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June 13, 2003



Via Hand Delivery

The Honorable Vernon A. Williams
Secretary
Surface Transportation Board
1925 K St. N.W.
Washington, D.C. 20423

RE: STB Docket No. 42071, *Otter Tail Power Company v. The Burlington Northern and Santa Fe Railway Company*

Dear Secretary Williams:

Please find enclosed for filing the original and ten (10) copies of Complainant's Opening Evidence (Public Version)(Volume I – Narrative Discussion, Volume II – Exhibits to Narrative Discussion, and Volume III – Workpapers) in the above referenced proceeding. Also enclosed are two (2) compact disks containing the electronic version of the written text, exhibits and workpapers in PDF format.

An extra copy of this filing is enclosed for stamping and returning to our offices.

Should you have any questions regarding the foregoing, please do not hesitate to contact the undersigned.

Sincerely,

Nicholas J. DiMichael
Counsel for Complainant

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cc: Counsel for Defendant

THOMPSON HINE LLP
ATTORNEYS AT LAW
1920 N Street, N.W.
Washington, D.C. 20036-1600
www.ThompsonHine.com
Phone 202.331.8800
Fax 202.331.8330

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BEFORE THE
SURFACE TRANSPORTATION BOARD

OTTER TAIL POWER COMPANY **Complainant,** **v.** **THE BURLINGTON NORTHERN AND SANTA FE RAILWAY COMPANY,** **Defendant.**	**Docket No. 42071**

COMPLAINANT'S OPENING EVIDENCE

VOLUME I - NARRATIVE DISCUSSION

George Koeck, Esq.
General Counsel
Otter Tail Corporation
4334 18th Avenue, SW, Suite 200
Fargo, ND 58103
(701) 451-3567

Nicholas J. DiMichael, Esq.
Jeffrey O. Moreno, Esq.
Michael H. Higgins, Esq.
THOMPSON HINE LLP
1920 N Street, N.W., Suite 800
Washington, DC 20036
(202) 331-8800

Attorneys for Complainant

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I
SUMMARY AND ARGUMENT

PART I

COUNSEL'S ARGUMENT AND SUMMARY OF EVIDENCE

In accordance with the procedural schedule established in this case by the December 26, 2002 order of the Surface Transportation Board ("STB" or "Board"), Complainant, Otter Tail Power Company ("OTP") hereby submits its Opening Evidence and Argument. This submission adheres to the format prescribed in the Board's March 12, 2001 decision in STB Ex Parte No. 347 (Sub-No. 3), General Procedures for Presenting Evidence in Stand-Alone Rate Cases ("General Procedures").

A. INTRODUCTION AND FACTUAL BACKGROUND

OTP initiated this proceeding by Complaint filed on January 2, 2002. The Complaint challenges the common carrier rates published by The Burlington Northern and Santa Fe Railway Company ("BNSF") in BNSF's Common Carrier Pricing Authority No. BNSF 90062[1] for the transportation of coal by unit trains from thirteen mines[2] in the Powder River Basin of Wyoming ("PRB") to the Big Stone Generating Station ("Big Stone"), near Big Stone, South Dakota. The Complaint, which also challenges any and all adjustments to the challenged rates and any subsequent new rates established by BNSF for the same rail transportation services, encompasses BNSF 90062-A[3], which revised the rates in BNSF 90062 effective January 1, 2003.

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[1] Exhibit I-A-1.

[2] The thirteen mines identified in BNSF 90062 are Buckskin, Rawhide, Eagle Butte, Dry Fork, Fort Union, Clovis Point, Caballo, Belle Ayr, Caballo Rojo, Cordero, Coal Creek, Jacobs Ranch, and Black Thunder.

[3] Exhibit I-A-2.

1. Identity of Otter Tail and Description of the Big Stone Generating Station.

OTP, Northwestern Energy (formerly Northwestern Public Service Company) and MDU Resources Group, Inc. jointly own the Big Stone Generating Station. OTP operates the station as the operating agent on behalf of the joint owners. Big Stone is a 475-megawatt electric generating unit. It burns approximately 2 million tons of coal per year. OTP purchases coal for Big Stone from several mines located in the PRB. Currently, OTP has a primary coal supply agreement with RAG Coal West, Inc. to supply PRB coal to Big Stor[REDACTED] from its Belle Ayr and Eagle Butte Mines. BNSF transports the coal by rail from the mines to Big Stone in single-line, unit train service in rail cars owned by OTP.

OTP is the electric utility division of Otter Tail Corporation, which also engages in a wide variety of non-utility businesses.[4] The headquarters for OTP is in Fergus Falls, Minnesota. OTP's electric utility business includes the production, transmission, distribution and sale of electricity in Minnesota, North Dakota and South Dakota. OTP provides electricity to approximately 127,000 customers in a 50,000 square mile area that is predominantly rural and agricultural.[5] Only five communities within OTP's service territory have a population over 10,000 and none exceeds 16,000.[6] OTP also engages in electric power sales in the wholesale electric power market.

MDU Resources Group, Inc. ("MDU") is a diversified natural resource company that is headquartered in Bismarck, North Dakota.[7] Through its Montana-Dakota Utilities Co. Division,

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4 Otter Tail Corporation 2003 Form 10-K, p. 2; Exhibit I-A-3.

5 Id. at 3.

6 Id.

7 MDU Resources Group, Inc. 2003 Form 10-K, p. 3; Exhibit I-A-4.

MDU generates, transmits and distributes electricity in the northern Great Plains states of Montana, North Dakota and South Dakota.[8] MDU provides retail electric service to over 116,000 residential, commercial, industrial and municipal customers located in 177 communities and adjacent rural areas.[9] MDU also engages in electric power sales in the wholesale electric power market.

Northwestern Energy ("Northwestern") is the energy division of Northwestern Corporation, which provides electricity and natural gas to approximately 598,000 customers in Montana, South Dakota and Nebraska.[10] Its principal office is in Sioux Falls, South Dakota. Northwestern serves electric retail customers in Montana and South Dakota. Its Montana service territory covers approximately 107,600 square miles, representing nearly three-quarters of the land area, and serves 299,000 customers in 191 communities and surrounding rural areas, including Yellowstone National Park.[11] The South Dakota service territory covers 25 counties with a combined population of approximately 99,500. In 2002, Northwestern's South Dakota operations provided retail electric service to 57,000 customers in 108 communities.[12] Northwestern also engages in electric power sales in the wholesale electric power market.

2. Transportation of PRB Coal to Big Stone.

BNSF serves both the origin PRB mines and the Big Stone Station. Currently, most of the PRB coal burned at Big Stone originates at the Belle Ayr and Eagle Butte mines, pursuant to coal

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8 Id.

9 Id. at 4.

10 Northwestern Corp. 2003 Form 10-K, p. 4; Exhibit I-A-5.

11 Id. at 8.

12 Id. at 9.

supply contracts REDACTED OTP also has purchased coal in recent years from the Black Thunder, Cordero, and Caballo Rojo mines. The Big Stone trains consist of 117 privately owned aluminum rail cars pulled by three distributed power locomotives. BNSF hauls the coal northward, out of the PRB, to Donkey Creek, Wyoming, where the trains head northwest towards Jones Junction, Montana. At Jones Junction, the trains turn northeast along BNSF's line to Terry, Montana, where the trains then continue in a southeasterly direction along the BNSF line to Aberdeen, South Dakota. From Aberdeen, the trains continue along the same BNSF line east to the Big Stone Station near Big Stone, South Dakota. The length of this entire haul is approximately 914 miles.

3. **Events Leading Up to the Filing of the Complaint.**

From March 1, 1995 through December 31, 2001, BNSF transported PRB coal to Big Stone pursuant to a confidential coal transportation contract designated ICC-BN-C-2913. In anticipation of the expiration of this contract, OTP initiated negotiations for a new rail transportation contract with BNSF in April 2001. Ultimately, the negotiations were unsuccessful.

Specifically, on April 25, 2001, OTP met with BNSF in Fort Worth, Texas to submit a proposal for a new contract to Big Stone, REDACTED in shipper supplied aluminum cars to a level that OTP considered reasonable. In response, BNSF simply offered to extend the existing contract terms and conditions without any rate reduction. Three months later, on July 2, 2001, BNSF submitted another proposal, which OTP also deemed unacceptable. After executing a Confidentiality Agreement, OTP and BNSF met a number of times and, over the course of several months,

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[13] Exhibit I-A-6.

exchanged information regarding their views of an appropriate rate. On November 29, 2001, BNSF informed OTP that its July 2nd offer was final.

On October 4, 2001, due to the impasse between the parties and the impending expiration of the existing rail contract, OTP asked BNSF to establish a common carrier rate for the movement of coal in unit trains with shipper-supplied cars from Wyoming PRB mines to the Big Stone Station, pursuant to 49 C.F.R. §1300.3.[14] BNSF responded to OTP's request, on October 16, 2003, with Common Carrier Pricing Authority BNSF 90062, which established a rate of $13.49 per ton in shipper supplied aluminum cars.[15] The rates were effective for one year from January 1, 2002.[16]

REDACTED

In light of these facts, OTP had no alternative but to file a complaint with the STB challenging the common carrier rates in BNSF 90062 in order to obtain a reasonable rail transportation rate. OTP filed its complaint on January 2, 2002.

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[14] Exhibit I-A-7.

[15] Exhibit I-A-1.

[16] BNSF subsequently published BNSF 90062-A, on December 10, 2002, which established rates of $13.76 per net ton in aluminum cars, effective from January 1, 2003 until changed, superceded or canceled. See Exhibit I-A-2. Those are the rates currently in effect.

REDACTED

4. OTP's Long-Standing Attempts to Obtain a Fair and Reasonable Rail Rate to Big Stone.

Economic development efforts are a very important part of OTP's business. Unlike utilities in densely populated regions, OTP has a very small and fragile retail customer base. Its service territory is largely rural and agricultural in nature, which is reflected in the fact that OTP serves only 127,000 customers in a 50,000 square mile area, in which only five communities have a population over 10,000.[18] Therefore, OTP must play a major role in attracting commercial and industrial customers to its service territory, which in turn attracts, or at least maintains, residential customers. A major enticement to many businesses are low electric rates. The delivered cost of coal is one of highest cost factors in the generation of electricity. Although OTP has a competitive coal supply market, it has not been able to obtain a competitive, or even a reasonable, rail rate, despite significant efforts to do so.

OTP has pursued a reasonable rail rate at Big Stone for over two decades. The Big Stone Station began commercial operation in 1975. It originally burned North Dakota lignite from the Gascoyne Mine in western South Dakota and transported the lignite coal via The Burlington Northern Railroad ("BN"), or its predecessors, pursuant to a 20-year agreement. When one of these predecessors, the Milwaukee Road, declared bankruptcy and sought to abandon its rail line west of Ortonville, Minnesota, which served the Big Stone plant, OTP submitted a bid, on behalf of the Big Stone co-owners, to acquire the line. A public railroad authority created by the State of North Dakota ultimately purchased the line and subsequently sold it to BN.

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[18] See notes 4-6, supra, and accompanying text. MDU and Northwestern have similar demographics. See notes 7-12, supra, and accompanying text.

In 1994, as the 20-year contract with BN was nearing expiration, OTP teamed up with local business interests for the purpose of constructing a 2-mile build-out to obtain competitive rail service from the Twin Cities & Western Railroad ("TCWR").[19] The objective was to obtain rail competition for the Big Stone Station and to attract business to a proposed industrial park, adjacent to the Big Stone rail spur. The ICC conditionally granted a petition to construct the proposed build out in Finance Docket No. 32645, Big Stone - Grant Industrial Development and Transportation, LLC -- Construction Exemption -- Ortonville, MN and Big Stone City, SD (served Sept. 26, 1995).

BN, however, commenced a lawsuit in federal court on March 16, 1995, seeking a declaratory ruling that the build-out proposal constituted tortious interference with two trackage rights agreements between BN and TCWR. Just two days before filing this lawsuit, BNSF sent OTP a letter in which BN adamantly declared its intent to defend its monopoly over Big Stone.[20] The ensuing litigation lasted until December 1997, when the U.S. Court of Appeals for the Eighth Circuit affirmed a district court decision that accepted BN's interpretation of the trackage rights agreements. This effectively eliminated any realistic build-out option.

This litigation also eliminated any competitive leverage OTP had from the threat of a build-out during the negotiations for a new rail contract to replace the expiring 20-year agreement. The new contract was a 5-year agreement to transport coal from PRB mines to Big Stone. This agreement was extended for two additional years, through December 31, 2001, at which time BNSF 90062 became effective.

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[19] For a more detailed discussion of this project and its subsequent history, see Pages II-B-2 through II-B-5, infra.

[20] Exhibit II-B-5.

From 1995 through the present, OTP has been actively involved in efforts to obtain rail competition through legislative change. Ward Uggerud, an OTP Senior Vice President, was the founding Chairman of the Alliance for Rail Competition ("ARC") from 1996-1998. OTP has remained active in ARC and regularly lobbies for rail competition legislation.

In the absence of any prospect for a build-out or imminent legislative change that would permit greater rail-to-rail competition, OTP now has turned to existing regulatory remedies to obtain a reasonable rail rate to Big Stone. This rate proceeding is the culmination of two decades of substantial, but as yet unsuccessful, attempts to obtain a fair and reasonable rail rate to Big Stone. Thus, as a matter of last resort, OTP has turned to the regulatory protections that are promised in the ICC Termination Act.

B. BNSF POSSESSES MARKET DOMINANCE.

Market dominance over the issue traffic is a threshold requirement before the Board may prescribe a maximum reasonable rail rate.[21] A determination of market dominance requires two findings by the Board. First, the Board must find "quantitative market dominance" by determining that the revenues produced by the issue traffic exceed 180% of the railroad's variable cost of providing the service. Second, the Board must find "qualitative market dominance" by determining that there is an absence of effective competition from other railroads or modes of transportation for the transportation of the issue traffic. In Section II of this Opening Evidence, OTP presents the facts that prove BNSF has market dominance over the transportation of coal from PRB mines to the Big Stone Station.

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[21] 49 U.S.C. §§10701(d)(1) and 10707(b).

1. **BNSF Possesses Quantitative Market Dominance.**

In Section II.A., infra, OTP has determined that BNSF's revenue from the issue traffic exceeds 180% of its variable cost of providing the related transportation service. Therefore, BNSF possesses quantitative market dominance over the transportation of coal from each of the thirteen PRB mines covered by BNSF 90062 to the Big Stone Station.

BNSF 90062 establishes a single rate from thirteen PRB mines to the Big Stone Station and OTP has challenged that rate from all thirteen origins. OTP, however, has performed a complete variable cost calculation for every time period only for the Belle Ayr and Eagle Butte Mine origins, since those are the mines from which Big Stone has received almost all of its coal since BNSF 90062 became effective on January 1, 2002. Nevertheless, OTP still has submitted complete variable cost evidence for the remaining eleven mines for the first quarter of 2003[22], and for the Cordero and Caballo Rojo Mines in the fourth quarter of 2002[23], since unit trains of coal did move from those mines to Big Stone in that quarter. Therefore, OTP has presented sufficient evidence to establish BNSF's quantitative market dominance, and hence to obtain a prescribed maximum reasonable rate, for movements to Big Stone from each of the thirteen origin mines.

OTP has calculated BNSF's variable costs using 2002 BNSF Uniform Railroad Accounting System ("URCS") unit costs. Where appropriate, however, OTP has adjusted BNSF's system-average costs from the URCS model in order to reflect the economies of unit train coal transportation and the movement-specific characteristics of the Big Stone movement. Therefore, in order to more closely approximate BNSF's actual costs of providing service to the Big Stone Station, OTP has

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22 Exhibit II-A-19.

23 Exhibits II-A-15 and II-A-16.

made movement-specific adjustments to BNSF's URCS maintenance of way costs, joint facility costs, return and depreciation on road property investment, locomotive capital costs, locomotive maintenance costs, crew wage costs, and loss and damage payments.

Movement-specific adjustments are permitted, and even encouraged, by the Board. For example, the Board repeatedly has held that "[b]ecause a carrier's systemwide average costs are not necessarily representative of the costs of providing a particular service, [], appropriate adjustments are made in individual rate cases to determine as nearly as possible the costs attributable to providing the service at issue."[24] The Board also has held that such adjustments are particularly appropriate "to reflect the economies and efficiencies that are associated with high-volume, repetitive movements such as . . . unit train service."[25]

OTP's calculations demonstrate that BNSF's revenues from each of the thirteen origins to Big Stone substantially exceed 180% of its variable cost of providing the rail service.[26] For the two principal mines from which OTP currently receives coal, Belle Ayr and Eagle Butte, the average 1Q02-1Q03 ratio of revenue to variable costs of the challenged rates are respectively.[27] For the remaining eleven origin mines, the challenged rates range from

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24 Minnesota Power, Inc. v. Duluth, Missabe & Iron Range Ry., STB Docket No. 42038, Slip op. at 3 (served Mar. 6, 2000). See also West Texas Utilities v. Burlington Northern R.R., 1 S.T.B. 638, 717 (1996) ("WTU"); Arizona Pub. Serv. Co. v. The Atchison, Topeka and Santa Fe Ry., 2 S.T.B. 367,422 1997) ("APS").

25 Texas Municipal Power Agency v. The Burlington Northern and Santa Fe Ry. Co., STB Docket No. 42056, Slip op. at 3 (served Feb. 9, 2001). See also, PPL Montana, LLC v. The Burlington Northern and Santa Fe Ry. Co., STB Docket No. 42054, Slip op. at n.8 (served Nov. 9, 2000); FMC Wyoming Corp. v. Union Pacific R.R. Co., STB Docket No. 42022, Slip Op. at 48 (served May 12, 2000) ("FMC").

26 Tables II-A-1 and II-A-11.

27 Exhibit II-A-22.

of BNSF's variable costs.[28] Thus, OTP clearly has established BNSF's quantitative market dominance over the issue traffic.

2. BNSF Possesses Qualitative Market Dominance.

In Section II.B., infra, OTP has demonstrated that BNSF possesses qualitative market dominance over the transportation of coal from PRB mines to the Big Stone Station. Qualitative market dominance exists when there is an absence of effective competition from other rail carriers or other modes of transportation. The D.C. Circuit explained the meaning of "effective competition" in Arizona Public Service Co. v. U.S.,[29] as follows:

> At the core of the "effective competition" standard is the idea that there are competitive, market pressures on the railroads deterring them from charging monopoly prices for transporting goods. *Of course any such effective competition will always be relative to a particular price that the railroads charge.* At some point the availability of an alternative such as the horse and buggy or even people carrying oil in buckets theoretically prevents railroads from raising their rates beyond an outer bound. But the mere existence of some alternative does not in itself constrain the railroads from charging rates far in excess of the just and reasonable rates that Congress thought the existence of competitive pressures would ensure.

Thus, the mere showing that the complainant conceivably can use another transportation option does not support a finding of effective competition without evidence showing the feasibility of the other option.[30]

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28 Table II-A-11.

29 742 F.2d 644, 650-51 (D.C. Cir. 1984) [emphasis in original].

30 See, Salt River Project Agric. Improv. and Power Dist. v. U.S., 762 F.2d 1053, 1059-60 (D.C. Cir. 1985).

OTP has indisputably demonstrated the absence of intramodal competition. BNSF has admitted, in response to OTP's Requests for Admission, that no other rail carrier is capable of serving the Big Stone Station.[31] Furthermore, BNSF itself was responsible for eliminating OTP's only feasible build-out option when it successfully prosecuted a lawsuit to prevent the Twin Cities and Western Railroad from serving Big Stone and other potential shippers via a two mile build-out to Ortonville, Minnesota.[32] This left OTP with only a prohibitively expensive 25-mile build-out to Appleton, Minnesota.

Effective intermodal competition also is absent. First, water transport is not an option because neither the origin PRB mines or the Big Stone Station are located near a navigable waterway. BNSF also admits this fact in response to OTP's requests for admission.[33] Second, transportation of 2 million tons of coal annually by truck over more than 600 miles of public roads and highways is inherently infeasible. The costs of trucking are prohibitively higher than for rail; the limited capacity of trucks relative to rail cars and highway weight restrictions would require 107,000 round trips per year, or 293 trips per day; and there would be significant social and environmental obstacles to adding so many trucks to highways and local roads. For all these reasons, the Board never has found trucks to be an effective competitive alternative to rail transportation of coal by unit train, even at shorter distances. [34] For the same reasons, a rail-truck transload operation from the nearest competitive

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31 Exhibit I-B-1.

32 State of Minnesota by Burlington Northern R.R. Co. v. Big Stone-Grant Industrial Development and Transportation, LLC, 990 F. Supp. 731 (D. Minn. 1997), aff'd, 131 F.3d 144 (8th Cir. 1997).

33 See Exhibit I-B-3.

34 Salt River Project Agric. Improv. and Power Dist. v. U.S., 762 F.2d 1053, 1060 (D.C. Cir. 1985); Arizona Public Service Co., 2 S.T.B. 367, 374-76; West Texas Utilities Co., 1 S.T.B. 638, 652; Dayton Power & Light Co. v. Louisville and Nashville R.R. Co., 1 I.C.C. 2d 375, 383 (1985).

railroad to Big Stone, 25 miles away, would not be an effective competitive alternative to BNSF-direct service to Big Stone.[35]

C. SUMMARY OF STAND ALONE COST EVIDENCE.

OTP has opted to calculate BNSF's maximum reasonable rates for unit train coal transportation service from PRB mines to the Big Stone Station using the Stand Alone Cost ("SAC") constraint in Coal Rate Guidelines, Nationwide.[36] The purpose of a SAC analysis is to determine the least cost at which an efficient competitor could provide the issue service in order to simulate a competitive price.[37] Therefore, consistent with the Board's guidelines, OTP's SAC analysis is based upon the revenues and costs associated with a hypothetical, optimally efficient, feasible rail carrier.

1. The Otter Tail Railroad.

In Section III.B., infra, OTP has designed its hypothetical least cost competitor, which it has denominated the Otter Tail Railroad ("OTRR"). The OTRR, which contains 1,287 route miles, replicates existing BNSF rail lines in Wyoming, Montana, North Dakota, Minnesota and South Dakota.[38] The OTRR physically connects with the existing BNSF system at Converse and Donkey

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35 See WTU, 1 S.T.B. at 650 and 652 (STB rejected the feasibility of a 27-mile transload option).

36 1 I.C.C. 2d 520 (1985), aff'd sub nom. Consolidated Rail Corp. v. U.S., 812 F.2d 1444 (3d Cir. 1987).

37 Id. at 542.

38 Exhibit III-A-1 is a schematic of the OTRR. At its southernmost point, the OTRR originates at BNSF's Converse Yard in Wyoming. From there, it follows the route of BNSF's Orin Line north to Donkey Creek, Wyoming and then northwest through Gillette and Sheridan, Wyoming up to Moran Junction, Montana. At Moran Junction, the line turns northeast along BNSF's mainline through Miles City, Montana to Glendive, Montana. At Glendive, the line turns east into North Dakota and follows the BNSF's main line through Bismarck and Jamestown, North Dakota to Fargo, North Dakota. At Fargo, the OTRR turns southeast along the BNSF main line to Brushvale, Minnesota. From Brushvale to East Brekenridge, Minnesota, the OTRR operates over the RRVW via trackage rights for 10.52 miles. It then continues along the BNSF main line to Benson, Minnesota, where it turns west into South Dakota and follows the BNSF main line to Big Stone, South Dakota and terminates at the Big Stone Station rail spur. In addition, there are seven branch lines along the OTRR route that also

Creek, Wyoming; Moran Junction, Terry and Snowden, Montana; Mandan and Fargo, North Dakota; and Benson, Minnesota. In order to be extremely conservative in its estimate of operating facilities and other physical parameters, OTP has designed the OTRR to accommodate a daily average number of trains moving over each of its route segments equal to the peak day's traffic during the peak volume year of 2021.

2. The OTRR's Traffic Group.

In Section III.A., infra, OTP has identified the traffic that the OTRR will handle. The ability to group traffic of different shippers is essential to the SAC analysis and its application of constrained market pricing.[39] As permitted by the guidelines, OTP has identified potential customers of the OTRR by reference to BNSF's existing customer list.[40]

The OTRR traffic group consists of unit train coal movements and general freight trains moving in overhead service. The OTRR will originate 180.4 million net tons of coal in the 2002 base year at nineteen mines, including eleven of the thirteen mines in BNSF 90062.[41] Except for coal destined to Big Stone, the OTRR will interchange all of the coal it originates with the BNSF at Converse, Donkey Creek, Moran Junction, Snowden, Mandan, Fargo and Benson. The OTRR also will handle 25.2 million net tons of general freight traffic in the 2002 base year, only in overhead service, in both directions between Donkey Creek and Moran Junction; Moran Junction and Terry; Moran Junction and Fargo; and Snowden and Fargo.

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replicate existing BNSF lines.

[39] Coal Rate Guidelines, 1 I.C.C. 2d at 544.

[40] Id. at 543.

[41] The Coal Creek and Fort Union Mines are not included because they are not currently operational and thus did not originate any coal traffic in the 2002 base year for the OTRR.

OTP has projected the coal traffic volumes throughout the 20-year DCF period of the OTRR, but it has held the non-coal traffic volumes constant at 2002 base year levels. By the end of the 20-year DCF period in 2021, the OTRR will handle 205.1 million tons of coal. The coal volume projections are based **REDACTED** upon the annual change in the AEO 2003[42] forecast of the change in PRB coal volumes. This methodology has been approved by the Board in FMC at 34 and WPL at 18-21. OTP has taken an extremely conservative approach by not projecting any increases in non-coal traffic,

By the peak year of the DCF-period, in 2021, the OTRR will handle a total of 230 million tons of traffic.

Consistent with the guidelines, OTP has assumed that the revenue contribution of other (i.e., non-OTP) traffic is at current rate levels for the 2002 base year of the OTRR.[43] There are four categories of revenue on the OTRR: (1) traffic that originates and terminates on the OTRR; (2) traffic that originates on the OTRR and is interchanged with a railroad other than BNSF; (3) traffic that originates on the OTRR and is interchanged with BNSF; and (4) overhead traffic that moves over the OTRR and is interchanged with BNSF at both ends. The stand-alone revenues are calculated somewhat differently for each category.

The first and second categories are treated similarly. The first category consists of just the Big Stone movement, which is the only single-line haul on the OTRR. Therefore, 2002 base year revenues are based on the rates and tons identified in BNSF's traffic tapes. For the second category,

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[42] U.S. Department of Energy, Energy Information Administration Annual Energy Outlook 2003 with Projections to 2025, January 2003.

[43] Coal Rate Guidelines, 1 I.C.C. 2d at 544.

OTP assumed that the revenues earned by the OTRR are the same as those actually earned by BNSF on the same traffic to the same interchange. These assumptions have been approved by the Board in FMC at 27.

The third and fourth categories, which are sometimes referred to as "cross-over" traffic, constitute the largest volume of traffic on the OTRR. For this traffic, it is necessary to allocate BNSF's current and prospective single-line revenue and joint-line revenue divisions between the residual BNSF and OTRR. The Board has used the modified mileage block prorate method in recent SAC cases because it "is the best procedure for allocating revenues to carriers where market-based divisions are not available."[44] However, since, in this proceeding, BNSF did produce market-based divisions for most coal traffic and some non-coal traffic in discovery, OTP has used this superior evidence to allocate cross-over revenues for all coal traffic and some non-coal traffic. Where actual divisions were not available for non-coal traffic, OTP has used the modified mileage block prorate methodology.

OTP next projected the 2002 base year revenues through the end of the 20-year DCF period. OTP projected revenues for coal traffic based upon existing transportation contracts and pricing authorities and BNSF's internal rate forecasts, plus a DRI-WEFA forecast of the RCAF-U. Certain adjustments were made upon the expiration of existing contracts to reflect whether or not a coal customer is captive to BNSF for rail service. For non-coal traffic, OTP used the rate of change forecast in BNSF's Long Range Plan for the relevant Commodity or Business Group over the 1998-2007 time period.

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[44] FMC at 27 (citing McCarty Farms, Inc., v. Burlington Northern R.R., STB Docket No. 37809, slip op. at 9 (served Aug. 20, 1997) and Nevada Power II, 10 I.C.C. 2d 259, 268 (1994)).

The total OTRR revenues are $877 million in 2002 and $1,374 million in 2021. This includes coal revenue of $676 million in 2002 and $1,153 million in 2021. The non-coal revenues are $201 million in 2002 and $221 million in 2021.

3. OTRR Operating Plan, Expenses, and Investment.

In Sections III.C, III.D., III.E. and III.F., infra, OTP describes in detail the operating plan, expenses, and investments that are necessary for the OTRR to provide the least cost, optimally efficient service for its traffic group. In general, the operating plan is for a modern, heavy tonnage freight railroad over which all traffic moves in unit train, run-through service in both the loaded and empty directions. Consistent with SAC principles, OTP has excluded costs that were not incurred by the incumbent railroad, since those would constitute impermissible barriers to entry.[45] OTP also has limited OTRR train sizes to the largest train currently received by each customer to ensure that OTRR's operations will meet the requirements of shippers and connecting railroads.

OTP has designed the OTRR's facilities and operating plan to handle the flow of traffic on the peak operating day of the peak year of operation, even though that date, which is October 18, 2021, does not occur until twenty years into the future. This is a very conservative approach, since most for-profit businesses ordinarily would construct their facilities to meet average expected demand, and use demand management techniques to meet demand during short-term, peak operating periods. The OTRR, however, will construct its entire infrastructure in its first year of operation.

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[45] APS at 385-86; WTU at 668-670.

OTP has considerable freedom to select how the OTRR will move the traffic.[46] The OTRR will use a different route than BNSF currently uses to handle the Big Stone coal movement and the non-coal overhead traffic between Fargo and Snowden. Since the OTRR will originate and terminate the Big Stone movement, OTP can reroute this traffic as long as the new route is reasonable and meets OTP's transportation needs.[47] The new route for the Big Stone movement produces comparable cycle times at a reduced transportation rate.

The OTRR also will reroute non-coal traffic between Fargo and Snowden that BNSF currently hauls over its northern mainline in North Dakota via Nolan, Surrey, Minot and Williston, North Dakota. This re-route occurs entirely on the OTRR and does not re-route any portion of the off-SARR movement handled by the residual BNSF. Indeed, OTP has chosen to extend the OTRR from Glendive, Montana to Snowden, Montana precisely to avoid any off-SARR effects. Therefore, OTP can reroute this traffic as long as the new route is reasonable and meets the shippers' transportation needs[48]. As with the Big Stone movement, the OTRR will provide at least the same level of service for this non-coal traffic as BNSF at a reduced cost.

The aggregate 2002 operating expenses of the OTRR equal $233.3 million. The total required road property investment for the OTRR is $2,237.4 million.

4. Application of the Board's DCF Analysis and Summary of SAC Analysis

In SAC cases, the Board utilizes a discounted cash flow ("DCF") model to compare the stream of revenues that would be generated by the complainant's stand-alone railroad to the stream

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46 Texas Municipal Power Agency v. The Burlington Northern and Santa Fe Ry., STB Docket No. 42056, Slip op. at 18 (served March 24, 2993) ("TMPA"); Coal Rate Guidelines, 1 I.C.C. 2d at 543-44.

47 TMPA at 21.

48 Id.

of costs that the railroad wuld incur over a 20-year period, discounted to a common point in time.[49] In Sections III.G and III.H, infra, OTP applies the DCF analysis to the revenues and costs associated with the OTRR for each year of the 20-year DCF period to show that the OTRR would generate greater revenues than it would need to cover all of the costs that are incurred in and assigned to each year. Furthermore, Section III.H. demonstrates that the rates in BNSF 90062 exceed the jurisdictional threshold and stand-alone cost for each rate, and thus exceed the maximum reasonable levels permitted by law.

Pursuant to 49 U.S.C. 11704(b), OTP is entitled to reparations for the amounts it has been charged by BNSF, since January 1, 2002, in excess of the maximum reasonable rate for transportation from the PRB to the Big Stone Station. OTP has calculated the amount of reparations owed, in Section III.H., to be $13.3 million, from January 1, 2002 through May 20, 2003.[50] In addition, OTP is entitled to interest on this amount, calculated pursuant to 49 C.F.R. Part 1141. However, OTP reserves the right to contend that interest should be calculated by a different methodology because the methodology in Part 1141 would unfairly grant BNSF a significant windfall.

Furthermore, OTP asks the Board to prescribe maximum reasonable rates that would apply to the transportation of PRB coal from the thirteen mines covered by BNSF 90062 to the Big Stone Station.

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[49] Wisconsin Power and Light Co. Union Pacific R.R., STB Docket No. 42051, Slip Op. at 30 (served Sept. 13, 2001) ("WPL"); FMC at 23-24.

[50] Table III-H-3.

5. PPL Cross-Subsidy Analysis.

In PPL, the STB performed a threshold cross-subsidy analysis on a line segment basis for the first time in a SAC case. Specifically, in response to a cross-subsidy argument raised by BNSF, the STB conducted an "abbreviated analysis" of whether an impermissible cross-subsidy existed between the lower density western segment of PPL's stand-alone railroad and the higher density PRB portion, and concluded that the western segment "would not be self-sustaining."[51] The original PPL decision, however, did not address whether complainants were required to affirmatively address the cross-subsidy issue in their opening evidence and, if so, how they were to identify line segments for the cross-subsidy analysis.

On reconsideration of its PPL decision, the Board clarified this issue. In response to criticism that it had changed the legal standard, the Board stated, "This is the first case in which a railroad has claimed that the shipper's SAC evidence relied on a cross subsidy" and that the Board was applying established CMP principles in response to PPL's defense to BNSF's cross-subsidy claim.[52] Thus, it is apparent that a cross-subsidy claim is an affirmative defense of the railroad that must be raised and specifically addressed by the railroad in its reply evidence, and to which the shipper may respond on rebuttal.[53]

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[51] PPL Montana v. The Burlington Northern and Santa Fe Ry., STB Docket 42054, Slip op. at 10-13 (served Aug. 19, 2002) ("PPL").

[52] PPL Montana v. BNSF, STB Docket No. 42054, Slip op. at 6 (served March 21, 2003) ("PPL II").

[53] This conclusion does not impermissibly shift the complainant's burden of proof, since the complainant still must include sufficient evidence of costs and revenues in its opening evidence that would allow the railroad and the Board to test for a cross-subsidy. The submission of this data constitutes complainant's *prima facie* case. The burden of going forward then lies with the railroad to identify specifically, in its reply evidence, any impermissible cross-subsidy that it believes to exist. If the railroad does so, the complainant may respond to that evidence on rebuttal.

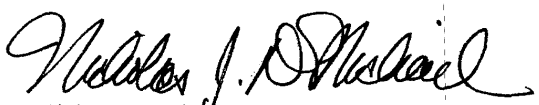
In Section III.A.4., infra, OTP has included, in its opening evidence, all of the data necessary to perform a PPL cross-subsidy analysis on any line segment and, by way of example, it has actually performed that analysis on the same line segments as the Board in PPL. Consistent with PPL, OTP analyzed the highest density portion of the OTRR, the PRB, apart from the remaining OTRR system. In other words, OTP segmented the OTRR at the same point where the Board segmented PPL's stand-alone railroad. OTP examined the revenues and attributable costs of each segment consistent with the Board's methodology in PPL, except that OTP's methodology is more precise. Instead of developing operating costs for traffic on the western segment of the OTRR based on a series of ratios of the western traffic as a portion of the total traffic, OTP has determined the actual operating statistics associated with the traffic by performing a separate string analysis for only that traffic moving over the western segment of the OTRR system. OTP then performed a separate DCF analysis for the western segment based on the road property investment and operating statistics specific to that segment. Since the revenues attributable to the traffic moving over the western segment of the OTRR exceed (and in fact significantly exceed) the attributable cost on a cumulative basis over the 20-year DCF period, no impermissible cross-subsidy exists.

D. CONCLUSION.

For all of the reasons set forth herein and in the remainder of OTP's Opening Evidence in this proceeding, the Board should conclude that BNSF possesses market dominance over the movement of coal from PRB mines to the Big Stone Station and that the rates for these movements in BNSF 90062 are unreasonably high. As such, OTP requests that the Board prescribe maximum reasonable rates for this transportation at the levels described herein and award OTP reparations for

the amounts BNSF has overcharged OTP since January 1, 2002, when the challenged rates became effective, plus interest and any other appropriate relief.

Respectfully submitted,



George Koeck
General Counsel and Corporate Secretary
Otter Tail Corporation
4334 18th Avenue, SW, Suite 200
Fargo, North Dakota 58103
(701) 451-3567

Nicholas J. DiMichael
Jeffrey O. Moreno
Michael H. Higgins
Thompson Hine LLP
1920 N Street, NW
Washington, DC 20036
(202) 331-8800

Counsel for Complainant,
Otter Tail Power Company

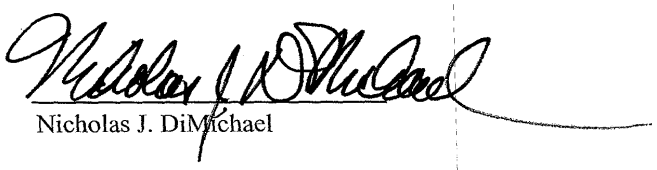
June 13, 2003

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CERTIFICATE OF SERVICE

I hereby certify that on this 13th day of June, 2003, I served a copy of Complainant's Opening Evidence (Public Version) by hand delivery to counsel for Defendant at the following address:

Samuel M. Sipe, Jr., Esq.
Anthony J. LaRocca, Esq.
Cynthia L. Quarterman, Esq.
Brooke L. Gaede, Esq.
Steptoe & Johnson
1330 Connecticut Avenue, NW
Washington, DC 20036



Nicholas J. DiMichael

II-A
QUANTITATIVE MARKET DOMINANCE

PART II

MARKET DOMINANCE

II. A. QUANTITATIVE MARKET DOMINANCE

49 U.S.C. § 10707(d)(1) defines the quantitative element of the market dominance analysis to be a showing that the revenues produced by the movement at issue are at least 180% of the variable cost of providing the related transportation service. In this Section, Otter Tail demonstrates that the quantitative threshold is clearly met in this proceeding.

1. Overview of Variable Costs Presentation

Presented in this Section are BNSF's variable costs of transporting coal from the PRB to the Big Stone Generating Station near Milbank, SD, calculated using 2002 BNSF Uniform Railroad Accounting System ("URCS") unit costs, developed using standard, Board-accepted procedures.[1] As explained in more detail below, the BNSF system-average costs from the URCS model have been adjusted in a number of respects to reflect Big Stone Station movement-specific transportation characteristics as well as the economies of moving coal in unit train service.[2] This quantitative market dominance section is sponsored by Joseph J. Plaistow. The maintenance of way portion is sponsored by Michael L. Seale.

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1 The 2002 BNSF URCS was calculated using the 2002 cost of capital from "Comments of the Association of American Railroads and Its Member Railroads" in Ex Parte No. 558 (Sub-No. 6), p. 6, filed March 28, 2003. See Opening Workpaper Vol. III, p. 19.

2 Many of Otter Tail's movement-specific cost adjustments are based upon discovery information furnished by BNSF. To the extent BNSF relies upon data that was requested by Otter Tail in discovery and not produced by BNSF, Otter Tail objects to such data and will request the Board to strike it from the record. If BNSF relies upon data that was not requested by Otter Tail in discovery, Otter Tail expects that all such data will be provided to Otter Tail without prejudice to Otter Tail addressing such data in the reply and rebuttal stages of this proceeding.

Although Common Carrier Pricing Authority ("CCPA") BNSF 90062 (and 90062-A) and Otter Tail's Complaint cover rates and service terms for 13 BNSF-served PRB mines, Otter Tail has conducted a complete variable cost calculation for every time period only for the Belle Ayr and Eagle Butte Mine origins, from which the Big Stone Station has received almost all of its coal.[3] Otter Tail has submitted variable costs for the other 11 origins only for the 1Q03 time period.[4] See Exhibit II-A-19. However, the lack of complete variable cost information for each of these 11 mines should not prevent a finding that quantitative market dominance is present for all of the mines covered by CCPA BNSF 90062 and 90062-A. As demonstrated below, the average 1Q02-1Q03 ratio of revenue to variable costs calculated for Belle Ayr is 281%, and the average 1Q02-1Q03 ratio of revenue to variable costs calculated for Eagle Butte is 286%, far in excess of the 180% statutory level.[5] Thus, Otter Tail's evidence supports a finding by the Board that the quantitative threshold is met for all of the 13 mines listed in CCPA BNSF 90062 and 90062-A.

a. Summary of Variable Cost Analysis and Resulting Revenue to Variable Cost Ratios

In general, Otter Tail's calculation of BNSF's variable cost of transporting Otter Tail's coal traffic from the PRB mines to the Big Stone Station is based on the following:

- A detailed analysis of the transportation characteristics of BNSF's rail service when handling Otter Tail's coal traffic to the Big Stone Station;
- Base year 2002 BNSF URCS variable unit costs indexed to each of the quarters of 2002 and the first quarter of 2003 ("1Q02 through 1Q03") wage and price levels; and

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[3] A schematic of the route of movement generally used by BNSF to transport coal to the Big Stone Station is shown as Exhibit II-A-1.

[4] Because coal in unit trains moved from Cordero and Caballo Rojo Mines in 4Q02, variable costs from those mines for that time period are presented in Exhibits II-A-15 and II-A-16, respectively.

[5] See Exhibit II-A-22.

- Specific adjustments to BNSF's system average unit costs to reflect the characteristics and efficiencies of Big Stone Station unit coal train service.[6]

Pricing Authority 90062 established a single rate of $13.49 per net ton in Otter Tail-supplied aluminum cars, and of $14.23 per net ton in Otter Tail-supplied steel cars, for shipments of coal from Buckskin, Rawhide, Eagle Butte, Dry Fork, Fort Union, Clovis Point, Caballo, Belle Ayr, Caballo Rojo, Cordero, Coal Creek, Jacobs Ranch, and Black Thunder Mines to the Big Stone Station.[7] Coal began moving under these rates in January, 2002. The $13.49 aluminum car and $14.23 steel car rates remained in effect through the year 2002. Pursuant to CCPA BNSF 90062-A, the rates were changed to $13.76 per net ton in aluminum cars and $14.51 per net ton in steel cars effective January 1, 2003.

The results of Otter Tail's study of BNSF's variable costs for transporting coal from the PRB to the Big Stone Station in Otter Tail's railcars for 1Q02 through 1Q03 are summarized in Table II-A-1 below:

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6 These adjustments are consistent with those made or approved by the Board in several recentrail maximum rate cases involving the calculation of the variable costs of handling unit train coal traffic: WTU, 1 S.T.B. at 644-45; WPL; STB Docket No. 41185, Arizona Public Service Company v. The Atchison, Topeka and Santa Fe Railway Company, 2 S.T.B. 367 (1997) ("APS"); STB Docket No. 42022, FMC Wyoming Corp. v. Union Pacific Railroad Company, Decision served May 12, 2000 ("FMC"); and TMPA. Otter Tail has paid particular attention to the Board's directives in "General Procedures for Presenting Evidence in Stand-Alone Cost Rate Cases," STB Ex Parte No. 347 (Sub-No. 3), served March 12, 2001, at 3. There the Board urged the parties presenting evidence in maximum rate proceedings to document their findings thoroughly. The Board stressed the importance of supporting assumptions and figures. It cautioned parties to establish a clear audit trail between evidence submitted and workpapers (both hardcopy and electronic) relied upon.

7 CCPA BNSF 90062 also specified a "fall-back" rate of $14.84 per net ton in shipper-supplied aluminum cars and $15.65 in shipper-supplied steel cars "...in the event that annual volumes are less than 1,800,000 tons. If the annual volume minimum is not reached, the fall-back rates would be charged "retroactively" to all tons shipped in that year. Similar "fall-back" rates were included in subsequently issued versions of Pricing Authority BNSF 90062. See Opening Workpapers Vol. III, pp. 1 to 8.

Table II-A-1
Summary of Movements
Costed In Otter Tail's Opening Evidence

Quarter	Origin	Type of Cars	Rate Per Ton [1]	Var. Cost Per Ton [2]	J.T. [3]
(1)	(2)	(3)	(4)	(5)	(6)
1Q02	Belle Ayr	Aluminum	$13.49		
	Eagle Butte	Aluminum	13.49		
2Q02	Belle Ayr	Aluminum	13.49		
	Eagle Butte	Aluminum	13.49		
3Q02	Belle Ayr	Aluminum	13.49		
	Eagle Butte	Aluminum	13.49		
4Q02	Belle Ayr	Aluminum	13.49		
	Eagle Butte	Aluminum	13.49		
	Cordero	Aluminum	13.49		
	Caballo Rojo	Aluminum	13.49		
1Q03	Belle Ayr	Aluminum	13.76		
	Eagle Butte	Aluminum	13.76		
	Buckskin	Aluminum	13.76		
	Rawhide	Aluminum	13.76		
	Dry Fork	Aluminum	13.76		
	Fort Union	Aluminum	13.76		
	Clovis Point	Aluminum	13.76		
	Caballo	Aluminum	13.76		
	Cordero	Aluminum	13.76		
	Caballo Rojo	Aluminum	13.76		
	Coal Creek	Aluminum	13.76		
	Jacobs Ranch	Aluminum	13.76		
	Black Thunder	Aluminum	13.76		

REDACTED

[1] Common Carrier Pricing Authority BNSF 90062 and 90062-A
[2] Exhibits II-A-7 through II-A-19.
[3] Column (5) x 180%.

b. Traffic and Operating Characteristics of Movements from the PRB to the Big Stone Station[8]

Before developing the variable cost of service, it is first necessary to specify the traffic and operating characteristics for the PRB coal movements to the Big Stone Station. The Appendix to the Interstate Commerce Commission's ("ICC") order in its 1982 PEPCO decision[9] "outlines the cost-related evidentiary requirements we believe are necessary for complete records in these proceedings."[10] The Appendix further provides that the operating characteristics for coal movements should be quantified in a tabular form followed by a narrative description of each item.

i. Tabular Form

Tables II-A-2 and II-A-3, below, identify the 1Q02 operating parameters for coal movements in Otter Tail-supplied aluminum freight cars originating at the Belle Ayr and Eagle Butte Mines and terminating at the Big Stone Station. The "item" columns in these tables summarize the operating parameters requested in the ICC's PEPCO order. The Otter Tail operating parameters are quantified in Column (2) or in the narrative description following the tables.

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8 The details for the traffic and operating characteristics for each quarter 1Q02 through 1Q03 are set forth in Exhibit II-A-2 and electronic file "T&O Otter Tail Opening.123" in the electronic files accompanying Section II-A.

9 ICC Docket No. 36114 (Sub-No. 1), Potomac Electric Power Company v. Consolidated Rail Corporation, et al. Decision served April 7, 1982. ("PEPCO")

10 Id at 4.

Table II-A-2

ICC's Required Operating Parameters - Otter Tail Coal Trains from Belle Ayr Mine-Aluminum Cars - 1Q02

Item (1)	Amount (2)
1. Name of mine or origin, and power plant or destination	See Description Below
2. Milepost at origin; milepost at destination	See Description Below
3. Annual tons (tariff minimum, actual and projected)	See Description Below
4. Date of first shipment (if new movement)	See Description Below
5. Alpha-numeric car type	
6. Weight of lading per car (in pounds)	
7. Tare weight of car (in tons to one decimal)	
8. Identity of car owner	Otter Tail
9. Identity of locomotive owner	BNSF
10. Car lease rental (railroad supplied cars)	See Description Below
11. Locomotive lease rental (if any)	See Description Below
12. Present rate (1Q01)	$13.49
13. Proposed rate	Not Applicable
14. Initial rate and effective date	See Description Below
15. Amounts (or percent) of rate escalation and dates (if any)	See Description Below
16. Cars per train or per shipment	
17. Loaded miles (each railroad) (identify any way miles included in loaded miles)	
18. Empty miles (each railroad), if applicable. If not applicable, indicate empty factor	
19. Length of origin loop track (if any). Indicate whether included in lines 17 or 18	Not Included in 17 and 18
20. Length of destination loop track (if any)	
21. Number of locomotive units (by segment)	See Description Below
22. Loading hours and basis of calculation	See Description Below
23. Unloading hours and basis of calculation	See Description Below
24. Cycle hours	
25. Number of train sets required for movement (unit trains only)	See Description Below
26. Trips per year per train set (unit train only)	
27. Crew districts, loaded direction	See Description Below
28. Crew districts, empty direction	See Description Below
29. Turnaround crews (specify)	See Description Below
30. Locomotive units required (by type and horsepower for each railroad)	See Description Below
31. Cars required (railroad-owned for each railroad)	See Description Below
32. Cabooses (for each railroad)	See Description Below
33. Spare margin for locomotives	
34. Spare margin for cars (railroad supplied)	
35. Spare margin for cabooses	Not Applicable
36. Switching by road haul locomotives (specify)	See Description Below
37. Switching by yard locomotives (specify)	See Description Below
38. Helper service (location, miles, time)	See Description Below
39. Helper crew (hours for crew cycle on this movement)	See Description Below
40. Location of interchanges (indicate which are non-through)	Not Applicable
41. Location of inter-intratrain switches	Not Applicable
42. Joint facility payments (indicate basis for computation)	See Description Below

REDACTED

Table II-A-3

ICC's Required Operating Parameters - Otter Tail Coal Trains from Eagle Butte Mine-Aluminum Cars - 1Q02

Item (1)	Amount (2)
1. Name of mine or origin, and power plant or destination	See Description Below
2. Milepost at origin; milepost at destination	See Description Below
3. Annual tons (tariff minimum, actual and projected)	See Description Below
4. Date of first shipment (if new movement)	See Description Below
5. Alpha-numeric car type	
6. Weight of lading per car (in pounds)	
7. Tare weight of car (in tons to one decimal)	
8. Identity of car owner	Otter Tail
9. Identity of locomotive owner	BNSF
10. Car lease rental (railroad supplied cars)	See Description Below
11. Locomotive lease rental (if any)	See Description Below
12. Present rate (1Q01)	$13.49
13. Proposed rate	Not Applicable
14. Initial rate and effective date	See Description Below
15. Amounts (or percent) of rate escalation and dates (if any)	See Description Below
16. Cars per train or per shipment	
17. Loaded miles (each railroad) (identify any way miles included in loaded miles)	
18. Empty miles (each railroad), if applicable. If not applicable, indicate empty factor	
19. Length of origin loop track (if any). Indicate whether included in lines 17 or 18	Not Included in 17 and 18
20. Length of destination loop track (if any)	
21. Number of locomotive units (by segment)	See Description Below
22. Loading hours and basis of calculation	See Description Below
23. Unloading hours and basis of calculation	See Description Below
24. Cycle hours	
25. Number of train sets required for movement (unit trains only)	See Description Below
26. Trips per year per train set (unit train only)	
27. Crew districts, loaded direction	See Description Below
28. Crew districts, empty direction	See Description Below
29. Turnaround crews (specify)	See Description Below
30. Locomotive units required (by type and horsepower for each railroad)	See Description Below
31. Cars required (railroad-owned for each railroad)	See Description Below
32. Cabooses (for each railroad)	See Description Below
33. Spare margin for locomotives	
34. Spare margin for cars (railroad supplied)	
35. Spare margin for cabooses	Not Applicable
36. Switching by road haul locomotives (specify)	See Description Below
37. Switching by yard locomotives (specify)	See Description Below
38. Helper service (location, miles, time)	See Description Below
39. Helper crew (hours for crew cycle on this movement)	See Description Below
40. Location of interchanges (indicate which are non-through)	Not Applicable
41. Location of inter-intratrain switches	Not Applicable
42. Joint facility payments (indicate basis for computation)	See Description Below

REDACTED

ii. **Narrative Description**

1. **Name of Mine or Origin, and Power Plant or Destination**

Mine -- Belle Ayr, Eagle Butte, Buckskin, Rawhide, Dry Fork, Fort Union, Clovis Point, Caballo, Cordero, Caballo Rojo, Coal Creek, Jacobs Ranch, and Black Thunder Mines.

Power Plant --Big Stone Generating Station (located near Milbank, SD).

2. **Milepost at Origin; Milepost at Destination**

Milepost at Origin – Belle Ayr - MP 15.5; Eagle Butte - MP 9.5; Buckskin - MP 9.4; Rawhide - MP 9.5; Dry Fork - MP 7.9; Fort Union - MP 6.0; Clovis Point - MP 3.0; Caballo - MP 14.5; Caballo Rojo - MP 17.3; Cordero - MP 21.1; Coal Creek - MP 25.9; Jacobs Ranch - MP 5.8; and Black Thunder - MP 3.1.

Milepost at Destination -- Big Stone Station – MP 602.2.

REDACTED

4. **Date of First Shipment (If New Movement)** -- The first shipment under Common Carrier Pricing Authority BNSF 90062 occurred in January 1, 2002 upon expiration of contract ICC-BN-C-2913.

5. **Alpha-Numeric Car Type** -- Aluminum hopper cars are used to move Otter Tail's coal between the PRB mines and the Big Stone Station. Otter Tail's cars have reporting marks BSPX and are predominantly Association of American Railroads ("AAR") car type code J311. The "J" represents gondola Car-GT, open top, solid bottom cars suitable for unloading or dumping machines only. The "3" designation (first numeric) represents 185,000 lbs. load limit and over; the "1" designation (second numeric) represents GT Depresssed Bottom; and the "1" designation (third numeric) indicates a car with 36-48 feet inside length. The car type information was identified from *The Official Railway Equipment Register*, Volume 117, No. 2, issued October, 2001, page UMLER 153.

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[11] Source for 2002 and 2003 tonnage: BNSF freight bills. See Opening Workpaper Vol. III, pp. 736 to 936.

Table II-A-4 below lists the lading weights Otter Tail used in its Opening cost calculations:

Table II-A-4
Weight of Lading Per Car
(Tons)

Quarter	Origin	Type of Cars	Tons
(1)	(2)	(3)	(4)
1Q02	Belle Ayr	Aluminum	
	Eagle Butte	Aluminum	
2Q02	Belle Ayr	Aluminum	
	Eagle Butte	Aluminum	
3Q02	Belle Ayr	Aluminum	
	Eagle Butte	Aluminum	
4Q02	Belle Ayr	Aluminum	REDACTED
	Eagle Butte	Aluminum	
	Cordero	Aluminum	
	Caballo Rojo	Aluminum	
1Q03	Belle Ayr	Aluminum	
	Eagle Butte	Aluminum	
	Buckskin	Aluminum	
	Rawhide	Aluminum	
	Dry Fork	Aluminum	
	Fort Union	Aluminum	
	Clovis Point	Aluminum	
	Caballo	Aluminum	
	Cordero	Aluminum	
	Caballo Rojo	Aluminum	
	Coal Creek	Aluminum	
	Jacobs Ranch	Aluminum	
	Black Thunder	Aluminum	

REDACTED

8. **Identity of Car Owner** -- Otter Tail owns the freight cars used for transportation at the shipper car rate specified in Common Carrier Pricing Authority BNSF 90062 and 90062-A.

9. **Identity of Locomotive Owner** -- The motive power for the coal trains destined to the Big Stone Station is supplied by BNSF.

10. **Car Lease Rental (Railroad Supplied Cars)** -- Railcars for this movement are provided by Otter Tail. Car lease rental costs are not applicable to these Otter Tail cars.

11. **Locomotive Lease Rental** --

12. **Present Rate (1Q03)** -- $13.76 per net ton in aluminum cars and $14.51 per net ton in steel cars from PRB Mines.

13. **Proposed Rate** -- Not applicable.

14. **Initial Rate and Effective Date** -- $13.49 per net ton in aluminum cars and $14.23 per net ton in steel cars from PRB Mines. This rate became effective in January, 2002, upon expiration of Contract BN-C-2913.

15. **Amounts (Or Percent) of Rate Escalation and Dates (If Any)** -- Common Carrier Pricing Authority BNSF 90062 does not include provisions for periodic rate adjustments to reflect changes in costs as indicated by the RCAF-U index. The $13.49 and $14.23 rates remained in effect throughout the year 2002. On December 10, 2002, BNSF issued CCPA BNSF 90062-A increasing the applicable rates to $13.76 per net ton in aluminum cars and $14.51 per net ton in steel cars from PRB Mines effective January 1, 2003.

REDACTED

Table II-A-5
Cars Per Train

Quarter	Origin	Type of Cars	No. of Cars
(1)	(2)	(3)	(4)
1Q02	Belle Ayr	Aluminum	
	Eagle Butte	Aluminum	
2Q02	Belle Ayr	Aluminum	
	Eagle Butte	Aluminum	
3Q02	Belle Ayr	Aluminum	
	Eagle Butte	Aluminum	
4Q02	Belle Ayr	Aluminum	
	Eagle Butte	Aluminum	
	Cordero	Aluminum	
	Caballo Rojo	Aluminum	REDACTED
1Q03	Belle Ayr	Aluminum	
	Eagle Butte	Aluminum	
	Buckskin	Aluminum	
	Rawhide	Aluminum	
	Dry Fork	Aluminum	
	Fort Union	Aluminum	
	Clovis Point	Aluminum	
	Caballo	Aluminum	
	Cordero	Aluminum	
	Caballo Rojo	Aluminum	
	Coal Creek	Aluminum	
	Jacobs Ranch	Aluminum	
	Black Thunder	Aluminum	

17. **Loaded Miles (Each Railroad) (Identify any Way Miles Included in Loaded Miles)** -- In the loaded direction, the miles traveled from the PRB mines to Big Stone Station are based on BNSF's timetables and track charts produced during discovery. There are no miles in way train service. Loaded miles traveled from Belle Ayr and Eagle Butte Mines are listed on Line 17 of Tables II-A-2 and II-A-3 (see Opening Workpaper Vol. III, pp. 39-96 and electronic files "Miles Opening.123").

18. **Empty Miles (Each Railroad), if Applicable. If not Applicable, Indicate Empty Factor** -- The empty miles from the Big Stone Station to each PRB mine are based on BNSF's timetables and track charts. Empty miles traveled from the Big Stone Station to Belle Ayr and Eagle Butte are listed on Line 18 of Tables II-A-2 and II-A-3. (See Opening Workpaper Vol. III, pp. 39-96 and electronic file "Miles Opening.123").

19. **Length of Origin Loop Track (if any). Indicate Whether Included in Lines 17 or 18** --

REDACTED

20. **Length of Destination Loop Track (if any). Indicate Whether Included in Lines 17 or**

21. **Number of Locomotive Units (by Segment)** -- Based on BNSF records, the typical number of locomotive units for the movement is three from the PRB mines to the Big Stone Station. In the empty return direction from the Big Stone Station to the PRB mines, two or three locomotives are required for the Otter Tail service.

Table II-A-6 below lists the numbers of locomotives Otter Tail used in its Opening cost calculations:

Table II-A-6
Number of Locomotives Used

Quarter	Origin	Type of Cars	Number of Locomotives
(1)	(2)	(3)	
1Q02	Belle Ayr	Aluminum	
	Eagle Butte	Aluminum	
2Q02	Belle Ayr	Aluminum	
	Eagle Butte	Aluminum	
3Q02	Belle Ayr	Aluminum	
	Eagle Butte	Aluminum	
4Q02	Belle Ayr	Aluminum	
	Eagle Butte	Aluminum	
	Cordero	Aluminum	
	Caballo Rojo	Aluminum	
1Q03	Belle Ayr	Aluminum	REDACTED
	Eagle Butte	Aluminum	
	Buckskin	Aluminum	
	Rawhide	Aluminum	
	Dry Fork	Aluminum	
	Fort Union	Aluminum	
	Clovis Point	Aluminum	
	Caballo	Aluminum	
	Cordero	Aluminum	
	Caballo Rojo	Aluminum	
	Coal Creek	Aluminum	
	Jacobs Ranch	Aluminum	
	Black Thunder	Aluminum	

22. **Loading Hours and Basis of Calculation** -- Common Carrier Pricing Authority BNSF 90062 and 90062-A permit 4 hours free time for loading.

23. **Unloading Hours and Basis of Calculation** -- Common Carrier Pricing Authority BNSF 90062 and 90062-A permit 4 hours free time for unloading.

24. **Cycle Hours** -- Average round-trip cycle hours between Big Stone Station and Belle Ayr Mine equaled 1Q02 shipments. Average round-trip cycle hours between Big Stone and Eagle Butte Mine equaled 1Q02 shipments. The cycle hours include loading and unloading time and are summarized in Exhibit II-A-2. (See electronic file "T&O Summary Opening.123."). Table II-A-7 below lists the cycle hours Otter Tail used in its Opening cost calculations:

REDACTED

Table II-A-7
Cycle Hours

Quarter	Origin	Type of Cars	Cycle Hours
(1)	(2)	(3)	(4)
1Q02	Belle Ayr	Aluminum	
	Eagle Butte	Aluminum	
2Q02	Belle Ayr	Aluminum	
	Eagle Butte	Aluminum	
3Q02	Belle Ayr	Aluminum	
	Eagle Butte	Aluminum	
4Q02	Belle Ayr	Aluminum	
	Eagle Butte	Aluminum	
	Cordero	Aluminum	
	Caballo Rojo	Aluminum	
1Q03	Belle Ayr	Aluminum	REDACTED
	Eagle Butte	Aluminum	
	Buckskin	Aluminum	
	Rawhide	Aluminum	
	Dry Fork	Aluminum	
	Fort Union	Aluminum	
	Clovis Point	Aluminum	
	Caballo	Aluminum	
	Cordero	Aluminum	
	Caballo Rojo	Aluminum	
	Coal Creek	Aluminum	
	Jacobs Ranch	Aluminum	
	Black Thunder	Aluminum	

25. **Number of Train Sets Required for Movement (Unit Trains Only)** -- There are currently this movement.

26. **Trips Per Year Per Train Set (Unit Train Only)** -- Average trips per year between Big Stone and Belle Ayr Mine equaled 1Q02 shipments. Average trips per year between Big Stone and Eagle Butte Mine equaled 1Q02 shipments.

27. **Crew Districts, Loaded Direction** -- Based upon actual BNSF wage data, the crew districts encompassed by the customary BNSF route for handling the Otter Tail Big Stone loaded trains are as follows:

28. **Crew Districts, Empty Direction** --Based upon actual BNSF wage data, the crew districts encompassed by the customary BNSF route for handing the Otter Tail Big Stone empty trains are as follows:

REDACTED

31. **Cars Required (Railroad-Owned for Each Railroad)** -- Otter Tail supplies the J311 aluminum gondola railcars used for the transportation services specified in Common Carrier Pricing Authority BNSF 90062 and 90062-A. Therefore, the associated costs are not included in Otter Tail's calculation of BNSF's variable costs for that service, shown in Exhibits II-A-7 through II-A-19 unless BNSF actually provided the cars.

32. **Cabooses (for Each Railroad)** -- Cabooses are not used on the Otter Tail Big Stone trains. Cabooses have been replaced by End-of-Train Devices ("EOTD").

33. **Spare Margin for Locomotives** -- Spare margins have been used in the development of locomotive capital costs for 2002 and 2003, respectively. (See electronic files "Loco Maint OTP.123" and "Loco Maint OTP-2003.123".

34. **Spare Margin for Cars (Railroad-Supplied)** when railroad cars are used.

35. **Spare Margin for Cabooses** -- As noted in Item 32 above, cabooses are not used in the Otter Tail service. However, the locomotive spare margins referenced in Item 32, above, are also used in developing EOTD capital costs.

36. **Switching by Road Haul Locomotives (Specify)** -- The BNSF Train Activity Reports for Otter Tail trains show very little switching.[12] (See Opening Workpaper Vol. III, pp. 937-1615). These reports were used to develop per train used for Road Switching on Yard Tracks and used for Road Switching on Non-Yard Tracks. (See electronic file "Switching.xls").

37. **Switching by Yard Locomotives (Specify)**

REDACTED

[12] Train Activity Reports for a represenative sampling of BNSF Otter Tail trains were gathered during field trips to Gillette and Sheridan, WY and Forsyth, MT. BNSF furnished these documents from Aberdeen, SD. Trains were sampled using procedures outlined in electronic file "Random Sample Procedures.wpd".

[13] Calculation of special study helps per shift and percent of trains helped are shown in electronic files "Open-Gillette Helper.xls" and "Open-Sheridan Helper.xls".

39. **Helper Crew (Hours for Crew Cycle on This Movement)** -- See item 38 and electronic file "Open-Avg Helper Wages.xls").

40. **Location of Interchanges (Indicate Which are Non-Through)** -- Not applicable.

41. **Location of Inter-Intratrain Switches** -- There is no inter/intra-train switching applicable to the Otter Tail movement.

42. **Joint Facility Payments (Indicate Basis for Computation)** -- REDACTED calculated based on actual maintenance of way. See Exhibit II-A-3.

The foregoing traffic and operating characteristics were used to develop the variable cost of handling the Otter Tail coal trains between the PRB origin mines and the Big Stone Station.

c. Components of Variable Cost

Variable costs are costs that vary with changes in output. They change in direct proportion to an increase or decrease in traffic. The variable costs included in Otter Tail's analysis are developed following the STB's URCS procedures. This cost level includes variable expenses and return on investment in both road and equipment property. For variable costs, return is calculated at the current cost of capital using the Board's expected 2002 railroad cost of capital determination[14] (i.e., 9.76 percent after taxes in 2002).

The detailed traffic and operating characteristics of the Big Stone Station movements described above were applied to the unit costs developed in URCS. BNSF's variable cost of handling the Big

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[14] STB Ex Parte No. 558 (Sub-No. 6), Railroad Cost of Capital - 2002, Comments of the Association of American Railroads, filed March 28, 2003, V.S. Rockey, pp. 2, 17 included as Opening workpaper Vol. III, p. 23.

Stone Station coal movements for 2002 and 2003 were developed utilizing BNSF 2002 URCS unit costs and the indexing procedures approved by the Board.[15]

To more closely approximate the actual costs of providing a particular service, costs are tailored to the transportation characteristics and costs per unit of a particular movement. Where a party is able to show that its service-specific costs are demonstrably superior, the Board prefers those costs over system average costs.[16] With that in mind, Otter Tail's variable cost calculations reflect the results of the following special studies of several significant variable cost components designed to tailor BNSF's costs of handling the Big Stone Station coal traffic to the actual movement parameters.

- Maintenance of way costs have been developed using BNSF maintenance of way expense records provided to Otter Tail in discovery.
- Joint facility costs have been developed based on the provisions of a joint facility agreement and are included in the maintenance of way costs.
- Return and depreciation on road property investment have been developed using BNSF's investment in the actual rail route used by the Big Stone Station coal traffic, according to valuation records provided during discovery by BNSF.
- Locomotive capital costs have been developed based on the equipment used and their time of use on each Big Stone train, the specific equipment pool from which the equipment used in Otter Tail Big Stone service is drawn, and specific cycle times for Big Stone Station service.
- Locomotive maintenance costs have been developed based on specific BNSF-provided locomotive maintenance agreements for the equipment used in Big Stone Station coal service.

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15 The unadjusted 2002 BNSF URCS used to develop variable cost of service is in electronic file "UBNSF02.zip" in the electronic workpapers accompanying Part II-A. Indexing is shown in electronic file "BN02 Index.123."

16 See e.g. FMC at 48 ("Because a carrier's system-wide average costs are not necessarily representative of the costs of providing a particular service, however, movement-specific adjustments are sometimes made to better reflect the costs attributable to providing a particular service").

- Crew wage costs have been developed based on the specific wage payments to crews operating the Big Stone Station trains in 2002.

- Loss and damage for the Big Stone Station coal movement has been developed based on actual reported loss and damage payments to Otter Tail as reported during the period from 1999 through 2002, inclusive.

Table II-A-8 below lists Otter Tail's Opening cost component calculations for the 1Q03 Belle Ayr and Eagle Butte traffic:

Table II-A-8

Otter Tail Opening Variable Costs Per Ton

For Belle Ayr and Eagle Butte Movements (1Q03)

Item	Belle Ayr	Eagle Butte
(1)	(2)	(3)
1. Carload O/T Clerical Expense		
2. Carload Handling – Other Expense		
3. Switching Exp – Yard Locomotives		
4. Switching Exp – Road Locos (Non-Yard)		
5. Switching Exp – Road Locos (Yard)		
6. Gross Ton-Mile Expense (GTM)		
7. Loop Track Expense – Origin & Destination		
8. Train-Mile Expense – Other than Crew		
9. Train-Mile Expense – Train & Engine Crew	REDACTED	
10. Helper Service Expense – Other than Crew		
11. Helper Service Expense – T&E Crew		
12. Locomotive Unit-Mile Expense		
13. Locomotive Ownership Expense		
14. User Responsibility For Car Repair Expense		
15. Car Ownership Expense		
16. Car Operating Expense		
17. Caboose & EOTD Ownership Expense		
18. Loss and Damage Expense		
19. Jt. Facility - Incl. In Line 6		
20. Total Variable Cost Per Carload		
21. Tons Per Car		
22. Variable Cost Per Ton		
23. RFA-URCS Linking Factor		
24. Linked Variable Cost Per Ton (L.22 x L.23)		
25. Jurisdictional Threshold (L.24 x 180%)		
26. Rate Per Ton		
27. R/VC Percentage (L.26 ÷ L.24)		

Each variable cost component is discussed below. Several cost components reflect system average costs. Other cost components have been refined based on the results of the special studies listed above. As each cost component is discussed, its basis (that is, system average or special study) is specified.

i. Gross Ton-Mile Related Costs

Costs considered to be a function of gross ton-miles as developed in URCS were applied on a system average basis with the exception of maintenance-of-way, joint facilities, return and depreciation related to road property, locomotive capital, and locomotive maintenance. Table II-A-9 lists Otter Tail's Opening GTM cost components:

Table II-A-9
Otter Tail Opening - GTM Expense Per Car
Belle Ayr and Eagle Butte to Big Stone (1Q03)

Item	Belle Ayr	Eagle Butte
(1)	(2)	(3)
1. Maintenance-of-Way		
2. Return on Road Property	**REDACTED**	
3. Road Property Depreciation		
4. Fuel		
5. Locomotive Maintenance		
6. Other GTM		
7. Total		

Otter Tail's analyses of these costs are discussed in the following paragraphs.

(a) Maintenance-of-Way Costs (GTM)

BNSF's variable maintenance-of-way unit costs associated with handling Otter Tail's unit coal train traffic were developed using actual maintenance of way data provided by BNSF in discovery. As discussed in FMC and noted above, the Board prefers costs based on actual data that are tailored to the movement in question rather than the use of system average costs.

In calculating BNSF's variable maintenance-of-way costs associated with transporting Otter Tail's coal trains over BNSF's track between the PRB mine facilities and the Big Stone Station, BNSF's 2001 actual maintenance of way expenses were analyzed. This analysis resulted in line specific, variable, route of movement, running maintenance-of-way costs. This line specific cost was then compared to BNSF's 2001 system average maintenance of way URCS unit cost to develop the relationship between BNSF's maintenance experience on the Otter Tail route and BNSF system maintenance experience.

The procedures used to calculate line specific maintenance of way expenses are discussed below.

a. Procedures

The procedures that Otter Tail followed to calculate the relationship between BNSF's line specific maintenance expenses and BNSF system average maintenance costs are summarized in the following eight (8) steps:

(1) The BNSF-assigned maintenance of way location codes for each line segment making up the Otter Tail route were identified from the list of location codes provided by BNSF in discovery;[17]

(2) The total miles, trailing gross ton-miles, operating maintenance of way expenses and a cost per trailing gross ton-mile were then developed for each location code on the Otter Tail route;[18]

(3) For each location code, the miles traversed by Otter Tail trains, the trailing gross ton-miles associated with each Otter Tail train and the cost per trailing gross ton-mile applicable to each Otter Tail train were calculated;[19]

(4) The 2001 BNSF costs per trailing gross ton-miles for the Otter Tail trains (from Step 3) were summed and then divided by the total Otter Tail trailing gross ton-miles resulting in a total Otter Tail cost per trailing gross ton-mile for the entire route.

REDACTED

(5)

(6) The maintenance of way monies produced by BNSF in discovery for all location codes include both running and switching expenses. The ratio of running maintenance of way monies to total (running and switching) maintenance of way monies from BNSF's 2001 URCS formula was used to isolate the running maintenance of way monies produced by BNSF for all BNSF location codes;[22]

(7) The variable unit cost for the BNSF location codes used by the Otter Tail trains was calculated using the results from Steps 4, 5 and 6 above. Specifically, the total line specific unit cost (Step 4) was multiplied by the ratio of total BNSF line specific expenses to BNSF R-1 expenses (Step 5) and then the switching related maintenance

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17 See Opening Workpaper Vol. III, p. 25.
18 See electronic file "TOTAL ROUTE.XLS"
19 See electronic file "TOTAL ROUTE.XLS"
20 See electronic file "TOTAL ROUTE.XLS"
21 See Opening Workpaper Vol. III, pp.26 to 30 and electronic file "DEVELOPMENT OF MOW ADJUSTMENT RATIO.XLS"
22 See electronic file "DEVELOPMENT OF MOW ADJUSTMENT RATIO.XLS"

monies were excluded by applying the Step 6 ratio. This result was then multiplied by the average variability percentage for running maintenance of way expenses from BNSF's 2001 URCS formula.

(8) The final step was to develop a ratio of the line specific variable maintenance of way unit cost for the Otter Tail route to BNSF's 2001 URCS system average variable maintenance of way unit cost.

REDACTED

The procedures described above include direct expenses as well as direct overheads applicable to each location code. The maintenance of way information produced by BNSF in discovery was incomplete because it did not include data necessary to calculate non-direct overheads.[25] BNSF was requested to provide this data but refused.[26] The data BNSF provided shows expenses at the location code level, at the assistant vice president and directors level and in total.

BNSF was also requested to provide information necessary to track expenses in its accounting reporting structure. On March 21, 2003, BNSF was provided an example of its reporting structure for location codes and the corresponding cost and roll-up centers and was requested to provide the missing data[27]. BNSF responded on May 14, 2003 and provided the missing data required to track expenses through its accounting structure. However, it was not possible to calculate all of the associated overheads because BNSF did not provide the requested expenses for each reporting level.

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23 See electronic file "DEVELOPMENT OF MOW ADJUSTMENT RATIO.XLS"

24 See electronic file "DEVELOPMENT OF MOW ADJUSTMENT RATIO.XLS"

25 Otter Tail relied upon 2001 BNSF provided data in this line specific analysis even though BNSF provided data for 1999 through partial year 2002. Otter Tail used 2001 data only, for the following reasons:

REDACTED

26 See Opening Workpaper Vol. III, pp. 31 to 34.

27 See Opening Workpaper Vol. III, pp. 35 to 38.

The procedures utilized by Otter Tail circumvented this problem by applying the ratio of the average variable maintenance of way unit cost for the Otter Tail route to BNSF's URCS system average variable maintenance of way unit costs that is calculated without general overheads. General overheads are applied on a system basis.

(b) Joint Facility Costs

A joint facility consists of yards, tracks, stations or other property shared by more than one railroad. For example, if BNSF owns a segment of track that it rents to another railroad, the using railroad pays a rental fee to BNSF and BNSF classifies that fee in its accounting system as a joint facility credit. Conversely, if BNSF is the using carrier on a segment of track owned by another carrier, the payments BNSF makes to the owner are classified by the BNSF in its accounting system as a joint facility debit.

As listed in Section II.A.b.(2) Item 42 of the narrative description of traffic and operating characteristics, a joint facility is applicable to the following line segment on the Otter Tail route:

REDACTED

segment were included as part of the line specific maintenance-of-way variable cost analysis described above.

(c) Road Property Return and Depreciation (GTM)

In conformance with the Board's preference for movement-specific variable costs, Otter Tail has calculated return and depreciation related to BNSF's road property for the specific line segments

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[28] See Opening Workpaper Vol III, pp 112 to 268.

traversed by Otter Tail trains in service to Big Stone Station based on BNSF's valuation records provided to Otter Tail in discovery.[29][30] This is the same approach approved by the Board in other recent rate cases, including WPL, FMC, and TMPA.[31]

Otter Tail's Road Property Investment and Depreciation cost data fully comply with Board precedent, including the Board's WPL ruling on this issue.[32] In WPL the Board ruled that unassigned investment costs that are shown to be used in part for the benefit of the subject movement must be reflected. Otter Tail has complied with this Board ruling using the information provided in discovery. Specifically, road investment in any system-wide facilities (for example, the Fort Worth Dispatching Center) used in part for the benefit of the Big Stone Station movement was captured using BNSF's "unassigned_2002.xls" file that reported those investments. While BNSF did not provide movement-specific investment in rail yards in response to the Board's directive, road investment in any yard facilities used for the benefit of the Big Stone Station traffic were captured by Otter Tail through the switch engine minute unit cost reflecting a system average allocation of

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29 On November 15, 2002, the Board ordered BNSF to produce to Otter Tail data and documents relating to movement-specific data, specifically road property investment and depreciation data attributable to the segments of track used by BNSF to provide rail transportation service to Big Stone. BNSF responded to the Board's directive by providing files "1s1_dv_2002.txt" (i.e., the Fixed Asset Database), "unassigned_2002.xls" and "pisnu_2002.xls" (i.e., unassigned and non-unitized road property investment), and "COMPANY_PROPCLS.xls" and "Lsranges.xls" (i.e., road property decorders)

30 See Exhibit II-A-4. Pages 6 through 11 of this exhibit detail Otter Tail's procedures.

31 In WPL, the Board declined to accept line-specific road property investment and depreciation costs in favor of system average costs, because UP had shown that a portion of its investment that was assigned to a general (default) account and not to specific line segments was needed to provide service to the complainant. See WPL at 53-54.
REDACTED
Otter Tail has assigned 100% of the invested capital used in connection with the Big Stone Station movement. Otter Tail's assignments are based upon the road property investment information provided to Otter Tail by BNSF in discovery. The unique problem that led the Board to default to system average in WPL does not exist here. In addition, Otter Tail has not made any "acquisition premium" adjustments to BNSF's reported book property values, as occurred in WPL. Also See FMC, Appendix C and TMPA, pp. 56-57.

32 See the Appendix - "Roadway Ownership Variable Cost Evidence" to the Board's May 9, 2002 decision in STB Docket No. 42051, Wisconsin Power and Light Company v. Union Pacific Railroad Company

yard investment. Otter Tail also followed the Board's WPL decision by apportioning line segment road investment costs based on the ratio of Big Stone Station traffic gross ton-miles versus total gross ton-miles on a line segment-by-line segment basis rather than for the entire route.

REDACTED

BNSF was requested to provide the applicable lease agreements covering those line segments, but BNSF did not provide the agreements.[33] Those lease agreements would have provided the information required to properly determine BNSF's line-specific lease rental costs in providing service over the leased lines. In the absence of actual lease costs, Otter Tail has reflected the actual line-specific values provided by BNSF in discovery.

(d) Locomotive Maintenance Costs (GTM)

In rate proceedings involving the Burlington Northern Railroad Company ("BN") prior to its merger with the Atchison, Topeka and Santa Fe Railway Company,

REDACTED

These expenses were accepted by the ICC in preference to system-average locomotive maintenance expenses.

REDACTED

While BNSF may not prepare reports of

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[33] See Opening Workpaper Vol. III, pp. 269 to 270.

maintenance by locomotive type in the ordinary course of business, they can easily access maintenance by locomotive type and series (if not by individual locomotive number) from the vendors to which BNSF contracts out its locomotive maintenance.[34]

REDACTED

[34] See Opening Workpaper Vol. III, p. 651-656.

[35] See Exhibit II-A-5, electronic files "Loco Maint OTP.123" and "Loco Maint OTP-2003.123"and Opening Workpaper Vol. III, pp. 387 to 643 for Otter Tail's results and for a full explanation of Otter Tail's locomotive maintenance costing procedure.

[36] See electronic files "Loco Maint Open. 123" and "Loco Maint OTP-2003.123" included in the electronic workpapers for Part II-A. In other rate cases involving unit-train coal movements, the ICC acknowledged that locomotive maintenance costs for such movements should be well below the carrier's system average costs, because the locomotives utilized in trainload coal service experience higher-than-average utilization. See ICC Docket No. 37038, Bituminous Coal - Hiawatha, Utah to Moapa, Nevada, 6 I.C.C. 2d 1 (1989) ("Nevada Power I") at 38.

REDACTED

ii. Locomotive Unit-Mile (LUM) Related Costs

(a) LUM Cost Component Development

Expense items considered a function of locomotive unit-miles were developed as follows. System average locomotive costs were used except for locomotive maintenance and capital costs.

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37 See computer file "Loco Cap Open (OTP).xls" and "BNSF System Loco Age.123".

38 See Otter Tail Opening Workpapers Vol. III, pp. 707 to 725.

(b) Locomotive Capital (LUM)

Locomotive capital costs (depreciation and return) were developed based on the locomotive units[39]

REDACTED

Table II-A-10 below shows the locomotive types used in Otter Tail service based on the percentage of total hours that each locomotive type spends in Otter Tail service:

Table II-A-10
Otter Tail Opening - Locomotive Usage by Type
Belle Ayr and Eagle Butte to Big Stone (1Q03)

	Item (1)	Belle Ayr/Eagle Butte (2)
1.	SD70MAC	
2.	C44-9W	
3.	C40-8W	REDACTED
4.	SD75MAC	
5.	SD40-2	
6.	Other locomotive types	
7.	Total	100.00%

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39 The locomotive units used were identified from computer files "yo2m0106_BSB.xls" and "yo2m0712_BSB.xls" provided by BNSF in discovery. This information plus information on the BNSF Alliance coal pool was used in the determination of locomotive capital costs.

40 A summary of locomotive cycle time for Big Stone Station trains is included in Exhibit II-A-2. The source of these locomotive cycle times is shown in computer file "trn stats 02bsb Opening.xls" in the electronic workpapers for Part II-A.

41 See Otter Tail Opening electronic files "Loco Maint OTP.123" and "Loco Maint OTP-2003.123".

42 See Opening electronic files "Loco Cap Open (OTP).xls" and "Loco Cap Inputs OTP Open.123".

REDACTED

The calculation of locomotive capital costs for the Otter Tail movement for 1Q02 through 1Q03 is detailed in Exhibits II-A-7 through II-A-18.

iii. Crew Wages

Movement-specific crew wage costs were developed for the BNSF line segments traversed by the Big Stone Station trains. The crew districts are listed supra, as Traffic and Operating Characteristics Numbers 27 and 28. The crew wage costs per train were calculated based on actual wage payments for the year 2002,

identified as operating the Big Stone Station trains. These crew wage costs are detailed in Exhibit II-A-6.[44]

Otter Tail identified wage payment components directly related to the operation of the Big Stone Station trains (that is, "train-related" components) and wage payment components not directly related to the operation of Big Stone Station trains but, rather, related to the operation of train service to all customers generally (that is, "non-train-related" wage components). The ratio of non-train-related

REDACTED

[44] The calculations of crew wage costs per train are shown in Exhibit II-A-6. Additional crew wage documentation can be found in electronic files "Open-Avg Loading Crew Wages.xls" and "Open-Avg Road Crew Wages per train.xls" in the electronic workpapers for Part II-A.

wages to train-related wages is generally called the markup ratio. Otter Tail used this markup ratio to apply non-train-related wage payments to the Big Stone Station trains.[45]

Because of BNSF errors or inappropriate reporting of crew wages, Otter Tail made the following adjustments to the crew wage records provided to Otter Tail by BNSF:[46]

REDACTED

[45] See WPL at 56-57.
[46] See Opening electronic file "Open-Avg Road Crew Wages per train.xls".
[47] Bates numbers BNSF/OTP 34426, 34390, 34397 and 34387 provided by BNSF and included as Opening Workpapers Vol. III, pp. 1257 to 1260.

REDACTED

After the adjustments discussed above, the occupation specific mark-up percents were applied and the resulting average wages per train were added to those developed for the loading crews. The total crew wages are summarized in Opening electronic file "Open-Wages Summary.xls".

Crew wage variable costs (including overheads), indexed to 1Q02 through 1Q03, are shown in Exhibits II-A-7 through II-A-19.

iv. Other Line-Haul Costs

In addition to costs related to gross ton-miles, locomotive unit-miles and crews, the following line-haul variable costs were considered:

(a) Train-mile other;

(b) Car inspection costs;

(c) Car expense for substituted cars;

(d) Car Repairs - User Responsibility; and

(e) Helper service.

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48 See Opening electronic file "Open-Avg Road Crew Wages per train.xls".
49 See Opening electronic file "Open-Loading Crew Wages.xls"

(a) Train-Mile Other Costs

Major components of other train-mile expenses in URCS include the costs for dispatching trains, a portion of train supplies and expenses, the costs for car inspectors, signals and interlockers, cabooses/end-of-train devices, crossing protection, drawbridge operation, clearing wrecks and damage to property. In Otter Tail's analysis, these variable costs were allocated on a system average basis except for caboose/end-of-train device costs which were based on a special study.

End-of-Train Device ("EOTD") capital costs were applied on a movement specific basis.[50] Other train-mile unit costs were developed based on URCS procedures and were applied to the round-trip train-miles. The resulting per train cost was converted to a per carload basis and included in the variable cost of moving the Big Stone Station trains at lines 8 and 17 of page 1 of 12 and pages 5 of 12 and 10 of 12 at Exhibits II-A-7 through II-A-18.

(b) Car Inspection Costs

Car inspection costs for freight cars include the cost of car inspectors in the yards servicing the train. In URCS, car inspection costs are applied on a train-mile basis. System average URCS car inspection costs were used in developing the Big Stone Station movements' variable costs

REDACTED

Otter Tail's development of car inspection costs is shown in Exhibits II-A-7 through II-A-18.

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[50] See Exhibits II-A-7 through II-A-19 and electronic file "BNSF 2002 EOTD.xls" in the electronic files for Part II-A.

(c) Car Expense for Substituted Cars

Lacking an information source for movement-specific or car type-specific freight car costs, Otter Tail had to rely on system average freight car costs by car type

REDACTED

Following URCS procedures, Otter Tail developed system average car type-specific car costs for the car types used in the service to Big Stone Station. Ownership and maintenance costs were based on the URCS cost per car-mile and cost per car-day.

The results of the car expense calculations were reported in the Car Expense for Substitute Cars cost component reported at page 8 of 12 of each of Exhibits II-A-7 through II-A-18. Costs were indexed to the time period covered in each exhibit.

REDACTED

(d) Car Repairs - User Responsibility

Car repairs-user expense was calculated to reflect movements in shipper-supplied cars using 9.51% of URCS system average costs as specified by the ICC in Ex Parte No. 334.

(e) Helper Service

Costs associated with the additional locomotive unit-miles required to provide the helper services were included in the helper service costs as were the additional wage expenses of the crews operating the helper locomotives.

The costing procedures used and the results of the Helper Service Cost calculations were reported in the Helper Service - LUM Expenses and Helper Service - Crew Expenses cost components at page 7 of 12 of each of Exhibits II-A-7 through II-A-18 where overheads were added. Costs were indexed to the time period covered in each exhibit.[51]

v. Terminal Costs

In addition to costs considered a function of line-haul operations, the following terminal costs were considered:

(a) Station billing;

(b) Switching;

(c) Loop track movements; and

(d) Loss and Damage/Claims for Cars Handled

(a) Station Billing

In developing station clerical variable costs, system average clerical costs were adjusted to reflect the economies inherent in unit coal train movements such as the Big Stone Station's. These unit train economies were measured by applying the Ex Parte No. 399 procedures.[52] There the ICC found that 75% of station clerical costs were car related and the remaining 25% were train related.

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51 See electronic file "VC Otter Tail Open.123".

52 ICC Ex Parte No. 399, Rail Cost Recovery Percentage, Decision served January 25, 1985, Appendix A, page 3.

(b) **Switching**

REDACTED

(c) **Loop Track Movements**

The costs associated with loop track movements are composed of the gross ton-mile and locomotive unit-mile costs associated with the train movements over the loop tracks. (Loop tracks are circular or "loop" tracks over which the train moves during the loading and unloading processes.)

The results of the loop track movement costs are reported as Expenses for Loop Track Movements, line 7 of page 1 of 12 and Page 11 of 12 of each of Exhibits II-A-7 through II-A-18. Costs were indexed to the time period covered in each exhibit.

(d) **Claims for Cars Handled and Loss and Damage**

The claims for cars handled expense was applied on a per car basis according to URCS procedures. The claims for cars handled expense was adjusted to exclude the costs not applicable to BNSF's handling of cars in service to the Big Stone Station, i.e., costs associated with cleaning car interiors, car loading devices and grain doors.[54] BNSF furnished loss and damage expenses

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[53] The Train Activity Reports are included in Opening Workpaper Vol. III, pp. 937 to 1615. Trains were sampled using procedures outlined in electronic file "Random Sample Procedures.wpd".

[54] This adjustment was accepted by the Board in FMC, WPL, and TMPA. See, for example, TMPA, p. 53. The adjustment calculation is shown in electronic file "Claimadj 02.123" in the electronic Workpapers for Volume

associated with transporting coal to the Big Stone Station in the years 1999 through 2002.[55] The average of these loss and damage costs is included in Otter Tail's calculation of BNSF variable cost of handling the Big Stone Station traffic.[56]

2. Indexing

Detailed data concerning operations and expenses for applying URCS is not available on a quarterly basis. Following the Board's procedures for updating 2002 URCS costs,[57] the base period variable costs were indexed, where appropriate, to reflect 1Q02 through 1Q03 wage and price levels.[58] It is important to recognize that the composite index is a general or price-inflation index, not a cost index. No adjustment for railroad productivity gains is included in the composite index even though the Board, the railroads and the Railroad Accounting Principles Board have recognized the existence and impact of such productivity increases.[59]

3. Summary

The detailed separation of BNSF's base period variable costs between expenses, depreciation and return on investment for transporting Otter Tail coal trains from Belle Ayr and Eagle Butte Mines to the Big Stone Station for 1Q02 through 1Q03 is shown in Exhibits II-A-7 through II-A-

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II-A.

55 See electronic file "L&D.123."

56 See electronic file "L&D.123" included in the electronic Workpapers for Part II-A.

57 ICC's 1E3-80 indexing procedures supplemented by Ex Parte No. 411, Complaints Filed Under Section 229 of the Staggers Rail Act of 1980.

58 See electronic file "BN02 Index.123".

59 Railroad Cost Recovery Procedures-Productivity Adjustment, served March 24, 1989; Railroad Accounting Principles, Final Report by Railroad Accounting Principles Board, September 1, 1987; Ex Parte 290 (Sub-No. 4), Improving Railroad Productivity, Final Report of the Task Force on Railroad Productivity, A Report to the National Commission on Productivity and the Council of Economic Advisors, Washington, D.C., November 1973. See also ICC, Proceedings Productivity Measurement Conference, November 26, 1974.

19.[60] BNSF's variable cost calculations and revenue to variable cost ratios for BNSF handling of unit coal trains to the Big Stone Station are summarized in Table II-A-11 below.

[60] See, electronic file "VC Otter Tail Open.123" included in the electronic workpapers for Part II-A.

Table II-A-11

Summary of Movements Costed in Otter Tail's Opening Evidence

Quarter	Origin	Type of Cars	Rate Per Ton [1]	Var. Cost Per Ton [2]	R/VC [3]
(1)	(2)	(3)	(4)	(5)	(6)
1Q02	Belle Ayr	Aluminum	$13.49	$4.72	286%
	Eagle Butte	Aluminum	13.49	4.62	292
2Q02	Belle Ayr	Aluminum	13.49	4.75	284
	Eagle Butte	Aluminum	13.49	4.68	288
3Q02	Belle Ayr	Aluminum	13.49	4.76	283
	Eagle Butte	Aluminum	13.49	4.69	288
4Q02	Belle Ayr	Aluminum	13.49	4.86	278
	Eagle Butte	Aluminum	13.49	4.69	288
	Cordero	Aluminum	13.49	5.00	270
	Caballo Rojo	Aluminum	13.49	4.72	286
1Q03	Belle Ayr	Aluminum	13.76	5.04	273
	Eagle Butte	Aluminum	13.76	5.03	274
	Buckskin	Aluminum	13.76	4.89	281
	Rawhide	Aluminum	13.76	4.88	282
	Dry Fork	Aluminum	13.76	4.88	282
	Fort Union	Aluminum	13.76	4.87	283
	Clovis Point	Aluminum	13.76	4.86	283
	Caballo	Aluminum	13.76	4.94	279
	Cordero	Aluminum	13.76	5.13	268
	Caballo Rojo	Aluminum	13.76	4.85	284
	Coal Creek	Aluminum	13.76	4.93	279
	Jacobs Ranch	Aluminum	13.76	5.03	274
	Black	Aluminum	13.76	5.09	270

[1] Common Carrier Pricing Authority BNSF 90062 and 90062-A

[2] Exhibits II-A-7 through II-A-19.

[3] Column (4) ÷ Column (5).

BNSF's variable costs of handling the Big Stone Station coal traffic in 1Q03 range from $4.85 to $5.13 per ton in Otter Tail-supplied aluminum railcars. When compared with BNSF's common

carrier rate level, the BNSF variable cost levels produce revenue-to-variable cost ratios that range from 268% to 284% in aluminum railcars. Revenue-to-variable cost ratios for all movements are substantially greater than 1.80, which is the jurisdictional threshold ratio.

II-B
QUALITATIVE MARKET DOMINANCE

II.B. QUALITATIVE MARKET DOMINANCE

In addition to possessing quantitative market dominance over the PRB to Big Stone movement, BNSF has qualitative market dominance.[1] Congress has defined "market dominance" as the "absence of effective competition from other rail carriers or modes of transportation for the transportation to which a rate applies."[2] The Board has construed the statute to require complainants to demonstrate the absence of effective intramodal and intermodal competition.[3] In this case, it is clear that BNSF has no such competition for the movement of coal from the PRB to the Big Stone Station.[4] Thus, the Board has jurisdiction to prescribe a maximum reasonable rate for the issue transportation pursuant to 49 U.S.C. §§10701 and 10704.

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[1] The factual testimony in this Part II-B is sponsored by Ward Uggerud, Senior Vice President, Otter Tail Power Company.

[2] 49 U.S.C. §10707(a).

[3] STB Ex parte No. 627, Market Dominance Determinations--Product and Geographic Competition (served Dec. 21, 1998), aff'd Association of American R.R. v. S.T.B., 306 F.3d 108 (D.C. Cir. 2002). See STB Docket No. 42054, PPL Montana, LLC v. BNSF, Slip Op. at 4 (served Aug. 19, 2002).

[4] Despite the obviousness of this fact, BNSF steadfastly refused to admit a series of Requests for Admission ("RFAs") posed by OTP in discovery, pursuant to 49 C.F.R. 1114.27, with the purpose of eliminating this issue from the case. Exhibits II-B-1 and II-B-2. After considerable protest from OTP, BNSF eventually admitted two of the RFAs. See Exhibit II-B-3. Nevertheless, BNSF's intransigent denials and its convoluted responses to corresponding interrogatories are a transparent attempt to force OTP to expend time, money, and resources to prepare evidence of qualitative market dominance. BNSF's conduct also creates an additional burden on the Board. As a consequence, BNSF's actions frustrate the very purpose of RFA's, which is to narrow the issues in dispute and thereby eliminate the burden of unnecessary litigation. Because RFAs are not proper subjects of motions to compel, OTP reserves the right to pursue its costs incurred in proving the facts in the RFA's denied by BNSF, as provided under 49 C.F.R. 1114.31(c), at the conclusion of this proceeding.

1. **There is No Intramodal Competition to BNSF's Transportation of Coal from the PRB to Big Stone.**

a. **No other railroad serves the Big Stone Station.**

BNSF is the only rail carrier capable of directly serving the Big Stone Station. BNSF has conceded this point in response to OTP's RFA No. 6, in which BNSF "admits that it does not know of any . . . rail carrier other than BNSF that has the current ability to deliver coal to the Big Stone plant in substantial quantities."[5] The next closest railroad that interchanges with a carrier other than BNSF is the Twin Cities & Western Railroad ("TCWR"), approximately 25 miles east of Big Stone. Thus, there is no existing intramodal competition at Big Stone.

b. **BNSF successfully foreclosed OTP's only viable build-out option at Big Stone.**

In addition to the absence of existing intramodal competition at Big Stone, there is no potential for such competition via a build-out to another railroad. Indeed, BNSF's predecessor, BN, successfully prosecuted a lawsuit, in the mid 1990's, to prevent the provision of competitive rail service to Big Stone and other potential shippers over a planned build-out to the TCWR, which possessed local trackage rights over a nearby BNSF line. BN's underlying motivation clearly was to preserve its monopoly position over the Big Stone Station.

In 1994, a group of local business interests, including OTP, formed Big Stone-Grant Industrial Development and Transportation, LLC ("BSID"). BSID had two purposes: (1) to develop an industrial park, and (2) to construct and operate a line of rail to provide rail access to shippers locating in the park and to ensure a competitive rate for rail service. The industrial park was to be located adjacent to the Big Stone Station, along the industrial spur that connects the Station to the

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[5] See Exhibit II-B-3.

BNSF main line. The BSID was a total community effort spurred by the May 1994 announcement that Northern Corn Processors Cooperative was considering Big Stone, South Dakota as the site of a new corn processing plant and that a key criteria in its final determination would be access to two independent railroads.

The BSID proposed to construct approximately two miles of rail line. Exhibit II-B-4 is a diagram of the proposed build-out. At its eastern end, this build-out would have connected to a rail spur located near Ortonville, Minnesota, which in turn connected to the BNSF main line just east of the Minnesota/South Dakota border. At its western end, the build-out would have extended only 1000 feet into South Dakota, crossed the BN main line, and connected to the Big Stone Station industrial spur. The TCWR would have provided competitive rail service over the build-out pursuant to local trackage rights that it possessed over the BN main line that connected to the Ortonville spur. On January 10, 1995, BSID filed a petition with the former Interstate Commerce Commission ("ICC") for authority to construct the proposed build-out. The ICC conditionally granted the petition, subject to completion of the environmental review, on September 26, 1995.[6]

However, prior to the ICC's decision and shortly after BSID's public announcement of its intent to construct the build-out to the TCWR, BN commenced a lawsuit in the United States District Court for Minnesota, on March 16, 1995, seeking a declaratory ruling that BSID's proposal constituted tortious interference with two trackage rights agreements between BN and TCWR. The dispute centered on the different nature of TCWR's trackage rights on the Minnesota and South Dakota sides of the border. Whereas TCWR possessed local trackage rights over the Minnesota line

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[6] Finance Docket No. 32645; Big Stone - Grant Industrial Development and Transportation, LLC - - Construction Exemption -- Ortonville, MN and Big Stone City, SD (served Sept. 26, 1995).

segment, it possessed only overhead trackage rights on the South Dakota line segment. BN alleged that TCWR could not serve the Big Stone Station and proposed industrial park because those industries already were served by BN from the South Dakota line segment over which TCWR only possessed overhead trackage rights. In reply, BSID contended that the build-out would connect to the Minnesota line segment over which TCWR possessed local trackage rights. Ultimately, the district court accepted BN's interpretation of the trackage rights agreements and that decision was affirmed on appeal.[7]

BN's lawsuit eliminated any economically feasible build-out option for Big Stone. The next closest option was to connect directly with the TCWR, over 25 miles away, near Appleton, Minnesota. Even if the distance alone were not prohibitive, such a build-out also would have to cross BNSF lines at least twice and cross the Minnesota River. OTP has considered this option too impractical to warrant serious consideration.

Thus, BNSF's predecessor aggressively and vigorously squashed the only feasible build-out that OTP possessed to break BNSF's market dominance over the Big Stone Station. BN's paramount intent to preserve its monopoly position over Big Stone was explicitly laid out in a March 14, 1995 letter from David Quilici, then BN's Director of Coal Marketing, to Ward Uggerud, OTP's Vice President of Operations, just two days before BN commenced its lawsuit:

> We also wish to make you clearly aware that any plan for service to Otter Tail Power via TCW violates BN's contractual rights. Our concerns are not mere technicalities. We view this matter very seriously. BN's trackage is its primary business franchise, and the right to use that track is private property. BN permits limited track use by other carriers under terms and circumstances that will not be

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[7] State of Minnesota by Burlington Northern R.R. Co. v. Big Stone-Grant Industrial Development and Transportation, LLC, 990 F. Supp. 731 (D. Minn. 1997), aff'd, 131 F.3d 144 (8th Cir. 1997).

> injurious to BN. TCW has no right of local access, or to make deliveries in the Big Stone, South Dakota area. Accordingly, BN will not stand by if TCW attempts to engage in such operations.

Exhibit II-B-5. The referenced injury to BN clearly is the loss of its monopoly over Big Stone.[8] Having preserved that monopoly through litigation, BNSF cannot credibly contend now that it lacks qualitative market dominance.

2. Big Stone Lacks Effective Intermodal Competitive Alternatives to BNSF.

a. Trucks are not an effective competitive alternative to BNSF.

It is virtually understood by all that trucks are not an effective competitive alternative to rail for the transportation of large volumes of coal in unit trains. In fact, the Board has never found the trucking of coal to be an effective competitive alternative to unit train rail transportation.[9] Neither has OTP ever utilized trucks to deliver PRB coal to Big Stone. Although the Board has observed that trucks almost always will be an available option to any shipper, it has determined that the feasibility of this option usually will dependa upon the nature of the product and the needs of the shipper or receiver.[10]

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[8] OTP was condemned, under the antitrust laws, by the U.S. Supreme Court in Otter Tail Power Co. v. U.S., 410 U.S. 366 (1973), for this very same behavior in attempting to preserve its monopoly over municipal franchise customers by refusing to wheel power over OTP's transmission lines that the municipalities had purchased from other electric generators. The only legal distinction between these two cases was that the Federal Power Commission ("FPC") lacked sufficient authority to order interconnections, which would have substituted FPC authority for antitrust regulation, whereas the Board possesses sufficiently broad authority through its approval of trackage rights agreements and ability to order competitive access. Id. at 374-75. But for this STB authority and the Board's refusal to apply the competitive access laws in all but extremely narrow circumstances, BNSF's actions to thwart OTP's access to the TCWR would have violated the antitrust laws and entitled OTP to competitive access relief.

[9] Salt River Project Agric. Improv. and Power Dist. v. U.S., 762 F.2d 1053, 1060 (D.C. Cir. 1985); Arizona Public Service Co., 2 S.T.B. 367, 374-76; West Texas Utilities Co., 1 S.T.B. 638, 652; Dayton Power & Light Co. v. Louisville and Nashville R.R. Co., 1 I.C.C. 2d 375, 383 (1985).

[10] Product and Geographic Competition, 2 I.C.C.2d 1, 21 (1985). See also, Arizona Pub. Serv. Co. v. U.S., 742 F. 2d 644, 650-51 (D.C. Cir. 1984) ("[T]he mere existence of some alternative does not in itself constrain the railroads from charging rates far in excess of the just and reasonable rates that Congress thought the existence of

The transportation of 2 million tons of coal annually to Big Stone by truck would be prohibitively expensive, operationally infeasible and environmentally impracticable. Big Stone was designed to receive coal by rail and any significant shift to trucks would require substantial modifications to its unloading facilities. OTP also would have to make a significant investment in a fleet of trucks that is substantially larger than its rail car fleet, while at the same time stranding its existing rail car investment.

In addition, a single truck can carry only a fraction of the amount of coal that a railcar can transport. At a minimum, coal moving by trucks from the PRB to Big Stone would have to travel through Wyoming and South Dakota. Over this route, the maximum weight of coal that a truck could haul over public roads would be 18.75 tons.[11] Therefore, the delivery of 2 million tons of coal to Big Stone annually by truck would require 107,000 round trips, or 293 trucks per day in continuous service for 365 days. The prospect of such a large number of heavy trucks on the roads and highways also would raise a myriad of potentially insurmountable social and environmental concerns.[12] Even if these logistical problems hypothetically could be overcome, the Board has recognized that there is a well-established cost differential between truck and rail rates.[13]

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competitive pressures would ensure.")

[11] Wyo. Stat. Ann. 31-18-02(v)(F) (2003). The maximum allowable weight in South Dakota exceeds that of Wyoming (S.D. Codified Laws 32-22-16(3) (2002)). In order to comply with Wyoming law, a truck traveling through both states would have to adhere to Wyoming's lower maximum weight limit.

[12] See West Texas Utilities Co. v. Burlington Northern R.R. Co., 1 S.T.B. 638, 652 (1996) ("WTU") (citing "environmental concerns, noise, community opposition, increased inefficiencies associated with loading and unloading, etc.," as rendering trucks an infeasible alternative to rail for unit train coal transportation); STB Docket No. 42051, Wisconsin Power and Light v. Union Pacific Railroad Co., Slip Op. at 10 (Served Sept. 12, 2001) ("WPL") (citing "high cost and significant community impact" for concluding that trucks are not an effective alternative to rail).

[13] Arizona Pub. Serv. Co. v. The Atchison, Topeka and Santa Fe Ry. Co., 2 S.T.B. 367, 374-76 (1997) (APS) (merely comparing linear distances, *i.e.*, the straight line distance between two points, the 100 miles in APS is a mere fraction of the 700 miles to Big Stone).

Thus, trucks clearly are not an effective competitive alternative to rail for the transportation of coal from the PRB to Big Stone.[14]

b. Water transport is not an alternative to BNSF.

Water transportation simply is not an option for the transportation of coal from the PRB to Big Stone. Neither the origins or the destination are located on or near a navigable body of water, rendering this alternative physically impossible. BNSF essentially has conceded this fact in response to OTP's RFA No. 5.[15]

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[14] For the same reasons that trucks alone do not provide an effective competitive alternative to rail service, a rail-truck transload operation would not do so. The TCWR, 25 miles away in Appleton, Minnesota, is the nearest location for a transload facility. In addition to the expense of modifying Big Stone's unloading facilities, OTP would incur the expense of constructing transload facilities and investing in trucks. Furthermore, the trucks would have to travel entirely over local state and county roads in Minnesota and South Dakota, encountering the same social and environmental issues as all-truck moves. For these very same reasons, the STB rejected a 27 mile coal transload operation as infeasible in WTU, 1 S.T.B. at 650 and 652.

[15] See Exhibit II-B-3.

III-A
STAND-ALONE TRAFFIC GROUP

III.A. TRAFFIC GROUP

Otter Tail's calculation of the maximum lawful rate under the Stand-Alone Cost ("SAC") constraint of the Board's Coal Rate Guidelines is based upon a hypothetical rail carrier which Otter Tail has named the Otter Tail Railroad ("OTRR"). This Section III-A of Otter Tail's opening evidence is jointly sponsored by Thomas D. Crowley and Robert D. Mulholland. As described in detail in Section III-B, infra, the OTRR is designed to provide service between coal mines in the PRB and the Big Stone Generating Station, for the transportation of coal from BNSF-served PRB mines to interchange with BNSF for delivery to other utility plants; and for the movement of general freight trains in overhead service for interchange with BNSF at Donkey Creek, Wyoming, Moran Junction, Terry and Snowden, Montana and Fargo, North Dakota. The OTRR rail network extends from mines located on BNSF's Orin Line north through Donkey Creek, then west over BNSF's line to Moran Junction. From Moran Junction the line turns northeast to Glendive, Montana via Terry. From Glendive the line turns east to Fargo, via Mandan, North Dakota, then south to Benson, Minnesota and finally west to Big Stone City, South Dakota. The OTRR also includes the BNSF segment between Glendive and Snowden to the north, as well as the coal mine branch lines from Eagle Butte to Campbell, from Decker to Dutch, from Kuehn to Sarpy Jct., and from Big Sky to East Nichols. The OTRR covers a total of 1286.7 route miles.[1] A schematic of the OTRR route appears in Exhibit III-A-1.

The stand-alone rail network that would most efficiently handle the subject traffic has been

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configured based on current coal purchases by Otter Tail combined with other traffic available to the OTRR. The traffic and revenue identification processes for the OTRR are discussed below under the following headings:[2]

1. OTRR Traffic
2. The OTRR's Historical and Projected Traffic Volumes
3. The OTRR's Historical and Projected Revenues
4. Reasonableness Test of OTRR's Traffic and Revenue Divisions

1. OTRR Traffic

The OTRR's traffic group consists of coal movements in unit trains and general freight trains moving in overhead service. The OTRR directly serves the 13 mines for which BNSF provided rates and service terms in Pricing Authority 90062.[3] In addition, the OTRR serves three mines south of Reno Jct., on the Orin Line; two mines in the Montana Powder River Basin; and three mines on branch lines that connect to the BNSF main line between Moran Junction, and Terry. Table III-A-1 below lists these 21 mines in geographic order from North to South.

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2 The configuration, design, operation and costs associated with OTRR are addressed infra.

3 Two PRB mines are listed in BNSF Pricing Authority 90062 at issue in this proceeding that are not currently operational and therefore originated no coal in the 2002 base year of Otter Tail's SAC model.

Table III-A-1
Coal Mines Served by OTRR

1.	Rosebud
2.	Big Sky
3.	Absaloka
4.	Spring Creek
5.	Decker
6.	Eagle Butte
7.	Rawhide
8.	Buckskin
9.	Clovis Point
10.	Dry Fork
11.	Fort Union
12.	Caballo
13.	Belle Ayr
14.	Caballo Rojo
15.	Cordero
16.	Coal Creek
17.	Jacobs Ranch
18.	Black Thunder
19.	North Rochelle
20.	Rochelle/N. Antelope [1/]
21.	Antelope

1/ These Peabody Coal Company operations were originally two separate mines, but they have been combined into a single mining complex with two rail loadouts on concentric loop tracks.

The OTRR handles originated coal traffic moving from these mine loadouts to the Big Stone Station and to interchange locations between OTRR, BNSF and the Otter Tail Valley Railroad

("OVRR"). In addition to the Big Stone Station, the OTRR handles coal destined to 74 power plants and BNSF's Superior Dock and Cook Coal Terminal and 10 industrial destinations. Exhibit-III-A-2 lists each of the power plant customers whose coal originates on the OTRR. General freight trains are handled in overhead service in both directions between Donkey Creek and Moran Junction, between Moran Junction and Terry, between Moran Junction and Fargo, and between Snowden and Fargo.

2. The OTRR's Historical and Projected Traffic Volumes

a. Historical Volumes

Utilizing BNSF's traffic tapes for 2002, 180.4 million net tons of coal were identified that would originate and move over all or part of the OTRR system. In addition, 25.2 million net tons of non-coal traffic were identified from BNSF's train event files and traffic tapes in 2002 that would move over the OTRR. Exhibit III-A-3 shows the origin, destination, on-SAC location, off-SAC location, net tons, total BNSF revenues and OTRR revenues for each movement on the OTRR in 2002. The methodology employed in the selection of the OTRR traffic comports with Coal Rate Guidelines, Nevada Power,[4] FMC, and WPL, which endorse the adoption of appropriate traffic "groups."

i. Unit Coal Train Traffic

The traffic tape and train event data provided by BNSF and BNSF forecasts of traffic also provided in discovery were used to establish the traffic base for the OTRR. For coal traffic, a database was compiled from the BNSF revenue traffic data, which was provided for each loaded

[4] Bituminous Coal – Hiawatha, UT to Moapa, NV, 10 I.C.C. 2d 259 at pages 262 to 268 (1994) (Nevada Power).

railcar on the BNSF system for 2002. This data was pared down to include only information in the field containing the Standard Transportation Commodity Code ("STCC") indicating they were coal movements. The data was then summarized on a train-by-train basis in order to evaluate traffic levels. Through a pair of programs, the records were collapsed into a database containing one data record per train. This procedure was used to summarize unit coal train traffic because all cars in a unit train move together and therefore all have the same information in each of the fields identifying train symbols in BNSF's traffic file.

Next, the "train-by-train" data file was summarized by collapsing the data in the origin and destination fields of the database in order to create a database of movement-specific data for the January through December 2002 period, including the number of cars, trains and tons that moved, the amount of net revenue BNSF received from the moves, and the average movement miles on the BNSF system. Once this was accomplished, several manual deletions were made to the resulting database in order to eliminate traffic that would not be included as traffic moving over the OTRR. These deletions were:

1. Movements that did not originate at mines located on the OTRR;
2. Data records for utility and industrial destinations that contained data for less than unit train movements;[5] and

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[5] The exception to this rule was industrial coal moves that were added to unit coal trains moving to utilities in Minnesota and Wisconsin, and to the Superior coal terminal.

The remaining coal traffic originating at the 21 mines served by the OTRR was considered for inclusion in the OTRR traffic group. Of this set of traffic, the origin and destination pairs that appear in Exhibit III-A-3were selected to be included in the OTRR traffic group. This traffic group includes 86 destinations.

ii. Non-Unit Coal Train Traffic

For all OTRR traffic other than unit coal train traffic, a different and more complex procedure was required to identify volume and revenues moving over the OTRR. Because general freight trains such as manifest and intermodal trains do not move in unit train service, it was not possible to summarize the data using only BNSF's traffic tapes. Cars that make up these kinds of trains may come from numerous origins on various dates. They may also move to numerous destinations and they may be interchanged several times while en route.

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The train event file is the only file provided that includes routing information. Therefore, the

train event file was used to identify BNSF traffic that moved over OTRR lines in 2002. For each train included in the train event file provided, a series of programs were used to determine the train's route of movement, when the train moved, whether or not it traversed any part of the OTRR, where it entered and exited the OTRR, and the number of loaded and empty railcars that moved on each train while it was on the OTRR. The data files and programs used to make these calculations are included as electronic workpapers and a description of the procedure is included as Exhibit III-A-4.

After the train event file was analyzed and OTRR trains were identified, the traffic file was evaluated in an effort to determine which revenue carloads moved on each of the OTRR trains. Each data record included in the traffic file contains information for a railcar or intermodal unit, including waybill information, movement origin, BNSF interchange points, movement destination, and up to eight trains on which the equipment moved under the waybill. Each of the eight trains identified as having moved the revenue car in the traffic file was compared to the list of OTRR trains identified in the traffic selection process described above. When a match was made between the trains identified in the traffic file and the OTRR train list, the car was assigned to that train. To avoid double-counting revenue, each of the loaded cars included in the traffic file was linked to only one OTRR train.

This linking procedure was completed for each data record included in the traffic file provided by BNSF.

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A detailed description of this procedure along with instructions needed to replicate the analysis and all programs and databases utilized in the analysis are included in Exhibit III-A-4 and the electronic workpapers.

iii. Summary of Traffic

The traffic resulting from the analyses described above is the starting point for the stand-alone railroad traffic and revenue analyses. The OTRR's 2002 traffic volumes (as measured by tons) by principal line segment are as follows:[6]

Table III-A-2
OTRR 2002 Base Year Traffic Volume [1/]

	Segment (1)	2002 Base Year Tons (Millions) (2)
1.	Converse Yard to Campbell	80.1
2.	Campbell to Dutch	71.3
3.	Dutch to Moran Junction	42.1
4.	Moran Junction to Terry	48.0
5.	Terry to Glendive	45.7
6.	Glendive to Snowden	17.8
7.	Glendive to Mandan	63.1
8.	Mandan to Fargo	62.4
9.	Fargo to Benson	10.3
10.	Benson to Big Stone City	1.9

1/ The volumes shown for several line segments include tons that originate or terminate at intermediate points.
Source: Electronic file "OTRR Density.xls".

As shown in Table III-A-2, the heaviest traffic volume occurs in the PRB itself, between Converse Yard and Campbell on the line segment that replicates BNSF's Orin Line. As further described in Section III-B, infra, the OTRR interchanges traffic with BNSF at Converse, Donkey

6 See electronic files "Otter Tail Railroad Coal Traffic Forecast.xls" and "Ottertailsac02x.xls".

Creek, Moran Junction, Terry, Snowden, Mandan, Fargo and Benson.

b. Projected Volumes

The volumes of coal handled each year by the OTRR are projected to increase moderately and gradually throughout the 20-year DCF period, reaching their peak in 2021 when the total tons of coal moving over the OTRR system are projected to be approximately 205.1 million. The volumes of non-coal traffic handled by the OTRR are held constant at 2002 base year levels.

i. Projected Coal Volumes

The forecast of the tonnages to be handled by the OTRR over the 20-year discounted cash flow ("DCF") model life [7] is based upon REDACTED the U.S. Department of Energy, Energy Information Administration ("EIA") Annual Energy Outlook 2003 With Projections to 2025, January 2003 ("AEO 2003").[8]

Using the 2002 traffic base described above, along with the EIA documents described above, the customer base and traffic growth rate for the OTRR system for the 2002 through 2021 time period was determined. The specific procedures followed are summarized in the following four steps:

1. The stand-alone traffic for the base year (2002) was developed from BNSF traffic tapes provided in discovery.[9]

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7 See electronic file "Otter Tail Railroad Coal Traffic Forecast.xls".

8 The EIA's Annual Energy Outlook contains both aggregate forecasts and projections based upon coal supply region and coal type. The use of a combination of railroad and EIA forecasting data to make volume projections in a SAC model follows prior Board precedent. In FMC, the Board used UP's Long Range Plan for the early year's projections of future coal volumes, and AEO 1999 for the later years of the DCF model. Id. at 34. More recently, the Board relied in part upon AEO 2000 to determine the rate of increase of projected coal volumes in WPL. Id. at 18-21. See Opening Workpaper Vol. III, pp. 2428 to 2437.

9 See electronic files "Otter Tail Railroad Coal Traffic Forecast.xls" and "BNSF Coal Traffic Analysis.doc"

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3. The 2004 - 2021 stand-alone traffic was based on the annual change in the AEO 2003 forecast of the change in Powder River Basin coal volumes. The annual coal volumes handled by the OTRR were adjusted by the EIA forecast subject to a cap calculated as the greater of: 1) the projected 2003 traffic level; or 2) the annual tonnage needed to realize an 85% plant capacity factor. Once the tonnage at an individual power plant reached the cap, the annual coal volumes remained flat for the remainder of the DCF model life.[14]

    a. For electric utilities that purchased coal from multiple origins in the base year (2002) but the OTRR only included base year tons from some of these origins, the annual volume growth (subject to the tonnage cap) was shared proportionately by all origins identified in the base year.

    b. The proportion of coal moving in shipper furnished rail cars and railroad furnished rail cars was calculated for each origin-destination movement included in the OTRR in base year 2002 utilizing BNSF's records. These ratios were used in each year of the DCF model life to estimate the ownership of rail cars moving on the OTRR.

4. The annual volume received at each plant where the OTRR originates the rail traffic over the DCF model life is shown in Exhibit III-A-5.

ii. Projected Non-Coal Volumes

Otter Tail has held the OTRR's non-coal traffic volumes for the 2003-2021 time period constant at the 2002 levels in the aggregate and also by commodity group (intermodal, auto, grain, manifest, and other).

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[14] BNSF 2003-2007 Long Range Plan. See Opening Workpaper Vol. III, pp. 2425 to 2427.

c. **Eighty-five Percent Capacity Constraint**

The coal volume projections summarized in Exhibit III-A-5 use a capacity factor of 85% as a ceiling on future coal volume growth.[13] That is, annual growth for each user of coal transported by the OTRR is projected using either BNSF's internal forecasts or the change in EIA's PRB production forecasts. These forecasts are applied to the base year 2002 tonnages set out in Exhibit III-A-3 for each of the years thereafter through 2021. For several reasons, the 85 percent capacity factor standard is a reasonable and conservative maximum to apply for this purpose.

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Second, the Board has endorsed the use of an 85% capacity factor to cap coal volume growth for purposes of application of the SAC pricing constraint. In WTU, the Board accepted the complainant's estimate of future coal volume growth, which included the 85% capacity factor cap "as the best evidence of record here."[14] Rejecting BNSF's claim in that proceeding that a 70% factor should have been used, the Board observed:

> [A]s a plant uses more coal, it requires more coal to produce the same output, *i.e.*, it results in decreased efficiency (higher heat rates) as the plant ages. Therefore, as time passes, we would expect each plant to use more, rather than less coal. For that reason, and because BN's 70% ceiling is plainly too low, we use WTU's 85% capacity factor....[15]

More recently in WPL the Board opined:

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[13] If the actual capacity factor is greater than 85%, then the annual tonnage associated with the actual capacity factor is used as the ceiling.

[14] See 1 S.T.B. at 664.

[15] Id. at 663-64.

> The record shows that, as demand for electricity has grown, plant utilization has increased — since 1982 the average utilization rate for all coal-fired generators has increased from 54% to 67%. Furthermore, AEO 2000 predicts that the average utilization rate for coal-fired plants will increase from 68% to 83% between 1998 and 2020. Therefore, WPL's assumption that the plants in the EWRR traffic group could operate at up to 85% of capacity is not unreasonable.[16]

The reasonableness of an 85% capacity factor cap on growth is further confirmed by reference to general statistics for U.S. coal-fired generating units. The statistical measure of the degree to which a particular unit approaches its maximum capacity level is called the Weighted Equivalent Factor ("WEF"), which reflects all generation lost due to planned and forced outages, and seasonal, planned and forced derated hours. The North American Electric Reliability Council ("NERC") collects generating unit performance data for all coal-fired power plants in the United States and portions of Canada. These include plants of varying sizes, ages and levels of operating efficiency. According to statistics compiled by NERC, the average WEF for all coal-fired units over the 1995-1999 time period was 83.38 percent and the WEF average has been steadily increasing over time.[17] For at least two reasons, a future national average well in excess of 85 percent is likely to be achieved.

First, the WEF average throughout the 1990's was suppressed by outages due to pollution control retrofitting of existing coal-fired plants. Many new scrubbers were added to generating facilities in the 1990's to comply with the Clean Air Act Amendments, which in most cases required the affected units to be taken out of service for months at a time. Additionally, the 1998 and 1999 WEF factors were affected by the major outages caused by the boiler explosions at the State Line

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16 WPL at 20.
17 See Opening Workpaper Vol. III, pp. 1747-1748.

and Hawthorn power plants in 1998 and 1999, respectively. Recent installations of auxiliary units for nitrogen oxide removal also have reduced the average WEF. Most of these events and the related outages are non-recurring. Particularly given publicly acknowledged rising consumer and commercial energy demands and the prospects for increased emphasis on domestic energy resources as part of the U.S. Administration's strategy to combat global terrorism, unit utilization as a percentage of total capacity is sure to increase at these stations and in the WEF averages generally.

Second, many if not most coal-fired power plants are located in regions where, in the past, all of the coal plant capacity is not needed year round, particularly in the Spring and Fall. As such, there has been less incentive historically to accelerate scheduled maintenance because of the excess capacity. As electricity demand grows, however, so does the need for low-cost, coal-fired generation round-the-clock in the Spring and Fall, and during the night and on weekends in the Summer and Winter. Consequently, in the future it is reasonable to expect that utilities will perform the required scheduled maintenance in a shorter amount of time, reducing outage durations and contributing to an increase in capacity utilization percentages.

By reference to specific line segments, and based on the procedures described above, OTRR's peak year volumes are distributed as summarized in Table III-A-3 in the peak year of 2021.

Table III-A-3
OTRR 2021 Peak Year Traffic Volume

	Segment (1)	2021 Peak Year Tons (Millions) (2)
1.	Converse Yard to Campbell	97.1
2.	Campbell to Dutch	65.1
3.	Dutch to Moran Junction	53.4
4.	Moran Junction to Terry	59.7
5.	Terry to Glendive	57.5
6.	Glendive to Snowden	17.9
7.	Glendive to Mandan	74.9
8.	Mandan to Fargo	74.2
9.	Fargo to Benson	12.6
10.	Benson to Big Stone City	2.3

Source: Electronic file "OTRR Density.xls".

3. The OTRR's Historical and Projected Revenues

The traffic handled by the OTRR system falls into four revenue categories: 1) traffic that originates and terminates on OTRR lines that replicate a BNSF single-line route; 2) traffic interchanged with a railroad other than BNSF that first moves over OTRR lines that replicate the BNSF system; 3) traffic interchanged with the BNSF that first moves over OTRR lines that replicate the BNSF; and 4) overhead traffic that moves over OTRR lines that replicate the BNSF system that is interchanged with BNSF at both ends of the segments. Traffic categories 3) and 4) are sometimes referred to as "cross-over" traffic. As explained infra, the procedures used to calculate stand-alone revenues differ somewhat for each category.

Revenues for shipments on the OTRR were developed from the BNSF's traffic tapes referred

to above. The traffic tapes have three revenue fields, titled: (1) "RVWDES" or gross revenues expressed in whole dollars; (2) "CONALOW" or contract allowance adjustment; and (3) "COTREV" or Certificate of Transportation premiums. According to instructions and explanation provided by BNSF concerning this data, both the "CONALOW" and "COTREV" fields must be subtracted from the "RVWDES" field in order to produce net revenues. Otter Tail has followed these instructions.

a. Single Line Revenues

The OTRR directly serves only one destination, the Big Stone Station. Base year 2002 revenues for the Big Stone Station traffic were based on a combination of the rates contained in BNSF's traffic tapes and the 2002 tons identified from the BNSF traffic tapes.

b. Divisions of Revenues – Existing Interchanges

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Consistent with established Board precedent,[20] it is assumed that the revenues earned by the OTRR from the transportation of existing interchange traffic are the same as those actually earned by BNSF for handling the same traffic. These revenues were derived from BNSF provided traffic tapes for 2002, as well as traffic and revenue forecast data produced by BNSF in discovery, and are

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18 See electronic file "Otter Tail Railroad Coal Traffic Forecast.xls".
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20 FMC at 27.

summarized by year in Exhibit III-A-5.[21]

c. Divisions of Revenues – "Cross-over" Coal Traffic

The largest category of coal traffic handled by the OTRR is "cross-over" traffic, i.e., traffic which currently moves over a larger segment of the BNSF system than its length of haul over the OTRR system would be. These OTRR shipments include traffic leaving the OTRR system at newly-created interchange locations at Converse, Donkey Creek, Moran Junction, Terry, Snowden, Mandan, Fargo and Benson. Cross-over traffic is effectively interlined between OTRR and BNSF either for ultimate delivery by BNSF, or for further interchange by BNSF to another carrier.

For this traffic category, BNSF's current and prospective single-line revenue or joint-line revenue division must be divided between BNSF and OTRR. Otter Tail's discovery to BNSF included requests for data showing the total freight revenues, and (separately) BNSF's share or division of total revenues, for coal traffic moving over portions of the BNSF system that include the route segments replicated by the OTRR.[22] In response, BNSF produced data containing BNSF revenues and total revenues for interline coal movements that were settled by BNSF.[23]

Otter Tail evaluated the division of revenue data that BNSF actually achieved in the rail market place and that BNSF provided in discovery. The objective of this evaluation was to apply the results of BNSF's actual market place division data in the stand-alone context. The OTRR, as a replacement for BNSF, would achieve the same market place revenue division result for the cross

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[21] See electronic file "Otter Tail Railroad Coal Traffic Forecast.xls".

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[23] BNSF's revenue division data was provided for 2001 only. See electronic, file "interline01.dbf" and "intline.dat".

over traffic that BNSF achieves in the real world for handling interline or overhead movements. Using the BNSF supplied actual division data and a simple regression formula, Otter Tail determined the statistical relationship between revenue divisions and miles traveled that BNSF, in fact, realizes for handling its actual interline coal movements. The resulting regression coefficients were applied to the characteristics of the cross-over coal traffic as it moved on the OTRR to determine the portion of total revenues that the OTRR would receive by including the cross-over coal traffic in the stand-alone group.

Specifically, the revenue division data were analyzed and applied to the OTRR interline coal movements. Otter Tail developed OTRR revenues for coal traffic that moves from each of the 21 coal mines served by the OTRR to a newly created interchange with BNSF by utilizing the BNSF supplied revenue division data. BNSF interline coal moves for which BNSF provided revenue division data, were stratified into two groups, 1) moves for which BNSF moved the traffic and 2) moves for which BNSF moved the traffic REDACTED For each stratum, a regression was run to establish the statistical relationship between the percent of revenues BNSF receives for these movements in the market place to the percent of the total movement miles that BNSF travels when handling each of the movements. The methodology is set forth in Exhibit III-A-6.

To apply the results of both regression analyses, each OTRR coal movement was assigned an interchange point between the OTRR and BNSF. The distance from the applicable origin to that interchange point was measured using track charts provided by BNSF in discovery. The OTRR segment miles were divided by the weighted average BNSF mileage for each total movement derived

from BNSF's traffic tapes, which resulted in the percent of total miles handled by the OTRR.[24] Using an assumed coal movement of 1000 miles of which 600 miles are on the OTRR as an example, the percent of revenue received by the OTRR for the assumed movement would be derived using the following standard linear regression equation:

Where:

$$y = a + bx$$

And:

y = % of total revenue received by OTRR

a = Regression constant or intercept

b = Coefficient for variable *x*

x = % OTRR miles of total movement miles

Then:

y =

y = **REDACTED**

By applying the regression coefficients to the hypothetical cross-over movement, the OTRR receives of the revenues for handling the traffic of the miles. BNSF receives the residual

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[25] The development of the regression constant or intercept and the x variable coefficient is discussed in detail in Exhibit III-A-6.

revenues or for handling the traffic % of the miles.

Each calculation developing OTRR revenues based on the regression analyses is included at sheet '2002 SAC Moves' of the electronic workpaper titled 'Otter Tail Railroad Traffic Forecast.xls'.

Applying the results of the regression analyses described above, annual revenue for the OTRR cross-over coal traffic equals $641 million at 2002 levels as shown on Exhibit III-A-5.

d. Divisions of Revenues - "Cross-Over" Overhead Non-Coal Traffic

BNSF also provided revenue division data for general freight traffic settled by BNSF for the 2001 time period. The data includes (1) total movement revenue, (2) BNSF portion of the total revenue, and (3) the foreign railroad's portion of the total revenue.

OTRR handles general freight exclusively in overhead service. Therefore the revenue division data provided by BNSF was largely non-applicable to the OTRR non-coal traffic groups because it involved movements where BNSF was the interline forwarded or interline received railroad of a multiple railroad movement. In these cases, no revenue division data was provided for the overhead portion of the moves involving three or more railroads.

There were, however, a number of movements included in the revenue division data provided by BNSF where BNSF was the overhead carrier.[26] For the movements where BNSF is the overhead carrier, a regression analysis was used to determine the relationship between the BNSF's proportion of the total miles and BNSF's proportion of the total revenues. The results of the regression were used to calculate OTRR revenues for the few carloads containing the commodities that moved in the

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[26] See electronic "interod01.xls".

cars included in the regression analysis i.e., one (1) percent of the total OTRR overhead non-coal traffic. The methodology is set forth in Exhibit III-A-6. For all other general freight overhead movements on the OTRR, revenue divisions were based on the modified mileage prorate methodology.

Consistent with the methodology endorsed by the Board in McCarty Farms,[27] and subsequent cases, Otter Tail allocated revenues for non-coal overhead traffic using the modified mileage block prorate method as described in the User Guide for the 1995 Surface Transportation Board Waybill Sample. Under this formula, each participating carrier is credited with one "block" for each 100 miles (or portion) that it handles a shipment, plus an additional block if the carrier originates or terminates the shipment. Total blocks are divided into total revenue, and the resulting revenue per block is multiplied by the total number of blocks credited to the OTRR to arrive at the OTRR's allocated revenue share.

In FMC, the Board held that the modified mileage block prorate method should be used where the defendant fails to produce relevant divisions.[28] The Board added that the modified mileage block prorate method "is the best procedure for allocating revenues to carriers where market-based divisions are not available.[29]

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27 2 S.T.B. at 472.

28 See FMC at 30-31.

29 See McCarty at 9; Bituminous Coal–Hiawatha, UT to Moapa, NV, 10 I.C.C.2d 259, 268 (1994) (Nevada Power II)." Id. at 27 n.62.

Otter Tail does not believe that prior SAC cases have addressed to any significant extent the issue of how to apply the modified mileage block prorate methodology where the SARR serves primarily as the bridge carrier for a single incumbent. Specifically, where the residual incumbent will receive an origination block and a termination block, there is no clear guidance from the Board's precedent whether the residual incumbent's origin and destination mileages should be combined or should be treated separately when allocating 100-mile blocks. The following diagram demonstrates the nature of the problem:

A ---------- **B** ---------- **C** ---------- **D**
(BNSF - 101) (OTRR - 100) (BNSF - 101)

The diagram assumes that line segments A-B and C-D each are 101 miles in length, that line segment B-C is 100 miles in length, and that the residual BNSF originates the traffic at point A, interchanges the traffic with the OTRR at point B, and then receives the traffic in interchange from the OTRR at point C for delivery to its final destination (i.e., point D). The mileage blocks could be allocated between BNSF and the OTRR in two ways:

Allocation No. 1:

1. BNSF receives one origin block and one destination block;
2. Since BNSF's ***total*** mileage is 202 miles, BNSF would receive three additional blocks;
3. The OTRR mileage is 100 miles for a total of one block;
4. There are a total of six blocks; and
5. BNSF receives 5/6 of the revenue (83%); the OTRR receives 1/6 (17%).

Allocation No. 2:

1. BNSF receives one origin block and one destination block;

2. Since BNSF's ***upstream*** mileage is 101 miles, BNSF receives two additional blocks for its upstream segment;

3. Since BNSF's ***downstream*** mileage is 101 miles, BNSF receives two additional blocks for its downstream segment;

4. The OTRR mileage is 100 miles for a total of one block;

5. There are a total of seven blocks; and

6. BNSF receives 6/7 of the revenue (86%); the OTRR receives 1/7 (14%)

In calculating revenues in this case, Otter Tail has followed Allocation No. 2, which treats the upstream and downstream portions of the residual incumbent's line as separate for purposes of allocating mileage blocks, and therefore yields lower SARR revenues (i.e., is more conservative) under the foregoing example.

e. Projected Revenues For Coal Traffic

The revenues for coal handled each year by the OTRR are projected to change throughout the 20-year DCF period. The rate of change in revenues is dependent upon the competitive nature of each individual movement handled by OTRR. Using transportation contracts and BNSF pricing authorities provided by BNSF during discovery plus a DRI-WEFA forecast of the RCAFU,[30] the revenues for the OTRR system coal traffic for the 2003 through 2021 time period were determined. The specific procedures followed are summarized in the following steps:

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30 In FMC and WPL, the Board accepted forecasts produced by Standard & Poor's DRI. In January 2001, Standard and Poor's sold DRI to Global Insight Company, which merged DRI with its WEFA unit to form DRI-WEFA. A copy of the DRI-WEFA forecast used in this Opening Evidence is included in workpapers. See Opening Workpaper Vol. III, pp. 1804 to 1805.

1. The base year revenues (2002) for coal traffic handled by the OTRR were developed from BNSF traffic tapes provided in discovery.[31] The actual gross BNSF revenues for the OTRR traffic were identified. The BNSF gross revenues were reduced by eliminating the allowances identified on the BNSF traffic tapes. The resulting BNSF revenues were then separated between the BNSF and the OTRR based on the revenue division methodology described at Exhibit III-A-6.

2. The 2003 revenues for coal traffic handled by the OTRR were based on the BNSF's forecast of annual average transportation rates for each movement, dated October 18, 2002.[32] BNSF's forecast of annual average transportation rates was multiplied by the 2003 BNSF forecasted tonnage for each customer. The resulting BNSF revenues were then separated between the BNSF and the OTRR based on the revenue division methodology described at Exhibit III-A-6.

3. The 2004 - 2021 revenues for coal traffic included on the OTRR stand-alone system were based on the BNSF's 2003 forecast of the annual average transportation rates for each customer included in the OTRR traffic.[33] These BNSF rates were adjusted annually from 2004 to the end of the existing transportation contract term by forecasting the change in each customer's specific transportation contract adjustment mechanism.[34] At the expiration of the existing contract term, the transportation rates for OTRR stand-alone traffic were calculated as follows:

   a. For traffic that is captive, the transportation rate at the termination of the existing contract equals the expired contract rate. For the remainder of the 20-year DCF model life, this rate is adjusted based on the projected average annual change produced by the expired contract rate adjustment mechanism. This methodology is consistent with prior Board rulings and insures that the rate trends reflected in the existing contracts continue.[35]

   b. For traffic that is competitive, the transportation rate at the termination of the existing contract is based on rate levels in the competitive marketplace. The competitive marketplace rate levels represent actual market rates included in BNSF contracts signed in 2002 and 2003 that were provided in discovery in this proceeding. A 1Q03 composite competitive rate per ton-mile and a 1Q03 composite competitive market rate adjustment mechanism were developed from the BNSF contracts signed in 2002 and 2003.[36] After the competitive contract expires and for each remaining year of the 20-year DCF model life, the 1Q03 adjusted competitive

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31 See electronic file "Otter Tail Railroad Coal Traffic Forecast.xls" and "BNSF Coal Traffic Analysis.doc".
32 See Opening Workpaper, Vol. III, pp. 1666 to 1704.
33 Ibid.
34 See Opening Workpaper, Vol. III, pp. 1817 to 2350 for relevant contract pages from BNSF contracts.
35 WPL at page 28.
36 The details of these calculations are summarized in Exhibit III-A-7. See Opening Workpaper, Vol. III, pp. 2351 to 2424 for relevant contract pages from BNSF contracts.

rate per ton-mile[37] was applied to the actual mileage for the competitive movement to determine the competitive rate per ton for the movement. There is one exception to this rule. If the expired contract rate is less than the competitive marketplace rate, the expired contract rate was assumed to continue through 2021.

4. A summary of the annual revenues for each customer's traffic included in the OTRR stand-alone system for each year of the DCF model life is shown in Exhibit III-A-5.

f. Projected Revenues For Non-Coal Traffic

Exhibit III-A-5 also contains a forecast of the OTRR's non-coal revenues. In order to calculate revenues on non-coal traffic for the time period from 2003 through 2021, Otter Tail utilized the following procedures:

1. For 2002, Otter Tail determined the applicable rate and revenues by using the BNSF's traffic tapes for each movement provided by BNSF in discovery;[38] and

2. For 2003-2021, Otter Tail determined the applicable rate by using the rate of change forecast in BNSF's Long Range Plan for the relevant Commodity or Business Group over the 1998-2007 time period.[39]

g. Summary

In summary, the 2002 through 2021 coal revenues for the OTRR were calculated by multiplying each year's rate per ton for each movement (developed according to the procedures discussed above) by the annual tonnage for each movement. This results in OTRR coal revenues of , 2002 and in 2021. The revenues for each year for each customer are contained in Exhibit III-A-5. **REDACTED**

For non-coal intermodal traffic, OTRR receives $ or , of total 2002 BNSF **REDACTED**

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37 Adjusted annually by the change in the composite competitive market rate adjustment mechanism.
38 See electronic file "ottertailsac02x.xls".
39 See electronic file "ottertailsac02x.xls".

revenue for this group of traffic. By comparison, OTRR handles this overhead traffic of the total miles between origin and destination, on average.[40] For all non-coal traffic handled, OTRR receives $ in 2002 and $ in 2021.
REDACTED

In total, OTRR receives $ in revenue in 2002 based on the actual revenue division data described above.[41]

4. Reasonableness Test of OTRR's Traffic and Revenue Divisions

In PPL, the Board raised two issues regarding the stand-alone traffic group which are addressed below. The first issue determines if an impermissible cross-subsidy exists because the stand-alone cost associated with serving a subset of traffic included in the stand-alone traffic group exceed the revenues attributable to this subset of traffic. The second issue determines if the division of revenue allocated to the residual incumbent for each cross-over movement covers the residual incumbent's attributable cost of handling that traffic.

a. PPL Cross-Subsidy Analysis

In its recent PPL decision, the Board responded to an assertion by BNSF that an impermissible cross-subsidy existed in that case by determining that:

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[40] Of the 11,248 trains of non-coal traffic handled by the OTRR, 49% are intermodal trains. Of the total SAC revenues received by OTRR for non-coal traffic, 44% is from intermodal traffic.

[41] If the modified mileage block prorate methodology were used to calculate OTRR revenue divisions instead of actual BNSF provided revenue division data that Otter Tail relied upon, the OTRR's 2002 base year revenues would equal million. See electronic file "Otter Tail Railroad Coal Traffic Forecast.xls".

> "[i]n examining whether the hypothesized [stand-alone railroad] incorporates a proscribed cross-subsidy, the appropriate inquiry is not, as BNSF suggests, whether a particular subset of traffic is generating revenues in excess of the SAC associated with serving that subset of traffic, but whether there is a readily identifiable subset that would not cover the collective attributable costs associated with serving the traffic."[42]

The Board then conducted, on its own initiative, an "abbreviated analysis" of whether an impermissible cross-subsidy existed, based on certain assumptions and findings. This analysis, set out in "Section IV" of PPL,[43] concluded that the "western part" of PPL's stand-alone railroad "would not be self sustaining," and that, therefore PPL's stand-alone analysis was fatally flawed. The Board then dismissed PPL's complaint.

The "Western Part" of PPL's stand-alone railroad found by the Board to not be self sustaining, is that portion of PPL's railroad that is west of Campbell, Wyoming, i.e., the lines that exclude the highest density portion of the PPL stand-alone railroad – the PRB. In the instant proceeding, Otter Tail interpreted the Board's segmented stand-alone cost test to also exclude the highest density portion of Otter Tail's stand-alone railroad, i.e. the PRB. Therefore, Otter Tail performed a PPL cross subsidy test on that portion of the OTRR west of Campbell, Wyoming which excludes the PRB. The Western Part of the OTRR, therefore consists of the rail segments from Campbell to Moran Junction, then to Glendive, Fargo and Benson, including the Decker, Kuehn, Big Sky, Snowden and Big Stone Branches.

Otter Tail examined the revenues and attributable cost in a manner that is theoretically

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42 PPL at 9-10.
43 PPL unprinted at 10-13.

consistent with the methodology utilized by the Board in Section IV of PPL.[44] However, Otter Tail's methodology is more precise than that used by the Board in PPL in that, rather than attempting to develop operating costs for the traffic on the Western Part of the OTRR system based on a series of ratios of the Western traffic as a portion of the total traffic, Otter Tail determined the actual operating statistics associated with traffic on the Western Part of the OTRR system, by performing a separate string analysis for only that traffic moving over the Western Part of the OTRR system. Otter Tail then performed a separate DCF analysis for the Western Part of the OTRR based on the road property investment and operating statistics specific to the Western Part of the OTRR. This analysis demonstrates that the revenues attributable to the traffic moving on the Western subset of the OTRR exceed the "attributable costs" of this subset, as that term was defined in PPL. The revenues attributable to the traffic moving on the Western Part of the OTRR exceed the attributable cost as defined by the Board in PPL on a cumulative basis over the twenty-year DCF period. Thus, no impermissible cross-subsidy exists for this subset of traffic.[45]

b. Residual Incumbent's Division of Revenues

Also, in regards to "cross-over" traffic, the Board in PPL identified the revenue/cost relationship that the residual carrier (BNSF in PPL) would have to realize in order to handle cross-over traffic. Specifically, the Board stated that "A residual carrier would agree to move the traffic so long as the revenue division would allow it to cover its attributable costs associated with handling the traffic."[46]

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44 PPL at 10-13

45 See the electronic files in Part III-H, folder "Campbell West". This information may also be used by the Board to determine if other subsets of traffic meet the PPL cross-subsidy test.

46 PPL at 10, citations omitted.

The definition of attributable costs as it relates to the residual carrier is clear in economic literature and in prior STB/ICC decisions. In Ex Parte 355, Cost Standards for Railroad Rates,[47] the ICC determined that:

> "As long as a rate covers DVC (directly variable cost), cross-subsidy will not be necessary and predatory pricing will not be taking place. We believe that the formula we are adopting will allow us to determine the costs that directly vary with the service rendered. Cross-subsidy and predatory pricing occur only when the carrier services the shipper at noncompensatory rates. The formula we have proposed should ensure the compensatory nature of the rates."

The ICC also defines DVC in Ex Parte 355:[48]

> "We found the costs properly included in DVC to be the line-haul cost of the lading, applicable switching costs, and station clerical costs."

To determine if any BNSF revenue divisions are less than BNSF's DVC on both the cross-over coal traffic and the cross-over non-coal overhead traffic, Otter Tail calculated the residual BNSF's DVC[49] for each of the identified coal cross-over movements and non-coal cross-over overhead movements. **REDACTED**

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47 364 I.C.C. 904.

48 364 I.C.C. 899.

49 Otter Tail used BNSF's 2002 URCS unit costs to determine the line haul cost of lading, applicable switching cost and station clerical cost for the residual BNSF portion of each of the cross-over moves. For the details of this analysis, See electronic files in Part III-A, folder "DVC".

III-B
STAND-ALONE RAILROAD SYSTEM

III. B. OTTER TAIL RAILROAD

The description of the OTRR is contained below under the following headings:

1. Route and Mileage
2. Track Miles and Weight of Track
3. Yards
4. Other

1. Route and Mileage

The OTRR replicates existing BNSF rail lines in their present location extending from the PRB mines in Wyoming and Montana and extending into North Dakota, Minnesota and South Dakota. The OTRR primarily handles unit coal trains moving from PRB mines to one (1) generating station destination, and to eight (8) interchange locations with BNSF. Exhibit III-B-1 contains detailed schematics, or "stick diagrams," showing the interchange locations as well as the locations of main line track and yards. The stick diagrams also show the passing sidings, rail spurs, type and location of rail and turnouts used on the OTRR plus the locations where defective equipment detectors ("DED") and automatic equipment identification ("AEI") scanners are placed.

In addition to handling unit coal train traffic, the OTRR also moves unit grain trains and manifest, intermodal, automobile and unit trains of other commodities. All non-coal traffic is overhead to the OTRR and moves in run-through trainload service between interchange points. The overhead traffic is interchanged, received and forwarded from/to BNSF at one of five (5) interchange location pairs.

Proceeding from south to north, the OTRR starts at Converse Yard, Wyoming located in the

PRB just south of Nacco Junction. The route of the OTRR follows that of the BNSF's Orin Line in a northerly direction to Donkey Creek, Wyoming and then northwest following the route of BNSF's mainline through Gillette and Sheridan, Wyoming, crossing the Wyoming/Montana state line and continuing northwest to Moran Junction, Montana. At Moran Junction the line turns northeast and follows BNSF's mainline through Miles City, Montana to Glendive, Montana. At Glendive the line turns east, crosses the Montana/North Dakota state line and follows BNSF's mainline through Bismark and Jamestown, North Dakota to Fargo, North Dakota. At Fargo the OTRR turns southeast and crosses the North Dakota/Minnesota border and follows the BNSF mainline to Brushvale, Minnesota. From Brushvale to E. Breckenridge, Minnesota, the OTRR operates over the Red River Valley & Western Railroad ("RRVW") via trackage rights for 10.52 miles. The OTRR then continues southeast again following BNSF's mainline to Benson, Minnesota. Finally, from Benson the OTRR turns west, crosses the Minnesota/South Dakota state line and follows the BNSF mainline to Big Stone, South Dakota to the spur that serves Otter Tail's Big Stone generating station where the OTRR terminates.

The OTRR has a total of seven branch lines. These include Reno Junction to Jacob Junction (Reno Branch), Campbell to Eagle Butte Junction (Eagle Butte Branch), Dutch to Nerco Junction (Decker Branch), Sarpy Junction to Absaloka (Kuehn Branch), E. Nichols to Big Sky (Big Sky Branch), Glendive to Snowden (Snowden Branch) and Benson to Big Stone (Big Stone Branch).

The OTRR physically connects with the existing BNSF system at Converse and Donkey Creek, Wyoming; Moran Junction, Terry and Snowden, Montana; Mandan and Fargo, North Dakota; and Benson, Minnesota.

REDACTED

The lines comprising the OTRR are shown on the map included as Exhibit III-A-1. The route mileages for each of the principal line segments of the OTRR are shown in Table III-B-1 below.

Table III-B-1
Line Segments of the OTRR

	Segment (1)	Route Miles (2)
1.	Converse Yard, WY to W. Donkey Creek, WY	
2.	Reno Junction to Jacobs Junction (Reno Branch)	
3.	E. Donkey Creek to W. Dutch, WY	
4.	Campbell to Eagle Butte Junction (Eagle Butte Branch)	
5.	Dutch to Nerco Junction (Decker Branch)	
6.	W. Dutch to Moran Junction, MT (incl. W. Moran Yard)	
7.	Moran Junction to Terry, MT	
8.	Sarpy Junction, Mt to Absaloka, MT (Kuehn Branch)	
9.	E. Nichols, MT to Big Sky, MT (Big Sky Branch)	**REDACTED**
10.	Terry to Glendive, MT	
11.	Glendive to Snowden, MT (Snowden Branch)	
12.	Glendive to Fargo, ND	
13.	Fargo to Brushvale, MN	
14.	Brushvale to E. Breckenridge, MN	
15.	E. Breckenridge to Benson, MN	
16.	Benson to Big Stone, SD (Big Stone Branch)	
17.	Total	

Source: Electronic file "miles.xls".

The total route mileage shown above includes 1,276.2 miles of new construction by the OTRR and 10.5 miles of existing track over which the OTRR operates by means of trackage rights (between Brushvale and E. Breckenridge, Minnesota). In addition, the OTRR includes 7.7 miles of new construction for various wye connections and also to connect the main line to various mine spur

tracks. OTRR's total new construction equals 1,283.9 route miles.

The OTRR's physical parameters, including track miles, weight of rail, yards, etc., which are described in detail below, have been designed to accommodate a daily average number of trains moving over each of its route segments equal to the peak day's traffic during the peak volume year of 2021. The actual number of daily train movements is approximately double the number of loaded train movements, as all coal traffic on the OTRR moves in cycling unit trains and the overhead trains move in both directions. As will be discussed in more detail in section III-C, infra, designing a railroad to accommodate its peak day traffic volume in its peak year of operation provides an extremely conservative estimate of the required railroad operating facilities. An analogous comparison would be a retail store which plans, builds and staffs its operations on a year-round basis based on its sales during its peak holiday shopping period. Most U.S. based companies, including Class I railroads, use demand management and marketing techniques to manage network demand and do not design and build their facilities to meet peak day volumes.[1] Otter Tail has chosen, however, to build its facilities to accommodate its peak day volume demand to show the extreme conservative nature of its hypothetical operation.

2. Track Miles and Weight of Rail

The OTRR is designed to provide maximum efficiency in the form of a modern heavy tonnage railroad, consisting of either a double-main track or a single-main track interspersed with sections

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[1] According to the McKinsey Global Institute, a unit of McKinsey & Company, U.S. companies lead other industrial nations, including Japan and Germany, in productivity and capital management by maximizing output while minimizing capital expenditures on fixed networks. U.S. companies are able to reach high productivity levels by effective marketing to smooth demand, and short term facility acquisitions to meet demand peaks. Class I railroads, including BNSF, use techniques such as short term trackage rights agreements, and preferential pricing to manage the demand over their fixed networks. See Opening workpaper Vol. III, pp. 2465 to 2493.

of passing track, and is equipped with a Centralized Traffic Control ("CTC") system.[2]

The OTRR system includes a total of 1,560.4 miles of track, including main lines, passing sidings (which are considered main track) and branch lines, and 88.5 miles of yard, interchange and setout/storage tracks. The stick diagrams depicting the OTRR track configuration, are attached as Exhibit III-B-1.[3]

Because the OTRR does not carry all the traffic handled by BNSF over these lines, the track configuration of the OTRR is not identical to the existing BNSF lines that it replicates. For example, in 2002 BNSF originated **REDACTED** OTRR handles 180.4 million net tons.

The OTRR also moves 25.2 million tons of non-coal freight traffic on its mainlines. However, the OTRR does not handle any of the non-coal traffic that BNSF originates or terminates on these lines. As stated previously, all non-coal traffic handled by the OTRR is overhead, and moves in run-through service between interchange points. Although the volumes of traffic the OTRR handles are large, they can easily be accommodated by the track layout and traffic control system designed for this stand-alone railroad.

To accommodate the traffic to be handled by the OTRR, all main track and structures are designed to accommodate unit coal trains with cars loaded to a maximum gross weight on rail ("GWR") of 286,000 pounds. The main track is also designed to allow a maximum authorized speed of 60 miles per hour.

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2 The OTRR does not have CTC signaling on the Kuehn, Big Sky or Big Stone Branches.

3 The mileposts shown in Exhibit III-B-1 are the BNSF mileposts for the replicated lines (Exhibit III-B-1 excludes the RRVW trackage rights segment). See Opening Workpaper Vol. III, pp. 2442 to 2464 and electronic file "Track Charts".

4 See Opening Workpaper Vol. III, pp. 2495 to 2498.

a. Main Line Rail Specifications

The rail construction specifications prescribed for the OTRR are consistent with those used to construct the WRPI/CNW line between Shawnee Junction and Joyce, Wyoming and other modern high speed railroads. The WRPI/CNW lines were all constructed with new 136-pound continuous welded rail ("CWR"). This rail section has been used for OTRR lines between Converse Yard and Reno Junction, between E. Donkey Creek and E. Campbell, between Glendive and Fargo and on the Reno and Eagle Butte Branches. Where traffic volumes and/or train speeds are not as great over the main line, Otter Tail has used new 132-pound CWR in place of 136-pound CWR. Table III-B-2 below lists the type and weight of rail on each main line section of the OTRR.

Table III-B-2
Main Line Rail Specifications of the OTRR

Segment (1)	Beginning MP (2)	Ending MP (3)	Rail Specification (4)
1. Converse Yard, WY to Reno Jct.	70.0	43.0	New 136# CWR
2. Reno Jct to Donkey Creek	43.0	0.0	New 132# CWR
3. E. Donkey Creek to E. Campbell	583.0	587.6	New 136# CWR
4. E. Campbell to Moran Jct	587.6	825.1	New 132# CWR
5. Moran Jct to Glendive	209.8	0.0	New 132# CWR
6. Glendive to Mandan	215.8	0.0	New 136# CWR
7. Mandan to Fargo	200.2	8.6	New 136# CWR
8. Fargo to Moorhead Jct.	8.6	5.93	Relay 132# CWR
9. Moorhead Jct. to Brushvale [1/]	8.6	6.4	Relay 132# CWR
10. Wahpeton to Benson	216.8	133.6	Relay 132# CWR

[1/] Brushvale to Wahpeton is operated via trackage rights.

The rail specifications shown above were developed by Mr. McDonald and are appropriate given the OTRR's traffic density, train speed limits, type of trains to be handled, and directional

flow of loaded trains (See Section III-C, infra). As shown in detail in Section IV, Mr. McDonald has considerable experience in planning, constructing, operating and maintaining lines of railroad that carry millions of tons of traffic each year. Among his many accomplishments, as Vice President of WRPI, Mr. McDonald was responsible for the successful, planning, construction and operation of the CNW/WRRI rail line into the PRB which was designed to handle unit coal train traffic. Subsequently, as Vice President Operations at CNW, he was responsible for all transportation, mechanical and maintenance of way functions for the entire CNW system.

b. Branch Line Rail Specifications

The rail specifications of the main tracks of each of the OTRR's branch lines are set forth in Table III-B-3 below.[5]

Table III-B-3
Branch Line Rail Specifications of the OTRR

	Branch Line (1)	Route Miles (2)	Rail Specification (3)
1.	Reno Branch	6.46	New 136# CWR
2.	Eagle Butte Branch	11.43	New 136# CWR
3.	Decker Branch	16.52	New 132# CWR
4.	Kuehn Branch	37.40	Relay 132# CWR
5.	Big Sky Branch	33.10	Relay 132# CWR
6.	Snowden Branch	78.64	New 132# CWR
7.	Big Stone Branch	45.73	Relay 132# CWR

[5] See Exhibit III-B-1.

c. **Sidings**

The OTRR's passing sidings are considered part of its main-line trackage, and are discussed in subparts (a) and (b) above.

d. **Other Tracks**

The OTRR's yards and related trackage are discussed in the next section. Other tracks include set-out/rip tracks for bad order cars, which also will be used from time to time to store maintenance-of-way equipment. The OTRR system includes a total of 10.7 track miles of set-out/rip tracks, which are described in more detail in Section III-C, infra. These tracks consist of 132-pound relay rail and are generally 600 feet in length. Consistent with established railroad design practices, these tracks are strategically placed in proximity to the defective-equipment detectors. The location of each set-out track is shown in Exhibit III-B-1.

Between Donkey Creek and Cordero Junction and between Reno Junction and Converse yard, the OTRR design provides for double main line track with crossovers placed to facilitate the traffic flow to each mine in these areas. This double main line with crossover tracks provides maximum flexibility in this portion of the OTRR thereby ensuring minimal delays in train operations. All other segments of the OTRR have a single main line track with passing sidings spaced appropriately to provide ample capacity for the volume of traffic moving over each segment. The methodology for determining capacity requirements is discussed in Section III-C-2, infra.

3. **Yards**

a. **Location and Purpose**

The OTRR will have two principal yards, located at Donkey Creek and Glendive. Schematic

diagrams of each of these yards, showing the track layouts and other facilities, are contained in Exhibit III-B-1.[6] Donkey Creek Yard is OTRR's main yard and is the location of OTRR's headquarters. Donkey Creek also serves as an interchange point with BNSF and contains facilities to: 1) conduct FRA certified car inspections; 2) make running car repairs; 3) remove bad order cars and place spare cars as necessary; and 4) service locomotives. Donkey Creek Yard also houses OTRR's locomotive shop facility, with appropriate support trackage.

At Donkey Creek, OTRR delivers loaded trains to BNSF that originate at PRB mines, primarily those mines located north of Reno Junction, and the Spring Creek and Decker mines.[7] These trains pass the yard on the main tracks and move east on BNSF from Donkey Creek to Alliance, Nebraska and beyond on BNSF for ultimate termination at power stations in Arizona, Arkansas, Colorado, Iowa, Illinois, Indiana, Kansas, Michigan, Missouri, Nebraska, Ohio, Oklahoma, Texas and Wisconsin. The OTRR also receives non-coal, general freight from the BNSF at Donkey Creek, and, in turn, forwards general freight traffic to the BNSF at Donkey Creek that OTRR receives at other locations on its system. The Glendive Yard also contains facilities to conduct FRA-certified car inspections, make running car repairs, remove bad order cars and place spare cars as necessary, and service locomotives.

b. <u>Other Yards</u>

The Converse Yard is primarily a point of interchange with BNSF. Empty trains arriving will enter the yard and be relayed to the PRB mines. Loaded southbound trains will generally stay on the

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6 As shown in Exhibit III-B-1, Donkey Creek Yard is located east of Donkey Creek Jct.

7 These include the Eagle Butte, Buckskin, Rawhide, Dry Fork, Fork Union, Caballo, Belle Ayr, Coal Creek, Caballo Rojo and Cordero mines.

main line tracks with OTRR crews stopping at Converse (MP 70.0) to effect the run-through interchange with BNSF. At Converse yard, the OTRR delivers loaded coal trains to BNSF destined for Alabama, Arizona, Colorado, Illinois, Iowa, Kansas, Louisiana, Michigan, Missouri, Nebraska, Ohio, Oklahoma, Texas and Wyoming.

The Campbell Yard, located just north of Campbell, WY on the Eagle Butte Branch, is used as a staging location, when necessary, to accommodate service to the mines north of Campbell. Campbell Yard is also used to stage the helper locomotives used to assist loaded trains operating between the mines north of Campbell and the Belle Ayr mine on the Orin Line. Campbell Yard consists of two staging tracks and two set-out tracks and one 3.2-mile section of passing track. Staging/relay tracks will also be located on the Decker branch at Dutch to accommodate service to the mines on these branches. The Decker branch will have a 3.2-mile section of passing track and one 8,000-foot relay track.

In addition to the Donkey Creek and Converse Yards, the OTRR has interchange tracks located at Moran Junction, Terry, Snowden, Fargo, and Benson to interchange forward and receive trains with BNSF.[8] The layout for each of these yards is shown in Exhibit III-B-1.

At Moran Junction the OTRR delivers coal to BNSF that is destined to locations in Montana, Oregon, Washington and British Columbia. OTRR also receives empty unit coal trains from BNSF at Moran Junction that move to Montana and Wyoming mines for reloading. In addition, OTRR delivers overhead traffic to BNSF that has been received at Donkey Creek, Terry and Fargo. Finally,

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[8] The OTRR also interchanges trains with BNSF at Mandan, but the volume of traffic is not sufficient to require an interchange yard.

OTRR receives overhead traffic from BNSF at Moran Junction that it delivers to BNSF at Donkey Creek, Terry and Fargo.

At Terry, OTRR receives westbound overhead traffic from BNSF that it delivers to BNSF at Moran Junction. In addition, OTRR delivers eastbound overhead traffic to BNSF at Terry that it has received from BNSF at Moran Junction.

At Snowden, OTRR delivers westbound overhead traffic to BNSF that it has received from BNSF at Fargo and receives eastbound overhead that it delivers to BNSF at Fargo. OTRR also delivers coal to BNSF at Snowden that BNSF moves to Minot, North Dakota for interchange with the Canadian Pacific Railway which delivers the coal to Brandon, Manitoba.

At Mandan, OTRR delivers PRB coal to BNSF that terminates at Stanton, North Dakota. OTRR also receives empty coal trains from BNSF at Mandan.

At Fargo, OTRR delivers loaded unit coal trains to BNSF that terminate in Minnesota, Wisconsin and North Dakota. OTRR also receives empty unit coal trains from BNSF at Fargo that are returning to Montana and Wyoming mines for reloading. In addition, OTRR receives westbound overhead traffic from BNSF that it delivers to BNSF at Snowden and Moran Junction. OTRR also delivers eastbound overhead traffic to BNSF at Fargo that it has received at Snowden and Moran Junction.

At Benson, OTRR delivers loaded unit coal trains to BNSF that terminate in Minnesota and Wisconsin destinations and OTRR receives empty unit coal trains that move back to Montana and Wyoming mines for reloading.

d. Miles and Weight of Yard Track

The OTRR's yards contain a total of 77.8 track miles. As shown in Exhibit III-B-1, the yard tracks generally consist of relay 132-pound CWR and the turnouts are new 132-pound material.

4. Other

a. Track Parameters and Topography

The main track is constructed to a standard that allows maximum train speeds of 60 MPH for loaded and empty trains, and to accommodate maximum gross weight on rail of 286,000 pounds. Lower maximum speeds will prevail in areas where grades and/or curves do not permit trains to achieve these maximums.

Heavy-duty timber crossties are used for this railroad. Crosstie and other track and grading specifications (including turnouts, other track material, ballast and side slopes) are described in Section III-F, infra. These specifications are designed to handle the weight and volume of traffic handled by the OTRR.

b. Signal/Communications System

The OTRR's main line track configuration consists of alternating sections of single track and double track or single track with passing tracks and sidings. The OTRR is equipped with a CTC system that includes power switches controlled by centralized dispatchers.[9] A properly-designed railroad of this kind can carry very large traffic volumes; larger, in fact, than a double-track railroad that is not signaled for operations in both directions or that lacks frequent crossovers between main

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[9] The Kuehn, Big Sky and Big Stone Branches do not have CTC signaling and are operated under track warrants.

tracks.

The spacing of the double-track sections and passing sidings has been planned with appropriate intermediate crossovers between main tracks in double-track territory so that the railroad can accommodate its projected peak traffic volume. In addition, most turnouts[10] between main tracks and passing sidings will be No. 20 turnouts, which allows trains to operate through the turnout at a speed of 40 MPH.[11]

DED's are spaced appropriately along the route to identify cars that are bad-ordered en route. Each DED has two 600-foot bad-order/set-out tracks in the immediate vicinity. The bad-order/set-out tracks also can be used for the temporary storage of track equipment working in close proximity during the day. AEI scanners are located at each point of interchange with BNSF.

c. Use of Tracks Between

As stated previously, the OTRR utilizes trackage rights over the between

in the same manner that Documents

REDACTED

produced by BNSF in discovery indicate that BNSF currently uses its trackage rights over

It is more efficient for the OTRR to use these

trackage rights and pay trackage rights fee rather than construct the rail line between

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REDACTED

[11] Turnouts from main tracks to/from yards (where slower train speeds are appropriate) will generally be No. 15. Turnouts within yards, including those for bad-order/set-out tracks, will generally be No. 11, including those for spare car tracks, locomotive servicing and shop repairs and car repairs within the Donkey Creek and Glendive Yards. Exact turnout specifications are shown on Exhibit III-B-1.

III-C
OPERATING PLAN

III. C. OPERATING PLAN

The OTRR operating plan is designed to enable the efficient handling of its peak annual traffic volume **REDACTED** million tons in 2021), in compliance with applicable contractual service requirements and target train cycle times. The OTRR operating plan is sponsored by Mr. Richard H. McDonald, except for the string diagram analysis and its associated output, which are jointly sponsored by Mr. Thomas D. Crowley and Mr. Daniel L. Fapp.

The operating plan of the OTRR is discussed below under the following headings:

1. General Parameters
2. Capacity and Cycle Time
3. Other

1. General Parameters

The OTRR is designed to maximum efficiency for a modern, heavy tonnage freight railroad. All trains will operate in run-through service, i.e., locomotive power and train consists are retained at all interchange points in both directions. There will be no need for freight classification yards, and no intermediate switching will be performed other than at Donkey Creek and Glendive Yards, where FRA-certified inspections occur and where spare rail cars are inserted in trains to replace bad-order cars as necessary.

a. Traffic Flow and Interchange Points

i. Traffic Flow

The initial total annual coal traffic volume to be transported by the OTRR in the 2002 "base year" is approximately million tons.[1] The OTRR will directly serve 18 PRB mines that are presently served by BNSF. Six (6) of these mines (Eagle Butte, Fort Union, Clovis Point, Buckskin, Rawhide and Dry Fork) are located on the Eagle Butte Branch north of Campbell. Two (2) of the mines (Decker and Spring Creek) are located on the Decker Branch, north of Dutch. The other ten (10) mines (Caballo, Belle Ayr, Caballo Rojo, Cordero, Coal Creek, Jacobs Ranch, Black Thunder, North Rochelle, Rochelle/North Antelope, and Antelope) are located south of Donkey Creek on the Orin Line. In addition, the OTRR originates coal from the Absaloka mine located on the Kuehn Branch and at the Big Sky and Rosebud mines located on the Big Sky Branch. Utilizing base year (2002) data provided by BNSF in discovery, **REDACTED** million tons of coal traffic that originated on BNSF at these 21 mines were identified for inclusion in the OTRR's traffic group as originated traffic.[2]

The OTRR will deliver coal directly to one destination power plant representing a total of million tons in the base year.[3] The balance of the OTRR's coal traffic will be interchanged to BNSF for termination by BNSF at BNSF served utilities and industrial plants, for delivery to river trans-load sites at **REDACTED** and for forwarding to other railroads. These "off-line" plants, the interchange points and the volume of traffic moving to each plant in 2002 are shown in Exhibit III-A-3.

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1 Exhibit III-A-3.
2 In 2002, no coal traffic handled by the OTRR moved from the Coal Creek or Fort Union mines.
3 Otter Tail Power's Big Stone plant.

REDACTED

In addition to coal unit train shipments, the OTRR will handle . million net-tons of various commodities in unit train and trainload shipments in overhead, run-through service. This traffic will move between the following interchange location pairs: 1) Donkey Creek and Moran Junction; 2) Moran Junction and Terry; 3) Moran Junction and Fargo; and 4) Snowden and Fargo.

As discussed in detail in Section III-A, supra, the OTRR's coal traffic volume is projected to grow by an average of 0.6 percent per year over the 20-year DCF period.[4] It has been assumed that the volumes for all non-coal commodities will remain constant throughout the 20-year DCF period. These growth projections result in the peak-year volumes (in millions of net-tons by principal line segment) shown in Table III-C-1 below:

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[4] In 2002, the OTRR handles million tons of coal which grows to million tons in 2021 or an average annual change of percent. See Exhibit III-A-5. This rate of growth is extremely conservative considering the EIA is forecasting PRB coal production to increase by 2.6 percent per year over the same time period. See electronic file "Otter Tail Railroad Coal Traffic Forecast.xls" worksheet "EIA Forecast" cell O98.

Table III-C-1
OTRR Peak Year Traffic Volume – 2021[1/]

Segment (1)	Peak Year Tonnage (Millions) (2)
1. Converse to Donkey Creek	**REDACTED**
2. Donkey Creek to Dutch	
3. Dutch to Moran Junction	
4. Moran Junction to Terry	
5. Terry to Glendive	
6. Glendive to Fargo	
7. Glendive to Fargo	
8. Fargo to Benson	
9. Benson to Big Stone	

[1/] Maximum tons moving over the line segment.
Source: Electronic file "OTRR Density.xls".

The peak[5] or heaviest one-day's traffic volume during the peak year has been determined by forecasting the traffic to each location in the year 2021, the peak traffic year on the OTRR, and extrapolating 2002 trains to their 2021counterparts on the basis of the increase in overall traffic volumes for the peak year compared to the base year.[6] The OTRR's facilities and operating plan have been designed to handle the flow of traffic on the peak operating day of the peak year of

REDACTED

[5] "Peak" is defined in terms of the number of loaded trains moving over each of the OTRR's line segments. The peak day is October 18, 2021 when 92 loaded trains moved over on the OTRR. See electronic file "PeakCoalTrains.xls".

[6] Year 2021 trains were forecasted to each destination on an individual basis, and reflect the change in coal demand between 2002 and 2021 for that destination. For example, in 2002 BNSF transported million tons to utilizing l trains. By 2021, traffic to is forecasted to grow to million tons per year, or a percent increase. To account for this growth, an additional 24 trains, or 14 percent more trains are assumed to move to in 2021. See electronic file "Peak Coal Trains.xls".

operation. In other words, the OTRR has been constructed so that the facilities in-place in the first year of the railroad's operation are of sufficient size and capacity to handle the traffic during the busiest traffic day of the busiest traffic year on the railroad, which does not occur until 20 years into the future. Such built-in overcapacity is almost never seen in real-world businesses. Rather, for-profit organizations ordinarily construct their facilities to meet average expected demand, and then use various demand management techniques to meet demand during short-term, peak operating periods.[7] However, in order to provide as conservative a picture as possible about its required operations and facilities, Otter Tail has chosen to include its entire infrastructure investment in its first year of operation.

ii. Rerouted Traffic

The OTRR uses a different route than the route currently used by BNSF to handle the issue traffic and the non-coal overhead traffic moving between Fargo and Snowden. BNSF moves the issue traffic from PRB mine origins to

BNSF moves the issue traffic southeast across the

to Otter Tail's Big Stone plant.

The OTRR has not constructed BNSF's mainline from Terry into North Dakota and then across northern South Dakota through Aberdeen to Big Stone. Instead, OTRR moves the issue traffic through Terry and continues northeast to Glendive. At Glendive the OTRR moves the issue traffic

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[7] For example, railroads will enter into
workpaper Vol. III, pp. 2465 to 2495.

due east across North Dakota to Fargo, where it turns southeast to Benson then west to Big Stone. BNSF's mainline across northern South Dakota is a **REDACTED**

The rail distance via BNSF's northern South Dakota line from the Donkey Creek to Big Stone is miles. By comparison the route used by OTRR through Glendive, Fargo and Benson is 1,036.1 miles from Donkey Creek to Big Stone, or miles further than the route actually used by BNSF. In its recent TMPA decision, the STB reaffirmed, and the BNSF concurred, that a shipper has the right to reroute issue traffic over higher-density, more cost efficient rail.[8]

BNSF currently routes the non-coal overhead traffic, moved by the OTRR between Fargo and Snowden, ov **REDACTED**

The OTRR moves this traffic over its central North Dakota mainline via Jamestown and Bismark, North Dakota to Glendive, then north over the Snowden Branch to Snowden. BNSF's **REDACTED** current route is a distance of miles. OTRR's route is a distance of 483.9 miles or miles longer than BNSF's route. The STB also reaffirmed in TMPA the right of a shipper to reroute non-issue traffic over the hypothetical stand-alone railroad.[9] Unlike the situation in TMPA where the shipper attempted to reroute non-issue traffic to a location not customarily used by the rerouted traffic ("off-SARR reroute"), the rerouted non-coal traffic handled by the OTRR will be delivered back to the BNSF at a location on the BNSF route that this traffic traverses in the real world. Simply stated, there is no off-SARR rerouting on the OTRR system.[10] Otter Tail has accounted for the

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8 See TMPA at 18 and 21.

9 See TMPA at 21.

10 Otter Tail recognizes the cautions expressed by the STB in TMPA regarding off-SARR reroutes ("there is some question as to whether an off-SARR rerouting could be supported short of a full SAC analysis." TMPA at 24). Otter Tail has deliberately extended the OTRR system form Glendive to Snowden to account for the cost of rerouting the non-coal overhead traffic.

additional cost incurred by the rerouted traffic, and the OTRR provides approximately the same level of service for the rerouted Fargo-Snowden traffic that BNSF currently provides.

iii. Interchange

OTRR originated coal traffic will be interchange forwarded to BNSF at the following locations; Converse, Donkey Creek, Moran Junction, Mandan, Snowden, Fargo, and Benson. In addition, OTRR overhead traffic will be interchanged with BNSF at Donkey Creek, Moran Junction, Terry, Snowden and Fargo. Table III-C-2 below sets forth the number of loaded trains and net-tons forwarded or received by OTRR at each interchange location for OTRR.

Table III-C-2
Annual Loaded Trains and Net-Tons
by Interchange Location - 2002

Interchange Location	Forwarded		Received	
	Number of Trains	Number of Net Tons (Millions)	Number of Trains	Number of Net Tons (Millions)
(1)	(2)	(3)	(4)	(5)
1. Converse				
2. Donkey Creek				
3. Moran Junction				
4. Terry				
5. Snowden				
6. Mandan				
7. Fargo				
8. Benson				
9. Total				

REDACTED

Source: Electronic files "OTRR Density.xls" and "Peak Coal Trains.xls".

b. Trains and Equipment

i. Train Sizes

The OTRR will operate only loaded and empty unit coal trains and trainloads of other commodities in run-through service. All trains will operate with two-person crews. The OTRR will operate coal unit trains up to the largest size trains that BNSF currently operates for each customer in its traffic group during 2002. It is assumed that coal unit trains operated during the 20-year DCF period will be no larger than the largest trains currently utilized by each customer. This assumption is consistent with the STB's McCarty decision which stated that train lengths and loading factors

must be consistent with the preferences of shippers and connecting railroads.[11] Limiting OTRR train sizes to the largest train currently received by each customer forces the OTRR to operate trains that meet the requirements of both the customer and any connecting railroad.

According to documents produced by BNSF in discovery, BNSF operates PRB coal trains with up to cars, using ( ).[12]

REDACTED

Trainload traffic of other commodities were determined from BNSF's traffic tapes provided in discovery. The OTRR will handle the same train sizes and mixes of loaded and empty cars that BNSF moves between the interchange location pairs.

ii. Train Frequency

The OTRR Railroad will operate 24 hours per day, 365 days per year. At the outset, the OTRR will originate an average of 12.2 trains per day at mines located between Converse and Reno.[13] Of these trains, 9.4 will move south to Converse for interchange to BNSF and 2.8 will move north to west to Benson and Fargo for interchange with BNSF.

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11 See McCarty at 476.
12 See Opening Workpaper Vol. III, pp. 2504 to 2506.
13 See electronic file "Peak Coal Trains.xls".

In addition, the OTRR will originate an average of 7.5 trains per day at mines north of Reno and south of Donkey Creek. Of these trains, 4.0 will move north to Donkey Creek with 3.3 trains interchanged to BNSF (0.7 of these trains travel westbound for interchange with BNSF or termination by the OTRR at Big Stone City).[14] The remaining trains travel south to Converse for interchange with BNSF.

An average of 10.1 trains per day will originate on the Eagle Butte Branch with 7.9 trains moving east to Donkey Creek for interchange with BNSF, 1.4 trains moving west for interchange with BNSF and 0.8 trains moving south to Converse for interchange with BNSF.[15]

An average of 3.7 trains per day originate on the Decker Branch. Of these, 0.9 trains move eastbound for interchange with BNSF at Donkey Creek and 2.8 trains move west for interchange with BNSF.[16]

An average of 1.0 trains and 0.8 trains originate on the Kuehn and Big Sky Branches respectively each day. All of these trains move east through Glendive to interchange with BNSF.[17]

In addition, in 2002 the OTRR will handle an average of 5.7 non-coal trains per day between Donkey Creek and Moran Junction, 1.3 non-coal trains per day between Moran Junction and Terry, 2.6 non-coal trains per day between Moran Junction and Fargo, and 21.2 non-coal trains per day

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14 Id.
15 Id.
16 Id.
17 Id.

between Snowden and Fargo.[18] Table III-C-3 below shows the number of non-coal trains between each interchange location pair by direction and interchange location.

Table III-C-3
Non-Coal Overhead Trains
by Interchange Pair - 2002

	Interchange Location	Westbound Trains	Eastbound Trains
	(1)	(2)	(3)
1.	Fargo/Snowden	4,030	3,709
2.	Fargo/Moran Junction	571	392
3.	Terry/Moran Junction	254	207
4.	Donkey Creek/Moran Junction	912	1,173

Source: Electronic file "Peak CoalTrains.xls".

iii. Locomotives

(a) Road Locomotives -- The OTRR's road locomotive power for unit coal trains will consist entirely of EMD Model SD-70MAC ("SD 70") locomotives. These are heavy-duty locomotives particularly suitable for hauling unit coal trains,[19]

REDACTED

All coal trains will be powered by three locomotive units in DP configuration in both the loaded and empty direction. SD-70's also will be used by the OTRR as helpers. The OTRR will need a total of 152 SD-70's to handle its peak-day, coal traffic volume. This figure was developed

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18 Id.

19 See Opening Workpaper Vol. III, pp. 2500 to 2503.

using a string-diagram analysis described in Section III-C-2, infra, and includes the helper units as well as a five (5) percent spare margin.[20] This figure also reflects the use of run-through power, as described below in paragraph (b).

The non-coal trains will be operated in run-through, overhead service. As a result the OTRR will operate the trains with the locomotive power provided by BNSF. Based on the locomotive pool concept described in paragraph (b) below, the OTRR will provide sufficient locomotive units to the pool to cover the locomotive requirements of the non-coal overhead traffic on the OTRR system. These locomotives will be General Electric Dash 9 locomotives.

REDACTED

The procedure for adding and removing locomotives at Donkey Creek and Glendive involves an exchange of power in the following manner. Upon arrival of each westbound train, the lead locomotive units will be removed from the train by the inbound crew, which will take the inbound units to the servicing station. The outbound crew will replace the inbound head end units with fully-fueled and serviced units. The rear unit on empty coal trains is removed by the locomotive servicing contractor and replaced with a fully fueled and serviced unit. This procedure will also take place for all eastbound coal trains passing through Glendive that have been loaded south of Donkey Creek.

This procedure permits the exchange of power necessary for efficient servicing of locomotives, and further, OTRR satisfies its obligation to provide its share of locomotive servicing needs on

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REDACTED

21 See Opening Workpaper Vol. III, pp. 2500 to 2503.

traffic interchanged with BNSF. This procedure also dovetails nicely with OTRR's maintenance functions on all its locomotives which will be performed at Donkey Creek. Units are cycled in and out of service during the locomotive exchange process, or they are exchanged at other convenient locations and routed back to Donkey Creek for periodic inspection and maintenance.

(b) Use of Run-through Power – All of the OTRR's unit train coal traffic that is interchanged to other railroads for movement to final destination, and all non-coal overhead traffic, will be handled in "run-through" service. This means that the locomotives will not be removed from a train by either railroad at the interchange point, but rather will stay with the train to destination. Run-through power is used routinely by both for interline unit train movements of western coal and other commodities.

REDACTED

Under the run-through concept, the number of locomotives that each railroad provides for a particular joint movement is allocated on the basis of the amount of time the locomotives spend on each railroad's system as a percentage of the total movement time, adjusted for any differences in locomotive horsepower (i.e., "horsepower hours"). Each railroad provides the required number of locomotives to the pool based on the amount of time the locomotives spend on each railroad's system.

The road locomotive requirements of the OTRR have been developed using this run-through concept. The number of locomotives required by the OTRR for contribution to the pool reflects and includes the time that the locomotives needed to handle the interline movements spend on the OTRR

system.[22] The locomotive hours spent on the OTRR are developed through the string diagram process described in Section III-C-2, infra.

(c) Helpers – In addition to the locomotive consists described above, the OTRR operating plan calls for locomotive helper service in locations:

REDACTED [23]

All helper units will occasionally be exchanged with the rear DP unit on assisted trains for purposes of cycling them to Donkey Creek for 92-day inspections and maintenance.

(i) Belle Ayr to Donkey Creek -

REDACTED

. As shown in information provided in discovery this is the same service that BNSF currently provides. Otter Tail has provided for helper consists manned around the clock to handle this service.

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[22] The use of locomotives on run-through service also eliminates the need for maintaining a locomotive fleet to meet the OTRR's one-day peak operating period. Class I railroads that enter into run through agreements balance their locomotive usage based on horsepower hours used. The balancing of power means that to the extent more locomotives are needed for the peak time period, that need will be balanced with days when the OTRR requires less than its total fleet because the OTRR locomotives are off-line in service with the BNSF and other railroads. Thus, the OTRR need not maintain a fleet to meet its operating requirements on the one-busiest day of the operating year.

[23] Helper service on the OTRR is based on data provided by BNSF in discovery. See Opening Workpaper Vol. III, pp. 2507 to 2509.

(ii) Clearmont to Parkman – All loaded trains moving westbound between Claremont, and Parkman, WY are assisted by two SD70 locomotives. According to information provided by BNSF in discovery, these locomotives are operated by [24] The roundtrip distance between Clearmont and Parkman is REDACTED miles. Otter Tail has provided for helper consist manned around the clock.

(iii) Eagle Butte Branch – One SD70 helper locomotive assists all trains originating on the Eagle Butte Branch from the mine to Campbell. For those trains that originate on the Eagle Butte Branch and move south over the Orin Line to Converse for interchange with BNSF, the Eagle Butte Branch helper continues to push the train to MP 8.2 on the Orin Line. Otter Tail provided for one (1) helper consist around the clock.

(iv) Origins from the Decker Branch – All trains originating on the Decker branch moving west towards Moran Junction are assisted by REDACTED locomotives from Nerco Junction to Parkman. These locomotives are operated by a crew that travels roundtrip miles per train assisted. All trains originating on the Decker branch moving east towards Donkey Creek are assisted by locomotives from Nerco Junction to Ulm, a roundtrip distance of miles. These helper locomotives are also operated by a . Operation of helper service for the trains originating on the Decker branch is based on information provided by BNSF in discovery. Otter Tail has provided for manned around the clock.

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[24] Id.

(d) **Switch Locomotives and Crews** – The OTRR will require a total of six (6) SD-40-2 switch locomotives. Two will be stationed at Donkey Creek, two at Glendive, and two will be available for work train service over the system. One switch crew will be on duty 24 hours per day, 365 days per year at both of these yards. Time permitting, inbound road crews can also assist in removing and replacing cars in their trains. The primary function of the switch crews will be to: (1) remove bad-order cars from trains following FRA-certified inspections; (2) move repaired cars to and from the spare car storage tracks; and (3) insert spare cars into trains as necessary. Based on the number of trains being inspected at Donkey Creek and Glendive, coverage by one switch crew on a round-the-clock basis will be sufficient to handle the anticipated switching activity.

iv. Railcars

(a) **Coal Service** – The vast majority of the OTRR's coal movements occur in **REDACTED** railcars.

Where the OTRR supplies railcars, they will be primarily **REDACTED** cars required as well. The OTRR car requirements are based on the existing mix of cars provided by BNSF for those movements occurring in railroad-supplied equipment.

The OTRR will supply railcars for the coal movements summarized in Table III-C-41

Table III-C-4
Summary of Coal Movements Where OTRR Provided the Railcars

	Movement (1)	Plant (2)	Destination (3)
1.			
2.			
3.			
4.		**REDACTED**	
5.			
6.			
7.			
8.			
9.			
10.			

1/

Based on these annual tonnages and the expected cycle times for each customer's trains, and pro-rating the number of cars needed for interline movements in the same manner as was done for locomotives, the OTRR will need a total of 610 coal cars, including a five (5) percent spare margin.[25]

(b) Non-coal Service – The OTRR will pay a pro rata share of the cost of the cars used for the non-coal movements. Where cars are provided by another railroad (i.e., for the overhead movements), the OTRR will pay the appropriate time and mileage charges while the cars are on its system. For railcars provided by shippers in non-coal overhead service, the OTRR pays a mileage allowance for each car type derived from the data reported by BNSF in its R-1 Annual Report.

25 See Exhibit III-C-1.

The car requirements for all of the movements in the OTRR traffic group were developed on the basis of the peak-day tonnages to each customer (including the overhead movements), train lengths, the expected cycle or transit times for each customer's trains, and the protection of the number of cars needed for the interline and overhead movements with BNSF. The specific number of cars required is a product of the OTRR's operating statistics developed by the string diagram analysis described below.[26]

2. Capacity and Cycle Time

a. Capacity

There is a limit to the number of trains that can travel over a single-track line during the hours that the line is in service each day. A single-track railroad requires trains to operate in two directions on just one track. Passing sidings or sections of second main track spaced at regular intervals along the route allow opposing trains to pass each other. The capacity of the line depends upon the amount of time required for a train to travel over the most time-consuming single-track section from one siding to the next. The string analysis discussed below demonstrates the feasability of the OTRR, i.e., the facilities of the OTRR provide adequate capacity to move all of the trains on the peak operating day.

The following calculation defines a line's capacity; i.e., available track time divided by the running time for a single train or fleet of multiple trains between sidings. As an example, if available track time is 18 hours per day (24 hours reduced by the factors of both planned maintenance and

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[26] See Exhibits III-C-1 and III-C-2.

unexpected delays) and the actual running time required to traverse 15 miles of single track [27] is 36 minutes (an average speed of 25 miles per hour considering the factors of switch and signal authorization, start-up, and headway), then the capacity is calculated as follows:

18 hours x 60 minutes ÷ 36 minutes = 30 trains per day

Variations from expected normal operations are accounted for either by increasing the expected running time over the single-track segment or reducing the total number of trains per day produced by the formula by a factor based on experience and judgment.

This is the methodology used to design the track configuration for the OTRR. In configuring the railroad, the expected train running times between double-track sections were calculated and unplanned or unscheduled delays of the real world were given due consideration. The maximum number of trains operated on the peak one-day of October 18 in the peak traffic year of 2021 on the OTRR equaled 176 trains.[28]

In order to test the adequacy of the track configuration and other aspects of the OTRR operating plan to handle the expected traffic group, a string diagram analysis was conducted for the peak traffic one-day period on the OTRR during the peak year of the entire 20-year DCF period used to determine stand-alone costs in this proceeding. This string diagram analysis was

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27 The 15 miles is calculated by measuring the distance of the single track segment (13.5 miles) plus the distance to clear one train length (1.5 miles).

28 132 loaded trains and 44 empty trains. See Electronic file "Peak Day Train Count.xls". There would be no scheduled maintenance on October 18. The actual capacity, even with a 2-hour delay on the peak day, would be 36 trains (22 hours x 60 minutes ÷ 36 minutes = 36 trains per day).

performed for the entire OTRR.[29] This analysis is described in Exhibit III-C-2. It demonstrates that the track configuration is more than adequate to accommodate the traffic peak without delays.[30]

The track configuration as designed will accommodate the OTRR's traffic volume, including projected traffic growth during the 20-year DCF period used for the stand-alone cost analysis, consistent with the service requirements of its customers, and maintaining the same or greater level of service than currently provided by BNSF.

b. Cycle Time

The starting point for calculating cycle time is the peak-year, peak-day traffic density expressed in terms of loaded and empty trains on each principal line segment, as described earlier. The elapsed train running time over each line segment, including the running times on the OTRR, was determined based on the string program (taking into account grades, curvature and other factors that could cause a reduction in running time), and train acceleration and deceleration time (including deceleration/acceleration time for empty trains to enter and leave second main track or passing sidings). Six hours are allowed for loading each train at origin. The unloading time at the one local destination (**REDACTED**) equals six hours. The transit time for movements off the OTRR are based on BNSF's actual transit times and average speeds.

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29 PRB coal traffic moves in relatively even increments, and variations in transportation requirements between seasonal periods are not as large as for most other commodities due to utilities' need to maintain a relatively stable coal inventory at their power plants.

30 The operating plan for the peak day does not provide for maintenance windows because an efficient railroad would not perform discretionary track maintenance on the peak traffic day of the year. Rather, maintenance would be scheduled before and after the peak when more capacity (and thus more time to perform maintenance) is available.

It was assumed that two (2) hours would be consumed at Donkey Creek and Glendive for empty coal trains in order to exchange power, perform FRA-certified inspections, remove bad order cars, insert any spare cars, and change crews. Thirty minutes is consumed at Glendive on loaded eastbound coal trains to exchange locomotive power and to change crews. Westbound overhead trains, loaded coal trains moving to Benson for interchange with BNSF and loaded coal trains that originate south of Donkey Creek that are moving to Fargo for interchange with BNSF require an average of one (1) hour at Donkey Creek and Glendive for FRA-certified 1,000- mile inspections and crew change. At Terry, westbound overhead trains will require 45 minutes to be inspected by OTRR crews when the trains are received from BNSF. At Converse Yard, the inbound empty coal unit trains enter the yard and are inspected by the OTRR car inspector, with the assistance of its train crew. This inspection, which takes 45 minutes is somewhat redundant in that the empty train will have been inspected by BNSF at Guernesy, a distance of only 102.3 miles from Converse. At Converse, in the loaded direction, and at all other interchange locations, 15 minutes are required for the crew change between the OTRR and BNSF crews. Fifteen (15) minutes is also required for crew changes of run-through trains. All of these time estimates are based on Mr. McDonald's experience.

c. Operating Statistics

As part of the process of developing the string chart, service units resulting from the traffic flowing over the OTRR for the peak one-day also were developed.[31] Specifically, the number of locomotive unit-miles, locomotive hours, railroad-provided car-miles, railroad-provided car hours, road train crew starts and road train crew overnight stays were determined from this analysis. The

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[31] In order to ensure that there was a full complement of empty trains on the OTRR during the peak day, the string analysis begins seven days prior to the peak day.

development of the annual service units of the OTRR is shown on Exhibit III-C-1 and discussed below.

Annual locomotive unit-miles and railroad-provided car-miles were developed by multiplying the service units identified for the peak one-day period in 2021 by 365 to reflect a full year. The resulting annual aggregate service units were then adjusted by the change in OTRR tonnage from 2021 back to 2002 to develop the annual service units applicable to the 2002 traffic.

Annual train crew personnel requirements were developed by first multiplying the road train crew starts identified for the peak one-day period by 365 to reflect a full year. The resulting aggregate road train crew starts were then adjusted by the change in OTRR tonnage from 2021 back to 2002 to reflect the requirements of the 2002 traffic. The resulting aggregate number of road train crew starts was divided by 270 starts per year per crew[32] and multiplied by two to reflect two-person crews.[33] In total, the OTRR requires 384 road crew personnel and 12 yard crew personnel. To this number of train crew personnel, 50 helper crew personnel were added at the location specified above. In total, the OTRR requires 446 train crew personnel to handle its 2002 traffic level.

Annual road train crew overnight stay requirements were developed by first multiplying the road train crew overnight stays identified for the peak one-day period by 365 to reflect a full year. The resulting aggregate road train crew overnight stays were then adjusted by the change in OTRR

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32 See FMC at 161.

33 As the crews moving trains between Glendive and Snowden operate in turnaround service, the number of crews required in the one-day peak period have been adjusted to reflect the actual time between the delivery of a train to BNSF at Snowden and the arrival of the next train for interchange from BNSF. See Otter Tail electronic workpaper "Crew calculationforOtterTailOpen.xls".

tonnage from 2021 back to 2002 to reflect the requirements of the 2002 traffic. In total, the OTRR requires 41,534 road train crew overnight stays associated with its 2002 traffic.

Using the peak operating day in which to base annual crew requirements provides a conservative number of required train crew members. Because the OTRR is the least cost most efficient carrier, it can be reasonably assumed that the OTRR would be using nearly all of its operating personnel on its peak operating day.[34] Because the subsequent operating statistics reflect the labor required on the peak operating day, their use to determine average operating requirements clearly provides a conservative estimate of required staff.

OTRR locomotive requirements were developed in the following manner. The loaded train and empty train locomotive cycle hours were identified for the peak one-day period.[35] Annual road train locomotive cycle hours were developed by multiplying the locomotive cycle hours for the peak one-day period by 365 to reflect a full year. The resulting annual locomotive road train cycle hours were then adjusted by the change in OTRR tonnage from 2021 back to 2002 to develop the annual locomotive cycle hours applicable to the 2002 traffic. To develop the number of road train locomotives required by the OTRR, the total number of road train locomotive cycle hours for 2002 was divided by 8,760 hours per year and then increased by five (5) percent to reflect spare

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[34] To assume otherwise would indicate that the OTRR had scheduled days-off and vacation time during its peak operating day. No least cost most efficient business would allow such unrealistic use of its staffing capacity. As such, no additional additives or work day factors are required to "beef-up" staffing levels to meet the peak period demand.

[35] Locomotive cycle hours were developed based on the time the trains are on the OTRR. Virtually all of the traffic handled by the OTRR is interchange traffic that is handled on a run-through basis. Under the run-through concept, each of the participating railroads contributes a specified number of locomotives based on the amount of time the movement spends on each railroad's tracks. Accumulating the time associated with all of the locomotives in each train's consist while on the OTRR's tracks reflects the applicable portion of the movement that the OTRR would be responsible for providing locomotives.

locomotive units.[36] Based on the above, the OTRR requires 114 SD-70 road train locomotives to handle its 2002 traffic. In addition, the OTRR requires 16 helper locomotives for a total of 130 SD 70 locomotive units.[37] To handle its general freight traffic, OTRR requires 64 General Electric Dash 9 locomotives.

OTRR car requirements for unit coal train traffic were developed in a manner similar to locomotives. The loaded train and empty train cycle hours for movements in railroad-supplied cars were identified for the peak day. Annual railroad-provided car cycle hours were developed by multiplying the car cycle hours for the peak day by 365 to reflect a full year. The resulting annual car cycle hours were further adjusted by the change in OTRR tonnage from 2021 back to 2002 to develop the annual railroad-provided car cycle hours applicable to the 2002 traffic. To develop the number of cars required by the OTRR, the total number of railroad-provided car cycle hours for 2002 was divided by 8,760 hours per year and then increased by five (5) percent to reflect spare cars. Based on the above, the OTRR requires 610 cars to handle its 2002 traffic moving in railroad-provided cars.

The aggregate service units, equipment requirements and crew personnel requirements developed in Exhibit III-C-1 were applied to the appropriate operating unit costs as described in Section III-D, infra.

REDACTED

[36] The five percent spare margin is a reasonable assumption given
and 2) the OTRR is a least cost most efficient carrier. Anything above this five percent spare margin level would be an attempt to impute inefficiencies on an efficient system. See Section III-C-1 "b".

[37] The OTRR also requires four (4) SD40-2 switch locomotives stationed at Donkey Creek and Glendive. See Section III-C-1-b.

3. Other

a. FRA-Certified Inspections

The OTRR will perform FRA-certified car inspections at Donkey Creek and Glendive.[38] As indicated in the discussion of the OTRR's yards, this includes the empty coal trains plus all westbound overhead trains moving through these points destined for interchange with BNSF. In addition loaded coal trains moving to interchange at Benson and loaded coal trains that originate at mines south of Donkey Creek that are moving to interchange at Fargo are also inspected at Glendive.

There will be no need to perform car inspections at any of the OTRR's interchange points, except Terry and Converse[39] because the OTRR and its interchange partner

REDACTED

Under this procedure, which is common today for run-through trains, the OTRR will deliver all loaded unit coal trains and westbound overhead trains to

For example, loaded trains interchanged to BNSF at Fargo will have received an FRA-certified inspection on the OTRR at Glendive in the empty direction. The distance from Glendive to the mines[40] north of Donkey Creek and back to Fargo is 1,143.8 miles, which is within the 1,500 mile

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38 All empty coal trains passing through Glendive will be designated "Extended Haul Trains" as per FRA 232.213, and permitted to travel 1,500 miles between FRA-certified inspections.

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REDACTED

40 Unit coal trains originated at mines north of Donkey Creek and interchanged to BNSF at Fargo originate at Decker, Spring Creek, Absaloka, Rosebud and Big Sky. Of these the mine most distant (779.2 miles) from Fargo is Decker.

requirement between inspections for "Extended Haul Trains". Similarly, the OTRR will receive inspected and certified empty coal trains from BNSF at Benson and Fargo and these trains can move to Glendive without prior inspection on the OTRR under their BNSF certificates.[41] A similar procedure, which involves reciprocal obligations on each railroad, and which is now in use in the railroad industry with respect to interlined trains, will be used at all of the OTRR's other interchange points. Stated differently, OTRR will deliver FRA-certified inspection trains to BNSF at Donkey Creek, Moran Junction, Snowden, Fargo and Benson.

b. Train Control and Communications

OTRR's operating plan includes a Centralized Traffic Control ("CTC") system with remotely-controlled power switches for all main-track turnouts and appropriately spaced wayside signals.[42] All train operations on OTRR's system will be controlled by centralized dispatchers who will be located in the OTRR's headquarters at Donkey Creek. Operations on the RRVW trackage rights between Brushvale and E. Breckenridge, including the power switch at the connection between the OTRR and RRVW at both of these locations, will be controlled by RRVW dispatchers.

The OTRR's internal communications will be handled by a microwave system covering the entire OTRR route. The system will have 45 microwave towers.[43] All dispatchers, train crews, maintenance crews, and field supervisory personnel will be equipped with two-way radios linked to the microwave system.

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41 The BNSF rail distance from Fargo to Glendive is miles.
42 With the exception of the Kuehn, Big Sky and Big Stone Branches, which are operated under track warrants.
43 See Section III-F, infra.

c. Miscellaneous

Other aspects of the OTRR's operating plan involve locomotive maintenance and fueling, equipment maintenance, and personnel (including train crew districts and manning). These items are discussed in detail in Section III-D infra.

III-D
OPERATING EXPENSES

III. D. ANNUAL OPERATING EXPENSES FOR THE OTRR

The annual operating and maintenance expenses for the OTRR were developed by several of Otter Tail's experts. Mr. Burris is sponsoring the testimony related to the operating unit costs, materials supplies and expense, training costs, travel costs and personnel compensation in Parts III-D. Mr. Richard H. McDonald as a part of the operating plan, determined the required positions and number of employees for transportation and engineering/mechanical departments, except for the required train crews in Part III-D-3. The required number of train crews shown in Part III-D-3 are an output of the string model described in Part III-C-2, supra, which is sponsored by Mr. Thomas D. Crowley and Mr. Daniel L. Fapp. Mr. McDonald also developed the maintenance plan for the OTRR in Part III-D-4. Mr. Lawrence D. Sugar and Mr. Jack Conser are jointly sponsoring the general and administrative personnel and outsourcing costs in Part III-D-3. Mr. Joseph A. Kruzich is sponsoring the personnel and capital and operating costs related to the OTRR's information technology and communications requirements in Part III-D-3.

The annual operating and maintenance expenses for the OTRR were developed in the following manner. First, an operating plan was developed that identifies operating employee manpower and locomotive and railroad-owned freight car requirements. The peak traffic demand period of the OTRR was then identified and a string diagram was prepared to test the operational feasibility of the operating plan/engineering design. The string diagram identified the units of work that the OTRR had to perform to handle the traffic levels based on the peak traffic period. General and administrative requirements and costs were developed based on the operating plan. In addition, the information technology system requirements necessary to handle the stand-alone traffic levels were

determined and finally operating unit costs were applied to the identified OTRR workload to develop annual operating expenses.[1]

Annual roadway maintenance expenses and joint facility expenses for the OTRR were also developed. The quantification of OTRR's workload and the development of each of the annual operating expenses generated by OTRR is described below under the following topical headings.[2]

1. Locomotives
2. Freight Car Expense
3. Personnel
4. Maintenance of Way
5. Leased Facilities
6. Loss and Damage
7. Insurance
8. Ad Valorem Taxes
9. Other - Operating Costs Related To Re-Routed Traffic
10. Summary of Total Operating Expenses

1. LOCOMOTIVES

Based on Mr. McDonald's observations of BNSF operations in the territory encompassed by the OTRR, the OTRR will utilize SD70 and C44-9 (Dash 9) locomotives to handle its traffic. The OTRR will need a total of 178 SD70 and C44-9 locomotives to handle the volume and size of

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1 See Exhibit III-H-1, Table K.

2 The development of all of the operating costs of the OTRR is contained in the computer file "Otter Tail_Opr_Exp.123" included in Otter Tail's electronic workpapers.

originating unit coal train traffic and non-coal overhead traffic described in Section III-A, supra.

REDACTED

This figure includes a spare margin of 5 percent. The SD70 and C44-9 locomotives will handle all main-line traffic movements, including movement over the RRVW trackage. All minor yard and set-out movements required for this railroad will be handled by the SD70 road locomotives. The OTRR will also require 16 SD70MAC locomotives for helper service and a total of four (4) SD40-2 locomotives for switching service at Donkey Creek and Glendive. The OTRR will acquire all of its locomotives through operating leases.

All of the coal and non-coal traffic interchanged with BNSF will be handled in run-through service. In other words, the same locomotive consist stays with the train as it moves through the interchange point. This is a very common practice among railroads involved in handling joint (interline) western coal movements.

The number of locomotives that each carrier involved in a particular run-through movement must provide is allocated among the participants based on the amount of time the locomotives spend on each carrier as a relationship to the time of the total movement (adjusted for any differences in horsepower). Each carrier then provides the required number of locomotives which are put into a pool. Locomotives required for each movement are then used from the pool. The locomotive requirements of the OTRR have been developed using this run-through pool concept, and reflect the locomotives necessary to handle the traffic for the time the interline movements are on its system, i.e., the number of locomotives that the OTRR would have to contribute to the pool. Records of

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[3] The five (5) percent spare margin

REDACTED

locomotive horsepower-hours expended on each railroad are maintained, and contributions to the pool are adjusted as necessary to keep the horsepower-hours in balance.

a. Locomotive Leases

The OTRR will lease all of its locomotives. As indicated in Part III-C, supra, the OTRR requires a mix of locomotives to move the different train types on its system. The OTRR will use three different types of locomotives, including C44-9 locomotives and SD70 locomotives for line haul and helper service and SD 40-2 locomotives for switching. To determine the costs associated with the linehaul locomotives, Otter Tail utilized an annual locomotive lease cost of and er locomotive for C44-9 and SD70 locomotives, respectively.

REDACTED For SD40-2 locomotive the annual lease cost of per locomotive. This results in a total annual locomotive lease cost of million in the 2002 base year.[6]

b. Locomotive Maintenance

Maintenance of the OTRR locomotive fleet will be performed by an independent contractor. The required locomotive maintenance facilities will be constructed by the OTRR at Donkey Creek. A maintenance cost of per diesel unit-mile is used for SD70 and C44-9 locomotives, respectively **REDACTED** In addition, annual costs of for SD70 and C44-9 locomotives, respectively, are included to account

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4 See electronic file "Otter Tail_Opr_Exp.123" and Opening Workpaper Vol. III, pp. 2571 to 2612.

5 Id.

6 **REDACTED**

7 See Opening Workpaper Vol. III, pp. 2613 to 2734 and electronic workpaper "LOCO MAINT_Otter Tail.123."

for overhauls every 5 years for SD70 MAC's and every 6 years for Dash 9's.

The locomotive maintenance cost for SD40-2 locomotives is) per diesel unit-mile, **REDACTED** for overhaul costs, which takes place every 8 years. The total locomotive maintenance cost for the OTRR is millions in the 2002 base year. Table III-D-1 below summarizes the OTRR's annual locomotive maintenance expense in the 2002 base year.

Table III-D-1
OTTR Locomotive Maintenance Costs

	Item	Type of Locomotive SD70	C44-9	SD40-2
	(1)	(2)	(3)	(4)
1.	Number of locomotives	130	64	4
2.	Number of locomotive unit miles (000)	20,886	11,736	210
3.	Maintenance cost per LUM			
4.	Mileage costs	**REDACTED**		
5.	Annual overhaul cost per unit			
6.	Annual overhaul cost			
7.	Total Locomotive Maintenance Costs			

Sources:
Line 1: Exhibit III-C-1
Line 2: Exhibit III-C-1 for Column 2 qand 3; Column 4, (4 locomotives x 24 hrs x 365 days) x 6 miles per hour.
Line 3: Electronic file "LOCOMAINT_OTTER Tail.123".
Line 4: Line 2 x Line 3.
Line 5: Electronic file "LOCOMAINT_OTTER Tail.123".
Line 6: Line 1 x Line 5.
Line 7: Line 4 + Line 6.

[8] See Opening Workpaper Vol. III, pp. 2613 to 2734.

c. Locomotive Servicing

OTRR locomotive servicing costs are based on a cost of per diesel unit-mile calculated

REDACTED This amount is applied

to the locomotive unit miles for C44-9 and SD70 locomotives produced by the string model discussed in Section III-C-2, supra. Locomotive servicing costs for SD40-2 locomotives are based on 210,240 locomotive unit miles, or four (4) SD40-2 locomotives operating 24 hours per day, 365 days per year, times six (6) miles per hour.

d. Locomotive Fuel

The OTRR's locomotive fuel costs are based on BNSF's first quarter 2002 fuel cost of per gallon obtained from BNSF's Financial Presentation.[10] The fuel consumption rate for each of the trains in Otter Tail's string model was developed by taking BNSF's system average fuel consumption rates per gross ton-mile and diesel unit-mile from their 2002 STB URCS and applying them to each train for both road and general freight traffic. This process yielded total gallons of fuel consumed by OTRR coal and non-coal traffic, which was then converted to gallons per diesel unit-mile by dividing the gallons consumed by the coal and non-coal traffic by the locomotive unit miles associated with that traffic. This analysis yields an average fuel consumption rate

REDACTED

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9 See Opening Workpaper Vol. III, pp. 2735 to 2739.
10 See Opening Workpaper Vol. III, pp. 2740 to 2741.
11 See Electronic file "OTRR Fuel Consumption.123".

2. FREIGHT CAR EXPENSE

Of the million tons of coal in 2002 that formed the traffic group of the OTRR. Only percent of these tons moved in freight cars provided by the railroad. The other coal, : **REDACTED** moves in freight cars provided by the shipper. The party providing the railcars was determined from the Overhead shipments on the OTRR move in cars provided by BNSF, foreign roads or shippers. The cost of leasing and maintaining railcars is discussed below.

a. Rail Car Lease Expense

The OTRR will utilize a mixture of railroad-provided cars and private cars. For railroad-provided cars, Otter Tail developed car costs using three different approaches. First, for non-coal overhead traffic moving in foreign road owned cars, car costs are based on time and mileage by car type developed from BNSF's 2002 R-1. Second, for non-coal overhead traffic moving in BNSF equipment, an annual full service lease cost was developed for each car type from information provided by BNSF in discovery or from publically available sources.[12] A weighted annual car cost for all car types was then developed based on the percentage each car type moves on the OTRR system. The weighted average annual car cost was then converted to a cost per hour and cost per mile and applied to the non-coal car hours and car miles produced by the string program.

Third, for OTRR provided coal cars, car lease payments are based on annual full service lease costs developed from publically available sources or as provided by BNSF in discovery of **REDACTED** for equipped gondolas and hopper cars respectively.[13]

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12 See Opening Workpaper Vol. III, pp. 2747 to 2757.
13 See Opening Workpaper Vol. III, pp. 2758 to 2879 and "OTRR Car Costs.xls".

b. Rail Car Maintenance

As discussed, supra, OTRR will use full service car leases. Therefore, no maintenance expense is required for these railcars because, by definition, the lessor maintains these railcars.

The OTRR does not need and will not have any cabooses, because it will provide End-of-Train devices ("EOTD") for the overhead trains. EOTD's are not required for coal trains as they are operated with distributed power and, therefore, a locomotive is always at both ends of each coal train. EOTDs will be checked, with batteries charged as necessary, by the car inspectors at Donkey Creek and Glendive.[14]

Shippers who supply railcars for their movements will make their own separate arrangements for maintenance of their cars, either at destination power plants (in the case of some coal shippers) or at existing contract-repair facilities on or near the route of movement.

c. Private Car Allowances

The OTRR coal movements that occur in private cars involve cars that are provided per diem and mileage-free **REDACTED** That is, the cars are provided free of charge to the railroad and the freight rate presumably reflects the fact that the carrier is not incurring car costs. Because

and because

OTRR also will pay no mileage allowances with respect to coal movements in private cars.

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[14] See electronic file "Otter Tail_Opr_ Exp.123."

For non-coal private cars, OTRR has included a private mileage charge per car mile by car type which is applied to all private car miles on the OTRR. [15] The private car mileage charge by car type was developed from data contained in BNSF's 2002 R-1.

3. PERSONNEL

a. Operating Personnel

The OTRR will be operated and staffed as a regional railroad rather than as a large Class I rail carrier. System headquarters will be located at Donkey Creek. Consistent with the stand-alone concept, the OTRR will not be bound by **REDACTED** , and employees can move across traditional craft lines. This provides flexibility (and opportunities for efficiency) in staffing the railroad and sizing its personnel requirements. The operating personnel are included in two departments, i.e., Transportation and Engineering/Mechanical.

i. Staffing Requirements - The Transportation Department personnel for the OTRR are shown in Table III-D-2 below.

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[15] See electronic file "OTRR Car Costs.123" and Opening Workpaper Vol. III, pp. 2747 to 2755.

Table III-D-2
OTRR Transportation Department Personnel

Position (1)	Number of Employees (2)
1. Vice President-Transportation	1
2. Administrative Assistant	1
3. Director-Safety Rules and Training	1
4. Manager-Safety Rules and Training	2
5. Director-Operations Control	1
6. Manager-Operations Control	5
7. Dispatchers	14
8. Crew Management	10
9. Director-Customer Service	1
10. Manager-Customer Service	5
11. Director-Train and Locomotive Operations	1
12. Manager-Train and Locomotive Operations	6
13. Assistant Manager-Train and Locomotive Ops	10
14. Train Crew Personnel	446
15. Total Transportation Department Personnel	504

(a) Vice President-Transportation – The Vice President-Transportation is located at Donkey Creek and is responsible for all transportation, customer service and marketing functions. Table III-D-2 above includes all Transportation Department employees, both at headquarters and in the field. The OTRR's headquarters personnel cover the following functions; operations control, train operations, locomotive operations, customer service/marketing and operating rules, safety and training. The Transportation Department is also assigned one Administrative Assistant who is responsible for budget and other administrative work as assigned by the Vice President.

(b) **Safety, Rules and Training** – The Director-Safety Rules and Training reports to the Vice President Transportation. The Director and Managers - Safety Rules and Training interface with the FRA and other government agencies in matters pertaining to rules and operating practices; produce OTRR's operating timetable, rules and related instructions; handle government safety reporting; and act as liaison with various levels of government as well as customers and contractors on safety-related matters. They will make periodic field audits, administer the OTRR's safety and operating rules manuals and instructions, provide input to safety training and operating practices, and provide expertise in connection with the investigation of accidents and injuries.

(c) **Operations Control** - The Director-Operations Control is responsible for coordinating train operations, i.e., dispatching, motive power assignments, customer service, crew management and connecting railroads. A Manager-Operation Control will be on duty three shifts per day for two days per week, and two shifts per day for seven days per week to provide supervision when the Director is not on duty. There will be three (3) dispatching desks, each manned by a dispatcher three shifts per day, seven days per week. The dispatching desks will be assigned to the following districts:

Desk 1 – Converse to East Donkey Creek, including the Reno Branch and Donkey Creek Junction to West Campbell, including the Eagle Butte Branch.

Desk 2 – West Campbell to Moran Junction, including the Decker Branch and Moran Junction to Glendive, including the Kuehn Branch and Big Sky Branch.

Desk 3 – Glendive to Fargo, including the Snowden Branch and Fargo to Benson, including the Big Stone Branch

Fourteen dispatchers are accounted for in order to provide additional coverage needed for vacations and holidays, sick days, and training. Selected dispatchers can also fill in for a Manager-Operations Control, if necessary.[16]

(d) Crew Management – In general, train crews will be assigned using a computerized crew-calling system. Crews will input their status when going off duty to establish their next assignment, and later telephone the system for an update. As a backup, this plan calls for a Crew Manager to be on duty one shift, five days per week, plus two crew callers on duty three shifts per day, seven days per week, to handle vacations and special requests, monitor the system, and resolve any scheduling problems that may arise.[17]

(e) Customer Service - OTRR's coal customer base is small (51 coal customers only one of which is local to its system), is reasonably stable and changes infrequently over time. Therefore, marketing requirements are minimal. In addition, OTRR handles non-coal traffic which is overhead to its system. This traffic is received from and forwarded to BNSF in trainload service.

The Director-Customer Service, assisted by five managers, is responsible for the same functions **REDACTED** This includes monitoring train locations, maintaining contact with the mines, and responding to customer inquiries. A manager will be on duty three shifts per day, seven days per week. Development of the number of customer service managers is shown in electronic workpaper "OTRR Transportation Department Personnel.123."

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16 The number of dispatchers is developed in electronic workpaper "Transportation Department Personnel.123."
17 The number of crew callers is developed in electronic workpaper "Transportation Department Personnel.123."

(f) Train and Locomotive Operations - The Director-Train and Locomotive Operations will provide supervision to the Managers located at Donkey Creek, Reno, Dutch, Glendive, Mandan and Fargo. The Managers will be salaried positions, working a five day week, but on call 24 hours per day, seven days per week. Their duties are similar to those of a Trainmaster on a Class I railroad, and they are responsible for supervising train crews, assisting customers and other operating personnel, coordinating interchanges with other railroads, conducting FRA-required and other appropriate testing, and responding to and investigating accidents and day-to-day operating problems. In addition, they will provide ongoing training to locomotive engineers in proper procedures and techniques of train handling. The 10 Assistant Managers-Train and Locomotive Operations will perform identical duties at these locations or other locations as directed by their respective managers. Staffing is determined with due consideration given to moving trains to and from the mines, to monitor activity at the OTRR's major yards, and the need to coordinate the large number of trains being interchanged with BNSF. Two (2) Assistant Managers are located at Reno, Donkey Creek and Glendive, and one (1) Assistant Manager is located at Moran, Snowden, Fargo and Benson.

(g) Train Crews - Crew change points on the OTRR will be located at Converse, Donkey Creek, Dutch and Moran Junction, Glendive, Mandan, Fargo and Benson with Converse, Donkey Creek, Dutch, Glendive, Fargo and Benson, serving as the designated "home" terminals. As a least-cost most-efficient railroad, the OTRR is not constrained by the work rules that limit the crew districts on existing unionized Class I **REDACTED** . All OTRR crews based at any point will be able to operate in any direction from that point as necessary, in either straight away (point-to-

point) or turnaround service. This gives the OTRR much more flexibility in scheduling train crews and sizing its crew personnel requirements.

The basic assignments for the OTRR crews are as follows:

Assignment 1 – Crews based at Converse will handle the PRB mine runs for trains originating at mines as far north as Caballo that move south out of the PRB and are interchanged to BNSF at Converse. These crews will operate in turnaround service.

Assignment 2 – Crews based at Donkey Creek serving mines south of Donkey Creek (for movements north out of the PRB) and mines on the Eagle Butte Branch will operate in turnaround service. Donkey Creek crews will also handle the occasional loaded train (originating on the Decker and Eagle Butte branches) between Donkey Creek and Converse for interchange with BNSF at Converse.

Assignment 3 – Crews operating between Donkey Creek and Dutch and between Dutch and Moran Junction will operate in straightaway service. The home terminal for these crews will be Dutch.

Assignment 4 – Trains loaded on the Decker Branch will be manned by crews from the Dutch home terminal. Empty trains will move from Donkey Creek or Moran Junction to the Decker Branch mines for loading. The crew will go off duty at the mine and be taxied back to Dutch. The replacement crew will have arrived at the mine via the same taxi from Dutch. This crew will relieve the empty train crew, complete the loading process and move the loaded train to either Donkey Creek or Moran Junction as necessary.

Assignment 5 – Crews operating between Moran Junction and Glendive will operate in straightaway service. The home terminal will be Glendive. Trains loaded on the Kuehn and Big Sky Branches will also be manned by these crews. The crews delivering the empty train to the mines on the Kuehn and Big Sky Branches will begin the loading process, then be taxied to Moran. The replacement crews will have arrived at the mines via the same taxi from Moran, will then relieve the first crew, complete the loading process and return with the loaded train to Glendive.

Assignment 6 – Crews operating between Snowden and Glendive will operate in turnaround service, with their home terminal at Glendive.[18]

Assignment 7 – Crews operating between Glendive and Mandan will operate in straightaway service, with their home terminal at Glendive.

Assignment 8 – Crews operating between Mandan and Fargo will operate in straightaway service with their home terminal at Fargo.

Assignment 9 – Crews operating between Fargo and Benson will operate in straightaway service, with their home terminal at Benson. Crews based at Benson will handle the Big Stone traffic in turnaround service.

ii. **Compensation** -- The salary levels for the operating personnel are based on 2002 BNSF Wage Forms A and B provided in discovery[19] with the exception of the Vice President - Transportation, whose salary is based on the salary, including bonuses, paid by Wisconsin Central to its Executive Vice Presidents in 2000, indexed to 1Q02. For each job title classification appearing in BNSF's Wage Forms A and B an average salary was computed based on straight-time and over-time wages paid. These average wages were then applied according to the job title classifications as contained in the U.S. Code of Federal Regulations, Chapter X, Section 1245.5.

Constructive allowances for train crews are based on two types of constructive allowances.

REDACTED

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18 The number of turnaround crews that move trains from Glendive to Snowden has been adjusted to account for an instance of the crew being unable to make a complete turn within permitted hours of service because an interchange received train is not readily available at Snowden when the crew arrives at Snowden with a train to be interchange forwarded.

19 See Electronic file "Ottertail Salaries.123".

Both the direct and ratio constructive allowances paid

REDACTED

. The OTRR would not incur payments for many of these items for one of three reasons. First, because the OTRR has two crew members on all trains, the special pay differential

does not apply to the OTRR. The OTRR,

REDACTED

, does not have "short crews" or reduced crews and therefore this constructive allowance is not appropriate. Second, the OTRR

would not incur the constructive allowance payments to its train crew members for

Third, the OTRR is a non-union railroad and therefore union related constructive allowances do not apply. These constructive allowance payments include

The OTRR does incur constructive allowances for payments related to vacations, meals, training, safety training, military service, jury duty, bereavement, required physical exams and others.[20] The constructive allowances paid by OTRR to its train crew members, on a combined basis equal 24% of straight-time and overtime wages paid to its engineers and conductors.

Fringe benefits for all employees are included based on 38 percent of wages which are based on the ratio of total supplements to total wages paid in the first quarter 2002 for all Class I carriers as shown in the Association of American Railroads' workpapers supporting its calculation of the

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[20] See electronic workpaper "Construtive Allowance Ratio.123" for a listing of all constructive allowance payments made to BNSF crews that worked on Otter Tail trains. This file designates
are included for OTRR's crews and those that are excluded for one of the three reasons discussed above.

Rail Cost Adjustment Factor.[21] The calculations of operating personnel compensation are detailed in Otter Tail's supporting workpapers.[22]

Table III-D-3 below shows the compensation for all OTRR operating personnel.

Table III-D-3
Compensation for OTRR Transportation Department Personnel

	Position (1)	Number of Employees (2)	Annual Salary (3)	Annual Compensation (4)
1.	Vice President-Transportation	1	$240,475	$240,475
2.	Administrative Assistant	1		
3.	Director Safety, Rules and Training	1		
4.	Manager Safety, Rules and Training	2		
5.	Director-Operations Control	1		
6.	Manager-Operations Control	5	**REDACTED**	
7.	Dispatchers	14		
8.	Crew Supervisor	1		
9.	Crew Callers	9		
10.	Director-Customer Service	1		
11.	Manager-Customer Service	5		
12.	Director-Train and Locomotive Operations	1		
13.	Manager-Train and Locomotive Operations	6		
14.	Assistant Manager-Train and Locomotive Ops	10		
15.	Train Crew Personnel	446		
16.	Total Transportation Department Personnel	504	–	$29,305,798

iii. Materials, Supplies and Equipment - Materials, supplies and equipment for operating personnel include office furniture and equipment, office supplies, safety equipment, EOT

21 See Opening Workpaper Vol. III, p. 2891.
22 See computer files "Ottertail Salaries.123" and Opening Workpaper Vol. III, pp. 2880 to 2886.

devices, two-way radios and batteries, tools, necessary motor vehicles, tools and supplies. The total annual operating expense for these items equals $[23]

iv. Other – Crew Taxi Service – Crews are provided with taxi service as follows:

i. At Converse yard, all trains that are interchange forwarded stop at MP 70.0 on the main track to deliver the train to BNSF. MP 70.0 is approximately three (3) miles from the Converse yard office, therefore all OTRR crews must be taxied from MP 70.0 to the yard office to go off duty. Trains received at Converse are delivered with the locomotives stopping at the north end of the yard which is adjacent to the yard office, therefore OTRR crews that are going on duty do not require taxi service to get to their locomotives.

2. At E. Donkey Creek all forwarded trains require taxi service to return OTRR train crews to the yard office to go off duty. Donkey Creek based crews going on duty that move forwarded trains to mines for loading or westbound overhead trains, do not require taxi service. Dutch crews require taxi service between the rest location and Donkey Creek Yard.

3. All crews operating into and out of Dutch are based in Dutch, therefore the only crews that require taxi service are those that deliver trains to one of the two mines on the Decker Branch. Taxi service is required from Dutch to the mine to relieve the crews that have begun the loading process. The same taxi returns with the relived crew.

4. As Moran is home-away terminal, all crews require taxi service to and from the rest location and the yard.

5. Taxi service is also required from and to mines on the Kuehn and Big Sky Branches to relieve Glendive based crews that have begun the loading process. The same taxi service returns to a rest location with the relieved crew.

5. At Glendive, crews that move trains received from or forwarded to BNSF at Terry are taxied between Glendive and Terry. At Glendive all crew changes take place near the yard office, and taxi service is not required.

6. Mandan is not a home terminal, therefore all inbound and outbound Glendive and Fargo crews must be taxied to and from the rest location.

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[23] The Transportation materials, supplies and equipment expenses shown above also include expenses for car inspectors. Detailed development of these expenses can be found in computer file "Otter Tail__Opr__Exp.123" in the electronic workpapers for Part III-D and Opening Workpaper Vol. III, pp. 2895 to 2958.

7. At Fargo, crews that are based at Benson require taxi service to and from the rest location.

8. No taxi service is required at Benson or Snowden.

REDACTED

The taxi service within yards is based on a cost of per trip, for taxi trips from yards to rest locations the cost is $ per trip. The cost per trip between Dutch and the mines on the Decker Branch, between Moran and the mines on the Kuehn and Big Sky Branches and between Glendive and Terry are based on per trip.[24]

b. Non-Operating Personnel

i. Staffing Requirements -- The Engineering/Mechanical Department personnel for the OTRR are shown in Table III-D-4 below.

[24] Application of the taxi cost is shown in Electronic file "Otter Tail_Opr_Exp.123".

Table III-D-4

OTRR Engineering/Mechanical Department Personnel

	Position (1)	Number of Employees (2)
1.	Vice President-Engineering/Mechanical	1
2.	Director-Safety, Rules and Training	1
3.	Manager-Safety, Rules and Training	2
4.	Director-Engineering Services	1
5.	Engineering Services	3
6.	Purchasing & Budget	2
7.	Director-Maintenance Operations	2
8.	Supervisor-Maintenance-of-Way	6
9.	Supervisor-Communications & Signals	2
10.	Maintenance Crew Members	196
11.	Structure Crew Members	8
12.	Director-Equipment Planning	1
13.	Director-Mechanical Operations	1
14.	Manager-Mechanical Operations	2
15.	Car Inspectors	50
16.	Total Engineering/Mechanical Department Personnel	278

(a) Vice President – The Vice President-Engineering/Mechanical will oversee this department, including OTRR's relations with its contractors. Maintenance of the railroad's locomotives, freight cars, maintenance-of-way equipment and vehicles will all be contracted. Program track maintenance will be contracted as will major signal and structures projects. In addition, maintenance of microwave towers and radio communications system will be contracted. This is consistent with how such work is handled by other regional railroads. Table III-D-4 above includes all Engineering/Mechanical Department employees, both at the Donkey Creek headquarters and in the field.

(b) **Safety, Rules and Training** – The Director and Managers for Safety, Rules and Training will perform the same duties described for their counterparts in the Transportation Department.

(c) **Engineering Services** - The Engineering Services personnel (one Director and three engineers) are responsible for engineering and mechanical planning, including special contracts, joint facilities, force account work, design, blueprints and environmental matters. The Purchasing & Budgets Managers will prepare and monitor the Department's budgets and administer requisitions, inventories, and purchases of materials and equipment within the Engineering/Mechanical Department.

(d) **Maintenance Operations** - The Directors-Maintenance Operations located at Donkey Creek and Glendive are responsible for defining, planning, and coordinating all maintenance and contract program activity. They have the authority to re-align personnel in any crew over the OTRR system, depending on a special need that may arise. Six (6) Supervisors-Maintenance-of-Way (one each located at Donkey Creek, Sheridan, Hyshum, Glendive, Mandan and Fargo) and the Communications & Signals Supervisors headquartered at Donkey Creek and Glendive will primarily be responsible for the day-to-day inspections and maintenance carried out by OTRR field forces, and secondly, for monitoring the execution of program work carried out by contractors.

The railroad will be divided into six (6) districts for maintenance purposes, as follows:

1. The Donkey Creek District includes all facilities on the Orin Subdivision between MP 0.0 Donkey Creek Junction and MP 70.0 (Converse), including the Reno Branch from MP 0.0 to MP 5.76, between MP 583 (East Donkey Creek and MP 600 (West Gillette) on the Black Hills Subdivision, including Donkey Creek Yard, and the Campbell Subdivision (Eagle Butte branch) from MP 0.0 to MP 9.52.

2. The Sheridan District includes all facilities between MP 600 (West Gillette) and MP 828 (Moran Junction) on the Big Horn Subdivision, the Dutch Subdivision (Decker branch) from MP 0.0 to MP 16.15 and the Forsyth Subdivision from MP 209.8 (Jones Junction) to MP 190.

3. The Hyshum District includes the Forsyth Subdivision from MP 190 to MP 15, the Kuehn Branch from MP 0.0 (Sarpy) to MP 37.4 (Kuehn) and the Big Sky Branch from MP 0.0 (E. Nichols to MP 33.1 Big Sky).

4. The Glendive District includes the Forsyth Subdividison from MP 15 to MP 0.0 (Glendive), the BNSF's Sidney Branch from MP 0.0 (Glendive) to MP 78.6 (Snowden), the Dickenson Subdivision from MP 215.8 (Glendive) to MP 155 (Rider) and the Glendive Yard.

5. The Mandan District includes the Dickenson Subdivision from MP 155 (Rider) to MP 0.0 (Mandan) and the Jamestown Subdivision from MP 200.3 (Mandan) to MP 49.7 (Tower City).

6. The Fargo District includes the Jamestown Subdivision from MP 49.7 (Tower City) to MP 31.2 (Surrey Junction), the KO Subdivision from MP 31.2 (Surrey Junction) to MP 5.8 (Morehead Junction), the Prosper, Morehead and Morris Subdivision from Morehead Junction to MP 132.2 (Benson), and the Appleton Subsdivision from MP 0.0 (Benson) to MP 21.4 (Appleton), and MP 579.4 (West Appleton) to MP 602.2 (Big Stone).

A total of 14 crews will be assigned to the six (6) Maintenance-of-Way Supervisors. They will be headquartered at Reno, Donkey Creek, Kendrick, Sheridan, Rowley, Hysham, Shirley, Sidney, Glendive, Dickenson, Mandan, Jamestown, Fargo and Herman.

In general, each crew will be assigned 14 people: one (1) who will serve as foreman, one (1) as track inspector, three (3) who will function primarily as signal maintainers and nine (9) crewmen, including a welder and helper and three machine operators. These crews will provide coverage during the normal work week, and be subject to call in the event of emergencies during off hours. The six (6) Supervisors-Maintenance-of-Way will supervise the maintenance of the OTRR's track, structures, and signals, and day-to-day emergencies that may arise. Each crew will be assigned a

high-rail inspection vehicle, a fully equipped high-rail boom truck, a fully-equipped welder's truck, an auxiliary van, and two signal maintainer's vans and other necessary tools and equipment. Each of the six (6) Supervisors-Maintenance-of-Way is assigned a tamper/liner, ballast regulator/snow plow and a backhoe to be used by the crews in his territory.

The Supervisors Maintenance-of-Way located at Donkey Creek and Glendive will also have responsibility for a four-man Structures gang comprised of water service, electrical, masonry and carpentry skills for the OTRR. They will be equipped with an all-service van.

The two (2) Supervisors Communications and Signals are headquartered at Donkey Creek and Glendive. These individuals will monitor the performance of maintainers, who conduct tests of communications and signals facilities on a periodic basis as required by FRA regulations, as well as those necessary for safe operation of the railroad. These Supervisors will also monitor the specific tasks assigned to contractor forces working in their territory.

(e) Mechanical Operations - The Director-Mechanical Operations, also located at Donkey Creek, is responsible for the efficient utilization and maintenance of locomotive power and railcars on the OTRR system. All locomotive inspections and maintenance will be performed at OTRR shop facilities located at Donkey Creek by contractors. Contractors at Donkey Creek and Glendive will also provide any required hostling service, and they will fuel, sand and lubricate locomotives at the facilities provided. In addition, on-track work equipment, inspection-vehicles and high-rail vehicles will be maintained by the contractor. Managers-Mechanical Operations will be located at both Donkey Creek and Glendive and will interface with, and monitor the activities of the contractor. The managers are also responsible for OTRR's car inspection forces.

In the event a mechanical failure occurs on-line, the train crew will notify the dispatcher, who, in turn will call the maintenance contractor. The contractor will then make the necessary repairs at the site or make other arrangements to remedy the failure.

If a locomotive mechanical failure occurs enroute, the train crew will notify the dispatcher who in turn will call the locomotive maintenance contractor. The contractor will then make the repairs at the site.

OTRR will perform FRA-certified inspections on empty coal trains and all westbound non-coal trains at its Donkey Creek and Glendive facilities and provide certified trains at interchange to BNSF at Donkey Creek, Moran, Snowden, Fargo and Benson. Accordingly, BNSF will provide a certified train to OTRR in return. The interchange procedure will be expedited as OTRR crews merely make the proper air test on their receiving trains and depart. A foreman and five carmen will be on duty three shifts per day, seven days per week at Glendive to conduct inspections. Each crew will inspect three trains simultaneously, utilizing motorized vehicles on paved roadways adjacent to each track. At Donkey Creek, a foreman and three carmen will be on duty three shifts per day seven days per week to conduct inpections. Each crew will inspect two trains simultaneously. OTRR will inspect trains received in interchange at Converse Yard with a carman on duty three (3) shifts per day, seven days per week, with the assistance of the outbound train crew. Development of the number of car inspectiors is included in the electronic workpaper "Transportation Department Personnel.123."

ii. **Compensation** -- The salary levels for these personnel are estimated based on 2002 BNSF Wage Forms A and B provided in discovery in the same manner as the salaries for transportation department personnel. The Vice President - Engineering/Mechanical's salary is based on the salary paid by the Wisconsin Central Railroad to its Executive Vice Presidents, including

bonuses, in 2000, indexed to 1Q02.Fringe benefits are also included based on **REDACTED**

Table III-D-5 below shows the salaries and annual compensation for all OTRR non-operating personnel.

Table III-D-5

Compensation for OTRR Engineering/Mechanical Department Personnel

	Position (1)	Number of Employees (2)	Annual Salary (3)	Annual Compensation (4)
1.	Vice President-Engineering/Mechanical	1	$240,475	$240,473
2.	Director-Safety, Rules and Training	1		
3.	Manager-Safety, Rules and Training	2		
4.	Director-Engineering Services	1		
5.	Engineering Services	3		
6.	Purchasing & Budget	2	**REDACTED**	
7.	Director-Maintenance Operations	2		
8.	Supervisor-Maintenance-of-Way	6		
9.	Supervisor-Communications & Signals	2		
10.	Maintenance Crew Members	196		
11.	Structures Crew Members	8		
12.	Director-Equipment Planning	1		
13.	Director-Mechanical Operations	1		
14.	Manager-Mechanical Operations	2		
15.	Car Inspectors	50		
16.	Total Engineering/Mechanical Department Personnel	278	--	$13,505,789

1/ The salaries shown represent the average salary for the maintenance crew members and the building and bridges crew members, respectively.

iii. Materials and Supplies -- Materials, supplies and equipment for non-operating personnel include office furniture and equipment, office supplies, safety equipment, two-way radios

25 See electronic workpaper "Ottertail Salaries.123" and Opening Workpaper Vol. III, pp. 2880 to 2886.

and batteries, necessary motor vehicles, tools and supplies. This includes work equipment for the field maintenance-of-way forces, hi-rail trucks and track inspection vehicles,[26] motorized vehicles for the car inspectors, and company automobiles. The total annual operating expense for these items equals $.[27] Detailed development of these expenses can be found in computer file "OTRR_MOW.123" in the electronic workpapers for Part III-D.

With respect to company vehicles, a pool of 13 company automobiles will be maintained at the Donkey Creek and Glendive headquarters for use primarily by transportation and engineering/mechanical staffs while traveling in the field on OTRR business. Company vehicles also are needed for the field transportation, mechanical and maintenance-of-way supervisory personnel. A total of 27 company vehicles are needed including the 13 at Donkey Creek and Glendive.

c. General and Administrative Expense

This section describes the staffing and related expenses necessary to meet the financial, accounting, and general and administrative requirements consistent with the OTRR's operating plan. The staffing plan begins with a summary description of the business environment from a financial and administrative perspective. It describes each job function that is necessary to support the operating plan, the number of staff members in each position, and those activities that would be outsourced to third parties and the related costs of such services.

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26 The OTRR's maintenance-of-way equipment needs are addressed in Part III-D-4 below.

27 The Engineer/Mechanical material and supplies expense for car inspectors is included with the Transportation Department materials and supplies expense in Otter Tail__Opr__.Exp123.

OTRR is a single business unit with multiple cost departments including General and Administrative, Transportation, and Engineering and Mechanical. It has an established customer base, which is fairly consistent year to year. It originates a single commodity (coal) moving under long-term contracts. In addition, the OTRR handles various commodities in run through, overhead trainload and unit train service. Electronic waybills are prepared or received. When OTRR performs the billing, customers are invoiced electronically.[28] Outbound coal traffic moves in unit trains under a single revenue billing. Interline freight payments and disbursements to and from connecting carriers are processed through the Railroad Clearing House and settled electronically. As is customary in the shipment of coal to utilities, the utility pays the freight bill and most frequently the destination carrier collects the freight charges and settles with the other carriers, including OTRR.

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The vast majority of the coal moves in customer owned equipment. OTRR supplies only percent of the total coal cars, . Overhead traffic moves in equipment provided by the interline carrier or third parties. Car hire reporting requirements are managed by Railcar Management, Inc., with monthly reports provided to OTRR on both owned foreign and private equipment. All OTRR locomotives are provided by third parties under long-term operating leases. All vehicles are leased from vehicle fleet management companies who provide all vehicle acquisition, licensing, titling and monthly reporting functions.

The Financial and Accounting Department uses a comprehensive financial software package that incorporates both day to day operational accounting and all required financial reporting and budgeting. The software is accessible through a company-wide Intranet via workstations. The

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[28] The OTRR performs the billing for and collects freight revenue from only one customer, Otter Tail Power.

hardware and software requirements of the OTRR and information technology staff are thoroughly described, infra.

OTRR is a privately held company without SEC reporting requirements. It conducts business in only five states, Wyoming, Montana, North Dakota, Minnesota and South Dakota.

In summary, the OTRR general and administrative staff is comprised of 43 staff members. This staff is assigned to the President's Office, Finance and Accounting, Information Technology Department, Legal Affairs Department, Human Resources Department and Marketing Department as shown in Table III-D-6 below.

Table III-D-6

OTRR General and Administrative Personnel

Department/Position (1)	Number of Employees (2)
1. President's Office	
i. President	1
ii. Administrative Assistant	1
2. Finance and Accounting Department	
i. Vice President-Finance	1
ii. Secretary	1
c. Vice President-Treasurer	1
d. Cash Manager	1
e. Vice President-Controller	1
f. Assistant Controller-Revenue	1
g. Director-Taxes	1
h. Manager Financial Reporting	1
i. Staff Accountant	1
j. Revenue Accounting Clerk	3
k. Assistant Controller-Disbursements	1
l. Manager Car Hire	1
m. Disbursement Clerks	2
n. Payroll Clerks	2
o. Costs and Budget Clerk	1
n. Secretary	1
4. Information Technology	
iii. Director	1
iv. IT Specialists	8
5. Legal Affairs	
v. General Counsel	1
b. Staff Attorney	1
c. Secretary/Paralegal	1
6. Human Resources Department	
a. Vice President-Human Resources	1
b. Director-Recruitment	1
c. Director-Personnel	1
d. Analyst	1
e. Claims Manager	1
vi. Secretary/Administrative Assistant	1
7. Marketing Department	
a. Vice President - Marketing	1
b. Marketing Analyst	2
8. Total General and Administrative Personnel	43

In addition to the general and administrative staff shown in the table above, OTRR outsources several general and administrative functions including the audit and internal review functions, tax return preparation, certain legal services, claims management, payroll processing, payroll tax payments, payroll tax return preparation and filing, preparation of W-2 forms, 401(k) administration and railroad retirement filings. The OTRR spends REDACTED annually to various service providers for its general and administrative outsourcing requirements.

i. General and Administrative Staffing Requirements – The general and administrative ("G&A") personnel for the OTRR handle all of the administrative functions associated with running the railroad. This includes the costs associated with the executive officers and support staff, materials, supplies, information technology requirements and training.

The OTRR does not need a large number of general and administrative employees for a number of reasons. Revenue accounting is reduced because the terminating carrier, which in all but one instance is other than OTRR, does the billing. OTRR has only coal customers and is the terminating carrier [29] Customer service is provided by the Transportation Department which has the primary contact with coal mines and other railroads.

General and Administrative staffing requirements are detailed in this section under the following departments: President's Office, Finance and Accounting, Information Technology, Legal Affairs, Human Resources and Marketing. As previously stated, customer service is primarily directed by the Transportation Department.

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[29] See Exhibit III-A-5.

(a) President's Office -- The primary responsibilities for the President and CEO are supervising the Vice Presidents, managing OTRR's external relations and its relations with connecting carriers, and providing strategic direction for the company. Given the OTRR's narrow operational focus, he or she does not need a large staff to assist with this function. Accordingly, only one Administrative Assistant is provided.

The President will also serve as Chairman of the OTRR's Board of Directors. OTRR can be governed by a five member Board consisting of the President, the Vice President-Transportation, Vice President - Finance and Accounting, a representative of the OTRR's customer group and a representative of OTRR's outside investors. Outside board members will be paid $30,000 per annum for their services. The Vice President - Legal Affairs will serve as General Counsel to the Board. The President's Office will have one (1) Administrative Assistant who is the principal intermediary for community relations and provides secretarial and administrative support to the President.

(b) Finance and Accounting - The Finance and Accounting Department is directed by the Vice President-Finance who manages a staff of 19 individuals and reports to the President of the OTRR. The department is responsible for all finance, treasury and accounting functions of the company.

(i) Vice President – Finance - In addition to overseeing the finance, treasury and accounting departments, the Vice President-Finance maintains the company's relationships with the investment community and with OTRR's lending institutions. The Vice President-Finance reviews all contracts with outside contractors for the engineering and mechanical departments, and approves capital budget requests.

(ii) **Treasurer** - Reporting to the Vice President - Finance, the Treasurer is responsible for overseeing cash management, monitoring debt payment requirements and obtaining insurance coverage from outside insurance carriers. The Treasurer also invests excess funds short-term in accordance with the company's investment policy, negotiates lease contracts for locomotive power and railcars, vehicle management agreements, and run through agreements with other carriers.

(iii) **Cash Manager** - Reporting to the Treasurer, the Cash Manager manages day to day cash flows through PC connections with banks to ensure that sufficient cash is on hand to meet all corporate requirements and advises the Assistant Controller - Revenue Accounting upon receipt of funds from customers and other rail carriers. The Cash Manager also provides clerical staff support to the department as required and the Cash Manager also invests excess cash in qualified short-term investments.

(iv) **Secretary** - The Finance and Accounting Department Secretary provides secretarial, administrative and clerical support to the Vice President - Finance, the Treasurer and the Cash Manager.

(v) **Vice President - Controller** - Reporting to the VP – Finance, the Controller directs all billing, and interline freight accounting, revenue collection, vendor payment processing, car hire payments, payroll, taxes, budgeting and financial reporting activities. As Chief Accounting Officer the Controller advises the Vice President - Finance on all accounting, tax and budget issues. The Controller is the primary liaison with outside auditors and directs the preparation of annual operating and capital budgets, monitors monthly performance against budget, and directs the preparation of forecasts, cost studies and revenue analysis as required. The Controller oversees the preparation of the Federal, state, and local income tax returns by OTRR's outside accounting firm.

(vi) **Assistant Controller - Revenue Accounting** - The Assistant Controller - Revenue Accounting oversees all customer and interline freight billing, collection of receivables and supervises billing for demurrage, storage, easements, utility crossings, and car repairs, if any. In addition the Assistant Controller reviews all shipper contracts and enters contract terms into the billing system.

(vii) **Revenue Clerks (3)** - The Revenue Clerks prepare customer freight bills electronically and review interline freight payments when received against shipper contracts. These clerks also prepare invoices for demurrage, storage, easements, utility crossings and car repairs, if any, and forecast anticipated cash receipts. One clerk is assigned to coal contracts, one to all other unit train business, chiefly grain, vehicle and intermodal, and one to manifest traffic.

(viii) **Assistant Controller - Disbursements** - The Assistant Controller - Disbursements oversees the processing and payment of trade accounts payable, car hire and payroll. The Assistant Controller - Disbursements also reviews all contracts with outside suppliers, performs bank reconciliations and advises the Treasurer on daily cash requirements. Federal and state payroll tax returns are prepared by an outside payroll processing service such as ADP. Railroad retirement reports are prepared internally.

(ix) **Disbursement Clerks (2)** - Disbursement Clerks prepare accounts payable vouchers for payment of trade and care hire payables. They also maintain OTRR's vendor data base.

(x) **Payroll Clerks (2)** - Payroll Clerks process employee work hours and forward these hours to a payroll processing firm via secure electronic data transfer, and update the employee data base as required for payroll processing. Time and attendance data is captured electronically at OTRR's various points of service.

(xi) Manager Car Hire Accounting – The Manager of Car Hire Reporting reviews the management reports from Railcar Management, Inc. and verifies payments due to other carriers and private car owners. The Manager of Car Hire Accounting also tracks revenue due to OTRR from its fleet of coal cars. Because of the sheer volume of traffic moving in foreign and private equipment, it is most probable that the revenue due OTtRR will be more than offset by car hire owed by OTRR.

(xii) Manager - Financial Reporting - The Manager – Financial Reporting oversees the monthly closing of the accounting books and prepares a monthly financial reporting package for review by the Controller. Additionally, the manager of financial reporting supervises the budgeting process and maintains the chart of accounts.

(xiii) Cost and Budget Analyst – The Cost and Budget Analyst supports the Manager of Financial Reporting in the preparation of the annual budget, budget variance analysis and cost studies relating to departmental expenses. In addition, the Cost and Budget Analyst supports the marketing department in cost analysis for transportation contracts.

(xiv) Director of Taxes – The Director of Taxes prepares sales and use tax, ad valorem, and property tax returns for the five states in which OTRR transacts business. Although an outside prepares the Federal, State and Local income tax returns accounting firm, the Director of Taxes coordinates the preparation of the returns and provides support as required to the external accountants.

(xv) Secretary – The Controller's Department secretary provides secretarial, administrative and clerical support to the Controller and Assistant Controllers as necessary.

(d) Information Technology -- The Information Technology Department will be staffed by one (1) Director and eight (8) IT specialists. Since the OTRR will not need a mainframe environment, there will be less IT effort required due to the relative simplicity of a NT/PC based system. A staff of nine (9) people will be adequate to provide coverage twenty-four hours per day, seven days per week with one (1) person each shift, and five (5) full time specialists on duty five days per week during normal business hours. Also, most of the application software proposed is available off-the-shelf, which requires very little development and maintenance effort.

The primary IT staff function will be to trouble shoot various problems with vendors, coordinate the transportation, car hire and revenue accounting applications with RMI and the business users, and monitor the network infrastructure. There also will be occasions when enhancements will be required to the crew calling and dispatching systems. The eight (8) IT specialists will be active participants in this effort.

(i) IT Director – The IT director will oversee the IT daily activities , provide top management with updates to new technology and advise future strategic direction for the department. This includes the formulation of te logical and physical computer architecture plans and assessing the cost and feasibility of all user requests.

(ii) Lead RMI Technician – The lead RMI technician will be responsible for all RMI applications and serve as a liaison to RMI and the user departments. This individual will ensure that all the users' needs are met in an efficient and timely manner.

(iii) Help Desk PC Technician – The Help Desk PC Technician will take incoming calls from the various users and reroute the call to a PC Technician for immediate handling. This position will follow-up with the user to make sure the problem has been resolved.

This assignment will be during regular business hours with an answer machine to take calls during the night and on weekends. These messages will be monitored by the on-duty techinician to assure prompt responses.

(iv) PC Technicians – Two (2) PC Technicians will provide user support in the day-to-day operation of OTRR's operating system and applications software and computers. These two technicians will provide technical support, configuring desktops, and maintaining network connectivity and printing capability.

(v) Network Engineers – Two (2) Network Engineers will be responsible for overseeing the network security matters and local area network – LAN/wide are network – WAN. These two (2)individuals will also be responsible for planning, designing and managing transmission facilities, cabling and communications devices. These positions will also handle any telecommunications issues that may occur.

(vi) Program Development – The Program Development Technician will be responsible for maintaining and upgrading the crew calling and dispatcher systems. This individual will work closely with management of the crew and dispatcher systems. This individual will also be responsible for developing an information web-site. The web site will not be elaborate because the OTRR's customer base is small.

(vii) Exchange 2000 Engineer – The Exchange 2000 Engineer will be responsible for messaging, design and implementation of the Windows 2000 Exchange environment. This skill level for this position will necessarily be very wide in scope and the individual will be able to handle many functions because the messaging, design and implementation of the Windows 2000

Exchange system is not a full time assignment. Therefore this individual will be called upon to assist others on an as needed basis.

(viii) Data Center – The OTRR does not require a data center facility such as those that Class I railroads typically have to house mainframe computer systems and associated peripheral equipment. Since the OTRR's IT system design is NT/PC based, this system can be housed in a room approximately 15' X 20', with normal office environment heating and air condition accommodations. This room would be located in the OTRR headquarters at Donkey Creek.

(d) Legal Affairs - The Legal Affairs Department is directed by the Vice President - General Counsel who is supported by a Staff Attorney and a departmental Secretary/Paralegal. All litigation work is handled by outside counsel. In addition, outside counsel provides expertise on regulatory and environmental matters, and claims management as required.

(i) Vice President - General Counsel – Reporting to the President, the General Counsel provides advice on all legal, regulatory, environmental, and corporate governance issues. The General Counsel also acts as Corporate Secretary to the Board of Directors and keeps corporate books and records.

(ii) Staff Attorney - The Staff Attorney supports the Vice President - General Counsel especially in the cases of government regulations and environmental law.

(iii) Secretary/Paralegal - The Secretary/Paralegal provides research and administrative support to both the Vice President- General Counsel and the Staff Attorney.

(e) Human Resources - The Human Resources department oversees all employee related activities. Some of the department's functions are outsourced to specialist firms, *e.g.* claims management and retirement plans, while others, such as, safety are carried out directly by the

operating departments. An outside investment company manages the company's 401(k) retirement plan, and the employees select investment options. As the plan is not self-administered the Human Resources department is not required to manage the OTRR retirement plan.

(i) Vice President – Human Resources – Reporting to the President, the Vice President - Human Resources directs employee recruiting and hiring, compensation and benefit plans, training, and oversees all aspects of human resources regulatory compliance. This individual also coordinates safety training with the transportation, mechanical and engineering staffs.

(ii) Director of Personnel – The Director of Personnel serves as an employee relations liaison and responds to inquires concerning salaries and wages, benefit programs and retirement issues from OTRR's employees. In addition, the Director of Personnel provides assistance in the areas of risk management, workplace injury claims, regulatory compliance and updates the employee database as necessary.

(iii) Director of Recruitment – With an employee base of approximately 700 people and an estimated turnover rate of 5 percent, the Director of Recruitment to be responsible for hiring and recruiting employees at all levels of the railroad on a continuing basis.

(iv) Claims Manager – Reporting to the Director of Personnel, the Claims Manager will direct the efforts of the outside claims management firm to ensure that employee claims are processed expeditiously and are treated fairly and objectively. The claims manager ensures that all FRA required reports are properly filed.

(v) Human Resource Analyst – The Human Resource Analyst prepares wage, salary and benefit studies in support of the Directors of Personnel and Recruitment.

(vi) **Secretary** – The Human Resources Secretary provides secretarial, administrative and clerical support to the Vice President – Human Resources and his staff.

(f) **Marketing** – Since the OTRR is a stand-alone railroad that originates a single commodity, coal, in unit train shipments, its marketing activities are greatly simplified. Of the approximately **REDACTED** trains OTRR will handle less than 1 percent represent destination traffic. Furthermore, over 90 percent of the traffic moves in unit trains of coal, grain, vehicles, intermodal or other. All other traffic moves in run through overhead service.

OTRR's customer base is constant; the railroad does not solicit new customers. Over the twenty-year DCF model the OTRR adds no new customers. At the end of the current contracts each customer stays on the OTRR because it is the low cost alternative.

OTRR has only one customer whom it bills directly, i.e., the issue Big Stone coal traffic., Tracking shipments, estimating deliveries, coordinating service with mine operations, and other customer service issues have been assigned to the Transportation Department.

The responsibility for carrier relations, contract administration, customer contacts, pricing and service commitments can be adequately performed by a small staff comprised of a Vice President and supported by two marketing analysts.

(i) **Vice President – Marketing** - Reporting to the President, the Vice President – Marketing is primarily responsible for maintaining relationships with OTRR's coal customer, mine operators, and interline freight partners. This individual has authority for pricing decisions, division requirements, and establishing customer service commitments

(ii) Marketing Analyst – Coal – The Marketing Analyst for coal contracts administers existing coal contracts and supports the Vice President of Marketing with pricing studies. Works closely with the cost analyst on the Controller's staff.

(iii) Marketing Analyst – Non Coal – The Marketing Analyst for non-coal traffic administers existing grain, vehicle, and intermodal contracts and supports the Vice President of Marketing with pricing studies. Works closely with the cost analyst on the Controller's staff.

ii. Compensation -- Annual salaries for the general and administrative personnel were estimated based on data contained in BNSF's Wage Forms A and B with seven (7) exceptions. Salaries for the President, Vice President - Finance, Vice President - Treasurer, Controller, Vice President - General Counsel, Vice President - Human Resources and Vice President - Marketing are based on the salaries, including bonuses, similar to those paid to the Wisconsin Central Railroad in 2000, indexed to 1Q02.[30] Fringe benefits equal to of salaries are also included.[31]

Table III-D-7 below displays the salaries and annual compensation for all OTRR general and administrative personnel.

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[30] Salaries of the Vice President - Treasurer, Controller, Vice President - General Counsel, Vice President - Human Resources and Vice President - Marketing are based on the salary, including bonus, paid to the Vice President - Chief Accounting Officer by Wisconsin Central in 2000, indexed to 1Q02.

[31] See electronic workpaper "Ottertail Salaries.123"and Opening Workpaper Vol. III, pp. 2880 to 2886.

Table III-D-7

OTRR General and Administrative Personnel

Department/Position (1)	Number of Employees (2)	Annual Salary (3)	Annual Compensation (4)
1. President's Office			
a. President	1	$372,364	$372,364
b Administrative Assistant	1		
2. Finance and Accounting Department			
a. Vice President-Finance	1	$240,475	$240,475
b. Secretary	1		
c. Vice President-Treasurer	1	$200,281	$200,281
d. Cash Manager	1		
e. Vice President-Controller	1	$200,281	$200,281
f. Assistant Controller-Revenue	1		
g. Director-Taxes	1		
h. Manager Financial Reporting	1		
i. Staff Accountant	1		
j. Revenue Accounting Clerk	3		
k. Assistant Controller-Disbursements	1		
l. Manager Car Hire	1	**REDACTED**	
m. Disbursement Clerks	2		
n. Payroll Clerks	2		
o. Costs and Budget Clerk	1		
n. Secretary	1		
4. Information Technology			
a. Director	1		
b. IT Specialists	8		
5. Legal Affairs			
a. General Counsel	1	$200,281	$200,281
b. Staff Attorney	1		
c. Secretary/Paralegal	1		
6. Human Resources Department			
a. Vice President-Human Resources	1	$200,281	$200,281
b. Director-Recruitment	1		
c. Director-Personnel	1		
d. Analyst	1		
e. Claims Manager	1		
f. Administrative Assistant	1		
7. Marketing Department			
a. Vice President - Marketing	1	$200,281	$200,281
b. Marketing Analyst	2		
8. Total General and Administrative Personnel	43	--	$4,002,730

iii. Materials and Supplies -- Materials, supplies and equipment for general and administrative personnel include office furniture and equipment and office supplies. Costs for all of this equipment have been included in Otter Tail's calculation of the OTRR's annual operating expenses.[32]

iv. Other General and Administrative Expense – Many of the functions normally performed in-house at large railroads can be outsourced by the OTRR. Outsourcing is very common among railroads that are truly interested in achieving an optimally efficient operation, and that are not bound by traditional union-labor work rules.

Further, OTRR can realize a cost benefit under the outsourcing arrangement by reducing payroll and benefit costs for a comparable staff position and by reducing "desk costs" which include additional square footage of office space that would be required for additional staff, computers and office equipment, including phones, additional phone lines, and file cabinets.

(a) Professional Fees and Outside Services – Numerous short line railroads and railroad holding companies realize a cost benefit by outsourcing the following financial and accounting functions. The annual costs for these outsourced functions are shown below and are based on Otter Tail Witness Sugar's experience as President of South Central Florida Express, CFO with Emons Transportation Group (now Genesse & Wyoming, Inc.) and Controller of PHH Group, Inc. (now Cendant), both of which were publicly-held companies, and on discussions with the Controller of United States Sugar Corporation, South Central Florida Express, Inc.'s parent company. The estimate for payroll preparation, payroll and Railroad Retirement tax filings, W-2

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[32] See computer file "Otter Tail__Opr__Exp.123" in the electronic workpapers for Part III-D for details (except for maintenance-of-way equipment and supplies, which are discussed further in Part III-D-4).

preparation, and state and local payroll tax filings is based on Mr. Sugar's experience with South Central Florida Express which uses ADP for all its payroll preparation and reporting requirements and with Paychex.

- Federal, State and Local tax return preparation ($60,000 annually)
- Payroll Processing, payroll tax payments, tax return preparation and filing, W-2's, Railroad retirement filings ($66,000 for 825 employees paid biweekly)[33]
- Audit and internal systems review ($200,000 annually). This is comparable to that paid by the United States Sugar Corporation whose revenues are $600 million annually.
- Legal Fees ($250,000 annually)
- Retirement Plan Administration - 401(k) ($14,850 annually).[34]
- Risk Management and Claims ($125,000 annually)

(ii) Risk Management and Claims – The OTRR has two (2) Directors and four (4) Managers of Safety and Training in the Operating Department who will be responsible for government safety reporting and liaison, safety rule development and education for contractors and employees, and representing OTRR in the industry and in government associations and forums.

Professional risk and claims management can be secured through outsourcing. This is an area that lends itself to outsourcing, since the flow of work is not necessarily steady and is impacted by the frequency of claims filed. High risk operations such as switching, shops, handling of hazardous commodities etc., are minimal on OTRR, so outsourcing these responsibilities makes economic sense. There are a number of professional firms that focus on risk and claims management, and

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33 Based on $80 per employee per year.

34 Based on a conversation with Paychex the cost would be $1.50 per employee per month.

some with extensive experience in the rail industry, including Railway Claims, Inc. An annual amount of **REDACTED** is included for risk management and claims outsourcing costs.

(b) **Start-Up and Training** – The costs associated with initial hiring and training the employees needed for the start-up of the OTRR are also included. An amount of $1,349 per person[35] to account for initial hiring cost is included. The initial hiring cost is based on an assumption that 60 percent of employees are hired by word of mouth, 10 percent of employees are hired using a recruitment firm, 15 percent of employees are hired through advertisement and 15 percent of employees are hired through other means. This percent distribution of hiring methods is based on an annual survey of recruitment practices performed by the firm of Drake Bean Morin.[36]

In addition $4.2 million[37] is included for training costs for the train crew personnel. Training for train crews personnel is based on actual training costs available in the market place, including training costs charge by AMDG company for new conductors and Keeping Track Company for familiarizing experienced conductors and engineers with rail territories where they have no current experience. Otter Tail's training costs are based on the assumption that 25 percent of the train and enginemen are experienced enginemen, 50 percent are experienced conductors (one-half of which will receive training to become engineers) and 25 percent have no railroad experience. The average training cost for train and enginemen is $9,483 per individual, including tuition, travel and salary as appropriate.[38]

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35 See Electronic file "OTRR Training and Recruitment.123".
36 See Opening Workpaper Vol. III, pp. 2986 to 2989 and Electronic file "OTRR Training and Recruitment.123".
37 See Electronic file "OTRR Training and Recruitment.123".
38 See Opening Workpaper Vol. III, pp. 2959 to 2971 and Electronic files "OTRR Training and Recruitment" and "AMDG orientation.pdf".

Training for dispatchers is based on that provided by the National Academy of Railroad Sciences ("NARRS"), which provides for 14 weeks for training for new untrained dispatchers. This includes four (4) weeks of classroom training and ten (10) weeks of field training. According to the NARRs website individuals attending their training are responsible for paying their own tuition, room, board and travel expenses while learning to become dispatchers. However, some railroads reimburse the NARRS graduate for his or her $2,500 tuition cost.[39] Based on this the OTRR is paying each dispatcher $2,500 for training.

Maintenance-of-way crew members are paid one-week's salary during training and maintenance-of-way supervisors are paid two-weeks salary during training. In addition, the OTRR incurs $5,000 training cost for each maintenance-of-way crew member and supervisor. IT specialists are paid for four (4) weeks salary to set up the computer system of the OTRR.

Initial hiring and training costs are start-up costs, and will not be incurred on an annual basis, as a result they have been capitalized and recovered over the life of the OTRR.[40] This is consistent with the "matching rule" which is an accounting principle that hold that expenses should be matched with the revenues that those expenses are used to produce. By hiring and training its employees, the OTRR is making an investment in human capital. Most of these employees will participate in activities that will generate revenue for the OTRR for years to come. Therefore, the training and hiring costs associated with these employees should be "matched" to future revenues. A business' start-up costs should be amortized, and those start-up costs include expenses paid or incurred in

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39 See Opening Workpaper Vol. III, pp. 2972 to 2978.

40 The initial hiring and training costs have been added to the engineering costs for tax depreciation purposes and recovered over 20 years in the discounted cash flow model discussed in the Section II-G, infra. See electronic workpaper "Otter Tail_Opr_Exp.123" and Opening Workpaper Vol. III, pp. 2959 to 2991.

connection with "any activity engaged in for profit and for the production of income before the day on which the active trade or business begins."[41]

(c) Travel - Travel expenses have been included for all OTRR employees at the Director level and higher, for all Marketing Department employees (including the two Marketing Department Analysts) and the Human Resources Manager. Travel expenses of $6,667 for each of these individuals is included. Based on an annual survey of corporate travel managers performed by Runzheimer International, which estimates the annual cost of corporate travel for corporate employees that travel for business.

d. Other – Information Technology Requirements

The OTRR is a unique railroad in that it primarily handles unit coal trains and also handles some non-coal overhead traffic in trainload service. This reduces the complexity of computer and communications systems required to support the operations. For a typical Class I or regional railroad, the computer system requirements can be very complex due to the large number of customers served, large number of different commodities handled, large numbers of different origin and destination pairs, different types of equipment required to handle the lading, yard operations to handle blocking, and service commitments to customers on an individual car basis. Under the OTRR plan there will be a maximum of 176 trains a day (132 loaded and 44 empty) during the peak year. Only a few of OTRR's customers originate one commodity. All other commodities are handled in run through, overhead, unit train or trainload service. Because of a predominance of private cars, service measurements by train rather than by individual railcars, and multiple car billing

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[41] U.S. Master Tax Codes, Section 904, See Opening Workpaper Vol. III, pp. 904 to 905.

with RMI Revenue System used to allocate revenues. This type of operation simplifies the information technology requirements considerably, and renders unnecessary the colossally expensive mainframe systems that carriers such as BNSF use.

Based on the OTRR's operating plan and general and administrative departments, the capital requirements for requisite information technology and communications systems are equal to $1.9 million. The annual operating cost for information technology and communications is also equal to $4.3 million at year 2002 price levels. Table III-D-8 below shows the capital and annual operating expenses separately for information technology and communications systems.

Table III-D-7
Capital and Operating Costs for
Information Technology and Communications Systems

	Item (1)	Capital Cost (2)	Operating Cost (3)
1.	Information Technology	$1,592,935	$4,095,631
2.	Communications	328,630	205,906
3.	Total	$1,921,565	$4,301,537

See Opening Workpapers Vol. III, pp. 2992 to 3255.

Described below is the computer and communications system that has been designed to meet the OTRR's mission-critical technology needs to achieve operating efficiencies, customer satisfaction, minimal staffing, and maximum productivity, and to operate trains safely.

i. Transportation System

The key item in the OTRR's information technology architecture is RMI's Transportation Management Services ("TMS") package. This design is very similar to the one currently used on the Transportacion Ferroviaria Mexicana ("TFM"), the Mexican Railroad partially owned by the KCS, though the TMS system has a lot more functionality.

TMS is an integrated system for managing day-to-day rail operations. It includes modules for yard and inventory control, waybilling, train operations, switching settlements, demurrage, EDI consists, waybills, bill of lading, blocking instructions, work orders, switch instructions, and many other features. This system will be outsourced to RMI using frame relay communications from Donkey Creek (where the major transactions reporting will occur) to Atlanta, Georgia where RMI is located. Field personnel will access the RMI system via the Internet.

The capital cost for the RMI system is $200,000,[42] which includes training and implementation. The annual operating expense will be $2,193,600 based on the number of carloads handled.[43]

ii. Crew Management System

A crew management system is needed to efficiently manage the OTRR's train crews and equipment utilization. The OTRR will purchase a license from PS Technology for the SCAT Client Server system, and related equipment and software (Oracle Data Base). This would provide the functionality needed to schedule train and engine crew requirements over the OTRR system. It also minimizes the need for a large staff of crew callers or other crew management personnel.[44]

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42 See Opening Workpaper Vol. III, pp. 2993 to 3017.

43 See electronic workpaper "OTRR-IT Capital Budget.xls" and Opening Workpaper Vol. III, pp. 2993 to 3017.

44 The OTRR operating plan provides for a single in-house caller to be on duty on a constant basis, which is adequate given the capabilities of the computerized crew management system.

The cost for OTRR crew management system with 446 train, engine and yard employees and seven (7) crew change locations is **REDACTED**

iii. Dispatching System

A computerized dispatching system monitors the movement of trains and other equipment at all times, and distributes traffic efficiently across the railroad. The OTRR will purchase and implement a PC-based version of the Alstom CTC Dispatching system. This system is similar to the one that is currently being used by the KCS. This system has all the functionality needed for OTRR and includes all equipment, installation and tests on site.

The estimated costs for a three station dispatchers Alstom system with hot standby servers would be $ **REDACTED** This is more than adequate to meet the OTRR's need for dispatcher coverage three shifts per day, seven days per week. Therefore, is included in the stand-alone calculation to cover the cost of a dispatching system.[46]

iv. Automatic Equipment Identification

Automatic equipment identification (AEI) includes a trackside scanner that reads information from each car (car number and initial) in a manner similar to reading a bar code. That information is accumulated on a PC while the train passes a specific site where the scanner is installed. These readings are then compared to the train consist residing on a computer to determine if there are any discrepancies. If there are, the consist record is adjusted to agree with the reading from the scanner.

AEI enhances car and locomotive utilization, increases train consist accuracy and improves the railroad's ability to reorganize cars within a consist. Since the OTRR is a stand–alone railroad that

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45 See electronic workpaper "Otter Tail Crew Management.wpd."

46 A detailed description of the system's capacity is included in Opening Workpaper Vol. III, pp. 3023 to 3024. See electronic workpaper "OTRR-IT Capital Budget.xls."

only handles unit coal trains and some non-coal overhead traffic in trainload service, the critical points to verify train identification are at the interchange points. In a unit train operation, cars stay together as a unit except for an occasional setting out of a bad order car on occasions. The OTRR will have eight (8) scanners, one (1) at each of the eight interchange locations of Converse, Donkey Creek, Moran, Terry, Snowden, Mandan, Fargo and Benson for a total cost of **REDACTED**

v. Revenue Accounting

The OTRR will need a revenue accounting system to handle interline settlements for all the coal unit trains that interchange and the non-coal overhead traffic. RMI has a revenue accounting system that will provide all the functionality required by the OTRR. The RMI Revenue Management Services ("RMS") is a full function revenue management system that has been certified by the ARR for Interline Settlement System ("ISS") processing. This certification allows railroads using the ISS/Connect tor participate in the Interline Settlement System. ISS/Connect provides complex rate management, EDI management, freight billing, support for industry reference files, revenue protection and additional functionality. The RMS cost is based on the total monthly settlements. The OTRR will have an estimated **REDACTED** carloads in the 2002 based year that will be processed through the revenue management system at an annual cost of $1,402,800.[48] The capital cost for implementing and training on the RMI Revenue System will be $50,000.[49] These costs are included in the OTRR Capital and Operating Budgets.

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47 See Opening Workpaper Vol. III, pp. 3025 to 3029.
48 See Opening Workpaper Vol. III, pp. 2993 to 3017.
49 See Opening Workpaper Vol. III, pp. 2993 to 3017.

vi. Car Accounting

The OTRR will need a receipt and a payable car hire system because several of the cars that will be used in its service are provided by other carriers in overhead service. RMI has a car hire system that will provide the necessary features needed by the OTRR to keep track of foreign cars on-line and compute charges due from it to foreign roads. The system separates car earnings by designated owner groups, issues remittance and settlement summaries, flags non-moving cars and missing junctions, and helps keep track of assets with on-line access to car movement data.

The capital cost for the car hire RMI system is $50,000, which includes training and implementation. [50] The annual operating expense will be $244,032 based on the number of non-private interchange and private cars handled per month.[51]

vii. General Accounting

Peachtree MAS 200 system will be used as the OTRR's general accounting system. Peachtree MAS 200 is an industrial strength accounting package that will adequately support all the general accounting functions the OTRR will require. It is capable of handling high-volume accounting transactions daily, and has multi-user network capabilities. The Peachtree MAS 200 system provides financial snapshot and business analysis reporting, as well as all the core accounting features needed to run a small-to-medium size business. The software cost for this product is $23,125, and it is designed to run on Windows 2000 and a Windows NT operating system. The total costs for this system, including hardware, is $26,279, which includes a Dell OptiPlex X60 PC, cables, HP LaserJet

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50 See electronic workpaper file "OTRR-Operating Budget.xls".
51 See electronic workpaper file "OTRR-Capital Budget.xls".

5000N printer and the Peachtree MAS 11-Users version.[52] The MAS 200 accounting software will run on a Dell PowerEdge 2600 server, the same as that which will be used to run the Optumum Solution Software.

viii. Human Resource Management

The OTRR will use Optimum Solutions, Inc. NT/PC based system for human resources management. This system provides all the functionality that OTRR will need at an affordable cost. The software package including all basic employee reporting features, employee profile tracking, attendance reports, benefit, insurance and COBRA reports, compensation/job history reports, EEO and citizenship reports, organizational reports, and all OSHA and workers compensation reports. The capital cost for this system is $11,500 with an annual license fee of $2,500 for two (2) to five (5) users. The total hardware cost for this system is $6,675, which includes a Dell OptiPlex X60 PC, cables, HP Laser Jet 5000N printer and a Dell PowerEdge 2600 Server.[53]

ix. Network And Router Equipment

OTRR will need networking capability and routers because it will have a small number of computers in multiple locations. Networking and router equipment permit these computers to communicate with one another. OTRR will need one router at each field reporting location and two at its headquarters. The OTRR's communication network will consist of a microwave system. The costs for this microwave system have been provided for in Section III-F, infra. The IT budget includes $89,585 for a network computer system with backup located at the Donkey Creek

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52 Details for these cost estimates are included in Opening Workpaper Vol. III, pp. 3030 to 3067.
53 See Opening Workpaper Vol. III, pp. 3068 to 3077.

headquarters, for Local Area Network (LAN) and Wide Area Network (WAN). Additionally, $14,489 is included for routers at various locations, and $96,000 for Internet access for headquarters and field locations.[54]

x. Workstations and Printers

Both desktop and laptop PC's are provided in the IT cost estimates for the OTRR, with a high-end configuration to run a state-of-the-art operating system while avoiding the need to purchase other applications. One PC is provided for each general and administrative employee as well as for operating personnel located at the Donkey Creek headquarters. Additionally, one PC is provided at each crew change point and at the major yard locations where employees are assigned. Laptops are provided for use by employees who are required to travel a considerable amount of their time. The total capital cost for desktop and laptop computers is $215,988.[55]

The OTRR will need a variety of printers for work orders, safety bulletins and normal office work such as printing contracts, correspondence and reports. A color printer will be needed for various maps, charts and diagrams. Printers also will be needed in the field and at major interchange locations, to print information relating to the work performed there. IT expenses for the OTRR include a desktop laser printer for each desktop PC, and a printer for laptop PCs where needed. One color and two line printers will be installed at headquarters, and one line printer at each major yard. The total cost for these printers is $67,540.[56]

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54 See Opening Workpaper Vol. III, pp. 3182 to 3188.
55 See Opening Workpaper Vol. III, pp. 3124 to 3157.
56 See the electronic workpapers for Section III-D and Opening Workpaper Vol. III, pp. 3124 to 3181 for development of workstation and printer costs.

xi. Voice and Data Communications

The OTRR will need a telephone system and telephone service for external calls. This system would include traditional telephones for each administrative employee, NTS telephone system, voicemail systems and a calling card system. Nexpath Telephony Server-NTS Server Rack Mounted Systems is capable of handling 51 outside lines and up to 85 extentions. The one time total cost for this system is $22,295 for the server, $120 per telephone and $50 per telephone for installation. This system would be capable of handling internal calls over the microwave system and external calls from various parties. The external calls would consist of local and long distance telephone service, 800 services, paging and faxing. The estimated cost for external service is $50 per administrative employee.

Data telecommunications to support the RMI transportation system from Donkey Creek to Atlanta will be provided by AT&T. This will be a frame relay system that is based on estimated transactions. The cost for this service is $1,000 per month or $12,000 per year. The Internet will be used for data communications for all the field offices. The field offices will have Internet access to a RMI transportation system in Atlanta.

Cellular phones and pagers will be provided for employees who need them to perform their work efficiently. The total capital cost for the cellular phones and the NTS is $50,985 and the annual cost for all the above systems is $97,906.[57]

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[57] See the electronic workpapers "OTRR Cell Phones & Pagers.xls" and Opening Workpaper Vol. III, pp. 3189 to 3248 for development of the Voice and Data communication cost.

xii. Software Maintenance

Software products such as PC accounting packages that run on a server require payments of annual maintenance fees for support and upgrades. Network software and tools such as security software and monitoring software, all require payment of annual fees for support and upgrades. Some of these fees are included in the licensing agreement, such as that for the Optimum Solutions program, which has an annual fee payable for the use of its product. Other providers have a flat charge for the package with no annual fees, but they will have enhancement upgrade announcements from time to time with a specified charge for the upgrade.

These upgrade fees generally run approximately 15% of the original cost of the product. Therefore, a 15% maintenance fee has been included for products that don't have a stated annual fee. An additional $2,000 per router has been included for LAN software maintenance. The total costs for these fees are estimated at $59,071 per year.[58]

xiii. Railinc Services

OTRR will need some Railinc services to pass and receive car information to foreign roads, **REDACTED** There will be a number of cars interchanged to these railroads on a daily basis. This information will be useful to track car locations and planning daily operation activities. The total annual cost for Railinc service will be $27,768.

xiv. Security Software

OTRR will need a security software to protect its network from exterior sources due to the large amount of data being transmitted to Atlanta and to various parts of the railroad. Watchguard

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[58] See electronic workpaper "OTRR IT Operating Budget.xls."

Firebox 1000 is a comprehensive, easily managed firewall and VPN security appliance for mid-size businesses requiring a secure, private network. The capital cost for this software is $2,999 and an annual operating cost of $450 for maintenance.[59]

xv. Miscellaneous IT Expense

Wiring the network connectivity and other computer peripherals is required at the Donkey Creek headquarters and field offices. An allowance of $6,000 is included in the IT Capital Budget to account for this expense. In addition an annual expense of $6,000 is included to account for back-up tape vaulting expense in the IT Operating Budget.

4. MAINTENANCE-OF-WAY

The annual normalized maintenance-of-way costs for the OTRR are based on the engineering specifications, operating plan and traffic volumes discussed earlier. The OTRR will be maintained to Federal Railroad Administration ("FRA") Class 4 track safety standards. The road property will be maintained largely through a combination of regular inspection and spot maintenance, supplemented by contract cycle maintenance programs for ties, rail and ballast. The program and spot maintenance plans and associated costs are based upon the size and kind of properties to be maintained as well as the materials and contract work needed.

REDACTED

The estimated maintenance-of-way ("MOW") costs are separated between "spot" maintenance and material replacement. The total annual maintenance-of-way costs for the OTRR equal $ million at 2002 wage and price levels. Of the total annual normalized maintenance-of-way costs,

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[59] See Opening Workpaper Vol. III, pp.3251 to 3255.

REDACTED

percent, or million, constitute spot maintenance costs and the remainder represent program or replacement maintenance costs.[60]

a. Annual Operating (Spot) Maintenance Costs

The annual spot maintenance costs for the OTRR represent those expenses required to keep the railroad in operation on a day-to-day basis. This includes expenses for: (1) inspection, including those required by FRA regulations, (2) labor to effect repairs, including damage due to derailment, washouts, etc., and (3) actions taken to minimize slow orders and maximize the life of materials.

Program maintenance is the replacement of material assets, over defined segments, usually at regular intervals. This type of maintenance generally includes replacement of track material such as rail, ties, other track material, turnouts, crossings, signals, bridges, etc. It also includes out-of-face surfacing with additional ballast. **REDACTED**

The annual spot maintenance costs for the OTRR[61] equal

b. Program (Normalized) Annual Maintenance Costs

Program maintenance will, to the fullest extent possible, be performed on a cycle basis by which contract forces can perform it on an efficient basis. The primary programs performed by contractors and directed by OTRR Supervisors, will include all large-scale rail and tie replacement work, as well as out-of-face surfacing. Costs for materials are normalized (as described below); the

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60 See Opening Workpaper Vol. III, pp. 2992 to 3255 and computer file "Otrr__mow.123" for the development of the maintenance of way cost estimates.

61 As explained previously, the program maintenance costs (i.e., replacement of the OTRR's assets) are accounted for in the DCF model used to develop stand-alone capital costs while the spot maintenance costs are incorporated as an operating cost.

62 See computer file "Otrr__mow.123."

outside-contractor's costs represent labor and equipment only. The costs for replacing ties and rail and for surfacing were developed from Means.

The normalized annual track material replacement needs of the OTRR are based upon the track configuration, anticipated traffic densities, and the resulting expected service lives for each track material component. The replacement needs are determined by dividing the construction quantities by the estimated service lives. The resulting amounts represent the normalized replacement of assets, also known as program maintenance.

i. Staffing Requirements – Staffing is divided into management personnel and field personnel. Management personnel are stationed at Donkey Creek or Glendive and include the Vice President-Engineering/Mechanical, the Director-Engineering Services, Engineering Services personnel, the Directors-Maintenance Operations, Purchasing and Budgets analysts, and the Supervisors-Communications and Signals.

As noted earlier, the OTRR will have MOW Supervisors located at Donkey Creek, Sheridan, Hyshum, Glendive, Mandan, and Fargo, with appropriate personnel assigned to cover their respective territories. All of the MOW personnel were identified, and their duties described, in the previous discussion regarding the OTRR's Engineering/Mechanical Department.

ii. Compensation -- Based on the staffing described above, personnel costs were developed using BNSF's 2002 Wage Forms A & B provided in discovery. Categories of OTRR personnel were compared to similar categories of BNSF personnel and average salaries/wages were determined, and specific BNSF Division numbers are linked to OTRR categories.[63]

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[63] See electronic workpaper "Otrr_mow.123."

iii. **Materials, Supplies and Equipment** -- Standard life calculations were used to determine the annual cost for replacement of each category of unit based on traffic density (gross tons). Where multiple units exist (e.g., turnouts), a weighted average cost was developed and applied for the annual replacement of the item. The unit costs assigned to track materials and other items are the same unit costs used to determine the stand-alone construction cost for the OTRR.

(a) Ties – Ties are estimated to last 20 years on the single-track sections and 25 years on double-track sections between Converse and Fargo, including the Reno, Eagle Butte, Decker and Snowden Branches. On the remainder of the OTRR, i.e., Fargo to Benson ties are estimated to last 30 years on single-track and 35 years on double-track sections. On the Kuehn, Big Sky and Big Stone Branches and in all yards and set-out tracks cross ties are estimated to last 35 years.

(b) Surfacing Program – The OTRR is estimated to require out-of-face surfacing every three (3) years for all single-track sections and every four years on double-track sections between Converse Yard and Fargo, including the Reno, Eagle Butte, Decker and Snowden Branches. Surfacing is estimated to be required every five (5) years on the Fargo to Benson line and every six (6) years on the Kuehn, Big Sky and Big Stone Branches. This is the equivalent of approximately 347 track miles per year, although the actual locations to be surfaced in any given year may vary depending on traffic, soil conditions, and weather. A quantity of 300 cubic yards of ballast per mile is used for resurfacing.

(c) Rail – Rail life for new rail is calculated based on an average life of billion gross tons ("BGT").[64] Density statistics are used to determine average gross tons over various line

REDACTED

64

segments. These averages are then used to calculate average rail life and replacement. These averages are also used to determine the amount of rail grinding, which is assumed to be required every 100 MGT. In areas of double track, the gross ton estimates are assumed to be divided evenly between the two tracks. Second-hand rail used for lightly used branch lines is assumed to have a useful life of .75 BGT. Second hand rail for yards and set-out tracks are assumed to have a useful life of 40 years.

(d) Other Track Material – The total number of each item was taken from the quantities required for construction of the OTRR. As noted above, average life calculations were used to develop an annual rate of replacement.

(e) Equipment – As described previously, six vehicles will be assigned to each Maintenance-of-Way crew base. Each base will have a fully-equipped high-rail boom truck, a high-rail inspection truck, a fully-equipped welder's truck, and two signal maintainer's vans. Additionally, each Maintenance-of-Way Supervisor will be assigned an auxiliary van. Power tools will be provided, including rail saws, drills and generators, as well as other miscellaneous equipment required for inspection, spot repairs and day-to-day emergencies. A fully equipped all service van for use by the structures crew will be stationed at both Donkey Creek and Glendive. Each Maintenance-of-Way Supervisor will also have the use of an automatic tamper/lining machine, a ballast regulator/snowplow and a backhoe. Two (2) Model-40 Burro cranes are available to handle panels, other miscellaneous items and special ditching assignments over the OTRR system.

(f) Outside Contractors – Outside contractors will be used for various other maintenance items, including all weed spraying, rail geometry testing, rail grinding, rail testing. They will also be used for major bridge and building maintenance, large ditching projects, heavy

snow removal and cleaning up any derailments. Spraying the entire route of the OTRR for weed control will be performed annually. Rail geometry testing will be performed twice a year. As previously indicated, rail grinding will be performed every 100 MGT; two passes are assumed.

An allowance is also made for other miscellaneous contract work. This includes clean-up of large spills, survey work, bridge inspection, etc., that would not normally be handled by routine maintenance. An allowance for both snow removal and derailment cleanup was also made.

iv. Summary of OTRR Normalized Annual Maintenance Costs -- Based on the above, normalized annual maintenance costs for the OTRR equal million.[65]

REDACTED

5. LEASED FACILITIES

As a replacement for the BNSF, the OTRR is allowed to participate in any existing joint facility agreements in the same manner that BNSF participates. Based on information provided by BNSF in discovery, the OTRR will utilize

REDACTED

The amount per train mile is based on the trackage rights agreement which provided for a fee of As BNSF failed to provide tl this agreement to Otter Tail in discovery, the rate per train was escalated to the 1Q02 wage and price levels by applying the AAR's purchased services index from 3Q87 to 1Q02. The resulting is

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[65] See Opening Workpaper Vol. III, pp. 3256 to 3309 and computer file "Otrr__mow.123."

applied to all trains passing over this segment on the peak day, increased to an annual amount and then reduce to reflect the annual volume moving on the OTRR in the 2002 base year. The trackage rights agreement is included in the workpapers and the escalation of the cost per train mile are developed in the operating cost spreadsheet.[66]

6. LOSS AND DAMAGE

Annual loss and damage costs for the OTRR were developed by multiplying the tons moved, for each commodity handled times the actual 2002 loss and damage cost per ton **REDACTED**

The loss and damage per ton amount on cross-over traffic was then reduced to reflect only that portion of total revenues that are attributable to the OTRR.[67]

7. INSURANCE

Insurance expenses for the OTRR were calculated based on the relationship of casualty and insurance expenses incurred by BNSF to its total 2002 railroad expenses excluding maintenance of way depreciation and casualty and insurance expenses. For 2002, this ratio equals . These calculations are consistent with the methodology used by the STB in WTU, FMC and TMPA.[69]

8. AD VALOREM TAXES

In discovery, BNSF provided annual ad valorem (property) tax amounts paid in 2002 in the States of Wyoming, Montana, North Dakota, and South Dakota and the corresponding route miles

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66 See Workpapers Vol. III, pp. 3310 to 3355 and computer file "Otter Tail__Opr__Exp.123."
67 See Workpapers Vol. III, pp. 3356 to 3372.
68 See Workpapers Vol. III, pp. 3373 to 3381 and computer file "Otter Tail__Opr__Exp.123."
69 See WTU at 5, FMC at 174 and TMPA at 106.

owned in each state. Based on this information, an amount per route mile, indexed to 1Q02, for road property for each state was developed which was applied to the OTRR route miles in each state.[70] BNSF did not provide ad valorem tax information for the state of Minnesota, as a result the average tax rate per route mile for the other four states was applied to the route miles owned in Minnesota.

Table III-D-7, below shows the ad valorem tax paid by the OTRR in 2002 by state.

Table III-D-8
OTRR AD Valorem Tax by State

State	OTRR Route Miles	Ad Valorem Tax
(1)	(2)	(3)
1. Wyoming		
2. Montana	**REDACTED**	
3. North Dakota		
4. Minnesota		
5. South Dakota		
6. Total	1,283.89	$6,296,802

9. OTHER – OPERATING COSTS RELATED TO RE-ROUTED TRAFFIC

As indicated in Parts III-A, B and C above, the OTRR is handling some BNSF traffic via routes that differ from those presently used by BNSF. The rerouted issue traffic presently moves l

REDACTED

The OTRR will handle this traffic via Gillette, Moran Junction, through Terry to Glendive, then to Fargo, Benson and finally Big Stone, a distance of 1,036.1 miles . miles . than currently routed by BNSF.

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[70] See computer file "Otter Tail__Opr__Exp.123" and Opening Workpaper Vol. III, pp. 3382 to 3386.

In addition to the issue traffic, overhead traffic moving between Fargo and Snowden presently is routed over **REDACTED** The OTRR will handle this traffic via BNSF main east/west line through central North Dakota, through Jamestown and Bismark to Glendive, Montana, then to Snowden. The OTRR route is **REDACTED** than the current BNSF's route. The OTRR's annual operating expenses reflect the increases in costs resulting from the re-routes.[71] For overhead traffic, this includes, car costs for system, foreign and private cars. For the issue traffic no increase in car costs have been included, however, Otter Tail would not object to incurring any additional car related costs in order to receive the rate reduction associated with the stand-alone cost presented herein.

To the extent the re-routed traffic moves in private equipment, the involved customers will incur some increase in car-maintenance costs which are mileage-related. However, the increased costs are *de minimus*. Otter Tail would willingly accept this modest increase in its car costs in return for the rate reduction resulting from the SAC analysis. There is no reason why the other shippers would not also accept the re-route with no reduction in service in return for a similar percentage reduction in their rates.

10. SUMMARY OF TOTAL OPERATING EXENSES

Table III-D-9 below contains year 2002 annual operating expenses for the OTRR.

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[71] In addition, the additional capital recovery costs are accounted for in the Otter Tail's DCF model as all the rail lines required to move the rerouted traffic are included in Otter Tail's construction cost in section III-F, infra

Table III-D-9

Annual Operating Expenses For The OTRR — 2002

	Item (1)	Amount (millions) (2)
1.	Trackage Rights	
2.	Maintenance of Way (spot)	
3.	Locomotive Fuel and Servicing	
4.	Locomotive Lease	
5.	Locomotive Maintenance	
6.	Operating Personnel Incl. Materials and Supplies	
7.	Freight Car Expenses	
8.	Ad Valorem Taxes	
9.	Loss and Damage	
10.	General and Administrative	
11.	Insurance	
12.	Total	233.318

Source: Exhibit III-H-1, page 23 of 27, Column (2).

As shown in Table III-D-9 above, the aggregate 2002 operating expenses of the OTRR equal $233.3 million.

III-E
NON-ROAD PROPERTY INVESTMENT

III. E. NON-ROAD PROPERTY INVESTMENT

1. Locomotives

As stated in Section III-D supra, the OTRR will lease locomotives required to provide service to its customers rather than purchase them. As a result they are included with the operating expense portion of this statement.

2. Railcars

As stated in Section III-D supra, the OTRR will lease railcars required to provide service to those customers not providing their own railcars. As these railcars are leased, they are included in the operating expense portion of this statement.

3. Other

OTRR's other equipment, including company automobiles, radios office equipment, computers, software and telephones are discussed in section III-D-3 under operating costs. The annual cost for this equipment is included as an operating expense. Maintenance-of-way equipment such as hi-rail trucks, tampers, and ballast regulators are discussed in section III-D-4 under maintenance of way. The OTRR's computer system needs, and the associated capital investment, are described above in Section III-D-9, which details the OTRR's IT requirements.

III-F
ROAD PROPERTY INVESTMENT

III.F. ROAD PROPERTY INVESTMENT FOR THE OTRR

Total road property investment for the OTRR was developed by several of Otter Tail's experts. Mr. Philip H. Burris is sponsoring the testimony related to land and easement valuation and right of way determination in Part III-F-1. Mr. Michael Brook is sponsoring the testimony concerning comparable land sales data in Part III-F-1. Mr. Charles A. Stedman is sponsoring the specific evidence related to the roadbed preparation/earthworks component of road property investment exclusive of culverts and roadbed specifications in Part III-F-2. Dr. Vinaya Sharma is sponsoring evidence related to bridge classification, design and cost in Part III-F-5. Testimony related to the design of the microwave system and investment cost in Part III-F-6 is sponsored by Mr. John A. Mullan. Mr. Richard H. McDonald is sponsoring all other road property investment requirements in Parts III-F-2 through 12.

The OTRR's right-of-way is comprised of track that it constructs and track that it accesses through a trackage rights agreement with the RRVW.[1] The OTRR's road property investment costs were classified by STB property account for input into the discounted cash flow ("DCF") model discussed in Section III-G, infra. Table III-F-1 below summarizes the OTRR's investment costs by STB property account at 1Q02 levels.

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[1] The OTRR's use of the RRVW trackage was discussed in Section III-B-1, supra.

Table III-F-1
Summary of OTRR Investment
Costs by STB Property Account -- 1Q02 Levels

Property Account (1)	Asset Category (2)	Aggregate Investment (millions) (3)
1	Engineering	
2	Land	
3	Grading	
4	Tunnels	
6	Bridges and Culverts	
8	Ties	
9	Rail and OTM	
11	Ballast	
12	Track Labor	
13	Fences and Roadway Signs	
17	Roadway Buildings	
19	Fuel Stations	
20	Shops and Enginehouses	
26	Communication Systems	
27	Signals & Interlockers	
39	Public Improvements	
	Total	$2,237.4

REDACTED

Source: Exhibit III-H-1, page 3 of 27, Column (10). Excludes training startup costs.

As shown in Table III-F-1 above, the total 1Q02 road property investment costs for the OTRR equal $2,237.4 million.[2]

The engineering design criteria for the OTRR have been developed to serve the specific traffic requirements of the proposed railroad. As stated previously, the OTRR moves coal from origin

[2] The total shown in Table III-F-1 above is slightly lower than the total investment shown on Exhibit-III-F-1. This is because the DCF model reflects the cost associated with each property account based on when the monies are expended during the 30-month construction period of the OTRR. For example, while the investment cost for land as of 1Q02 is $ million, the OTRR actually expends the monies for land in 2000 when the value is $ million.

mines in Wyoming and Montana for eventual delivery to the electric generation facilities of domestic utilities and also handles overhead movements of grain, automotive, intermodal and general freight traffic.

Consistent with the stand-alone cost constraint of the Guidelines[3] no barriers to entry exist with respect to the design and construction of the OTRR. Furthermore, and also consistent with Guidelines, the OTRR is designed as a least cost, most efficient railroad. Accordingly, the intent is to minimize resources used in building the rail plant, consistent with safety, operational and service requirements, and future plant maintenance. Part 1 of Chapter 16 of the American Railway Engineering and Maintenance-of-Way Association ("AREMA") Manual covers basic engineering considerations for planning and designing railroads. Applicable concepts contained in that chapter have been incorporated into this design.[4]

Moreover, in many instances, the design criteria proposed for the OTRR are consistent with the criteria relied upon by WRPI/CNW in construction of the line between Shawnee Junction, WY and Joyce, NE and consistent with BNSF's lines between Converse Junction, WY and Big Stone, SD as confirmed during Otter Tail's experts' April 2002 field trip.[5]

Otter Tail's chief engineering witness, Mr. Richard H. McDonald was Vice President - WRPI and was in charge of the project to construct the former WRPI/CNW line between Joyce, NE and Shawnee Junction, WY where that line connects with the BNSF, including yards and related facilities at Bill, WY and at South Morrill, NE. This line is 107.3 miles long and was constructed

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3 1 I.C.C.2d 520 (1985)

4 However, AREMA specifications are recommendations, not requirements.

5 See Opening Workpaper Vol. III, pp.3387 to 3402 for the information obtained on this field trip made by Messrs. McDonald, Burris and Fapp.

in 1983-84. Construction included approximately 75 percent single-track subgrade and 25 percent double-track subgrade. The roadbed width was 28 feet for single track and 43 feet for double track, i.e., track centers for multiple track were 15 feet apart. Mr. McDonald has combined his knowledge of the WRPI construction with the requirements of the OTRR in determining the specifications for the OTRR.

1. Land Requirements

Determination of the value of land for the OTRR was accomplished through a multiple step process. First, the acres of land for the right-of-way, yards, buildings and communications systems was determined. Second, a physical inspection of the property was made to determine the actual land use types along the existing BNSF rail lines comprising the OTRR right-of-way. Third, based on this physical inspection, the land use types were categorized as agricultural, industrial, commercial, residential and open space[6] and acreage required for the OTRR was assigned to each of these categories through a parcelization process.

Fourth, for each land use type and county through which the OTRR passes, comparable land sales were found in close proximity to BNSF's existing right-of-way. Fifth, based on the unit prices represented in the comparable land sale data, an "Across The Fence" value was estimated for the land required by the OTRR. The total acres of land required for the OTRR equals 15,673 acres and the land value required for the OTRR as of the first quarter 2002 is equal to $33.3 million.

The development of the value of land required by the OTRR is discussed in this section under the following headings:

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[6] Open space includes areas where the right-of-way crosses significant rivers or natural terrain that makes development extremely difficult.

a. Right-of-Way Acreage

b. Yard Acreage

c. Other Acreage

d. Property Value

a. Right-of-Way Acreage

As stated in section III-B supra, the right-of-way configuration of the OTRR follows the existing BNSF right-of-way from Converse, Wyoming to Big Stone, South Dakota. The hypothetical right-of-way of the OTRR is generally 100' in width. Consistent with the STB's findings in other stand-alone cost proceedings,[7] the width of the hypothetical right-of-way is 75 feet in towns such as Gillette and Sheridan, Wyoming, Miles City and Glendive, Montana and Bismark and Fargo, North Dakota.

The right-of-way acres were reduced to reflect those parcels of BNSF's existing right-of-way that are not owned and that BNSF accesses through easements. To determine the location and extent of land BNSF currently uses via easements, the BNSF's valuation maps (provided by BNSF in discovery) were examined. These easements were then matched to the designated parcels on the OTRR right-of-way and the acreage required to purchase in each parcel was reduced by the easement acreage.[8] The total acres for the OTRR right-of-way, excluding easement acres, equals REDACTED

b. Yard Acreage

As discussed in Section III-B-3. The OTRR has full-service yards located at Donkey Creek,

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7 See McCarty 2 S.T.B. 460, 504; WTU 1 S.T.B. 638, 702-703; FMC at 112; and WPL at 76.

8 A summary of BNSF's easements, by BNSF valuation section, and OTRR right-of-way parcels are contained in electronic workpaper "OTRR Land.xls."

WY and Glendive, MT. Its other staging and relay yards are located at Converse, WY, Campbell, WY and Dutch, WY. In addition, interchange tracks are located at Moran Junction, MT, Terry, MT, Snowden, MT, Fargo, ND, and Benson, MN. The configuration of each of these yards is shown in Exhibit III-B-1. The total acres required for the yards is equal to 262.[9] The acres for each yard is summarized in Table III-F-2 below.

Table III-F-2
OTRR Yard Land Acreage Requirements

	Yard Location (1)	Acres (2)
1.	Converse, WY	14.97
2.	Donkey Creek, WY	108.77
3.	Campbell, WY	4.82
4.	Dutch, WY	2.46
5.	Moran Junction, MT	3.49
6.	Glendive, MT	114.31
7.	Snowden, MT	2.55
8.	Fargo, ND	8.41
9.	Benson, MN	2.57
10.	Total Yard Acres	262.35

c. Other Acreage

In addition to the land for the right-of-way and yards, the OTRR requires land for other facilities (not located at yards) and microwave communications sites.[10] The OTRR requires 8.68 acres for these other facilities and a total of 59.01 acres of land for 45 microwave sites. The total acres of land for these other facilities and microwaves sites on the OTRR equals 67.69 acres. Table

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9 Development of yard acres is found in Otter Tail's electronic workpaper "OTRR_bldgs.xls."

10 The facilities and microwave communications requirements are discussed in Section III-F-7 and III-F-6 of this narrative, respectively.

III-F-3 below summarizes the acres of land required by the OTRR for these items.

Table III-F-3
OTRR Other Facility and Microwave Land Requirements

	Facility (1)	Acres (2)
1.	Reno	.63
2.	Kendrick	.64
3.	Sheridan	.83
4.	Rowley	.63
5.	Hysham	.83
6.	Shirley	.63
7.	Sidney	1.79
8.	Dickenson	.62
9.	Mandan	.83
10.	Jamestown	.62
11.	Herman	.63
12.	Microwave Towers	59.01
13.	Total	67.69

d. Property Value

To determine the value of the land required by the OTRR, the right-of-way was divided into more than 600 parcels based on the types and uses of the property that the right-of-way crosses. For each parcel to be acquired, the highest and best use was determined by considering the current use of the adjoining property. To determine the highest and best use of the adjoining property, the land adjoining the existing BNSF right-of-way between Converse and Big Stone was inspected during an April 2002 field trip. The visual observations of the uses of the land adjoining the existing BNSF right-of-way were recorded , specifically identifying variations in the land based on features such as the access to the property, the type of land use (e.g., agricultural, residential, commercial, industrial

and open land), the topography and availability of utilities. A summary of the observations that describe the land uses adjacent to the OTRR right-of-way is contained in Exhibit III-F-2.

Once the property was divided into parcels and each parcel's highest and best use was identified and the fair market value of each parcel was estimated based on an Across the Fence ("ATF") value. The ATF analysis assigns value based on the market price of similar land adjacent to or near the right-of-way. The fair market value is defined as:

> "The highest price estimated in terms of money which the land would bring if exposed for sale in the open market, with reasonable time allowed in which to find a purchaser, buying with knowledge of all the uses and purposes to which it is adapted and for which it is capable of being used." [Sacramento Southern R.R. Co. v. Heilbron 156 Cal. 408, 104 p. 979 (1909)][11]

To determine the fair market value, comparable sales data for each land use type was developed for the counties through which OTRR passes. This comparable sales data accurately reflects the prices that other purchasers and sellers in the market have agreed to as the value for comparable properties. Market data necessary to make the sales comparisons used in our analysis was obtained from Mr. Michael A. Brook, an established real estate appraiser located in Billings, Montana. The comparison data is based on actual sales that took place during the September 1995 to January 2003 time period.[12] Using this sales information, an aggregate ATF value was established as of the first

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11 The Appraisal of Real Estate, Tenth Edition, Appraisal Institute, 1992, p. 21.

12 The comparable sales information provided by Mr. Brook is contained in Opening Workpaper Vol. III, pp. 3403 to 3899 and summarized in electronic workpaper "OTRR__Land__Comparables.xls."

quarter of 2002 by county and land use characteristic.[13]

The average land value derived from the comparative land sales data by county and land use type was then applied to each parcel's acreage (excluding easements) to derive the OTRR land acquisition costs for that parcel. In those instances where no comparable land sales were available by county and land use type, the average overall average by land use type was used.[14]

Information regarding the actual transaction fees and acquisition costs paid by BNSF for easements was obtained from BNSF in discovery. Using this information, the average transaction fee and acquisition cost were determined and a weighted average easement cost per acre was developed. This weighted average easement cost per acre was applied to easement acres on the OTRR right-of-way and added to the total right-of-way land value.[15]

An assemblage factor has been applied to those portions of the OTRR right-of-way that replicates BNSF's rail lines that have been recently constructed. These line segments include the mainline from Eagle Butte Junction to Converse and each of the branch lines that serve coal mines. A assemblage factor was applied to the land values for these main line segments and branch line. The factor is consistent with appraisal literature that indicates "if the subject property connects points of little significance...[the] cost of avoidance in comparison to

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13 The individual comparable land sale values per acre were indexed from the date of sale to January 2002 using a monthly land appreciation index that was derived from the annual appreciation land indexes based on U.S. Department of Agriculture land values and the U.S. Department of Commerce Consumer Price Index. This is discussed in greater detail in Section III-G, infra. See also Opening Workpaper Vol. III, pp. 4767 to 4772, and computer file "OTRR_Land.xls."

14 A calculation of the average cost by land type and county is contained in electronic spreadsheet "OTRR_Land_Comparables.xls." In addition comparable land sales data form Grant County, South Dakota and Wilkin County, Minnesota was obtained directly from these counties and is included in electronic files "Grant County Land.xls" and "Wilkin Land Sales.xls", respectively.

15 Copies of BNSF's easement documents are included in Opening Workpaper Vol. III, pp. 3900 to 4241, and the calculation of the average easement cost per acre is included in Otter Tail's electronic workpaper "OTRR_Land.xls."

assembling a new corridor is minimal, the enhancement factor may be near 1...".[16]

The total land value for the OTRR right-of-way, yards, buildings and microwave towers is equal to $ REDACTED. This land value is summarized in Exhibit III-F-3.

2. **Roadbed Preparation**

Roadbed preparation costs for the OTRR equal $594.0 million. Each component of roadbed preparation is discussed below.

a. **Clearing & Grubbing**

Clearing refers to the cutting of trees, stumps, shrubs and other vegetation within 6 inches of the ground and the disposal of such cut materials. Grubbing refers to the removal and disposal of all stumps and roots and other debris visible on the surface.

Exhibit III-F-4 identifies the acres per track mile that were cleared when the rail lines being replicated by the OTRR were originally constructed, based on the quantities developed by the ICC's Bureau of Valuation and contained in B.V. Form 561 (commonly referred to as the ICC Engineering Reports).[17] Exhibit-III-F-5 identifies the acres per track mile that were cleared for the construction of the Orin Line and the Eagle Butte Branch Line.[18] These quantities (per track mile) were then increased by the ratio of the current roadbed specifications to the original construction specifications and applied to the track miles (including yards and sidings) of OTRR in the same manner as the grading quantities discussed in Section III-F-2.b, infra. Exhibit III-F-4 details the calculation of the

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16 "Value of Transportation/Communication Corridors", Dolman and Seymour, Appraisal Journal, October 1978. See Opening Workpaper Vol. III, pp. 4242 to 4256.

17 The ICC Engineering Reports are discussed in detail in Section III-F-2.b., infra

18 Exhibit-III-F-5 details the calculation of several of the other grading item quantities per mile for the Orin Line and the Eagle Butte Branch Line.

OTRR acreage requiring clearing.[19]

The acres per route mile of grubbing were also obtained from the ICC Engineering Reports and the BN Orin Line and Eagle Butte Branch Line data and applied to the OTRR's line segments in the same manner as the acres for clearing. These figures are also displayed in Exhibits III-F-4 and III-F-5.

Based on a review of the OTRR route by Messrs. McDonald, Burris and Fapp, it was determined that much of the route would require minimal clearing and most of the clearing would be the removal of brush as opposed to trees. This is supported by the ICC Engineering Reports which show minimal clearing and substantially less grubbing.[20]

In determining the appropriate cost for clearing and grubbing applicable to the OTRR, Otter Tail has reflected two different costs for clearing and one cost for grubbing. For the number of acres that were grubbed, Otter Tail has assumed that trees were cleared. Therefore, Otter Tail has used the cost per acre for clearing of $119.46 (cut and chip light, trees to 6" in diameter) from the 2002 Means Handbook.[21] This cost per acre reflects the application of the Means Handbook location factors.[22] For these same acres, Otter Tail has utilized the cost per acre for grubbing of $1,360.61 (associated with cut and chip light, trees to 6" in diameter), also obtained from the 2002 Means Handbook and including the application of the Means Handbook location factors. For the remaining

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19 See electronic file "OTRR Grading.xls" in the electronic workpapers for Part III-F.

20 See Exhibit III-F-4.

21 RSMeans Company, Inc. publishes several construction cost estimating handbooks, including Site Work & Landscape Cost Data, Square Foot Costs and Heavy Construction Costs. These handbooks are collectively referred to in this narrative as the "Means Handbook" and the relevant pages from these books relied upon by Otter Tail are included in Otter Tail's Opening Workpaper Vol. III under Section III-F.

22 All of the unit costs from the Means Handbook utilized by Otter Tail are adjusted by the Means Handbook location factors. The cost figures in the Means Handbook represent national averages. The Means Handbook city cost indexes for site construction are used to develop weighted average factors based on OTRR miles in each state. See computer file "OTRR Grading.xls" contained in the electronic workpapers for Section III-F.

acres of clearing for the OTRR, Otter Tail applied the cost per acre of $191.46 (including the location factor adjustment) for clearing with dozer and brush rake, medium brush to 4" diameter.

The OTRR requires 227.47 acres to be cleared at a cost of $1.1 million and 227.47 acres to be grubbed at a cost of $0.3 million for a total cost of $1.4 million for clearing and grubbing at 1Q02 levels.[23]

b. Earthworks

Without extensive, costly engineering studies that would be unreasonable to undertake under the circumstances that attend rate reasonableness determinations under the Guidelines, one cannot be absolutely precise about the earthwork quantities (grading) required to build a hypothetical railroad. However, in cases where a railroad already exists, the grading quantities for that railroad are a matter of record. This information can be used to compute an estimate for earthwork quantities given current design standards.

In developing the estimated earthwork quantities necessary for the construction of the OTRR, Otter Tail relied on the information contained in the ICC Engineering Reports.[24] Discussion of this data and its use in developing the earthwork requirements for the OTRR is set forth below.

i. History of the ICC Engineering Reports

In the early part of the 20th century, the ICC's Bureau of Valuation, in compliance with former Section 19A of the Interstate Commerce Act, prepared extensive valuations of the physical plants of the railroads in the United States. This data was to be used to aid the ICC in its function of

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23 See Exhibit III-F-6.

24 Copies of these ICC Engineering Reports, which were obtained from the National Archives and Records Administration, are included in Opening Workpaper Vol. III, pp. 4258 to 4309.

determining reasonable rates. Particularly applicable to grading are data collected under the "Special Instructions for 'Road Accounts'":

> Account 3. Grading
>
> Cross-section measurements shall be made of the roadbed as it now exists in such manner as will permit an accurate ascertainment of the quantities therein. In general, cross sections shall be made at each 100-foot station and at such intermediate points as the conditions demand for calculating the grading quantities and their classification. Station and plus of all grade points shall be noted.
>
> Horizontal distances in cross sections shall be ascertained from the base line and at right angles thereto. Vertical distances shall be ascertained from base of rail or subgrade. Ditches and channel changes constructed by the carrier, which can not properly be classed as borrow pits, shall be estimated or measured at such intervals as are necessary to obtain information as to yardage. Note shall be made of kind of ditches, and where used for other than railroad purposes give conditions governing construction.
>
> Unless otherwise instructed all material excavated shall be classified by the assistant field engineer as "solid rock," "loose rock,"or "common excavation."
>
> Solid rock shall comprise rock in solid beds or masses in its original position which may be best removed by blasting, and bowlders (sic) or detached rock measuring 1 cubic yard or over.
>
> Loose rock shall comprise all detached masses of rock or stone of more than 1 cubic foot and less than 1 cubic yard, and all other rock which can be properly removed by pick and bar and without blasting, although steam shovel or blasting may be resorted to on favorable occasions in order to facilitate the work.
>
> Common excavation shall comprise all other materials of whatsoever nature that do not come under the classification of "solid rock"or "loose rock."

I.C.C. Division of Valuation, "Instructions for Field Work of the Roadway Branch of the Engineering Section," 1916, page 10.

The results of these valuation studies are summarized in the ICC Engineering Reports. Information contained in the Engineering Reports is considered to be highly reliable, and the use of

these Reports in determining the grading requirements for a stand-alone railroad has been accepted by the Board in recent coal rate proceedings.[25]

ii. Identification of Applicable Valuation Sections

The ICC's Engineering Reports correspond to railroad valuation sections. The railroad valuation sections cover specific rail lines and are usually confined within a state. As part of the ICC's valuation process, valuation section index maps were created which identified the boundaries of each railroad valuation section.[26]

Based on these maps, Otter Tail identified the valuation sections corresponding to the line segments of the OTRR.[27] These sections were owned in the 1800s and early 1900s by the Chicago, Burlington and Quincy Railroad, Northern Pacific Railway, Great Northern Railway, Chicago Milwaukee & St. Paul Railway and the Montana Eastern Railway. Exhibit III-F-7 contains a listing of the valuation sections applicable to the line segments of the OTRR.

iii. Extraction of Data from the ICC's Engineering Reports

Once the applicable valuation sections and relevant ICC Engineering Reports were identified, Otter Tail extracted the data necessary to calculate the required earthwork quantities for the OTRR.

First, the miles for each valuation section were drawn off in three categories: (1) main-line; (2)

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25 See WPL at 79, 82; WTU, 1 S.T.B. 638, 704-05; and TMPA at 117-118.

26 See Opening Workpaper Vol. III, pp. 4258 to 4309.

27 ICC Engineering Reports were available for all of the OTRR rail lines with the exception of the Orin Line (Converse Yard to Donkey Creek) and five coal mine branches - Campbell to Eagle Butte Jct.(Eagle Butte, Rawhide, Buckskin , Dry Fork, Fort Union and Clovis Point), Reno Jct. to Jacobs Jct.(Black Thunder and Jacobs Ranch), Dutch to Nerco Jct. (W. Decker, E. Decker and Spring Creek), Sarpy Jct. to Kuehn (Absaloka) and Nichols to Big Sky, (Big Sky and Energy).

other main track; and (3) all other track. Next, the cubic yards of excavation were extracted by type of material -- common, loose rock and solid rock. Then, the cubic yards of embankment were extracted by type of material -- common and loose rock.

Exhibit III-F-4 summarizes the data extracted from the ICC Engineering Reports for each valuation section applicable to the OTRR. The grading quantities extracted from the Engineering Reports also were used to develop a distribution of the earthwork quantities into four types of material -- the three types of excavation (common rock, loose rock, solid rock) and total embankment (borrow). This distribution for each valuation section is displayed on Exhibit III-F-8.

iv. Adjustments to Engineering Report Quantities to Reflect Modern Design Standards

The earthwork quantities contained in the Engineering Reports are assumed to be based on design specifications less stringent than those for modern day construction, and therefore need to be adjusted.

Based on a review of literature prevailing at the time, Otter Tail estimated that the ICC Engineering Report quantities for the railroads comprising the OTRR reflect average roadbed widths of 16 feet for fills and 19 feet for cuts.[28] The OTRR is based on modern design standards required to accommodate unit train coal traffic. The OTRR has single-track roadbed widths of 28 feet for fills and 44 feet for cuts,[29] from Converse Yard to Reno Junction, Campbell to Donkey Creek and Glendive to Fargo and also on the Reno and Eagle Butte branches. All of the remaining lines of the

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[28] See William C. Willard, Maintenance of Way and Structures, McGraw-Hill Book Company, 1915, pp. 29-31. See Opening Workpaper Vol. III, pp. 4310 to 4312.

[29] The additional 16 feet reflects 8 feet on each side necessary to accommodate side ditches 2 feet wide and 2 feet deep.

OTRR have single track roadbed widths of 24 feet for fills and 40 feet for cuts. The OTRR has a side slope of 1.5 to 1 for all of its lines, as explained, infra.

In order to calculate the earthwork requirements of the OTRR, it was necessary to adjust the ICC Engineering Report quantities so that they would reflect the OTRR's modern day design specifications.

Exhibit III-F-9 contains the adjusted earthwork quantities per mile for single and double track based on the roadbed width specifications described above. Specifically, 24-foot single track (39-foot double track)[30] and 28-foot single track (43-foot double track)[31] roadbed widths were used depending on the location.

v. Earthwork Quantities for the Recently Constructed Segments of the OTRR

Six line segments of the OTRR, one (1) section of the OTRR's main line and five (5) coal mine branches, did not exist when the ICC conducted its valuation studies. Therefore, there are no ICC Engineering Reports for the following segments: (1) Converse Yard, WY to Donkey Creek, WY; (2) Reno Junction, WY to Jacobs Junction, WY; (3) Campbell, WY to Eagle Butte Junction, WY; (4) Dutch, MT to Nerco Junction, MT; (5) Sarpy Junction, MT to Kuehn, MT; and (6) Nichols, MT to Big Sky, MT. The calculation of the earthwork quantities for each of these line segments is discussed below.

(a) **Converse Yard, WY to Donkey Creek, WY** – Although there are no ICC

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30 24-foot width for single track plus 15 foot center-to-center spacing for the adjacent track.
31 28-foot width for single track plus 15-foot center-to-center spacing for the adjacent track.

Engineering Reports for the Converse Yard to Donkey Creek line segment, there is publicly available data covering a portion of this line segment. In his February 28, 1985 IPS[32] testimony, Burlington Northern Railroad Company witness Jerry R. Masters provided excavation figures covering the portion of BNSF's Orin Line from Reno[33] to Orin Junction,[34] a total of 79.37 miles, in his Exhibits JRM-3A and JRM-3B.

In his testimony, Mr. Masters provided the cubic yards of excavation for this rail line and a wealth of other information pertaining to its construction. According to Mr. Masters' testimony, the roadbed width for the Orin Line construction equaled 28 feet for single track. Mr. Masters also stated that this portion of the Orin Line (Reno to Orin Junction) was originally constructed as 50% single track and 50% double track.

Utilizing this information, combined with the specifications for the side ditch and side slope geometry,[35] and adjusting to a 24-foot or 28-foot top of subgrade width,[36] Otter Tail estimated the earthwork quantities per mile for the Orin Line. Specifically, Otter Tail calculated 141,736 cubic yards per mile for single track and 174,843 cubic yards per mile for double track (including excavation for special ditches)[37] assuming a 24-foot roadbed width and 150,555 cubic yards and 183,682 cubic yards, respectively, for a 28-foot roadbed width.

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32 ICC Docket No. 37021, Iowa Public Service Company v. Burlington Northern Railroad Company and Chicago and North Western Transportation Company ("IPS"). See Opening Workpaper Vol. III, pp. 4314 to 4321.

33 Reno is at MP 42.9 on the Orin Line, 42.9 miles south of Donkey Creek and 27.1 miles north of MP 70, the southern terminus of the OTRR.

34 Orin Junction is south of Converse Yard.

35 Otter Tail assumed that the side ditch and side slope specifications for the Orin Line are the same as those specified for the OTRR.

36 These calculations are detailed in computer file "OTRR Grading.xls" contained in the electronic workpapers.

37 See Exhibit III-F-10.

(b) Reno Junction, WY to Jacobs Junction, WY – BNSF did not provide any earthwork quantities for this line in response to Otter Tail's discovery requests.[38] To calculate the grading quantities for this line, Otter Tail used the adjusted per mile quantities for the connecting Orin Line based on a 28-foot roadbed width for single track and a 43-foot roadbed width for double track.

(c) Campbell, WY to Eagle Butte Junction, WY – In response to Otter Tail's discovery requests, BNSF provided information for this line in the same format as the Orin Line data included in Mr. Masters' IPS testimony.[39] Otter Tail has used this data in the same manner as it utilized the Orin Line data, i.e., Otter Tail calculated the earthwork quantities per mile based on a 28-foot roadbed width. Specifically, Otter Tail calculated cubic yards per mile for single track and cubic yards per mile for double track (including excavation for special ditches) assuming a 28-foot roadbed width.[40]

(d) Dutch, WY to Nerco Junction, MT, Sarpy Junction, MT to Kuehn, MT and Nichols, MT to Big Sky, MT – BNSF did not provide any earthwork quantities for the lines from Dutch, WY to Nerco Junction, MT (Decker Branch), Sarpy Junction, MT to Kuehn, MT (Kuehn Branch) and Nichols, MT to Big Sky, MT (Big Sky Branch) in response to Otter Tail's discovery requests.[41] To calculate the earthwork quantities for these lines, Otter Tail utilized L. E. Peabody

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38 See BNSF's February 19, 2002 response to Otter Tail's Request For Production No. 84 which is included in Opening workpaper Vol. III, pp. 4503 to 4504.

39 Exhibit III-F-5 details the calculation of earthwork quantities per mile for the Eagle Butte Branch Line.

40 See Exhibit III-F-10.

41 See BNSF's February 19, 2002 response to Otter Tail's Request For Production No. 84 which is included in Opening workpaper Vol. III, pp. 4503 to 4504.

& Associates, Inc.'s Computer Aided Railway Design System ("CARDS") program.[42] CARDS uses the information from U.S. Geological Survey ("USGS") topographical maps[43] in concert with the specifications for the OTRR[44] to calculate the earthwork quantities for each of these three rail lines.[45]

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and length of bridges was taken from the BNSF track charts.[46]

Using CARDS, Otter Tail calculated 1,439,330 cubic yards of excavation[47] and 485,600 cubic yards of borrow for the Decker Branch, 777,385 cubic yards of excavation and 326,000 cubic yards of borrow for the Kuehn Branch, and 438,925 cubic yards of excavation and 275,200 cubic yards of borrow for the Big Sky Branch.[48]

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42 CARDS was accepted by the ICC in Docket No. 38301S Coal Trading Corporation, et al. v. The Baltimore and Ohio Railroad Company, et al. ("Coal Trading"). See October 28, 1988 ALJ decision at 41. See also the ICC's January 17, 1990 decision at 6 I.C.C. 2d 361, 419.

43 The USGS maps covering the route traversed by these three rail lines show most of the existing rail lines in place. Therefore, in developing the earthwork quantities using CARDS, the existing alignment was utilized and the locations where the elevation lines would have crossed the rail line were identified based on the location of the elevation lines adjacent to the existing track.

44 In order to be consistent with the remaining sections of the OTRR, and consistent with the least cost, most efficient criteria of stand-alone theory, which only requires the construction of necessary facilities, Otter Tail utilized the CARDS program in conjunction with the same specifications used for other OTRR lines (i.e., a 24-foot roadbed width, a side slope of 1.5:1, side ditch depth of 2 feet and side ditch width of 2 feet) to calculate the earthwork requirements for these lines.

45 The USGS maps covering these rail lines have not been revised since the early 1970's and do not show all of the rail lines. For example, the USGS maps covering the Decker Branch only show the trackage from Dutch to W. Decker and do not show the rail lines to E. Decker and Spring Creek. In performing the CARDS analysis,Otter Tail calculated the quantities for the trackage shown on the USGS maps using CARDS and applied the average per-mile earthwork quantity to the amount of constructed track on the branch.

46 The curves on these lines were also identified during the process of entering the data into the CARDS program. CARDS calculates curve data based on the track alignment shown on the USGS topographical maps, and does not allow for the insertion of curve data from an outside source.

47 The excavation quantities were distributed between the three types of material based on the distribution of materials for the valuation section to which the branch line connects. The excavation quantities for the Decker Branch were distributed based on the distribution percentages for valuation section CBQ-6AB-WY and the quantities for the Kuehn and Big Sky Branches were distributed using the distribution percentages for the NP-1-MT valuation section.

48 See Opening Workpaper Vol. III, pp. 4397 to 4464 and the proprietary computer files included in Otter Tail's electronic workpapers under III-F-2 in the "CARDS" subdirectory.

vi. OTRR Earthwork Quantities and Costs

Once the adjusted earthwork quantities per mile were developed, it was necessary to calculate the total earthwork requirements and costs for the OTRR. These requirements and costs are discussed below.

(a) OTRR Line Segments – Exhibit III-F-11 details the calculation of the grading quantities for the respective line segments of the OTRR. First, the OTRR line segments were matched with the applicable valuation section(s). Next, the applicable roadbed width was identified. Then, the route miles for each segment were divided into single track and double track based on the track requirements of the OTRR. Finally, the single and double track amounts were multiplied by the applicable cubic yards per mile for the appropriate valuation section.

Total grading requirements for the line segments of the OTRR equal 92.9 million cubic yards.

(b) OTRR Yards

Grading requirements for the OTRR yards, with the exception of the yards at Converse, Campbell and Dutch, are based on the ICC Engineering Report quantities. As Orin Line and the Eagle Butte Branch did not originally have any yards, for the Converse and Campbell Yards, Otter Tail utilized the cubic yards per mile for additional track (from Exhibit III-F-10) applied to the miles of track in each yard. Specifically, Otter Tail utilized 33,127 cubic yards per mile for additional track for the Converse Yard and 46,972 cubic yards per mile for additional track for the Campbell Yard. The resulting quantities were treated as excavation, consistent with the Orin Line and Eagle Butte Branch quantities which were all classified as common excavation.

For the Dutch Yard, Otter Tail estimated 20,931 cubic yards per mile for the additional track based on the earthwork quantities developed for the Decker Branch using the CARDS program discussed infra.[49] The resulting quantities were classified into the three earthwork types in the same manner as the quantities for the branch, i.e., they were distributed using the same distribution as the connecting valuation section, CBQ-6AB-WY.

Otter Tail calculated the yard grading requirements for the remaining yards[50] based on an assumed average fill height of **REDACTED** applied to the miles of track in each yard. The one-foot fill height was used for yards because an assumed fill height of one foot was used to allocate earthwork quantities to the yard tracks involved in the original construction.

The earthwork quantities recorded in the ICC Engineering Reports reflect the requirements for all track in the particular valuation section -- the main track, double main track, other sidings and yards. There is no separation of these quantities by type of track, and no separate identification of earthwork quantities for yard track.

The purpose of the adjustment program (i.e., the Excel spreadsheet)[51] is to determine the earthwork quantities per mile for the main line track. As such, the earthwork quantities for yard track need to be removed. To do this, spreadsheet formulas calculate the number of track yard miles for each valuation section and develop the associated earthwork by assuming a one-foot fill. This amount of earthwork is then deducted from the total quantities for the particular valuation section

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49 See Opening Workpaper Vol. III, p. 4405.
50 Donkey Creek, Moran Junction, Snowden, Fargo and Benson.
51 See electronic workpapers file "OTRR Grading.xls."

and the remaining quantities are distributed to the main line miles. Therefore, when calculating the grading quantities for a yard that is placed in a particular valuation section, the one-foot fill has to be used in order to be consistent and not overstate the required earthwork quantities.[52]

The calculations of the yard track earthwork quantities for the OTRR are contained in Exhibit III-F-12.

(c) Total Earthwork Quantities

In order to properly develop the costs for the grading of the OTRR, it was necessary to separate the earthwork requirements into four types of material -- common, loose rock, solid rock and borrow. This was done by distributing the total quantities for the line segments developed in Exhibit III-F-11 based on the distribution percentages obtained from the ICC Engineering Reports (as developed in Exhibit III-F-8).

The distribution of the earthwork quantities by type of material is shown in Exhibit III-F-13 and summarized in Table III-F-4 below.

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[52] The Board has accepted this approach. See WPL at 81.

Table III-F-4
OTRR Earthwork
Quantities By Type Of Material Moved

	Type of Earth Moved (1)	Cubic Yards (000) (2)
1.	Common Excavation	52,211
2.	Loose Rock Excavation	12,633
3.	Solid Rock Excavation	8,034
4.	Borrow	20,683
5.	Total	93,562

Source: Exhibit III-F-13.

(d) Earthwork Unit Costs

Unit costs for each of the four categories of earthwork were developed using the RSMeans Site Work & Landscape Cost Data Handbook ("Means Handbook")[53] for 2002.[54] The unit costs for common, loose rock and solid rock excavation reflect an estimated 70% ratio of cut used as fill. The unit cost used for solid rock is an average of the unit costs for loose rock and solid rock excavation developed using the Means Handbook because much of the work classified by the ICC valuation teams as solid rock would be rippable using modern equipment.[55] Finally, Otter Tail adjusted the

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53 As noted previously, RSMeans Company publishes several construction cost handbooks and Otter Tail has relied on them in developing its construction costs for the OTRR. While the specific pages from the specific handbooks are included in Otter Tail's Opening workpapers, they are collectively referred to as the "Means Handbook" in the narrative.

54 See Opening Workpaper Vol. III, pp. 4333 to 4354 and electronic workpapers file "OTRR Grading.xls."

55 As noted in the ICC's definition of loose rock cited earlier, loose rock was restricted to detached masses of stone less than 1 cubic yard and "all other rock which can be properly removed by pick and bar and without blasting..." Clearly, modern equipment would be capable of removing more rock, without blasting, than that removed by pick and bar.

Means Handbook unit costs based on the location factors also included in the Means Handbook.[56] The development of the unit costs is fully detailed in computer file "OTRR Grading.xls" contained in the electronic workpapers for Section III-F.

(e) Total Earthwork Costs

Table III-F-5 below displays the total earthwork costs for the OTRR at 1Q02 levels.

Table III-F-5
OTRR Earthwork Costs - 1Q02

	Type of Earth Moved (1)	Earthwork Costs (millions) (2)
1.	Common Excavation	$191.6
2.	Loose Rock Excavation	73.5
3.	Solid Rock Excavation	65.5
4.	Borrow	226.7
5.	Total Earthwork Costs	$557.2

Source: Exhibit III-F-13

Total earthwork costs for the OTRR equal $557.2 million at 1Q02 levels.

c. Lateral Drainage

The linear feet of pipe per route mile for lateral drainage were obtained from the ICC Engineering Reports and applied to the line segments of the OTRR. Pipe quantities were also extracted from the track charts for the newly constructed segments. The cost per linear foot for

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[56] The Means Handbook location factors were discussed in Section III-F-2.a, supra

installed drainage pipe, including backfill and compaction, was taken from the 2002 Means Handbook. Based on the ICC Engineering Reports and BNSF's track charts (for the recently constructed rail lines and the OTRR lines in Minnesota), the OTRR requires linear feet of lateral drainage pipe. Total investment in lateral drainage for the OTRR equals $(at 1Q02 levels.[57] REDACTED

d. Culverts

Culverts are used for minor drainage channels where large openings are not required. Culverts will be corrugated aluminized metal pipe, galvanized steel plate pipe, or reinforced concrete box depending upon the location and application. Culvert strength and cover would be adequate to withstand railroad loadings to a gross weight on rail of 286,000 pounds per car. Culverts typically would be sized to pass a 50 year storm event and to avoid flooding into the ballast section during a 100 year storm event. Culverts are generally less expensive to install and maintain than bridges and therefore are preferred when appropriate.

Using the culvert inventory produced by BNSF in discovery, supplemented by a review of BNSF track charts for approach (lateral) culverts, and publicly available track charts for the OTRR line segments in Minnesota, an inventory of existing culvert type, location and length was created. Where appropriate, culvert lengths were modified to reflect OTRR track sections as compared with existing BNSF track sections, i.e., from single track sections to double track sections, and vice versa, as appropriate. Culverts were further aggregated by equivalent area and general pipe type. BNSF

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[57] See Exhibit III-F-6 and electronic file "OTRR Grading.xls".

did not provide culvert unit costs in response to Otter Tail's discovery requests.[58] Therefore, unit costs for all types of culverts were developed from the Means Handbook. The total construction cost for culverts is $26.5 million at 1Q02 levels.[59]

e. **Other**

i. **Side Slopes**

The OTRR has average side slopes of 1.5:1. This side slope design has consistently been accepted by the Board.[60] In addition, as the Board noted in WPL, such side slopes are in common use.

The side slope is one of the variables used in the computation to adjust the original earthwork quantities from the ICC Engineering Reports to modern day design standards. In making this adjustment, Otter Tail has assumed a 1.5:1 side slope for both the original construction (the input) and the current construction (the output). To the extent that side slopes greater than 1.5:1 exist on certain line segments, the input specification would also need to be changed to correspond to the output specification. Stated differently, if the side slope on a particular line segment was 2:1, then 2:1 would be assumed for the original construction as well as the current construction. As 1.5:1 has been repeatedly accepted by the STB in previous stand-alone rate cases, Otter Tail has used it in this proceeding for both the original and current construction.

ii. **Drainage Ditches**

The OTRR will have side ditches in cuts, for drainage, that are 2 feet wide, 2 feet deep and

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58 BNSF did not provide useful culvert cost data in response to Otter Tail's Request For Production Nos. 86 and 87.
59 See Opening Workpaper Vol. III, pp. 4469 to 4473 and electronic workpaper "OTRR Culverts.xls."
60 See WPL at 80-81; FMC at 111-12; and TMPA at 116, n. 183.

trapezoidal in section. In some cases, this size ditch is larger than the existing ditches on the antecedent BNSF lines, which were examined in the April 2002 field inspection.[61] Additionally, 2-foot ditches were recently accepted in WPL, PPL and TMPA where evidence that such ditches were in use was persuasive.[62]

iii. Retaining Walls

The cubic yards of retaining walls per route mile are based on the ICC Engineering Reports and applied to the line segments of the OTRR. Specifically, Otter Tail identified the cubic yards of masonry and the quantities of cross ties, timber and pilings contained on the ICC Engineering Reports under the category of Protection of Roadway. Rather than construct retaining walls, the OTRR would use gabions (galvanized steel mesh boxes) filled with rock. Otter Tail converted the quantities for all items except piling to cubic yards to develop the required cubic yards of gabions. The cost per cubic yard for gabions and the cost per linear foot for pilings were taken from the 2002 Means Handbook. Retaining wall investment equals $0.08 million on the OTRR.[63]

iv. Rip Rap

The cubic yards of rip rap per route mile were taken from the ICC Engineering Reports and the Orin Line and Eagle Butte Branch construction data. The cost per cubic yard for placing rip rap was obtained from the 2002 Means Handbook The OTRR requires 365,118 cubic yards of rip rap at $31.54 per cubic yard for total investment costs of $11.5 million at 1Q02 levels. Rip rap used for

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61 See Opening Workpaper Vol. III, pp. 3387 to 3402.
62 See WPL at 82-83; PPL at 19; and TMPA at 116, n. 183.
63 See Opening electronic workpaper file "OTRR Grading.xls", worksheet "III-F-6 Othr EW".

bridges has been included in the cost for the bridges and is not included in this item.

v. Relocating and Protecting Utilities

Otter Tail has included costs of $1.0 million for relocating utilities for the sections of the OTRR from Converse Yard to Donkey Creek, WY and the five coal line branches[64] (including the OTRR-owned portions of the mine spurs) since the BNSF lines along these segments were built within the last 40 years when utility structures already were in place. However, when the BNSF main lines paralleled by the OTRR from Donkey Creek to Big Stone (and the Snowden Branch) were originally constructed, few, if any, utility lines existed that would have had to be relocated. These costs were not incurred by the incumbent and thus, under Guidelines, would constitute a barrier to entry if imposed on the OTRR. Therefore Otter Tail did not include any cost for relocating utilities for these lines. This is consistent with the Board's findings in prior coal rate cases.[65]

vi. Seeding/Topsoil Placement

Otter Tail has included costs for seeding/topsoil placement in the same locations where BNSF has incurred these costs.[66] For the Converse Yard to Donkey Creek section of the OTRR, and the five coal mine branches (including the OTRR-owned portions of the mine spurs), Otter Tail has based its quantity calculations on the actual quantities used in the construction of the Orin Line from Exhibits 3A and 3B to Jerry Masters' testimony in IPS.[67] For the remaining sections of the OTRR,

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64 Reno Junction, WY to Jacobs Junction, WY (Reno Branch); Campbell, WY to Eagle Butte Junction, WY (Eagle Butte Branch); Dutch, WY to Nerco Junction, MT (Decker Branch); Sarpy Junction, MT to Kuehn, MT (Kuehn Branch); and Nichols, MT to Big Sky, MT (Big Sky Branch).

65 See McCarty 2 S.T.B. 460, 508; APS at 31; WPL at 85; PPL at 19; and TMPA at 121.

66 The procedures employed by Otter Tail are the same procedures accepted by the STB in WPL and TMPA. See WPL at 84-85; TMPA at 121-122.

67 This is the same information used to develop the earthwork quantities for the Orin Line. See Opening Workpaper Vol III, pp. 4314 to 4321.

Otter Tail has relied on the embankment protection quantities obtained from the ICC Engineering Reports.[68]

In addition to quantities, Mr. Masters' exhibits show an average cost of placing topsoil (including seeding)[69] of $0.66 per cubic yard (at 1978 cost levels).[70] Indexing this unit cost to 1Q02 results in a cost of $2.01 per cubic yard. Total investment costs for seeding/topsoil placement for the OTRR equal $3.0 million at 1Q02 levels. Exhibit III-F-14 shows the development of the costs for placing topsoil.

vii. Water for Compaction

In dry areas, classified as arid or semi-arid, water is required to aid in the compaction process when developing the track roadbed on fill sections. The OTRR has 643 miles located in arid territory and 650 miles located in semi-arid territory.[71] Bill, located near the southern terminus of the OTRR and included in the section which the Orin Line construction data represents, is classified as arid, receiving an average of 8.5 inches of rain per year.[72] Gillette, located within a few miles of the Eagle Butte Branch, is classified as semi-arid, receiving an average of 16.6 inches of rain per year.[73] Therefore, Otter Tail has used 20 gallons of water per cubic yard of embankment in arid territory based on the Orin Line data and 9 gallons of water per cubic yard of embankment in semi-arid territory based on the Eagle Butte Branch construction data.[74] The cost of $0.009 per gallon is

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68 Based on the ICC Engineering Reports, only 0.01% of the remaining 1,104.3 miles of the OTRR had embankment protection quantities.

69 As noted by the STB in WPL (page 85, note 159), the term "placing topsoil" on the Orin Line construction documents includes seeding. See also TMPA at 121-122.

70 See Opening Workpaper Vol. III, pp. 4313 to 4321 and electronic workpapers file "OTRR Grading.xls".

71 See Opening Workpaper Vol. III, p. 4355 and electronic workpapers file "OTRR Grading.xls".

72 See Opening Workpaper Vol. III, p. 4357.

73 See Opening Workpaper Vol. III, p. 4359.

74 See Opening Workpaper Vol. III, p. 4355 and electronic workpapers file "OTRR Grading.xls".

based on publically available bids received by the Wyoming Department of Transportation in 2001.[75] Otter Tail has included $7.3 million for water for compaction for all of the embankment portions of the OTRR.[76]

viii. Surfacing For Roads

Otter Tail has included $4.9 million for the costs associated with surfacing detour roads during construction for the OTRR rail line between Converse Yard and Donkey Creek (plus the five coal branches and the OTRR-owned portions of the mine spurs) as the parallel BNSF lines were built when the roads were already in existence. However, when the BNSF main line between Donkey Creek and Big Stone (plus the Snowden Branch), was originally constructed, roads were not prevalent, and few, if any, were paved. Consequently, these costs are excluded from the OTRR's calculations under Guidelines, as a barrier to entry.[77] The development of costs for surfacing for roads, based on the Orin Line and Eagle Butte Branch data, is shown in Exhibit III-F-14.

ix. Environmental Compliance

Otter Tail has included $ for environmental compliance for the segments of OTRR between Converse Yard and Donkey Creek (plus the five coal branches and the OTRR-owned portions of the mine spurs). These costs were incurred by BNSF when its parallel lines were built, and their inclusion therefore is consistent with Guidelines. The development of costs for environmental compliance is shown in Exhibit III-F-14.

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75 See Opening Workpaper Vol. III, pp. 4386.
76 See Exhibit III-F-14.
77 See FMC at 120; WPL at 35; PPL at 20 and TMPA at 122-123.

x. Land For Waste Quantities

Not all of the excavated material is re-used as fill. Otter Tail's earthwork calculations assume a 30 percent waste ratio. As this waste material needs to be placed somewhere, the OTRR will acquire additional land near the right-of-way to accommodate the dumping of the waste material. Otter Tail has assumed an average 15-foot depth for wasted materials and has also included the costs for the dumped material to be moved and shaped by a bulldozer. The bulldozer costs have been included in the excavation unit costs. Otter Tail has included an additional 904 acres of land at $384.54 per acre[78] for a total cost of $0.3 million.[79]

xi. Donkey Creek and Glendive Yard Paving and Drainage

Car inspection for the OTRR takes place at Donkey Creek and Glendive Yards. The OTRR has included 9 paved roadways, each 8,000 feet in length adjacent to the inspection tracks in the Donkey Creek Yard and 11 paved roadways, each 8,000 feet in length adjacent to the inspection tracks in the Glendive Yard. The OTRR has also included catch basins and piping necessary for drainage from the roadways. The catch basins are spaced at 1,000-foot intervals in each roadway with piping located under the roadways and extensions at the end to take the water away from the yards. Otter Tail has included $4.9 million in investment costs for these items.[80]

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78 The $384.54 per acre figure is the average of the rural land values used for the right-of-way on the premise that the majority of the excavation will take place outside of urban areas and that there will be no dumping of waste in urban areas. See Opening electronic workpapers file "OTRR Land.xls".

79 See Exhibit III-F-14 for this calculation.

80 See Exhibit III-F-14.

3. Track Construction

a. Geotextile Fabric

The use of geotextile fabric is a recent development in railroad construction, i.e., within the last 50 years. Many of the rail lines of the OTRR were constructed before the advent of geotextile fabric. Furthermore, there is no evidence of geotextile use during the construction of the Orin Line.

Accordingly, based on the experience of Otter Tail's construction expert, OTRR has included geotextile fabric only under turnouts[81] resulting in investment costs of $0.3 million.[82]

b. Ballast and Subballast

The ballast and subballast layers serve to distribute the heavy track loads, both static and dynamic, to the subgrade at a bearing pressure that can be adequately supported by the subgrade. The ballast and subballast layers also allow water to escape from the ballast section to preserve subgrade stability. In addition, the subballast provides a filter to prevent finer-grained subgrade soils from intruding into the ballast.

The majority of the rail lines of the OTRR have 20 inches[83] of ballast and subballast below the tie. This consists of an 8-inch[84] compacted subballast layer and a 12-inch[85] layer of clean standard main-line rock ballast under the base of the ties. Additional ballast is placed between the ties and out 12" from the ends of the ties for track stability. The subballast and ballast specifications are

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81 See Opening Workpaper Vol. III, pp. 4508 to 4509 for the calculation of the amount of geotextile fabric per turnout.

82 This is consistent with PPL which relied on the experience of the same chief engineering witness used by Otter Tail (See PPL at 21).

83 These ballast and subballast depths were designed by Otter Tail's construction expert and are consistent with AREMA guidelines. See Opening Workpaper Vol. III, p. 4507.

84 Ibid.

85 Ibid.

consistent with those accepted by the STB in PPL.[86]

The 8-inch subballast layer and the 12-inch depth of ballast below the ties are used for all main track (including second main track sections) except for the light density lines of the OTRR. On the light density lines of the OTRR, from Fargo to Benson and the Kuehn, Big Sky and Big Stone branches, a 6-inch subballast layer and a 9-inch ballast layer is used. For yards, where there is little dynamic loading of the rail and ballast, a ballast depth of 6 inches (and a subballast depth of 6 inches) below the ties is used.

Subballast consists of similar materials crushed and compacted to provide a well-graded, dense layer of crushed rock similar to a road base material. Ballast and subballast quantities are developed for all sections of track based on the lengths of single- and double-track sections[87] and the amount of tangent track and the amount of curved track greater than 2 degrees.[88] Ballast is included for bridges but subballast is not as there is no need to transfer load to a subgrade. Unit costs for ballast and subballast were obtained from information provided by BNSF in discovery.[89] Total investment for subballast ($) and ballast ($) equals $

REDACTED

c. Ties

Timber ties are used for all OTRR tracks. The ties for the majority of the main track are AREMA specification Grade 5 ties, 7" x 9" x 8'-6", commonly used by U.S. railroads in heavy-tonnage mainline trackage. The light density lines, yard and set-out tracks are laid with 6" x 6" x

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86 The stand-alone railroad in PPL included some of the same lines as the OTRR.
87 See Opening electronic workpapers file "OTRR Construction.xls."
88 Curved track requires more ballast due to superelevation.
89 See Opening Workpaper Vol. III, pp. 4487 and 4489.

8'-6" Grade 3 ties.

The majority of the main track and passing sidings, have a tie spacing of 19.5 inches, or 3,250 ties per mile, which is consistent with industry standards for track over which unit coal traffic moves.[90] The light-density lines, yards and set-out tracks, have a tie spacing of 21 inches, or 3,017 per mile.

Unit costs for ties were obtained from information provided by BNSF in discovery.[91] Total tie investment for the OTRR equals $ REDACTED

d. Track

Because of the OTRR's heavy traffic density, continuous welded rail ("CWR") was selected for all trackage. As stated in the Section III-B, supra, the rail sections used for main track are a combination of 136-pound new CWR, 132-pound new CWR and 132-pound relay CWR. New 136-pound CWR is used for the main track and all passing sidings on the main line between: (1) Converse Yard and Reno Junction, (2) E. Campbell and E. Donkey Creek, and (3) Glendive and Fargo. New 136-pound CWR is also used on the Eagle Butte and Reno branches. New 132-pound CWR is used for the mainline and passing sidings from Reno Junction to Glendive, including the Snowden and Decker branches. Relay 132-pound CWR is used between Fargo and Benson, on the Kuehn, Big Sky and Big Stone branches, all set-out tracks and most yard track.[92]

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90 REDACTED

91 See Opening Workpaper Vol. III, pp. 4476 and 4483.

92 See Exhibit III-B-1 for specific locations of type and weight of rail.

The prices for new rail provided by BNSF in discovery include the cost of the plant welds.[93] However, the second-hand rail price used by Otter Tail does not include the cost of the plant welds. Second-hand rail is welded into 1,440-foot strings (40 welds per string based on 36-foot lengths[94]). Once the rail is laid and anchored, field welds are performed with a mobile flash-butt welder or Thermite process. Bonded insulated joints for signal applications are factory fabricated in 13-foot lengths and then field-welded in place. Unit costs for these items were obtained from information provided by BNSF in discovery and from suppliers.[95] Total rail investment for the OTRR (including welds) equals $ **REDACTED**

i. Track Labor

BNSF did not provide track labor costs per foot in response to Otter Tail discovery requests.[96] Track labor costs were developed based on costs presented by the UP in the public version of its FMC testimony indexed to 1Q02.[97] Based on a cost of $120,030 per track mile, track labor costs for the OTRR equal $197.9 million at 1Q02 levels.

e. Switches (Turnouts)

Turnouts for the OTRR are a mixture of AREMA No. 20 and No. 15 for all main tracks, interchange tracks and yard tracks. AREMA Number 11 turnouts are used for set-out, locomotive maintenance, car storage and car maintenance tracks. As discussed in Section III-B-4.b, supra, the

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93 See Opening Workpaper Vol. III, p. 4476.

94 Although the OTRR will purchase SH rail in 39-foot lengths, 18 inches must be cropped off each end (3 feet in total) prior to welding. OTRR has reflected a credit (based on scrap value) for the cropped ends.

95 See Opening Workpaper Vol. III, pp. 4476 to 4495.

96 There were some labor costs included in some of the AFE's provided by BNSF in discovery, but these costs included more than just track labor costs.

97 See Opening electronic workpapers file "Track Labor Unit Costs.xls."

OTRR operates under a CTC system from Converse Yard, WY to Benson, ND. All main-track switches, passing-track switches, certain yard leads and switches that connect the main track with yard and mine tracks on this section (with the exception of set-out track switches which are manually operated and equipped with electric locks), are power switches. The remaining portions of the OTRR[98] operate under track warrants and the turnouts are hand-thrown switches. Exhibit III-B-1 identifies the location and size of the turnouts, and power requirements, on the OTRR. Switch heaters are provided for at all electronically-controlled switches. Insulated joints are included at all power switches. Electric locks are included at all manual turnouts connected to the main line and passing sidings located in CTC territory. Finally, the OTRR crosses the Canadian Pacific Railway System near Bismark, ND and again near Valley City, ND.

Unit costs for these items were obtained from information provided by BNSF in discovery and publicly available information.[99] Total turnout investment (including railroad crossings) for the OTRR equals $ **REDACTED**

f. Other Track Construction

i. Plates, Spikes and Anchors

Tie plates are used under each rail on all ties. Tie plates for main track and passing sidings are new AREMA 14-inch double-shoulder plates with standard punching. Tie plates for yard and set-out tracks are second-hand double-shoulder plates. Spikes are used to hold the rail to the tie plate and the tie plate to the ties, and to provide the lateral restraint to hold the rail to gauge (4'-8-1/2" inside

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98 The Kuehn, Big Sky and Big Stone branches.
99 See Opening Workpaper Vol. III, pp. 4496 to 4499.

on heavy-tonnage lines. Automatic in-gauge rail lubricators are installed on all track with curvature greater than 2 degrees. Rail lubricator unit costs (including installation) were obtained from information provided by BNSF in discovery.[102] Rail lubricator investment for the OTRR equals $:

REDACTED

iii. Material Transportation

Transportation costs associated with the OTRR's track material, with the exception of ballast, are included based on the application of $0.035 per ton-mile[103] to the ton-miles associated with moving the material from the supplier to the OTRR. Ballast transportation costs are included at $ per ton-mile based on information provided by BNSF in discovery.[104] Material transportation costs for the OTRR equal $ million at 1Q02 levels.[105]

4. Tunnels

REDACTED

5. Bridges

Bridge types, design and unit costs for the OTRR were developed by Otter Tail's bridge expert, Dr. Vinaya Sharma. Dr. Sharma has nearly twenty (20) years experience with all aspects of railroad bridges including thirteen (13) years with the Association of American Railroads' ("AAR") Research and Test Department.

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102 See Opening Workpaper Vol. III, p. 4497.
103 See PPL at 25.
104 See Opening Workpaper Vol. III, p. 4511.
105 See Opening electronic workpapers file "OTRR Transportation.xls".

Bridge requirements for the OTRR were developed based on a review of bridge information provided by BNSF in discovery and publicly available track charts for the OTRR lines in Minnesota.

[106] The OTRR bridges have the same spans and lengths as the existing bridges on the BNSF, with a few exceptions,[107] and all are ballast-deck bridges. For cost estimating purposes, the existing bridge types were grouped into the following three bridge classes:[108]

Class 1: Wood trestles, concrete trestles, box beam and beam spans 40' or less

Class 2: Deck plate girder, concrete slab and beam spans greater than 40'

Class 3: Thru plate girder and truss

The estimated cost per linear foot for each of the three bridge types, based on single track, was developed using costs obtained from the Means Handbook and suppliers.[109] In addition, [redacted]

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106 This excludes bridges that only go over roads on the main line between Donkey Creek and Big Stone and the Snowden Branch. These bridges were built as an accommodation to the highway traffic that developed after this rail line was originally put in place and were not paid for by the incumbent. The investment for these bridges has been excluded as a barrier to entry.

107 The number of spans and span lengths of a few bridges were modified to reflect the use of thru plate girder bridges where BNSF currently has a truss bridge.

108 See Opening Workpaper Vol. III, pp. 4598 to 4609 and electronic workpapers file "OTRR Bridges V2.xls."

109 BNSF did not provide bridge construction costs per foot in response to Otter Tail's Request For Production No. 71.

110 These walkways and inner guardrails are consistent with the STB's decision in PPL.

111 See Opening Workpaper Vol. III, pp. 4610 to 4612 and electronic workpaper files "OTP Bridge Unit Costs.xls" and "OTRR Bridges.xls."

6. Signals and Communications

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The communications system for the OTRR consists of a

[112] The microwave backbone network permits a variety of devices to "talk to each other" over wide distances. In particular, microwave tower systems support locomotive communications, two-way radio communications, general voice communications, general data communications, AEI reader data transfers, and FED alerts. OTRR microwave backbone network site (tower) locations were based either on, or in close proximity to, microwave tower locations provided by the BNSF in discovery.[113]

In some instances, the BNSF microwave site locations did not facilitate adequate coverage for the OTRR microwave network and therefore, additional sites were added to the OTRR microwave network design for the site locations in

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Each site includes a microwave tower, microwave antennas, communications equipment enclosure, microwave base station and communications support equipment. This backbone facilitates all voice and data communications between intra-railroad facilities along the network span. OTRR microwave backbone network site tower heights were based on tower sizes provided

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112 See Opening Workpaper Vol. III, pp. 4634 to 4639 for a map of the OTRR microwave network.
113 See Opening electronic workpapers file "BNSF_microwave_data.pdf".

by BNSF in discovery.[114] Where tower heights were not provided, tower height was over-engineered comparative to locale.

An 800 MHz Land Mobile Radio (LMR) network provides communication access via mobile and portable radios for operating crews, supervisory and track maintenance personnel that need to communicate with the railroad's operating headquarters and central dispatching facility at Donkey Creek, WY. LMR base station facilities are co-located with microwave sites and include LMR antenna, LMR base station and communications support equipment. Additionally, LMR repeaters extend LMR base station frequency coverage along certain network segments. All LMR base station facilities are interconnected via the microwave backbone network. Investment costs for the microwave backbone network and LMR network equal $ [115] REDACTED

The OTRR is equipped with a Centralized Traffic Control ("CTC") system on all of its lines with the exception of Benson, ND to Big Stone, SD and the Kuehn and Big Sky branches. Appropriately spaced wayside signals are used and all main-track interlockings are remotely controlled by the dispatchers located in Donkey Creek, WY. Costs for the CTC system of $200.3 million are based on the costs accepted by the STB in FMC,[116] indexed to 1Q02.[117]

A total of REDACTED roll-by hot bearing and defective equipment detectors, collectively referred to as defective equipment detectors ("DED"), are located on the main line as a safety assurance measure. These detectors are placed in the locations identified on Exhibit III-B-1.

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114 See Opening electronic workpapers file "BNSF_microwave_data.pdf".
115 See Opening Workpaper Vol. III, pp. 4632 to 4633 and electronic workpapers file "OTRR Microwave Network.xls."
116 See FMC at 128-130.
117 See Opening Workpaper Vol. III, pp. 4690 to 4694 and electronic workpapers file "OTRR CTC.xls."

Investment costs of $ REDACTED for the DED's (installed) are based on information provided by BNSF in discovery[118] applied to the number required by the OTRR.

In addition, Automatic Equipment Identification ("AEI") scanners are installed at each of the eight interchange locations, i.e., Converse Yard, Donkey Creek Yard, Moran Junction, Terry, Snowden, Mandan, Fargo and Benson.[119] They will provide continuous data updates on the location of individual trains, for use both as a management tool and to provide customers with real-time train location and consist information. The OTRR operates only trains that stay intact while on the OTRR (except for the occasional removal of a bad-order car). Spare empty coal cars are conveniently stored at Donkey Creek and Glendive Yards.

7. Buildings and Facilities

The buildings and facilities necessary for the OTRR's operation are described below. The calculations supporting the costs of these buildings and facilities are contained in Otter Tail's supporting workpapers.[120]

a. Operations Headquarters and Operations Buildings

The OTRR is headquartered at Donkey Creek, WY. The OTRR's headquarters facility at Donkey Creek accommodates its operating supervisory, clerical and dispatching staff; the CTC control center; and the general and administrative staff. This facility, approximately 24,000 square feet in size, provides office space appropriate for the supervisory operating personnel and

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118 See Opening electronic workpapers file "BNSF_microwave_data.pdf".
119 Costs for the AEI scanners are included in the Information Technology costs discussed in Section III-D-3 supra
120 See Opening Workpaper Vol. III, pp. 4696 to 4734 and electronic workpapers file "OTRR_bldgs.xls."

general/administrative staff of the OTRR. The structure also houses the OTRR's Dispatch Center. A second building, approximately 4,500 square feet in size, is used by the train crew, maintenance-of-way and train inspection personnel.

b. Operating Crew Change Buildings

In addition to Donkey Creek, WY, crew facilities are constructed at Converse Yard, Dutch, WY, Moran Junction, MT, Snowden, MT, Glendive, MT, Mandan, ND, Fargo, ND and Benson, MN. Each facility has sufficient space to provide for offices as necessary for the transportation management, a conference room, secured storage, locker rooms and restrooms. Paved parking lots for employees are also constructed.

c. Maintenance-of-Way Buildings

In addition to Donkey Creek, WY, maintenance-of-way gang facilities are located at Reno, WY, Kendrick, WY, Sheridan, WY, Rowley, MT, Hysham, MT, Shirley, MT, Sidney, MT, Glendive, MT, Dickinson, ND, Mandan, ND, Jamestown, ND, Fargo, ND and Herman, MN. These facilities include the necessary offices, a garage area capable of accommodating vehicles, a storage area for specialty tools and materials, a locker room, restroom and an outside storage area and parking facility.

d. Locomotive Facility and Fueling Stations

Locomotive facilities at Donkey Creek consist of a locomotive shop containing five tracks and fueling and servicing facilities containing five tracks and 2 platforms. The two shorter tracks in the shop will be used for heavy repairs, with the three longer tracks used for periodic inspections and

light repairs. The building will also include a storeroom, office, restroom and locker facilities for the contractor's forces, facilities for OTRR's car inspectors and an office for the Manager-Mechanical Operations. The OTRR also has a locomotive servicing and fueling facility at Glendive Yard consisting of five tracks and 3 platforms. Costs of $22.5 million for the locomotive shop and fueling and servicing facilities are based on the locomotive shop and fueling and servicing facilities accepted by STB in TMPA.[121]

8. Public Improvements

a. Fences

OTRR right-of-way and snow fencing requirements were determined from the Orin Line construction documents, the Eagle Butte Branch construction documents and the ICC Engineering Reports. Investment cost of $18.1 million for fencing is based on unit cost information obtained from state Department of Transportation bids from the states traversed by the OTRR applied to the identified quantities.[122]

b. Signs & Road Crossing Devices

The OTRR has the following roadway signs along its route - mileposts, whistle posts, stations, yard limits, speed restriction, advanced warning, resume speed signs and flangers (at rail lubricator and DED locations). Otter Tail has included signs on both sides of the right-of-way in double track areas. Costs for roadway signs were provided by BNSF in discovery. Investment costs for roadway signs for the OTRR equal $[illegible] REDACTED

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121 See Opening electronic file "LocoFuel_facility.xls".
122 See Opening Workpaper Vol. III, pp. 4737 to 4740.

Except for the portion of the OTRR between Converse Yard and Donkey Creek, and the five coal mine branches, the rail lines comprising the route of the OTRR were constructed prior to the advent of vehicular traffic. Therefore, many of the highway crossings on the OTRR were constructed after the rail lines were in place and were paid for with local, state and federal funds.

According to McCarty, PPL and WPL, a stand-alone railroad is only required to include the costs for those highways crossings, and the associated crossing protection, that were necessitated by a new rail line crossing an existing highway.[123] Based on this criterion, the OTRR is only required to include the highway crossing investment costs for the at-grade and over-grade crossings on the portion of the OTRR which was constructed in the recent past, i.e., Converse Yard to Donkey Creek and the five coal mine branches.[124] As BNSF did not provide complete highway crossing and protection device information in discovery, the highway crossings (both at-grade and over-grade), and associated crossing protection devices, for these sections of the OTRR, were identified from material obtained from the Federal Railroad Administration.[125] Costs for the highway crossings (including over-grades) and associated protection devises were determined from BNSF data provided in discovery and other publically available cost information.[126] Total investment for highway crossings and crossing protection for the OTRR equals $ **REDACTED**

9. Mobilization

Mobilization costs represent the costs incurred by the contractor(s) to: (1) assemble the required equipment, personnel and facilities at designated locations so the construction may proceed;

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123 See McCarty 2 S.T.B. 460, 520-521; WPL at 99-100; and PPL at 28-29.
124 This is also consistent with STB precedents regarding surfacing for road detours. See Section III-F-2.e.viii, supra.
125 See Opening electronic workpapers file "OTRR Crossings.xls."
126 See Opening Workpaper Vol. III, pp. 4742 to 4749.

(2) dispose of equipment and remove temporary facilities used during the construction; and (3) the costs of securing a bond to ensure completion of the project.

To estimate mobilization costs associated with the construction of the OTRR, Otter Tail has applied a 3.5 percent mobilization factor to all construction costs less land and track materials.[127] Use of this 3.5 percent factor for mobilization (exclusive of land and track materials) results in $42.9 million added to the construction costs of the OTRR.

10. Engineering

Engineering for the OTRR includes overall design, aerial mapping, geotechnical exploration, land surveying, procurement, and contract and construction management. Construction management includes field engineering and inspection. Due to the number of contracts necessary for the procurement and construction of this railroad, a large engineering force is necessary for design on a fast-track basis. Availability of an engineering force of the required magnitude is assumed so that no barrier to entry would occur because of engineering.

Engineering services for the OTRR were estimated based on the STB's PPL decision.[128] Specifically, Otter Tail applied an 8.5 percent factor to total construction costs (excluding land). Otter Tail also included $9,036 per route mile[129] for mapping and subsurface investigation.

Based on the above amounts, $167.5 million is included for the engineering costs associated

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127 This application of the mobilization factor is consistent with PPL. See PPL at 29-30.

128 As noted in PPL, at 30-31, both parties agreed on 5.0 percent for design and engineering and $8,464 per route mile for mapping and subsurface investigation. The STB included 2.5 percent for construction management based on the Means Handbook and accepted PPL's estimate of 1.0 percent for inspection costs (based on the experience of the same construction expert used by Otter Tail, i.e., Mr. McDonald).

129 $8,464 per mile from PPL, indexed from 3Q00 to 1Q02.

with the construction of the OTRR.

11. Contingencies

Contingencies are typically applied to projects to account for unknowns and to account for potential cost overruns that are caused by unforeseen events or circumstances. They represent an attempt to account for the amount of risk in a particular project. Consistent with PPL, WPL and TMPA,[130] Otter Tail included a 10 percent contingency factor in developing the construction costs of the OTRR resulting in investment costs of $204.4 million

12. Other

a. Construction Time Period

i. Overall Construction Schedule

Two factors guide the construction schedule for the OTRR, i.e., Guidelines concept of unconstrained resource availability and the requirements of the most time-consuming project(s) on the system.

To develop an overall construction schedule, construction projects that were the most time consuming for the OTRR and appropriate schedules for the track work were determined. Subject to the assumption of unconstrained resources (discussed below), all current, normal parameters for rail line construction scheduling were followed, based upon Otter Tail's construction expert's experience and recognized engineering standards. These include:

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[130] See PPL at 31; WPL at 104; and TMPA at 158.

1. Scheduling construction in a normal sequence (e.g., mobilization, clearing and road access, followed by permanent construction in accordance with specification requirements).

2. Reflecting current productivity and skill levels and the use of mechanized construction equipment (excavators, rock drills, scrapers, track machinery, etc.).

3. Accounting for required material quantities adjusted to reflect simultaneous segment construction.

4. Reflecting actual topographical constraints (e.g., rivers, topography requiring extensive cuts and fills) as well as features which facilitate easier construction (e.g., flat topography).

5. Accounting for regional weather and seasonal changes.

6. Proper planning of needed physical access to construction sites (roads, temporary storage, etc.).

The construction schedule for the OTRR assumes availability, as of the first day, of all necessary labor, materials and equipment, and continued and unrestricted supplies of each throughout the construction period. This is consistent with the principle of unconstrained resources which is part of the theory underlying Guidelines. As particularly applied to the matters within the scope of this testimony, the concept of unconstrained resources includes the following:

1. The absence of any limitations on engineering or management expertise.

2. The absence of limitations on the availability of qualified construction contractors in sufficient numbers to permit simultaneous segment construction over the entire OTRR system.

3. The absence of limitations on the availability of skilled labor, construction materials, and equipment.

4. The availability of adequate housing and other accommodations for crews and supervisors.

5. The absence of restraints on access to construction sites due to permitting or other government approval requirements.

6. The absence of restraints on land acquisition for the line due to legal delays and condemnation.

In the absence of resource constraints, construction of the OTRR Railroad was broken into small segments, each of which are completed simultaneously. The key factor in determining the overall length of the construction period is the time needed to complete the most time-consuming heavy construction project on the system (in this case, the 3,785-foot bridge near Valley City, ND at MP 64.4). This schedule, together with the time needed to complete the track work, effectively dictates the overall construction period.

All engineering planning and design work would be performed over a 16-month period. This includes a period of 3 months to perform an adequate amount of surveying and mapping to start engineering, and to establish an alignment, grade and right-of-way for portions of the railroad so that land acquisition could commence as early as six months from initiation of the project. Land acquisition would take approximately 6 months.

At the 10-month mark (halfway into the land acquisition phase, and with final design work 50 percent complete), the multiple grading, tunnel and bridge packages would be initiated with special focus on access to critical sites and establishment of staging areas.

Three months after grading, tunnel and bridge packages are initiated, multiple bridges and structures contracts would start at readily accessible locations. Access to some sites may require access provided through grading contracts and would commence as soon as access is gained.

Construction of all bridges and structures is anticipated to require 14 months. (The longest bridge is approximately 3,785 feet long and can be completed in this time frame given sufficient resources.)

All other items to be constructed (including track laying, signal installation and control systems installations, and operational testing) are completed in a year, commencing as early as 6 months after grading, bridge and drainage work is initiated.

The total design and construction time for the OTRR is 30 months. The majority of capital expense is incurred during the last year and a half of construction, as design is not capital-intensive.

ii. Track Construction

In the absence of resource constraints, the OTRR is divided into construction segments or contract packages (e.g., grading and drainage, bridge construction, track work, signal installation, and site finishing), all of which proceed sequentially as described above. The general parameters, which apply to track construction, are as follows:

1. The track work contractor(s) commence construction of the entire OTRR system from multiple locations at the same time as soon as a portion of each segment of roadbed and bridge structure is ready for track.

2. Construction starts from a mobilization point, which has existing rail and road access for the transportation of bridge structure and track materials and for the eventual welded rail train for distribution of running rail.

3. Track work proceeds in a linear manner, starting from the mobilization points and moving toward the limit of the package and the junction point with the adjacent package.

4. When mainline track work beyond a planned auxiliary track is completed, work begins on the auxiliary track as main track construction continues.

5. Track gangs lay an average of five 1,440-foot CWR strings per day, for an average of 0.70 miles per day laid, ballasted, surfaced and anchored per track gang. This work proceeds as follows:

   a. The 8" layer of subballast is placed and compacted on the subgrades.

   b. Pre-plated ties are then distributed and placed on the subballast layer ahead of the rail train.

   c. Rail strings are laid and spiked every fourth tie, as the rail train is moved forward to unload the next rail strings.

   d. Final spiking, ballasting and surfacing, temperature control procedures and anchorage is performed to complete the track construction.

   e. At a rate of 0.70 miles per day, a 65-mile segment of track is completed in approximately three and a half months with crews working six days per week.

As stated previously, the construction portion of the OTRR comprises 1,283.88 route-miles. Including the multiple track and yards, a total of 1,648.82 track miles are required. For construction purposes, the entire track plant system is divided into separate track laying packages in order to meet the unconstrained resource criteria for construction. Bridges and grading are similarly broken into many small construction packages, with the amount of track or bridge length varying with the complexity and difficulty of the construction. Each of the larger bridges also represents a separate construction package.

III-G
DISCOUNTED CASH FLOW ANALYSIS

III-G APPLICATION OF THE DISCOUNTED CASH FLOW MODEL TO THE OTRR

In the most recent decisions involving stand-alone evidence, the ICC and the STB have used a 20-year DCF model to recover capital and operating costs. In developing its stand-alone evidence, Otter Tail has used a DCF model patterned after the one used by the Board in FMC, WPL and TMPA in that it recovers investment costs spread evenly over time. In all DCF calculations before FMC, the Board's DCF model recovered investment costs based on tons, not time. Otter Tail's discussion of its use of the Board's time approach is contained in Section III-H.

Exhibit III-H-1 is a printout of the DCF model used to develop the stand-alone costs for the OTRR. The DCF model in Exhibit III-H-1 is comprised of 13 tables labeled Table A through Table L. [1] A discussion of the DCF model is contained in Section III-H, infra on a table-by-table basis.

1. Annual Cost of Capital

The Board has held that during the construction period a stand-alone railroad's annual cost of capital should reflect the Class I railroad industry's average costs of debt and common and preferred equity, as well as its percentage mix of debt and equity.[2] Otter Tail has calculated the OTRR's capital charges in accordance with this precedent for the three years (1999-2001) of the OTRR construction period. Table III-G-1 displays the relevant costs and capital structure percentages for each year during the construction period.

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1 The DCF model including the calculation of each of its 13 tables is in computer file "Exhibit III-H-1.123."

2 See, e.g., WTU. at 712-13.

Table III-G-1
Railroad Industry Cost of Capital [3]

Capital Structure (1)		1999 % Weight (2)	1999 % Cost (3)	2000 % Weight (4)	2000 % Cost (5)	2001 % Weight (6)	2001 % Cost (7)
1.	Debt	35.5%	7.2%	45.4%	8.0%	41.8%	6.9%
2.	Common Equity	62.7	12.9	52.1	13.9	56.0	12.8
3.	Preferred Equity	1.8	6.3	2.5	6.3	2.2	6.3
4.	Total	100.0%	10.76%	100.0%	11.03%	100.0%	10.2%

Each year of the construction phase, the OTRR will issue debt, preferred equity and common equity based on the costs and the capital structure shown in Table III-G-1 above for the investment amounts expended.

For the first year (2002) of the 20 year DCF model time period, the cost of capital is based on a combination of historical and current year capital data. The weighted cost of debt, preferred equity and the capital structure is based upon the Table III-G-1 information. The cost of equity for 2002 is based on the Association of American Railroad's recent filing in Ex Parte No. 558 (Sub-No. 6).[4] For each year after 2002, the weighted cost of debt, preferred equity and the capital structure is based upon the Table III-G-1 information and the annual cost of equity is based on the railroad industry equity cost of capital for the 1999 through 2002 time period. The resulting OTRR cost of capital for each year 2002-2021 is shown in Table A of Exhibit III-H-1.

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[3] Ex Parte No. 558 (Sub-No. 3), Railroad Cost of Capital - 1999, (served June 12, 2000); Ex Parte No. 558 (Sub-No. 4), Railroad Cost of Capital -2000, (served July 2, 2001); Ex Parte No. 558 (Sub-No. 5), Railroad Cost of Capital -2001, (served June 20, 2002).

[4] The 2002 annual cost of equity is taken from the Association of American Railroads filing in Ex Parte 558 (Sub-No. 6), filed March 29, 2003. See Opening workpaper Vol. III, pp. 4750 to 4761.

2. Inflation Indexes

Table A of Exhibit III-H-1 contains forecasts of capital costs, operating expenses and land values needed to run the 20-year DCF model which produces stand-alone costs for the OTRR.

The annual inflation forecast that is used to calculate the value of the OTRR's road property assets is based on the DRI-WEFA forecast,[5] dated June 2001, for rail labor and rail materials and supplies. These are the same procedures utilized by the Board in FMC.[6]

The annual inflation forecast that is used to calculate the value of the OTRR's operating expenses is based on a forecast of the RCAF-A from DRI-WEFA's RCAF forecast dated June 2001.

The annual inflation forecast for land is calculated as follows. For agricultural land, the compounded annual growth rates in land values for Wyoming, Montana, North Dakota, Minnesota and South Dakota were developed separately, for the five-year period from January 1998 to January 2002, from the U.S. Department of Agriculture, National Agricultural Statistics Service, Agriculture Land Values report. The growth rate for land in towns such as Gillette, WY and Fargo, ND, is based on the U.S. Department of Commerce, Consumer Price Index for urban population areas in the western U.S. These four growth rates were weighted by the proportion of the OTRR's acreage represented by each growth rate. This yields an annual average compounded growth rate for real estate of 5.0 percent. This annual appreciation rate was used in Otter Tail's DCF analysis.

As discussed in Section III-F, comparable land sales data was adjusted to the January 1, 2002

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5 A copy of the DRI-WEFA forecast is included in Opening Workpaper Vol. III, pp. 1804 to 1805.

6 The inflation indexes for 2002 are the actual values. See Opening Workpaper Vol. III, pp. 4762 to 4766.

4. **Other – Capital Cost Recovery**

The Board's DCF methodology uses economic depreciation to calculate the capital recovery cost of the stand-alone entity's property. The value of an asset at any point in time equals the discounted present value of the earnings that it will produce over its remaining useful life. Economic depreciation effectively represents an asset's loss of earning power as it approaches the end of its life and/or replacement date. Under constrained market pricing principles as applied by the Board and its predecessor, a 20-year base period is used to benchmark the stand-alone railroad's asset value. The analysis also recognizes that the stand-alone railroad will replace assets as they wear out, and the analysis embodies a residual value calculation to reflect the continued operation of the railroad after the end of the 20-year DCF period (i.e., after 2020), using the methodology endorsed by the Board in FMC, WPL and TMPA.

III.F. ROAD PROPERTY INVESTMENT FOR THE OTRR

Total road property investment for the OTRR was developed by several of Otter Tail's experts. Mr. Philip H. Burris is sponsoring the testimony related to land and easement valuation and right of way determination in Part III-F-1. Mr. Michael Brook is sponsoring the testimony concerning comparable land sales data in Part III-F-1. Mr. Charles A. Stedman is sponsoring the specific evidence related to the roadbed preparation/earthworks component of road property investment exclusive of culverts and roadbed specifications in Part III-F-2. Dr. Vinaya Sharma is sponsoring evidence related to bridge classification, design and cost in Part III-F-5. Testimony related to the design of the microwave system and investment cost in Part III-F-6 is sponsored by Mr. John A. Mullan. Mr. Richard H. McDonald is sponsoring all other road property investment requirements in Parts III-F-2 through 12.

The OTRR's right-of-way is comprised of track that it constructs and track that it accesses through a trackage rights agreement with the RRVW.[1] The OTRR's road property investment costs were classified by STB property account for input into the discounted cash flow ("DCF") model discussed in Section III-G, infra. Table III-F-1 below summarizes the OTRR's investment costs by STB property account at 1Q02 levels.

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[1] The OTRR's use of the RRVW trackage was discussed in Section III-B-1, supra.

III-H
RESULTS OF SAC ANALYSIS

III-H. RESULTS OF SAC ANALYSIS

1. Results of SAC Analysis

As discussed in Section III-G, Otter Tail has calculated OTRR's stand-alone cost of moving coal to the Big Stone Station. These calculations are summarized in this section and in Exhibit III-H-1. Exhibit III-H-1 is the DCF model used to develop the stand-alone costs for the OTRR. The DCF model is comprised of thirteen (13) tables labeled Table A through Table L. The discussion of the DCF model below is on a table-by-table basis.

Table A -- Annual Cost of Capital

Table A displays the cost of debt and equity as well as the weighted cost of capital used to compute capital carrying charges. The development of the cost of capital used in the DCF model is discussed in Section III-G, supra.

Table B -- Inflation Indexes

Table B contains the inflation indices used for road property assets. These indices are used to inflate road property assets, operating costs and land. The development of these indicies are fully discussed in Section III-G, supra.

Table C -- Road Property Investment Values

Table C displays total start-up investment at 1Q02 levels. The calculation of road property investment costs is based on construction cost information which is fully discussed in Section III-F, supra.[1]

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[1] Table C also includes the initial hiring and training costs described in the operating cost section.

Table D -- Interest During Construction

Table D calculates the Interest During Construction ("IDC") which would accrue on the assets of the OTRR. Table D also contains both the total IDC amount and the IDC that is debt-related. IDC is calculated based on the investment values in Table C, the composite cost of capital from Table A and the length of finance period for each account. The construction schedule described in Section III-F was used as the basis for determining the length of the finance period. The amount of IDC that is debt-related is calculated by multiplying the investment by the length of the finance period, the OTRR's debt percent, and the cost of debt. Debt-related IDC is shown as an interest deduction during the construction period (July 1, 1999 through December 31, 2001).

Table E -- Amortization Schedule Of Assets Purchased With Debt Capital

The amortization schedule calculates the annual interest payment required for the debt-related portion of the OTRR's investment. The debt-related portion of the OTRR investment base (referred to as principal) is developed by multiplying the debt percentage from Table A for the appropriate investment period times the sum of the total investment and the interest during construction. The quarterly annuity payment is then calculated based on the principal, the debt rate from Table A and the DCF model life of 20 years.

The amount of interest included in the quarterly payment is calculated by multiplying the beginning balance (this equals the principal in the first period) by the interest rate.

Table F – Present Value of Replacement Cost

Table F calculates the additional investment (on a present value basis) the OTRR would have

to make if the hypothetical railroad replaced each asset indefinitely at the end of each asset's life. This additional investment is added to the initial investment in Table I prior to determining the quarterly cash flows.[2]

Table G -- Tax Depreciation Schedules

Table G displays the tax depreciation required under the Federal Tax Code currently in effect.[3] Investment in communications (Account 26), signals and interlockers (Account 27), and the track accounts (Accounts 8, 9, 10, 11, and 12) were depreciated over seven (7) years employing a 200 percent declining balance methodology with a change to straight-line depreciation. Investment in bridges and culverts (Account 6), fences and roadway signs (Account 13), roadway-buildings (Account 17), fuel stations (Account 19), shops and enginehouses (Account 20) and public improvements (Account 39) was depreciated over 15 years using a 150 percent declining balance method with a change to straight-line depreciation. Investment in grading (Account 3) was depreciated over 50 years using straight-line amortization. Investment in engineering (Account 1) was depreciated over five (5) years using straight-line amortization.

Table H -- Average Annual Inflation In Asset Prices

Table H computes the average annual inflation rate by which the real levelized revenue (rate or price) per ton in Table I is indexed. The weighted average inflation rate was used because Table H calculates the required revenues necessary to recover the investment. All road property accounts are indexed at the quarterly rates shown in Table B.

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2 See Opening Workpaper Vol. III, pp. 4777 to 4782 for the salvage rates used in Table F.

3 The mandatory method for depreciating most tangible property placed in service after December 31, 1986 is the Modified Accelerated Cost Recovery System ("MACRS"). In addition, Business Start-Up Costs, e.g., Engineering and start-up Training Costs, have been amortized over a 60 month period, starting with the month in which the business begins. See Opening Workpaper Vol. III, pp. 4783 to 4785.

Table I -- Discounted Cash Flow

Table I displays the calculation of the capital carrying charge and associated flow of funds required to recover the total road property investment. Inputs to this spreadsheet were taken from the tables described above. Table I calculates the quarterly capital carrying charge required over 20 years (80 quarters) after consideration of the applicable tax liability.

The total start-up investment is comprised of the road property investment shown in Table C, the interest during construction calculated in Table D, and the present value of replacement investment calculated in Table F. The result equals the total investment which has to be recovered from the quarterly revenue stream over the life of the OTRR.

In calculating the quarterly revenue stream, the tax benefits associated with interest on the investment financed with debt from Table E and the road property tax depreciation from Table G are included.

The cash flow shown in Column (8) of Table I is the amount remaining each quarter after the payment of federal and state tax liabilities. This cash flow is used for payment of return on and return of total investment and IDC in the stand-alone railroad. This quarterly figure is then discounted by the fourth root of the composite annual cost of capital from Table A, adjusted to reflect the asset being placed in service mid-third quarter. The present value cash flow is then summed for each quarter along with the future cash flow and the total equals the total cost that must be recovered. The future cash flow is an approximation of the value of the unconsumed assets of the OTRR and serves to reflect the cash flow required to account for the value of the assets not consumed during the DCF model's 20 year life.

The development of the quarterly levelized capital carrying charge requirement is a relatively simple calculation, i.e., starting capital carrying charge requirement (cost per ton) times the quarterly index factor from Table H which will recover total investment during the 20 year DCF model period. The starting capital carrying charge requirement (cost per ton) which recovers the total investment is developed through an iterative process. The DCF model begins with a specified amount for the cost per ton and then runs through the calculation described above to develop the cumulative present value of the cash flow. If this cumulative number does not equal the total costs to be recovered from the quarterly revenue flow (start-up investment plus the present value of the replacement investment) the starting cost per ton is adjusted upward or downward as necessary and the DCF model runs through the calculations again. This process is repeated until the starting cost per ton results in a cumulative present value cash flow which equals the required investment to be recovered from the quarterly revenue flow.

Table J – Part 1 Computation Of Federal Tax Liability -- Taxable Income

Table J - Part 1 displays the calculation of the OTRR federal tax liability. The procedures followed to develop this calculation are discussed in Section III-G-3, supra.

Table J – Part 2 Computation Of State Tax Liability -- Taxable Income

Table J - Part 2 displays the calculation of the OTRR state income tax liability which is also discussed in Section III-G-3, supra.

Table K -- Operating Expenses

Table K displays the operating expenses incurred in each year of the OTRR's operation based on the traffic levels described earlier. The majority of the operating costs are developed from inputs discussed in Section III-D, supra. Table K uses the annual operating costs, states them on a quarterly basis and indexes them to reflect inflation over the life of the OTRR based on the inflation rates shown in Table B.

Table L -- Summary of SAC

Table L summarizes the total stand-alone cost for the OTRR based on investment and operating costs. The capital requirement from Table I and the annual operating expenses from Table K are presented and summed in Table L for each quarter and each year the OTRR operates.

2. Reparations

This section of Otter Tail's Opening Evidence compares the BNSF common carrier rates challenged by Otter Tail to the jurisdictional threshold and stand-alone cost calculations associated with the movement of coal to Otter Tail's Big Stone Station. Following this comparison, and because it demonstrates that the BNSF rates are greater than both the jurisdictional threshold and stand-alone cost calculations, the amount of reparations that BNSF owes Otter Tail for coal shipments to the Big Stone Station under the rates established by Pricing Authority 90062 is calculated.

a. Maximum Rate Calculations

The maximum rate for the movement of coal from each origin to the Big Stone Station equals the greater of the jurisdictional threshold calculation or stand-alone costs. Table III-H-1 compares

BNSF's rate levels (Column (2)) to the jurisdictional threshold calculation (Column (4)) and the stand-alone costs (Column (5)). In each quarter from 1Q02 through 1Q03, the BNSF rate per ton is greater than both the jurisdictional threshold and stand-alone cost. Therefore, the maximum rate equals the greater of the jurisdictional threshold or stand-alone cost and is summarized in Column (6) of Table III-H-1 below.

Table III-H-1

Summary of Maximum Rate Calculations for Issue Traffic -- 1Q02 through 1Q03

Time Period (1)	BNSF Rate Per Ton 1/ (2)	BNSF Variable Cost Per Ton 2/ (3)	Jurisdictional Threshold Per Ton 3/ (4)	Stand-Alone Cost Per Ton 4/ (5)	Maximum Rate Per Ton 5/ (6)
A. 1Q02					
1. Belle Ayr	$13.49	$4.72	$8.50	$7.06	$8.50
2. Eagle Butte	13.49	4.62	8.32	7.06	8.32
B. 2Q02					
3. Belle Ayr	$13.49	$4.75	$8.55	$6.99	$8.55
4. Eagle Butte	13.49	4.68	8.42	6.99	8.42
C. 3Q02					
5. Belle Ayr	$13.49	$4.76	$8.57	$6.97	$8.57
6. Eagle Butte	13.49	4.69	8.44	6.97	8.44
D. 4Q02					
7 Belle Ayr	$13.49	$4.86	$8.75	$7.09	$8.75
8. Eagle Butte	13.49	4.69	8.44	7.09	8.44
9. Cordero	13.49	5.00	9.00	7.09	9.00
10. Caballo Rojo	13.49	4.72	8.50	7.09	8.50
E. 1Q03					
11. Belle Ayr	$13.76	$5.04	$9.07	$7.22	$9.07
12. Eagle Butte	13.76	5.03	9.05	7.22	9.05

1/ Common Carrier Pricing Authority BNSF 90062 for 1Q02 through 4Q02, BNSF 90062A for 1Q03.
2/ Exhibit II-A-7 through II-A-18.
3/ Column (3) x 180 percent.
4/ Exhibit III-H-1.
5/ Greater of jurisdictional threshold (Column (4)) or stand-alone cost (Column (5)).

The maximum rate in each quarter (Column (6)) is greater than BNSF's proposed rate in each

quarter (Column (2)) and therefore reparations need to be calculated.

b Reparations Calculation

The Commission's decision in Coal Rate Guidelines[4] and the Board's decisions in WTU and APS are in agreement on the following issues: [5]

1. A stand-alone cost analysis identifies the point where captive traffic cross-subsidizes other shippers on the railroads;

2. Cross-subsidies should be avoided; and

3. The amount of a cross-subsidy is the amount by which total revenues exceed the total costs of serving that traffic by itself.

As demonstrated in Section III-G, supra, the stand-alone analysis submitted by Otter Tail shows that the traffic included in the stand-alone system is cross-subsidizing other BNSF traffic. The total annual revenues actually received by BNSF beginning on January 1, 2002 under Pricing Authority 90062 greatly exceed the stand-alone costs of serving such traffic. Table III-H-2, below, summarizes the aggregate savings associated with constructing and operating the OTRR, i.e., the amount that actual revenues exceed stand-alone costs for each quarter in 2002 and the first two quarters of 2003 (through May 20, 2003). Table III-H-2 also shows the percent reduction that is applied to the rates of all traffic in the stand-alone group. When the percent reduction is applied to the rates Otter Tail paid to BNSF, a maximum rate based on stand-alone costs results. When the percent reduction is hypothetically applied to the other rates of the stand-alone traffic group, the differential pricing that is realized by BNSF is maintained.

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4 1 I.C.C. 2d at 524-525 and 548.

5 The major railroads are also in agreement on these issues. See Amicus Brief of Eastern and Western Railroads in ICC Docket No. 38783, Omaha Public Power District v. Burlington Northern Railroad Company, dated February 24, 1986.

Table III-H-2

Aggregate Savings Of Constructing,

Operating and Maintaining OTRR - 1Q02 though 2Q03

($ In Millions)

	Quarter (1)	Aggregate Revenues [1] (2)	Aggregate Stand-Alone Costs [1] (3)	Aggregate Overpayments [2] (4)	Percent Reduction [3] (5)
1.	1Q02	$219.4	$114.9	$104.5	47.6%
2.	2Q02	219.4	113.7	105.7	48.2
3.	3Q02	219.4	113.3	106.1	48.4
4.	4Q02	219.4	115.3	104.1	47.4
5.	1Q03	218.6	114.7	103.9	47.5
6.	2Q03	218.6	116.2	102.4	46.8

[1] Source: Exhibit III-H-1.
[2] Column (2) minus Column (3).
[3] (Column (4) ÷ Column (2)).

The approach utilized to allocate the aggregate savings (overpayments) to the users of OTRR and to calculate the principal amount of reparations due to Otter Tail is discussed below.

c. Reparations Based on Stand-Alone Costs

In Coal Trading, the ICC prescribed a methodology for calculating reparations. In describing how to calculate reparations, the ICC stated:

> "The ratio of computed overpayments to actual annual revenues can be applied to either the complainants' actual issue traffic revenues during the period or the rate at issue in each time period multiplied by the tons tendered to determine the reparations due."[6]

In calculating reparations due to Otter Tail based on the stand-alone cost calculation, the following

[6] 6 I.C.C. 2d 436 (and 520)

formula was solved for each quarter from 1Q02 through 2Q03. The sum resulting from solving this formula equals the total reparations due to Otter Tail in each quarter for each BNSF rate level based on stand-alone costs. The formula can be expressed as follows:

$$\mathbf{OTR} = \sum \mathbf{(RP - (RP \times (1 - (SACO/SACR)))) \times T}$$

Where:

OTR	=	Otter Tail Reparations
RP	=	Rate actually paid by Otter Tail to BNSF
SACO	=	Aggregate of DCF model stand-alone overpayments for quarter
SACR	=	Aggregate DCF model revenues for quarter
T	=	Total tons in quarter for applicable movement

d. <u>Jurisdictional Threshold Considerations</u>

An additional adjustment to the reparation is needed if the stand-alone rate falls below the jurisdictional threshold. Determining whether this is the case requires a comparison of the stand-alone rate and the jurisdictional threshold. For each quarter, the greater of stand-alone costs and the jurisdictional threshold equals the maximum reasonable rate used to calculate the principal amount of reparations due Otter Tail.

In calculating reparations due to Otter Tail based on the jurisdictional threshold, the following formula was solved for each quarter from 1Q02 through 2Q03. The sum resulting from solving this formula equals the total reparations due to Otter Tail in each quarter for each BNSF rate level based on the jurisdictional threshold. The formula can be expressed as follows:

$$\mathbf{OTR} = \sum \mathbf{(RP - JT) \times T}$$

Where:

OTR	=	Otter Tail Reparations
RP	=	Rate actually paid by Otter Tail to BNSF
JT	=	Applicable jurisdictional threshold per ton for quarter
T	=	Total tons in quarter for applicable movement

Otter Tail calculated the principal amount of reparations on a movement-by-movement basis, using the greater of the stand-alone rate or the jurisdictional threshold. A summary of these calculations is shown in Column (2) of Table III-H-3 below for the January 1, 2002 through May 20, 2003 period.

Table III-H-3
Principal Amount of Reparations
Due Otter Tail through May 20, 2003
($ in Millions)

	Quarter (1)	Amount (2)
1.	1Q 2002	$2.9
2.	2Q 2002	2.4
3.	3Q 2002	2.1
4.	4Q 2002	2.2
5.	1Q 2003	2.2
6.	2Q 2003 [1]	1.5
7.	Total	$13.3

[1] Through May 20, 2003.
Source: Exhibit III-H-2 and electronic workpaper "OT Reparations.123."

Table III-H-3 above shows for the period from January 1, 2002 through May 20, 2003, that BNSF

owes Otter Tail $13.3 million in principal reparations payments.

In addition to the principal amount of reparations, interest from the date of the first unlawful charge needs to be identified and paid to Otter Tail. Otter Tail reserves the right to demonstrate that interest should be calculated by a methodology different from that set forth in 49 C.F.R. Part 1141.1, which is calculated at a rate equivalent to the average yield of the 13 week United States Treasury Bills, compounded quarterly.

Among other reasons why this methodology is inappropriate in this case, the use of the 13 week Treasury Bill rate would result in windfall profits to BNSF. By applying the Treasury Bill rate (which is 1.17% for the issue date of March 27, 2003)[7] to the principal amount of reparations owed by BNSF, the Board would enable BNSF to reap a substantial monetary benefit from the large disparity between the Treasury Bill rate and the BNSF's cost of capital.

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[7] The Treasury Bill rate of 1.17% issued on March 27, 2003 is the interest rate in effect on the first day of 2Q03. This is the 2Q03 interest rate used to calculate interest for the April 1, 2003 through June 30, 2003 time period in accordance with 49 CFR 1141. See Opening Workpaper Vol. III, pp. 4786 to 4791.

IV
WITNESS QUALIFICATIONS

Otter Tail v. BNSF - List of Exhibits

EXHIBIT I-A	TITLE
1	Common Carrier Pricing Authority BNSF 90062.
2	Common Carrier Pricing Authority BNSF 90062-A.
3	Otter Tail Corp. Annual Report for 2002; Form 10-K. (excerpt)
4	MDU Resources Group, Inc. Annual Report for 2002; Form 10-K. (excerpt)
5	Northwestern Corporation Annual Report for 2002; Form 10-K. (excerpt)
6	Coal supply agreements for the Big Stone station.
7	Letter from W. Uggerud (OTP) to R. Brautovich (BNSF) dated Oct. 4, 2001
8	Letter from G. Richie (BNSF) to D. Bowman (OTP) dated Oct. 5, 2001.

EXHIBIT II-A-	TITLE
1	Schematic of Current BNSF Route from PRB, WY to Otter Tail's Big Stone Station
2	Traffic and Operating Characteristics for Origin-Destination Pair Movements from PRB, WY to Otter Tail's Big Stone Station
3	Development of Adjustment Ratio for Line-Specific Maintenance-of-Way for Otter Tail Route
4	Road Return and Depreciation for BNSF's Movement of Coal in Unit Trains from PRB, WY to Otter Tail's Big Stone Station
5	Locomotive Maintenance Costs by Model
6	Crew Wages for BNSF's Movements of Coal in Unit Trains from PRB, WY to Otter Tail's Big Stone Station
7	Variable Costs for Unit Train Movements of Coal Via Burlington Northern Santa Fe

PUBLIC VERSION
HIGHLY CONFIDENTIAL AND CONFIDENTIAL MATERIAL REDACTED

BEFORE THE
SURFACE TRANSPORTATION BOARD

OTTER TAIL POWER COMPANY **Complainant,** **v.** **THE BURLINGTON NORTHERN AND SANTA FE RAILWAY COMPANY,** **Defendant.**	**Docket No. 42071**

COMPLAINANT'S OPENING EVIDENCE

VOLUME II - EXHIBITS

George Koeck, Esq.
General Counsel
Otter Tail Corporation
4334 18th Avenue, SW, Suite 200
Fargo, ND 58103
(701) 451-3567

Nicholas J. DiMichael, Esq.
Jeffrey O. Moreno, Esq.
Michael H. Higgins, Esq.
THOMPSON HINE LLP
1920 N Street, N.W., Suite 800
Washington, DC 20036
(202) 331-8800

Attorneys for Complainant

June 13, 2003

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ENTERED
Office of Proceedings
JUN 16 2003
Part of
Public Record

Otter Tail v. BNSF - List of Exhibits

for Otter Tail from Belle Ayr Mine to Otter Tail's Big Stone Station - Shipper Aluminum Cars – Base Year 2002 Indexed to 1Q02 Levels

8 Variable Costs for Unit Train Movements of Coal Via Burlington Northern Santa Fe for Otter Tail from Eagle Butte Mine to Otter Tail's Big Stone Station - Shipper Aluminum Cars – Base Year 2002 Indexed to 1Q02 Levels

9 Variable Costs for Unit Train Movements of Coal Via Burlington Northern Santa Fe for Otter Tail from Belle Ayr Mine to Otter Tail's Big Stone Station - Shipper Aluminum Cars – Base Year 2002 Indexed to 2Q02 Levels

10 Variable Costs for Unit Train Movements of Coal Via Burlington Northern Santa Fe for Otter Tail from Eagle Butte Mine to Otter Tail's Big Stone Station - Shipper Aluminum Cars – Base Year 2002 Indexed to 2Q02 Levels

11 Variable Costs for Unit Train Movements of Coal Via Burlington Northern Santa Fe for Otter Tail from Belle Ayr Mine to Otter Tail's Big Stone Station - Shipper Aluminum Cars – Base Year 2002 Indexed to 3Q02 Levels

12 Variable Costs for Unit Train Movements of Coal Via Burlington Northern Santa Fe for Otter Tail from Eagle Butte Mine to Otter Tail's Big Stone Station - Shipper Aluminum Cars – Base Year 2002 Indexed to 3Q02 Levels

13 Variable Costs for Unit Train Movements of Coal Via Burlington Northern Santa Fe for Otter Tail from Belle Ayr Mine to Otter Tail's Big Stone Station - Shipper Aluminum Cars – Base Year 2002 Indexed to 4Q02 Levels

14 Variable Costs for Unit Train Movements of Coal Via Burlington Northern Santa Fe for Otter Tail from Eagle Butte Mine to Otter Tail's Big Stone Station - Shipper Aluminum Cars – Base Year 2002 Indexed to 4Q02 Levels

15 Variable Costs for Unit Train Movements of Coal Via Burlington Northern Santa Fe for Otter Tail from Cordero Mine to Otter Tail's Big Stone Station - Shipper Aluminum Cars – Base Year 2002 Indexed to 4Q02 Levels

16 Variable Costs for Unit Train Movements of Coal Via Burlington Northern Santa Fe for Otter Tail from Caballo Rojo Mine to Otter Tail's Big Stone Station - Shipper Aluminum Cars – Base Year 2002 Indexed to 4Q02 Levels

17 Variable Costs for Unit Train Movements of Coal Via Burlington Northern Santa Fe

Otter Tail v. BNSF - List of Exhibits

	for Otter Tail from Belle Ayr Mine to Otter Tail's Big Stone Station - Shipper Aluminum Cars – Base Year 2002 Indexed to 1Q03 Levels
18	Variable Costs for Unit Train Movements of Coal Via Burlington Northern Santa Fe for Otter Tail from Eagle Butte Mine to Otter Tail's Big Stone Station - Shipper Aluminum Cars – Base Year 2002 Indexed to 1Q03 Levels
19	Summary Variable Costs for Unit Train Movements of Coal Via Burlington Northern Santa Fe for Otter Tail from 11 PRB Mines to Otter Tail's Big Stone Station - Shipper Aluminum Cars – Base Year 2002 Indexed to 1Q03 Levels
20	Rates, Variable Costs, and Revenue to Variable Cost Ratio - BNSF O/D Pairs - 1Q02 through 1Q03

EXHIBIT II-B-	**TITLE**
1	BNSF's discovery responses dated February 19, 2002 (excerpt).
2	BNSF's discovery responses dated Sept. 5, 2002 (excerpt).
3	Letter from T. LaRocca (counsel for BNSF) to J. Moreno (counsel for OTP) dated April 4, 2003.
4	Diagram of proposed Big Stone-Grant Industrial Park build-out.
5	Letter from D. Quilici (BN) to W. Uggerud (OTP) dated March 14, 1995.

EXHIBIT III-A-	**TITLE**
1	Schematic of the OTRR Route
2	Maximum Coal Consumption for OTRR Customers
3	Summary of OTRR 2002 Traffic and Revenues By Origin/Destination Pairs - Coal and Non Coal
4	BNSF/OTRR 2002 General Freight Analysis Step by Step Instructions

Otter Tail v. BNSF - List of Exhibits

5	Summary of Annual Traffic and Revenues For The OTRR - 2002 to 2021
6	Explanation of Separation of BNSF and OTRR Revenues Based on Revenue Division Data
7	Calculation of Competitive Market Rate And Contract Adjustment Mechanism For New BNSF Contracts

EXHIBIT III-B-	**TITLE**
1	OTRR Stick Diagrams

EXHIBIT III-C-	**TITLE**
1	OTRR Service Units - 2002
2	String Diagram Analysis

EXHIBIT III-F-	**TITLE**
1	Estimated Road Property Construction Cost for the OTRR – 1Q02
2	OTRR Land Right-of-Way Parcels
3	OTRR Land Value
4	Extraction of Quantities from ICC Engineering Reports for Valuation Sections on the OTRR
5	Development of Clearing, Grubbing, Lateral Drainage, Rip Rap and Retaining Walls Quantities for the Donkey Creek to Converse Jct. and Campbell to Eagle Butte Portions of the OTRR
6	Development of Clearing, Grubbing, Lateral Drainage, Rip Rap and Retaining Wall Quantities and Costs for the OTRR

Otter Tail v. BNSF - List of Exhibits

7	Valuation Sections Covering the Trackage of the OTRR
8	Distribution of ICC Engineering Report Earthwork Quantities by Type of Material
9	ICC Engineering Report Quantities Adjusted to Reflect OTRR Design Specifications
10	Development of the Earthwork Quantities for the Donkey Creek to Converse Jct. and Campbell to Eagle Butte Portions of the OTRR
11	Total Earthwork Quantities by Line Segment for the OTRR
12	Earthwork Quantities for the Yards of the OTRR
13	Development of Total Earthwork Quantities and Costs by Type of Material Moved for the OTRR
14	Development of Other Grading Requirements for the OTRR

EXHIBIT III-H-	**TITLE**
1	OTRR Discounted Cash Flow Model
2	Reparations Calculation Based on the Higher of Stand-Alone Cost or Jurisdictional Threshold (01/01/02 - 05/20/03)

I
SUMMARY AND ARGUMENT

THE BURLINGTON NORTHERN AND SANTA FE RAILWAY COMPANY
COMMON CARRIER PRICING AUTHORITY BNSF 90062

Effective Date:	On or after January 1, 2002, upon expiration of Contract BN-C-2913.
Expiration Date:	One year from the effective date, unless renewed or extended.
Commodity:	Raw sub-bituminous Coal, STCC 11-21-Series (excluding artificially dried or processed coal).
Origins:	Wyoming Powder River Basin Mines listed in Attachment A, subject to diversion restrictions identified below.
Destination	Big Stone Generating Station located near Big Stone City, SD.
Route:	BNSF Direct.
Rate:	$13.49 in U.S. Dollars per net ton of coal in shipper supplied aluminum coal railcars with a maximum average lading per car of 121 tons per car. $14.23 in U.S. Dollars per net ton of coal in shipper supplied steel coal railcars with a maximum average lading of 100 tons per car.

Freight charges will be assessed on the basis of the applicable minimum weight per trainload (see below) or the actual weight of coal per trainload whichever is greater. The aforementioned rates are subject to a minimum annual volume of 1,800,000 tons per year. In the event the minimum annual volume is not achieved during any calendar year, adjusted rates of $14.64 per net ton and $15.65 per net ton respectively shall be applied to all shipments moving within the calendar year, and shipper will pay the difference between the rates initially paid and the adjusted rates within 30 days following the end of the calendar year in which minimum annual volume requirements were not met.

Trainload and Railcar Weights:

Weights shall be ascertained at origin by shipper, its agent, or the coal mine operator, at no charge to BNSF, and will be provided to BNSF via either electronic data interchange or facsimile upon release of a loaded train. BNSF shall have the right to inspect and certify the origin scales. The minimum weight per trainload is 11,500 net tons of coal for steel cars and 13,685 net tons for aluminum cars.

Railcar Supply and Tender Requirements:

Shipper provided railcars shall be suitable for loading not less than 100 net tons of coal per steel carload. Shipper provided railcars shall be suitable for loading not less than 119 net tons of coal per aluminum carload. The minimum tender for a train of shipper railcars is 115 such railcars and a maximum tender of 117 railcars.

Claims for damage to or destruction of shipper railcars shall be handled in accordance with the procedures set forth in the field manual and office manual of the Association of American Railroads Interchange Rules, as amended from time-to-time. Notwithstanding the foregoing BNSF shall not be liable for loss or damage caused by defects in design, materials, or workmanship of Shipper-supplied equipment or otherwise due events of force Majeure to improper loading or unloading performed by Shipper, its agent, contractor or consignee.

Loading:

Shipper or its agent shall be responsible for the provision of appropriate loading facilities. All cars in each shipment shall be tendered to BNSF (or its agent or contractor) for loaded movement within four (4) hours of actual or constructive placement for loading at origin ("Loading Free Time"). Shipper shall pay a charge per hour or fraction thereof that a train is held in excess of loading free time as published in Tariff BNSF 6041-series.

Unloading:

Shipper or its agent shall be responsible for the provision of appropriate unloading facilities. All cars in each shipment shall be tendered to BNSF (or its agent or contractor) for empty movement within four (4) hours of actual or constructive placement for unloading at destination ("Unloading Free Time"). Shipper shall pay a charge per hour or fraction thereof that a train is held in excess of loading free time as published in Tariff BNSF 6041-series.

Accessorial Services:

Coal unit train accessorial services and charges therefor, other than specified in this common carrier authority, shall be as described in BNSF Authority 6041-Series or successors thereto, except that no change in destination shall be permitted.

Billing and Payment:

BNSF will bill each shipment under the terms of the Uniform Stralght Bill of Lading. All railcars for each shipment are to be billed on one (1) Bill of Lading. This Common Carrier Authority BNSF 90062, correct address and patron code must be shown on the bill of lading to insure accurate billing. Freight charges will be billed by BNSF and paid by shipper within fifteen (15) days of receipt of invoice by wire transfer. In the event that shipper does not make timely payment, or if adverse credit conditions occur, which in BNSF's judgement could affect shipper's ability to meet payment terms, BNSF may require shipper to pay cash in advance of service for all amounts for which shipper is liable under this Common Carrier Authority.

Other Provisions:

Shipments made under the provisions of this Common Carrier Authority are subject to the Uniform Freight Classification 6000-Series or its successor, applicable tariffs, statutes, federal regulatory rules and regulations, AAR rules, and other accepted practices within the railroad industry as may be amended from time-to-time.

Shipments shall be deemed to be in service to the Origin served by the immediately preceding shipment; provided, however, diversion to any other qualified Origin as set forth in Attachment A, is authorized without additional charge to Shipper, in the event reasonable notice (by telephone or otherwise) is given to BNSF operating personnel prior to departure of empty trains from Shipper's facility of intention to divert the empty train to a specifically identified alternate Origin.

Attachment A
(BNSF 90062)

Wyoming Powder River Basin Coal Origins

Coal Mine	BNSF Origin
Buckskin	Buckskin Jct.
Rawhide	Rawhide Jct.
Eagle Butte	Eagle Jct.
Dry Fork	Dry Fork Jct.
Fort Union	Union Jct.
Clovis Point	East Gillette Jct.
Caballo	Caballo Jct.
Belle Ayr	Belle Ayr Jct.
Caballo Rojo	Rojo Jct.
Cordero	Cordero Jct.
Coal Creek	Coal Creek Jct.
Jacobs Ranch	Jacobs Jct.
Black Thunder	Thunder Jct.

REDUCTION

BNSF 90062-A — Original Title Page

BNSF

THE BURLINGTON NORTHERN AND SANTA FE RAILWAY COMPANY

BNSF PRICE LIST 90062-A
(Cancels BNSF 90062)

LOCAL ALL-RAIL RATES

ON

RAW SUBBITUMINOUS COAL

(STCC 11-21)

BETWEEN STATIONS IN THE CONTINENTAL UNITED STATES

THIS TARIFF ALSO APPLIES ON INTRASTATE TRAFFIC

Governed, except as otherwise provided herein:
By UFC 6000-Series and Tariff ICC BN 6041-Series

ISSUED December 10, 2002 — EFFECTIVE January 1, 2003

Issued by Paul M. Anderson, P.O. Box 961069, Ft. Worth, TX 76161-0069

THE BURLINGTON NORTHERN AND SANTA FE RAILWAY COMPANY
COMMON CARRIER PRICING AUTHORITY BNSF 90062-A

Effective Date:	January 1, 2003.
Expiration Date:	Effective until changed, superceded or cancelled.
Commodity:	Raw sub-bituminous Coal, STCC 11-21-Series (excluding artificially dried or processed coal).
Origins:	Wyoming Powder River Basin Mines listed in Attachment A, subject to diversion restrictions identified below.
Destination	Big Stone Generating Station located near Big Stone City, SD.
Route:	BNSF Direct.
Rate:	$13.76 in U.S. Dollars per net ton of coal in shipper supplied aluminum coal railcars with a maximum average lading per car of 119 tons per car. $14.51 in U.S. Dollars per net ton of coal in shipper supplied steel coal railcars with a maximum average lading of 100 tons per car.

Freight charges will be assessed on the basis of the applicable minimum weight per trainload (see below) or the actual weight of coal per trainload whichever is greater. The aforementioned rates are subject to a minimum annual volume of 1,800,000 tons per year. In the event the minimum annual volume is not achieved during any calendar year, adjusted rates of $15.14 per net ton and $15.96 per net ton respectively shall be applied to all shipments moving within the calendar year, and shipper will pay the difference between the rates initially paid and the adjusted rates within 30 days following the end of the calendar year in which minimum annual volume requirements were not met.

Trainload and Railcar Weights:

Weights shall be ascertained at origin by shipper, its agent, or the coal mine operator, at no charge to BNSF, and will be provided to BNSF via either electronic data interchange or facsimile upon release of a loaded train. BNSF shall have the right to inspect and certify the origin scales. The minimum weight per trainload is 11,500 net tons of coal for steel cars and 13,685 net tons for aluminum cars.

Railcar Supply and Tender Requirements:

Shipper provided railcars shall be suitable for loading not less than 100 net tons of coal per steel carload. Shipper provided railcars shall be suitable for loading not less than 119 net tons of coal per aluminum carload. The minimum tender for a train of shipper railcars is 115 such railcars and a maximum tender of 117 railcars.

Claims for damage to or destruction of shipper railcars shall be handled in accordance with the procedures set forth in the field manual and office manual of the Association of American Railroads Interchange Rules, as amended from time-to-time. Notwithstanding the foregoing BNSF shall not be liable for loss or damage caused by defects in design, materials, or workmanship of Shipper-supplied equipment or otherwise due events of Force Majeure to improper loading or unloading performed by Shipper, its agent, contractor or consignee.

Loading:

Shipper or its agent shall be responsible for the provision of appropriate loading facilities. All cars in each shipment shall be tendered to BNSF (or its agent or contractor) for loaded movement within four (4) hours of actual or constructive placement for loading at origin ("Loading Free Time"). Shipper shall pay a charge per hour or fraction thereof that a train is held in excess of loading free time as published in Tariff BNSF 6041-series.

Unloading:

Shipper or its agent shall be responsible for the provision of appropriate unloading facilities. All cars in each shipment shall be tendered to BNSF (or its agent or contractor) for empty movement within four (4) hours of actual or constructive placement for unloading at destination ("Unloading Free Time"). Shipper shall pay a charge per hour or fraction thereof that a train is held in excess of loading free time as published in Tariff BNSF 6041-series.

Accessorial Services:

Coal unit train accessorial services and charges therefor, other than specified in this common carrier authority, shall be as described in BNSF Authority 6041-Series or successors thereto, except that no change in destination shall be permitted.

Billing and Payment:

BNSF will bill each shipment under the terms of the Uniform Straight Bill of Lading. All railcars for each shipment are to be billed on one (1) Bill of Lading. This Common Carrier Authority BNSF 90062-A, correct address and patron code must be shown on the bill of lading to insure accurate billing. Freight charges will be billed by BNSF and paid by shipper within fifteen (15) days of receipt of invoice by wire transfer. In the event that shipper does not make timely payment, or if adverse credit conditions occur, which in BNSF's judgement could affect shipper's ability to meet payment terms, BNSF may require shipper to pay cash in advance of service for all amounts for which shipper is liable under this Common Carrier Authority.

Other Provisions:

Shipments made under the provisions of this Common Carrier Authority are subject to the Uniform Freight Classification 6000-Series or its successor, applicable tariffs, statutes, federal regulatory rules and regulations, AAR rules, and other accepted practices within the railroad industry as may be amended from time-to-time.

Shipments shall be deemed to be in service to the Origin served by the immediately preceding shipment; provided, however, diversion to any other qualified Origin as set forth in Attachment A, is authorized without additional charge to Shipper, in the event reasonable notice (by telephone or otherwise) is given to BNSF operating personnel prior to departure of empty trains from Shipper's facility of intention to divert the empty train to a specifically identified alternate Origin.

Attachment A
(BNSF 90062-A)

Wyoming Powder River Basin Coal Origins

COAL MINE	BNSF ORIGIN
Buckskin	Buckskin Junction
Rawhide	Rawhide Junction
Eagle Butte	Eagle Junction
Dry Fork	Dry Fork Junction
Fort Union	Union Junction
Clovis Point	East Gillette Junction
Caballo	Caballo Junction
Belle Ayr	Belle Ayr Junction
Caballo Rojo	Rojo Junction
Cordero	Cordero Junction
Coal Creek	Coal Creek Junction
Jacobs Ranch	Jacobs Junction
Black Thunder	Thunder Junction

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CONFORMED PERIOD OF REPORT:     20021231
FILED AS OF DATE:               20030327

FILER:

        COMPANY DATA:
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                CENTRAL INDEX KEY:                      0000075129
                STANDARD INDUSTRIAL CLASSIFICATION:     ELECTRIC SERVICES [4911]
                IRS NUMBER:                             410462685
                STATE OF INCORPORATION:                 MN
                FISCAL YEAR END:                        1231

        FILING VALUES:
                FORM TYPE:              10-K
                SEC ACT:                1934 Act
                SEC FILE NUMBER:        000-00368
                FILM NUMBER:            03619143

        BUSINESS ADDRESS:
                STREET 1:               215 S CASCADE ST
                STREET 2:               PO BOX 496
                CITY:                   FERGUS FALLS
                STATE:                  MN
                ZIP:                    56538-0496
                BUSINESS PHONE:         2187398200

        MAIL ADDRESS:
                STREET 1:               215 S CASCADE ST
                STREET 2:               P O BOX 496
                CITY:                   FERGUS FALLS
                STATE:                  MN
                ZIP:                    56538-0496

        FORMER COMPANY:
                FORMER CONFORMED NAME:  OTTER TAIL POWER CO
                DATE OF NAME CHANGE:    19920703

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SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

(Mark One) (X) Annual Report pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

For the fiscal year ended DECEMBER 31, 2002
OR
( ) Transition Report pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934
For the transition period from _____to_____

Commission File Number 0-368

OTTER TAIL CORPORATION
(Exact name of registrant as specified in its charter)

MINNESOTA (State or other jurisdiction of incorporation or organization)	41-0462685 (I.R.S. Employer Identification No.)
215 SOUTH CASCADE STREET BOX 496, FERGUS FALLS, MINNESOTA (Address of principal executive offices)	56538-0496 (Zip Code)

Registrant's telephone number, including area code: 866-410-8780

Securities registered pursuant to Section 12(b) of the Act: Title of each class	Name of each exchange on which registered
NONE	NONE

Securities registered pursuant to Section 12(g) of the Act:

COMMON SHARES, PAR VALUE $5.00 PER SHARE
PREFERRED SHARE PURCHASE RIGHTS
CUMULATIVE PREFERRED SHARES, WITHOUT PAR VALUE
(Title of class)

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. (Yes X No _____)

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein and will not be contained, to the best of the registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ( )

Indicate by check mark whether the registrant is an accelerated filer (as defined in Rule 12b-2 of the Act). (Yes X No _____)

The aggregate market value of the voting stock held by nonaffiliates on June 28, 2002 was $784,354,838.

Indicate the number of shares outstanding of each of the registrant's classes of Common Stock, as of the latest practicable date: 25,593,524 COMMON SHARES ($5 PAR VALUE) AS OF FEBRUARY 28, 2003.

Documents Incorporated by Reference:
2002 ANNUAL REPORT TO SHAREHOLDERS-PORTIONS INCORPORATED BY REFERENCE INTO PARTS I AND II

PROXY STATEMENT DATED MARCH 6, 2003-PORTIONS INCORPORATED BY REFERENCE INTO PART III

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PART I

Item 1. BUSINESS

(a) General Development of Business

Otter Tail Corporation (the Company) was incorporated in 1907 under the laws of the State of Minnesota. The Company's executive offices are located at 215 South Cascade Street, Box 496, Fergus Falls, Minnesota 56538-0496 and 3203 32nd Avenue South, P.O. Box 9156, Fargo, North Dakota 58106-9156. Its telephone number is (866) 410-8780.

The Company makes available free of charge at its internet website (www.ottertail.com) its annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and any amendments to these reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934 as soon as reasonably practicable after such material is electronically filed with or furnished to the Securities and Exchange Commission. Information on the Company's website is not deemed to be incorporated by reference into this Annual Report on Form 10-K.

In the late 1980s, the Company determined that its core electric business was located in a region of the country where there was little or no growth in the demand for electricity. In order to maintain growth for shareholders, Otter Tail Power Company (as the Company was known) began to explore opportunities for the acquisition and long-term ownership of nonelectric businesses. This strategy has resulted in steady growth over the years. In 2001, the name of the Company was changed to "Otter Tail Corporation" to more accurately represent the broader scope of electric and nonelectric operations and the name "Otter Tail Power Company" was retained for use by the electric utility. In 2002, approximately 57% of the Company's consolidated revenues and approximately 31% of the Company's consolidated net income came from nonelectric operations.

The Company's strategy is focused on the growth of its operating companies. The Company's goal is to create value and growth through the acquisition, long-term ownership and decentralized operation of diverse businesses. The Company's electric utility provides a steady base of revenues and earnings as part of this strategy. The following guidelines are considered when reviewing potential acquisition candidates:

- Emerging or middle market company;
- Proven entrepreneurial management team that will remain after the acquisition;
- Products and services intended for commercial rather than retail consumer use;
- The potential to provide immediate earnings and future growth; and
- Preference for 100% ownership of acquired entities.

The Company assesses the performance of its operating companies' return on capital and will consider divesting under-performing operating companies.

Otter Tail Corporation and its subsidiaries conducted business in 48 states and 6 Canadian provinces and had approximately 3,111 full-time employees at December 31, 2002. The businesses of the Company have been classified into five segments: Electric, Plastics, Manufacturing, Health Services and Other Business Operations.

- Electric (the Utility) includes the production, transmission, distribution and sale of electric energy in Minnesota, North Dakota

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and South Dakota under the name Otter Tail Power Company. Electric utility operations have been the Company's primary business since incorporation.

- Plastics consists of businesses producing polyvinyl chloride pipe in the Upper Midwest, West, Southwest and South-central regions of the United States.

- Manufacturing consists of businesses in the following manufacturing activities: production of waterfront equipment, wind towers, frame-straightening equipment and accessories for the auto repair industry, custom plastic pallets, material and handling trays and horticultural containers; fabrication of steel products; contract machining; and metal parts stamping and fabrication. These businesses are located primarily in the Upper Midwest and Utah.

- Health Services consists of businesses involved in the sale of diagnostic medical equipment, supplies and accessories. These businesses also provide service maintenance, mobile and fixed-based diagnostic services, portable X-ray imaging and interim rental of diagnostic medical imaging equipment to various medical institutions located in 40 states.

- Other Business Operations consists of businesses in electrical and telephone construction contracting, transportation, telecommunications, entertainment and energy services and natural gas marketing as well as the portion of corporate administrative and general expenses that are not allocated to other segments. These businesses operate primarily in the Upper Midwest, except for the transportation company which operates in 48 states and 6 Canadian provinces.

The Company's electric operations, including wholesales power sales, are operated as a division of Otter Tail Corporation, and the Company's energy services and natural gas marketing operations are operated as indirect subsidiaries of Otter Tail Corporation. Substantially all the other businesses are owned by the Company's wholly owned subsidiary, Varistar Corporation (Varistar).

The Company continues to investigate acquisitions of additional nonelectric businesses and expects continued growth in this area. The following acquisitions were completed during 2002:

- On May 1, 2002 the Company acquired the stock of Computed Imaging Services, Inc. (CIS) of Houston, Texas for 158,257 shares of Otter Tail Corporation common stock and approximately $1.2 million in cash. CIS provides computed tomography and magnetic resonance imaging mobile services, interim rental, and sales and service of new, used and refurbished diagnostic imaging equipment to hospitals and other healthcare facilities in the south central

United States. The acquisition of CIS allows the Company to expand its existing Health Services operations into another region of the country. CIS annual revenues were approximately $5.9 million in 2001.

- On May 28, 2002 the Company acquired the stock of ShoreMaster, Inc. of Fergus Falls, Minnesota for 303,124 shares of the Company's common stock and $2.3 million in cash. ShoreMaster is a leading manufacturer of waterfront equipment ranging from residential-use boatlifts and docks to commercial marina systems. The acquisition of ShoreMaster is expected to provide diversification and growth opportunities for the Company's Manufacturing segment. ShoreMaster's annual revenues were approximately $20 million in 2001.

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- On October 1, 2002 the Company acquired the stock of Galva Foam Marine Industries, Inc. of Camdenton, Missouri for 256,940 shares of the Company's common stock and approximately $1.0 million in cash. Galva Foam is a leading manufacturer of waterfront equipment ranging from residential boatlifts and docks to commercial marina systems. The acquisition of Galva Foam, in combination with the ShoreMaster acquisition, will expand the market reach of the Company's waterfront manufacturing product line nationwide with both saltwater and freshwater products. Galva Foam had annual revenues of approximately $13 million in 2001.

- In 2002, the Company also acquired two other businesses, neither of which was individually material, one in energy management services and the other in health services. The total purchase price for these businesses was approximately $2 million in cash.

For a discussion of the Company's results of operations, see "Management's Discussion and Analysis of Financial Condition and Results of Operations," which is incorporated by reference to pages 18 through 30 of the Company's 2002 Annual Report to Shareholders, filed as an Exhibit hereto.

(b) Financial Information About Industry Segments

The Company is engaged in businesses that have been classified into five segments: Electric, Plastics, Manufacturing, Health Services and Other Business Operations. Financial information about the Company's segments is incorporated by reference to note 2 of "Notes to Consolidated Financial Statements" on pages 38 through 49 of the Company's 2002 Annual Report to Shareholders, filed as an Exhibit hereto.

(c) Narrative Description of Business

ELECTRIC

General

The Utility, which conducts business under the name of Otter Tail Power Company, provides electricity to more than 127,000 customers in a 50,000 square mile area of Minnesota, North Dakota and South Dakota. The Company derived 43% of its consolidated operating revenues from the Electric segment in 2002, 47% in 2001 and 45% in 2000. In 2002, approximately 50.5% of retail electric revenues came from Minnesota, 41.2% from North Dakota and 8.3% from South Dakota compared to 50.9% from Minnesota, 41.2% from North Dakota and 7.9% from South Dakota for 2001.

The territory served by the Utility is predominantly agricultural, including a part of the Red River Valley. Although there are relatively few

large customers, sales to commercial and industrial customers are significant. By customer category, 29.1% of 2002 electric revenue was derived from commercial customers, 25.0% from residential customers, 15.8% from industrial customers and 30.1% from other sources, including municipalities, farms and wholesale sales. For 2001, electric revenue by category was 26.6% from commercial customers, 23.4% from residential, 15.4% from industrial and 34.6% from other sources.

Wholesale electric energy sales increased from 44.0% of total kwh sales in 2001 to 45.2% of total kwh sales in 2002. While wholesale electric energy kwh sales grew 7.8% between the years, revenue per kwh decreased by 22.5% resulting in a reduction of wholesale energy gross margins. Activity in the short-term energy market is subject to change based on a number of factors and it is difficult to predict the quantity of wholesale power sales or prices for wholesale power in the future. However, the Company expects that market conditions for wholesale power transactions in 2003 will be similar to the conditions that existed in 2002.

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The aggregate population of the Utility's retail electric service area is approximately 230,000. In this service area of 423 communities and adjacent rural areas and farms, approximately 130,900 people live in communities having a population of more than 1,000, according to the 2000 census. The only communities served which have a population in excess of 10,000 are Jamestown, North Dakota (15,527); Fergus Falls, Minnesota (13,471); and Bemidji, Minnesota (11,917). As of December 31, 2002 the Utility served 127,157 customers. This is an increase of 539 customers from December 31, 2001.

Capability and Demand

At December 31, 2002 the Utility had base load net plant capability totaling 563,258 kw, consisting of 253,508 kw from the jointly-owned Big Stone Plant (constituting the Utility's 53.9% share of the plant's total capability), 154,350 kw from the Hoot Lake Plant (owned solely by the Utility), 149,450 kw from the jointly-owned Coyote Station (constituting the Utility's 35% share of the station's total capability), and, under contract, 5,950 kw from a co-generation plant near Bemidji, Minnesota. In addition to its base load capability, the Utility has combustion turbine and small diesel units, used chiefly for peaking and standby purposes, with a total capability of 92,855 kw, and hydroelectric capability of 4,336 kw. During 2002, the Utility generated about 78% of its retail kwh sales and purchased the balance.

The Utility has arrangements to help meet its future base load requirements and continues to investigate other means for meeting such requirements. The Utility has under construction a gas-fired combustion turbine expected to be operational by June 1, 2003. The unit will have a total capability between 40,000 and 50,000 kw. The Utility has an agreement with another utility for the annual exchange of 75,000 kw of seasonal capacity which runs through October 2004. The Utility has an agreement to purchase 50,000 kw of year-round capacity which extends through April 30, 2005 and another agreement to purchase 50,000 kw of year-round capacity through April 30, 2010 from another utility. The Utility had a seasonal capacity agreement to purchase 50,000 kw for the summer 2002. The Utility has a direct control load management system which provides some flexibility to the Utility to effect reductions of peak load. The Utility, in addition, offers rates to customers which encourage off-peak usage.

The Utility traditionally experiences its peak system demand during the winter season. For the year ended December 31, 2002, the Utility experienced a system peak demand of 640,220 kw on February 4, 2002. The highest sixty-minute peak demand ever was 642,826 kw on December 14, 2000. The Utility's capability

of meeting system demand at the time of the peak in February 2002, including power purchase agreements, its own generating capacity and reserve requirements computed in accordance with accepted industry practice, amounted to 843,969 kw. The Utility's additional capacity available under power purchase contracts (as described above), combined with generating capability and load management control capabilities, is expected to meet 2003 system demand, including industry reserve requirements.

Fuel Supply

Coal is the principal fuel burned at the Big Stone, Coyote and Hoot Lake generating plants. Coyote, a mine-mouth facility, burns North Dakota lignite coal. Hoot Lake and Big Stone plants burn western subbituminous coal.

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The following table shows the sources of energy used to generate the Utility's net output of electricity for 2002 and 2001:

<TABLE>
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	2002		2001	
Sources	Net Kilowatt Hours Generated (Thousands)	% of Total Kilowatt Hour Generated	Net Kilowatt Hours Generated (Thousands)	% of Total Kilowatt Hour Generated
<S>	<C>	<C>	<C>	<C>
Subbituminous Coal.....	2,459,046	69.3%	2,663,298	70.7%
Lignite Coal.....	1,063,942	30.0	1,075,545	28.6
Hydro.....	24,220	.7	23,531	.6
Oil.....	1,205	.0	2,891	.1
Total.....	3,548,413	100.0%	3,765,265	100.0%

</TABLE>

The Utility has a primary coal supply agreement with RAG Coal West, Inc. for the supply of Wyoming subbituminous coal to Big Stone Plant for 2003-2004. Purchases are made for the supply of subbituminous coal for the Hoot Lake Plant under a contract with Kennecott Coal Sales Company expiring June 30, 2004. A lignite coal contract with Dakota Westmoreland Corporation for the Coyote Station expires in 2016, with a 15-year renewal option subject to certain contingencies.

It is the Utility's practice to maintain minimum 30-day inventory (at full output) of coal at the Big Stone Plant, a 20-day inventory at the Coyote Station and a 10-day inventory at the Hoot Lake Plant.

Railroad transportation services to the Big Stone Plant are being provided under a common carrier rate by the Burlington Northern and Santa Fe Railroad Co. The Company has filed a complaint in regard to this rate with the Surface Transportation Board requesting the Board set a competitive rate. The Surface Transportation Board is not likely to act on this complaint until late in 2004. The Company would expect the outcome of the proceeding to have a favorable impact on its fuel costs for Big Stone Plant. An agreement is in place with the Burlington Northern and Santa Fe Railroad for Hoot Lake Plant which expires in mid-2004. No coal transportation agreement is needed for the Coyote Station due to its location next to a coal mine.

The average cost of coal consumed (including handling charges to the plant sites) per million BTU for each of the three years 2002, 2001 and 2000 was $1.125, $1.014 and $.994, respectively.

The Utility is permitted by the State of South Dakota to burn some alternative fuels, including tire derived fuel, at the Big Stone Plant. The quantity of alternative fuel burned at the Big Stone Plant is insignificant when compared to the total annual coal consumption at the Big Stone Plant.

General Regulation

The Utility is subject to regulation of rates and other matters in each of the three states in which it operates and by the federal government for certain interstate operations. A breakdown of electric rate regulation by each jurisdiction is as follows:

<TABLE>
<CAPTION>

		2002		2001	
Rates	Regulation	% of Electric Revenues	% of kwh Sales	% of Electric Revenues	% of kwh Sales
<S>	<C>	<C>	<C>	<C>	<C>
MN retail sales	MN Public Utilities Commission	35.8%	28.3%	33.8%	29.3%
ND retail sales	ND Public Service Commission	29.2	21.9	27.4	22.4
SD retail sales	SD Public Utilities Commission	5.8	4.5	5.3	4.3
Transmission & sales for resale	Federal Energy Regulatory Commission	29.2	45.3	33.5	44.0
		100.0%	100.0%	100.0%	100.0%

</TABLE>

The Utility operates under approved retail electric tariffs in all three states it serves. The Utility has an obligation to serve any customer requesting service within its assigned service territory. Accordingly, the Utility has designed its electric system to provide continuous service at time of peak usage. The pattern of electric usage can vary dramatically during a 24 hour period and from season to season. The Utility's tariffs provide for continuous electric service and are designed to cover the costs of service during peak times. To the extent that peak usage can be reduced or shifted to periods of lower usage, the cost to serve all customers is reduced. In order to shift usage from peak times, the Utility has approved tariffs in all three states for lower rates for residential demand control and controlled service, in Minnesota and North Dakota for real-time pricing, and in North Dakota and South Dakota for bulk interruptible rates. Each of these special rates is designed to improve efficient use of the Utility facilities, while encouraging use of cost-effective electricity instead of other fuels and giving customers more

control over the size of their electric bill. In all three states, the Utility has approved tariffs which allow qualifying customers to release and sell energy back to the Utility when wholesale energy prices make such transactions desirable.

The majority of the Utility's electric retail rate schedules now in effect provide for adjustments in rates based on the cost of fuel delivered to the Utility's generating plants, as well as for adjustments based on the cost of electric energy purchased by the Company. Such adjustments are presently based on a two-month moving average in Minnesota and under FERC, a three-month moving average in South Dakota and a four-month moving average in North Dakota. These adjustments are applied to the next billing after becoming applicable.

The following summarizes the material regulations of each jurisdiction applicable to the Utility's electric operations, as well as the specific electric rate proceedings during the last three years with the Minnesota Public Utilities Commission (MPUC), the North Dakota Public Service Commission (NDPSC), the South Dakota Public Utilities Commission (SDPUC) and the Federal Energy Regulatory Commission (FERC). The Company's nonelectric businesses are not subject to direct regulation by any of these agencies.

Minnesota: Under the Minnesota Public Utilities Act, the Utility is subject to the jurisdiction of the MPUC with respect to rates, issuance of securities, depreciation rates, public utility services, construction of major utility facilities, establishment of exclusive assigned service areas, contracts and arrangements with subsidiaries and other affiliated interests, and other matters. The MPUC has the authority to assess the need for large energy facilities and to issue or deny certificates of need, after public hearings, within six months of an application to construct such a facility. The Utility has not had a significant rate proceeding before the MPUC since July 1987.

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The Department of Commerce (DOC) is responsible for investigating all matters subject to the jurisdiction of the DOC or the MPUC, and for the enforcement of MPUC orders. Among other things, the DOC is authorized to collect and analyze data on energy and the consumption of energy, develop recommendations as to energy policies for the governor and the legislature of Minnesota and evaluate policies governing the establishment of rates and prices for energy as related to energy conservation. The DOC acts as a state advocate in matters heard before the MPUC. The DOC also has the power, in the event of energy shortage or for a long-term basis, to prepare and adopt regulations to conserve and allocate energy.

Under Minnesota law, every regulated public utility that furnishes electric service must make annual investments and expenditures in energy conservation improvements, or make a contribution to the state's energy and conservation account, in an amount equal to at least 1.5% of its gross operating revenues from service provided in Minnesota. The DOC may require the utility to make investments and expenditures in energy conservation improvements whenever it finds that the improvement will result in energy savings at a total cost to the utility less than the cost to the utility to produce or purchase an equivalent amount of a new supply of energy. Such DOC orders are appealable to the MPUC. Investments made pursuant to such orders generally are recoverable costs in rate cases, even though ownership of the improvement may belong to the property owner rather than the utility. Since 1995, the Utility has recovered demand-side management related costs not included in base rates under Minnesota's Conservation Improvement Programs through the use of an annual recovery mechanism approved by the MPUC.

The MPUC requires the submission of a 15-year advance integrated resource plan by utilities serving at least 10,000 customers, either directly or indirectly, and having at least 100 megawatts of load. The MPUC's findings and orders with respect to these submissions are binding for jurisdictional utilities. Typically, the filings are submitted every two years. The Utility's most recent plan was submitted to the MPUC in 2002 and was approved early in 2003. The MPUC also granted the Utility a one-year waiver in submitting its next integrated resource plan, which will be completed in 2005.

The MPUC requires the annual filing of a capital structure petition. In this filing the MPUC reviews and approves the capital structure for the Company. Once the petition is approved, the Company may issue securities without further petition or approval, provided the issuance is consistent with the purposes and amounts set forth in the approved capital structure petition. The Company's current capital structure petition is in effect until March 31, 2003. The Company filed its capital structure petition for 2003 on January 31, 2003 and is awaiting action from the MPUC.

The Minnesota legislature has enacted a statute that favors conservation over the addition of new resources. In addition, it has mandated the use of renewable resources where new supplies are needed, unless the utility proves that a renewable energy facility is not in the public interest. It has effectively prohibited the building of new nuclear facilities. An existing environmental externality law requires the MPUC, to the extent practicable, to quantify the environmental costs of each type of generation, and to use such monetized values in evaluating resource plans. The MPUC must disallow any nonrenewable rate base additions (whether within or outside of the state) or any rate recovery therefrom, and may not approve any nonrenewable energy facility in an integrated resource plan, unless the utility proves that a renewable energy facility is not in the public interest. The state has prioritized the acceptability of new generation with wind and solar ranked first and coal and nuclear ranked fifth, the lowest ranking.

Pursuant to the Minnesota Power Plant Siting Act, the Minnesota Environmental Quality Board (EQB) has been granted the authority to regulate the siting in Minnesota of large electric power generating facilities in an orderly manner compatible with environmental preservation and the efficient use of resources. To that end, the EQB is empowered, after study, evaluation and

hearings, to select or designate sites in Minnesota for new electric power generating plants (50,000 kw or more) and routes for transmission lines (100 kv or more) and to certify such sites and routes as to environmental compatibility.

The Minnesota Legislature enacted the Minnesota Energy Security and Reliability Act in 2001. Its primary focus was to streamline the siting and routing processes for the construction of new electric generation and transmission projects. The bill also added to utility requirements for renewable energy and energy conservation.

North Dakota: The Utility is subject to the jurisdiction of the NDPSC with respect to rates, services, certain issuances of securities and other matters. The NDPSC periodically performs audits of gas and electric utilities over which it has rate setting jurisdiction to determine the reasonableness of overall rate levels. In the past, these audits have occasionally resulted in settlement agreements adjusting rate levels for the Utility. The North Dakota Energy Conversion and Transmission Facility Siting Act grants the NDPSC the authority to approve sites in North Dakota for large electric generating

facilities and high voltage transmission lines. This Act is similar to the Minnesota Power Plant Siting Act described above and applies to proposed new electric power generating plants of 50,000 kw or more and proposed new transmission lines of more than 115 kv. The Utility is required to submit a ten-year plan to the NDPSC annually.

On December 29, 2000 the NDPSC approved a performance-based ratemaking (PBR) plan that links allowed earnings in North Dakota to seven performance standards in the areas of price, electric service reliability, customer satisfaction and employee safety. The PBR plan is effective for 2001 through 2005, unless suspended or terminated by the NDPSC or the Utility. This PBR plan provides the opportunity for the Utility to raise its allowed rate of return and share income with customers when earnings exceed the allowed return. During 2001, the Utility achieved a rate of return on equity that exceeded targets under the plan, resulting in a sharing of the income between shareholders and customers in the form of a $662,300 refund to North Dakota retail electric customers in 2002. The Utility's 2002 rate of return is expected to be within the allowable range defined in the plan.

The NDPSC reserves the right to review the issuance of stocks, bonds, notes and other evidence of indebtedness of a public utility. However, the issuance by a public utility of securities registered with the Securities and Exchange Commission is expressly exempted from review by the NDPSC under North Dakota state law.

South Dakota: The South Dakota Public Utilities Act subjects the Utility to the jurisdiction of the SDPUC with respect to rates, public utility services, establishment of assigned service areas and other matters. The Utility is not currently subject to the jurisdiction of the SDPUC with respect to the issuance of securities. Under the South Dakota Energy Facility Permit Act, the SDPUC has the authority to approve sites in South Dakota for large energy conversion facilities (100,000 kw or more) and transmission lines of 115 kv or more. There have been no significant rate proceedings in South Dakota since November 1987.

FERC: Wholesale power sales and transmission rates are subject to the jurisdiction of the FERC under the Federal Power Act of 1935, as amended (FPA). The FERC is an independent agency which has jurisdiction over rates for electricity sales for resale, transmission and sale of electric energy in interstate commerce, interconnection of facilities, and accounting policies and practices. Filed rates are effective after a one-day suspension period, subject to ultimate approval by the FERC. The Utility is a member of the Mid-Continent Area Power Pool (MAPP), which operates in parts of eight states in the Upper Midwest and in three provinces in Canada. Power pool sales are conducted

continuously through MAPP in accordance with schedules filed by MAPP with the FERC. Additional MAPP functions include a regional reliability council that maintains generation reserve sharing requirements.

The Utility agreed in October 2001 to join the Midwest Independent System Operator (MISO) regional transmission organization (RTO) pursuant to FERC Order No. 2000. In December 2001, the MISO received FERC approval as a regional transmission organization. FERC's view is that the MISO will benefit the public interest by enhancing the reliability of the Midwest electric grid and facilitating and enhancing wholesale competition. The MISO covers a broad region containing all or parts of 20 states and one Canadian province. The MISO began operational control of the Utility's transmission facilities above 100 kv on February 1, 2002, but the Utility continues to own and maintain its transmission

assets. As the transmission provider and security coordinator for the region, the MISO offers available capacity, accepts schedules and provides settlement for transmission services.

In July 2002, the FERC issued a Notice of Proposed Rulemaking (NOPR) on Standard Market Design (SMD). Its purpose is to insure standard commercial rules for the operation of competitive markets for electricity. The SMD NOPR calls for markets to be operational across the United States by the end of 2004. The MISO, with strong FERC encouragement, has established the end of 2003 as a target for MISO markets to be operational within its geographical area of operation. The MISO is working together with the FERC on this process and has filed proposed energy market rules with FERC for day-ahead and real-time energy markets and financial transmission rights and has requested assurances from FERC that all start-up costs will be recoverable for market participants. As the Utility transitions to the full operation of the MISO there could be short-term negative impacts on wholesale power transactions.

Other: The Utility is subject to various federal and state laws, including the Federal Public Utility Regulatory Policies Act and the Energy Policy Act of 1992, which are intended to promote the conservation of energy and the development and use of alternative energy sources. The Utility may also become subject to comprehensive energy legislation currently pending before the United States Congress.

The Utility is unable to predict the impact on its operations resulting from future regulatory activities, from future legislation or from future tax that may be imposed on the source or use of energy.

Competition, Deregulation and Legislation

Electric sales are subject to competition in some areas from municipally owned systems, rural electric cooperatives and, in certain respects, from on-site generators and cogenerators. Electricity also competes with other forms of energy. The degree of competition may vary from time to time depending on relative costs and supplies of other forms of energy. The Utility may also face competition as the restructuring of the electric industry evolves.

The Company believes the Utility is well positioned to be successful in a more competitive environment. A comparison of the Utility's electric retail rates to the rates of other investor-owned utilities, cooperatives and municipals in the states the Utility serves indicates that the Utility's rates are competitive. In addition, the Utility would attempt more flexible pricing strategies under an open, competitive environment.

Legislative and regulatory activity could affect operations in the future. The Utility cannot predict the timing or substance of any future legislation or regulation. State and federal efforts to restructure the electric utility industry have slowed. The United States Congress ended its 2002 legislative session without passing electric industry restructuring legislation. Congress did consider a comprehensive energy bill, but failed to pass it prior to the November elections. There was no legislative action in

2002 regarding electric retail choice in any of the states where the Utility operates and no major electricity legislation is expected in 2003 legislative sessions in those states. The Company does not expect retail competition to come to the States of Minnesota, North Dakota or South Dakota in the foreseeable future.

Environmental Regulation

Impact of Environmental Laws: The Utility's existing generating plants are subject to stringent federal and state standards and regulations regarding, among other things, air, water and solid waste pollution. The Utility estimates it has expended in the five years ended December 31, 2002, approximately $5.3 million for environmental control facilities. Included in the 2003-2007 construction budget are approximately $2.6 million for environmental equipment for existing and new facilities, including $0.8 million for 2003.

Air Quality: Pursuant to the Federal Clean Air Act of 1970 as amended (the Act), the United States Environmental Protection Agency (EPA) has promulgated national primary and secondary standards for certain air pollutants.

The primary fuels burned by the Utility's steam generating plants are North Dakota lignite coal and western subbituminous coal. Electrostatic precipitators have been installed at the principal units at the Hoot Lake Plant. A fabric filter to collect particulates from stack gases has been installed on a smaller unit at Hoot Lake Plant. As a result, the units at the Hoot Lake Plant currently meet all presently applicable federal and state air quality and emission standards.

The Utility improved the fine particulate emissions control at Big Stone Plant by replacing a major portion of the plant's electrostatic precipitator in the third quarter of 2002. The replacement technology is an Advanced Hybrid technology that was installed as part of a demonstration project co-funded by the Department of Energy's National Energy Technology Laboratory Power Plant Improvement Initiative. The technology is designed to capture at least 99.99% of the fly ash particulates emitted from the boiler. Initial test data demonstrates the emissions design parameters were met. However, the Utility will continue to investigate and assess the operational performance of the unit as well as options to improve the Advanced Hybrid's balance-of-plant impacts as part of its on-going effort to refine the demonstration technology. For the $13.4 million project, the Energy Department's share is approximately $6.5 million, the Utility's share is approximately $2.9 million and the remaining portion was funded by the Big Stone Plant co-owners and other industry participants. The Big Stone Plant is currently operating within all presently applicable federal and state air quality and emission standards.

The Coyote Station is equipped with sulfur dioxide removal equipment. The removal equipment--referred to as a dry scrubber--consists of a spray dryer, followed by a fabric filter, and is designed to desulfurize hot gases from the stack. The fabric filter collects spray dryer residue along with the fly ash. The Coyote Station is currently operating within all presently applicable federal and state air quality and emission standards.

The Act, in addressing acid deposition, imposed requirements on power plants in an effort to reduce national emissions of sulfur dioxide (SO2) and nitrogen oxides (NOx).

The national SO2 emission reduction goals are achieved through a market-based system under which power plants are allocated "emissions allowances" that will require plants to either reduce their emissions or acquire allowances from others to achieve compliance. Each allowance is an authorization to emit one ton of sulfur dioxide. Sulfur dioxide emission requirements are currently being met by all of the Utility's generating facilities without the need to acquire other allowances for compliance.

The national NOx emission reduction goals are achieved by imposing mandatory emissions standards on individual sources. All of the Utility's generating facilities met the NOx standards during 2002. Hoot Lake Plant unit 2 is governed by the phase one early opt-in provision until January 1, 2008. The remaining generating units meet the NOx emission regulations that were adopted by the EPA in December 1996.

The Act calls for EPA studies of the effects of emissions of listed pollutants by electric steam generating plants. The EPA has completed the studies and sent reports to Congress. The Act required that the EPA make a finding as to whether regulation of emissions of hazardous air pollutants from fossil fuel-fired electric utility generating units is appropriate and necessary. On December 14, 2000 the EPA announced that it affirmatively decided to regulate mercury emissions from electric generating units. The EPA expects to propose regulations by December 2003 and issue final rules by December 2004. Because promulgation of rules by the EPA has not been completed, it is not possible to assess whether, or to what extent, this regulation will impact the Utility.

In 1998, the EPA announced its New Source Review Enforcement Initiative targeting coal-fired utilities, petroleum refineries, pulp and paper mills and other industries for alleged violations of EPA's New Source Review rules. These rules require owners or operators that construct new major sources or make major modifications to existing sources to obtain permits and install air pollution control equipment at affected facilities. The EPA is attempting to determine if emission sources violated certain provisions of the Act by making major modifications to their facilities without installing state-of-the-art pollution controls. On January 2, 2001, the Utility received a request from the EPA, pursuant to Section 114(a) of the Act, to provide certain information relative to past operation and capital construction projects at the Big Stone Plant. The Utility has responded to that request and at this time cannot determine what, if any, actions will be taken by the EPA. In December 2002, the EPA issued changes to the existing New Source Review rules. These changes are not expected to result in any significant additional costs to the Utility. The EPA also proposed changes clarifying application of certain sections of the New Source Review rules. The Utility is currently evaluating the proposal. The EPA plans to accept comments on these proposed changes in early 2003 and then undertake a new rule-making process during the next one to two years.

The Coyote Station is subject to certain emission limitations under the "Prevention of Significant Deterioration" (PSD) program of the Clean Air Act. The EPA and the North Dakota Department of Health are currently engaged in discussions about the maximum allowable increases of sulfur dioxide, which may result in imposition of a cap on the sulfur dioxide emissions from all the coal-fired steam-electric generating units that are located in North Dakota, including the Coyote Station. If a cap were imposed, it is likely the cap would be set at a level above current actual emission levels. The probable impact of a cap on sulfur dioxide emissions on future operations, if it were imposed, is uncertain.

Water Quality: The Federal Water Pollution Control Act Amendments of 1972, and amendments thereto, provide for, among other things, the imposition of effluent limitations to regulate discharges of pollutants, including thermal discharges, into the waters of the United States, and the EPA has established effluent guidelines for the steam electric power generating industry. Discharges must also comply with state water quality standards.

The Utility has all federal and state water permits presently necessary for the operation of the Big Stone and Hoot Lake Plants. The water discharge permit for the Coyote Station was renewed in 1998 for a five-year term. The Utility has filed the permit renewal application for Coyote Station and believes that since there are no significant issues with the renewal request, it will receive a renewed permit in due course. The Utility owns five small dams on the

Otter Tail River, which are subject to FERC licensing

requirements. A license for all five dams was issued on December 5, 1991. Total nameplate rating (manufacturer's expected output) of the five dams is 3,450 kw.

Solid Waste: Permits for disposal of ash and other solid wastes have been issued for the Coyote Station and the Big Stone Plant. The Hoot Lake Plant permit was under public notice until January 17, 2003 and the Utility expects that the permit will be issued shortly. The Utility estimates that the current ash disposal site at the Hoot Lake Plant will be filled to capacity within approximately one year. The Utility plans to increase marketing of the ash for construction purposes and to build a new ash disposal site adjacent to the current site within the same permitted area in 2003. An estimate of the engineering costs required to construct a new facility has been completed. On that basis, the Utility believes that the investment required will not have a significant impact on future plant operating costs.

At the request of the Minnesota Pollution Control Agency (MPCA), the Utility has an ongoing investigation at its former, closed Hoot Lake Plant ash disposal sites. The MPCA continues to monitor site activities under their Voluntary Investigation and Cleanup Program. In April 2001, the Utility submitted a Remedial Investigation Work Plan to the MPCA describing its plan to further investigate the environmental impact of the closed portion of the Hoot Lake Plant ash disposal site. The MPCA approved the plan, with some suggested modifications, in July 2001. These tasks have been completed. The MPCA also asked that the Utility eliminate a ground water seepage that was originating from one of the disposal areas. Site work relating to that request was completed in November 2001. However, seepage reappeared in a new location in the spring of 2002. The Utility initiated additional studies to further characterize the site and its report was submitted to the MPCA in March 2003 for their review and comment. Although the Utility is still evaluating various options, its preliminary estimate of remediation costs to address the ash disposal site issues over the next three years is not expected to have a material impact on the Company's consolidated results of operations, financial position or cash flows.

The EPA has promulgated various solid and hazardous waste regulations and guidelines pursuant to, among other laws, the Resource Conservation and Recovery Act of 1976, the Solid Waste Disposal Act Amendments of 1980 and the Hazardous and Solid Waste Amendments of 1984, which provide for, among other things, the comprehensive control of various solid and hazardous wastes from generation to final disposal. The States of Minnesota, North Dakota and South Dakota have also adopted rules and regulations pertaining to solid and hazardous waste. The total impact on the Utility of the various solid and hazardous waste statutes and regulations enacted by the federal government or the States of Minnesota, North Dakota and South Dakota is not certain at this time. To date, the Utility has incurred no significant costs as a result of these laws.

In 1980, the United States enacted the Comprehensive Environmental Response, Compensation and Liability Act, commonly known as the Federal Superfund law, which was reauthorized and amended in 1986. In 1983, Minnesota adopted the Minnesota Environmental Response and Liability Act, commonly known as the Minnesota Superfund law. In 1988, South Dakota enacted the Regulated Substance Discharges Act, commonly known as the South Dakota Superfund law. In 1989, North Dakota enacted the Environmental Emergency Cost Recovery Act. Among other requirements, the federal and state acts establish environmental response funds to pay for remedial actions associated with the release or threatened release of certain regulated substances into the environment. These federal and

state Superfund laws also establish liability for cleanup costs and damage to the environment resulting from such release or threatened release of regulated substances. The Minnesota Superfund law also creates liability for personal injury and economic loss under certain circumstances. The Utility is unable to determine the total impact of the Superfund laws on its operations at this time but has not incurred any significant costs to date related to these laws. The Utility is not presently named as a potentially

responsible party under the federal or state Superfund laws.

Capital Expenditures

The Utility is continually expanding, replacing and improving its electric facilities. During 2002, approximately $45.8 million was invested for additions and replacements to its electric utility properties, including $16 million for continuing work on the new gas-fired combustion turbine and $7 million for completion of the Company-owned portion of a large transmission line project in North Dakota. During the five years ended December 31, 2002 gross electric property additions, including construction work in progress, were approximately $146.9 million and gross retirements were approximately $43.0 million.

The Utility estimates that during the five-year period 2003-2007 it will invest approximately $146 million for electric construction. The Utility continuously reviews options for increasing its generating capacity. While at this time the Utility has no firm plans for additional base load generating plant construction, the Utility has under construction a gas-fired combustion turbine expected to be operational by June 1, 2003. Most of the costs related to the construction of the gas-fired combustion turbine occurred in 2002. The majority of electric utility expenditures for the five-year period 2003 through 2007 will be for work related to the Utility's production plants and distribution system.

Franchises

At December 31, 2002 the Utility had franchises to operate as an electric utility in all of the 371 incorporated municipalities that it serves. All franchises are nonexclusive and generally were obtained for 20-year terms, with varying expiration dates. No franchises are required to serve unincorporated communities in any of the three states that the Utility serves.

Employees

At December 31, 2002 the Utility had approximately 728 full-time employees. A total of 365 employees are represented by local unions of the International Brotherhood of Electrical Workers and are covered by a three-year labor contract expiring November 1, 2005. The Utility has not experienced any strike, work stoppage or strike vote, and considers its present relations with employees to be good.

PLASTICS

General

Plastics consists of businesses producing polyvinyl chloride (PVC) pipe. The Company derived 12% of its consolidated operating revenues from this segment in 2002, 10% in 2001 and 14% in 2000.

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COMPANY DATA:
COMPANY CONFORMED NAME: MDU RESOURCES GROUP INC
CENTRAL INDEX KEY: 0000067716
STANDARD INDUSTRIAL CLASSIFICATION: GAS & OTHER SERVICES COMBINED [4932]
IRS NUMBER: 410423660
STATE OF INCORPORATION: DE
FISCAL YEAR END: 1231

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BUSINESS ADDRESS:
STREET 1: 918 EAST DIVIDE AVENUE
CITY: BISMARCK
STATE: ND
ZIP: 58506-5650
BUSINESS PHONE: 7012227900

MAIL ADDRESS:
STREET 1: 918 EAST DIVIDE AVENUE
CITY: BISMARCK
STATE: ND
ZIP: 58506-5650

FORMER COMPANY:
FORMER CONFORMED NAME: MONTANA DAKOTA UTILITIES CO
DATE OF NAME CHANGE: 19850429
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UNITED STATES SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 10-K

X ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2002

OR

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from _____ to _____

Commission file number 1-3480

MDU Resources Group, Inc.
(Exact name of registrant as specified in its charter)

Delaware	41-0423660
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)

Schuchart Building
918 East Divide Avenue
P.O. Box 5650
Bismarck, North Dakota 58506-5650
(Address of principal executive offices)
(Zip Code)

(701) 222-7900
(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Name of each exchange on which registered
Common Stock, par value $1.00 and Preference Share Purchase Rights	New York Stock Exchange Pacific Stock Exchange

Securities registered pursuant to Section 12(g) of the Act:

Preferred Stock, par value $100
(Title of Class)

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months, and (2) has been subject to such filing requirements for the past 90 days. Yes X. No __.

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of the Registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. X

Indicate by check mark whether the registrant is an accelerated filer. Yes X. No __.

State the aggregate market value of the voting stock held by nonaffiliates of the registrant as of June 30, 2002: $1,877,769,000.

Indicate the number of shares outstanding of each of the Registrant's classes of common stock, as of February 21, 2003:

74,042,667 shares.

DOCUMENTS INCORPORATED BY REFERENCE.

1. Pages 41 through 81 of the Registrant's Annual Report to Stockholders for 2002 are incorporated by reference in Part II, Items 6 and 8 of this Report.

2. Portions of the Registrant's Proxy Statement, dated March 7, 2003 are incorporated by reference in Part III, Items 10, 11 and 12 of this Report.

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PART I

This Form 10-K contains forward-looking statements within the meaning of Section 21E of the Securities Exchange Act of 1934. Forward-looking statements should be read with the cautionary statements and important factors included in this Form 10-K at Item 7 -- Management's Discussion and Analysis of Financial Condition and Results of Operations - Risk Factors and Cautionary Statements that May Affect Future Results. Forward-looking statements are all statements other than statements of historical fact, including without limitation, those statements that are identified by the words "anticipates," "estimates," "expects," "intends," "plans," "predicts" and similar expressions.

ITEMS 1 AND 2. BUSINESS AND PROPERTIES

GENERAL

MDU Resources Group, Inc. (Company) is a diversified natural resource company which was incorporated under the laws of the State of Delaware in 1924. Its principal executive offices are at the Schuchart Building, 918 East Divide Avenue, P.O. Box 5650, Bismarck, North Dakota 58506-5650, telephone (701) 222-7900.

Montana-Dakota Utilities Co. (Montana-Dakota), a public utility division of the Company, through the electric and natural gas distribution segments, generates, transmits and distributes electricity and distributes natural gas in the northern Great Plains. Great Plains Natural Gas Co. (Great Plains), another public utility division of the Company, distributes natural gas in southeastern North Dakota and western Minnesota. These operations also supply related value-added products and services in the northern Great Plains.

The Company, through its wholly owned subsidiary, Centennial Energy Holdings, Inc. (Centennial), owns WBI Holdings, Inc. (WBI Holdings), Knife River Corporation (Knife River), Utility Services, Inc. (Utility Services), Centennial Energy Resources LLC (Centennial Resources) and Centennial Holdings Capital LLC (Centennial Capital).

WBI Holdings is comprised of the pipeline and energy services and the natural gas and oil production segments. The pipeline and energy services segment provides natural gas transportation, underground storage

and gathering services through regulated and nonregulated pipeline systems primarily in the Rocky Mountain and northern Great Plains regions of the United States. The pipeline and energy services segment also provides energy-related management services, including cable and pipeline magnetization and locating. The natural gas and oil production segment is engaged in natural gas and oil acquisition, exploration and production activities primarily in the Rocky Mountain region of the United States and in the Gulf of Mexico.

Knife River mines aggregates and markets crushed stone, sand, gravel and related construction materials, including ready-mixed concrete, cement, asphalt and other value-added products, as well as performing integrated construction services, in the north central and western United States, including Alaska and Hawaii.

Utility Services is a diversified infrastructure company specializing in electric, gas and telecommunication utility construction, as well as industrial and commercial electrical, exterior lighting and traffic signalization throughout most of the United States. Utility Services also provides related specialty equipment manufacturing, sales and rental services.

Centennial Resources owns electric generating facilities in the United States. Electric capacity and energy produced at these facilities is sold under long-term contracts to nonaffiliated entities. Centennial Resources also invests in potential new growth and synergistic opportunities that are not directly being pursued by the other business units. These activities are reflected in the independent power production segment.

Centennial Capital insures and reinsures various types of risks as a captive insurer for certain of the Company's subsidiaries. The function of the captive is to fund the deductible layers of the insured companies' general liability and automobile liability coverages. Centennial Capital also owns certain real and personal property and contract rights. These activities are reflected in the independent power production segment.

The Company, through its wholly owned subsidiary, Centennial Energy Resources International Inc (Centennial International), has an investment in an electric generating facility in Brazil. Electric capacity and energy produced at this facility is sold under a long-term contract to a nonaffiliated entity. Centennial International invests in projects outside the United States which are consistent with the Company's philosophy, growth strategy and areas of expertise. These activities are reflected in the independent power production segment.

As of December 31, 2002, the Company had 6,983 full-time employees with 88 employed at MDU Resources Group, Inc., 898 at Montana-Dakota, 57 at Great Plains, 432 at WBI Holdings, 3,022 at Knife River's operations, 2,480 at Utility Services, five at Centennial Resources and one at Centennial International. The number of employees at certain Company operations fluctuates during the year depending upon the number and size of construction projects. At Montana-Dakota and WBI Holdings, 433

and 68 employees, respectively, are represented by the International Brotherhood of Electrical Workers. Labor contracts with such employees are in effect through April 30, 2003 and March 31, 2005, for Montana-Dakota and WBI Holdings, respectively. Knife River has 40 labor contracts which represent 630 of its construction materials employees. Knife River is currently in negotiations on 5 of its labor contracts. Utility Services has 62 labor contracts representing the majority of its employees. The Company considers its relations with employees to be satisfactory.

The Company's principal properties, which are of varying ages and are of different construction types are believed to be generally in good condition, are well maintained, and are generally suitable and adequate for the purposes for which they are used.

During 2002, the Company underwent segment operating and reporting changes. The financial results and data applicable to each of the Company's business segments as well as their financing requirements and a discussion regarding the previously mentioned segment changes are set forth in Item 7 -- Management's Discussion and Analysis of Financial Condition and Results of Operations, Notes to the Consolidated Financial Statements and Supplementary Financial Information.

Any reference to the Company's Consolidated Financial Statements and Notes thereto and Supplementary Financial Information shall be to pages 41 through 79 in the Company's Annual Report to Stockholders for 2002 (Annual Report), which are incorporated by reference herein.

This annual report on Form 10-K, the Company's quarterly reports on Form 10-Q, the Company's current reports on Form 8-K and any amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934 are available through the Company's website as soon as reasonably practicable after the Company has filed such reports with the Securities and Exchange Commission (SEC). The Company's website address is www.mdu.com. The information available on the Company's website is not part of this annual report on Form 10-K.

ELECTRIC

General --

Montana-Dakota provides electric service at retail, serving over 116,000 residential, commercial, industrial and municipal customers located in 177 communities and adjacent rural areas as of December 31, 2002. The principal properties owned by Montana-Dakota for use in its electric operations include interests in seven electric generating stations, as further described under System Supply and System Demand, and approximately 3,100 and 4,000 miles of transmission and distribution lines, respectively. Montana-Dakota has obtained and holds valid and existing franchises authorizing it to conduct its electric operations in all of the municipalities it serves where such franchises are required. For additional information regarding Montana-Dakota's franchises, see Item 7 -- Management's Discussion and Analysis of Financial Condition and Results of Operations. As of December 31, 2002, Montana-Dakota's net electric plant investment approximated $274.2 million.

All of Montana-Dakota's electric properties, with certain exceptions, are subject to the lien of the Indenture of Mortgage dated May 1, 1939, as supplemented, amended and restated, from the Company to The Bank of New York and Douglas J. MacInnes, successor trustees.

The electric operations of Montana-Dakota are subject to regulation by the Federal Energy Regulatory Commission (FERC) under provisions of the Federal Power Act with respect to the transmission and sale of power at wholesale in interstate commerce, interconnections with other utilities, the issuance of securities, accounting and other matters. Retail rates, service, accounting and, in certain instances, security issuances are also subject to regulation by the North Dakota Public Service Commission (NDPSC), Montana Public Service Commission (MTPSC), South Dakota Public Utilities Commission (SDPUC) and Wyoming Public Service Commission (WYPSC). The percentage of Montana-Dakota's 2002 electric utility operating revenues by jurisdiction is as follows: North Dakota -- 60 percent; Montana -- 23 percent; South Dakota -- 7 percent and Wyoming -- 10 percent.

System Supply and System Demand --

Through an interconnected electric system, Montana-Dakota serves markets in portions of the following states and major communities -- western North Dakota, including Bismarck, Dickinson and Williston; eastern Montana, including Glendive and Miles City; and northern South Dakota, including Mobridge. The interconnected system consists of seven on-line electric generating stations which have an aggregate turbine nameplate rating attributable to Montana-Dakota's interest of 393,488 Kilowatts (kW) and a total summer net capability of 434,170 kW. Montana-Dakota's four principal generating stations are steam-turbine generating units using coal for fuel. The nameplate rating for Montana-Dakota's ownership interest in these four stations (including interests in the Big Stone Station and the Coyote Station aggregating 22.7 percent and 25.0 percent, respectively) is 327,758 kW. The balance of Montana-Dakota's interconnected system electric generating capability is supplied by three combustion turbine peaking stations. Additionally, Montana-Dakota has contracted to purchase through October 31, 2006, 66,400 kW of participation power annually from Basin Electric Power Cooperative for its interconnected system.

On August 20, 2002, Montana-Dakota entered into an agreement with Dakota I Power Partners (Dakota I) to purchase energy from a 20-megawatt wind energy farm in North Dakota. Dakota I is expected to construct the project in 2003. The wind farm is in close proximity to an existing Montana-Dakota transmission line. The entire energy output will be dedicated to Montana-Dakota's interconnected electric system. Regulatory approvals have been obtained from the NDPSC and SDPUC for the wind farm project. The wind farm project is subject to certain other regulatory approvals.

Montana-Dakota plans to construct a 40-megawatt natural gas-fired peaking unit. The unit is scheduled to be constructed for operation by June 1, 2003. The project is expected to be recovered in rates.

The following table sets forth details applicable to the Company's electric generating stations:

Generating Station	Type	Nameplate Rating (kW)	Summer Capability (kW)	2002 Net Generation (kilowatt-hours in thousands)
North Dakota --				
Coyote*	Steam	103,647	106,750	787,703
Heskett	Steam	86,000	104,050	523,025
Williston	Combustion Turbine	7,800	9,600	(70)**
South Dakota --				
Big Stone*	Steam	94,111	103,870	713,765
Montana --				
Lewis & Clark	Steam	44,000	52,300	286,514
Glendive	Combustion Turbine	34,780	33,800	4,453
Miles City	Combustion Turbine	23,150	23,800	1,590
		393,488	434,170	2,316,980

- ----------
* Reflects Montana-Dakota's ownership interest.
** Station use, to meet Mid-Continent Area Power Pool's accreditation requirements, exceeded generation.

Virtually all of the current fuel requirements of the Coyote, Heskett and Lewis & Clark stations are met with coal supplied by Westmoreland Coal Company (Westmoreland). Contracts with Westmoreland for the Coyote, Heskett and Lewis & Clark stations expire in May 2016, December 2005, and March 2003, respectively. Montana-Dakota is currently in negotiations with Westmoreland on the Lewis & Clark station contract. The majority of the Big Stone Station's fuel requirements are currently being met with coal supplied by RAG Coal West, Inc. under contract through December 31, 2004.

During the years ended December 31, 1998, through December 31, 2002, the average cost of coal purchased, including freight, per million British thermal units (Btu) at Montana-Dakota's electric generating stations (including the Big Stone and Coyote stations) in the interconnected system and the average cost per ton, including freight, of the coal purchased was as follows:

	Years Ended December 31,				
	2002	2001	2000	1999	1998
Average cost of coal per million Btu	$.98	$.92	$.94	$.90	$.93
Average cost of coal per ton	$14.39	$13.43	$13.68	$13.31	$13.67

The maximum electric peak demand experienced to date attributable to sales to retail customers on the interconnected system was 459,000 kW in July 2002. Montana-Dakota's latest forecast for its interconnected system indicates that its annual peak will continue to occur during the summer and the peak demand growth rate through 2008 will approximate 0.8 percent annually. Montana-Dakota's latest forecast indicates that its kilowatt-hour

(kWh) sales growth rate, on a normalized basis, through 2008 will approximate 0.9 percent annually.

Montana-Dakota currently estimates that, with the addition of a 40-megawatt natural gas turbine power plant and the purchase of energy from a 20-megawatt wind farm in North Dakota, it has adequate capacity available through existing generating stations and long-term firm purchase contracts until the year 2005. If additional capacity is needed in 2005 or after, it is expected to be met through intermediate-term purchases. In addition, the Company and Westmoreland Power, Inc. are working with the state of North Dakota to determine the feasibility of constructing a 500-megawatt lignite-fired power plant in western North Dakota. In December 2002, the Company confirmed its intent to continue the 500-megawatt feasibility study, however the Company has requested approval from the state of North Dakota to also include within the study, an alternative 250-megawatt plant option.

Montana-Dakota has major interconnections with its neighboring utilities, all of which are Mid-Continent Area Power Pool (MAPP) members. Montana-Dakota considers these interconnections adequate for coordinated planning, emergency assistance, exchange of capacity and energy and power supply reliability.

Through a separate electric system (Sheridan System), Montana-Dakota serves Sheridan, Wyoming and neighboring communities. The maximum peak demand experienced to date and attributable to Montana-Dakota sales to retail consumers on that system was approximately 51,200 kW and occurred in July 2002.

The Sheridan System is supplied through an interconnection with Black Hills Power and Light Company under a power supply contract through December 31, 2006 which allows for the purchase of up to 55,000 kW of capacity annually.

Regulation and Competition --

The electric utility industry can be expected to continue to become increasingly competitive due to a variety of regulatory, economic and technological changes. The FERC, in its Order No. 888, has required that utilities provide open access and comparable transmission service to third parties. In addition, as a result of competition in electric generation, wholesale power markets have become increasingly competitive and evaluations are ongoing concerning retail competition.

Montana-Dakota joined the Midwest Independent Transmission System Operator, Inc. (Midwest ISO) in September 2001. The Midwest ISO, which the FERC accepted as a Regional Transmission Organization under FERC Order No. 2000 in an order issued in December 2001, is responsible for operational control of the transmission systems of its members. Thereafter, in December 2001, Montana-Dakota filed an application with the FERC for authorization to transfer operational control over certain of its transmission facilities to the Midwest ISO, and, by order dated January 29, 2002, the FERC authorized the transfer. In December 2001, the Midwest ISO filed a proposed modification to the Midwest ISO Agreement to allow Montana-Dakota to be a separate pricing zone. The Midwest ISO commenced security center operations in December 2001 and tariff administration on February 1, 2002.

The Montana legislature passed an electric industry restructuring bill, effective May 2, 1997. The bill provided for full customer choice of electric supplier by July 1, 2002, stranded cost recovery and other provisions. Based on the provisions of such restructuring bill, because Montana-Dakota operates in more than one state, the Company had the option of deferring its transition to full customer choice until 2006. Legislation was passed in Montana on March 30, 2001 which delays the restructuring and transition to full customer choice until a time that Montana-Dakota can reasonably implement customer choice in the state of its primary service territory.

In its 1997 legislative session, the North Dakota legislature established an Electric Industry Competition Committee to study over a six-year period the impact of competition on the generation, transmission and distribution of electric energy in North Dakota. To date, the Committee has made no recommendation regarding restructuring. In 1997, the WYPSC selected a consultant to perform a study on the impact of electric restructuring in Wyoming. The study found no material economic benefits. No further action is pending at this time. The SDPUC has not initiated any proceedings to date concerning retail competition or electric industry restructuring. Federal legislation addressing this issue continues to be discussed.

Although Montana-Dakota is unable to predict the outcome of such regulatory proceedings or legislation, or the extent to which retail competition may occur, Montana-Dakota is continuing to take steps to effectively operate in an increasingly competitive environment. For additional information regarding retail competition, see Item 7 -- Management's Discussion and Analysis of Financial Condition and Results of Operations.

The NDPSC authorized its Staff to initiate an investigation into the earnings levels of Montana-Dakota's North Dakota electric operations based on Montana-Dakota's 2000 Annual Report to the NDPSC. The investigation was based on a complaint filed with the NDPSC Staff. On April 24, 2002, the NDPSC issued an Order requiring Montana-Dakota to reduce its North Dakota electric rates by $4.3 million annually, effective May 8, 2002. On April 25, 2002, Montana-Dakota filed an appeal of the NDPSC Order in the North Dakota South Central Judicial District Court (District Court). The filing also requested a stay of the effectiveness of the NDPSC Order while the appeal was pending. Montana-Dakota challenged the NDPSC's determination of the level of wholesale electricity sales margins expected to be received by Montana-Dakota. On May 2, 2002, the District Court granted Montana-Dakota's request for a stay of a portion of the $4.3 million annual rate reduction ordered by the NDPSC. Accordingly, Montana-Dakota implemented an annual rate reduction of $800,000 effective with service rendered on and after May 8, 2002, rather than the $4.3 million annual reduction ordered by the NDPSC. The remaining $3.5 million was subject to refund if Montana-Dakota did not prevail in this proceeding. On November 22, 2002, the District Court issued an Order reversing the decision of the NDPSC and remanded the case back to the NDPSC. On January 15, 2003, the NDPSC issued an Order accepting Montana-Dakota's level of wholesale electricity sales margins thus reversing its initial decision and allowing Montana-Dakota to continue to charge the electric rates which were in effect.

Montana-Dakota had established reserves for 2002 revenues that had been collected subject to refund with respect to Montana-

Dakota's pending electric rate reduction. Based on the January 15, 2003, Order, as previously discussed, the reserves were reversed and recognized in income in 2002.

Fuel adjustment clauses contained in North Dakota and South Dakota jurisdictional electric rate schedules allow Montana-Dakota to reflect increases or decreases in fuel and purchased power costs (excluding demand charges) on a timely basis. Expedited rate filing procedures in Wyoming allow Montana-Dakota to timely reflect increases or decreases in fuel and purchased power costs. In Montana (23 percent of electric revenues), such cost changes are includible in general rate filings.

Environmental Matters --

Montana-Dakota's electric operations are subject to federal, state and local laws and regulations providing for air, water and solid waste pollution control; state facility-siting regulations; zoning and planning regulations of certain state and local authorities; federal health and safety regulations and state hazard communication standards. Montana-Dakota believes it is in substantial compliance with those regulations.

Governmental regulations establishing environmental protection standards are continuously evolving and, therefore, the character, scope, cost and availability of the measures that will permit compliance with these laws or regulations, cannot be accurately predicted. Montana-Dakota did not incur any material environmental expenditures in 2002 and does not expect to incur any material capital expenditures related to environmental compliance with current laws and regulations through 2005.

NATURAL GAS DISTRIBUTION

General --

Montana-Dakota sells natural gas at retail, serving over 217,000 residential, commercial and industrial customers located in 141 communities and adjacent rural areas as of December 31, 2002, and provides natural gas transportation services to certain customers on its system. Great Plains sells natural gas at retail, serving over 22,000 residential, commercial and industrial customers located in 19 communities and adjacent rural areas as of December 31, 2002, and provides natural gas transportation services to certain customers on its system. These services for the two public utility divisions are provided through distribution systems aggregating over 4,900 miles. Montana-Dakota and Great Plains have obtained and hold valid and existing franchises authorizing them to conduct natural gas distribution operations in all of the municipalities they serve where such franchises are required. For additional information regarding Montana-Dakota's and Great Plains' franchises, see Item 7 -- Management's Discussion and Analysis of Financial Condition and Results of Operations. As of December 31, 2002, Montana-Dakota's and Great Plains' net natural gas distribution plant investment approximated $104.3 million.

All of Montana-Dakota's natural gas distribution properties, with certain exceptions, are subject to the lien of the Indenture of Mortgage dated May 1, 1939, as supplemented, amended and restated, from the Company to The Bank of New York and Douglas J. MacInnes, successor trustees.

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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

Form 10-K

(Mark One)

☒ **ANNUAL REPORT UNDER SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2002

OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from _____ to _____.

Commission File Number: 0-692

NORTHWESTERN CORPORATION
(Exact name of registrant as specified in its charter)

Delaware	**46-0172280**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
125 S. Dakota Avenue, Sioux Falls, South Dakota	**57104**
(Address of principal executive offices)	(Zip Code)

Registrant's telephone number, including area code: **605-978-2908**

Securities registered pursuant to Section 12(b) of the Act:

(Title of each class)	(Name of each exchange on which registered)
Common Stock, $1.75 par value, and related Common Stock Purchase Rights	
Company Obligated Mandatorily Redeemable	**All listed on New York Stock Exchange**

Security of Trust Holding Solely Parent Debentures,
$25.00 liquidation amount
Common Stock Purchase Rights

Securities registered under Section 12(g) of the Act:

Preferred Stock, Par Value $100
(Title of Class)

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the past 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ☒

Indicate by check mark whether the registrant is an accelerated filer (as defined in Rule 12b-2 of the Act). Yes ☒ No ☐

As of June 28, 2002, the aggregate market value of the voting common stock held by non-affiliates of the registrant was $464,375,116, computed using the last sales price of $16.95 per share of the registrant's common stock on June 28, 2002, the last business day of the registrant's most recently completed second fiscal quarter, as reported by the New York Stock Exchange.

As of April 7, 2003, 37, 396,762 shares of the registrant's common stock, par value $1.75 per share, were outstanding.

Documents Incorporated by Reference

None

NORTHWESTERN CORPORATION
FORM 10-K
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SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

On one or more occasions, we may make statements in this Annual Report on Form 10-K regarding our assumptions, projections, expectations, targets, intentions or beliefs about future events. All statements other than statements of historical facts included herein relating to management's current expectations of future financial performance, continued growth, changes in economic conditions or capital markets and changes in customer usage patterns and preferences are forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934.

Words or phrases such as "anticipates," "believes," "estimates," "expects," "intends," "plans," "predicts," "projects," "targets," "will likely result," "will continue" or similar expressions identify forward-looking statements. Forward-looking statements involve risks and uncertainties which could cause actual results or outcomes to differ materially from those expressed. We caution that while we make such statements in good faith and we believe such statements are based on reasonable assumptions, including without limitation, management's examination of historical operating trends, data contained in records and other data available from third parties, we cannot assure you that our expectations will be achieved. Factors that may cause such differences include:

- our success in implementing our turnaround plan, which is dependent upon receiving significant proceeds from the sale of non-core assets;
- if we are unable to significantly reduce our debt, restructure our debt or obtain additional capital, our ability to fund our operations and service our substantial indebtedness will be adversely affected;
- risks regarding the class action lawsuit relating to the disposition of the energy assets by The Montana Power Company, including the acquisition of our Montana utility;
- the risk of litigation or regulatory action in connection with the restatement of our quarterly reports for fiscal 2002;
- our ability to fully address and correct inadequacies or material weaknesses in our internal controls and to thereafter maintain effective systems of internal controls;
- the risk of disruption of Expanets' business, including the loss of key employees, customers and suppliers, and reduction in the value of such business and its assets as a result of our efforts to sell or dispose of Expanets, or its assets, and our limited ability to provide further funds to such business;
- adverse federal, state, or local legislation or regulation or adverse determinations by regulators;
- unscheduled generation outages, maintenance or repairs;

- unanticipated changes in commodity prices or in fuel supply costs or availability due to higher demand, shortages, weather conditions, transportation problems or other developments;
- the risk of vendors requiring additional credit support, including letters of credit, or other constraints on trade credit;
- increases in interest rates;
- the rate of growth and economic conditions in our service territories;
- changes in general economic and competitive conditions in the markets in which we may compete; and
- risks regarding business uncertainties related to the occurrence of natural disasters, war, hostilities and the threat of terrorist actions.

We have attempted to identify, in context, certain of the factors that we believe may cause actual future experiences and results to differ naterially from our current expectation regarding the relevant matter of subject area. In addition to the items specifically discussed above, our usiness and results of operations are subject to the uncertainties described under the caption "Risk Factors" which is a part of the disclosure ncluded in Item 7 of this report on Form 10-K entitled "Management's Discussion and Analysis of Financial Condition and Results of)perations."

From time to time, oral or written forward-looking statements are also included in our reports on Forms 10-K, 10-Q and 8-K, Proxy tatements on Schedule 14A, press releases and other materials released to the public. Although we believe that at the time made, the xpectations reflected in all of these forward-looking statements are and will be reasonable, any or all of the forward-looking statements in this eport on Form 10-K, our reports on Forms 10-Q and 8-K, Proxy Statements on Schedule 14A and any other public statements that are made by s may prove to be incorrect. This may occur as a result of inaccurate assumptions or as a consequence of known or unknown risks and ncertainties. Many factors discussed in this Form 10-K, certain of which are beyond our control, will be important in determining our future erformance. Consequently, actual results may differ materially from those that might be anticipated from forward-looking statements. In light f these and other uncertainties, you should not regard the inclusion of a forward-looking statement in this Form 10-K or other public ommunications that we might make as a representation by us that our plans and objectives will be achieved, and you should not place undue eliance on such forward-looking statements.

We undertake no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future vents or otherwise. However, your attention is directed to any further disclosures made on related subjects in our subsequent periodic reports iled with the Commission on Forms 10-Q and 8-K and Proxy Statements on Schedule 14A.

Unless the context requires otherwise, references to "we," "us," "our," "NorthWestern Corporation" and "NorthWestern" refer specifically o NorthWestern Corporation and its subsidiaries and references to "NorthWestern Energy LLC" refer to NorthWestern Energy, L.L.C., our holly-owned subsidiary.

Part I

TEM 1. BUSINESSES

VERVIEW

NorthWestern Corporation is one of the largest providers of electricity and natural gas in the Upper Midwest and Northwest, serving approximately 598,000 customers in Montana, South Dakota and Nebraska. We have generated and distributed electricity in South Dakota and distributed natural gas in South Dakota and Nebraska since 1923 through our energy division, NorthWestern Energy, formerly NorthWestern Public Service. In February 2002, we completed the acquisition of the electric and natural gas transmission and distribution business of The Montana Power Company for $478 million in cash and the assumption of $511 million in existing debt and mandatorily redeemable preferred securities of subsidiary trusts of The Montana Power Company, net of cash received. As a result of the acquisition, from February 15, 2002, the closing date of the acquisition, through November 15, 2002, we distributed electricity and natural gas in Montana through our wholly owned subsidiary, NorthWestern Energy LLC. Effective November 15, 2002, we transferred all of the energy and natural gas transmission and distribution operations of NorthWestern Energy LLC to NorthWestern Corporation and since that date, we have operated that business as part of our NorthWestern Energy division. We are operating our utility business under the common name "NorthWestern Energy" in all our service territories.

We operate our business in five reporting segments:

- electric utility operations;
- natural gas utility operations;
- communications;
- heating, ventilation and air conditioning, or HVAC, and plumbing related services; and
- all other, which primarily consists of our other miscellaneous service and non-energy related operations and activities that are not included in the other identified segments, together with the unallocated corporate costs and investments, and any eliminating amounts.

For additional information related to our industry segments, see Note 23 of "Notes to Consolidated Financial Statements," included in Item 8 herein.

We also have made significant investments in three non-energy businesses:

- Expanets, Inc., or Expanets, a provider of networked communications and data services and solutions to medium sized businesses nationwide:
- Blue Dot Services Inc., or Blue Dot, a nationwide provider of air conditioning, heating, plumbing and related services; and
- CornerStone Propane Partners, L.P., or CornerStone, a publicly traded limited partnership (OTC: CNPP.PK) that is a retail propane and wholesale energy related commodities distributor.

Our experience with our non-energy businesses has been very disappointing. They have adversely impacted our overall results of operations, financial condition and liquidity for the past three years. See Note 23 of "Notes to Consolidated Financial Statements," included in Item 8 herein. We have written off our investment in CornerStone and have written off substantially all of our investments in Expanets and Blue Dot. In particular, Expanets has suffered from the continued deterioration of business in the telecommunications markets and billings and collections problems caused by the problems encountered

during the conversion to its EXPERT enterprise system. During 2002, we recorded the following charges aggregating approximately $878.5 million:

• Impairment of Blue Dot goodwill and other long-lived assets	$	301.7 million
• Impairment of Expanets goodwill and other long-lived assets	$	288.7 million
• Discontinued operations of CornerStone Propane, net of tax benefits	$	101.7 million
• Valuation allowance for deferred tax assets	$	71.5 million
• Expanets billing adjustments and accounts receivable write-offs and reserves	$	65.8 million
• Impairment of Montana First Megawatts project	$	35.7 million

- Retirement of acquisition term loan, net of tax benefits $ 13.4 million

We have incurred a significant amount of debt as a result of the investments we made in Expanets, Blue Dot, and CornerStone and our purchase of the electric and natural gas transmission and distribution business formerly owned by The Montana Power Company. At December 31, 2002, we had a common stockholders' deficit of $456.1 million and currently have $2.2 billion in debt and trust preferred instruments outstanding. The performance of Expanets, Blue Dot, and CornerStone has not met our expectations. It has become increasingly apparent that we will never recover our investments in these entities and that these entities will not generate cash flows in sufficient amounts to provide meaningful contributions to our debt service.

In February 2003, we closed and received funds from a $390.0 million senior secured term loan. The net proceeds of $366.0 million, after payment of financing fees and costs, were used to repay approximately $260 million of outstanding debt and accrued interest and retire approximately $20 million of outstanding letter-of-credit commitments under our existing $280 million bank credit facility. The remaining proceeds will be used to provide working capital and for general corporate purposes.

Also in February 2003, we outlined the elements of a turnaround plan that we are implementing. We will return our focus to our core utility business. We propose to sell or dispose of our non-core assets, including Expanets, Blue Dot, the Montana First Megawatts generation project, and several other smaller investments we have made and to enforce our sale of our Colstrip Transmission Line. We no longer hold a direct or indirect economic equity interest in CornerStone; accordingly, the results of CornerStone's operations are no longer reflected in our financial statements. We have told Expanets and Blue Dot that they must become financially independent from us. We are unwilling to provide additional financial support to Blue Dot or Expanets and the Montana Public Service Commission will not let us make advances of more than $10 million in the aggregate to our non-regulated businesses without their prior approval. To the extent possible under our senior secured term loan, we intend to use any proceeds from sales of non-core assets to reduce our debt.

Our senior secured term loan contains certain restrictions on the sale or disposition of assets, including non-core assets, and on the prepayment of the senior secured term loan and our other indebtedness. However, in the event of the sale of non-core or other assets having a fair market value of less than 10% of the value of the consolidated tangible assets of our utility business as of December 17, 2002, the reference date for the senior secured term loan, we must first offer the net proceeds of such sale to our lenders and, if such offer is rejected, we may use such proceeds to prepay other indebtedness. If we are unable to prepay debt as a result of these or other restrictions, we intend to retain the proceeds of any sale of non-core assets, or surplus cash, until the maturity date of such debt, at which time those funds would be applied to such debt.

For our utility only operations, which excludes Blue Dot, Expanets, and all other unregulated entities, and absent proceeds from the sale of non-core assets, we estimate the following for the years 2003 and 2004 ($ are approximate and in millions):

	2003	2004
Cash flows from operating activities(1)	$ 30	$ 80
Cash flows used in investing activities(2)	(60)	(60)
Cash flows provided (used) in financing activities(3)	32	(39)
Increase (decrease) in cash and cash equivalents	$ 2	$ (19)

1) The 2003 amount includes a net decrease in working capital of approximately $45 million and interest payments of approximately $140 million. The 2004 amount includes a net decrease in working capital of approximately $15 million and interest payments of approximately $140 million.

2) These amounts are comprised of capital expenditures.

3) The 2003 amount represents the net total of our currently anticipated financing activities for 2003 and is comprised of the following:

Net proceeds—Senior secured term loan	$ 366
Repayment of outstanding debt and retirement of letters-of-credit with proceeds from senior secured loan	(280)
Trust preferred dividend payments	(30)
Other debt payments	(24)

Cash flows provided by financing activities	$ 32

We have the right to defer payment of our trust preferred dividend payments for up to 20 consecutive quarters. The 2004 amount includes trust preferred dividend payments of approximately $30 million, and other debt payments of approximately $9 million.

Based on our current plans and business conditions, we expect that our available cash, cash equivalents and investments, together with amounts generated from operations, will be sufficient to meet our cash requirements for at least the next twelve months. However, due to a decrease in cash and cash equivalents during 2004, we believe that we may need additional funding sources or proceeds from the sale of non-core assets, by the end of 2004 or early in 2005. Commencing in 2005, we face substantial debt reduction payments. Absent the receipt of significant proceeds from the sale of non-core assets, the raising of additional capital or a restructuring of our debt, we will not have the ability to reduce our debt or meet our maturing debt obligations. Even if we are successful in selling some or all of our non-core assets, we will have to restructure our debt or seek new capital.

We have advised our Audit Committee of our Board of Directors that in the course of our 2002 year-end closing process and 2002 audit, we noted deficiencies in internal controls relating to: timely evaluation and substantiation of material account balances; and supervision, staffing, and training of accounting personnel. At that time, we discussed our evaluation of appropriate reserves for accounts receivable and billing adjustments. With the assistance of advisors, we continue to evaluate methods to improve our internal controls and procedures.

We were incorporated in Delaware in 1923. Our principal office is located at 125 S. Dakota Avenue, Sioux Falls, South Dakota 57104 and our telephone number is (605) 978-2908. We maintain an internet site at *http://www.northwestern.com* which contains information concerning us and our subsidiaries. During the fourth quarter of 2002, we began making available our Annual Report on Form 10-K, our Quarterly Reports on Form 10-Q, our Current Reports on Form 8-K and amendments to such reports filed or furnished pursuant to section 13(a) or 15(d) of the Securities and Exchange Act of 1934, as amended, along with our annual report to shareholders and other information related to us, free of charge, on this site as soon as reasonably practicable after we electronically file those

documents with, or otherwise furnish them to, the Securities and Exchange Commission. Our internet website and those of our subsidiaries and the information contained therein or connected thereto are not intended to be incorporated into this Annual Report on Form 10-K and should not be considered a part of this Annual Report on Form 10-K.

ENERGY BUSINESSES

Electric Operations

Services, Service Areas and Customers

Montana

We operate a regulated electric utility business in Montana through our NorthWestern Energy division. Our Montana electric utility business consists of an extensive electric transmission and distribution network. Our Montana service territory covered approximately 107,600 square miles, representing approximately 73% of Montana's land area as of December 31, 2002, and included approximately 786,000 people according to the 2000 census. We also transmit electricity for non-regulated entities owning generation facilities, other utilities and power marketers in Montana. In 2002, by category, residential electric transmission and distribution sales, and commercial and industrial transmission and distribution sales accounted for approximately 42% and 54% of our Montana electric utility revenue, respectively.

Our Montana electric transmission system consists of approximately 7,000 miles of transmission lines, ranging from 50 to 500 kilovolts, 260 circuit segments and 125,000 transmission poles with associated transformation and terminal facilities as of December 31, 2002, and extends throughout the western two-thirds of Montana from Colstrip in the east to Thompson Falls in the west. Our 230 kilovolt and 161 kilovolt facilities form the backbone of our Montana transmission system. Lower voltage systems, which range from 50 kilovolts to 115 kilovolts, provide for local area service needs. We also jointly own a 500 kilovolt transmission system that is part of the Colstrip Transmission System, which transfers Colstrip generation to markets within the state and west of Montana. The system has interconnections with five major non-affiliated transmission systems located in the Western Electricity Coordinating Council area, as well as one interconnection to a system that connects with the Mid-Continent Area Power Pool region. With these interconnections, we also transmit power to and from diverse

interstate transmission systems, including those operated by Avista Corporation; Idaho Power Company, a division of Idacorp, Inc.; PacifiCorp; the Bonneville Power Administration; and the Western Area Power Administration.

As of December 31, 2002, we delivered electricity to approximately 299,000 customers in 191 communities and their surrounding rural areas in Montana, including Yellowstone National Park. We also delivered electricity to rural electric cooperatives in Montana that served approximately 76,000 customers as of December 31, 2002. Our Montana electric distribution system consisted of approximately 16,400 miles of overhead and underground distribution lines and approximately 375 transmission and distribution substations as of December 31, 2002.

South Dakota

We operate our regulated electric utility business in South Dakota through our NorthWestern Energy division as a vertically integrated generation, transmission and distribution utility. Our electricity revenues in South Dakota are generated primarily through:

- residential generation, transmission and distribution sales,
- commercial and industrial generation, transmission and distribution sales, and
- wholesale sales.

We have the exclusive right to serve an assigned service area in South Dakota comprised of 25 counties with a combined population of approximately 99,500 people according to the 2000 census. We provided retail electricity to over 57,000 customers in 108 communities in South Dakota as of December 31, 2002. In 2002, by category, including supply for non-choice customers, commercial and industrial, residential, wholesale and other sales accounted for approximately 50%, 39%, 8% and 3% of our electric utility revenue, respectively.

Residential, commercial and industrial services are generally bundled packages of generation, transmission, distribution, meter reading, billing and other services. In addition, we provide wholesale transmission of electricity to a number of South Dakota municipalities, state government agencies and agency buildings. For these sales, we are responsible for the transmission of contracted electricity to a substation or other distribution point, and the purchaser is responsible for further distribution, billing collection and other related functions. We also provide sales of electricity to resellers, primarily including power pool or other utilities. Power pool sales fluctuate from year to year depending on a number of factors, including the availability of excess short-term generation and the ability to sell excess power to other utilities in the power pool.

Our transmission and distribution network in South Dakota consists of approximately 3,100 miles of overhead and underground transmission and distribution lines across South Dakota as well as 120 substations as of December 31, 2002. We have interconnections and pooling arrangements with the transmission facilities of Otter Tail Power Company, a division of Otter Tail Corporation; Montana-Dakota Utilities Co., a division of MDU Resources Group, Inc.; Xcel Energy Inc.; and the Western Area Power Administration. We have emergency interconnections with the transmission facilities of East River Electric Cooperative, Inc. and West Central Electric Cooperative. These interconnections and pooling arrangements enable us to arrange purchases or sales of substantial quantities of electric power and energy with other pool members and to participate in the benefits of pool arrangements.

Competition and Demand

Although Montana customers have a choice with regard to electricity suppliers, we do not currently face material competition in the transmission and distribution of electricity within our Montana service territory. Direct competition does not presently exist within our South Dakota service territory for the supply and delivery of electricity. Our service territory in South Dakota was assigned to us by the South Dakota Public Utilities Commission pursuant to the South Dakota Public Utilities Act, effective March 1976. Pursuant to the South Dakota Public Utilities Commission grant, we have the exclusive right to provide fully bundled services to all present and future electric customers within our assigned territory for so long as the service provided is adequate. There have been no allegations of inadequate service since assignment in 1976. The assignment of a service territory is perpetual under current South Dakota law.

We sell a portion of the electricity generated in facilities that we own jointly into the wholesale market. We face competition from other electricity suppliers with respect to our wholesale sales. However, we make such wholesale sales with respect to electricity in excess of our load requirements and such sales are not a material part of our business or operating strategy.

Competition for various aspects of electric services is being introduced throughout the country that will open utility markets to new

providers of some or all traditional utility services. Competition in the utility industry is likely to result in the further unbundling of utility services as has occurred in Montana. Separate markets may emerge for generation, transmission, distribution, meter reading, billing and other services currently provided by utilities as a bundled service. At present, it is unclear when or to what extent further unbundling of utility services will occur. We do not expect deregulation in South Dakota in the near future, but it is unclear if and when such competition will begin to affect our other territories. Some competition currently exists within our Montana and South Dakota service territories with respect to the ability of some customers to self-generate or by-pass parts of the electric

system, but we do not believe that such competition is material to our operations. Potential competitors may also include various surrounding providers as well as national providers of electricity.

In our Montana service territory, peak demand was approximately 1,390 megawatts, the average daily load was approximately 944 megawatts, and over 8,270,283 megawatt hours were delivered to choice and default supply customers during the year ended December 31, 2002. In our South Dakota service territory, peak demand was approximately 327 megawatts, including required reserve margins, the average hourly load was approximately 124 megawatts, and over 1,092,868 megawatt hours were delivered during the year ended December 31, 2002.

Electricity Supply

Montana

In Montana, we purchase substantially all of our power from third parties. We have power-purchase agreements with PPL Montana for 450 megawatts on-peak and 300 megawatts off-peak, and Duke Energy for 111 megawatts on and off peak. We also have 12 "qualifying facility" contracts that The Montana Power Company was required to enter into under the Public Utility Regulatory Policies Act of 1978, which provide a total of 101 megawatts of firm winter peak capacity. We have secured an additional contract from Thompson River Co-gen, LLC for 10 megawatts and are negotiating with additional parties with respect to three contracts aggregating approximately 190 megawatts, including a contract for 130 megawatts with Montana First Megawatts, our affiliate. In addition, we have recently completed a request for proposals, or RFPs, for wind generation and are currently reviewing such competitive bids to complement the supply portfolio. We believe that these arrangements, in conjunction with our ability to make open market purchases, are sufficient to meet our power supply needs through June 30, 2007, the end of the deregulation transition period in Montana. For more information about our obligations as a result of deregulation in Montana during the statutory transition period, see "Utility Regulation—Montana."

These open market purchases, along with the Montana Public Service Commission, or MPSC, approved base load supply, are being recovered through an annual electricity cost tracking process pursuant to which rates are based on estimated electricity loads and electricity costs for the upcoming tracking period and are annually reviewed and adjusted by the MPSC for any differences in the previous tracking year's estimates to actual information. This process is similar to the cost recovery process that has been utilized for more than 20 years in Montana, South Dakota and other states for natural gas purchases for residential and commercial customers. The MPSC further stated that we have an ongoing responsibility to prudently administer its supply contracts and the energy procured pursuant to those contracts for the benefit of ratepayers.

On March 27, 2001, we announced our plan to construct Montana First Megawatts, a 260 megawatt, natural gas-fired, combined-cycle electric generation facility. We commenced construction of the facility, located in Great Falls, Montana, in early November 2001. In light of the uncertainties regarding regulatory review of the Montana First Megawatts' power sales contract with NorthWestern Energy, and resulting difficulties in funding the project due to such uncertainties, we suspended construction on the project in June 2002. The facility is fully permitted and we estimate that a buyer of such facility could complete the project in approximately twelve months following the recommencement of construction activities. As part of our turnaround plan, we are evaluating our options with respect to the disposition of all or a substantial portion of our ownership interest in the project. We estimate total construction, development and related costs will be approximately $180 million inclusive of our existing investment. As of and at December 31, 2002, we determined that absent regulatory approval of the Montana First Megawatts' power sales contract with NorthWestern Energy, the value of the project was equal to the estimated salvage value of project equipment, so we recorded an impairment charge of $35.7 million against our investment of approximately $78.4 million in the project. Due to adverse changes to the independent power generation development market, absent receipt of necessary

egulatory approvals of the power sales contract, there is no assurance that we will be able to sell this asset at a favorable price, if at all, and herefore, we may be required to take additional charges.

On June 19, 2002, our power marketing affiliate entered into two five-year power supply contracts to supply a total of approximately 20 negawatts of electricity to customers located in Montana. These supply obligations commenced on July 1, 2002 and continue through June 30, 2007. Our affiliate secured supply to cover these contractual obligations through June 30, 2003. We intend to enter into new supply arrangements and/or make open market purchases to cover the remaining term of these supply obligations.

NorthWestern Energy leases a 30% share of Colstrip Unit 4, an 805 megawatt gross capacity coal-fired power plant located in outheastern Montana through the unregulated Colstrip Unit 4 Lease Management Division of NorthWestern Energy. A long-term coal supply ontract with Western Energy Company provides the coal necessary to run the plant. We sell our leased share of Colstrip Unit 4 generation, epresenting approximately 222 megawatts at full load, principally to Duke Energy Trading & Marketing and to Puget Sound Energy under greements expiring December 20, 2010.

South Dakota

Most of the electricity that we supply to customers in South Dakota is generated by power plants that we own jointly with unaffiliated arties. In addition, we have several wholly owned peaking/standby generating units that are installed at nine locations throughout our service erritory. Details of our generating facilities are described further in the chart below. Each of the jointly owned plants is subject to a joint anagement structure. Except as otherwise noted, we are entitled to a proportional share of the electricity generated in our jointly owned plants nd are responsible for a proportional share of the operating expenses, based upon our ownership interest. Most of the power allocated to us rom these facilities is distributed to our South Dakota customers, although in 2002, approximately 23% of the power was sold in the wholesale narket. Our facilities had a total net summer peaking capacity in 2002 of approximately 312 megawatts.

ame and Location of Plant	Fuel Source	Our Ownership Interest	Our Share of 2002 Peak Summer Demonstrated Capacity	% of Total 2002 Peak Summer Demonstrated Capacity
ig Stone Generating Station, located near ig Stone City in northeastern South akota	Sub-bituminous coal	23.4%	106.8 megawatts	34.2%
oyote I Electric Generating Plant, located ear Beulah, North Dakota	Lignite coal	10%	42.7 megawatts	13.7%
eal Electric Generating Unit No. 4, cated near Sioux City, Iowa	Sub-bituminous coal	8.7%	55.9 megawatts	17.9%
iscellaneous combustion turbine units nd small diesel units (used only during eak periods)	Combination of fuel oil and natural gas	100%	106.6 megawatts	34.2%
otal Capacity			312.0 megawatts	100%

We have entered into an agreement to purchase up to 28 megawatts of firm summer capacity from Basin Electric Generating Co. to assist n meeting peak demands during the summer of 2003. We also have contracted with MidAmerican Energy Company to supply firm capacity nergy as follows during the years 2004-2006: 32 megawatts in 2004; 36 megawatts in 2005; and 40 megawatts in 2006. In addition, we are a ember of the Midcontinent Area Power Pool, which is an area power pool arrangement consisting of utilities and power suppliers having ansmission interconnections located in a nine-state area in the North Central region of the United States and in two Canadian provinces. The rms and conditions of the Midcontinent Area Power Pool agreement and transactions between

idcontinent Area Power Pool members are subject to the jurisdiction of the Federal Energy Regulatory Commission, or the FERC.

The 2002 peak demand in our South Dakota service areas was approximately 327 megawatts, including required reserve margins, and the average daily load in South Dakota during 2002 was approximately 124 megawatts. Our share of generation capacity from jointly owned plants exceeded the average daily load in 2002 and our total system capability through our generating facilities and supply contract with Basin Electric Generating at the time of peak demand was approximately 340 megawatts. We believe we have adequate supplies through our share of generation from jointly owned plants, existing supply contracts, Midcontinent Area Power Pool power swap availability and capacity for sale in the current market to meet our power supply needs during the next few years.

We have a resource plan that includes estimates of customer usage and programs to provide for economic, reliable and timely supplies of energy. We continue to update our load forecast to identify the future electric energy needs of our customers, and we evaluate additional generating capacity requirements on an ongoing basis. This forecast shows customer peak demand growing modestly, which will result in the need to add peaking capacity in the future. However, we have adequate baseload generation capacity to meet customer supply needs in the foreseeable future.

Electricity Generation Costs

Coal was used to generate approximately 95% of the electricity utilized for South Dakota operations for the year ended December 31, 2002. Our natural gas and fuel oil peaking units provided the balance. We have no nuclear exposure. The fuel for our jointly owned base load generating plants is provided primarily through supply contracts of various lengths with several coal companies. The coal contracts for our baseload plants have varying lengths and terms. Currently, there is upward pressure on coal prices, which may result in modest increases in costs to our customers as we pass these costs through in our rates. The average cost by type of fuel burned is shown below for the periods indicated:

Fuel Type	Cost per Million BTU for the Year Ended December 31, 2000	2001	2002	Percent of 2002 Megawatt Hours Generated
Sub-bituminous-Big Stone	$ .96	$ 1.07	$ 1.24	48.60%
Lignite-Coyote*	.83	.75	.66	20.90
Sub-bituminous-Neal	.80	.71	.80	30.40
Natural Gas	5.40	4.26	6.68	0.05
Oil	4.31	5.16	2.04	0.05

* Includes pollution control reagent.

During the year ended December 31, 2002, the average delivered cost per ton of fuel for our base load plants was $20.91 at Big Stone, $11.12 at Coyote and $13.55 at Neal. Changes in our fuel costs are passed on to customers through the operation of the fuel adjustment clause in our South Dakota tariffs. For a discussion of federal regulations regarding the use of coal to produce electricity, see "Utility Regulation—Environmental." Also see "Risk Factors—Changes in commodity prices may increase our cost of producing and distributing electricity and distributing natural gas or decrease the amount we receive from selling electricity and natural gas, adversely affecting our financial performance and condition" included in Item 7 hereof.

Our base load coal plants have contracts for the delivery of lignite and sub-bituminous coal covering various periods. The Big Stone facility currently burns Wyoming sub-bituminous coal from the Powder River Basin supplied under contracts that continue through the end of 2004. The Coyote facility has a contract for the delivery of lignite coal that expires in 2016 and provides for an adequate fuel supply for Coyote's estimated economic life. Neal receives Wyoming sub-bituminous coal under multiple firm and spot contracts with terms of up to several years in duration.

The South Dakota Department of Environment and Natural Resources has given approval for Big Stone to burn a variety of alternative fuels, including tire-derived fuel and refuse-derived fuel. In 2002, approximately 1.8% of the fuel consumption at Big Stone was derived from alternative fuels.

Although we have no firm contract for diesel fuel or natural gas for our electric peaking units, we have historically been able to purchase diesel fuel requirements from local suppliers and currently have enough diesel fuel in storage to satisfy our current requirements. We have been able to use excess capacity from our natural gas operations as the fuel source for our gas peaking units.

We must pay fees to third parties to transmit the power generated at our Big Stone and Neal plants to our South Dakota transmission system. In 2001, we entered into a new 10-year agreement with the Western Area Power Administration for transmission services, including transmission of electricity from Big Stone and Neal to our South Dakota service areas through seven points of interconnection on the Western Area Power Administration's system. Transmission services under this agreement, and our costs for such services, are variable and depend upon a number of factors, including the respective parties' system peak demand and the amount of our transmission assets that are integrated into the Western Area Power Authority's system. In 2001 and 2002, our costs for services under this contract totaled approximately $3.28 million. Our tariffs in South Dakota generally allow us to pass costs with respect to power purchased, including transmission costs, from other suppliers to our customers.

Natural Gas Operations

Services, Service Areas and Customers

Our regulated natural gas utility operations purchase, transport, distribute and store natural gas for approximately 242,000 commercial and residential customers in Montana, South Dakota and Nebraska as of December 31, 2002. Natural gas service generally includes fully bundled services consisting of natural gas supply and interstate pipeline transmission services and distribution services to our customers, although certain large commercial and industrial customers, as well as wholesale customers, may buy the natural gas commodity from another provider and utilize our utility's transportation and distribution service.

Montana

We distributed natural gas to nearly 160,000 customers located in 109 Montana communities as of December 31, 2002. The MPSC does not assign service territories in Montana. However, we have nonexclusive municipal franchises to purchase, transport, distribute and store natural gas in the Montana communities we serve. The terms of the franchises vary by community, but most are for 30 to 50 years. During the next 4 years, one of our municipal franchises, which accounts for approximately 4,000 customers, is scheduled to expire. We also serve several smaller distribution companies that provided service to approximately 28,000 customers as of December 31, 2002. Our natural gas distribution system consisted of approximately 3,400 miles of underground distribution pipelines as of December 31, 2002.

We also transmit natural gas in Montana from production receipt points and storage facilities to distribution points and other nonaffiliated transmission systems. We transported natural gas volumes of approximately 55 billion cubic feet in the year ended December 31, 2002. NorthWestern Energy's Montana peak capacity was approximately 300 million cubic feet per day during the year ended December 31, 2002. Our Montana natural gas transmission system consisted of over 2,000 miles of pipeline, which vary in diameter from 2 inches to 20 inches, and served over 130 city gate stations as of December 31, 2002. NorthWestern Energy has connections in Montana with five major, non-affiliated transmission systems: Williston Basin Interstate Pipeline, NOVA Gas Transmission Ltd., Colorado Interstate Gas, Encana and Havre Pipeline. Seven compressor sites provided over 42,000 horsepower, capable of moving approximately 300 million cubic feet per day during the year ended December 31,

2002. In addition, we own and operate a pipeline border crossing through our wholly owned subsidiary, Canadian-Montana Pipe Line Corporation.

We own and operate three working natural gas storage fields in Montana with aggregate storage capacity of approximately 16.2 billion cubic feet and maximum aggregate working gas capacity of approximately 180 million cubic feet per day. We own a fourth storage field that is being depleted at approximately 0.03 million cubic feet per day with approximately 78 million cubic feet of remaining reserves as of December 31, 2002.

South Dakota and Nebraska

We provided natural gas to approximately 82,000 customers in 59 South Dakota communities and 4 Nebraska communities as of December 31, 2002. The state regulatory agencies in South Dakota and Nebraska do not assign service territories. We have nonexclusive

municipal franchises to purchase, transport, distribute and store natural gas in the South Dakota and Nebraska communities we serve. The maximum term permitted under Nebraska law for these franchises is 25 years while the maximum term permitted under South Dakota law is 20 years. Our policy is to seek renewal of a franchise in the last year of its term. During the next 6 years, 5 of our South Dakota and Nebraska municipal franchises, which account for approximately 36,000 customers, are scheduled to expire. We have never been denied the renewal of any of these franchises. We have approximately 2,000 miles of distribution gas mains in South Dakota and Nebraska with distribution capacity of approximately 15,000 MMBTU per day as of December 31, 2002. We also transport natural gas for other gas suppliers and marketers in South Dakota and Nebraska.

Competition and Demand

Montana's Natural Gas Utility Restructuring and Customer Choice Act, which was passed in 1997, provides that a natural gas utility may voluntarily offer its customers their choice of natural gas suppliers and provide open access in Montana. Although we have opened access to our Montana gas transmission and distribution systems and gas supply choice is available to all of our natural gas customers in Montana, we currently do not face material competition in the transmission and distribution of natural gas in our Montana service areas. We also provide default supply service to customers in our Montana service territories who have not chosen other suppliers under cost-based rates.

In South Dakota and Nebraska, we are subject to competition for natural gas supply. In addition, competition currently exists for commodity sales to large volume customers and for delivery in the form of system by-pass, alternative fuel sources such as propane and fuel oil, and, in some cases, duplicate providers. We do not face material competition from alternative natural gas supply companies in the communities in which we serve in South Dakota and Nebraska. We are currently the largest provider of natural gas in our South Dakota and Nebraska service territories based on MMBTU sold. In South Dakota, we also transport natural gas for one gas marketing firm currently serving four customers through our distribution systems. In Nebraska, we transport natural gas for one customer, whose supply is contracted from another gas company. We delivered approximately 6.6 million MMBTU of third-party transportation volume on our South Dakota distribution system and approximately 0.95 million MMBTU of third-party transportation volume on our Nebraska distribution system.

Competition in the natural gas industry may result in the further unbundling of natural gas services. Separate markets may emerge for the natural gas commodity, transmission, distribution, meter reading, billing and other services currently provided by utilities. At present, it is unclear when or to what extent further unbundling of utility services will occur. To remain competitive in the future, we must provide top quality services at reasonable prices. To prepare for the future, we must ensure that all aspects of our natural gas business are efficient, reliable, economical and customer-focused.

Natural gas is used primarily for residential and commercial heating. As a result, the demand for natural gas depends upon weather conditions. Natural gas is a commodity that is subject to market

price fluctuations. Purchase adjustment clauses contained in South Dakota and Nebraska tariffs allow us to reflect increases or decreases in gas supply and interstate transportation costs on a timely basis, so we are generally allowed to pass these higher natural gas prices through to our customers.

Natural Gas Supply

Like most utilities, our natural gas supply requirements are fulfilled through third party fixed term purchase contracts, natural gas storage services contracts and short-term market purchases. This supply flexibility or portfolio approach, enables us to maintain a diversified supply of natural gas sufficient to meet our supply requirements. We benefit from direct access to suppliers in the major natural gas producing regions in the United States, primarily the Rockies (Colorado), Mid-Continent, Pan-handle (Texas/Oklahoma) and Montana, and Alberta, Canada. These suppliers also provide us with market insight, which assists us in making procurement decisions.

In Montana our natural gas supply requirements for the year ended December 31, 2002, were approximately 20.3 million MMBTU. We have contracted with over seven major producers and marketers with varying contract durations for natural gas supply in Montana.

Our South Dakota natural gas supply requirements for the year ended December 31, 2002, were approximately 5.4 million MMBTU. We have contracted with BP Canada Energy Marketing Corp. in South Dakota to manage transportation, storage and procurement of supply in order to minimize cost and price volatility to our customers.

Our Nebraska natural gas supply requirements for the year ended December 31, 2002, was approximately 5.7 million MMBTU. Our Nebraska natural gas supply, storage and pipeline requirements are fulfilled primarily through a third-party contract with ONEOK.

To supplement firm gas supplies in South Dakota and Nebraska, NorthWestern also contracts for firm natural gas storage services to meet the heating season and peak day requirements of our natural gas customers. NorthWestern also operates two propane-air gas peaking units with a daily capacity of approximately 6,400 MMBTU. These plants provide an economic alternative to pipeline transportation charges to meet the peaks caused by customer demand on extremely cold days. We believe that our Montana, South Dakota and Nebraska natural gas supply, storage and distribution facilities and agreements are sufficient to meet our ongoing supply requirements.

Employees

As of December 31, 2002, we had 1,817 team members employed in our energy division, NorthWestern Energy. Of these, our Montana operations had 1,488 team members employed in its electric and gas utilities business, 406 of whom were covered by collective bargaining agreements involving six unions. In addition, our South Dakota and Nebraska operations had 329 team members employed in its electric gas and utilities business, 202 of whom were covered by the System Council U-26 of the IBEW. We consider our relations with team members to be good.

Utility Regulation

Electric Operations

Our utility operations are subject to various federal, state and local laws and regulations affecting businesses generally, such as laws and regulations concerning service areas, tariffs, issuances of securities, employment, occupational health and safety, protection of the environment and other matters.

Federal

We are a "public utility" within the meaning of the Federal Power Act. Accordingly, we are subject to the jurisdiction of, and regulation by, the FERC, with respect to the issuance of securities and the

setting of wholesale electric rates. We are an exempt "holding company" under the Public Utility Holding Company Act.

In April 1996, the FERC issued Order No. 888 and Order No. 889 requiring utilities to allow open use of their transmission systems by other utilities and power marketers. We and other jurisdictional utilities filed open access transmission tariffs, or OATTs, with the FERC in compliance with Order No. 888. NorthWestern Public Service and The Montana Power Company included OATTs in their filings which conform to the "Pro Forma" tariff in Order No. 888 in which eligible transmission service customers can choose to purchase transmission services from a variety of options ranging from full use of the transmission network on a firm long-term basis to a fully interruptible service available on an hourly basis. These tariffs also include a full range of ancillary services necessary to support the transmission of energy while maintaining reliable operations of our transmission system. NorthWestern Energy LLC, and subsequently, NorthWestern, succeeded to The Montana Power Company's OATTs.

In Montana, NorthWestern Energy sells transmission service across its system under terms, conditions and rates defined in its OATT, which became effective in July 1996. NorthWestern Energy is required to provide retail transmission service in Montana under tariffs for customers still receiving "bundled" service and under the OATT for "choice" customers.

In South Dakota, the FERC has approved our request for waiver of the requirements of FERC Order No. 889 as it relates to the "Standards of Conduct," exempting us as a small public utility. Without the waiver, the "Standards of Conduct" would have required us to physically separate our transmission operations and reliability functions from our marketing and merchant functions.

On December 20, 1999, the FERC issued Order No. 2000, its most recent order regarding Regional Transmission Organizations, or RTOs. An RTO is an organization that attempts to capture efficiencies created by combining individually operated transmission systems into a single operation, focusing on operational and strategic transmission issues. Pursuant to Order No. 2000, utilities that own, operate or control interstate transmission facilities were required to file a proposal with the FERC by October 15, 2000, describing the utilities' efforts to participate in an

RTO expected to be operational by December 15, 2001.

The Montana Power Company was a co-sponsor of a filing at the FERC that proposed to form RTO West. RTO West would be a nonprofit organization with an independent board that would act as the independent system operator for the aggregated transmission systems of participating transmission owners. If RTO West is implemented and we participate, we would execute a transmission operating agreement with RTO West prior to startup of the RTO West operation, which is not currently contemplated to occur before early 2006. We do not anticipate that the transmission operating agreement would include any of our transmission assets other than those used in NorthWestern Energy's Montana operations. RTO West would not be permitted to own transmission assets pursuant to its charter, so the transmission operating agreement would not convey ownership of the assets to RTO West but would grant RTO West the right to operate the assets consistent with the obligation to provide services pursuant to applicable tariffs. NorthWestern Energy and other participating transmission owners would likely retain the right and obligation to maintain the facilities that RTO West has authority to operate pursuant to the transmission operating agreements. Participation in RTO West would create a new commercial arrangement for the transmission of the energy we distribute in Montana, but NorthWestern Energy does not anticipate any material change in the size or timing of the transmission related revenue stream as a result of participation in RTO West.

With respect to our South Dakota transmission operations, we filed in October 2000 our Order No. 2000 Compliance Filing with the FERC detailing options we are pursuing in order to participate in an RTO, including participation in the investigation of the formation of a regional transmission entity as well as the pursuit of various options associated with joining the Midwest Independent System Operator.

On July 31, 2002, the FERC issued its Notice of Proposed Rulemaking in Docket No. RM01-12-000, Remedying Undue Discrimination through Open Access Transmission Service and Standard Electricity Market Design, or the SMD NOPR. The proposed rules set forth in the SMD NOPR would require, among other things, that:

- all transmission owning utilities transfer control of their transmission facilities to an independent third party;
- transmission service to bundled retail customers be provided under the FERC-regulated transmission tariff rather than state-mandated terms and conditions; and
- new terms and conditions for transmission service be adopted nationwide, including new provisions for pricing transmission in the event of transmission congestion.

If adopted as proposed, the rules set forth in the SMD NOPR would materially alter the manner in which transmission and generation services are provided and paid for. On January 15, 2003, the FERC announced the issuance of a white paper on SMD NOPR to be released in April 2003. The FERC also has indicated that it expects to issue the final rules during the summer of 2003.

Furthermore, the SMD NOPR presents several uncertainties, including what percentage of our investments in RTO West would be recovered, how the elimination of transmission charges, as proposed in the SMD NOPR, would impact us, and what amount of capital expenditures would be necessary to create a new wholesale market. We cannot predict when the FERC will issue final rules on SMD NOPR, or in what form, or the effect that they may have on the current RTO West proceedings. Although we cannot predict with certainty the impact the future proceedings will have on the Company's earnings, revenues or prices, management believes that in the aggregate, our earnings and revenues would not be materially affected.

The Montana Power Company provided wholesale power to two electric cooperatives, but the two cooperatives have chosen to obtain their power supply from another source, and NorthWestern Energy provides only transmission services to the Montana cooperatives. In order to recover the transition costs associated with power that would have been supplied to these two cooperatives, The Montana Power Company made a filing with the FERC in April 2000, seeking recovery of approximately $23.8 million in transition costs associated with serving both of the wholesale electric cooperatives. On November 1, 2002, the FERC granted the electric cooperatives' motion for summary judgment and determined that The Montana Power Company had failed to meet its burden of showing that it was entitled to recover the transition costs at issue. NorthWestern Energy, as successor to The Montana Power Company, is currently appealing the decision by the administrative law judge through the appropriate FERC rules of practice and procedure.

The limited liability company that formerly held our Montana transmission and distribution assets has been renamed "Clark Fork and Blackfoot, L.L.C." This entity operates the Milltown Dam, a two megawatt hydroelectric dam at the confluence of the Clark Fork and Blackfoot Rivers, under a license granted by the FERC. The current license for operation of the dam would have expired but for extensions

received from the FERC. The Montana Power Company received an extension of its FERC license to operate the dam until 2007, and we are currently seeking to extend that license until 2008. Generally, under FERC rules, notice of intent to renew a license must be filed five years prior to its expiration. Accordingly, Clark Fork and Blackfoot, L.L.C. gave the FERC its notice to seek renewal of the license in 2003. In the event the FERC license were terminated, the FERC may require that the dam be removed. If Clark Fork and Blackfoot, L.L.C. does not receive the license extension, it might be required to relinquish the license, cease operating the dam and remove the structures as early as 2007. Based on estimates received from our environmental consultants, management believes that the cost of such removal would be approximately $10 million.

Montana

NorthWestern Energy's Montana operations are subject to the jurisdiction of the MPSC with respect to electric service territorial issues, rates, terms and conditions of service, accounting records and other aspects of its operations.

In August 2000, The Montana Power Company filed a combined request for increased natural gas and electric rates with the MPSC. The Montana Power Company requested increased annual electric revenues of approximately $38.5 million, with a proposed interim annual increase of approximately $24.9 million. On November 28, 2000, the MPSC granted the former owner an interim electric rate increase of $14.5 million. On May 8, 2001, The Montana Power Company received a final order from the MPSC resulting in an annual electric service revenue increase of $16.0 million.

Montana law required that the MPSC determine the value of net unmitigable transition costs associated with the transformation of the utility business from a vertically integrated electric service company to a utility providing only default supply and transmission and distribution services. The MPSC was also obligated to set a competitive transition charge to be included in distribution rates to collect those net transition costs. The majority of these transition costs relate to out-of-market power purchase contracts, which run through 2032, that The Montana Power Company was required to enter into with certain "qualifying facilities" as established under the Public Utility Regulatory Policies Act of 1978. The Montana Power Company estimated the pre-tax net present value of its transition costs to be approximately $304.7 million in a filing with the MPSC on October 29, 2001.

On January 31, 2002, the MPSC approved a stipulation among The Montana Power Company, us and a number of other parties, which, among other things, conclusively established the pre-tax net present value of the retail transition costs relating to out-of-market power purchase contracts recoverable in retail rates to be approximately $244.7 million, approximately $60 million less than The Montana Power Company's filing with the MPSC. In addition, the stipulation set a fixed annual recovery for the retail transition costs beginning at $14.9 million in the first year after implementation and increasing up to $25.6 million through 2029. Because the recovery stream as finalized by the stipulation is less than the total payments due under the out-of-market power purchase contracts, the difference must be mitigated or covered from other revenue sources. Qualifying Facilities Contracts, or QFs, require us to purchase minimum amounts of energy at prices ranging from $65 to $138 per megawatt hour through 2029. Our gross contractual obligation related to the QFs is approximately $1.9 billion through 2029. A portion of the costs incurred to purchase this energy is recoverable through rates authorized by the MPSC, totaling approximately $1.5 billion through 2029. Upon completion of the purchase price allocation related to our acquisition of the electric and natural gas transmission and distribution business of The Montana Power Company, we established a liability of $134.3 million, based on the net present value of the difference between our obligations under the QFs and the related amount recoverable. Although we believe that we have opportunities to mitigate the impact of these differences through improved management of our obligations under these contracts and by negotiating buyouts of certain of these contracts, we cannot assure you that our actions will be successful.

The stipulation also required The Montana Power Company and us to contribute $30 million to an account, which will fund credits to Montana electric distribution customers. The account is being applied on a per kilowatt hour basis which began on July 1, 2002 with a term of one year, and had a balance of $16.3 million at December 31, 2002. See "Risk Factors—We may not be able to fully recover transition costs, which could adversely affect our net income and financial condition" and "Risk Factors—If the MPSC disallows the recovery of the costs incurred in entering into default supply portfolio contracts while we are required to act as the "default supplier," we may be required to seek alternative sources of supply and may not be able to fully recover the costs incurred in procuring default supply contracts, which could adversely affect our net income and financial condition" included in Item 7 hereof.

Montana's Electric Utility Restructuring Act enabled larger customers in Montana to choose their supplier of commodity electricity beginning on July 1, 1998, and provided that all other Montana customers will be able to choose their electric supplier during a transition period through June 30, 2007. We are required to act as the "default supplier" for customers who have not chosen an alternate supplier. The Montana Restructuring Act provided for the full recovery of costs incurred in procuring default supply contracts during this transition period. In its 2001 session, the Montana Legislature passed House Bill 474, which, among other things, reaffirmed full cost recovery for the default supplier by mandating that the MPSC use an electric cost recovery mechanism providing for full recovery of prudently incurred electric energy supply costs. In November 2002, Initiative 117 was passed, repealing HB 474 and reinstating a transition period ending on June 30, 2007. Because of the original language in the Restructuring Act, we believe we have adequate assurances of recovering our costs of acquiring electric supply. On October 29, 2001, The Montana Power Company filed with the MPSC its initial default supply portfolio, containing a mix of long and short-term contracts from new and existing power suppliers and generators. On April 25, 2002, the MPSC approved NorthWestern Energy LLC's proposed "cost recovery mechanism" in the form filed. On June 21, 2002, the MPSC issued a final order approving contracts meeting approximately 60% of the default supply winter peak load and approximately 93% of the annual energy requirements. We believe our current power supply arrangements, in conjunction with an ability to make open market purchases, are sufficient to meet our power supply needs through 2007. For further discussion of this risk, see "Risk Factors—We may not be able to fully recover transition costs, which could adversely affect our net income and financial condition" and "Risk Factors—If the MPSC disallows the recovery of the costs incurred in entering into default supply portfolio contracts while we are required to act as the "default supplier," we may be required to seek alternative sources of supply and may not be able to fully recover the costs incurred in procuring default supply contracts, which could adversely affect our net income and financial condition" included in Item 7 hereof.

South Dakota

We are subject to the South Dakota Public Utilities Commission with respect to electric service territorial issues, rates, terms and conditions of service, accounting records and other aspects of our operations. Under the South Dakota Public Utilities Act, a requested rate increase may be implemented 30 days after the date of its filing unless its effectiveness is suspended by the South Dakota Public Utilities Commission and, in such event, can be implemented subject to refund with interest six months after the date of filing, unless authorized sooner by the South Dakota Public Utilities Commission. Our electric rate schedules provide that we may pass along to all classes of customers qualified increases or decreases in costs related to fuel used in electric generation, purchased power, energy delivery costs and ad valorem taxes.

Our retail electric rates, approved by the South Dakota Public Utilities Commission, provide several options for residential, commercial and industrial customers, including dual-fuel, interruptible, special all-electric heating, and other special rates, as well as various incentive riders to encourage business development. An adjustment clause provides for quarterly adjustment based on differences in the delivered cost of energy, delivered cost of fuel, ad valorem taxes paid and commission-approved fuel incentives. We make an information filing with the Commission each month showing our calculations for the adjustment. The adjustment goes into effect 10 days after the information filing unless the South Dakota Public Utilities Commission staff requests changes during that period.

The states of South Dakota, North Dakota and Iowa have enacted laws with respect to the siting of large electric generating plants and transmission lines. The South Dakota Public Utilities Commission, the North Dakota Public Service Commission and the Iowa Utilities Board have been granted authority in their respective states to issue site permits for nonexempt facilities.

Natural Gas Operations

Federal

FERC Order 636 requires that all companies with interstate natural gas pipelines separate natural gas supply and production services from nterstate transportation service and underground storage services. The effect of the order was that natural gas distribution companies, such as NorthWestern, and individual customers purchase natural gas directly from producers, third parties and various gas-marketing entities and ransport it through interstate pipelines. We have established transportation rates on our transmission and distribution systems to allow customers to have supply choices. Our transportation tariffs have been designed to make us economically indifferent as to whether we sell and ransport natural gas or merely deliver it for the customer.

Our natural gas transportation pipelines are generally not subject to the jurisdiction of the FERC, although we are subject to state egulation. NorthWestern Energy conducts limited interstate transportation in Montana that is subject to FERC jurisdiction, but the FERC has llowed the MPSC to set the rates for this interstate service.

Montana

As a public utility, we are subject to MPSC jurisdiction when we issue, assume or guarantee securities, or when we create liens on our Montana properties. Rates for NorthWestern Energy's Montana natural gas supply are set by the MPSC. NorthWestern Energy uses an annual gas tracking mechanism in Montana for the recovery of gas supply costs, which we prepare and file annually with the MPSC. The filing sets gas cost rates based on estimated gas loads and gas costs for the upcoming tracking period and adjusts for any differences in the previous tracking year's estimates to actual information. The MPSC has utilized this process since 1979. We filed an annual gas cost tracker request in Montana in December 2001 for actual gas costs for the twelve month period ended October 31, 2001 and for projected costs for the twelve month period ended October 31, 2002. That request was finalized by order of the MPSC on October 10, 2002. On November 1, 2002, we filed an annual gas cost tracker request for actual gas costs for the twelve month period ended October 31, 2002 and for projected costs for the eight month period ended June 30, 2003. In our 2002 filing, we proposed to change the tracking year to July 1 through June 30 and therefore estimated our gas costs from November 1, 2002 through June 30, 2003. Our 2002 request is still pending with the MPSC. The only intervener in our recent request was the Montana Consumer Counsel, or MCC, who has filed testimony indicating that they have no issues with our gas costs or proposal. We expect that the MPSC will issue and order approving our request within approximately 60 days.

In August 2000, The Montana Power Company filed a combined request for increased natural gas and electric rates with the MPSC. The Montana Power Company requested increased annual natural gas revenues of approximately $12.0 million, with a proposed interim annual increase of approximately $6.0 million. On November 28, 2000, the MPSC granted the former owner an interim natural gas rate increase of $5.3 million. On May 8, 2001, The Montana Power Company received a final order from the MPSC resulting in an annual delivery and gas storage service revenue increase of $4.3 million. Because the amount established in the final order was less than the interim order, The Montana Power Company began including a credit for the difference collected from November 2000 through May 2001, with interest, in its customers' bills over a six-month period starting October 1, 2001.

In January 2001, The Montana Power Company submitted to the MPSC an annual gas cost tracker requesting an increase of approximately $51.0 million. At that time, the former owner also submitted a compliance filing for a credit of approximately $32.5 million associated with a sharing of the proceeds from the sale of gathering and production properties previously included in the natural gas utility's rate base. As a result, effective February 1, 2001, The Montana Power Company began collecting a net amount of $18.5 million in revenues over a one-year period. In September 2001, after all testimony addressing the amount of sharing had been filed with the MPSC, The Montana Power Company

reached an agreement with intervening parties to increase the amount of the credit to $56.3 million. This $23.8 million increase, along with $4.0 million in interest from the date of sale, is being credited to customers' bills over a one to two-year period, which began February 1, 2002. The amount of this customer credit was funded by The Montana Power Company through a purchase price adjustment at the closing of the acquisition of the electric and natural gas transmission and distribution business by NorthWestern and had a balance of $16.0 million as of December 31, 2002.

South Dakota

We are subject to the jurisdiction of the South Dakota Public Utilities Commission with respect to rates, terms and conditions of service, accounting records and other aspects of our natural gas distribution and transmission operations in South Dakota. Under the South Dakota Public Utilities Act, a requested rate increase may be implemented 30 days after the date of its filing unless its effectiveness is suspended by the South Dakota Public Utilities Commission and, in such event, can be implemented subject to refund with interest six months after the date of filing, unless authorized sooner by the South Dakota Public Utilities Commission. A purchased gas adjustment provision in our natural gas rate schedules permits the adjustment of charges to customers to reflect increases or decreases in purchased gas, gas transportation and ad valorem taxes.

Our retail natural gas tariffs, approved by the South Dakota Public Utilities Commission, include gas transportation rates for transportation through our distribution systems by customers and natural gas marketers from the interstate pipelines at which our systems take delivery to the end-user's premises. Such transporting customers nominate the amount of natural gas to be delivered daily and telemetric equipment installed for each customer monitors daily usage.

Nebraska

The State of Nebraska currently has no centralized regulatory agency exercising jurisdiction over natural gas operations in that state;

however, natural gas rates are subject to regulation by the municipalities in which gas utilities operate. Several legislative proposals have been introduced in the Nebraska Unicameral Legislature in its 2003 session to transfer jurisdiction over natural gas rates and terms and conditions of service to the Nebraska Public Service Commission, all with provisions that allow natural gas utilities to continue to negotiate with the cities they serve with regard to natural gas rates. At this time, it is uncertain whether such regulatory change will be implemented. Our retail natural gas tariffs, filed with the cities served, provide residential, general service and commercial and industrial options, as well as firm and interruptible transportation service. A purchased gas adjustment clause provides for adjustments based on changes in gas supply and interstate pipeline transportation costs.

Seasonality and Cyclicality

Our electric and gas utility businesses are seasonal businesses and weather patterns can have a material impact on their operating performance. Because natural gas is heavily used for residential and commercial heating, the demand for this product depends heavily upon weather patterns throughout our market areas and a significant amount of natural gas revenues are recognized in the first and fourth quarters related to the heating season. Demand for electricity is often greater in the summer and winter months associated with cooling and heating. Accordingly, our operations have historically generated less revenues and income when weather conditions are milder in the winter and cooler in the summer. In the event that we experience unusually mild winters or summers in the future, our results of operations and financial condition could be adversely affected.

Environmental

Our electric, natural gas and other business sectors are subject to extensive regulation imposed by federal, state and local government authorities in the ordinary course of day-to-day operations with regard to the environment, including air and water quality, solid waste disposal and other environmental considerations. The application of government requirements to protect the environment involves or may involve review, certification, issuance of permits or other similar actions or by government agencies or authorities, including but not limited to the United States Environmental Protection Agency, or the EPA, the Bureau of Land Management, the Bureau of Reclamation, the South Dakota Department of Environment and Natural Resources, the North Dakota State Department of Health, the Nebraska Department of Environmental Quality, the Iowa Department of Environmental Quality and the Montana Department of Environmental Quality, or the MDEQ, as well as compliance with court decisions.

We did not incur any material environmental expenditures in 2002. We are committed to remaining in compliance with all state and federal environmental laws and regulations and taking reasonable precautions to prevent any incidents that would violate any of these rules.

The Clean Air Act Amendments of 1990, which prescribe limitations on sulfur dioxide and nitrogen oxide emissions from coal-fired power plants, required reductions in sulfur dioxide emissions at our Big Stone plant beginning in the year 2000. We currently satisfy this requirement through the purchase of sub-bituminous coal, which contains lower sulfur content. The plant recently completed the replacement of a precipitator with an advanced hybrid particulate collector, at an approximate cost of $13.4 million. Roughly half of this cost will be paid for by the Department of Energy, and our project share of the remainder was approximately $1.2 million and was paid over a four-year period that ended in 2002. In 2000, the wall-fired boiler at our Neal 4 plant and the cyclone boilers located at our Big Stone and Coyote plants became subject to nitrogen oxide emission limitations. To satisfy these limits, the Neal 4 and Big Stone facilities purchase and burn sub-bituminous coal from the Powder River Basin, and the Coyote facility purchases and burns lignite coal. Low nitrogen oxide burners have been identified as additional possible control technology; however, installation of such burners has not yet been required. The Clean Air Act also contains a requirement for future studies to determine what, if any, limitations and controls should be imposed on coal-fired boilers to control emissions of certain air toxics, including mercury. Because of the uncertain nature the air toxic emission limits and the potential for development of more stringent emission standards in general, we cannot reasonably determine the additional costs we may incur under the Clean Air Act. Legislation has been introduced in the Congress to amend the Clean Air Act, including legislation that would adopt President Bush's "Clear Skies" proposals, or that would otherwise affect the regulatory programs applicable to emissions of sulfur oxide, nitrogen oxide, mercury, and possibly carbon dioxide. These proposals are all subject to the normal legislative process, and we cannot make any prediction about whether the proposals will pass, or the final terms of the legislation if it were to pass. Any such legislation, if it passed, would likely require administrative regulations to be adopted. We cannot reasonably determine whether any proposals would impose additional costs, or if so, what the magnitude of those costs would be.

On January 2, 2001, BSP Otter Tail, the contract operator at Big Stone, received a Request for Information from the EPA, pursuant to Section 114 of the Clean Air Act. The request sought information related to Big Stone's current and past operations, modifications and repairs. The EPA has taken no action since BSP Otter Tail filed its final response on April 2, 2001. However, it is possible that the EPA could file an enforcement action against the facility as part of its New Source Review enforcement initiative against coal-fired power plants. We cannot be

certain whether an action will be sought, and if sought, the effect of such an action on the cost of future compliance and operations.

NorthWestern has met or exceeded the removal and disposal requirements for all equipment containing polychlorinated biphenyls, or PCBs, as required by state and federal regulations. We will continue to use certain PCB-contaminated equipment for its remaining useful life and will, thereafter,

dispose of the equipment according to pertinent regulations that govern the use and disposal of such equipment.

The Comprehensive Environmental Response Compensation and Liability Act, or CERCLA, and some of its state counterparts require that we remove or mitigate adverse environmental effects resulting from the disposal or release of certain substances at sites that we own or previously owned or operated, or at sites where these substances were disposed. However, we cannot quantify costs associated with current site remediation efforts or future remediation efforts because of the following uncertainties:

- We may not know all sites for which we are alleged or will be found to be responsible for remediation; and
- We cannot estimate with a reasonable degree of certainty the total costs of remediation at sites where we have been identified as responsible for remediation.

For sites where we currently are required to investigate and or clean up contamination, we do not expect the unknown costs to have a material adverse effect on our consolidated operations, financial position or cash flows.

Two formerly operated manufactured gas plants located in Aberdeen and Mitchell, South Dakota, have been identified on the Federal Comprehensive Environmental Response, Compensation, and Liability Information System, or CERLIS, list as contaminated with coal tar residue. We are currently investigating these sites pursuant to a work plan approved by the EPA and the South Dakota Department of Environment and Natural Resources. At this time, we do not know whether any remediation is necessary at these sites. If, however, remediation is required at these sites, we cannot estimate with a reasonable degree of certainty at this time the total costs of clean up at these sites, but based upon our investigations to date, our current environmental liability reserves and environmental insurance, we do not expect cleanup costs to be material to NorthWestern. We also own a site in North Platte, Nebraska on which a former manufactured gas facility was located and which is under investigation for alleged soil and groundwater contamination. At present, we cannot estimate with a reasonable degree of certainty the total costs of remaining clean up at the site, but we do not expect clean up costs to be material.

The Montana Power Company was identified as a Potentially Responsible Party, or a PRP, at the Silver Bow Creek/Butte Area Superfund Site. The Montana Power Company settled most of its liability in a Consent Decree approved by the United States District Court for the District of Montana and received contribution protection in the event other PRPs claim contribution for cleanup costs they expend. The Atlantic Richfield Company, or ARCO, continues to address contamination of the site. The Montana Power Company transferred approximately 30 acres of property owned by it and included within the boundary of the Silver Bow Creek/Butte Area Superfund Site to NorthWestern Energy, LLC, the entity that was acquired by NorthWestern in February 2002. NorthWestern Energy continues to operate a maintenance center on this property. We cannot estimate with a reasonable degree of certainty whether additional clean up will be required, but we do not expect any residual cleanup costs to be material. Any subsequent remediation costs for contaminants not covered by the settlement will be subject to the indemnification provisions between TouchAmerica Holdings, Inc. and NorthWestern, which are described below.

Toxic heavy metals in the silts resting in Milltown Reservoir, which sits behind Milltown Dam, caused the EPA to identify Milltown Reservoir on its Superfund National Priority List. ARCO, as successor to the Anaconda Company, has been named as the party with responsibility for completing the remedial investigation and feasibility studies and conducting site cleanup, under the EPA's direction. The Montana Power Company did not undertake any direct responsibility in that regard, in light of a statutory exemption from liability under CERCLA in relation to the Milltown Dam. By virtue of its acquisition of The Montana Power Company's electric and natural gas transmission and distribution

business and the Milltown Dam, Clark Fork and Blackfoot, L.L.C. succeeded to similar protection under this statutory exemption. ARCO has argued that the owner of the Milltown Dam should be considered a PRP and has threatened to challenge Clark Fork and Blackfoot, L.L.C.'s

exempt status. ARCO and The Montana Power Company entered into a confidential settlement agreement to limit The Montana Power Company's and now Clark Fork and Blackfoot, L.L.C.'s potential liability and costs and ongoing operating expenditures, provided that the EPA selects a remedy that leaves the dam and sediments in place in its final Record of Decision. According to press reports, EPA staff have informally indicated that the agency may decide to require removal of the dam as part of the remedy to be selected. However, no draft decision has been issued for public comment. The final Record of Decision is expected out in the latter part of 2003. The EPA has indicated that it favors a remedy involving partial sediment and ultimate dam removal. In light of the EPA's position, ARCO and NorthWestern Energy have had discussions regarding a potential allocation and funding of the costs of the EPA's preferred remedy. Depending on the structure of any negotiated settlement with the EPA, ARCO and other parties, NorthWestern Energy may agree to fund some portion of its allocated share of the remedy costs in 2003. We have established a reserve of approximately $36.5 million at December 31, 2002, for liabilities related to the Milltown Dam and other environmental liabilities. The Company also secured a ten-year, $100 million environmental insurance policy, effective May 31, 2002, to mitigate the risk of future liabilities arising from a catastrophic failure of the Milltown Dam caused by an act of God.

In 1985 and 1986, researchers found elevated levels of heavy metals in sediments in the reservoir behind the Thompson Falls Dam. The EPA declared the site a "No Further Action" site for purposes of CERCLA, but the MDEQ listed the reservoir as a Comprehensive Environmental Cleanup and Responsibility Act site, or a CECRA site, Montana's state equivalent of a CERCLA National Priority List site. The MDEQ identified the site as a "Low Priority Site" and because of the low probability of direct human contact and the lack of evidence of migration to groundwater supplies, no action has been required. Given the low priority designation for this site, we believe that the risk of material remediation is low. As discussed below, The Montana Power Company retained pre-closing environmental liability relating to this CECRA listing when it sold the Thompson Falls Dam to PPL Montana. We cannot estimate with a reasonable degree of certainty the total costs, if any, of cleanup at this site. We do not expect cleanup costs to be material.

The Montana Power Company voluntarily cleaned up two sites where it formerly operated manufactured gas plants and was investigating a third at the time of our acquisition of The Montana Power, L.L.C. The Helena site was placed into the MDEQ's voluntary remediation program. While the site continued to experience exceedances of groundwater contamination levels, NorthWestern Energy determined that natural attenuation should address the problem. NorthWestern Energy requested closure of the site. The decision is pending. The Montana Power Company stated at the time of the acquisition that remediation was complete at a second site located in Missoula, and it had requested closure from the State for that site. A third former manufactured gas plant formerly owned by The Montana Power Company, located in Butte, was under investigation at the time of the acquisition. NorthWestern Energy continued the work and has now requested closure for the site. The decision is pending. We cannot estimate with a reasonable degree of certainty whether additional cleanup will be necessary or the total costs of such cleanup. However, we do not expect any of the outstanding cleanup costs to be material.

As described above, The Montana Power Company retained certain environmental liabilities in connection with its sale of assets to PPL Montana. Under the terms of our acquisition of The Montana Power, L.L.C., we assumed the first $50 million of NorthWestern Energy LLC's pre-closing environmental liabilities, including these retained environmental liabilities. Touch America Holdings, Inc. assumed the next $25.0 million in costs. NorthWestern Energy LLC and Touch America Holdings, Inc. agreed to equally split costs that fall between $75.0 and $150 million. In light of the financial difficulties

experienced by Touch America, we are uncertain as to the ability of Touch America to satisfy its contractual indemnification obligation.

Environmental laws and regulations require us to incur certain costs, which could be substantial, to operate existing facilities, construct and operate new facilities and mitigate or remove the effect of past operations on the environment. Governmental regulations establishing environmental protection standards are continually evolving, and, therefore, the character, scope, cost and availability of the measures we may be required to take to ensure compliance with evolving laws or regulations cannot be accurately predicted. However, we believe that we accrue an appropriate amount of costs and estimate reasonably foreseeable potential costs related to such environmental regulation and cleanup requirements. We do not expect these costs to have a material adverse effect on our consolidated financial position, ongoing operations, or cash flows.

COMMUNICATIONS, NETWORK SERVICES AND DATA SOLUTIONS BUSINESS—EXPANETS

Ownership

As of December 31, 2002, after impairment charges and recognition of our share of net losses, the net recorded book value of our aggregate investment in and advances to Expanets, which consisted of $364.1 million in equity and $205.7 million in intercompany

REDACTED

II-A
QUANTITATIVE MARKET DOMINANCE

REDACTED

II-B
QUALITATIVE MARKET DOMINANCE

REDACTED

III-A
STAND-ALONE TRAFFIC GROUP

REDACTED

III-B
STAND-ALONE RAILROAD SYSTEM

REDACTED

III-C
OPERATING PLAN

REDACTED

STRING DIAGRAM ANALYSIS

A string diagram is a methodology used to test the adequacy and feasibility of an operating plan and a system design. It permits identification of flaws in either the operating plan and/or the system, which in turn permits re-design to overcome the flaws.

String diagrams have been prepared that show how the track configuration for the Otter Tail Railroad ("OTRR") will accommodate the daily train counts and meets developed using the engineering design and configuration described in Section III-B and the operating plan described in Section III-C, supra. Attachment A to this Exhibit contains the string diagrams for the main line of the OTRR between Converse Yard, WY and Big Stone plant and the Snowden branch lines for the peak traffic day of October 18, 2021.[1/]

A. THE STRING DIAGRAM PROCESS

The string diagram model flows the traffic over the OTRR during the peak traffic day for the peak year included in the 20-year DCF analysis. For the OTRR, this peak day is October 18, 2021. Train activities between origin and destination/interchange for all loaded trains, and between destination/interchange and origin for all empty trains, were taken from the operating plan discussed in Section III-C, supra. The process is iterative in that first one train is flowed over the system, and then additional trains are added.

The operation of the first train will have no activities of other trains with which to contend, but as trains are added, operational conflicts between trains previously flowed and the trains added

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1/ The string diagram process develops the operating statistics for the OTRR on the peak operating day.

are identified and resolved. The process is repeated with each added train until every conflicting train event is resolved and the operational feasibility of handling all the OTRR trains has been established.

Train meets were one of the principal factors taken into account in designing and planning the lengths and locations of double track, crossovers and passing sidings on the OTRR. A train meet is a common example requiring the exercise of the conflict resolution process embodied in the string diagram model and will occur a number of times during each OTRR train cycle. When a train headed in one direction on a single-track segment meets a train traveling in the opposite direction, one train will be diverted onto a second main track or passing siding, permitting the other train to move unimpeded while minimizing the delay incurred by the diverted train because of reduced speed and/or waiting at the siding.

B. THE VARIABLES ACCOUNTED FOR IN THE STRING DIAGRAM MODEL

The activities (time) accounted for in the string diagramming process include loading, running, deceleration, acceleration, diversion onto second main tracks or passing sidings, re-entry to first main track from second main or passing siding, crew change, locomotive servicing and fueling, switching out bad-order or overloaded cars at yards, switching in repaired cars at yards, inspection, interchange, and unloading.

STRING DIAGRAM ANALYSIS

The fixed facilities reflected in the string diagram process are as follows:

- Single main track sections
- Second main (double track) sections
- Mine lead tracks
- Signals/Communications
- Yards
- Passing sidings
- Crossovers
- Turnouts
- Locomotive maintenance facilities
- Locomotive fueling facilities

The location of a train on the OTRR depends upon the speed the train travels and how long it takes to complete each of the activities that the train must carry out. On the OTRR, the maximum authorized speed is 60 miles per hour for empty trains and 50 miles per hour for loaded coal trains and 60 miles per hour for loaded non-coal trains. Train acceleration and deceleration impacts train location and depends upon trailing weight, locomotive tractive effort, among other factors. Curvature and grade also affect the speed of the train as it travels along its route.[2/] A safe headway spacing must also be maintained between trains.

The times required for the various activities are discussed in the text of Section III-C-2, supra. Those times were factored into the string diagram model. The applicable train movement rules and activity times were used in the development of each train's movement.

[2/] The specific grades and curves along the OTRR route are included as inputs into the calculations performed by the string program.

STRING DIAGRAM ANALYSIS

In performing the string diagram analysis, historical traffic data for 2002 was used as the basis for the train movements included in the string diagrams. The 2002 traffic levels were adjusted to 2021 levels based on the application of the forecasts to the OTRR 2002 traffic levels. After applying the forecast, the peak operating day in 2021 was identified, and the trains operating on the peak day, and the seven days prior to the peak day, were run through the string diagram analysis.[3/]

C. RESULTS OF THE OTRR STRING DIAGRAM PROCESS

The string diagrams resulting from the process described above demonstrate that the OTRR's operating plan and track configuration are feasible for the volume of traffic handled during the peak day of the peak year. The string diagram (for October 18, 2021) discussed below and included as Attachment A to this Exhibit III-C-2 illustrates the string diagram process. It plots on time/location coordinates and the location of loaded and empty trains traversing the OTRR.[4/]

The 5-page diagram shows train activity over a portion of the OTRR for one day. The diagram title on page 1, indicates that the diagram covers the Converse to West Lodge Grass section of the OTRR. The horizontal "Time" axis covers the 24 hour period broken down into twenty (20), 1 hour and 12 minute increments. The vertical location axis identifies locations on this section of the OTRR.

3/ Including the seven days before the peak operating day in the string diagram allows the model to incorporate the impact of empty coal trains returning to the system.

4/ The string diagram model is contained in Otter Tail's electronic workpapers. See "OtterTail_String.zip".

STRING DIAGRAM ANALYSIS

Each line on the diagram plots the time/location coordinates for a separate train. North- and west-bound trains are plotted in red and have upward trending slopes (from right to left) to indicate that the further north the train travels, the more time has elapsed.[5/] South- and east-bound loaded trains are plotted in blue and have upward trending slopes (from left to right) to indicate that the further south the train travels, the more time has elapsed. Returning light helper movements are plotted in green.

Each of the train activities mentioned earlier (for example, loading, running, diversion onto passing sidings, etc.) is incorporated into the string diagram model. The time that each activity takes is either stated in Section III-C, supra or is calculated within the string diagram model itself. Elapsed times for acceleration and deceleration, as well as meet times, are calculated by the model.[6/]

Simple examination of the string diagrams confirms that train meets occur where there are second main tracks to accommodate the meets. As an example, page 1 of Attachment A, examines the lines between "Converse" and "West Lodge Grass". Inspection of the string diagram indicates that trains meet on this segment. The segments between the sidings on this line are single track. The string diagram shows that the red and blue intersect at the sidings. This confirms that trains do not meet on this track segment. This process was repeated for each double-track segment and for each single-track segment and determined that train meets occur only

---

5/ Trains that originally move north and west out of the PRB and then turn east at Glendive are considered north/west bound trains in the string analysis.

6/ The string diagram model inserts the amount of meet time required to permit the trains to pass while one train is on the first main track and the other train is still on the second (diverging) main track or passing siding.

STRING DIAGRAM ANALYSIS

where double track or passing sidings are available. This analysis confirms that the OTRR has ample capacity to handle its peak day volume.

The results from the string diagram analysis were used to develop various operating statistics for the OTRR for the peak period and for the peak day. These statistics, shown in Exhibit III-C-1, were used to develop the annual operating statistics for the OTRR.

REDACTED

III-F
ROAD PROPERTY INVESTMENT

REDACTED

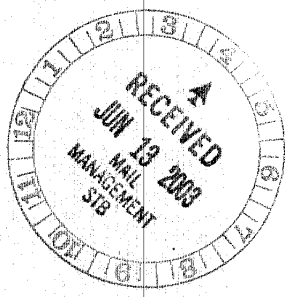
III-H
RESULTS OF SAC ANALYSIS

REDACTED

PUBLIC VERSION
HIGHLY CONFIDENTIAL AND CONFIDENTIAL MATERIAL REDACTED

BEFORE THE
SURFACE TRANSPORTATION BOARD

OTTER TAIL POWER COMPANY **Complainant,** **v.** **THE BURLINGTON NORTHERN AND SANTA FE RAILWAY COMPANY,** **Defendant.**	**Docket No. 42071**



COMPLAINANT'S OPENING EVIDENCE

VOLUME III - WORKPAPERS

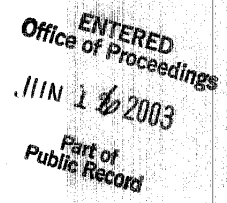
1 of 2

George Koeck, Esq.
General Counsel
Otter Tail Corporation
4334 18th Avenue, SW, Suite 200
Fargo, ND 58103
(701) 451-3567

Nicholas J. DiMichael, Esq.
Jeffrey O. Moreno, Esq.
Michael H. Higgins, Esq.
THOMPSON HINE LLP
1920 N Street, N.W., Suite 800
Washington, DC 20036
(202) 331-8800

Attorneys for Complainant

June 13, 2003



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II-A
QUANTITATIVE MARKET DOMINANCE

II-A-1

OPENING
VARIABLE COSTS -

BNSF PRICING
AUTHORITY

THE BURLINGTON NORTHERN AND SANTA FE RAILWAY COMPANY
COMMON CARRIER PRICING AUTHORITY BNSF 90062

Effective Date:	On or after January 1, 2002, upon expiration of Contract BN-C-2913.
Expiration Date:	One year from the effective date, unless renewed or extended.
Commodity:	Raw sub-bituminous Coal, STCC 11-21-Series (excluding artificially dried or processed coal).
Origins:	Wyoming Powder River Basin Mines listed in Attachment A, subject to diversion restrictions identified below.
Destination	Big Stone Generating Station located near Big Stone City, SD.
Route:	BNSF Direct.
Rate:	$13.49 in U.S. Dollars per net ton of coal in shipper supplied aluminum coal railcars with a maximum average lading per car of 121 tons per car.
	$14.23 in U.S. Dollars per net ton of coal in shipper supplied steel coal railcars with a maximum average lading of 100 tons per car.

Freight charges will be assessed on the basis of the applicable minimum weight per trainload (see below) or the actual weight of coal per trainload whichever is greater. The aforementioned rates are subject to a minimum annual volume of 1,500,000 tons per year. In the event the minimum annual volume is not achieved during any calendar year, adjusted rates of $14.64 per net ton and $15.65 per net ton respectively shall be applied to all shipments moving within the calendar year, and shipper will pay the difference between the rates initially paid and the adjusted rates within 30 days following the end of the calendar year in which minimum annual volume requirements were not met.

Trainload and Railcar Weights:

Weights shall be ascertained at origin by shipper, its agent, or the coal mine operator, at no charge to BNSF, and will be provided to BNSF via either electronic data interchange or facsimile upon release of a loaded train. BNSF shall have the right to inspect and certify the origin scales. The minimum weight per trainload is 11,500 net tons of coal for steel cars and 13,685 net tons for aluminum cars.

Railcar Supply and Tender Requirements:

Shipper provided railcars shall be suitable for loading not less than 100 net tons of coal per steel carload. Shipper provided railcars shall be suitable for loading not less than 119 net tons of coal per aluminum carload. The minimum tender for a train of shipper railcars is 115 such railcars and a maximum tender of 117 railcars.

Claims for damage to or destruction of shipper railcars shall be handled in accordance with the procedures set forth in the field manual and office manual of the Association of American Railroads Interchange Rules, as amended from time-to-time. Notwithstanding the foregoing BNSF shall not be liable for loss or damage caused by defects in design, materials, or workmanship of Shipper-supplied equipment or otherwise due events of force Majeure to improper loading or unloading performed by Shipper, its agent, contractor or consignee.

0002

Loading:

Shipper or its agent shall be responsible for the provision of appropriate loading facilities. All cars in each shipment shall be tendered to BNSF (or its agent or contractor) for loaded movement within four (4) hours of actual or constructive placement for loading at origin ("Loading Free Time"). Shipper shall pay a charge per hour or fraction thereof that a train is held in excess of loading free time as published in Tariff BNSF 6041-series.

Unloading:

Shipper or its agent shall be responsible for the provision of appropriate unloading facilities. All cars in each shipment shall be tendered to BNSF (or its agent or contractor) for empty movement within four (4) hours of actual or constructive placement for unloading at destination ("Unloading Free Time"). Shipper shall pay a charge per hour or fraction thereof that a train is held in excess of loading free time as published in Tariff BNSF 6041-series.

Accessorial Services:

Coal unit train accessorial services and charges therefor, other than specified in this common carrier authority, shall be as described in BNSF Authority 6041-Series or successors thereto, except that no change in destination shall be permitted.

Billing and Payment:

BNSF will bill each shipment under the terms of the Uniform Straight Bill of Lading. All railcars for each shipment are to be billed on one (1) Bill of Lading. This Common Carrier Authority BNSF 90062, correct address and patron code must be shown on the bill of lading to insure accurate billing. Freight charges will be billed by BNSF and paid by shipper within fifteen (15) days of receipt of invoice by wire transfer. In the event that shipper does not make timely payment, or if adverse credit conditions occur, which in BNSF's judgement could affect shipper's ability to meet payment terms, BNSF may require shipper to pay cash in advance of service for all amounts for which shipper is liable under this Common Carrier Authority.

Other Provisions:

Shipments made under the provisions of this Common Carrier Authority are subject to the Uniform Freight Classification 6000-Series or its successor, applicable tariffs, statutes, federal regulatory rules and regulations, AAR rules, and other accepted practices within the railroad industry as may be amended from time-to-time.

Shipments shall be deemed to be in service to the Origin served by the immediately preceding shipment; provided, however, diversion to any other qualified Origin as set forth in Attachment A, is authorized without additional charge to Shipper, in the event reasonable notice (by telephone or otherwise) is given to BNSF operating personnel prior to departure of empty trains from Shipper's facility of intention to divert the empty train to a specifically identified alternate Origin.

Attachment A
(BNSF 90062)

Wyoming Powder River Basin Coal Origins

Coal Mine	BNSF Origin
Buckskin	Buckskin Jct.
Rawhide	Rawhide Jct.
Eagle Butte	Eagle Jct.
Dry Fork	Dry Fork Jct.
Fort Union	Union Jct.
Clovis Point	East Gillette Jct.
Caballo	Caballo Jct.
Belle Ayr	Belle Ayr Jct.
Caballo Rojo	Rojo Jct.
Cordero	Cordero Jct.
Coal Creek	Coal Creek Jct.
Jacobs Ranch	Jacobs Jct.
Black Thunder	Thunder Jct.

0004

REDUCTION

BNSF 90062-A Original Title Page

BNSF

THE BURLINGTON NORTHERN AND SANTA FE RAILWAY COMPANY

BNSF PRICE LIST 90062-A
(Cancels BNSF 90062)

LOCAL ALL-RAIL RATES

ON

RAW SUBBITUMINOUS COAL

(STCC 11-21)

BETWEEN STATIONS IN THE CONTINENTAL UNITED STATES

THIS TARIFF ALSO APPLIES ON INTRASTATE TRAFFIC

Governed, except as otherwise provided herein:
By UFC 6000-Series and Tariff ICC BN 6041-Series

ISSUED December 10, 2002 EFFECTIVE January 1, 2003

Issued by Paul M. Anderson, P.O. Box 961069, Ft. Worth, TX 76161-0069

THE BURLINGTON NORTHERN AND SANTA FE RAILWAY COMPANY
COMMON CARRIER PRICING AUTHORITY BNSF 90062-A

Effective Date:	January 1, 2003.
Expiration Date:	Effective until changed, superceded or cancelled.
Commodity:	Raw sub-bituminous Coal, STCC 11-21-Series (excluding artificially dried or processed coal).
Origins:	Wyoming Powder River Basin Mines listed in Attachment A, subject to diversion restrictions identified below.
Destination	Big Stone Generating Station located near Big Stone City, SD.
Route:	BNSF Direct.
Rate:	$13.76 in U.S. Dollars per net ton of coal in shipper supplied aluminum coal railcars with a maximum average lading per car of 119 tons per car. $14.51 in U.S. Dollars per net ton of coal in shipper supplied steel coal railcars with a maximum average lading of 100 tons per car.

Freight charges will be assessed on the basis of the applicable minimum weight per trainload (see below) or the actual weight of coal per trainload whichever is greater. The aforementioned rates are subject to a minimum annual volume of 1,800,000 tons per year. In the event the minimum annual volume is not achieved during any calendar year, adjusted rates of $15.14 per net ton and $15.96 per net ton respectively shall be applied to all shipments moving within the calendar year, and shipper will pay the difference between the rates initially paid and the adjusted rates within 30 days following the end of the calendar year in which minimum annual volume requirements were not met.

Trainload and Railcar Weights:

Weights shall be ascertained at origin by shipper, its agent, or the coal mine operator, at no charge to BNSF, and will be provided to BNSF via either electronic data interchange or facsimile upon release of a loaded train. BNSF shall have the right to inspect and certify the origin scales. The minimum weight per trainload is 11,500 net tons of coal for steel cars and 13,685 net tons for aluminum cars.

Railcar Supply and Tender Requirements:

Shipper provided railcars shall be suitable for loading not less than 100 net tons of coal per steel carload. Shipper provided railcars shall be suitable for loading not less than 119 net tons of coal per aluminum carload. The minimum tender for a train of shipper railcars is 115 such railcars and a maximum tender of 117 railcars.

Claims for damage to or destruction of shipper railcars shall be handled in accordance with the procedures set forth in the field manual and office manual of the Association of American Railroads Interchange Rules, as amended from time-to-time. Notwithstanding the foregoing BNSF shall not be liable for loss or damage caused by defects in design, materials, or workmanship of Shipper-supplied equipment or otherwise due events of Force Majeure to improper loading or unloading performed by Shipper, its agent, contractor or consignee.

Loading:

Shipper or its agent shall be responsible for the provision of appropriate loading facilities. All cars in each shipment shall be tendered to BNSF (or its agent or contractor) for loaded movement within four (4) hours of actual or constructive placement for loading at origin ("Loading Free Time"). Shipper shall pay a charge per hour or fraction thereof that a train is held in excess of loading free time as published in Tariff BNSF 6041-series.

Unloading:

Shipper or its agent shall be responsible for the provision of appropriate unloading facilities. All cars in each shipment shall be tendered to BNSF (or its agent or contractor) for empty movement within four (4) hours of actual or constructive placement for unloading at destination ("Unloading Free Time"). Shipper shall pay a charge per hour or fraction thereof that a train is held in excess of loading free time as published in Tariff BNSF 6041-series.

Accessorial Services:

Coal unit train accessorial services and charges therefor, other than specified in this common carrier authority, shall be as described in BNSF Authority 6041-Series or successors thereto, except that no change in destination shall be permitted.

Billing and Payment:

BNSF will bill each shipment under the terms of the Uniform Straight Bill of Lading. All railcars for each shipment are to be billed on one (1) Bill of Lading. This Common Carrier Authority BNSF 90062-A, correct address and patron code must be shown on the bill of lading to insure accurate billing. Freight charges will be billed by BNSF and paid by shipper within fifteen (15) days of receipt of invoice by wire transfer. In the event that shipper does not make timely payment, or if adverse credit conditions occur, which in BNSF's judgement could affect shipper's ability to meet payment terms, BNSF may require shipper to pay cash in advance of service for all amounts for which shipper is liable under this Common Carrier Authority.

Other Provisions:

Shipments made under the provisions of this Common Carrier Authority are subject to the Uniform Freight Classification 6000-Series or its successor, applicable tariffs, statutes, federal regulatory rules and regulations, AAR rules, and other accepted practices within the railroad industry as may be amended from time-to-time.

Shipments shall be deemed to be in service to the Origin served by the immediately preceding shipment; provided, however, diversion to any other qualified Origin as set forth in Attachment A, is authorized without additional charge to Shipper, in the event reasonable notice (by telephone or otherwise) is given to BNSF operating personnel prior to departure of empty trains from Shipper's facility of intention to divert the empty train to a specifically identified alternate Origin.

Attachment A
(BNSF 90062-A)

Wyoming Powder River Basin Coal Origins

COAL MINE	BNSF ORIGIN
Buckskin	Buckskin Junction
Rawhide	Rawhide Junction
Eagle Butte	Eagle Junction
Dry Fork	Dry Fork Junction
Fort Union	Union Junction
Clovis Point	East Gillette Junction
Caballo	Caballo Junction
Belle Ayr	Belle Ayr Junction
Caballo Rojo	Rojo Junction
Cordero	Cordero Junction
Coal Creek	Coal Creek Junction
Jacobs Ranch	Jacobs Junction
Black Thunder	Thunder Junction

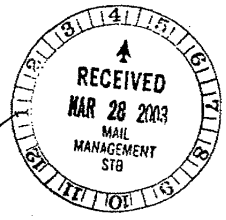
II-A-1

OPENING
VARIABLE COSTS

COST OF CAPITAL

ASSOCIATION OF
AMERICAN RAILROADS

Type Department Name Here
Dennis J. Starks
Senior Commerce Counsel*



207475

March 28, 2003

BY HAND DELIVERY

ENTERED
Office of Proceedings
MAR 28 2003
Part of
Public Record

The Honorable Vernon A. Williams
Secretary
Surface Transportation Board
1925 K. Street, N.W.
Washington, D.C. 20423

Re: Ex Parte No. 558 (Sub-No. 6), Railroad Cost of Capital - - 2002

Dear Secretary Williams:

Please find enclosed an original and ten (10) copies of the Comments of the Association of American Railroads and Its Member Railroads in the proceeding referenced above. A copy of the same on a 3.5inch diskette, in Word Perfect 9.0, is also provided for the Board's convenience.

Please date-stamp the extra copy of the Comments and this Letter, provided for that purpose, and return the same to the undersigned, via the individual hand delivering them.

Sincerely yours,

Dennis J. Starks

Enclosures

* Admitted to West Virginia, only. Practice limited to matters and proceedings before federal courts and agencies.
50 F Street, NW | Washington, DC 20001 | P (202) 639-2504 | F (202) 639-2868 | dstarks@aar.org

BEFORE THE
SURFACE TRANSPORTATION BOARD

207475

RAILROAD COST OF CAPITAL--2002	)	EX PARTE NO. 558 (Sub- No. 16)

RECEIVED
MAR 28 2003
MAIL MANAGEMENT
STB

COMMENTS OF THE ASSOCIATION OF AMERICAN RAILROADS AND ITS MEMBER RAILROADS

George P. Aspatore
Jon Broder
Paul R. Hitchcock
Theodore K. Kalick
Robert T. Opal
Louise Anne Rinn
Michael E. Roper
Peter J. Shudtz
Greg E. Summy
Marcella M. Szel
Bill Tuttle
Richard E. Weicher
William J. Wochner

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Louis P. Warchot
Dennis J. Starks
Association of American Railroads
50 F Street, N.W.
Washington, D.C. 20001
(202) 639-2504

Counsel for the Association of American Railroads
and Member Railroads

March 28, 2003

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II. THE COST OF EQUITY 2

III. THE COST OF PREFERRED STOCK 4

IV. THE COST OF DEBT 5

V. THE 2002 CAPITAL STRUCTURE OF THE RAILROAD INDUSTRY AND THE OVERALL COST OF CAPITAL 6

CONCLUSION 7

VERIFIED STATEMENTS

TAB	WITNESS*	SUBJECT
1	Craig F. Rockey	The railroads' cost of equity and overall cost of capital.
2	David F. Miller	Bond yields for 2002; yields on equipment trust certificates and conditional sales agreements; railroads' cost of debt and preferred stock; the market value capital structure.

*Verified statements are referenced in these comments by witness name -- viz., V.S. Rockey at

BEFORE THE
SURFACE TRANSPORTATION BOARD

RAILROAD COST OF CAPITAL--2002	)	EX PARTE NO. 558 (Sub- No. 6)

COMMENTS OF THE ASSOCIATION OF AMERICAN RAILROADS AND ITS MEMBER RAILROADS

By order served December 12, 2002, the Surface Transportation Board (STB/Board) instituted this proceeding to determine the railroads' cost of capital for the year 2002. That determination, as the Board noted, will enable it to make the statutorily required (49 U.S.C. 10701 (d)(2), 10704(a)(2)) annual individual railroad revenue adequacy determination for 2002. The Board noted further that the cost of capital determination may also be used in various other STB railroad proceedings. See Ex Parte No. 558 (Sub-No. 6) *Railroad Cost of Capital* – 2002 (Served December 12, 2002) (Slip Op. 1).

The railroads, through the Association of American Railroads (AAR) are submitting herewith their calculation of (1) the railroads' current 2002 cost of debt capital; (2) the railroads' 2002 current cost of preferred equity capital; (3) the railroads' 2002 cost of common equity capital and (4) the 2002 capital structure mix of the railroad industry on a market value basis.

AAR, through the attached verified statements of Craig F. Rockey, Vice President, Policy and Economics Department of the Association of American Railroads, and David F. Miller, Director - Accounting and Finance, AAR Policy and Economics Department. These statements establish the following:

1. The 2002 cost of debt capital is 6.00 (VS. Miller pp. 2, 14; Rockey pp. 2, 17).

2. The 2002 cost of preferred equity capital is 6.26 (VS. Miller p.18; Rockey p. 2).

3. The 2002 cost of common equity capital is 12.60 (VS. Rockey pp. 2, 17).

4. The capital structure of the railroad industry is 40.9% debt, 2.1% preferred equity and 57.0% common equity. (VS. Miller p. 19; VS. Rockey p. 2). From these data Mr. Rockey concludes that the overall railroad industry cost of capital for 2002 is 9.76% (V. S. Rockey pp. 2, 17).

I. INTRODUCTION

The sole purpose of this proceeding is to determine the cost of capital for 2002. Thus, while the revenue adequacy standards are not at issue in this proceeding, it has been held that the current cost of capital will continue to be the sole standard of revenue adequacy, and that the cost of capital will be computed using the current cost of debt and market value weights. See Ex Parte No. 393 (Sub-No. 1), *Standards for Railroad Revenue Adequacy*, 3 I.C.C. 2d 261 (1986), *aff'd sub. nom., Consolidated Rail Corporation v. United States*, 855 F.2d 78 (3rd Cir. 1988).

II. THE COST OF EQUITY

The Discounted Cash Flow (DCF) methodology has been used in all previous cost of capital proceedings to determine the cost of equity. The validity of the DCF approach is recognized by nearly every rate of return analyst in the United States, and among federal and state regulatory

agencies, the DCF model is the most widely used method for determining the cost of equity.[1] Mr. Rockey has established the DCF methodology in his calculation of the cost of common equity in this proceeding.

Under the DCF methodology, the cost of common equity is determined by adding together the dividend yield (the expected dividend for the next period divided by the common stock price) and the expected growth rate. The dividend yield is computed using publicly available data from the stock market. In all cost of capital proceedings since 1982, the Board has determined the expected growth rate by using a truncated average of published long-term earnings growth forecasts by a large number of security analysts to obtain an estimate of the investors' consensus of earnings growth expectations. The use of analysts' forecasts to estimate the composite growth rate is the most accurate approach available. As the Board has properly recognized, this part of the DCF formula measures investors' expectations, and a consensus of analysts' forecasts is the best evidence of those expectations. V.S. Rockey at pp. 9-13.

In cost of capital proceedings prior to Ex Parte No. 473, *Railroad Cost of Capital--1987*, 4 I.C.C. 2d 621 (1988), the expected growth rate has been calculated based on the consensus forecasts made by a group of prominent investment analysts who follow the rail industry. Commencing with Ex Parte No. 473, however, the Board has expressed a preference for use of consensus analyst five-year earnings per share growth rate forecasts published in Institutional

[1] V.S. Rockey at 8-9; National Association of Regulatory Utility Commissioners, *Utility Regulatory Policy in United States and Canada 1994-1995*, at pp. 520, 588, 615 (August 23, 1995).

Brokers Estimate System (IBES) reports.[2] AAR has accordingly used IBES data in determining the expected growth rate in this proceeding. Rockey at p. 9-10.

Based on a four-railroad composite and the identical DCF procedures used in the last nine cost of capital proceedings, Mr. Rockey estimates that the cost of equity for 2002 is 12.60 percent. V.S. Rockey at pp. 15.

III. THE COST OF PREFERRED STOCK

Preferred stock is a hybrid security which has some characteristics of debt and some characteristics of equity. Its cost depends in large part on its specific features. David F. Miller, the AAR's Director - Accounting and Finance, has determined the cost of railroad preferred stock based on the methodology used by the Board in the last eleven proceedings. That methodology is based upon the following criteria:

(a) Where the preferred is not convertible into common stock, and where the corporation is not required to redeem the preferred at specific times, the cost of preferred is equal to its current dividend yield.

(b) Where the preferred is not convertible but is subject to mandatory redemption providing holders of the instrument with a premium, the cost is equal to the current dividend yield, plus the present value of the premium.

[2] These reports are available from Lynch, Jones & Ryan, 325 Hudson Street, New York, N.Y. 10013.

(c) Where the preferred is convertible at the option of the holder, and the market values of the preferred and common indicate that conversion is likely to occur or that the conversion right controls the price of the preferred, the preferred has the same cost as equity.

Based on these criteria, the railroads' 2002 cost of preferred stock is 6.26 percent. V.S. Miller at p.18.

IV. THE COST OF DEBT

To determine the cost of debt, Mr. Miller has computed the average current bond yield for all bonds of the sample railroads that were publicly traded in 2002 (comprising 61 bonds). This methodology is identical to that used in the last twelve cost of capital proceedings. See *Ex Parte No. 558 (Sub 4) Railroad Cost of Capital - 2000*, __ S.T.B. ___ (Served June 12, 2001); see also V.S. Miller at 5-6. Under this approach, the bond yield is effectively based on a sample representing 73.1 percent of the total market value of the bonds issued by the railroads in the sample. As the Board has recognized, equipment trust certificates (ETCs) and conditional sales agreements (CSAs) are not actively traded in secondary markets. Their costs were therefore estimated by comparing them to the yields on other debt securities that are actively traded.[3] This is the same methodology used by the Board in the last fifteen proceedings.

[3] V.S. Miller at 8-12.

Using the Board's established methodology, the railroads' 2002 cost of debt is 6.01 percent. V.S. Miller at p. 14.

V. THE 2001 CAPITAL STRUCTURE OF THE RAILROAD INDUSTRY AND THE OVERALL COST OF CAPITAL

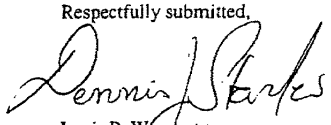
Pursuant to the Board's December 12, 2002 decision, the market values of debt, preferred equity, and common equity were compiled to compute the 2002 capital structure mix of the railroad industry. The railroads' market value capital structure is 40.9 percent debt, 2.1 percent preferred equity, and 57.0 percent common equity. V.S. Miller at p. 19. Based upon this capital structure, the overall 2002 cost of capital is 9.76 percent. V.S. Rockey at 17.

The cost of capital for 2002 is lower than the cost of capital for 2001, which was found to be 10.2 percent.

CONCLUSION

The Board should determine that the railroads' cost of capital for 2002 is 9.76 percent.

Respectfully submitted,



Louis P. Warchot
Dennis J. Starks
Association of American Railroads
50 F Street, N.W.
Washington, D.C. 20001
(202) 639-2504

George P. Aspatore
Jon Broder
Paul R. Hitchcock
Theodore K. Kalick
Robert T. Opal
Louise Anne Rinn
Michael E. Roper
Peter J. Shudtz
Greg E. Summy
Marcella M. Szel
Bill Tuttle
Richard E. Weicher
William J. Wochner

Counsel for the Association of American Railroads
and Member Railroads

March 28, 2003

VERIFIED STATEMENT

OF

CRAIG F. ROCKEY

I. INTRODUCTION

My name is Craig F. Rockey. I am Vice President – Policy and Economics of the Association of American Railroads (AAR), with offices at 50 F Street, N.W., Washington, D.C. 20001. The AAR is the trade association for the nation's railroads, as well as the railroads of Canada and Mexico. The AAR's United States railroad members, which include all of the Class I railroads, account for 93 percent of our nation's total railroad operating revenue.

The AAR serves as the central agency of the railroad industry for the collection and analysis of economic and financial data. In addition, it represents the industry in regulatory proceedings before the Surface Transportation Board ("STB" or "Board"). In particular, the AAR has participated in all of the STB proceedings addressing revenue adequacy standards and the annual cost of capital determinations.

Aside from other responsibilities, I have conducted or directed a wide range of analyses or projects addressing regulatory, legislative and internal issues relevant to the railroad industry. Furthermore, I have testified before federal, state, and local regulatory agencies, and have been an expert witness for the railroad industry on economic, statistical, and financial matters over the past 25 years. A summary of my qualifications and experience appears at the end of this statement.

In this submission, I am responding to the Board's decision of December 6, 2002 (served December 12) instituting the proceeding to determine the railroad industry's 2002 cost of capital – Ex Parte No. 558 (Sub-No.6), Railroad Cost of Capital – 2002 ("Ex Parte 558 Decision"). In my statement, I calculate the cost of common equity capital and the overall cost of capital of the railroad

industry (incorporating the cost of debt, cost of preferred equity, and market value capital structure mix of the railroad industry as computed by the AAR using the procedures accepted in previous STB proceedings). My statement is accompanied by the Verified Statement of David F. Miller, Director – Accounting & Finance of the AAR's Policy and Economics Department in which he presents the details underlying the calculation of the current cost of debt and preferred equity and the market value of the capital structure mix.

I conclude that the 2002 cost of capital for the railroad industry is 9.76 percent. This estimate is based on a cost of common equity capital of 12.6 percent, a cost preferred equity of 6.26 and a current cost of debt of 6.0 percent, and market value weights for common equity, preferred equity, and debt of 57.0 percent, 2.1 percent, and 40.9 percent, respectively.

II. DETERMINING THE COST OF CAPITAL

A. Defining the Cost of Capital

The cost of capital is the minimum rate of return on investment which the providers of capital require as a condition for undertaking an investment. In essence, it is the threshold rate of return on investment which makes capital investment attractive. The cost of capital is an opportunity cost in that it recognizes what investors sacrifice by not investing their funds elsewhere. Investment funds generally flow to projects and companies where the expected returns are thought to at least equal to the expected returns available of other investment opportunities, giving consideration to the relative (or commensurate) risk of investment.

As an example of the cost of capital, assume that an investment in a company is valued at $1,000 and that the current rate of return on that investment generated by that company is $70, equating to 7.0 percent. The investors in that company would generally not elect to keep their money

B. The Overall Cost of Capital

Multiplying the cost of debt, the cost of equity, and the cost of preferred stock by their respective market value proportions results in a 2002 average overall cost of capital of 9.76 percent, as shown below:

	Capital Structure Weight	Current Cost	Weighted Current Cost
Debt	40.9 %	6.00 %	2.45 %
Common Stock	57.0	12.60	7.18
Preferred Stock	2.1	6.26	.13
Weighted Current Cost of Capital	100.0 %		9.76 %

II-A-1

OPENING
VARIABLE COSTS

MAINTENANCE
OF WAY

REDACTED

II-A-1

OPENING
VARIABLE COSTS

ROUTE MILES
& LOOP TRACK

REDACTED

II-A-1

OPENING
VARIABLE COSTS

MAINTENANCE
OF WAY

REDACTED

II-A-1

OPENING
VARIABLE COSTS

JOINT FACILITY
AGREEMENTS

REDACTED

II-A-1

OPENING
VARIABLE COSTS -

ROAD RETURN &
DEPRECIATION

Request For Production Nos. 15 and 92

Line Segments In The SARR States For Which Otter Tail Seeks Lease Agreements, Rental Agreements, Joint Facility Agreements, Haulage Agreements And Other Handling Agreements

BNSF Subdivision (1)	From Station (2)	From Mile Post (3)	To Station	To Mile Post
Powder River Division				
1. Angora Subdivision	Third Street	0.3	Northport	33.8
2. Black Hills Subdivision	Edgemont	476.1	West Gillette	599.9
3. Butte Subdivision	East Alliance	364.0	Edgemont	476.1
4. Canyon Subdivision	East Guernsey	90.4	Bridger Jct.	133.2
5. Orin Subdivision	Bridger Jct.	127.3	Donkey Creek	0.4
6. Sand Hills Subdivision	Ravenna	127.7	East Alliance	364.0
7. Valley Subdivision	Northport	0.0	East Guernsey	90.4
Twin Cities Division				
8. Appleton Subdivision	Benson	0.0	Aberdeen	707.0
9. Jamestown Subdivision	Surrey Jct. Switch	31.2	Mandan	200.3
10. KO Subdivision	Moorhead Jct.	5.8	Surrey Jct. Switch	31.1
11. Mobridge Subdivision	Aberdeen	707.0	Hettinger	926.0
12. Moorhead Subdivision	East Breckenridge	212.3	South Moorhead	41.3
Montana Division				
13. Big Horn Subdivision	West Gillette	599.9	Huntley	229.4
14. Dickson Subdivision	Mandan	200.3	Glendive	215.8
15. Forsyth Subdivision	Glendive	0.0	Mossmain 1/	
16. Hettinger Subdivision	Hettinger	926.0	Terry	1078.9
Nebraska Division				
17. Creston Subdivision	End Creston Sub	59.6	Ashland	35.3
18. Council Bluffs Subdivision	Pacific Jct.	475.0	Omaha	496.2
19. Omaha Subdivision	Oreapolis	0.0	Ashland	47.0
20. Ravenna Subdivision	End Creston Sub	0.0	Ravenna	127.7

1/ BNSF operates over the Montana Rail Link ("MRL") from Jones Junction to Mossmain, MT.

II-A-1

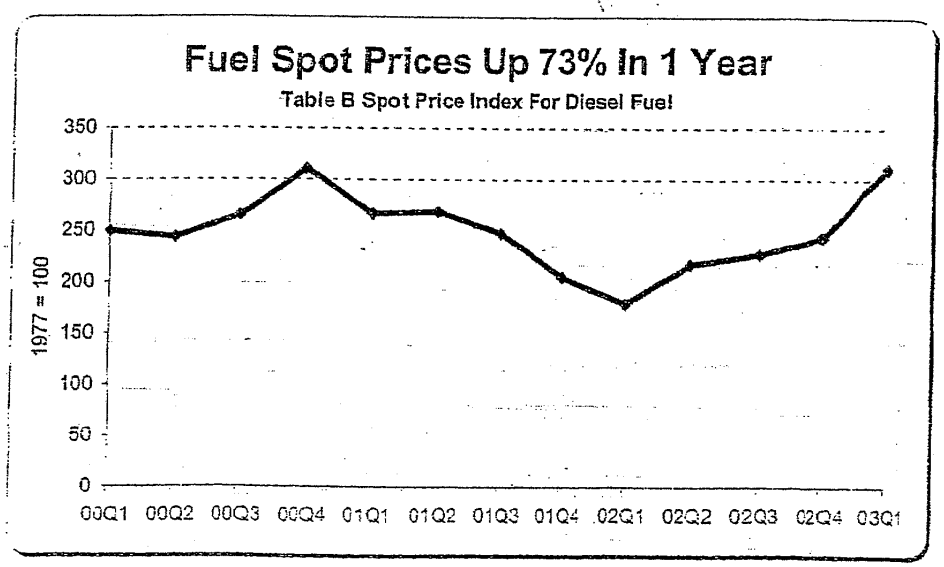
OPENING
VARIABLE COSTS

INDEXING

March 2003

ASSOCIATION
OF AMERICAN
RAILROADS

AAR RAILROAD COST INDEXES



Including Series RCR,
The All-Inclusive Index,
and The Rail Cost Adjustment Factor

Table C

QUARTERLY INDEXES OF CHARGEOUT PRICES AND WAGE RATES (1977=100)

WEST

	1Q01	2Q01	3Q01	4Q01	1Q02	2Q02	3Q02	4Q02	1Q03	2Q03	3Q03	4Q03
Wage rates	308.9	309.9	311.4	311.4	316.3	316.1	320.6	320.7	319.8			
Wage supplements	415.9	416.4	423.8	423.9	459.7	460.5	462.0	462.1	494.2			
Fuel	281.8	261.6	244.2	234.3	177.0	221.5	219.9	262.0	269.1			
Materials and supplies	229.9	234.9	235.5	235.6	234.6	233.5	226.3	218.0	213.1			
Equipment rents	240.7	243.6	243.8	245.3	244.5	243.3	242.6	240.9				
Purchased services	316.6	318.1	320.5	320.5	329.9	329.8	331.9	330.8				
Depreciation	403.4	404.7	404.8	422.2	422.3	423.7	436.9	427.1				
Interest	401.7	394.8	401.7	386.3	379.7	368.5	372.2	350.1				
Taxes (other than income and payroll)	214.5	284.6	271.2	236.5	252.6	265.4	286.2	258.9				
All other operating expenses	211.7	209.8	205.4	199.5	198.7	201.8	202.7	205.0				
Wage rates and supplements	334.4	335.3	338.0	338.0	349.4	349.3	353.2	353.4	359.3			
All materials (incl. fuel)	269.8	257.0	244.9	237.9	197.0	228.2	224.8	252.1	255.6			
Matl. prices & wage rates combined (excl. fuel)	292.6	294.3	295.6	295.7	299.5	299.1	301.4	300.0	298.4			
Matl. prices & wage rates combined (incl. fuel)	304.1	299.1	294.7	291.6	276.6	290.2	291.4	303.4	304.4			
Materials prices, wage rates and supplements combined (excl. fuel)	316.6	318.1	320.5	320.5	329.9	329.8	331.9	330.8	335.0			
Materials prices, wage rates and supplements combined (incl. fuel) - QMPW	326.7	322.3	319.4	316.7	308.3	320.4	321.7	332.4	337.7			
Taxes, purchased serv. and other expenses	245.4	251.7	249.0	242.7	247.3	250.0	253.3	251.4				
Equip. rents, deprec. and interest	329.8	330.8	332.0	336.3	334.9	333.1	337.5	330.1				
Equip. rents, taxes, deprec., purch. serv., interest & other expenses	291.7	295.4	294.7	293.7	295.3	295.7	299.6	294.9				
Total excl. fuel	308.2	310.9	311.7	311.2	316.5	316.6	319.8	316.7				
Total excl. interest	310.4	310.1	307.9	306.5	302.9	310.2	312.8	317.1				
Total excl. interest and depreciation	298.0	297.4	295.1	292.0	288.1	295.9	297.4	303.0				
Railroad Cost Recovery Index	314.3	313.7	311.8	309.9	306.2	312.8	315.4	318.8				

r - revised

Table A

ANNUAL INDEXES OF CHARGEOUT PRICES AND WAGE RATES (1977=100)

WEST

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Wage rates	232.1	251.3	250.9	251.0	264.8	273.6	274.2	281.6	282.3	304.6	314.1	316.7
Wage supplements	366.0	377.7	369.1	366.4	373.8	366.2	395.3	367.6	372.4	391.2	441.0	490.0
Fuel	190.4	184.4	185.6	175.0	175.8	205.8	200.1	161.0	164.7	261.9	255.5	220.1
Materials and supplies	183.0	208.9	217.1	223.9	224.1	225.0	231.5	232.3	230.8	228.3	234.0	228.1
Equipment rents	215.6	218.9	222.8	225.7	235.4	239.4	236.6	240.0	239.9	240.3	243.4	242.8
Purchased services	246.9	266.8	267.0	268.2	278.8	283.4	289.9	289.9	290.9	309.1	325.0	334.4
Depreciation	226.4	229.3	240.4	248.3	286.4	300.9	321.8	363.9	369.8	366.9	408.8	427.5
Interest	327.5	291.3	260.6	270.7	291.0	330.4	353.7	420.6	414.7	422.0	396.1	367.6
Taxes (other than income and payroll)	170.6	170.7	176.6	221.7	239.6	244.0	218.3	240.9	202.7	230.0	251.7	265.8
All other operating expenses	179.5	180.4	183.1	185.5	192.0	196.5	196.6	191.6	193.3	204.3	206.6	202.1
Wage rates and supplements	261.5	279.3	277.2	276.7	290.2	295.6	302.1	302.0	303.6	325.8	343.7	355.9
All materials (incl. fuel)	179.0	189.1	193.8	192.2	191.9	208.7	208.4	185.8	187.4	255.3	252.4	225.5
Matl. prices & wage rates combined (excl. fuel)	221.0	242.1	244.1	246.0	256.3	263.5	265.2	271.2	271.4	288.8	297.5	298.6
Matl. prices & wage rates combined (incl. fuel)	216.5	232.3	234.1	233.5	241.5	253.7	253.8	248.5	249.6	295.2	299.6	289.3
Materials prices, wage rates and supplements combined (excl. fuel)	246.9	266.8	267.0	268.2	278.8	283.4	289.9	289.9	290.9	309.1	325.0	334.4
Materials prices, wage rates and supplements combined (incl. fuel) - QMPW	241.0	256.6	257.1	256.1	264.9	274.4	278.7	270.1	271.7	315.4	326.1	323.7
Taxes, purchased serv. and other expenses	202.4	210.5	212.6	219.3	226.7	231.1	230.1	230.4	227.1	240.4	249.4	251.9
Equip. rents, deprec. and interest	243.0	239.3	240.0	246.2	269.0	282.3	290.8	317.7	319.1	327.1	332.2	333.9
Equip. rents, taxes, deprec., purch. serv., interest & other expenses	224.8	227.2	228.7	235.3	250.7	259.7	263.9	278.1	277.2	287.8	295.0	297.1
Total excl. fuel	238.3	250.2	251.0	254.7	268.1	275.0	280.6	288.1	288.2	302.6	314.0	319.6
Total excl. interest	232.5	244.3	246.4	248.3	260.2	268.6	272.3	272.0	272.7	301.5	312.0	312.8
Total excl. interest and depreciation	231.2	243.8	245.0	246.3	255.3	262.9	264.9	260.2	260.4	289.8	299.1	298.3
Railroad Cost Recovery Index	235.9	246.1	246.9	249.1	261.4	270.8	275.1	277.2	277.7	306.4	315.5	315.2

Note: The final annual wage rates and wage supplements are derived from the Annual Wage Statistics and the Annual Report Form R-1, consequently the final annual values may not equal the average of the four quarterly figures. The preliminary annual indexes, which appear in the December publication each year (indicated by a "p"), are averages of the four quarters.

Table D

SECOND QUARTER 2003 ALL-INCLUSIVE INDEX

The components and values of the All-Inclusive Index in the second quarter 2003 are shown below. The projected second quarter index of 101.1 is 1.9 percent higher than the first quarter 2003 forecast.

	2001 Weights	2003Q1 Forecast	2003Q2 Forecast	Percent Change
Labor	37.8 %	269.7	270.4	0.3 %
Fuel	10.5	100.7	130.4	29.5
Materials & Supplies	4.6	144.2	152.6	5.8
Equipment Rents	10.5	175.2	175.9	0.4
Depreciation	10.6	149.6	149.1	-0.3
Interest	3.8	98.6	98.6	0.0
Other	22.2	162.2	162.1	-0.1
Weighted Average				
a. 1980 = 100		193.2	196.9	
b. 1980 = 100 (linked)		190.6	194.3 [1]	
c. 4Q02 = 100		99.2	101.1 [2]	1.9

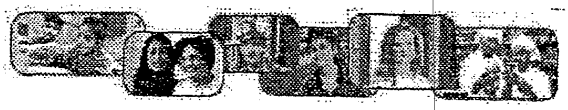
[1] 2003Q2 linked index of 194.3 = relative change (2003Q2 index of 196.9 / 2003Q1 index of 193.2) times 2003Q1 linked index of 190.6. Linking is necessitated by periodic changes in external weighting.

[2] 4Q02 based index = 2003Q2 index (194.3) / 4Q02 linking factor (192.1) times 100 = 101.1. 4Q97 based index is 112.2 and the 4Q92 based index is 123.8.



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Data extracted on: May 25, 2003 (1:21:10 PM)

Producer Price Index-Commodities

Series Id: WPU00000000
Not Seasonally Adjusted
Group: All commodities
Item: All commodities
Base Date: 8200

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1993	118.0	118.4	118.7	119.3	119.7	119.5	119.2	118.7	118.7	119.1	119.0	118.6	118.9
1994	119.1	119.3	119.7	119.7	119.9	120.5	120.7	121.2	121.0	120.9	121.5	121.9	120.4
1995	122.9	123.5	123.9	124.6	124.9	125.3	125.3	125.1	125.2	125.3	125.4	125.7	124.7
1996	126.3	126.2	126.4	127.4	128.1	128.0	128.0	128.3	128.2	128.0	128.2	129.1	127.7
1997	129.7	128.5	127.3	127.0	127.4	127.2	126.9	127.2	127.5	127.8	127.9	126.8	127.6
1998	125.4	125.0	124.7	124.9	125.1	124.8	124.9	124.2	123.8	124.0	123.6	122.8	124.4
1999	122.9	122.3	122.6	123.6	124.7	125.2	125.7	126.9	128.0	127.7	128.3	127.8	125.5
2000	128.3	129.8	130.8	130.7	131.6	133.8	133.7	132.9	134.7	135.4	135.0	136.2	132.7
2001	140.0	137.4	135.9	136.4	136.8	135.5	133.4	133.4	133.3	130.3	129.8	128.1	134.2
2002	128.5	128.4	129.8	130.8	130.8	130.9	131.2	131.5	132.3	133.2	133.1	132.9	131.1
2003	135.5 (P)	137.8 (P)	141.4 (P)	136.8 (P)									

P : Preliminary. All indexes are subject to revision four months after original publication.

. Bureau of Labor Statistics
tal Square Building
assachusetts Ave., NE
shington, DC 20212-0001

Phone: (202) 691-5200
Fax-on-demand: (202) 691-6325
Data questions: blsdata_staff@bls.gov
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II-A-1

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LOCOMOTIVE
INVESTMENT

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LOCOMOTIVE
MAINTENANCE

EMD

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Data extracted on: January 31, 2003 (4:16:15 PM)

Producer Price Index-Commodities

Series Id: WPU03T15M05
Not Seasonally Adjusted
Group: Industrial Commodities less fuels
Item: Industrial commodities less fuels
Base Date: 8200

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1991	126.1	126.1	125.9	125.9	125.8	125.7	125.7	125.6	125.5	126.1	126.1	126.2	125.9
1992	126.6	126.8	127.1	127.3	127.5	127.5	127.6	127.6	127.5	128.1	128.1	128.3	127.5
1993	129.0	129.5	129.8	130.1	130.0	129.8	129.9	129.4	129.1	129.8	130.0	130.3	129.7
1994	130.9	131.1	131.3	131.5	131.7	132.1	132.5	132.9	133.3	134.3	135.0	135.6	132.7
1995	137.1	137.9	138.3	139.0	139.3	139.4	139.6	139.6	139.3	139.7	139.6	139.4	139.0
1996	139.3	139.1	138.8	138.5	138.7	138.6	138.3	138.4	138.4	138.6	138.6	138.8	138.7
1997	139.1	139.2	139.3	139.2	139.1	139.1	139.0	139.1	139.0	139.4	139.4	139.3	139.2
1998	139.3	139.3	139.5	139.5	139.3	139.1	139.0	138.8	138.5	138.6	138.4	138.7	139.0
1999	138.6	138.6	138.6	138.7	138.9	139.0	139.3	139.5	139.8	140.7	140.8	141.0	139.5
2000	141.4	141.8	142.1	142.5	142.5	142.6	142.7	142.5	142.7	143.1	142.9	142.9	142.5
2001	143.5	143.5	143.6	143.7	143.7	143.6	143.2	142.8	142.8	142.6	142.3	142.2	143.1
2002	142.2	142.2	142.4	142.8	142.7	143.0	143.0	143.0	143.2 (P)	143.9 (P)	143.9 (P)	143.5 (P)	143.0 (P)

P : Preliminary. All indexes are subject to revision four months after original publication.

U.S. Bureau of Labor Statistics
Postal Square Building
Massachusetts Ave., NE
Washington, DC 20212-0001

Phone: (202) 691-5200
Fax-on-demand: (202) 691-6325
Data questions: blsdata_staff@bls.gov
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Data extracted on: January 30, 2003 (4:48:59 PM)

National Employment, Hours, and Earnings

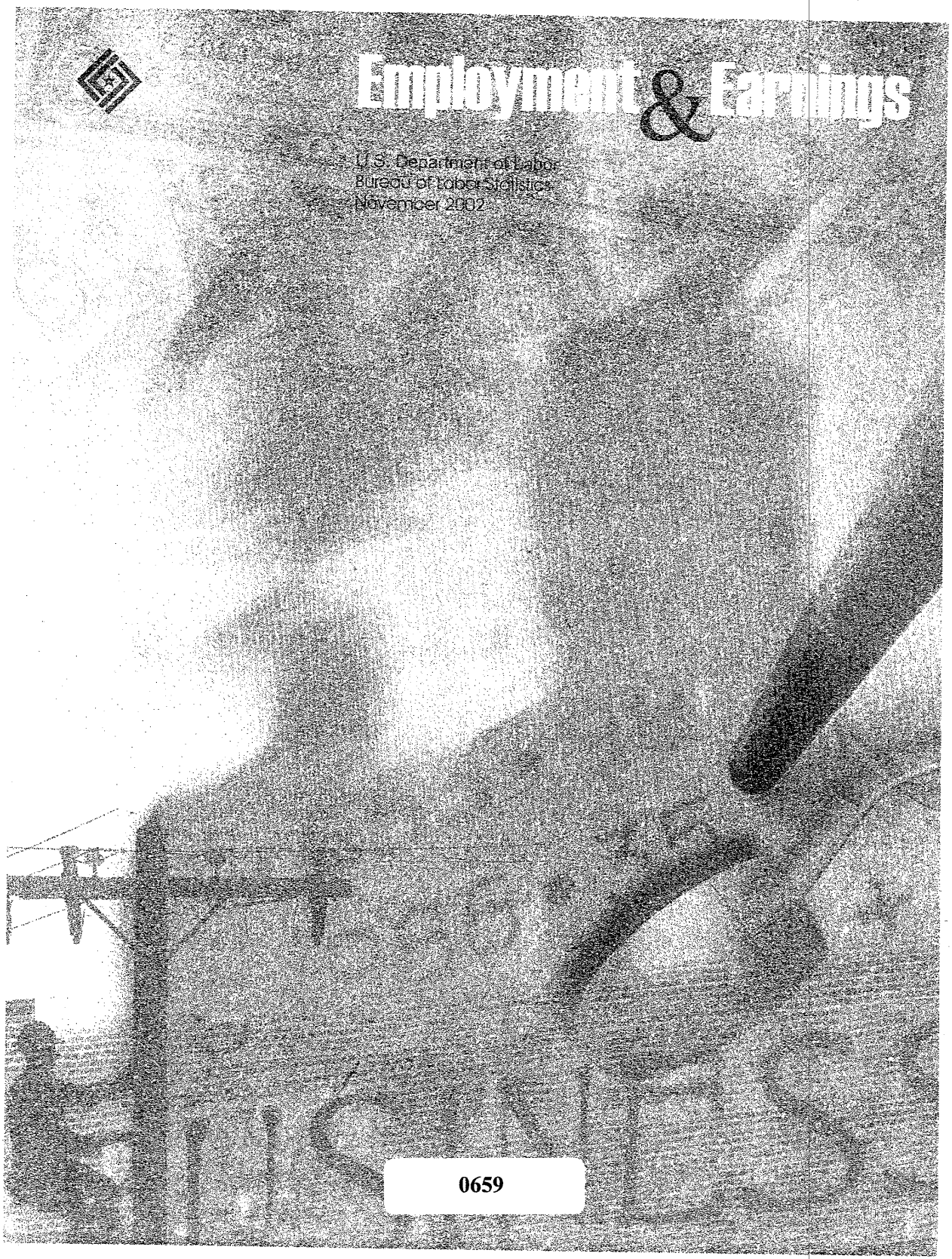
Series Id: EEU31371106 (n)
Not Seasonally Adjusted
Industry: Motor vehicles and car bodies
Data Type: AVERAGE HOURLY EARNINGS OF PRODUCTION WORKERS
SIC Code: 3711

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1992	18.26	18.09	18.16	18.11	18.44	18.42	18.12	18.37	18.32	18.47	18.37	18.64	18.32
1993	18.57	18.66	18.96	19.32	19.44	19.53	19.11	19.23	19.56	19.79	20.15	20.63	19.44
1994	20.27	20.44	20.55	20.80	20.78	20.73	20.88	20.60	21.00	20.66	20.68	21.01	20.71
1995	20.63	20.86	20.72	20.51	20.34	20.43	20.56	20.27	20.67	20.65	20.56	20.58	20.57
1996	20.47	20.65	20.44	21.04	21.13	21.09	21.38	21.08	21.39	21.12	21.26	21.54	21.06
1997	21.34	21.34	21.54	21.58	21.47	21.39	21.02	21.14	21.51	22.32	22.26	22.58	21.63
1998	22.32	22.36	22.59	22.22	22.06	21.90	21.56	21.70	21.66	21.25	21.00	21.02	21.80
1999	21.26	21.40	21.65	21.85	21.86	22.08	21.43	21.60	21.99	21.73	21.89	21.92	21.73
2000	22.37	22.30	22.24	22.46	22.55	22.82	22.38	22.90	23.25	23.89	23.80	23.98	22.92
2001	23.58	23.49	23.68	23.85	23.77	23.99	23.62	23.76	24.51	24.61	24.61	24.93	24.03
2002	24.92	24.74	24.73	24.93	24.80	25.12	24.48	25.17	25.59	26.13	26.52 (p)		

n : NAICS 2002 replaces SIC beginning June 2003. See http://www.bls.gov/ces/cesnaics.htm for details.
p : preliminary

U.S. Bureau of Labor Statistics
Postal Square Building
2 Massachusetts Ave., NE
Washington, DC 20212-0001

Phone: (202) 691-5200
Fax-on-demand: (202) 691-6325
Data questions: blsdata_staff@bls.gov
Technical (web) questions: webmaster@bls.gov
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Employment & Earnings
U.S. Department of Labor
Bureau of Labor Statistics
November 2002
0659

B-15. Average hours and earnings of production or nonsupervisory workers[1] on private nonfarm payrolls by detailed industry-Continued

Industry	1987 SIC Code	Average hourly earnings					Average weekly earnings				
		Sept. 2001	Oct. 2001	Aug. 2002	Sept. 2002[p]	Oct. 2002[p]	Sept. 2001	Oct. 2001	Aug. 2002	Sept. 2002[p]	Oct. 2002[p]
Durable goods-Continued											
Transportation equipment	37	$19.36	$19.41	$19.86	$20.08	$20.25	$811.18	$809.40	$848.02	$869.46	$862.65
Motor vehicles and equipment	371	19.73	19.83	20.56	20.76	21.03	846.42	844.76	914.92	938.35	931.63
Motor vehicles and car bodies	3711	24.51	24.61	25.17	25.65	–	1,051.48	1,060.69	1,125.10	1,161.94	–
Truck and bus bodies	3713	17.21	17.36	17.47	17.59	–	726.26	737.80	800.13	779.24	–
Motor vehicle parts and accessories	3714	17.84	17.89	18.70	18.85	–	767.12	758.54	834.02	859.56	–
Truck trailers	3715	12.12	12.14	12.59	12.75	–	549.04	537.80	570.33	581.40	–
Aircraft and parts	372	21.38	21.35	21.50	21.86	–	906.51	905.24	862.15	891.89	–
Aircraft	3721	24.24	24.13	24.17	24.59	–	988.99	989.33	932.96	954.09	–
Aircraft engines and engine parts	3724	20.94	20.96	21.47	21.84	–	927.64	918.05	906.03	939.12	–
Aircraft parts and equipment, nec	3728	18.68	18.71	18.87	19.23	–	803.24	806.40	760.46	798.05	–
Ship and boat building and repairing	373	14.84	15.00	15.24	15.29	–	538.69	558.00	573.02	576.43	–
Ship building and repairing	3731	16.31	16.46	16.52	16.55	–	603.47	630.42	632.72	635.52	–
Boat building and repairing	3732	12.90	12.92	13.47	13.59	–	457.95	461.24	493.00	500.11	–
Railroad equipment	374	18.55	18.37	18.17	18.59	–	742.00	732.96	739.52	777.06	–
Guided missiles, space vehicles, and parts	376	21.60	21.64	21.97	22.21	–	918.00	906.72	924.94	919.49	–
Guided missiles and space vehicles	3761	22.83	22.93	23.46	23.58	–	988.54	981.40	999.40	990.36	–
Misc. transportation equipment	379	13.21	13.10	13.30	13.19	–	512.55	497.80	535.99	535.51	–
Travel trailers and campers	3792	12.67	12.33	12.90	12.68	–	490.33	452.51	531.48	523.68	–
Instruments and related products	38	15.00	14.97	15.28	15.41	15.42	618.00	607.78	620.37	630.27	630.68
Search and navigation equipment	381	19.29	19.23	19.77	19.97	–	750.38	742.28	769.05	786.82	–
Measuring and controlling devices	382	15.19	15.22	15.51	15.51	–	631.90	620.98	642.11	645.22	–
Environmental controls	3822	12.06	12.33	12.49	12.55	–	507.73	500.60	515.84	512.04	–
Process control instruments	3823	15.35	15.51	15.81	15.81	–	610.93	617.30	630.82	637.14	–
Instruments to measure electricity	3825	18.23	17.95	18.62	18.60	–	736.49	694.67	752.25	749.58	–
Medical instruments and supplies	384	13.85	13.88	14.18	14.34	–	572.01	567.69	574.29	583.64	–
Surgical and medical instrument	3841	12.91	13.02	13.06	13.26	–	553.84	552.05	557.66	554.27	–
Surgical appliances and supplies	3842	14.07	14.08	14.34	14.36	–	568.43	563.20	554.96	552.91	–
Ophthalmic goods	385	11.29	11.39	11.78	11.91	–	504.66	522.80	498.29	512.13	–
Photographic equipment and supplies	386	19.07	18.52	18.63	19.01	–	734.20	690.80	724.71	745.19	–
Watches, clocks, watchcases, and parts	387	10.61	11.00	12.34	11.68	–	397.88	396.00	434.37	406.46	–
Miscellaneous manufacturing industries	39	12.38	12.24	12.39	12.44	12.49	467.96	457.78	479.49	480.18	483.36
Jewelry, silverware, and plated ware	391	12.56	12.56	12.93	13.04	–	452.16	463.46	459.02	474.66	–
Jewelry, precious metal	3911	12.60	12.59	13.08	13.22	–	438.48	448.20	440.80	454.77	–
Musical instruments	393	11.40	11.50	11.62	11.55	–	449.16	455.40	482.23	477.02	–
Toys and sporting goods	394	12.54	12.03	12.42	12.36	–	472.76	466.76	491.83	484.51	–
Dolls, games, toys, and children's vehicles	3942,4	12.71	12.59	12.44	12.21	–	488.06	469.61	457.79	417.58	–
Sporting and athletic goods, nec	3949	12.48	11.85	12.41	12.40	–	468.00	465.71	503.85	508.40	–
Pens, pencils, office, and art supplies	395	12.09	11.98	12.82	12.91	–	471.51	457.64	471.78	476.38	–
Costume jewelry and notions	396	11.01	11.15	11.19	11.30	–	401.87	402.52	434.17	435.05	–
Costume jewelry	3961	10.10	10.26	9.76	9.90	–	362.59	352.94	423.58	421.74	–
Miscellaneous manufactures	399	12.55	12.52	12.41	12.49	–	479.41	456.98	483.99	485.86	–
Signs and advertising specialties	3993	14.18	14.22	13.67	14.00	–	561.53	544.63	586.44	596.40	–
Nondurable goods		14.30	14.26	14.60	14.71	14.65	582.01	574.68	592.76	598.70	590.40
Food and kindred products	20	12.97	12.89	13.24	13.28	13.24	546.04	538.80	553.43	555.10	548.14
Meat products	201	10.87	10.73	10.97	11.01	–	451.11	448.51	448.67	452.51	–
Meat packing plants	2011	11.55	11.59	11.65	11.70	–	519.75	540.09	506.78	514.80	–
Sausages and other prepared meats	2013	12.35	12.20	12.53	12.56	–	518.70	506.30	517.49	507.42	–
Poultry slaughtering and processing	2015	9.87	9.60	9.91	9.98	–	389.87	377.28	389.46	397.20	–
Dairy products	202	15.01	15.00	15.17	15.34	–	624.42	610.50	643.21	653.48	–
Cheese, natural and processed	2022	13.17	13.22	13.25	13.57	–	574.21	545.99	597.58	629.65	–
Fluid milk	2026	16.00	15.84	15.94	16.00	–	665.60	655.78	669.48	684.80	–
Preserved fruits and vegetables	203	12.20	12.28	12.79	12.69	–	530.70	519.44	548.69	545.67	–
Canned specialties	2032	16.09	16.37	15.84	15.71	–	693.48	712.10	676.37	700.67	–
Canned fruits and vegetables	2033	12.25	12.34	12.96	12.80	–	578.20	551.60	605.23	587.52	–
Frozen fruits and vegetables	2037	12.47	12.49	12.62	12.67	–	557.41	559.55	548.97	568.88	–
Grain mill products	204	15.63	15.64	15.77	15.65	–	708.04	697.54	682.84	682.34	–
Flour and other grain mill products	2041	14.23	14.10	13.52	13.55	–	688.73	688.08	667.89	674.79	–
Prepared feeds, nec	2048	13.45	13.33	13.05	13.16	–	525.90	525.20	523.31	518.50	–

See footnotes at end of table.

Employment
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B-15. Average hours and earnings of production or nonsupervisory workers[1] on private nonfarm payrolls by detailed industry—Continued

Industry	1987 SIC Code	Average hourly earnings					Average weekly earnings				
		Avg. 2000	Jan. 2000	Dec. 2000	Jan. 2001P	Feb. 2001P	Avg. 2000	Jan. 2000	Dec. 2000	Jan. 2001P	Feb. 2001P
Durable goods—Continued											
Transportation equipment	37	$19.04	$18.57	$19.70	$19.28	$19.43	$825.34	$811.51	$831.34	$800.12	$796.63
Motor vehicles and equipment	371	19.58	18.99	20.36	19.75	19.95	865.44	850.75	851.05	807.78	805.98
Motor vehicles and car bodies	3711	24.35	23.30	25.69	25.18	–	1,093.32	1,039.18	1,073.84	1,012.24	–
Truck and bus bodies	3713	15.65	15.49	15.70	15.36	–	679.21	672.27	675.10	645.12	–
Motor vehicle parts and accessories	3714	17.95	17.66	18.35	17.93	–	795.19	801.76	771.12	744.10	–
Truck trailers	3715	12.10	11.84	12.46	12.51	–	502.15	518.59	503.38	484.14	–
Aircraft and parts	372	20.75	20.44	21.39	21.22	–	900.65	876.88	958.27	933.68	–
Aircraft	3721	(2)	(2)	(2)	(2)	–	–	–	–	–	–
Aircraft engines and engine parts	3724	20.73	20.12	21.54	21.08	–	937.00	911.44	1,003.76	959.14	–
Aircraft parts and equipment, nec	3728	18.22	18.06	18.65	18.59	–	774.35	753.10	811.26	812.38	–
Ship and boat building and repairing	373	14.39	14.26	14.67	14.83	–	578.48	578.96	598.54	588.75	–
Ship building and repairing	3731	15.96	15.94	16.23	16.49	–	663.94	653.54	714.12	712.37	–
Boat building and repairing	3732	12.47	12.16	12.63	12.64	–	481.34	488.42	469.64	453.78	–
Railroad equipment	374	17.70	16.63	18.54	18.04	–	762.87	691.71	821.32	770.31	–
Guided missiles, space vehicles, and parts	376	20.34	20.33	20.75	20.58	–	842.08	831.50	877.73	882.58	–
Guided missiles and space vehicles	3761	(2)	(2)	(2)	(2)	–	–	–	–	–	–
Misc. transportation equipment	379	13.07	12.67	13.53	13.53	–	520.19	518.66	515.49	539.65	–
Travel trailers and campers	3792	13.34	13.28	13.44	13.87	–	521.59	527.22	486.53	552.03	–
Instruments and related products	38	14.82	14.38	15.06	14.92	14.97	602.34	595.23	621.98	610.23	613.77
Search and navigation equipment	381	17.39	17.26	17.65	17.19	–	718.47	711.11	731.95	703.07	–
Measuring and controlling devices	382	14.80	14.49	15.32	15.32	–	615.68	605.68	635.76	631.18	–
Environmental controls	3822	12.04	11.96	12.38	12.41	–	518.92	526.53	510.06	522.46	–
Process control instruments	3823	14.88	14.55	15.20	15.27	–	601.15	592.19	617.12	621.49	–
Instruments to measure electricity	3825	17.33	17.04	17.71	17.94	–	717.46	707.16	738.51	733.75	–
Medical instruments and supplies	384	13.26	13.11	13.61	13.50	–	542.33	545.38	563.45	556.20	–
Surgical and medical instrument	3841	12.67	12.55	13.06	12.97	–	516.94	527.10	544.60	544.74	–
Surgical appliances and supplies	3842	12.53	12.42	12.78	12.70	–	506.21	503.01	522.70	508.00	–
Ophthalmic goods	385	11.26	11.01	11.84	11.94	–	451.53	434.90	467.98	450.14	–
Photographic equipment and supplies	386	18.81	18.40	19.40	18.99	–	790.02	756.24	805.10	759.60	–
Watches, clocks, watchcases, and parts	387	11.84	11.30	12.48	12.33	–	473.60	436.44	472.99	457.04	–
Miscellaneous manufacturing industries	39	11.65	11.52	11.91	11.90	11.91	459.01	450.43	470.45	462.91	464.49
Jewelry, silverware, and plated ware	391	12.30	12.16	12.53	12.26	–	471.09	448.70	483.66	463.43	–
Jewelry, precious metal	3911	12.08	11.92	12.35	12.06	–	451.79	424.35	463.13	445.01	–
Musical instruments	393	12.41	12.47	12.58	12.51	–	488.95	481.34	504.48	505.40	–
Toys and sporting goods	394	11.15	10.97	11.35	11.44	–	441.54	436.81	451.73	446.16	–
Dolls, games, toys, and children's vehicles	3942,4	11.08	10.99	11.29	11.25	–	433.23	420.92	441.44	422.25	–
Sporting and athletic goods, nec	3949	11.18	10.95	11.39	11.49	–	444.96	441.69	455.20	452.71	–
Pens, pencils, office, and art supplies	395	11.87	11.58	12.02	12.24	–	459.37	456.25	461.57	456.55	–
Costume jewelry and notions	396	10.80	10.68	10.90	10.85	–	409.32	383.55	422.92	412.30	–
Costume jewelry	3961	9.56	9.34	9.62	9.56	–	343.20	301.68	355.94	346.80	–
Miscellaneous manufactures	399	11.74	11.66	12.08	12.06	–	466.43	462.90	479.58	473.96	–
Signs and advertising specialties	3993	12.62	12.62	13.17	12.97	–	514.08	505.11	530.75	507.13	–
Nondurable goods		13.53	13.37	13.80	13.79	13.62	550.67	544.16	561.66	554.36	550.04
Food and kindred products	20	12.41	12.23	12.66	12.64	12.60	513.77	505.10	525.39	516.98	502.74
Meat products	201	10.24	10.15	10.33	10.37	–	424.96	421.23	431.79	426.28	–
Meat packing plants	2011	10.96	10.92	11.01	11.18	–	477.88	471.74	488.84	472.91	–
Sausages and other prepared meats	2013	11.42	11.44	11.26	11.41	–	487.53	486.20	501.07	491.77	–
Poultry slaughtering and processing	2015	9.29	9.17	9.48	9.45	–	389.74	368.63	373.51	378.95	–
Dairy products	202	14.43	14.21	14.68	14.81	–	603.06	591.14	609.22	611.65	–
Cheese, natural and processed	2022	13.06	12.88	13.17	13.28	–	545.91	536.38	545.24	553.86	–
Fluid milk	2026	15.22	15.02	15.51	15.62	–	642.28	626.33	668.48	656.04	–
Preserved fruits and vegetables	203	12.11	12.03	12.62	12.59	–	489.24	490.62	507.32	502.34	–
Canned specialties	2032	15.89	16.14	16.16	16.41	–	711.87	744.05	723.97	759.78	–
Canned fruits and vegetables	2033	13.10	13.09	14.00	14.04	–	522.69	515.75	547.40	539.14	–
Frozen fruits and vegetables	2037	11.27	11.00	11.84	11.57	–	453.40	421.30	464.13	455.86	–
Grain mill products	204	15.26	14.92	15.35	15.59	–	665.17	663.94	716.42	695.31	–
Flour and other grain mill products	2041	13.52	13.23	13.85	14.04	–	631.39	578.15	641.26	640.22	–
Prepared feeds, nec	2048	12.69	12.54	13.00	13.05	–	544.38	540.47	562.60	572.30	–

footnotes at end of table.

Employment & Earnings

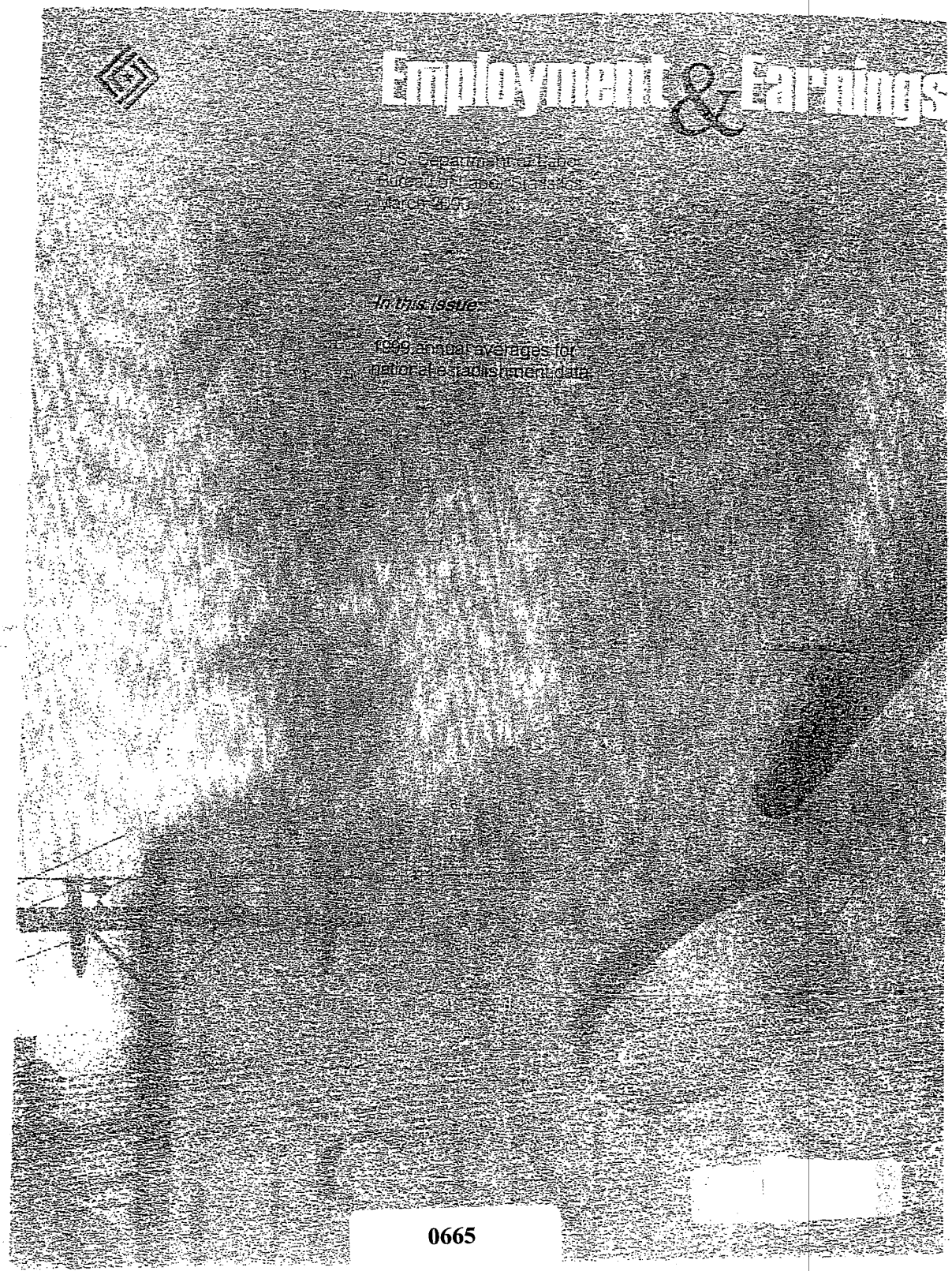
U.S. Department of Labor
Bureau of Labor Statistics
September 2000

0663

Average hours and earnings of production or nonsupervisory workers on private nonfarm payrolls by detailed industry—Continued

Industry	1987 SIC Code	Average hourly earnings					Average weekly earnings				
		July 1999	Aug. 1999	June 2000	July 2000P	Aug. 2000P	July 1999	Aug. 1999	June 2000	July 2000P	Aug. 2000P
Durable goods—Continued											
Transportation equipment	37	$17.88	$18.17	$19.01	$18.65	$18.87	$754.54	$794.03	$835.44	$781.44	$815.18
Motor vehicles and equipment	371	18.16	18.53	19.62	19.07	19.31	777.25	828.29	888.79	799.03	853.50
Motor vehicles and car bodies	3711	22.16	22.45	24.33	23.62	–	961.74	1,003.52	1,124.05	1,029.02	–
Truck and bus bodies	3713	15.59	15.33	15.89	14.93	–	709.35	685.78	703.93	630.05	–
Motor vehicle parts and accessories	3714	16.90	17.26	17.96	17.45	–	713.18	776.43	815.38	722.43	–
Truck trailers	3715	11.30	11.54	12.01	12.25	–	490.42	500.64	496.01	502.25	–
Aircraft and parts	372	19.78	19.90	20.55	20.62	–	828.78	851.72	885.71	892.65	–
Aircraft	3721	(2)	(2)	(2)	(2)	–	–	–	–	–	–
Aircraft engines and engine parts	3724	19.73	19.75	20.58	20.60	–	870.09	867.03	930.22	914.64	–
Aircraft parts and equipment, nec	3728	17.42	17.52	18.16	17.89	–	719.45	737.59	771.80	758.37	–
Ship and boat building and repairing	373	13.82	14.06	14.29	14.35	–	554.18	573.06	571.60	566.83	–
Ship building and repairing	3731	15.30	15.45	15.87	15.78	–	627.30	644.27	650.67	662.76	–
Boat building and repairing	3732	12.02	12.22	12.42	12.56	–	469.98	481.47	484.38	480.95	–
Railroad equipment	374	16.80	16.70	17.59	18.16	–	693.64	698.06	735.26	817.20	–
Guided missiles, space vehicles, and parts	376	20.16	20.13	20.34	20.27	–	826.56	825.33	838.01	835.12	–
Guided missiles and space vehicles	3761	(2)	(2)	(2)	(2)	–	–	–	–	–	–
Misc. transportation equipment	379	12.41	12.63	13.01	12.82	–	512.53	517.83	524.30	511.52	–
Travel trailers and campers	3792	12.52	12.82	13.33	12.87	–	502.05	512.80	521.20	513.51	–
Instruments and related products	38	14.25	14.28	14.49	14.71	14.71	584.25	591.19	596.99	606.05	603.11
Search and navigation equipment	381	17.40	17.37	17.17	17.36	–	725.58	722.59	705.69	725.65	–
Measuring and controlling devices	382	14.25	14.39	14.59	14.91	–	594.25	594.31	609.64	615.78	–
Environmental controls	3822	12.04	12.06	12.01	12.03	–	505.68	510.14	532.04	511.28	–
Process control instruments	3823	14.44	14.55	14.86	15.02	–	580.49	579.09	592.91	599.30	–
Instruments to measure electricity	3825	16.71	16.98	17.15	17.92	–	681.77	711.46	701.44	731.14	–
Medical instruments and supplies	384	12.94	12.97	13.17	13.28	–	524.07	536.96	534.70	541.82	–
Surgical and medical instrument	3841	12.43	12.36	12.62	12.69	–	493.47	512.94	511.11	521.56	–
Surgical appliances and supplies	3842	12.10	12.18	12.46	12.53	–	486.64	489.64	499.65	506.21	–
Ophthalmic goods	385	11.17	11.02	11.01	11.11	–	447.92	445.21	444.80	438.85	–
Photographic equipment and supplies	386	18.19	18.04	18.56	18.94	–	785.81	764.90	800.51	812.53	–
Watches, clocks, watchcases, and parts	387	10.84	10.80	11.78	11.72	–	423.64	427.68	484.16	471.14	–
Miscellaneous manufacturing industries	39	11.29	11.31	11.60	11.66	11.65	442.57	452.40	458.20	453.57	460.16
Jewelry, silverware, and plated ware	391	11.97	11.89	12.32	12.25	–	456.45	473.22	463.23	454.48	–
Jewelry, precious metal	3911	11.77	11.70	12.09	11.99	–	441.38	459.81	441.29	436.44	–
Musical instruments	393	12.00	12.00	12.37	12.59	–	456.00	469.20	484.90	469.61	–
Toys and sporting goods	394	10.93	10.92	11.16	11.19	–	431.74	446.63	446.40	439.77	–
Dolls, games, toys, and children's vehicles	3942,4	10.60	10.70	11.14	10.89	–	408.10	424.79	441.14	414.91	–
Sporting and athletic goods, nec	3949	11.87	11.02	11.17	11.29	–	441.69	456.23	447.92	448.21	–
Pens, pencils, office, and art supplies	395	11.44	11.44	11.98	11.82	–	441.58	443.87	463.63	449.16	–
Costume jewelry and notions	396	10.24	10.40	10.74	11.00	–	377.86	387.92	409.13	402.50	–
Costume jewelry	3961	9.08	9.24	9.51	9.51	–	323.25	328.94	348.07	328.10	–
Miscellaneous manufactures	399	11.33	11.38	11.62	11.74	–	450.93	457.48	466.96	464.90	–
Signs and advertising specialties	3993	12.24	12.37	12.60	12.71	–	493.27	500.99	505.26	505.86	–
Nondurable goods		13.21	13.17	13.48	13.52	13.57	537.65	539.97	549.98	548.89	550.94
Food and kindred products	20	12.15	12.07	12.39	12.46	12.43	507.87	506.94	512.95	513.35	518.33
Meat products	201	10.02	10.00	10.23	10.32	–	419.84	415.00	426.59	429.31	–
Meat packing plants	2011	10.94	10.87	10.97	11.02	–	472.61	473.93	476.29	472.76	–
Sausages and other prepared meats	2013	11.18	11.09	11.50	11.57	–	496.39	483.52	486.45	504.45	–
Poultry slaughtering and processing	2015	8.99	9.00	9.26	9.37	–	361.40	355.50	373.18	375.74	–
Dairy products	202	14.06	14.09	14.30	14.45	–	617.23	610.10	610.61	617.62	–
Cheese, natural and processed	2022	13.04	12.99	13.01	13.21	–	582.89	574.16	551.82	554.82	–
Fluid milk	2026	14.89	14.91	15.10	15.25	–	634.72	635.17	634.20	646.60	–
Preserved fruits and vegetables	203	11.61	11.58	11.93	12.10	–	472.53	467.52	472.43	469.46	–
Canned specialties	2032	15.34	15.46	15.83	16.53	–	636.61	652.41	653.78	735.59	–
Canned fruits and vegetables	2033	12.25	12.08	13.23	13.09	–	493.68	532.73	501.42	490.88	–
Frozen fruits and vegetables	2037	11.05	10.82	10.80	11.09	–	425.43	424.14	429.84	419.20	–
Grain mill products	204	15.13	14.78	15.20	15.28	–	679.34	653.23	674.88	684.54	–
Flour and other grain mill products	2041	13.34	13.61	13.45	13.37	–	601.63	617.89	618.76	613.66	–
Prepared feeds, nec	2048	12.35	12.27	12.48	12.65	–	537.23	531.29	539.14	545.22	–

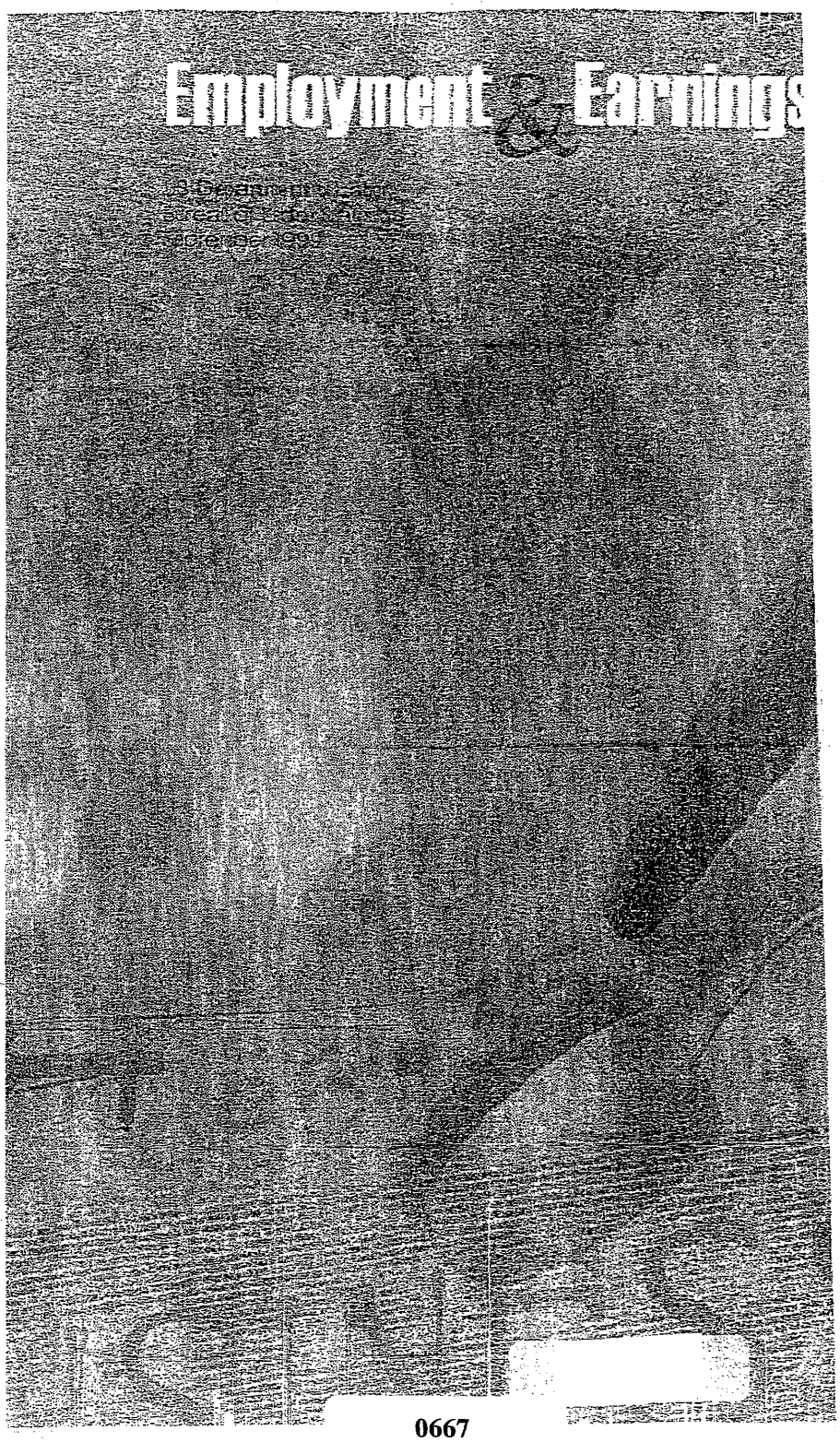
See footnotes at end of table.


Employment & Earnings
U.S. Department of Labor
Bureau of Labor Statistics
March 2000
In this issue:
1999 annual averages for
national establishment data

Average hours and earnings of production or nonsupervisory workers on private nonfarm payrolls by detailed industry—Continued

Industry	1987 SIC Code	Average hourly earnings					Average weekly earnings				
		Avg. 1999	Jan. 1999	Dec. 1999	Jan. 2000P	Feb. 2000P	Avg. 1999	Jan. 1999	Dec. 1999	Jan. 2000P	Feb. 2000P
Durable goods—Continued											
Industrial machinery and equipment	35	$15.01	$14.69	$15.36	$15.35	$15.35	$623.42	$619.92	$663.55	$652.38	$650.84
Engines and turbines	351	18.06	17.79	18.32	17.99	–	833.67	788.10	846.38	809.55	–
Turbines and turbine generator sets	3511	21.00	19.80	22.35	22.06	–	953.40	853.38	1,068.81	1,033.22	–
Internal combustion engines, nec	3519	17.15	17.17	17.13	16.76	–	759.75	767.50	782.84	746.79	–
Farm and garden machinery	352	13.86	13.09	14.64	14.40	–	568.26	532.76	628.06	605.24	–
Farm machinery and equipment	3523	14.71	13.82	15.66	15.37	–	607.52	570.77	679.84	657.84	–
Construction and related machinery	353	14.16	13.98	14.52	14.49	–	604.63	599.74	641.78	631.76	–
Construction machinery	3531	14.22	14.01	14.55	14.62	–	614.30	609.44	648.93	647.67	–
Mining machinery	3532	14.61	14.67	15.18	14.97	–	585.86	586.80	628.45	618.77	–
Oil and gas field machinery	3533	14.64	14.48	14.96	15.11	–	652.94	635.67	704.06	682.97	–
Conveyors and conveying equipment	3535	14.47	14.19	15.00	14.70	–	604.85	587.47	654.00	618.87	–
Industrial trucks and tractors	3537	13.04	12.93	13.34	13.30	–	542.46	536.50	574.95	570.57	–
Metalworking machinery	354	15.92	15.73	16.27	16.32	–	679.78	676.39	707.75	703.39	–
Machine tools, metal cutting types	3541	15.76	15.39	16.34	16.27	–	666.65	661.77	709.16	697.98	–
Machine tools, metal forming types	3542	16.41	16.30	16.95	16.76	–	717.12	700.90	771.23	750.85	–
Special dies, tools, jigs, and fixtures	3544	16.62	16.51	16.86	16.98	–	721.31	716.53	751.96	748.82	–
Machine tool accessories	3545	14.05	13.68	14.48	14.50	–	580.27	578.66	613.06	606.10	–
Power driven handtools	3546	12.79	12.81	13.31	13.46	–	528.23	538.02	569.77	528.98	–
Special industry machinery	355	15.68	15.34	16.14	16.15	–	655.42	639.69	697.25	692.84	–
Textile machinery	3552	13.60	13.33	13.98	14.12	–	552.16	537.20	599.74	591.83	–
Printing trades machinery	3555	16.13	16.12	16.79	16.48	–	654.88	665.76	696.79	682.27	–
Food products machinery	3556	15.23	15.06	15.48	16.52	–	638.14	626.50	654.80	662.70	–
General industrial machinery	356	14.35	14.14	14.61	14.64	–	601.27	592.47	634.07	623.66	–
Pumps and pumping equipment	3561	15.24	15.14	15.49	15.41	–	623.32	616.20	662.97	636.43	–
Ball and roller bearings	3562	15.15	14.86	15.26	15.37	–	646.91	641.33	689.13	680.89	–
Air and gas compressors	3563	14.68	14.53	14.95	14.98	–	623.90	610.26	650.33	623.17	–
Blowers and fans	3564	11.86	11.71	12.23	12.35	–	500.49	495.33	521.00	529.82	–
Speed changers, drives, and gears	3566	15.87	15.36	16.44	16.70	–	657.02	632.83	716.78	701.40	–
Power transmission equipment, nec	3568	14.20	13.83	14.66	14.62	–	585.04	569.80	625.98	609.65	–
Computer and office equipment	357	16.42	15.92	16.72	16.81	–	671.58	655.90	683.65	658.95	–
Electronic computers	3571	18.39	17.79	18.37	18.49	–	742.96	718.72	738.47	700.77	–
Computer terminals, calculators, and office machines, nec	3575,8,9	14.32	14.47	14.30	14.06	–	595.71	614.98	599.17	573.65	–
Refrigeration and service machinery	358	13.55	12.90	13.66	13.49	–	570.46	535.35	581.92	561.18	–
Refrigeration and heating equipment	3585	13.86	13.11	13.91	13.72	–	587.66	546.69	595.35	573.50	–
Misc. industrial and commercial machinery	359	14.56	14.29	14.95	15.01	–	617.34	604.47	648.83	645.43	–
Carburetors, pistons, rings, valves	3592	14.98	14.96	15.27	15.61	–	615.68	624.91	645.92	654.06	–
Scales, balances, and industrial machinery, nec	3596,9	14.45	14.15	14.84	14.91	–	614.13	596.55	642.57	641.13	–
Electronic and other electrical equipment	36	13.45	13.26	13.70	13.73	13.72	556.83	543.66	580.85	569.80	572.12
Electric distribution equipment	361	13.06	13.14	13.27	13.02	–	547.21	534.80	585.21	549.44	–
Transformers, except electronic	3612	12.04	11.98	12.18	11.92	–	516.52	500.76	542.01	507.79	–
Switchgear and switchboard apparatus	3613	14.01	14.18	14.32	14.11	–	574.41	562.95	625.78	589.80	–
Electrical industrial apparatus	362	12.93	12.62	13.13	13.16	–	537.89	523.06	558.03	544.82	–
Motors and generators	3621	11.87	11.86	11.99	12.11	–	502.10	489.82	511.97	501.35	–
Relays and industrial controls	3625	14.73	14.47	14.94	14.90	–	595.09	578.80	631.96	615.37	–
Household appliances	363	12.98	12.67	13.32	13.43	–	528.29	514.40	552.78	537.20	–
Household refrigerators and freezers	3632	14.92	14.46	15.97	15.92	–	601.28	611.66	648.38	589.04	–
Household laundry equipment	3633	13.69	13.84	13.50	13.13	–	538.02	538.38	535.95	522.57	–
Electric housewares and fans	3634	11.18	11.04	11.03	11.37	–	453.91	443.81	451.13	458.21	–
Electric lighting and wiring equipment	364	13.01	12.81	13.34	13.36	–	539.92	532.90	568.28	553.10	–
Electric lamps	3641	17.68	17.90	18.08	18.13	–	751.40	730.32	797.33	774.13	–
Current-carrying wiring devices	3643	13.39	13.37	13.50	13.38	–	548.99	552.18	561.60	540.55	–
Noncurrent-carrying wiring devices	3644	12.20	11.91	12.47	12.46	–	508.74	489.50	527.46	532.04	–
Residential lighting fixtures	3645	9.77	9.39	9.84	9.75	–	389.82	372.78	405.39	384.15	–
Household audio and video equipment	365	12.67	11.91	12.90	12.75	–	500.47	449.01	526.32	508.73	–
Household audio and video equipment	3651	12.17	11.68	12.47	12.50	–	479.50	439.17	502.54	503.75	–
Communications equipment	366	14.05	14.07	14.13	14.23	–	578.86	575.46	594.87	599.08	–
Telephone and telegraph apparatus	3661	14.71	14.82	14.82	14.91	–	631.06	646.15	634.30	635.17	–
Electronic components and accessories	367	13.72	13.58	13.95	13.97	–	570.75	552.21	592.88	583.85	–
Electron tubes	3671	14.81	14.95	14.58	14.24	–	633.87	624.91	642.96	596.65	–
Semiconductors and related devices	3674	18.36	18.10	18.56	19.01	–	782.14	767.35	822.30	832.64	–
Electronic components, nec	3679	11.27	11.02	11.58	11.38	–	462.07	451.62	473.62	454.06	–
Misc. electrical equipment and supplies	369	13.82	13.26	14.31	14.38	–	577.68	548.96	613.90	603.84	–
Storage batteries	3691	15.57	15.09	15.56	15.58	–	655.50	639.82	655.06	641.90	–
Engine electrical equipment	3694	13.59	12.90	14.55	14.72	–	577.58	535.04	646.02	635.90	–

See footnotes at end of table.


Employment & Earnings

5. Average hours and earnings of production or nonsupervisory workers[1] on private nonfarm payrolls by detailed industry—Continued

Industry	1987 SIC Code	Average hourly earnings					Average weekly earnings				
		July 1998	Aug. 1998	June 1999	July 1999p	Aug. 1999p	July 1998	Aug. 1998	June 1999	July 1999p	Aug. 1999p
Durable goods—Continued											
Transportation equipment	37	$16.66	$17.29	$18.20	$17.94	$18.09	$691.26	$740.01	$802.62	$755.27	$768.92
Motor vehicles and equipment	371	16.79	17.52	18.68	18.23	18.39	664.88	744.60	848.07	774.78	814.68
Motor vehicles and car bodies	3711	21.56	21.70	22.59	22.12	–	843.00	894.04	1,027.85	951.16	–
Truck and bus bodies	3713	15.17	15.06	15.71	15.60	–	637.14	644.57	732.09	714.48	–
Motor vehicle parts and accessories	3714	15.41	16.00	17.48	17.03	–	605.61	692.80	797.09	715.26	–
Truck trailers	3715	11.20	11.52	11.30	11.27	–	463.68	486.14	485.90	486.74	–
Aircraft and parts	372	19.15	19.13	19.57	19.81	–	833.03	843.63	835.64	828.06	–
Aircraft	3721	(2)	(2)	(2)	(2)	–	–	–	–	–	–
Aircraft engines and engine parts	3724	18.95	18.86	19.55	19.78	–	835.70	835.50	862.16	870.32	–
Aircraft parts and equipment, nec	3728	17.09	16.97	17.37	17.51	–	738.29	743.29	731.26	719.66	–
Ship and boat building and repairing	373	13.38	13.37	13.74	13.82	–	565.13	569.56	557.84	555.56	–
Ship building and repairing	3731	14.59	14.52	15.18	15.29	–	636.12	640.33	631.49	626.89	–
Boat building and repairing	3732	11.34	11.48	11.97	12.05	–	457.00	463.79	471.62	473.57	–
Railroad equipment	374	16.87	16.65	16.65	16.80	–	718.66	709.29	687.65	693.84	–
Guided missiles, space vehicles, and parts	376	20.00	20.04	20.14	20.16	–	832.00	837.67	829.77	829.40	–
Guided missiles and space vehicles	3761	(2)	(2)	(2)	(2)	–	–	–	–	–	–
Misc. transportation equipment	379	11.77	11.86	12.64	12.46	–	480.22	480.33	524.56	520.83	–
Travel trailers and campers	3792	11.77	12.08	13.01	12.49	–	470.80	465.08	526.91	513.34	–
Instruments and related products	38	13.78	13.79	14.13	14.26	14.34	560.85	568.15	586.40	584.66	590.81
Search and navigation equipment	381	17.58	17.40	17.48	17.34	–	734.84	725.58	720.18	723.08	–
Measuring and controlling devices	382	13.82	13.91	14.25	14.31	–	556.95	567.53	589.95	586.71	–
Environmental controls	3822	12.12	12.09	12.22	12.09	–	480.56	481.16	540.12	508.99	–
Process control instruments	3823	13.76	13.89	14.29	14.41	–	557.28	565.32	580.17	577.84	–
Instruments to measure electricity	3825	16.07	16.28	16.65	16.75	–	662.08	672.36	675.99	685.08	–
Medical instruments and supplies	384	12.71	12.71	12.81	12.96	–	514.76	522.38	530.33	524.88	–
Surgical and medical instrument	3841	11.89	11.83	12.20	12.49	–	486.30	483.85	497.76	497.10	–
Surgical appliances and supplies	3842	11.94	12.04	12.06	12.14	–	474.02	490.03	502.90	489.24	–
Ophthalmic goods	385	10.21	10.15	10.94	11.13	–	408.40	416.15	444.16	445.20	–
Photographic equipment and supplies	386	16.48	16.51	18.01	18.24	–	698.75	704.98	778.03	791.62	–
Watches, clocks, watchcases, and parts	387	10.80	10.43	10.55	10.84	–	427.66	407.81	440.99	423.84	–
Miscellaneous manufacturing industries	39	10.85	10.85	11.30	11.30	11.29	425.32	434.00	450.87	442.96	452.73
Jewelry, silverware, and plated ware	391	11.28	11.41	11.91	12.01	–	428.64	451.84	459.73	461.18	–
Jewelry, precious metal	3911	11.36	11.49	11.77	11.80	–	422.59	446.96	442.55	442.50	–
Musical instruments	393	11.04	11.14	11.80	12.01	–	446.02	460.08	476.72	456.38	–
Toys and sporting goods	394	10.49	10.43	10.89	10.99	–	414.36	416.16	439.96	434.11	–
Dolls, games, toys, and children's vehicles	3942,4	10.07	10.15	10.47	10.45	–	392.73	406.00	398.91	399.19	–
Sporting and athletic goods, nec	3949	10.67	10.56	11.05	11.20	–	423.60	420.29	457.47	448.12	–
Pens, pencils, office, and art supplies	395	11.44	11.36	11.49	11.44	–	432.43	433.95	448.11	440.44	–
Costume jewelry and notions	396	9.69	9.55	10.08	10.18	–	355.62	362.90	384.05	374.62	–
Costume jewelry	3961	8.69	8.52	8.95	9.09	–	318.05	313.54	323.99	322.70	–
Miscellaneous manufactures	399	10.96	10.96	11.43	11.32	–	437.30	444.69	460.63	450.54	–
Signs and advertising specialties	3993	11.52	11.57	12.36	12.14	–	466.56	477.64	499.34	488.03	–
Nondurable goods		12.81	12.75	13.15	13.22	13.18	520.09	522.75	539.15	536.73	540.38
Food and kindred products	20	11.80	11.76	12.16	12.15	12.09	490.88	493.92	505.86	507.67	506.57
Meat products	201	9.71	9.66	9.93	10.03	–	396.17	401.86	414.08	419.25	–
Meat packing plants	2011	10.26	10.36	10.77	10.93	–	438.10	455.84	466.34	472.18	–
Sausages and other prepared meats	2013	11.03	10.95	11.11	11.17	–	470.98	461.00	491.05	494.83	–
Poultry slaughtering and processing	2015	8.84	8.72	8.93	9.02	–	344.76	348.80	356.31	361.70	–
Dairy products	202	13.58	13.67	14.07	14.07	–	571.72	574.14	610.64	616.27	–
Cheese, natural and processed	2022	12.54	12.62	12.81	12.97	–	520.41	523.73	558.52	577.17	–
Fluid milk	2026	14.16	14.21	14.73	14.83	–	586.22	591.14	632.58	636.21	–
Preserved fruits and vegetables	203	11.16	11.25	11.64	11.53	–	462.02	471.38	472.58	469.27	–
Canned specialties	2032	14.66	14.69	15.43	15.34	–	621.58	624.33	686.84	636.61	–
Canned fruits and vegetables	2033	11.99	11.92	12.52	12.12	–	491.59	507.79	482.02	489.65	–
Frozen fruits and vegetables	2037	10.46	10.30	11.02	11.04	–	416.31	412.00	428.65	426.14	–
Grain mill products	204	15.05	14.78	15.08	15.20	–	699.83	671.01	655.03	680.96	–
Flour and other grain mill products	2041	13.04	13.11	13.59	13.34	–	607.66	605.68	608.83	601.63	–
Prepared feeds, nec	2048	11.73	11.76	12.23	12.37	–	526.56	517.44	519.78	536.36	–

[1] Footnotes at end of table.

Employment & Earnings

U.S. Department of Labor
Bureau of Labor Statistics
March 1999

In this issue:

1999 annual averages for national establishment data

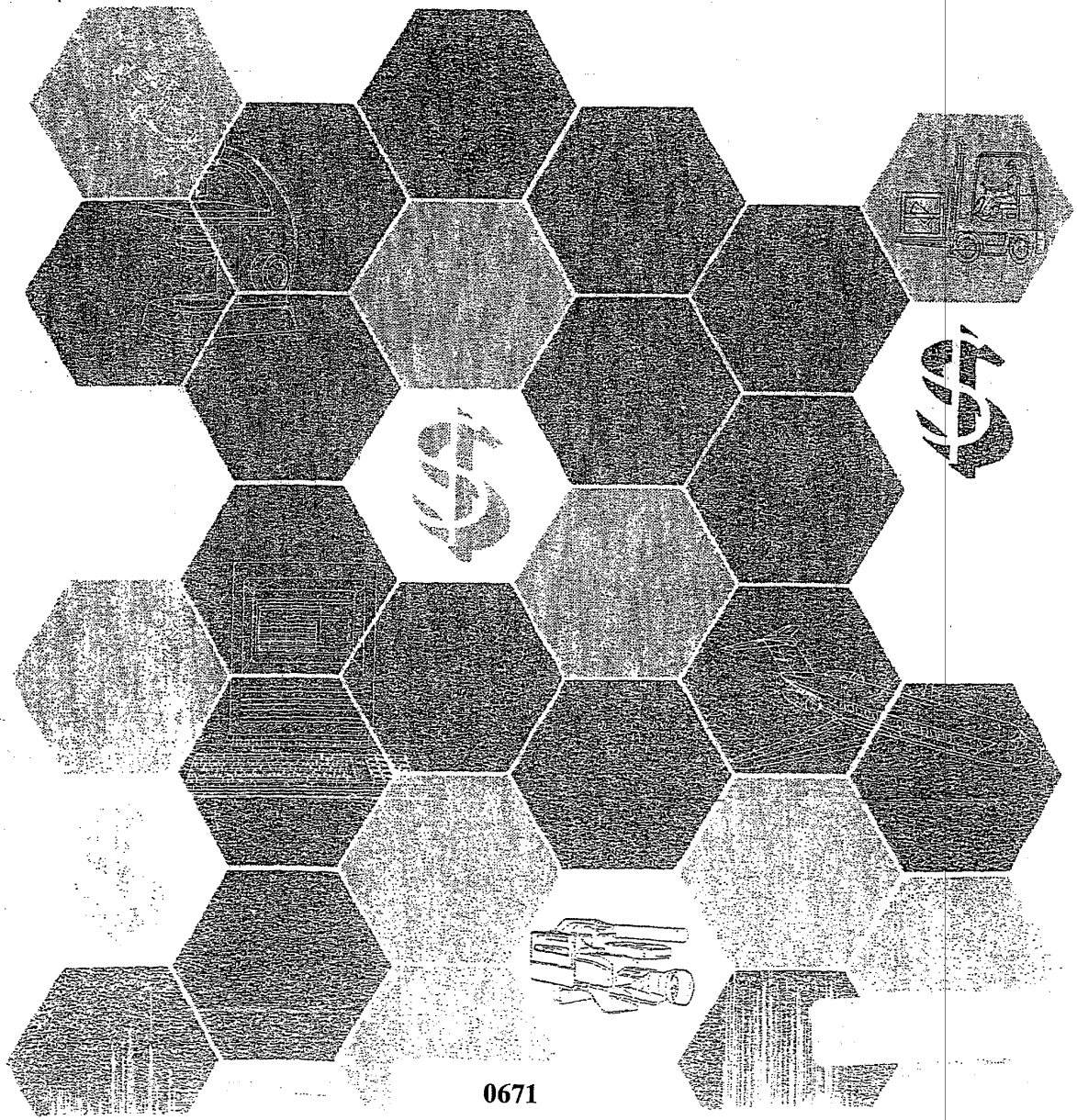
15. Average hours and earnings of production or nonsupervisory workers[1] on private nonfarm payrolls by detailed industry—Continued

Industry	1987 SIC Code	Average hourly earnings					Average weekly earnings				
		Avg. 1998	Jan. 1998	Dec. 1998	Jan. 1999p	Feb. 1999p	Avg. 1998	Jan. 1998	Dec. 1998	Jan. 1999p	Feb. 1999p
Durable goods—Continued											
Transportation equipment	37	$17.56	$17.75	$17.60	$17.49	$17.41	$762.10	$777.45	$804.32	$755.57	$762.56
Motor vehicles and equipment	371	17.94	18.24	17.81	17.69	17.57	780.39	797.09	833.51	774.82	787.14
Motor vehicles and car bodies	3711	21.81	22.32	21.02	21.11	–	933.47	937.44	985.84	876.07	–
Truck and bus bodies	3713	15.54	16.09	15.17	14.91	–	680.65	707.96	691.75	662.00	–
Motor vehicle parts and accessories	3714	16.56	16.79	16.69	16.66	–	731.51	753.87	791.11	759.70	–
Truck trailers	3715	11.42	11.36	11.57	11.60	–	480.78	485.07	495.20	485.16	–
Aircraft and parts	372	19.11	18.98	19.50	19.33	–	844.66	854.10	877.50	835.06	–
Aircraft	3721	(2)	(2)	(2)	(2)	–	–	–	–	–	–
Aircraft engines and engine parts	3724	18.93	18.78	19.33	19.23	–	840.49	837.59	869.18	853.81	–
Aircraft parts and equipment, nec	3728	18.80	18.77	17.15	16.92	–	740.88	754.65	776.90	732.64	–
Ship and boat building and repairing	373	13.36	13.54	13.59	13.73	–	565.13	584.93	587.09	561.56	–
Ship building and repairing	3731	14.65	14.98	14.85	15.22	–	637.28	675.60	656.37	631.53	–
Boat building and repairing	3732	11.39	11.15	11.76	11.61	–	461.30	451.58	490.39	464.40	–
Railroad equipment	374	16.91	17.07	16.35	16.04	–	728.82	763.03	701.42	664.06	–
Guided missiles, space vehicles, and parts	376	19.98	19.83	20.16	20.23	–	841.16	858.64	846.72	849.66	–
Guided missiles and space vehicles	3761	(2)	(2)	(2)	(2)	–	–	–	–	–	–
Misc. transportation equipment	379	11.92	11.72	12.14	12.28	–	482.76	473.49	500.17	503.48	–
Travel trailers and campers	3792	12.01	11.81	12.16	12.43	–	466.99	448.78	480.32	486.01	–
Instruments and related products	38	13.77	13.64	13.96	13.95	14.00	568.70	571.52	586.32	573.35	581.00
Search and navigation equipment	381	17.32	17.31	17.76	17.24	–	732.64	746.06	755.65	713.74	–
Measuring and controlling devices	382	13.87	13.62	14.20	14.21	–	571.44	570.68	597.82	588.29	–
Environmental controls	3822	12.02	11.78	12.23	12.24	–	486.81	499.47	523.44	526.32	–
Process control instruments	3823	13.85	13.40	14.29	14.26	–	569.24	560.12	591.61	576.10	–
Instruments to measure electricity	3825	15.98	15.61	16.25	16.27	–	663.17	638.45	685.75	670.32	–
Medical instruments and supplies	384	12.79	12.77	12.85	12.92	–	524.39	531.23	539.70	532.30	–
Surgical and medical instrument	3841	12.00	12.18	12.05	12.07	–	492.00	514.00	496.46	496.08	–
Surgical appliances and supplies	3842	12.00	11.86	12.13	12.19	–	487.20	482.76	516.74	507.10	–
Ophthalmic goods	385	10.23	10.28	10.35	10.33	–	417.38	421.48	414.00	390.47	–
Photographic equipment and supplies	386	16.29	15.75	16.54	16.68	–	680.70	661.50	697.99	692.22	–
Watches, clocks, watchcases, and parts	387	10.42	10.29	10.59	10.39	–	419.93	426.01	447.96	435.34	–
Miscellaneous manufacturing industries	39	10.87	10.79	11.10	11.13	11.12	433.71	430.52	446.22	434.07	439.24
Jewelry, silverware, and plated ware	391	11.36	11.18	11.53	11.51	–	445.31	427.08	450.62	431.63	–
Jewelry, precious metal	3911	11.44	11.34	11.42	11.46	–	439.30	424.12	435.10	418.29	–
Musical instruments	393	11.06	10.77	11.37	11.53	–	446.82	436.19	467.31	454.28	–
Toys and sporting goods	394	10.42	10.27	10.66	10.60	–	415.76	408.75	428.53	413.40	–
Dolls, games, toys, and children's vehicles	3942,4	10.11	9.78	10.51	10.37	–	395.30	372.62	413.04	368.14	–
Sporting and athletic goods, nec	3949	10.55	10.47	10.72	10.69	–	424.11	425.08	435.23	432.95	–
Pens, pencils, office, and art supplies	395	11.28	11.16	11.13	11.29	–	436.54	437.47	434.07	438.05	–
Costume jewelry and notions	396	9.72	9.80	9.80	10.06	–	375.19	385.14	379.26	374.23	–
Costume jewelry	3961	8.81	8.82	8.83	9.05	–	334.78	339.57	335.54	324.90	–
Miscellaneous manufactures	399	11.07	11.09	11.37	11.37	–	447.23	451.36	465.03	451.39	–
Signs and advertising specialties	3993	11.79	11.70	12.24	12.23	–	485.75	486.72	506.74	490.42	–
Nondurable goods		12.75	12.56	12.97	12.99	12.98	521.48	513.70	539.55	527.39	525.69
Food and kindred products	20	11.80	11.67	12.02	11.95	11.94	492.06	483.14	514.46	497.12	491.93
Meat products	201	9.66	9.51	9.90	9.90	–	397.99	389.91	425.70	421.74	–
Meat packing plants	2011	10.34	10.23	10.66	10.66	–	447.72	443.98	494.62	491.26	–
Sausages and other prepared meats	2013	11.01	10.87	11.15	11.18	–	462.42	452.19	488.37	474.03	–
Poultry slaughtering and processing	2015	8.73	8.55	8.90	8.91	–	345.71	336.02	362.23	362.64	–
Dairy products	202	13.57	13.27	13.79	13.96	–	559.94	549.38	584.70	577.94	–
Cheese, natural and processed	2022	12.40	11.95	12.57	12.71	–	515.84	480.39	540.51	522.38	–
Fluid milk	2026	14.20	14.06	14.43	14.54	–	592.14	589.11	610.39	612.13	–
Preserved fruits and vegetables	203	11.34	11.29	11.73	11.55	–	471.74	470.79	500.87	473.55	–
Canned specialties	2032	14.83	14.66	15.61	14.89	–	640.66	666.09	674.35	601.56	–
Canned fruits and vegetables	2033	12.22	12.33	12.95	12.60	–	504.36	498.13	540.02	515.84	–
Frozen fruits and vegetables	2037	10.50	10.45	10.72	10.70	–	429.45	427.41	454.53	429.07	–
Grain mill products	204	14.89	14.75	15.17	15.08	–	660.47	674.08	693.27	671.06	–
Flour and other grain mill products	2041	13.02	12.81	13.17	13.17	–	601.52	576.28	620.31	592.65	–
Prepared feeds, nec	2048	11.72	11.68	12.28	12.22	–	515.68	517.42	515.76	526.68	–

footnotes at end of table.

EMPLOYMENT AND EARNINGS

U.S. Department of Labor
Bureau of Labor Statistics
September 1998



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B-15. Average hours and earnings of production or nonsupervisory workers[1] on private nonfarm payrolls by detailed industry—Continued

Industry	1987 SIC Code	Average hourly earnings					Average weekly earnings				
		July 1997	Aug. 1997	June 1998	July 1998[p]	Aug. 1998[p]	July 1997	Aug. 1997	June 1998	July 1998[p]	Aug. 1998[p]
Durable goods—Continued											
Transportation equipment	37	$17.20	$17.43	$17.45	$16.92	$17.39	$729.28	$772.15	$748.61	$693.72	$739.08
Motor vehicles and equipment	371	17.52	17.83	17.84	16.96	17.72	737.59	797.00	761.77	673.81	744.24
Motor vehicles and car bodies	3711	21.02	21.14	21.90	21.57	–	912.27	953.41	906.66	841.23	–
Truck and bus bodies	3713	14.63	14.67	15.13	15.17	–	646.65	638.15	676.31	634.11	–
Motor vehicle parts and accessories	3714	16.17	16.50	16.36	15.47	–	686.20	739.20	705.39	614.16	–
Truck trailers	3715	11.04	11.17	11.49	11.20	–	464.66	481.43	500.96	463.68	–
Aircraft and parts	372	18.86	18.64	18.98	19.08	–	818.52	836.50	840.81	823.96	–
Aircraft	3721	(2)	(2)	(2)	(2)	–	–	–	–	–	–
Aircraft engines and engine parts	3724	18.44	18.64	18.90	18.99	–	853.77	823.89	842.94	835.56	–
Aircraft parts and equipment, nec	3725	16.89	16.72	16.72	16.81	–	736.03	747.38	740.70	727.37	–
Ship and boat building and repairing	373	13.20	13.16	13.24	13.32	–	555.72	557.98	552.11	563.44	–
Ship building and repairing	3731	14.60	14.50	14.60	14.59	–	699.48	643.80	610.28	637.56	–
Boat building and repairing	3732	10.93	10.99	11.29	11.37	–	432.93	434.11	468.54	458.21	–
Railroad equipment	374	16.72	16.94	16.98	17.01	–	740.70	770.77	735.23	717.82	–
Guided missiles, space vehicles, and parts	376	19.60	19.67	20.07	19.88	–	833.00	851.71	845.95	829.00	–
Guided missiles and space vehicles	3761	(2)	(2)	(2)	(2)	–	–	–	–	–	–
Misc. transportation equipment	379	11.25	11.54	11.78	11.77	–	436.50	462.75	485.34	482.57	–
Travel trailers and campers	3792	10.91	11.49	11.92	11.74	–	400.40	442.37	470.84	471.95	–
Instruments and related products	38	13.50	13.46	13.71	13.74	13.77	556.20	567.61	566.22	559.22	565.95
Search and navigation equipment	381	16.69	16.55	17.13	17.36	–	719.51	727.92	719.46	720.44	–
Measuring and controlling devices	382	13.50	13.50	13.74	13.81	–	553.50	561.60	564.71	557.92	–
Environmental controls	3822	11.70	11.62	11.81	12.10	–	458.64	475.26	479.49	461.01	–
Process control instruments	3823	13.06	13.13	13.68	13.75	–	541.99	554.09	563.62	559.63	–
Instruments to measure electricity	3825	15.45	15.52	15.90	16.00	–	633.45	639.42	655.26	656.00	–
Medical instruments and supplies	384	12.46	12.50	12.81	12.72	–	507.12	526.25	527.77	515.16	–
Surgical and medical instrument	3841	11.79	11.81	12.04	11.94	–	486.93	506.66	494.84	489.54	–
Surgical appliances and supplies	3842	11.56	11.57	11.90	11.85	–	462.00	477.84	489.09	472.82	–
Ophthalmic goods	385	10.10	10.00	10.19	10.19	–	399.96	412.00	412.70	402.51	–
Photographic equipment and supplies	386	15.90	15.95	16.45	16.47	–	683.70	697.45	705.71	698.33	–
Watches, clocks, watchcases, and parts	387	10.02	9.95	10.41	10.60	–	395.79	403.95	410.15	427.68	–
Miscellaneous manufacturing industries	39	10.51	10.57	10.82	10.84	10.84	416.15	425.97	431.72	424.93	430.35
Jewelry, silverware, and plated ware	391	10.84	10.96	11.38	11.29	–	421.68	438.40	460.65	425.78	–
Jewelry, precious metal	3911	10.91	11.04	11.49	11.35	–	417.85	436.29	444.66	421.09	–
Musical instruments	393	10.72	10.67	10.91	11.06	–	415.94	435.34	447.31	449.82	–
Toys and sporting goods	394	9.93	10.04	10.36	10.51	–	389.26	400.60	410.26	415.15	–
Dolls, games, toys, and children's vehicles	3942,4	9.49	9.54	10.07	10.18	–	361.57	378.69	398.72	397.02	–
Sporting and athletic goods, nec	3949	10.13	10.28	10.47	10.65	–	402.16	410.57	418.80	422.81	–
Pens, pencils, office, and art supplies	395	11.15	11.16	11.34	11.48	–	451.58	444.17	443.39	433.94	–
Costume jewelry and notions	396	9.47	9.38	9.79	9.66	–	364.60	363.01	374.42	355.49	–
Costume jewelry	3961	8.41	8.31	8.87	8.68	–	326.31	319.10	334.49	317.89	–
Miscellaneous manufactures	399	10.79	10.84	10.96	10.92	–	430.52	443.36	444.69	435.71	–
Signs and advertising specialties	3993	11.28	11.47	11.56	11.52	–	464.74	476.01	476.25	462.86	–
Nondurable goods		12.36	12.33	12.59	12.79	12.75	498.11	504.30	519.02	519.27	522.75
Food and kindred products	20	11.52	11.51	11.76	11.77	11.76	473.47	481.12	486.04	490.81	496.27
Meat products	201	9.38	9.35	9.61	9.71	–	376.14	379.61	394.01	397.14	–
Meat packing plants	2011	10.08	9.95	10.20	10.26	–	412.27	416.91	431.46	444.26	–
Sausages and other prepared meats	2013	10.82	10.71	10.92	10.99	–	455.52	451.96	460.82	469.27	–
Poultry slaughtering and processing	2015	8.44	8.47	8.74	8.85	–	328.32	332.87	348.73	344.27	–
Dairy products	202	13.20	13.29	13.46	13.52	–	564.96	559.51	573.40	570.54	–
Cheese, natural and processed	2022	12.11	12.04	12.35	12.43	–	507.41	504.48	519.94	515.65	–
Fluid milk	2026	13.99	13.91	14.16	14.12	–	592.14	591.18	594.81	594.57	–
Preserved fruits and vegetables	203	11.12	11.02	11.25	11.06	–	453.70	473.86	461.25	458.99	–
Canned specialties	2032	14.60	14.52	15.10	14.65	–	591.30	616.55	650.81	615.23	–
Canned fruits and vegetables	2033	12.15	11.58	12.31	11.62	–	507.87	521.10	491.32	478.74	–
Frozen fruits and vegetables	2037	10.23	10.33	10.35	10.48	–	395.90	423.53	408.83	413.15	–
Grain mill products	204	14.32	14.37	14.50	15.06	–	552.99	555.27	557.45	703.30	–
Flour and other grain mill products	2041	12.48	12.74	13.01	13.04	–	564.06	566.04	593.26	607.65	–
Prepared feeds, nec	2048	11.24	11.35	11.65	11.73	–	491.19	496.00	514.93	526.65	–

See footnotes at end of table.

EMPLOYMENT AND EARNINGS

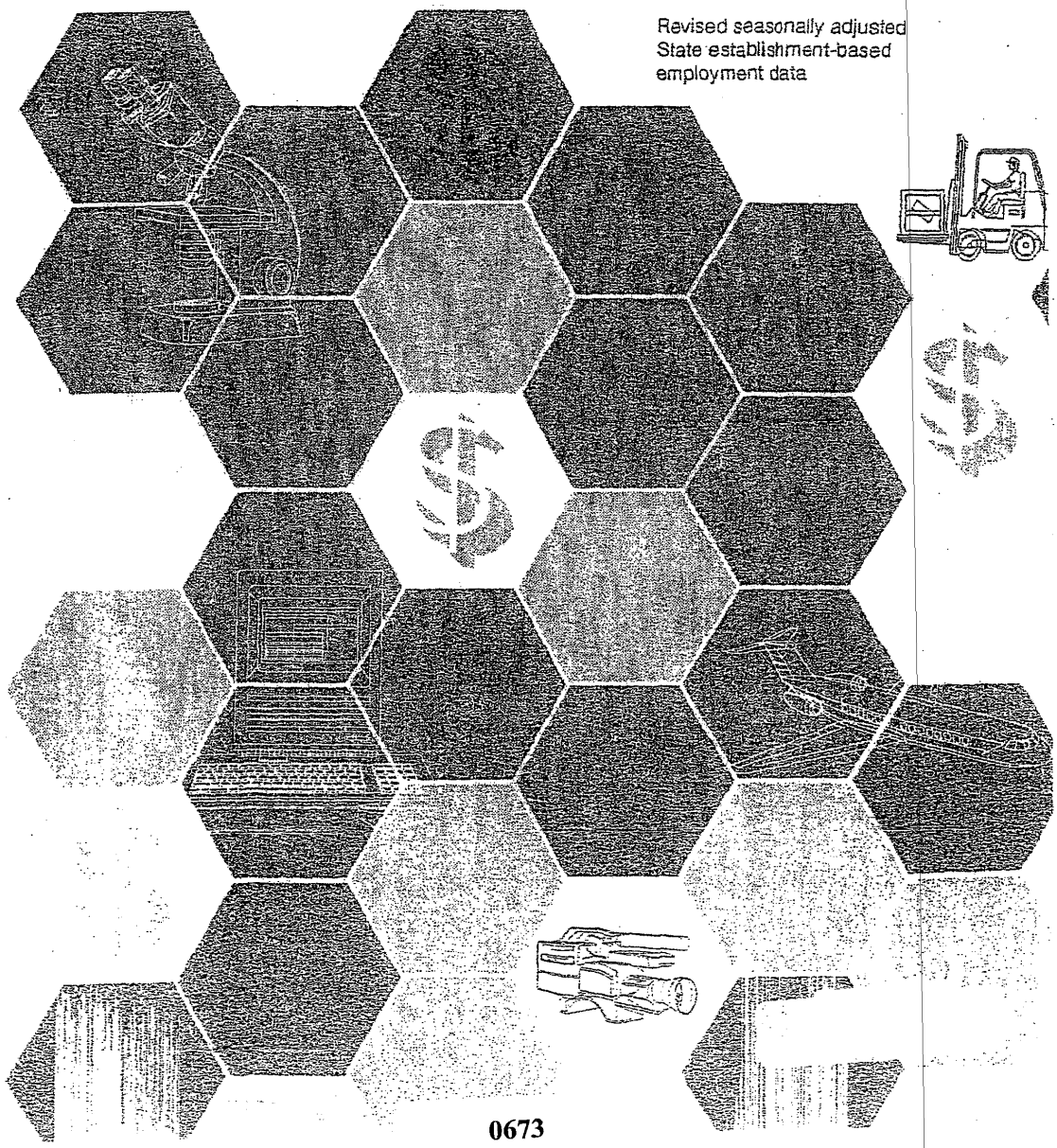
U.S. Department of Labor
Bureau of Labor Statistics
March 1998

In this issue:

1997 annual averages for national establishment data

Revised historical seasonally adjusted regional and State labor force data

Revised seasonally adjusted State establishment-based employment data



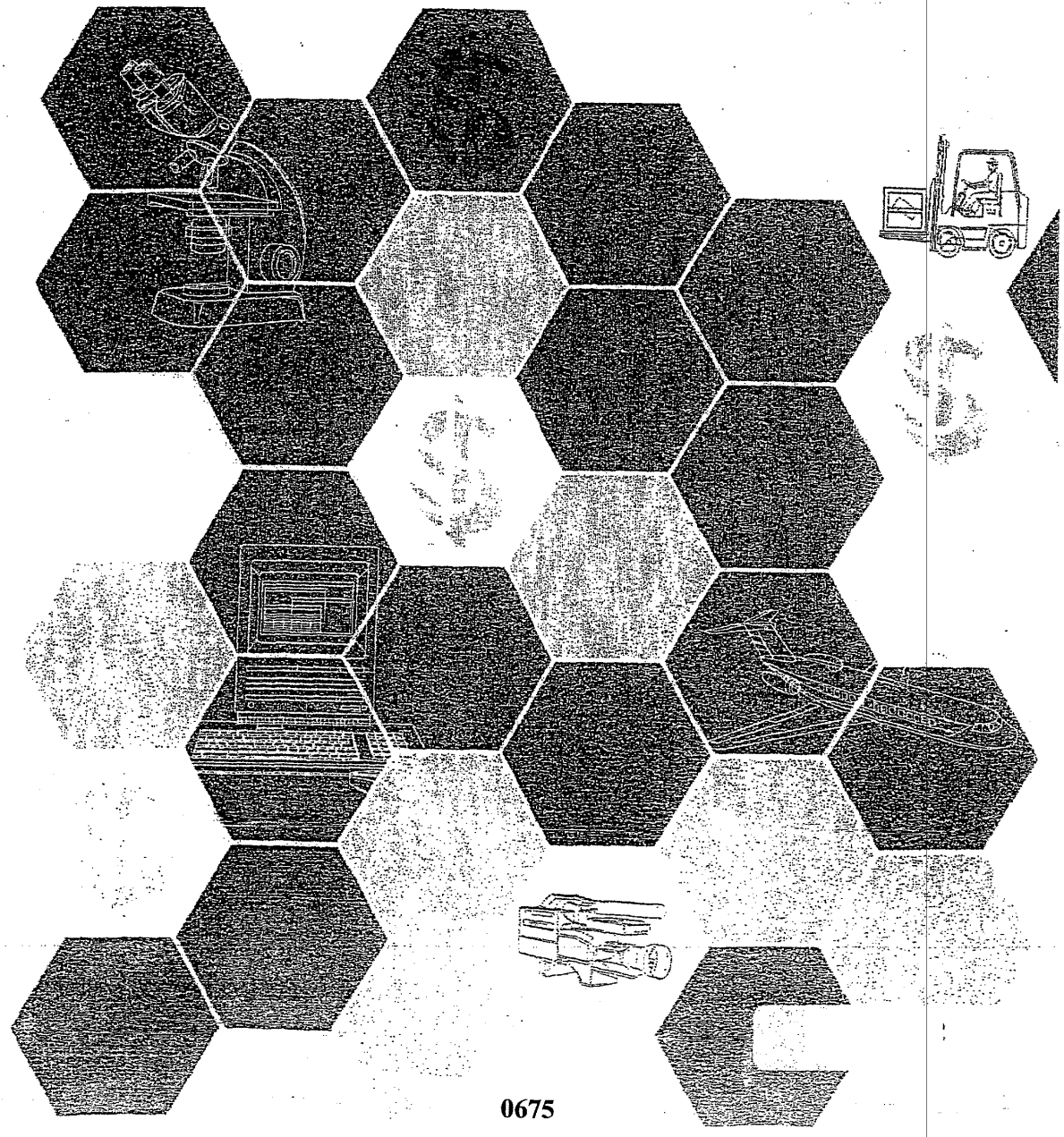
B-15. Average hours and earnings of production or nonsupervisory workers[1] on private nonfarm payrolls by detailed industry—Continued

Industry	1987 SIC Code	Average hourly earnings					Average weekly earnings				
		Avg. 1997	Jan. 1997	Dec. 1997	Jan. 1998P	Feb. 1998P	Avg. 1997	Jan. 1997	Dec. 1997	Jan. 1998P	Feb. 1998P
Durable goods—Continued											
Transportation equipment	37	$17.60	$17.46	$15.13	$17.79	$17.81	$783.20	$778.72	$825.54	$779.20	$772.35
Motor vehicles and equipment	371	18.09	18.02	18.69	18.27	18.34	814.05	819.91	865.35	798.40	793.96
Motor vehicles and car bodies	3711	21.63	21.34	22.56	22.29	–	964.17	988.04	1,047.71	933.85	–
Truck and bus bodies	3713	15.32	16.09	15.67	16.10	–	674.08	711.18	685.76	710.01	–
Motor vehicle parts and accessories	3714	16.79	16.69	17.25	16.95	–	758.46	766.07	809.03	759.36	–
Truck trailers	3715	11.20	11.13	11.43	11.35	–	469.96	429.62	486.92	473.97	–
Aircraft and parts	372	18.58	18.65	19.27	18.99	–	843.94	828.06	892.20	834.55	–
Aircraft	3721	(2)	(2)	(2)	(2)	–	–	–	–	–	–
Aircraft engines and engine parts	3724	18.58	18.16	19.31	18.80	–	837.95	806.30	915.29	836.60	–
Aircraft parts and equipment, nec	3728	16.71	16.60	16.94	16.79	–	753.62	750.32	789.40	759.91	–
Ship and boat building and repairing	373	13.19	13.15	13.18	13.53	–	556.62	556.25	560.15	564.50	–
Ship building and repairing	3731	14.58	14.49	14.42	15.00	–	640.06	641.91	636.61	676.50	–
Boat building and repairing	3732	10.92	10.75	11.17	11.16	–	433.52	420.93	444.57	451.98	–
Railroad equipment	374	16.81	16.78	17.11	17.07	–	744.68	729.93	776.79	763.03	–
Guided missiles, space vehicles, and parts	376	19.54	19.31	19.89	19.84	–	842.17	836.12	871.16	859.07	–
Guided missiles and space vehicles	3761	(2)	(2)	(2)	(2)	–	–	–	–	–	–
Misc. transportation equipment	379	11.52	11.33	11.81	11.74	–	463.10	438.47	495.39	478.12	–
Travel trailers and campers	3792	11.39	10.94	11.91	11.82	–	436.24	390.56	469.25	447.96	–
Instruments and related products	38	13.55	13.38	13.73	13.67	13.71	569.10	557.95	589.02	571.41	574.45
Search and navigation equipment	381	16.98	16.84	17.44	17.52	–	740.33	729.17	765.62	749.86	–
Measuring and controlling devices	382	13.57	13.39	13.79	13.65	–	566.56	558.36	592.97	570.57	–
Environmental controls	3822	11.67	11.75	11.89	11.74	–	478.47	489.96	505.33	493.08	–
Process control instruments	3823	13.27	13.03	13.65	13.40	–	556.67	543.35	599.24	561.46	–
Instruments to measure electricity	3825	15.63	15.33	15.94	15.71	–	650.21	633.13	687.89	659.49	–
Medical instruments and supplies	384	12.53	12.28	12.75	12.74	–	522.50	505.94	548.25	528.71	–
Surgical and medical instrument	3841	11.85	11.70	12.04	12.20	–	496.52	490.23	510.50	513.62	–
Surgical appliances and supplies	3842	11.61	11.34	11.94	11.81	–	476.01	457.00	512.23	479.49	–
Ophthalmic goods	385	10.16	10.15	10.35	10.30	–	409.45	406.00	423.32	423.33	–
Photographic equipment and supplies	386	15.92	15.92	15.82	15.75	–	669.34	667.74	681.84	669.93	–
Watches, clocks, watchcases, and parts	387	9.90	9.59	10.03	10.29	–	393.03	357.71	406.22	426.01	–
Miscellaneous manufacturing industries	39	10.60	10.59	10.81	10.81	10.80	425.24	419.36	446.45	431.32	434.16
Jewelry, silverware, and plated ware	391	10.98	10.93	11.29	11.19	–	437.00	419.71	465.15	428.34	–
Jewelry, precious metal	3911	11.10	11.04	11.48	11.34	–	437.34	416.21	470.68	421.85	–
Musical instruments	393	10.71	10.67	10.88	10.80	–	440.18	439.60	449.54	434.16	–
Toys and sporting goods	394	10.07	10.04	10.31	10.36	–	402.80	393.57	423.74	411.29	–
Dolls, games, toys, and children's vehicles	3942,4	9.59	9.55	9.83	9.87	–	374.97	351.44	396.15	374.37	–
Sporting and athletic goods, nec	3949	10.31	10.26	10.55	10.59	–	417.56	414.50	437.83	429.95	–
Pens, pencils, office, and art supplies	395	11.08	11.07	11.08	11.16	–	447.63	440.59	450.95	436.36	–
Costume jewelry and notions	396	9.39	9.22	9.69	9.79	–	372.78	354.19	389.54	386.71	–
Costume jewelry	3961	8.32	7.88	8.78	8.82	–	329.47	316.35	350.32	343.10	–
Miscellaneous manufactures	399	10.91	10.98	11.10	11.07	–	444.04	439.20	465.09	449.44	–
Signs and advertising specialties	3993	11.43	11.23	11.72	11.70	–	474.35	458.18	499.27	487.89	–
Nondurable goods		12.34	12.20	12.58	12.57	12.59	504.71	494.10	525.84	514.11	509.90
Food and kindred products	20	11.49	11.41	11.72	11.67	11.66	474.54	464.89	496.93	481.97	476.54
Meat products	201	9.36	9.33	9.50	9.52	–	379.08	376.93	394.25	390.32	–
Meat packing plants	2011	10.03	10.03	10.18	10.24	–	422.26	423.27	449.96	443.39	–
Sausages and other prepared meats	2013	10.73	10.71	10.85	10.86	–	449.59	432.68	465.47	451.78	–
Poultry slaughtering and processing	2015	8.42	8.38	8.53	8.55	–	329.22	329.33	336.94	336.02	–
Dairy products	202	13.20	13.07	13.35	13.26	–	558.36	542.41	580.70	548.96	–
Cheese, natural and processed	2022	12.06	11.85	12.13	11.94	–	502.90	482.30	507.03	479.99	–
Fluid milk	2026	13.88	13.78	14.01	14.05	–	589.90	585.65	592.62	595.79	–
Preserved fruits and vegetables	203	11.00	11.05	11.42	11.28	–	455.40	455.26	485.35	471.50	–
Canned specialties	2032	14.37	14.52	15.32	14.66	–	615.04	648.28	713.53	636.09	–
Canned fruits and vegetables	2033	11.76	12.01	12.27	12.35	–	491.23	481.60	527.61	531.41	–
Frozen fruits and vegetables	2037	10.27	10.24	10.49	10.45	–	413.88	414.72	433.24	429.50	–
Grain mill products	204	14.39	14.23	14.95	14.76	–	656.18	654.02	702.65	676.01	–
Flour and other grain mill products	2041	12.53	12.41	13.10	12.61	–	577.19	544.50	640.39	572.49	–
Prepared feeds, nec	2048	11.32	11.19	11.56	11.57	–	499.21	504.67	507.48	515.96	–

See footnotes at end of table.

EMPLOYMENT AND EARNINGS

U.S. Department of Labor
Bureau of Labor Statistics
September 1997



B-15. Average hours and earnings of production or nonsupervisory workers on private nonfarm payrolls by detailed industry—Continued

Industry	1987 SIC Code	Average hourly earnings					Average weekly earnings				
		July 1996	Aug. 1996	June 1997	July 1997p	Aug. 1997p	July 1996	Aug. 1996	June 1997	July 1997p	Aug. 1997p
Durable goods—Continued											
Transportation equipment	37	$17.29	$17.28	$17.45	$17.26	$17.51	$736.28	$735.50	$776.27	$730.10	$775.69
Motor vehicles and equipment	371	17.89	17.80	17.92	17.60	17.97	776.43	809.90	811.78	739.20	806.85
Motor vehicles and car bodies	3711	21.38	21.08	21.39	20.96	-	945.00	967.57	992.50	911.76	-
Truck and bus bodies	3713	14.64	14.61	14.84	14.64	-	629.52	619.46	654.83	647.09	-
Motor vehicle parts and accessories	3714	16.61	16.51	16.63	16.45	-	715.89	764.06	750.01	672.81	-
Truck trailers	3715	10.90	10.86	11.23	11.02	-	451.26	446.35	473.91	485.98	-
Aircraft and parts	372	18.66	18.70	18.80	18.85	-	793.05	805.97	838.48	819.98	-
Aircraft	3721	(r)	(r)	(r)	(r)	-	-	-	-	-	-
Aircraft engines and engine parts	3724	$18.49	$18.52	$18.37	$18.45	-	$841.30	$813.03	$817.47	$854.24	-
Aircraft parts and equipment, nec	3728	16.55	16.48	16.69	16.73	-	713.31	731.71	749.38	737.79	-
Ship and boat building and repairing	373	12.88	13.11	13.12	13.18	-	519.06	555.86	549.73	553.56	-
Ship building and repairing	3731	14.22	14.54	14.56	14.59	-	594.40	642.57	631.90	637.56	-
Boat building and repairing	3732	10.52	10.57	10.88	10.94	-	399.76	417.52	431.94	431.04	-
Railroad equipment	374	16.63	16.61	16.52	16.76	-	738.99	740.81	720.27	740.79	-
Guided missiles, space vehicles, and parts	376	18.61	18.66	19.32	19.54	-	790.93	807.98	826.90	828.81	-
Guided missiles and space vehicles	3761	(r)	(r)	(r)	(r)	-	-	-	-	-	-
Misc. transportation equipment	379	$11.38	$11.41	$11.35	$11.27	-	$432.44	$437.00	$449.46	$439.53	-
Travel trailers and campers	3792	11.36	11.31	11.33	10.89	-	419.18	425.26	427.14	399.66	-
Instruments and related products	38	13.18	13.18	13.55	13.55	13.53	540.38	548.29	567.75	556.91	563.26
Search and navigation equipment	381	16.70	16.69	16.88	16.91	-	718.10	724.35	735.97	722.06	-
Measuring and controlling devices	382	13.09	13.13	13.53	13.56	-	535.36	548.83	582.85	557.32	-
Environmental controls	3822	11.67	11.69	11.60	11.72	-	473.61	499.38	477.92	459.42	-
Process control instruments	3823	12.63	12.71	13.25	13.11	-	531.72	538.90	549.96	542.75	-
Instruments to measure electricity	3825	14.89	14.87	15.52	15.63	-	595.60	612.64	640.98	643.96	-
Medical instruments and supplies	384	12.05	12.06	12.60	12.52	-	486.82	492.05	525.42	508.31	-
Surgical and medical instruments	3841	11.43	11.50	12.09	11.87	-	453.77	466.90	506.57	487.86	-
Surgical appliances and supplies	3842	11.20	11.12	11.50	11.59	-	450.24	450.36	471.50	462.44	-
Ophthalmic goods	385	9.92	10.04	10.01	10.12	-	393.82	405.62	404.40	400.75	-
Photographic equipment and supplies	386	15.65	15.82	15.87	15.91	-	673.63	672.35	690.35	684.13	-
Watches, clocks, watchcases, and parts	387	9.85	9.57	9.95	10.02	-	395.97	388.54	399.99	395.79	-
Miscellaneous manufacturing industries	39	10.37	10.37	10.50	10.52	10.59	402.36	412.73	421.05	415.54	425.72
Jewelry, silverware, and plated ware	391	10.62	10.68	10.85	10.84	-	405.68	427.58	425.32	426.01	-
Jewelry, precious metal	3911	10.58	10.90	10.91	10.92	-	400.50	419.65	421.13	424.79	-
Musical instruments	393	10.42	10.57	10.59	10.73	-	399.09	434.43	443.72	416.32	-
Toys and sporting goods	394	9.90	9.82	9.95	9.98	-	381.15	388.87	394.02	388.22	-
Dolls, games, toys, and children's vehicles	3942,4	9.39	9.43	9.50	9.55	-	347.43	370.60	371.45	362.90	-
Sporting and athletic goods, nec	3949	10.15	10.04	10.18	10.19	-	398.90	399.59	406.18	401.49	-
Pens, pencils, office, and art supplies	395	11.04	10.90	11.05	11.18	-	438.29	435.24	450.84	452.79	-
Costume jewelry and notions	396	9.21	8.84	9.30	9.46	-	356.43	352.72	371.07	385.93	-
Costume jewelry	3961	8.03	7.49	8.32	8.41	-	301.13	292.11	329.47	326.31	-
Miscellaneous manufactures	399	10.56	10.75	10.81	10.77	-	416.81	427.85	437.81	429.72	-
Signs and advertising specialties	3993	10.98	11.31	11.27	11.28	-	440.30	460.32	465.45	463.61	-
Nondurable goods		12.00	11.95	12.27	12.38	12.35	482.40	488.76	499.39	500.15	506.35
Food and kindred products	20	11.25	11.16	11.45	11.53	11.51	460.13	463.14	467.16	475.04	479.97
Meat products	201	9.14	9.14	9.26	9.41	-	369.26	371.06	369.47	377.34	-
Meat packing plants	2011	9.80	9.79	9.89	10.08	-	410.62	414.12	398.57	413.28	-
Sausages and other prepared meats	2013	10.53	10.40	10.66	10.97	-	448.58	435.76	438.13	458.55	-
Poultry slaughtering and processing	2015	8.20	8.24	8.38	8.44	-	318.16	322.18	329.33	329.32	-
Dairy products	202	12.86	12.69	13.19	13.19	-	543.98	538.80	561.89	564.53	-
Cheese, natural and processed	2022	11.63	11.66	12.20	12.12	-	480.32	480.39	514.84	510.25	-
Fluid milk	2026	13.70	13.58	13.93	13.90	-	578.14	571.72	580.69	587.97	-
Preserved fruits and vegetables	203	10.62	10.69	10.86	11.10	-	420.90	447.91	443.90	453.99	-
Canned specialties	2032	14.14	13.73	14.16	14.60	-	591.05	591.76	577.73	595.68	-
Canned fruits and vegetables	2033	11.54	11.18	12.01	12.07	-	451.21	490.80	478.00	505.73	-
Frozen fruits and vegetables	2037	10.11	9.93	10.13	10.26	-	375.11	376.35	407.23	399.11	-
Grain mill products	204	13.95	13.94	14.10	14.32	-	638.91	631.48	633.09	654.42	-
Flour and other grain mill products	2041	11.90	12.06	12.50	12.52	-	539.07	557.17	561.25	583.43	-
Prepared feeds, nec	2048	11.01	11.09	11.19	11.25	-	493.25	486.85	492.36	490.50	-

See footnotes at end of table.

EMPLOYMENT AND EARNINGS

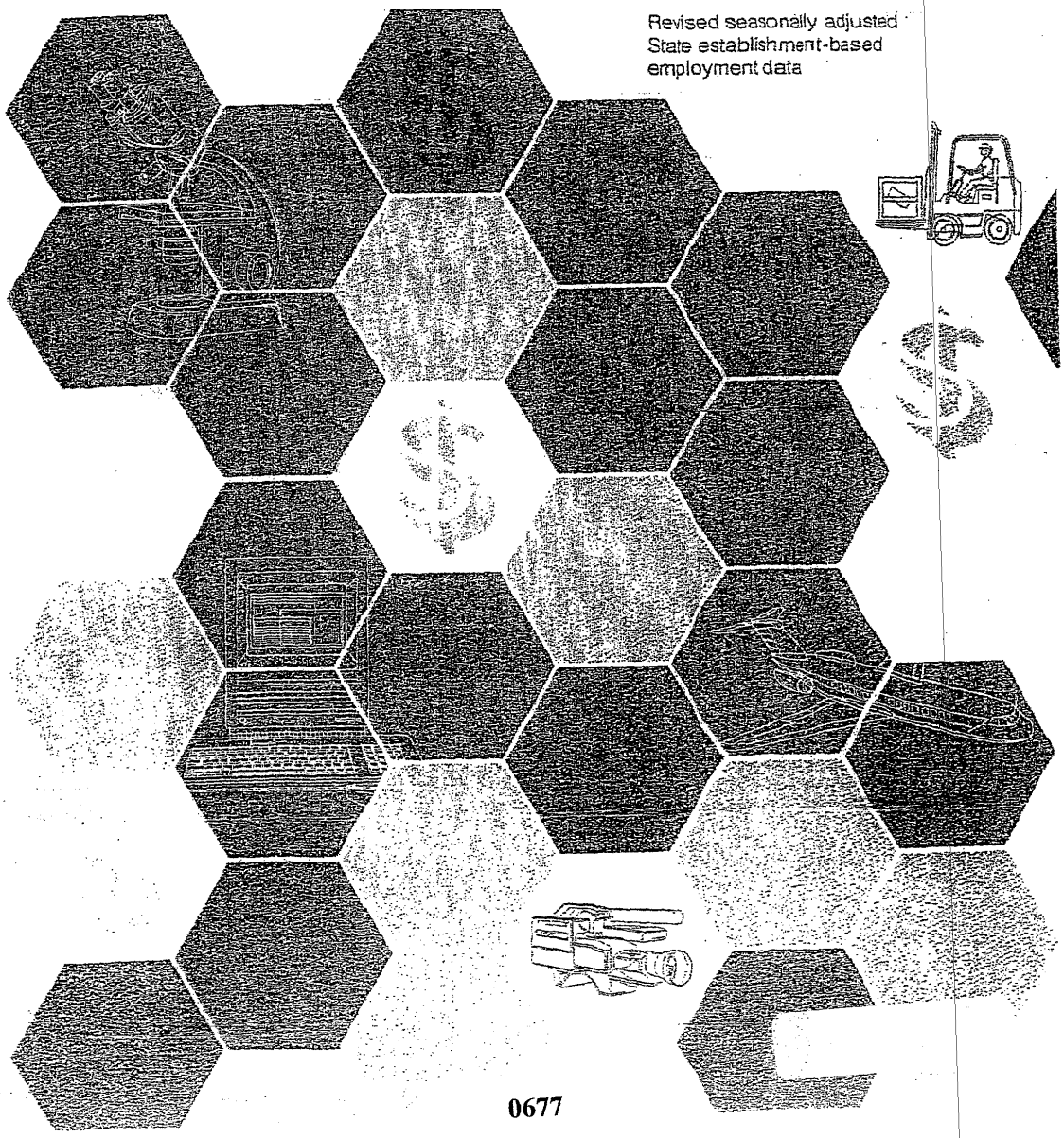
U.S. Department of Labor
Bureau of Labor Statistics
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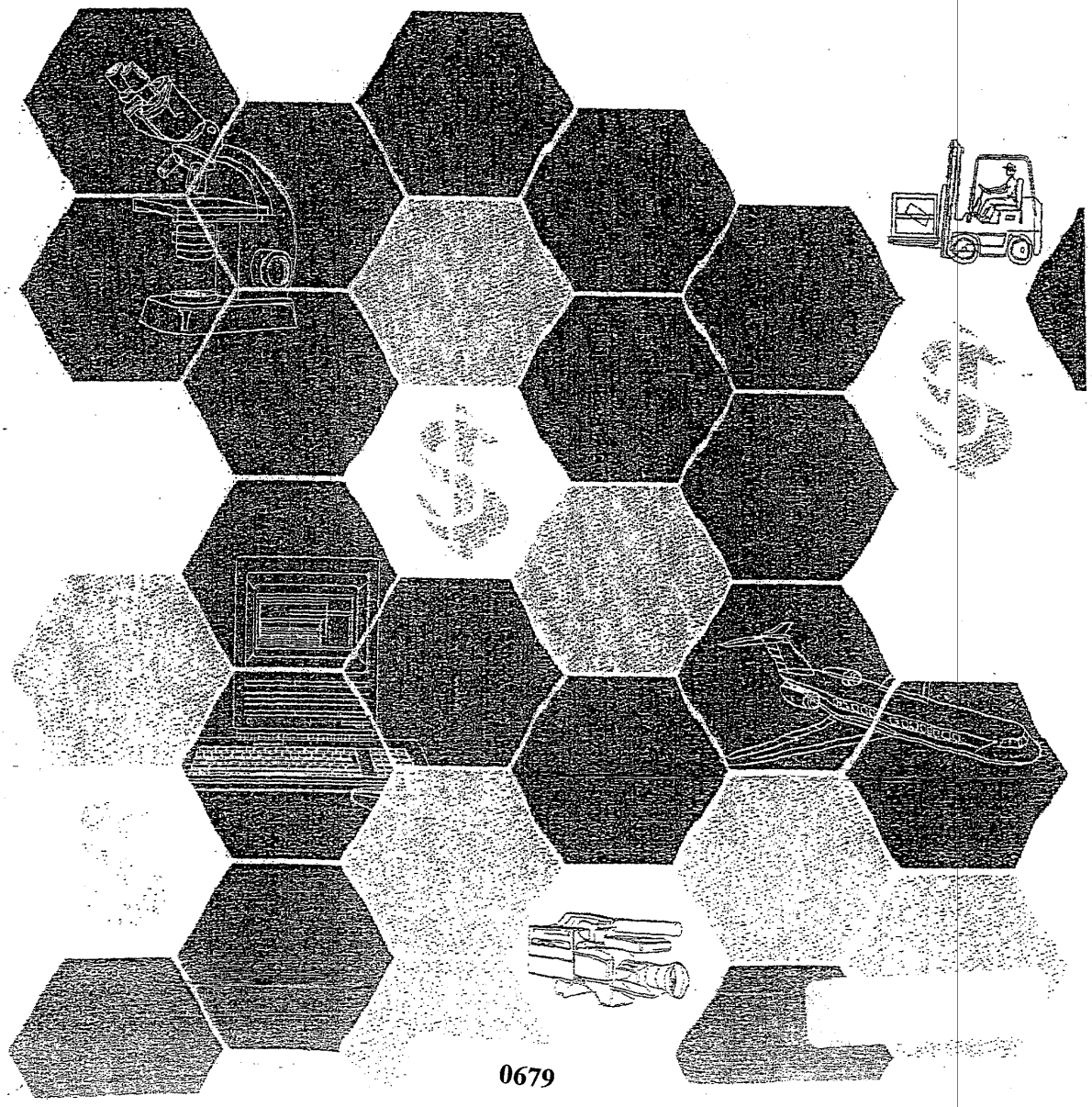
B-15. Average hours and earnings of production or nonsupervisory workers on private nonfarm payrolls by detailed industry—Continued

Industry	1987 SIC Code	Average hourly earnings					Average weekly earnings				
		Avg. 1996	Jan. 1996	Dec. 1996	Jan. 1997[p]	Feb. 1997[p]	Avg. 1996	Jan. 1996	Dec. 1996	Jan. 1997[p]	Feb. 1997[p]
Durable goods—Continued											
Transportation equipment	37	$17.24	$16.92	$17.61	$17.47	$17.44	$756.56	$715.72	$801.25	$780.91	$772.59
Motor vehicles and equipment	371	17.83	17.48	18.20	18.05	18.00	800.57	758.63	846.30	823.54	813.60
Motor vehicles and car bodies	3711	21.05	20.47	21.54	21.28	-	954.02	884.30	1,014.53	957.33	-
Truck and bus bodies	3713	14.86	15.10	15.63	16.10	-	644.74	629.67	698.66	713.23	-
Motor vehicle parts and accessories	3714	16.51	16.41	16.72	16.68	-	746.25	720.40	784.17	765.61	-
Truck trailers	3715	10.90	10.69	11.19	11.04	-	441.45	437.22	464.39	437.18	-
Aircraft and parts	372	18.54	18.32	18.60	18.73	-	809.93	747.46	857.26	824.12	-
Aircraft	3721	(†)	(†)	(†)	(†)	-	-	-	-	-	-
Aircraft engines and engine parts	3724	$18.05	$17.61	$18.50	$18.42	-	$808.64	$736.10	$869.50	$799.43	-
Aircraft parts and equipment, nec	3728	16.37	15.99	16.57	16.55	-	718.64	658.79	772.16	741.44	-
Ship and boat building and repairing	373	12.80	12.62	12.67	12.67	-	533.76	510.24	548.26	550.84	-
Ship building and repairing	3731	14.19	14.28	14.08	14.06	-	610.17	575.48	623.74	635.92	-
Boat building and repairing	3732	10.47	10.30	10.80	10.73	-	415.56	399.64	430.92	418.47	-
Railroad equipment	374	16.82	15.37	16.92	16.78	-	724.61	668.60	742.79	729.93	-
Guided missiles, space vehicles, and parts	376	18.55	18.01	19.24	19.38	-	792.51	752.82	850.41	836.23	-
Guided missiles and space vehicles	3761	(†)	(†)	(†)	(†)	-	-	-	-	-	-
Misc. transportation equipment	379	$11.44	$11.43	$11.57	$11.31	-	$445.02	$448.06	$459.33	$444.48	-
Travel trailers and campers	3792	11.44	11.35	11.27	11.00	-	433.56	430.17	424.88	394.90	-
Instruments and related products	38	13.14	12.99	13.39	13.38	13.37	547.94	524.80	577.11	556.61	561.54
Search and navigation equipment	381	16.73	16.65	17.10	16.66	-	717.72	680.99	764.37	730.04	-
Measuring and controlling devices	382	13.07	12.86	13.36	13.38	-	548.94	525.97	583.83	556.61	-
Environmental controls	3822	11.76	11.60	11.75	11.83	-	493.92	483.72	514.65	493.85	-
Process control instruments	3823	12.68	12.51	13.01	13.04	-	537.63	516.41	568.54	543.77	-
Instruments to measure electricity	3825	14.85	14.53	15.25	15.32	-	615.28	586.47	661.85	632.72	-
Medical instruments and supplies	384	12.07	11.91	12.33	12.32	-	494.87	471.94	520.33	507.58	-
Surgical and medical instruments	3841	11.57	11.67	11.64	11.70	-	472.06	483.96	488.88	481.40	-
Surgical appliances and supplies	3842	11.16	10.95	11.48	11.40	-	454.21	428.15	485.60	469.42	-
Ophthalmic goods	385	9.79	9.53	10.05	10.15	-	391.60	361.19	418.08	407.02	-
Photographic equipment and supplies	386	15.81	15.84	15.55	15.94	-	681.41	674.06	692.23	688.61	-
Watches, clocks, watchcases, and parts	387	9.54	9.52	9.44	9.52	-	387.32	364.52	396.48	389.85	-
Miscellaneous manufacturing industries	39	10.40	10.32	10.60	10.60	10.60	412.88	388.03	435.66	420.82	426.12
Jewelry, silverware, and plated ware	391	10.70	10.42	11.00	10.91	-	416.23	371.99	443.30	420.04	-
Jewelry, precious metal	3911	10.80	10.48	11.17	11.03	-	411.48	362.61	447.92	416.56	-
Musical instruments	393	10.60	10.88	10.60	10.67	-	432.48	436.29	443.08	438.54	-
Toys and sporting goods	394	9.85	9.60	9.86	10.02	-	391.05	354.56	412.34	396.79	-
Dolls, games, toys, and children's vehicles	3942,4	9.30	9.16	9.31	9.42	-	355.26	328.64	363.09	348.54	-
Sporting and athletic goods, nec	3949	10.12	10.10	10.26	10.30	-	409.85	382.79	438.10	421.27	-
Pens, pencils, office, and art supplies	395	10.99	10.76	10.92	11.02	-	432.33	401.02	455.48	440.80	-
Costume jewelry and notions	396	9.06	9.10	9.07	9.25	-	356.06	322.14	379.13	367.23	-
Costume jewelry	3961	7.93	8.03	7.89	7.92	-	310.06	286.67	330.58	320.76	-
Miscellaneous manufactures	399	10.82	10.72	11.14	11.04	-	431.72	412.72	455.63	441.60	-
Signs and advertising specialties	3993	11.24	11.18	11.52	11.27	-	456.34	438.26	481.54	459.82	-
Nondurable goods		11.97	11.92	12.24	12.21	12.20	484.79	457.73	509.18	494.51	492.88
Food and kindred products	20	11.22	11.09	11.47	11.41	11.33	460.02	435.84	481.74	455.53	463.40
Meat products	201	9.13	9.03	9.30	9.32	-	367.03	351.27	378.51	376.53	-
Meat packing plants	2011	9.82	9.67	10.07	10.02	-	415.89	406.14	433.01	423.85	-
Sausages and other prepared meats	2013	10.47	10.45	10.64	10.69	-	438.69	428.45	444.75	434.01	-
Poultry slaughtering and processing	2015	8.20	8.09	8.30	8.39	-	314.88	295.29	324.53	328.99	-
Dairy products	202	12.80	12.60	13.00	13.04	-	536.32	521.64	543.40	542.46	-
Cheese, natural and processed	2022	11.53	11.35	11.64	11.84	-	472.73	460.81	477.24	483.07	-
Fluid milk	2026	13.50	13.34	13.65	13.67	-	569.70	564.28	584.22	580.98	-
Preserved fruits and vegetables	203	10.72	10.88	11.02	11.03	-	439.52	437.38	468.35	454.44	-
Canned specialties	2032	14.07	14.32	14.43	14.63	-	605.01	641.54	649.35	645.16	-
Canned fruits and vegetables	2033	11.27	11.75	11.97	11.99	-	466.45	442.98	495.56	480.80	-
Frozen fruits and vegetables	2037	10.10	10.09	10.22	10.20	-	394.91	398.56	413.91	417.19	-
Grain mill products	204	13.93	13.54	14.49	14.19	-	631.03	584.93	656.83	648.48	-
Flour and other grain mill products	2041	12.12	12.07	12.43	12.41	-	546.61	514.18	576.75	544.80	-
Prepared feeds, nec	2048	11.09	11.12	11.24	11.20	-	490.18	492.61	504.58	504.00	-

See footnotes at end of table.

EMPLOYMENT AND EARNINGS

U.S. Department of Labor
Bureau of Labor Statistics
September 1996



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B-15. Average hours and earnings of production or nonsupervisory workers[1] on private nonfarm payrolls by detailed industry—Continued

Industry	1987 SIC Code	Average hourly earnings					Average weekly earnings				
		July 1995	Aug. 1995	June 1996	July 1996[p]	Aug. 1996[p]	July 1995	Aug. 1995	June 1996	July 1996[p]	Aug. 1996[p]
Durable goods—Continued											
Transportation equipment	37	$16.73	$16.57	$17.26	$17.33	$17.61	$704.33	$725.15	$768.07	$739.99	$778.36
Motor vehicles and equipment	371	17.30	17.20	17.91	18.00	18.37	736.98	761.96	818.49	779.40	830.32
Motor vehicles and car bodies	3711	20.56	20.27	21.09	21.41	-	916.99	906.07	965.92	948.46	-
Truck and bus bodies	3713	13.89	14.30	14.85	14.63	-	606.99	627.77	674.06	629.09	-
Motor vehicle parts and accessories	3714	15.99	16.10	16.61	16.59	-	681.99	713.23	769.04	711.71	-
Truck trailers	3715	10.65	10.57	10.94	10.87	-	436.65	451.34	449.63	447.84	-
Aircraft and parts	372	[1]	[1]	[1]	[1]	-	[1]	[1]	[1]	[1]	-
Aircraft	3721	[1]	[1]	[1]	[1]	-	-	-	-	-	-
Aircraft engines and engine parts	3724	[1]	[1]	[1]	[1]	-	[1]	[1]	[1]	[1]	-
Aircraft parts and equipment, nec	3728	$15.97	$15.93	$16.32	$16.46	-	$664.35	$683.40	$719.71	$711.07	-
Ship and boat building and repairing	373	12.78	12.70	12.77	12.79	-	529.09	535.94	537.62	521.83	-
Ship building and repairing	3731	14.10	14.06	14.17	14.14	-	606.30	610.20	617.81	598.12	-
Boat building and repairing	3732	10.11	10.15	10.42	10.50	-	389.24	409.05	415.76	403.20	-
Railroad equipment	374	14.97	15.08	16.31	16.55	-	651.20	680.11	725.80	738.13	-
Guided missiles, space vehicles, and parts	376	17.64	17.84	18.29	18.29	-	763.81	770.69	753.55	775.50	-
Guided missiles and space vehicles	3761	[1]	[1]	[1]	[1]	-	-	-	-	-	-
Misc. transportation equipment	379	$10.67	$11.10	$11.34	$11.24	-	$411.97	$441.78	$441.13	$428.24	-
Travel trailers and campers	3792	10.55	11.15	11.35	11.04	-	385.08	435.97	427.90	410.69	-
Instruments and related products	38	12.76	12.70	13.09	13.20	13.22	521.86	523.24	549.78	541.20	549.95
Search and navigation equipment	381	16.43	16.40	16.77	16.90	-	674.03	674.04	716.08	721.63	-
Measuring and controlling devices	382	12.61	12.60	13.05	13.06	-	519.53	524.16	553.32	534.15	-
Environmental controls	3822	11.39	11.36	11.89	11.89	-	446.49	464.62	493.44	474.41	-
Process control instruments	3823	11.97	12.09	12.61	12.63	-	503.94	504.15	539.71	530.46	-
Instruments to measure electricity	3825	14.21	14.18	14.76	14.86	-	588.29	591.31	632.56	595.89	-
Medical instruments and supplies	384	11.61	11.50	11.95	12.12	-	469.04	470.35	497.12	488.44	-
Surgical and medical instruments	3841	11.08	11.03	11.49	11.42	-	455.39	457.75	474.54	453.37	-
Surgical appliances and supplies	3842	10.95	10.77	10.98	11.28	-	429.24	432.95	452.38	454.58	-
Ophthalmic goods	385	9.58	9.66	9.83	9.87	-	373.62	376.74	390.25	390.85	-
Photographic equipment and supplies	386	15.47	15.51	15.83	15.88	-	662.12	659.18	680.69	674.90	-
Watches, clocks, watchcases, and parts	387	8.84	8.76	9.47	9.78	-	340.34	353.03	385.43	393.16	-
Miscellaneous manufacturing industries	39	10.07	9.99	10.35	10.40	10.45	392.73	398.60	410.90	404.56	418.00
Jewelry, silverware, and plated ware	391	10.22	10.19	10.73	10.61	-	386.32	400.47	416.32	407.42	-
Jewelry, precious metal	3911	10.17	10.22	10.65	10.70	-	382.39	397.56	407.96	402.32	-
Musical instruments	393	10.44	10.22	10.41	10.42	-	396.72	431.28	434.10	399.09	-
Toys and sporting goods	394	9.44	9.47	9.82	9.93	-	370.05	377.85	388.87	384.29	-
Dolls, games, toys, and children's vehicles	3942,4	8.95	9.06	9.28	9.29	-	330.26	352.30	351.71	344.66	-
Sporting and athletic goods, nec	3949	9.66	9.67	10.07	10.24	-	390.25	391.64	407.84	404.48	-
Pens, pencils, office, and art supplies	395	11.14	10.96	10.96	11.03	-	448.94	431.82	438.40	435.69	-
Costume jewelry and notions	396	9.02	8.50	9.08	9.19	-	328.33	328.95	356.84	355.85	-
Costume jewelry	3961	7.95	7.32	7.91	8.03	-	279.05	279.62	304.54	301.13	-
Miscellaneous manufactures	399	10.40	10.35	10.71	10.73	-	408.72	416.07	427.33	419.54	-
Signs and advertising specialties	3993	10.72	10.70	11.04	11.01	-	437.35	437.63	446.02	440.40	-
Nondurable goods		11.66	11.56	11.93	12.02	11.97	467.57	469.34	486.74	484.41	489.57
Food and kindred products	20	10.93	10.90	11.24	11.27	11.17	450.32	454.53	459.72	460.94	464.67
Meat products	201	8.98	9.02	9.09	9.14	-	367.28	363.51	363.60	369.26	-
Meat packing plants	2011	9.64	9.62	9.75	9.80	-	409.70	411.74	406.58	409.64	-
Sausages and other prepared meats	2013	10.40	10.52	10.42	10.53	-	434.72	439.74	430.35	447.53	-
Poultry slaughtering and processing	2015	8.06	8.09	8.19	8.21	-	319.18	309.45	316.95	319.37	-
Dairy products	202	12.28	12.35	12.78	12.85	-	531.72	527.35	539.32	543.56	-
Cheese, natural and processed	2022	11.15	11.19	11.53	11.61	-	480.57	462.15	489.27	475.33	-
Fluid milk	2026	13.00	13.01	13.46	13.63	-	553.80	551.62	566.67	576.55	-
Preserved fruits and vegetables	203	10.45	10.33	10.61	10.84	-	410.69	442.12	427.55	426.01	-
Canned specialties	2032	13.85	13.72	14.04	14.12	-	562.31	580.36	579.85	614.22	-
Canned fruits and vegetables	2033	11.03	10.82	11.33	11.59	-	435.69	484.74	452.07	457.61	-
Frozen fruits and vegetables	2037	9.51	9.25	9.97	10.12	-	377.55	386.65	373.88	376.46	-
Grain mill products	204	13.79	13.50	13.92	13.82	-	626.55	606.15	620.83	631.57	-
Flour and other grain mill products	2041	11.78	11.86	11.57	11.97	-	516.32	553.66	528.22	542.24	-
Prepared feeds, nec	2048	10.97	10.80	10.92	11.03	-	492.55	487.54	482.66	494.14	-

See footnotes at end of table.

EMPLOYMENT AND EARNINGS

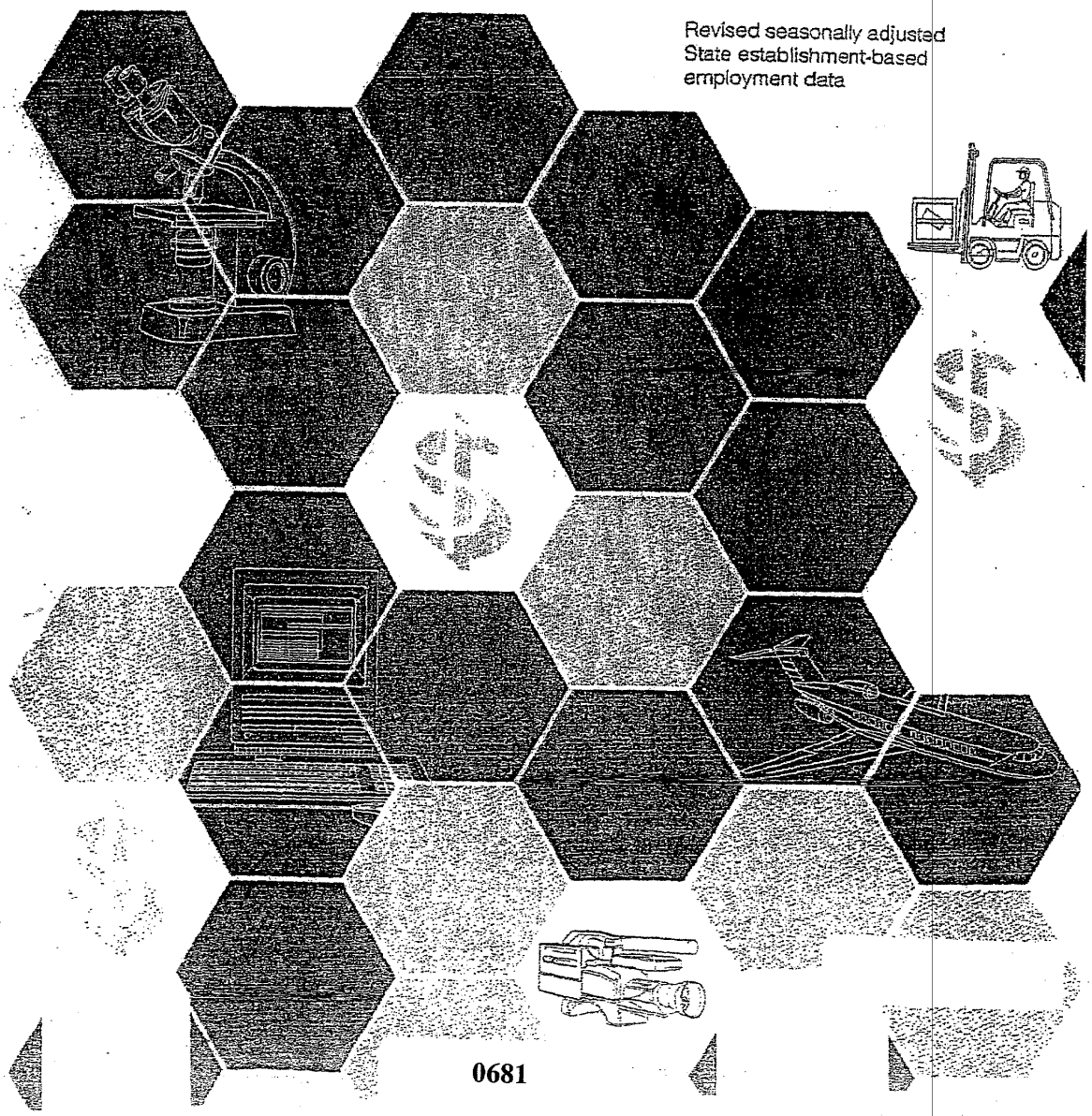
U.S. Department of Labor
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In this issue:

Revised seasonally adjusted national and regional household data

1995 annual averages for national establishment data

Revised seasonally adjusted State establishment-based employment data



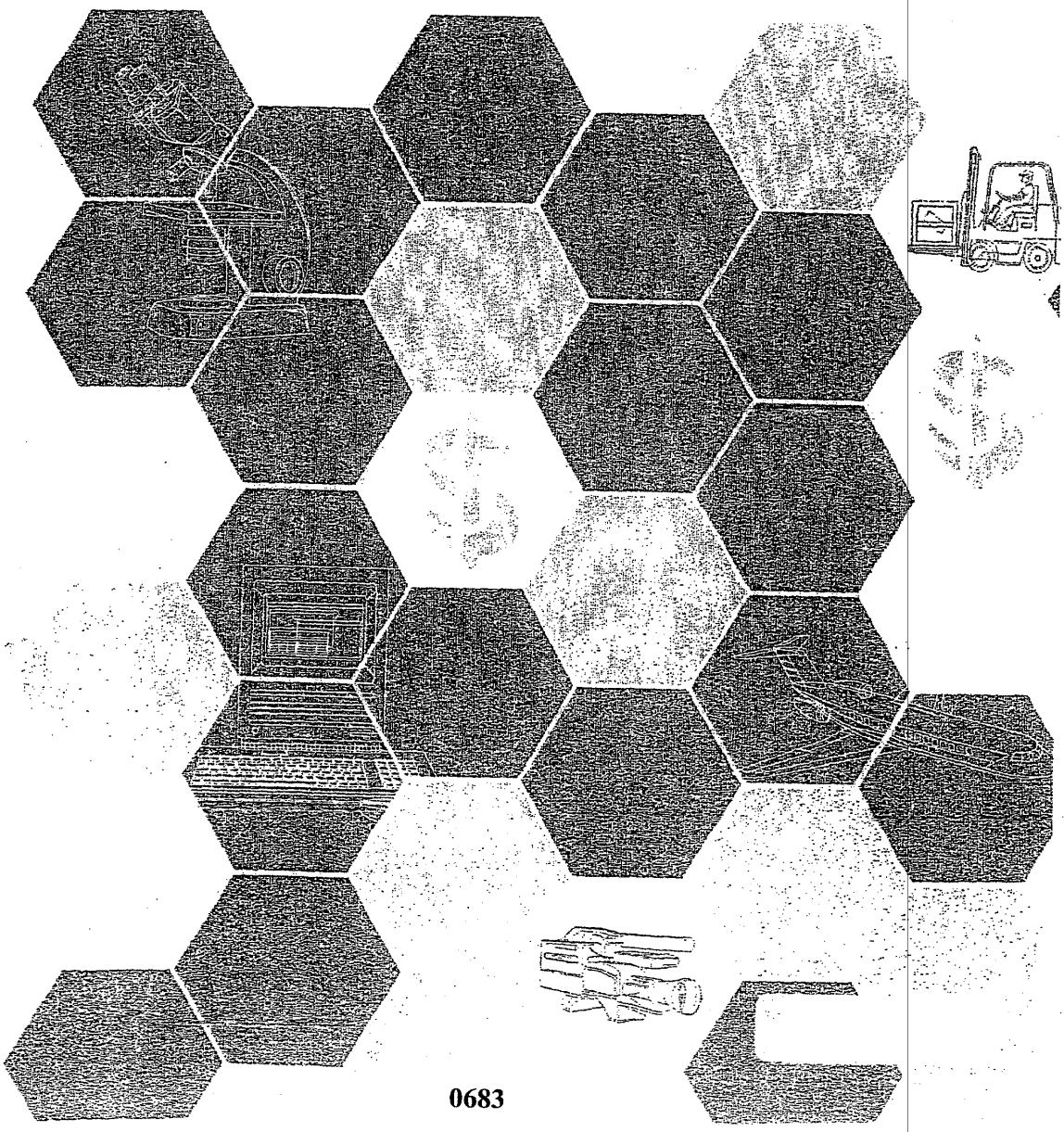
B-15. Average hours and earnings of production or nonsupervisory workers[1] on private nonfarm payrolls by detailed industry—Continued

Industry	1987 SIC Code	Average hourly earnings					Average weekly earnings				
		Avg. 1995	Jan. 1995	Dec. 1995	Jan. 1996[p]	Feb. 1996[p]	Avg. 1995	Jan. 1995	Dec. 1995	Jan. 1996[p]	Feb. 1996[p]
Durable goods—Continued											
Transportation equipment	37	$16.66	$16.60	$16.80	$16.63	$16.92	$728.04	$735.38	$735.64	$713.59	$736.02
Motor vehicles and equipment	371	17.25	17.12	17.48	17.34	17.45	772.80	780.67	793.59	750.82	769.55
Motor vehicles and car bodies	3711	20.57	20.63	20.58	20.45	-	940.05	938.67	938.45	881.40	-
Truck and bus bodies	3713	14.43	14.44	14.77	15.10	-	636.36	638.25	660.22	631.18	-
Motor vehicle parts and accessories	3714	15.89	15.84	16.16	16.13	-	708.69	730.22	740.13	706.49	-
Truck trailers	3715	10.45	10.09	10.65	10.68	-	442.04	443.96	435.59	436.81	-
Aircraft and parts	372	18.02	18.14	17.79	18.41	-	756.84	769.14	697.37	767.70	-
Aircraft	3721	(*)	(*)	(*)	(*)	-	-	-	-	-	-
Aircraft engines and engine parts	3724	$17.13	$17.24	$17.30	$17.31	-	$762.29	$751.66	$807.91	$727.02	-
Aircraft parts and equipment, nec	3728	15.98	16.10	15.61	16.22	-	679.15	695.52	649.38	682.86	-
Ship and boat building and repairing	373	12.67	12.59	12.83	12.86	-	525.81	519.97	546.56	518.26	-
Ship building and repairing	3731	14.17	14.22	14.30	14.36	-	602.23	597.24	620.62	587.32	-
Boat building and repairing	3732	10.04	9.70	10.32	10.31	-	401.60	390.91	426.22	404.15	-
Railroad equipment	374	15.07	15.26	15.17	15.23	-	672.12	697.22	679.62	657.94	-
Guided missiles, space vehicles, and parts	376	17.77	17.60	18.09	18.03	-	765.89	760.32	794.15	760.95	-
Guided missiles and space vehicles	3761	(*)	(*)	(*)	(*)	-	-	-	-	-	-
Misc. transportation equipment	379	$11.09	$11.22	$11.32	$11.43	-	$433.62	$440.95	$448.27	$446.91	-
Travel trailers and campers	3792	10.96	10.90	11.26	11.37	-	416.14	415.29	428.64	429.79	-
Instruments and related products	38	12.72	12.54	12.91	13.00	12.96	526.61	525.43	543.51	525.20	548.02
Search and navigation equipment	381	16.50	16.16	16.77	16.72	-	684.75	685.18	712.73	687.19	-
Measuring and controlling devices	382	12.54	12.31	12.75	12.81	-	525.43	519.46	549.53	525.21	-
Environmental controls	3822	11.21	10.85	11.45	11.58	-	465.22	463.30	494.64	482.89	-
Process control instruments	3823	12.07	11.90	12.25	12.43	-	511.77	504.56	548.80	514.60	-
Instruments to measure electricity	3825	14.09	13.84	14.26	14.34	-	588.96	579.90	603.20	576.47	-
Medical instruments and supplies	384	11.57	11.44	11.82	11.90	-	474.37	477.05	488.17	468.86	-
Surgical and medical instruments	3841	11.15	11.17	11.41	11.70	-	461.61	472.49	471.23	452.79	-
Surgical appliances and supplies	3842	10.85	10.73	11.00	10.97	-	435.09	436.86	445.50	427.83	-
Ophthalmic goods	385	9.59	9.47	9.43	9.57	-	370.17	364.60	374.37	361.75	-
Photographic equipment and supplies	386	15.37	15.09	15.51	15.62	-	660.91	645.85	662.28	674.78	-
Watches, clocks, watchcases, and parts	387	8.90	8.82	9.41	9.51	-	355.11	353.68	396.16	361.38	-
Miscellaneous manufacturing industries	39	10.02	9.98	10.24	10.27	10.20	398.80	397.20	409.60	384.10	400.86
Jewelry, silverware, and plated ware	391	10.22	10.10	10.49	10.36	-	395.51	377.74	410.16	371.92	-
Jewelry, precious metal	3911	10.20	9.98	10.60	10.40	-	389.64	367.26	407.04	362.96	-
Musical instruments	393	10.18	9.68	10.56	10.86	-	424.51	405.59	451.97	432.23	-
Toys and sporting goods	394	9.43	9.35	9.57	9.77	-	376.26	375.87	379.02	359.54	-
Dolls, games, toys, and children's vehicles	3942,4	9.22	9.33	9.36	9.22	-	357.74	361.07	358.49	329.15	-
Sporting and athletic goods, nec	3949	9.54	9.36	9.69	10.05	-	387.32	383.76	389.14	375.87	-
Pens, pencils, office, and art supplies	395	10.98	11.07	10.98	10.74	-	441.40	459.41	433.71	399.53	-
Costume jewelry and notions	396	8.65	8.70	8.98	9.05	-	333.89	327.99	360.10	324.90	-
Costume jewelry	3961	7.43	7.52	7.85	7.94	-	282.34	275.23	310.55	285.05	-
Miscellaneous manufactures	399	10.43	10.46	10.71	10.63	-	417.20	416.40	434.83	409.26	-
Signs and advertising specialties	3993	10.90	10.88	11.24	11.13	-	447.99	446.26	454.10	436.30	-
Nondurable goods		11.60	11.44	11.86	11.95	11.83	469.80	465.61	483.89	458.85	474.38
Food and kindred products	20	10.94	10.85	11.18	11.10	11.04	449.63	445.94	461.73	435.12	444.91
Meat products	201	8.97	8.88	9.04	9.05	-	364.18	366.74	364.31	352.05	-
Meat packing plants	2011	9.59	9.58	9.62	9.66	-	415.25	427.27	413.66	405.72	-
Sausages and other prepared meats	2013	10.41	10.24	10.52	10.46	-	433.06	423.94	436.58	429.91	-
Poultry slaughtering and processing	2015	8.03	7.93	8.12	8.11	-	311.56	311.55	311.81	295.20	-
Dairy products	202	12.34	12.28	12.55	12.54	-	523.22	521.90	527.10	520.41	-
Cheese, natural and processed	2022	11.16	11.03	11.29	11.35	-	460.62	455.54	462.59	465.35	-
Fluid milk	2026	12.97	12.84	13.19	13.23	-	552.52	552.12	561.89	559.63	-
Preserved fruits and vegetables	203	10.49	10.54	10.85	10.86	-	423.80	425.82	445.94	435.49	-
Canned specialties	2032	13.91	14.00	14.22	14.32	-	584.22	604.80	631.37	641.54	-
Canned fruits and vegetables	2033	11.00	11.11	11.57	11.80	-	445.50	431.07	453.54	444.66	-
Frozen fruits and vegetables	2037	9.62	9.69	10.17	10.01	-	384.80	390.51	396.63	393.39	-
Grain mill products	204	13.56	13.44	14.01	13.50	-	611.56	612.66	636.05	581.85	-
Flour and other grain mill products	2041	11.70	11.23	12.35	12.06	-	527.57	497.49	572.27	514.61	-
Prepared feeds, nec	2048	10.94	10.70	11.06	11.11	-	482.45	455.76	481.11	482.17	-

See footnotes at end of table.

EMPLOYMENT AND EARNINGS

U.S. Department of Labor
Bureau of Labor Statistics
September 1995



B-15. Average hours and earnings of production or nonsupervisory workers' on private nonfarm payrolls by detailed industry—Continued

Industry	1987 SIC Code	Average hourly earnings					Average weekly earnings				
		July 1994	Aug. 1994	June 1995	July 1995[p]	Aug. 1995[p]	July 1994	Aug. 1994	June 1995	July 1995[p]	Aug. 1995[p]
Durable goods—Continued											
Transportation equipment	37	$16.41	$16.44	$16.63	$16.63	$16.56	$697.43	$725.00	$725.39	$700.12	$723.67
Motor vehicles and equipment	371	16.89	16.92	17.17	17.19	17.05	728.65	771.55	769.22	732.29	755.32
Motor vehicles and car bodies	3711	20.88	20.60	20.43	20.61	–	937.51	962.02	927.52	919.21	–
Truck and bus bodies	3713	14.64	14.87	14.13	13.90	–	630.98	648.33	654.22	607.43	–
Motor vehicle parts and accessories	3714	15.22	15.43	15.85	15.67	–	642.28	698.98	708.69	648.74	–
Truck trailers	3715	9.69	9.92	10.43	10.88	–	430.22	430.53	458.92	437.86	–
Aircraft and parts	372	17.97	18.01	18.07	18.14	–	747.55	752.82	771.59	736.44	–
Aircraft	3721	[f]	[f]	[f]	[f]	–	–	–	–	–	–
Aircraft engines and engine parts	3724	$17.44	$17.25	$16.98	$17.26	–	$777.82	$736.58	$748.82	$774.14	–
Aircraft parts and equipment, nec	3728	16.18	16.00	16.07	16.05	–	667.65	666.40	693.05	667.86	–
Ship and boat building and repairing	373	12.56	12.30	12.64	12.76	–	512.45	504.30	525.82	525.71	–
Ship building and repairing	3731	13.92	13.73	14.11	14.13	–	580.46	568.80	602.50	604.76	–
Boat building and repairing	3732	10.02	9.84	10.04	10.14	–	392.78	396.55	399.59	390.39	–
Railroad equipment	374	15.47	15.87	14.97	14.94	–	666.87	742.72	658.68	652.88	–
Guided missiles, space vehicles, and parts	376	17.57	17.63	17.83	17.69	–	746.73	736.93	768.47	765.98	–
Guided missiles and space vehicles	3761	[f]	[f]	[f]	[f]	–	–	–	–	–	–
Misc. transportation equipment	379	$10.66	$10.66	$10.85	$10.86	–	$421.07	$418.94	$423.54	$408.34	–
Travel trailers and campers	3792	10.67	10.68	10.56	10.59	–	421.47	412.25	399.17	385.48	–
Instruments and related products	38	12.46	12.48	12.69	12.78	12.75	515.84	517.92	524.10	521.42	521.48
Search and navigation equipment	381	16.64	16.71	16.49	16.61	–	677.25	670.07	675.27	677.69	–
Measuring and controlling devices	382	12.17	12.25	12.51	12.60	–	512.36	519.40	521.67	520.38	–
Environmental controls	3822	10.86	10.80	11.37	11.37	–	451.98	463.32	461.52	447.98	–
Process control instruments	3823	11.75	11.71	11.90	11.96	–	504.08	505.87	508.13	503.52	–
Instruments to measure electricity	3825	13.49	13.64	13.96	14.25	–	554.44	574.24	560.74	592.80	–
Medical instruments and supplies	384	11.20	11.17	11.50	11.60	–	458.08	459.09	471.50	466.32	–
Surgical and medical instruments	3841	10.82	10.72	11.03	11.09	–	439.29	439.52	459.95	453.56	–
Surgical appliances and supplies	3842	10.58	10.60	10.88	11.00	–	432.72	436.72	434.11	431.20	–
Ophthalmic goods	385	9.38	9.42	9.70	9.59	–	383.01	370.21	379.27	371.13	–
Photographic equipment and supplies	386	15.12	15.08	15.41	15.39	–	656.21	645.42	662.63	657.15	–
Watches, clocks, watchcases, and parts	387	8.64	8.59	8.81	8.80	–	356.83	369.37	355.04	339.07	–
Miscellaneous manufacturing industries	39	9.61	9.63	9.95	10.02	9.97	379.60	384.24	397.01	393.76	396.81
Jewelry, silverware, and plated ware	391	9.84	9.91	10.21	10.21	–	372.94	379.55	395.13	384.92	–
Jewelry, precious metal	3911	9.77	9.83	10.21	10.15	–	366.38	376.49	391.04	379.61	–
Musical instruments	393	9.61	9.43	10.11	10.28	–	361.34	360.03	424.62	382.42	–
Toys and sporting goods	394	9.05	9.18	9.36	9.36	–	361.10	368.12	371.59	365.04	–
Dolls, games, toys, and children's vehicles	3942,4	8.79	8.83	9.14	9.03	–	334.02	347.02	343.66	331.40	–
Sporting and athletic goods, nec	3949	9.18	9.37	9.47	9.52	–	374.54	380.42	387.32	383.66	–
Pens, pencils, office, and art supplies	395	10.72	10.59	11.03	11.13	–	436.30	416.19	443.41	448.54	–
Costume jewelry and notions	396	8.26	8.26	8.52	9.08	–	317.95	324.58	339.95	329.60	–
Costume jewelry	3961	7.14	7.07	7.13	8.01	–	273.46	272.20	290.19	279.55	–
Miscellaneous manufactures	399	9.98	9.99	10.32	10.36	–	398.20	404.60	414.86	407.15	–
Signs and advertising specialties	3993	10.14	10.20	10.72	10.76	–	419.80	422.28	447.02	441.16	–
Nondurable goods		11.28	11.20	11.55	11.67	11.60	460.22	460.32	467.78	467.97	470.96
Food and kindred products	20	10.68	10.59	10.92	10.93	10.90	444.29	442.66	449.90	450.32	454.53
Meat products	201	8.76	8.72	8.98	8.99	–	362.66	361.88	368.26	367.69	–
Meat packing plants	2011	9.50	9.45	9.55	9.64	–	408.50	402.57	412.56	410.65	–
Sausages and other prepared meats	2013	10.15	10.09	10.39	10.39	–	439.50	433.87	434.30	434.30	–
Poultry slaughtering and processing	2015	7.76	7.76	8.07	8.06	–	308.07	312.73	320.38	316.37	–
Dairy products	202	11.99	12.05	12.19	12.28	–	511.55	502.49	522.95	535.41	–
Cheese, natural and processed	2022	10.73	10.83	11.09	11.15	–	444.22	437.53	458.02	460.57	–
Fluid milk	2026	12.74	12.72	12.88	12.95	–	544.00	536.78	547.40	555.98	–
Preserved fruits and vegetables	203	10.16	10.00	10.43	10.45	–	416.56	424.00	413.03	406.60	–
Canned specialties	2032	13.53	13.35	14.25	13.85	–	569.61	571.35	624.15	582.31	–
Canned fruits and vegetables	2033	10.56	10.29	11.30	11.02	–	439.30	451.73	427.14	431.99	–
Frozen fruits and vegetables	2037	8.96	8.74	9.28	9.50	–	366.36	352.22	372.13	374.30	–
Grain mill products	204	13.19	13.18	13.59	13.73	–	593.55	598.37	610.19	619.22	–
Flour and other grain mill products	2041	10.93	11.13	11.54	11.75	–	480.76	512.04	519.30	517.00	–
Prepared feeds, nec	2048	10.56	10.52	11.01	10.99	–	470.31	468.14	487.74	493.45	–

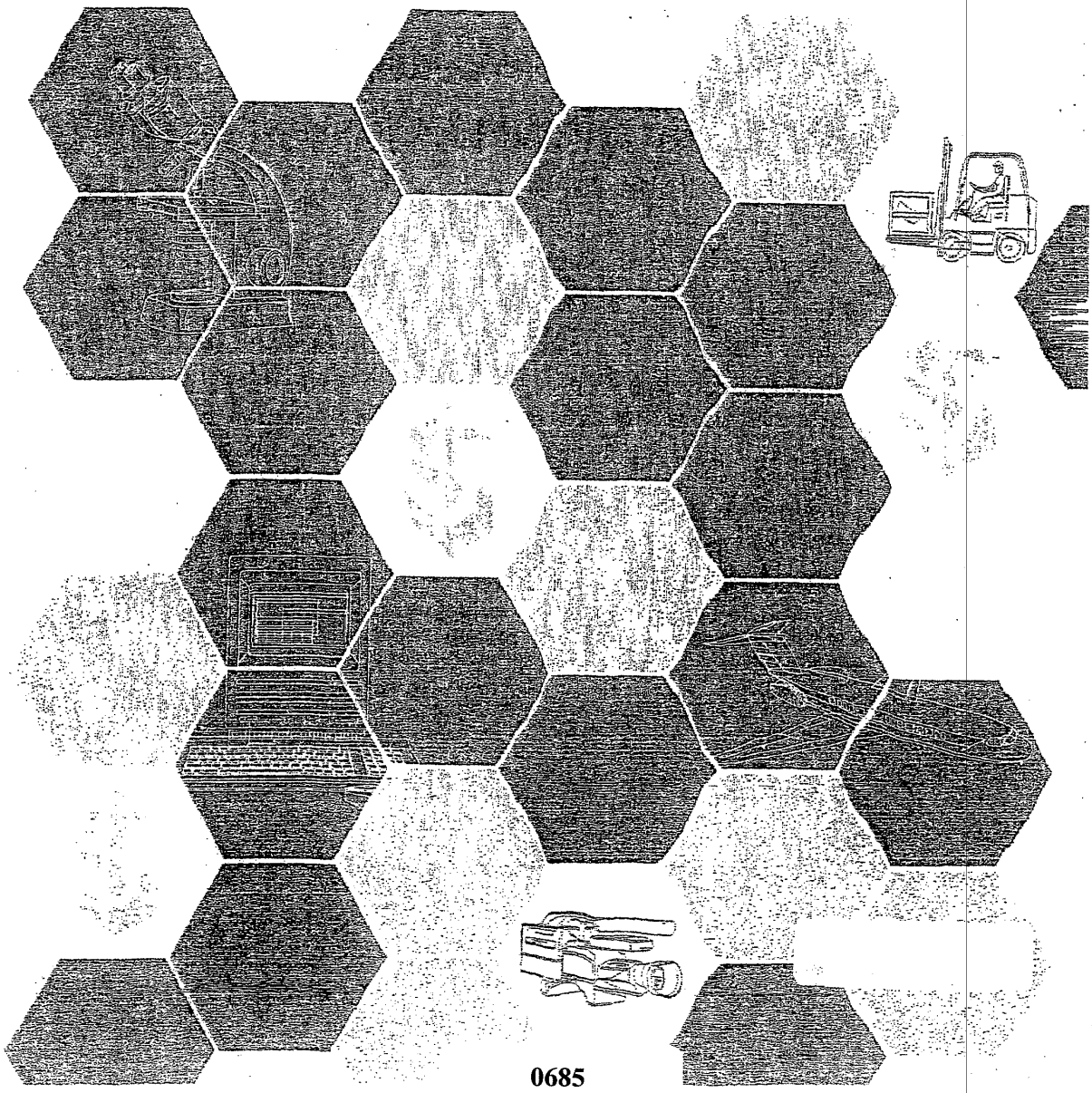
See footnotes at end of table.

EMPLOYMENT AND EARNINGS

U.S. Department of Labor
Bureau of Labor Statistics
March 1995

In this issue:

Revised seasonally adjusted regional and State data
1994 annual averages for national establishment survey data



B-15. Average hours and earnings of production or nonsupervisory workers[1] on private nonfarm payrolls by detailed industry—Continued

Industry	1987 SIC Code	Average hourly earnings					Average weekly earnings				
		Avg. 1994	Jan. 1994	Dec. 1994	Jan. 1995[p]	Feb. 1995[p]	Avg. 1994	Jan. 1994	Dec. 1994	Jan. 1995[p]	Feb. 1995[p]
Durable goods—Continued											
Transportation equipment	37	$16.45	$16.26	$16.84	$16.53	$16.66	$730.51	$710.56	$767.90	$732.84	$736.04
Motor vehicles and equipment	371	16.97	16.89	17.35	17.07	17.18	760.62	757.73	817.13	775.39	785.19
Motor vehicles and car bodies	3711	20.71	20.27	21.01	20.59	-	969.23	910.12	1,004.28	934.79	-
Truck and bus bodies	3713	14.61	14.57	14.73	14.46	-	638.44	626.41	688.42	648.47	-
Motor vehicle parts and accessories	3714	15.37	15.21	15.81	15.74	-	705.48	704.23	746.07	725.61	-
Truck trailers	3715	9.99	9.97	10.14	10.09	-	432.57	429.35	446.19	444.97	-
Aircraft and parts	372	17.93	17.56	18.44	18.16	-	756.98	732.25	802.14	769.98	-
Aircraft	3721	(6)	(6)	(6)	(6)	-	-	-	-	-	-
Aircraft engines and engine parts	3724	$17.31	$16.82	$17.80	$17.22	-	$752.99	$726.62	$808.12	$752.51	-
Aircraft parts and equipment, nec	3728	16.11	15.89	16.43	16.15	-	692.73	670.56	739.35	686.99	-
Ship and boat building and repairing	373	12.49	12.61	12.57	12.52	-	513.34	504.40	532.97	517.09	-
Ship building and repairing	3731	13.86	13.80	14.04	14.04	-	577.95	558.90	609.34	586.25	-
Boat building and repairing	3732	9.84	9.90	9.84	9.76	-	394.56	388.10	401.47	392.35	-
Railroad equipment	374	15.60	15.13	15.64	15.46	-	705.12	640.00	755.41	701.88	-
Guided missiles, space vehicles, and parts	376	17.48	17.41	17.73	17.51	-	737.66	732.96	769.48	752.93	-
Guided missiles and space vehicles	3761	(6)	(6)	(6)	(6)	-	-	-	-	-	-
Misc. transportation equipment	379	$10.91	$11.00	$11.17	$11.20	-	$434.22	$444.40	$438.75	$440.16	-
Travel trailers and campers	3792	10.79	10.63	10.93	10.90	-	418.78	416.70	417.53	416.29	-
Instruments and related products	38	12.47	12.41	12.62	12.53	12.62	520.00	515.02	537.51	525.01	523.73
Search and navigation equipment	381	16.77	16.39	17.03	16.32	-	692.50	681.32	722.48	690.94	-
Measuring and controlling devices	382	12.25	12.25	12.35	12.30	-	520.63	514.92	537.59	520.29	-
Environmental controls	3822	10.95	11.10	10.99	10.88	-	466.65	461.76	479.16	464.56	-
Process control instruments	3823	11.76	11.72	11.92	11.69	-	503.01	491.07	519.71	504.14	-
Instruments to measure electricity	3825	13.51	13.43	13.71	13.62	-	567.42	566.75	589.53	581.92	-
Medical instruments and supplies	384	11.13	11.03	11.40	11.40	-	457.44	452.23	488.36	475.36	-
Surgical and medical instruments	3841	10.84	10.85	11.01	11.15	-	446.61	450.28	467.93	473.18	-
Surgical appliances and supplies	3842	10.52	10.36	10.86	10.75	-	430.27	417.51	460.46	438.60	-
Ophthalmic goods	385	9.30	9.13	9.39	9.47	-	364.56	358.91	364.93	365.54	-
Photographic equipment and supplies	386	15.01	15.00	14.97	15.09	-	648.43	652.50	640.72	647.36	-
Watches, clocks, watchcases, and parts	387	8.52	8.44	8.65	8.82	-	355.28	340.95	364.17	353.68	-
Miscellaneous manufacturing industries	39	9.65	9.57	9.69	9.97	9.92	386.00	376.93	388.56	393.81	394.82
Jewelry, silverware, and plated ware	391	9.88	9.74	10.16	10.10	-	381.37	366.22	393.19	377.74	-
Jewelry, precious metal	3911	9.61	9.68	10.13	9.98	-	374.74	359.16	387.98	367.25	-
Musical instruments	393	9.64	9.59	9.77	9.66	-	390.42	384.56	409.36	408.50	-
Toys and sporting goods	394	9.08	8.98	9.23	9.34	-	364.21	356.51	373.62	373.60	-
Dolls, games, toys, and children's vehicles	3942,4	8.53	8.84	8.95	9.03	-	340.84	333.27	341.00	359.21	-
Sporting and athletic goods, nec	3949	9.18	9.05	9.37	9.35	-	378.22	370.15	392.80	381.48	-
Pens, pencils, office, and art supplies	395	10.67	10.36	10.94	11.10	-	433.20	418.54	447.45	462.87	-
Costume jewelry and notions	396	8.23	8.11	8.41	8.57	-	325.09	330.09	327.99	326.86	-
Costume jewelry	3961	7.05	6.98	7.12	7.52	-	278.16	286.18	276.97	275.23	-
Miscellaneous manufactures	399	10.10	10.11	10.38	10.44	-	405.01	404.40	424.54	417.60	-
Signs and advertising specialties	3993	10.35	10.28	10.87	10.85	-	424.35	414.28	459.60	443.77	-
Nondurable goods		11.25	11.16	11.45	11.45	11.44	460.13	450.86	476.63	467.16	469.32
Food and kindred products	20	10.67	10.59	10.87	10.86	10.85	440.67	426.76	458.71	446.35	439.43
Meat products	201	8.71	8.55	8.87	8.89	-	357.96	348.75	372.54	366.27	-
Meat packing plants	2011	9.43	9.35	9.55	9.58	-	409.26	400.15	440.04	425.31	-
Sausages and other prepared meats	2013	10.05	9.94	10.15	10.23	-	431.15	409.53	440.51	424.55	-
Poultry slaughtering and processing	2015	7.73	7.58	7.86	7.94	-	303.02	295.38	309.68	311.25	-
Dairy products	202	12.01	11.85	12.17	12.27	-	505.62	486.22	522.09	516.57	-
Cheese, natural and processed	2022	10.71	10.41	10.38	10.97	-	431.61	401.83	449.45	440.99	-
Fluid milk	2026	12.70	12.59	12.75	12.86	-	539.75	532.55	554.63	552.38	-
Preserved fruits and vegetables	203	10.20	10.41	10.51	10.53	-	417.18	413.56	436.17	426.47	-
Canned specialties	2032	13.49	13.55	13.58	14.00	-	573.33	581.30	600.24	606.20	-
Canned fruits and vegetables	2033	10.53	10.93	11.06	11.05	-	434.89	433.92	459.99	431.40	-
Frozen fruits and vegetables	2037	9.20	9.42	9.56	9.60	-	367.05	368.44	400.75	387.84	-
Grain mill products	204	13.09	12.85	13.65	13.44	-	590.36	571.83	642.74	614.21	-
Flour and other grain mill products	2041	11.06	10.77	11.47	11.18	-	508.57	473.88	551.71	493.04	-
Prepared feeds, nec	2045	10.50	10.41	10.71	10.70	-	464.10	461.16	489.45	485.78	-

See footnotes at end of table.

Table A. Producer price indexes for selected commodity groupings
(1982=100 unless otherwise indicated)

Commodity code	Grouping	Unadjusted Index 1/				Seasonally adjusted index 1/			
		Dec. 2000	January 2001	February 2001	March 2001	Dec. 2000	January 2001	February 2001	March 2001
	Finished goods (1967=100)	192.8	193.8	194.0	194.2	192.5	192.8	192.9	193.1
	All commodities	130.3	130.9	131.2	131.6	130.3	130.6	130.8	131.1
	MAJOR COMMODITY GROUPS								
	Farm products and processed foods and feeds	124.0	126.6	126.7	127.3	124.0	126.6	126.7	127.3
01	Farm products	103.0	107.7	107.8	108.4	103.0	107.7	107.8	108.4
02	Processed foods and feeds	134.1	136.1	136.3	136.7	134.1	135.9	136.1	136.5
	Industrial commodities	129.0	129.7	129.9	130.1	129.0	129.7	129.9	130.1
03	Textile products and apparel	131.7	131.7	131.7	131.7	131.7	131.7	131.7	131.7
04	Hides, skins, leather, and related products	165.3	165.3	165.3	165.3	165.3	165.3	165.3	165.3
05	Fuels and related products and power 2/	116.5	118.2	118.6	119.5	116.5	118.2	118.6	119.5
06	Chemicals and allied products 2/	134.7	135.0	135.2	135.5	134.7	135.0	135.2	135.5
07	Rubber and plastic products	129.0	129.0	129.0	129.0	129.0	129.0	129.0	129.0
08	Lumber and wood products	172.7	172.7	172.7	172.7	172.7	172.7	172.7	172.7
09	Pulp, paper, and allied products	172.6	172.6	172.6	172.6	172.6	172.6	172.6	172.6
10	Metals and metal products	104.8	104.8	105.1	105.3	104.8	104.8	105.1	105.3
11	Machinery and equipment	126.3	126.3	126.7	126.8	126.3	126.3	126.7	126.8
12	Furniture and household durables	123.8	123.8	123.8	123.8	123.8	123.8	123.8	123.8
13	Nonmetallic mineral products	148.3	148.3	148.3	148.3	148.3	148.3	148.3	148.3
14	Transportation equipment	135.2	135.2	135.2	135.2	135.2	135.2	135.2	135.2
15	Miscellaneous products	175.5	176.4	176.4	176.6	175.5	176.4	176.4	176.6
	Unprocessed commodities less farm products and processed foods and feeds	143.9	141.5	141.6	141.6				
	OTHER COMMODITY GROUPINGS								
01-1	Fruits and nuts, fresh and dry vegetables, and fresh cut flowers	109.7	123.8	114.3	114.3				
01-2	Grains	83.2	84.6	80.4	80.4				
01-3	Livestock	108.8	107.9	100.5	100.5				
01-4	Slaughter poultry	129.1	129.3	128.0	128.0				
01-5	Plant and animal fibers	140.4	140.5	71.9	71.9				
01-6	Chicken eggs	133.1	133.1	111.4	111.4				
01-7	Hay, hayseeds, and oilseeds	107.1	101.9	98.1	98.1				
01-81	Cotton	94.9	96.9	101.3	101.3				
01-9	Other farm products	172.7	169.6	156.4	156.4				
02-1	Cereal and bakery products	140.8	141.3	140.7	140.7				
02-2	Meats, poultry, and fish	118.6	118.1	115.9	116.7				
02-22	Processed poultry	119.1	119.2	115.3	116.0				
02-3	Sugar and confectionery	133.2	133.2	133.2	133.2				
02-4	Beverages and beverage materials	153.6	153.6	153.6	153.6				
02-5	Fats and oils	136.5	136.5	136.5	136.5				
02-7	Prepared animal foods	145.4	145.4	145.4	145.4				
03-81	Apparel	105.6	105.6	105.6	103.7				
04-4	Other leather and related products	129.5	129.5	129.5	130.4				
05-3	Gas fuels 3/	116.1	116.1	116.8	117.5				
05-4	Electric power	114.9	114.9	114.9	114.9				
05-7	Refined petroleum products	91.6	91.6	96.7	97.8				
06-3	Drugs and pharmaceuticals	259.1	259.1	261.3	261.3				
06-5	Paints and allied products	130.0	130.0	130.6	130.6				
06-7	Other chemicals and products	116.4	116.4	117.0	117.0				
07-1	Rubber and rubber products	120.6	120.6	121.2	121.2				
07-13	Rubber, except natural rubber	116.7	116.7	117.3	117.3				
07-15	Miscellaneous rubber products	123.8	123.8	124.4	124.4				
07-2	Plastic products	136.7	136.7	136.3	136.3				
08-1	Lumber, sawmill and planing mill products, excluding building	136.4	136.4	136.7	136.7				
08-4	Paper, and products, excluding building paper and board	161.3	161.3	161.3	161.3				
09-15	Converted paper and paperboard products	159.5	159.5	159.9	159.9				
10-1	Iron and steel	164.5	164.5	164.5	164.5				
10-25	Nonferrous metals	121.7	121.7	116.4	116.4				
11-3	Nonferrous mill shapes	144.8	144.8	145.6	145.6				
11-4	Metalworking machinery and equipment	150.2	150.2	150.3	150.3				
11-5	Special industry machinery and equipment	151.1	151.1	152.4	152.8				
11-7	Electrical machinery and equipment	163.6	163.6	164.6	164.6				
11-9	Miscellaneous machinery and equipment	118.1	118.1	117.9	118.1				
12-5	Motor vehicles	116.0	116.0	116.3	116.2				
13-2	Consumer ingredients	158.8	157.5	158.5	158.5				
15-1	Motor vehicles and equipment	111.7	111.7	111.7	111.7				
15-11	Home electronic equipment	132.6	132.6	132.1	132.1				
15-3	Durable goods, small arms, etc.	109.8	109.8	114.6	114.6				
15-9	Other miscellaneous durables	130.1	130.1	130.8	130.8				

1/ Data for December 2000 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision 4 months after originally published.

2/ Prices of home heating oil and gasoline are lagged 1 month.

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Summary Data from the Producer Price Index News Release April 2001

This news release from the Bureau of Labor Statistics of the U.S. Department of Labor provides summary data from the Producer Price Index. Full detail and summary text appear in the monthly periodical *PPI Detailed Report*, available for $58 per year from New Orders, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15220-7954. *PPI* data are available online at (http://stats.bls.gov/ppihome.htm), or telephone (202) 691-7705. Write to BLS at 2 Massachusetts Ave. N.E., Washington, DC 20212. For recorded information, call (202) 691-5200. For PPI definitions and methodology, request chapter 14 of the *BLS Handbook of Methods*, BLS Bulletin 2490. For information for the sensory impaired, call voice phone (202) 691-5200 or TDD message referral (800) 877-8339.

Table 2. Producer price indexes for selected commodity groupings
(1982=100, unless otherwise indicated)

Commodity code	Grouping	March 2000	Unadjusted index 1/ June 2000	July 2000	Percent change: July 2000
	Finished goods (1982=100)	147.8	148.8	148.8	0.0
	All commodities	130.8	131.1	131.2	0.1
	MAJOR COMMODITY GROUPS				
01	Farm products and processed foods and feeds	121.7	120.6	121.7	0.9
02	Processed foods and feeds	127.6	129.0	129.3	0.2
	Industrial commodities	133.9	133.9	133.9	0.0
03	Textile products and apparel	132.6	135.1	135.4	0.2
04	Hides, skins, leather, and related products	124.3	121.0	120.7	-0.2
05	Fuels and related products and power 2/	98.1	105.7	105.1	-0.6
06	Chemicals and allied products 2/	129.8	132.7	133.3	0.5
07	Rubber and plastic products	123.9	124.5	124.5	0.0
08	Lumber and wood products	169.2	170.9	170.4	-0.3
09	Pulp, paper, and allied products	181.7	181.7	181.9	0.1
10	Metals and metal products	136.1	136.1	136.1	0.0
11	Machinery and equipment	120.7	120.7	120.8	0.1
12	Furniture and household durables	123.8	123.8	123.7	-0.1
13	Nonmetallic mineral products	142.5	142.5	142.6	0.1
14	Transportation equipment	143.4	143.4	143.4	0.0
15	Miscellaneous products	170.3	170.3	170.3	0.0
	Industrial commodities less fuels and related products and power	143.1	142.6	142.7	0.1
	OTHER COMMODITY GROUPINGS				
01-1	Fruits and melons, fresh and dry vegetables, and tree nuts	111.9	101.4	102.9	1.5
01-2	Grains	91.9	78.6	74.9	-4.7
01-3	Slaughter livestock	98.3	100.1	97.0	-3.1
01-4	Slaughter poultry	117.8	129.2	126.5	-2.1
01-5	Plant and animal fibers	77.5	78.8	86.9	10.3
01-6	Chicken eggs	98.8	98.8	80.9	-18.1
01-7	Hay, hayseeds, and oilseeds	106.8	106.8	101.5	-5.0
01-8	Cotton	96.3	96.3	98.8	2.6
01-9	Other farm products	156.9	157.2	161.1	2.5
02-1	Cereal and bakery products	139.7	139.5	139.5	0.0
02-2	Meats, poultry, and fish	118.8	111.6	113.1	1.3
02-23	Processed poultry	112.9	111.6	111.6	0.0
02-3	Dairy products	133.0	133.0	132.5	-0.4
02-4	Processed fruits and vegetables	142.0	142.1	142.1	0.0
02-5	Sugar and confectionery	136.9	136.9	136.3	-0.4
02-6	Beverages and beverage materials	130.4	130.4	130.7	0.2
02-7	Fats and oils	127.4	127.5	127.6	0.1
02-81	Miscellaneous foods	146.8	146.8	146.8	0.0
02-82	Prepared animal foods	118.2	118.2	118.6	0.3
05-1	Crude fuels 2/	85.6	93.6	91.6	-2.1
05-2	Refined petroleum products	91.1	98.7	98.1	-0.6
05-3	Drugs and pharmaceuticals	256.5	256.5	256.4	0.0
06-1	Agricultural chemicals and products	125.4	125.4	125.3	-0.1
06-2	Paints and allied products	136.5	137.3	137.5	0.1
06-3	Industrial chemicals	114.1	115.2	115.9	0.6
07-11	Rubber, except rubber products	116.1	116.1	116.1	0.0
07-12	Miscellaneous rubber products	130.8	130.8	130.7	-0.1
07-2	Plastic products	131.5	132.0	133.3	1.0
08-1	Lumber, sawmill products, excluding building paper and board	169.3	170.1	170.1	0.0
09-15	Converted paper and purchased products	150.3	150.8	150.8	0.0
10-2	Iron and steel	118.4	118.4	118.4	0.0
10-23	Nonferrous metals	129.9	126.4	127.0	0.5
11-11	Nonferrous mill shapes	143.6	142.5	142.5	0.0
11-3	Metal containers, hardware, plumbing equipment	130.8	130.4	130.7	0.2
11-4	Special industry machinery	129.0	129.0	129.0	0.0
11-7	Electrical machinery and equipment	118.6	119.4	119.4	0.0
11-8	Miscellaneous machinery and equipment	133.7	133.7	133.3	-0.3
12-5	Motor vehicles and equipment	154.9	155.3	155.8	0.3
13-2	Household furniture	156.5	156.4	156.2	-0.1
14-1	Toys, sporting goods, small arms, etc.	132.6	132.6	132.8	0.2
15-4	Photographic equipment and supplies	100.5	100.4	100.5	0.1
15-5	Other miscellaneous products	136.0	137.7	136.9	-0.6

1/ Data for March 2000 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision 4 months after publication.

2/ Prices of some items in this grouping are largely a result of administered prices.

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Summary Data from the Producer Price Index News Release July 2000

This news release from the Bureau of Labor Statistics of the U.S. Department of Labor provides summary data from the Producer Price Index. Full detail and a summary text appear in the monthly periodical *PPI Detailed Report*, available for $36 per year from New Orders, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15220-7954. PPI data also are available online, on diskette, and on tape. For information, write to BLS, 2 Massachusetts Ave. N.E., Washington, DC 20212. For recorded messages about PPI data, call (202) 606-7828. For PPI definitions and methodology, see chapter 14 of the *BLS Handbook of Methods*, BLS Bulletin 2490, (forthcoming). For information for the sensory impaired, call voice phone (202) 606-7828, or TDD message referral 1-(800) 326-2577.

Table 1. Producer price indexes for selected commodity groupings
(1982=100 unless otherwise indicated)

Commodity code	Grouping	Unadjusted index 1/		
		Dec. 1999	March 2000	April 2000
	Finished goods (1967=100)	146.7	148.5	148.9
	All commodities	132.8	134.0	135.1
	MAJOR COMMODITY GROUPS			
01	Farm products and processed foods and feeds	119.7	124.6	125.7
02	Farm products	99.9	100.9	101.6
	Processed foods and feeds	130.9	132.0	133.4
03	Industrial commodities	129.8	130.8	132.2
04	Textile products and apparel	120.4	120.4	120.9
05	Hides, skins, leather, and related products	149.1	148.4	150.9
06	Fuels and related products and power 2/	87.8	92.8	94.1
07	Chemicals and allied products 2/	134.5	136.0	136.5
08	Rubber and plastic products	123.6	124.3	124.3
09	Lumber and wood products	183.7	183.7	184.2
10	Pulp, paper, and allied products	141.9	141.9	141.5
11	Metals and metal products	132.5	133.7	134.3
12	Machinery and equipment	123.0	124.0	124.0
13	Furniture and household durables	112.0	112.3	112.6
14	Nonmetallic mineral products	140.5	141.8	142.3
15	Transportation equipment	144.4	143.3	144.4
16	Miscellaneous products	109.5	110.1	110.5
	Industrial commodities less fuels and related products and power	141.0	142.1	143.4
	OTHER COMMODITY GROUPING			
01-1	Fruits and melons, fresh and dry vegetables, and tree nuts	119.9	119.8	118.4
01-2	Grains	74.9	80.9	80.6
01-3	Slaughter livestock	98.3	98.3	100.0
01-4	Slaughter poultry	110.7	110.7	110.8
01-5	Plant and animal fibers	77.3	77.3	76.5
01-7	Eggs, chicken	82.1	79.6	98.5
01-8	Milk, raw, and all milk	95.9	100.8	100.9
01-93	Other farm products	91.3	96.3	96.3
01-9	Cereal and bakery products	154.8	154.8	156.9
02-1	Meats, poultry, and fish	124.1	124.1	123.9
02-2	Processed poultry	111.9	109.9	111.5
02-3	Processed fruits and vegetables	133.6	133.5	132.4
02-5	Dairy products	150.5	149.8	150.6
02-6	Beverages and beverage materials	116.7	117.4	118.1
02-9	Packaged beverage materials	113.9	113.9	114.1
03-1	Fats and oils	127.4	129.2	127.0
03-21	Apparel	105.8	106.8	106.0
03-22	Other textile products and related materials	92.6	92.6	116.6
03-4	Footwear	125.9	125.9	125.8
05-1	Refined petroleum products	78.2	78.2	80.8
05-2	Crude petroleum products	78.5	78.5	87.6
05-3	Drugs and pharmaceuticals	205.6	205.6	205.7
05-4	Agricultural chemicals and products	123.8	123.8	122.4
05-5	Other chemicals and allied products	116.7	116.7	116.6
06-1	Rubber and rubber products	114.0	113.2	113.9
06-2	Miscellaneous plastic products	115.0	115.0	114.7
07-11	Miscellaneous rubber products	116.2	116.2	116.7
07-13	Plastic products	111.8	111.8	111.8
07-2	Lumber	187.6	187.6	188.4
08-1	Pulp, paper, and products, excluding building paper and board	121.9	120.6	120.5
08-2	Converted paper and paperboard products	130.2	130.2	130.2
10-1	Iron and steel	117.4	117.4	119.9
10-2	Nonferrous metals	175.2	173.8	177.7
10-25	Nonferrous mill shapes	148.3	148.3	149.0
11-1	Metalworking machinery and equipment	138.5	139.4	140.2
11-4	General purpose machinery and equipment	139.6	139.3	139.6
11-6	Special industry machinery	161.9	163.8	163.8
11-7	Miscellaneous machinery and equipment	110.3	110.9	110.9
11-9	Miscellaneous nonferrous metal products	111.2	111.2	111.6
12-6	Other household durable goods	133.8	133.8	133.6
13-2	Concrete ingredients	158.7	158.7	159.1
14-1	Flat glass	134.4	134.4	134.5
15-1	Motor vehicles and equipment	131.5	132.4	132.5
15-4	Tools, sporting goods, small arms, ammunition	122.6	122.6	123.0
15-5	Transportation equipment and supplies	110.7	110.7	110.8
15-9	Other miscellaneous products	115.9	116.4	116.5

1/ Data for December 1999 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision 4 months after initial publication.

2/ Prices of some items in this grouping are lagged 1 month.

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Summary Data from the Producer Price Index News Release April 2000

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Table 1. Producer price indexes for selected commodity groupings
(1982=100 unless otherwise indicated)

Commodity code	Grouping	Unadjusted index 1/		
		Sept. 1999	Oct. 1999	Oct. 1999
	Finished goods (1967=100)	122.3	122.4	122.9
	All commodities	126.3	126.6	127.9
	MAJOR COMMODITY GROUPS			
01	Farm products and processed foods and feeds	120.4	121.9	127.6
02	Processed foods and feeds	99.2	99.0	99.6
		130.8	132.9	133.9
	Industrial commodities	126.3	126.3	126.7
03	Textile products and apparel	121.4	120.3	120.4
04	Hides, skins, leather, and related products	135.9	137.4	138.2
05	Fuels and related products and power 2/	88.4	89.9	89.2
06	Chemicals and allied products	121.4	121.3	122.1
07	Rubber and plastic products	123.1	123.0	123.0
08	Lumber and wood products	181.8	186.8	191.3
09	Pulp, paper, and allied products	121.4	121.4	121.8
10	Metals and metal products	123.8	125.4	126.5
11	Machinery and equipment	128.2	128.3	128.3
12	Furniture and household durables	121.8	121.8	122.5
13	Nonmetallic mineral products	131.0	131.7	132.7
14	Transportation equipment	101.1	101.1	101.5
15	Miscellaneous products	125.9	126.1	126.4
	Industrial commodities less fuels and related products and power	119.0	119.3	119.7
	OTHER COMMODITY GROUPINGS			
01-1	Fruits and melons, fresh and dry vegetables, and tree nuts	122.4	120.8	135.2
01-2	Grains	82.2	78.2	77.7
01-3	Slaughter livestock	80.6	80.2	82.7
01-4	Slaughter poultry	85.6	102.6	102.7
01-5	Plant and animal fibers	85.6	85.6	85.6
01-6	Eggs, milk, and dairy products	80.0	80.0	80.8
01-7	Processed fruits and vegetables	101.2	101.7	99.6
01-8	Oilseeds	91.5	92.4	88.4
01-85	Other farm products	97.1	97.6	103.5
02-1	Cereal and bakery products	116.7	116.8	116.8
02-2	Processed poultry	115.0	114.2	114.7
02-22	Processed poultry, n.e.c.	150.6	150.6	150.6
02-5	Sugar and confectionery	115.2	115.2	114.7
02-6	Beverages and beverage materials	133.3	133.0	135.8
02-65	Nonalcoholic beverages	115.9	115.9	115.9
02-7	Fats and oils	127.6	127.6	127.7
02-85	Other foodstuffs and related products	126.4	126.4	126.3
03-1	Apparel	102.1	102.1	102.1
03-2	Cotton fabrics	112.4	112.4	111.0
03-3	Man-made fiber and silk fabrics	90.8	90.8	91.3
03-4	Textile housefurnishings	124.9	124.9	124.9
03-5	Nonapparel textile products	124.6	124.6	124.5
03-7	Refined petroleum products	64.5	64.5	64.3
04-1	Leather	253.8	253.8	253.8
04-3	Hides, skins, and leather products, n.e.c.	137.6	137.6	137.6
05-3	Drugs and pharmaceuticals	124.9	125.0	125.0
05-5	Agricultural chemicals and products	104.6	104.6	104.6
05-6	Paints and allied products	124.2	124.2	124.2
05-7	Other chemicals and chemical products	125.0	125.0	125.0
06-1	Rubber and rubber products	113.2	113.2	113.2
07-31	Rubber, except tires and tubes	113.1	113.3	113.4
07-33	Miscellaneous rubber products	113.3	113.3	113.4
07-2	Plastic products	118.5	118.5	118.6
08-1	Lumber	180.6	180.6	180.6
09-1	Pulp, paper, and products, excluding building paper and board	124.9	124.9	125.0
09-25	Converted paper and paperboard products	146.0	146.0	152.3
10-1	Iron and steel	152.9	152.9	152.2
10-2	Nonferrous metals	113.8	113.8	114.7
10-25	Nonferrous mill shapes	121.0	121.0	121.0
11-21	Metal containers	131.3	131.3	131.3
11-4	General purpose machinery and equipment	140.2	140.2	140.4
11-5	Special industry machinery and equipment	149.5	149.5	149.7
11-6	Special industry machinery, n.e.c.	141.6	141.6	141.7
11-7	Electrical machinery and equipment	131.5	131.5	131.7
12-6	Household furniture, n.e.c.	113.3	113.3	113.3
13-2	Concrete ingredients	152.9	152.9	153.0
14-1	Motor vehicles and equipment	102.6	102.6	102.6
15-1	Toys, sporting goods, small arms, etc.	128.6	128.6	128.5
15-9	Miscellaneous manufacturing industries	118.6	118.9	118.9
	Other miscellaneous products	115.1	115.1	115.9

1/ Data for June 1999 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision 4 months after original publication.

2/ Prices of most items in this grouping are lagged 1 month.

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Summary Data from the Producer Price Index News Release October 1999

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Table 3. Producer price indexes for selected commodity groupings
(1982=100 unless otherwise indicated)

Commodity code	Grouping	Unadjusted index 1/		
		Dec. 1998	March 1999	March 1999
	Finished Goods (1967=100)	168.0	168.1	170.6
	All commodities	122.8	122.8	121.5
	MAJOR COMMODITY GROUPS			
	Farm products and processed foods and feeds	120.5	120.3	118.3
01	Farm products	99.8	99.1	96.3
02	Processed foods and feeds	130.8	130.7	128.9
	Industrial commodities	125.3	125.3	124.5
03	Textile products and apparel	122.8	123.1	123.0
04	Hides, skins, leather, and related products	136.6	141.6	138.9
05	Fuels and related products and power 2/	79.6	78.3	77.0
06	Chemicals and allied products 2/	142.7	142.6	140.0
07	Rubber and plastic products	122.8	122.8	122.4
08	Lumber and wood products	126.5	126.9	126.4
09	Pulp, paper, and allied products	120.8	121.3	121.9
10	Metals and metal products	124.0	124.0	123.8
11	Machinery and equipment	124.5	124.7	124.4
12	Furniture and household durables	131.4	131.6	131.5
13	Nonmetallic mineral products	116.6	117.8	118.2
14	Transportation equipment	142.3	142.8	141.5
15	Miscellaneous products	166.6	166.6	166.2
	Industrial commodities less fuels and related products and power	130.7	130.7	130.7
	CRUDE COMMODITY GROUPS			
01-1	Fruits and nuts, fresh and dry vegetables, and tree nuts	116.5	114.8	122.6
01-2	Grains	87.1	89.9	93.3
01-3	Slaughter livestock	67.1	66.5	61.8
01-4	Slaughter poultry	126.2	124.0	118.7
01-5	Eggs and animal fibers	97.7	96.1	96.5
01-7	Cotton	121.5	104.9	99.5
01-8	Hay, hayseeds, and oilseeds	113.9	102.2	100.0
01-83	Oilseeds	105.5	91.3	93.5
01-9	Other farm products	107.4	111.0	102.9
02-1	Cereal and bakery products	107.6	107.1	109.2
02-2	Meats, poultry, and fish	111.8	112.2	111.4
02-22	Processed poultry	108.3	111.6	111.3
02-5	Sugar and confectionery	116.4	116.2	116.3
02-6	Beverages and beverage materials	137.3	138.4	138.8
02-7	Packaged beverage materials	134.6	134.5	134.5
02-8	Fats and oils	108.1	123.8	124.5
03-81	Apparel	127.0	126.4	126.8
04-4	Leather and related products	144.7	145.4	145.1
05-3	Gas fuels 2/	70.9	64.4	65.5
05-4	Crude petroleum	120.8	136.6	135.8
05-7	Refined petroleum products	42.2	40.7	40.4
06-3	Drugs and pharmaceuticals	249.1	252.8	253.8
06-5	Other chemicals and allied products	125.5	125.8	125.9
07-3	Rubber and rubber products	115.0	114.9	114.7
07-11	Rubber, except natural rubber	115.2	115.3	114.8
07-13	Miscellaneous rubber products	130.1	130.2	130.1
07-2	Plastic products	129.1	128.4	128.4
08-3	Lumber	273.5	286.4	286.6
09-1	Pulp, paper, and products, excluding building paper and board	141.2	141.3	141.2
09-15	Converted paper and paperboard products	150.6	150.2	151.2
10-2	Iron and steel	114.5	112.8	112.5
10-25	Nonferrous metals	116.4	114.6	114.6
11-3	Metalworking machinery and equipment	128.7	129.8	129.8
11-4	General purpose machinery and equipment	147.5	147.9	148.1
11-6	Special industry machinery	140.3	140.4	140.4
11-7	Electrical machinery and equipment	120.8	120.2	120.1
12-6	Miscellaneous machinery and equipment	119.6	119.6	119.4
13-4	Other household durable goods	152.2	152.2	152.0
14-1	Concrete ingredients	149.3	150.9	151.8
14-3	Motor vehicles and equipment	132.9	132.9	131.6
15-1	Toys, sporting goods, small arms, etc.	132.4	132.7	131.8
15-4	Photographic equipment and supplies	111.3	111.3	110.1
15-9	Other miscellaneous products	139.5	139.6	139.9

1/ Data for December 1998 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision 4 months after original publication.

2/ Prices of [illegible]

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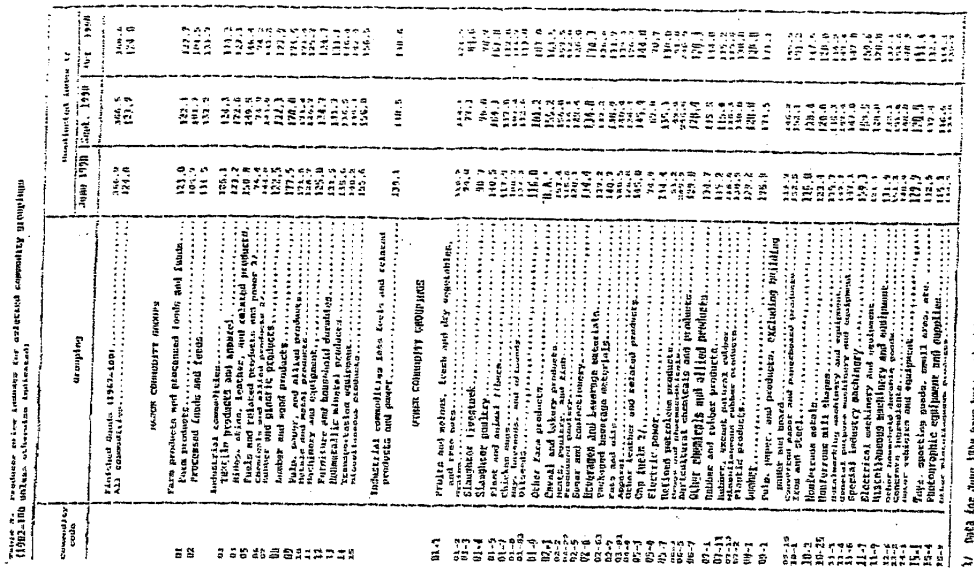
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Group or Producer price indexes for selected commodity groupings (1982=100, unless otherwise indicated)

Commodity code	Grouping	Unadjusted indexes 1/		
		August 1998	Sept. 1998	Oct. 1998
	Finished Goods (1967=100)	166.9	166.5	166.6
	All commodities	124.0	123.9	124.0
	MAJOR COMMODITY GROUPS			
01	Farm products and processed foods and feeds	123.0	123.1	122.7
02	Farm products	100.9	100.9	101.5
	Processed foods and feeds	131.5	133.9	133.9
03	Industrial commodities	126.1	126.3	126.3
04	Textile products and apparel	123.2	122.6	122.3
05	Hides, skins, leather, and related products	168.8	169.5	166.4
06	Fuels and related products and power 2/	74.4	74.8	83.5
07	Chemicals and allied products	124.6	124.6	124.6
08	Rubber and plastic products	122.5	122.3	122.3
09	Lumber and wood products	177.5	178.8	178.9
10	Pulp, paper, and allied products	139.3	139.5	139.5
11	Metals and metal products	128.9	129.2	129.2
12	Machinery and equipment	129.8	129.7	129.7
13	Furniture and household durables	131.5	131.3	131.3
14	Nonmetallic mineral products	139.2	139.3	139.3
15	Transportation equipment	130.6	130.7	130.7
16	Miscellaneous commodities	155.6	155.8	156.0
	Industrial commodities less fuels and related products and power	135.1	135.1	135.0
	OTHER COMMODITY GROUPINGS			
01-1	Fruits and nuts, fresh and dry vegetables, and rice nec	110.2	112.3	111.5
01-2	Cereal and bakery products	96.4	96.3	96.6
01-3	Slaughter livestock	90.7	89.0	90.7
01-4	Slaughter poultry	140.5	139.3	140.7
01-5	Dairy products	117.5	117.6	117.6
01-7	Processed fruits and vegetables	137.3	137.4	137.4
01-8	Sugar and confectionery	116.0	116.2	116.2
01-9	Beverages and beverage materials	N.A.	155.2	155.1
02-1	Cereal and bakery products	152.6	152.6	152.5
02-2	Meats, poultry, and fish	120.4	120.4	120.6
02-5	Sugar and confectionery	114.4	114.8	114.8
02-6	Beverages and beverage materials	132.8	132.8	132.8
02-9	Packaged beverage materials	160.5	160.5	160.5
03-21	Apparel	145.8	145.8	145.8
03-31	Other textile products and related materials	104.1	104.1	104.1
05-1	Fuels and power	74.4	74.4	83.5
05-2	Residential electric power	114.4	114.4	114.4
05-3	Natural gas distribution	93.3	93.3	93.3
05-4	Petroleum products, refined	72.6	72.6	79.4
05-5	Agricultural chemicals and products	129.8	129.8	129.1
05-6	Other chemicals and allied products	130.7	130.7	130.8
05-7	Rubber and rubber products	115.2	115.2	115.2
07-11	Lumber and wood products	178.6	178.6	178.6
07-13	Miscellaneous rubber products	118.4	118.4	118.4
07-22	Plastic products	127.2	127.2	127.2
09-1	Pulp, paper, and products, excluding building paper and board	139.0	139.3	139.3
09-10	Converted paper and paperboard products	132.9	132.9	132.9
10-1	Iron and steel	129.8	129.8	129.8
10-2	Nonferrous metals	128.8	128.8	128.8
10-25	Nonferrous mill shapes	128.4	128.4	128.4
11-4	Metal containers	123.1	123.1	123.1
11-6	General purpose machinery and equipment	129.1	129.1	129.2
11-7	Special industry machinery	130.1	130.1	130.0
11-9	Miscellaneous machinery and equipment	129.3	129.3	129.3
12-5	Electrical machinery and equipment	131.4	131.4	131.5
12-6	Computers, peripherals, and components	101.2	101.2	101.2
12-7	Consumer electronics	111.8	111.8	111.8
12-8	Other electronic components	128.2	128.2	128.2
15-1	Motor vehicles and equipment	129.4	129.4	129.4
15-2	Miscellaneous transportation equipment	112.5	112.5	112.5
15-9	Other sporting goods, small arms, etc.	115.3	115.4	115.4
16-9	Miscellaneous equipment and supplies	116.4	116.4	116.4

1/ Data for June 1998 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision four months after original publication.

2/ Prices of this group do not adjust to seasonal factors.

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Summary Data from the Producer Price Index News Release October 1998

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Table 3. Producer Price Indexes for selected commodity groupings
(1982=100 unless otherwise indicated)

Commodity code	Grouping	Unadjusted Indexes 1/		
		Aug. 1997	Nov. 1997	Dec. 1997
	Finished goods (1967=100)	360.9	360.9	360.8
	All commodities	127.2	127.8	128.1
	MAJOR COMMODITY GROUPS			
01	Farm products and processed foods and feeds	126.7	126.1	125.3
02	Processed foods and feeds	131.4	130.4	130.1
		104.3	103.7	103.9
	Industrial commodities	127.3	128.2	128.8
03	Textile products and apparel	122.6	122.5	122.5
04	Hides, skins, leather, and related products	154.2	153.1	153.5
05	Fuels and related products and power 2/	84.9	87.0	88.1
06	Chemicals and allied products 2/	133.7	134.0	134.0
07	Rubber and plastic products	123.4	123.3	123.3
08	Lumber and wood products	186.0	188.9	188.9
09	Pulp, paper, and allied products	167.8	170.4	171.2
10	Metals and metal products	132.2	131.3	130.6
11	Machinery and equipment	125.3	125.4	125.4
12	Furniture and household durables	130.7	130.7	130.7
13	Nonmetallic mineral products	133.6	133.7	133.9
14	Transportation equipment	149.5	149.5	149.5
15	Miscellaneous products	151.0	152.3	152.9
	Industrial commodities less fuels and related products and power	139.1	139.4	139.3
	OTHER COMMODITY GROUPINGS			
01-1	Fruits and melons, fresh and dry vegetables, and tree nuts	109.9	111.8	121.4
01-2	Grains	110.3	107.1	107.4
01-3	Slaughter livestock	95.0	93.1	91.4
01-4	Slaughter poultry	147.9	122.1	119.9
01-5	Plant and animal fibers	121.1	115.5	116.4
01-7	Chicken eggs	107.2	100.3	100.2
01-8	Hay, hayseeds, and oilseeds	145.4	146.8	140.7
01-83	Oilseeds	139.8	118.8	118.7
01-9	Other farm products	140.3	154.3	167.9
02-1	Cereal and bakery products	157.6	157.6	157.6
02-2	Meats, poultry, and fish	126.9	124.9	124.9
02-21	Processed poultry	115.8	115.8	115.7
02-3	Dairy and related products	139.4	138.1	138.0
02-4	Processed fruits and vegetables	160.0	157.6	156.9
02-5	Sugar and confectionery	126.7	139.4	139.4
02-83	Beverages and beverage materials	126.8	126.8	126.8
02-7	Fats and oils	144.2	144.2	144.2
03-21	Apparel	131.9	131.9	131.9
04-4	Other textile mill products	156.8	156.8	156.8
05-3	Gum fuels 2/	67.8	67.8	67.8
05-4	Crude petroleum	319.3	320.6	320.5
05-5	Refined petroleum products	82.1	82.1	82.1
05-7	Basic organic chemicals	132.0	132.1	132.0
06-3	Agricultural chemicals and products	200.6	200.6	200.8
06-4	Other chemicals and allied products	131.5	131.1	130.9
06-7	Rubber, except synthetic, products	115.6	115.3	115.0
07-11	Rubber and rubber products	117.6	117.1	117.1
07-13	Miscellaneous rubber products	110.4	110.2	110.2
07-2	Plastic products	110.2	110.1	110.0
08-1	Lumber	109.8	109.8	109.8
08-2	Millwork, plywood, and prefabricated structural members	196.8	196.8	196.8
09-15	Paper and board	144.8	147.7	148.9
09-21	Converted paper and paperboard products	146.4	149.6	151.6
09-3	Newspapers	126.8	127.6	127.1
10-2	Nonferrous metals	137.4	132.7	130.3
10-25	Nonferrous wire and cable	145.5	144.5	144.3
11-3	Metalworking machinery and equipment	145.7	145.9	145.9
11-4	General purpose machinery and equipment	145.3	145.5	145.6
11-6	Special industry machinery	157.4	157.5	157.5
11-7	Electrical machinery and equipment	122.1	122.8	122.8
11-9	Miscellaneous machinery and equipment	111.3	111.3	111.3
12-6	Other household durable goods	130.1	130.4	130.6
13-2	Concrete ingredients	141.3	141.3	141.3
14-1	Motor vehicles and equipment	131.8	131.8	131.8
15-2	Toys, sporting goods, small arms, etc.	111.5	111.5	111.7
15-3	Photographic equipment and supplies	111.8	111.8	111.8
15-9	Other miscellaneous products	133.3	133.8	133.7

1/ Data for August 1997 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision four months after original publication.

2/ Prices of some items in this grouping are lagged 1 month.

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Summary Data from the Producer Price Index News Release December 1997

This news release from the Bureau of Labor Statistics of the U.S. Department of Labor provides summary data from the Producer Price Index. Full detail and a summary text appear in the monthly periodical *PPI Detailed Report*, available for $36 per year from New Orders, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15220-7954. PPI data also are available online, on diskette, and on tape. For information, write BLS, 2 Massachusetts Ave. N.E., Washington, DC 20212. For recorded messages about PPI data, call (202) 606-STAT. For PPI definitions and methodology, see chapter 14 of the *BLS Handbook of Methods*, BLS Bulletin 2490, (forthcoming). For information for the sensory impaired, call voice phone (202) 606-7828, or TDD message referral 1-(800) 326-2577.

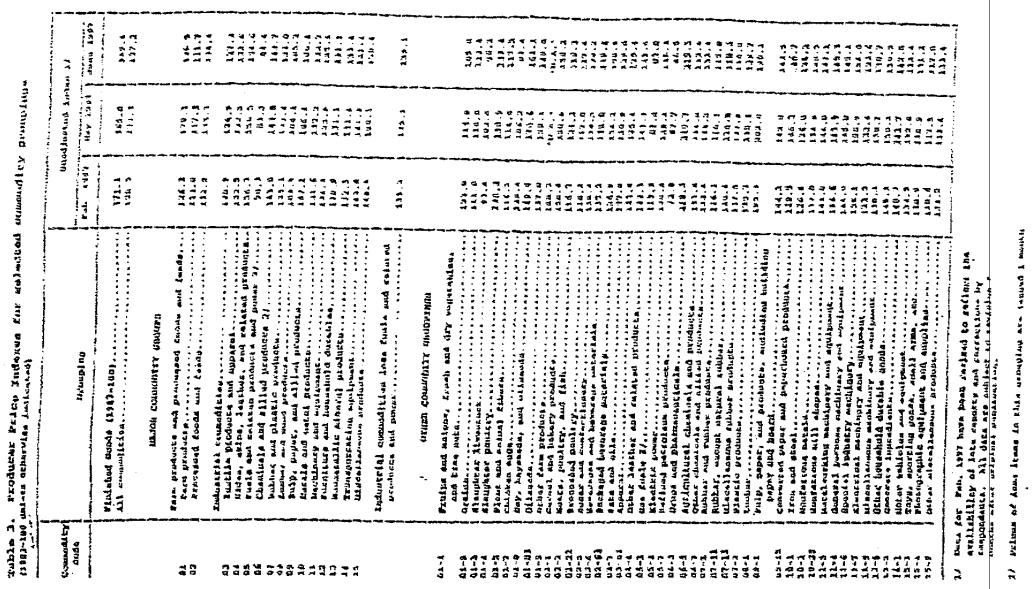


Table 3. Producer Price Indexes for selected commodity groupings
(1982=100 unless otherwise indicated)

Commodity code	Grouping	Unadjusted Index 1/		
		Feb. 1997	May 1997	June 1997
	Finished goods (1982=100)	131.1	132.0	132.4
	All commodities	130.5	131.5	131.7
	MAJOR COMMODITY GROUPS			
01	Farm products and processed foods and feeds	126.2	130.3	130.9
02	Farm products	111.0	115.3	115.9
03	Processed foods and feeds	132.2	133.1	133.4
	Industrial commodities	130.9	131.9	132.1
04	Textile products and apparel	120.9	121.5	121.6
05	Fuels and related products and power 2/	136.3	134.5	133.6
06	Chemicals and allied products	90.3	90.2	90.2
07	Rubber and plastic products	140.0	141.8	141.9
08	Lumber and wood products	143.1	142.4	142.4
09	Pulp, paper, and allied products	140.2	140.4	140.4
10	Metals and metal products	127.2	126.4	126.4
11	Machinery and equipment	121.6	122.2	122.2
12	Furniture and household durables	119.8	120.2	120.2
13	Nonmetallic mineral products	132.5	133.1	133.1
14	Transportation equipment	143.6	143.8	143.8
15	Miscellaneous products	126.5	126.1	126.4
	Industrial commodities less fuels and related products and power	135.3	135.3	135.3
	OTHER GROUPINGS			
01-1	Fruits and melons, fresh and dry varieties, and tree nuts	123.0	131.9	105.8
01-2	Grains	112.0	112.0	112.4
01-3	Livestock	93.4	102.1	102.1
01-4	Live poultry	106.4	110.0	110.1
01-5	Plant and animal fibers	110.9	110.9	111.4
01-6	Slaughter poultry	115.5	116.0	115.5
01-7	Milled rice, processed fruits and vegetables, and oilseeds	119.4	119.2	91.4
01-8	Other farm products	137.0	138.1	140.1
01-9	Cereal and bakery products	108.2	107.1	107.1
02-1	Processed animal fats and oils	114.5	114.0	114.0
02-21	Processed fruits and vegetables	116.2	112.0	112.2
02-3	Sugar and confectionery	125.5	125.2	125.2
02-4	Beverages and beverage materials	126.9	126.8	126.2
02-81	Miscellaneous foods	120.8	120.8	119.4
03-11	Cotton fabrics	120.4	120.4	120.4
03-12	Man-made fiber and silk fabrics	113.5	113.5	113.5
04-1	Cotton products	81.4	81.4	81.4
05-1	Petroleum products, refined	138.4	138.4	138.4
05-2	Crude petroleum	418.3	417.7	417.7
05-3	Gas fuels	91.0	91.0	91.0
05-4	Coal	122.4	122.4	122.4
05-5	Electric power	116.1	116.1	116.1
06-1	Industrial chemicals and products	111.4	111.4	111.4
06-2	Prepared paint	124.1	124.1	124.1
06-3	Synthetic rubber, including latex	117.6	117.6	117.6
06-4	Crudes	139.3	139.3	139.3
06-5	Pulp, paper, and products, excluding building	145.1	145.1	145.0
10-13	Construction steel, mill products	144.3	144.9	46.7
10-1	Iron and steel	139.3	140.3	126.3
10-2	Nonferrous metals	126.4	126.0	144.9
10-3	Nonferrous mill shapes	144.9	144.9	141.5
10-4	Metal containers	141.0	141.5	141.5
11-2	General purpose machinery and equipment	141.5	141.5	140.1
11-3	Special industry machinery	140.1	140.1	132.0
11-4	Electrical machinery and equipment	132.5	132.5	132.7
11-5	Motor vehicles and equipment	132.7	132.7	130.2
12-3	Household durable goods	130.2	130.2	130.2
13-3	Glass containers	130.2	130.2	132.8
13-4	Other nonmetallic mineral products	132.8	132.8	132.4
15-1	Leather and products	132.4	132.4	132.0
15-2	Footwear	132.0	132.0	132.4
15-4	Photographic equipment and supplies	132.4	132.4	133.4
15-9	Other miscellaneous products	133.4	133.4	

1/ Data for Feb. 1997 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision four months after original publication.

2/ Prices of some items in this grouping are issued 1 month

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Summary Data from the Producer Price Index News Release June 1997

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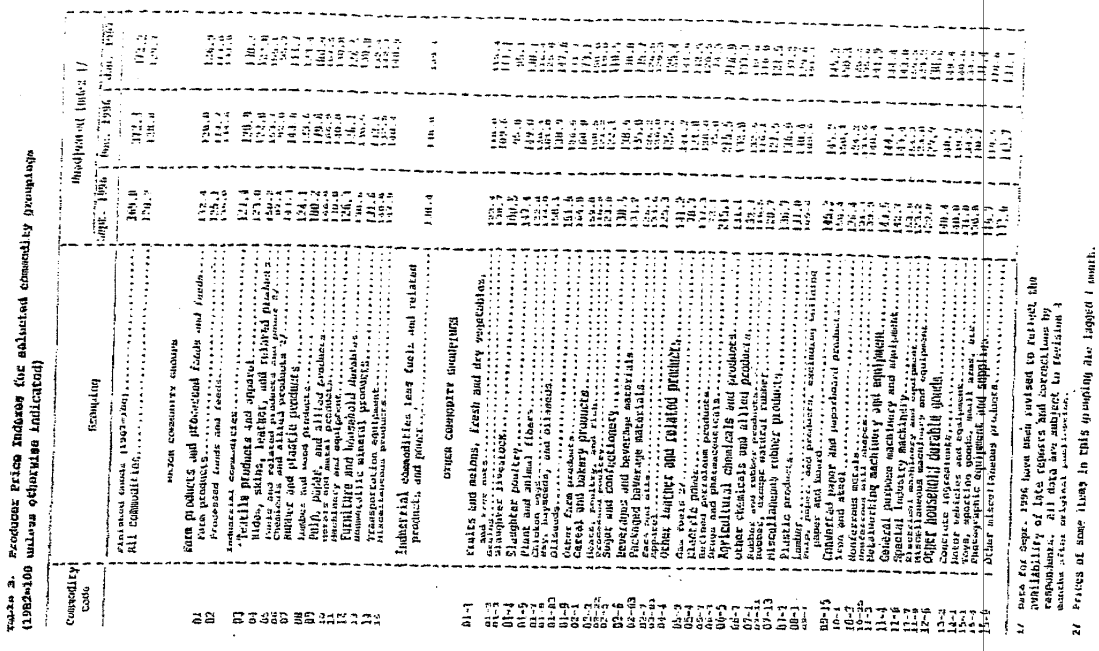


Table 3. Producer Price Indexes for selected commodity groupings
(1982=100 unless otherwise indicated)

Commodity code	Grouping	Unadjusted Index 1/		
		Dec. 1996	Nov. 1996	Dec. 1995
	Finished goods (1967=100)	169.8	172.1	166.1
	All Commodities	129.7	130.8	126.7
	MAJOR COMMODITY GROUPS			
02	Farm products and processed foods and feeds	132.4	136.0	126.9
02	Processed foods and feeds	126.5	127.2	123.8
	Commodities			
03	Textile products and apparel	121.4	120.9	120.7
04	Hides, skins, leather, and related products	123.0	123.0	122.8
05	Fuels and related products and power 2/	93.2	95.2	95.3
06	Chemicals and allied products	127.6	127.6	126.5
07	Rubber and plastic products	144.1	144.6	144.2
08	Lumber and wood products	158.2	160.2	153.4
09	Pulp, paper, and allied products	140.2	140.2	140.2
10	Metals and metal products	130.0	130.0	130.8
11	Machinery and equipment	120.6	120.6	119.5
12	Furniture and household durables	126.1	126.1	125.2
13	Nonmetallic mineral products	136.6	136.6	136.8
14	Transportation equipment	128.4	128.4	125.1
15	Miscellaneous products	130.6	130.6	130.9
	Industrial commodities less fuels and related products and power	138.0	138.0	134.4
	STAGE CATEGORY GROUPINGS			
01-1	Fruits and melons, fresh and dry vegetables	139.9	139.9	139.4
01-2	Grains	130.5	130.5	121.1
01-4	Slaughter livestock	130.3	130.4	126.1
01-5	Slaughter poultry	95.9	95.9	96.1
01-6	Plant and animal fibers	119.0	119.0	118.1
01-7	Chicken and eggs	120.6	120.6	121.4
01-8	Dry beans, peas, and oilseeds	136.1	136.1	137.6
01-9	Other farm products	134.5	134.9	134.7
02-1	Cereal and bakery products	129.0	129.0	123.3
02-2	Sugar and confectionery	129.0	129.0	130.5
02-3	Beef and veal	138.1	138.1	138.5
02-4	Pork	131.2	131.2	136.6
02-5	Processed poultry	120.3	120.3	116.7
02-6	Dairy products	120.3	120.3	119.5
02-7	Fats and oils, inedible	70.2	70.2	69.4
02-8	Other 2/	141.2	141.2	141.4
03-1	Crude petroleum	93.3	93.3	93.5
03-2	Refined petroleum products	215.1	215.1	214.5
04-1	Drugs and pharmaceuticals	144.1	144.1	142.0
04-2	Agricultural chemicals and products	112.7	112.7	111.9
04-3	Other chemicals and allied products	132.5	132.5	132.9
05-1	Rubber and rubber products	121.2	121.2	121.6
05-2	Miscellaneous rubber products	129.9	129.9	129.5
06-1	Plastic products	136.9	136.9	136.6
06-2	Lumber	131.0	131.0	130.6
06-3	Millwork, plywood, reconstituted wood	169.2	169.2	162.2
07-1	Converted paper and paperboard products	145.7	145.7	145.3
07-2	Iron and steel	150.4	150.4	150.3
07-3	Nonferrous metals	154.3	154.3	154.2
07-4	Metal containers	133.2	133.2	133.2
07-5	Hardware, plumbing, and heating equipment	121.5	121.5	121.5
07-6	Fabricated structural metal products	144.1	144.1	141.9
07-7	Other fabricated metal products	143.8	143.8	143.8
08-1	General purpose machinery and equipment	142.7	142.7	142.6
08-2	Special industry machinery and equipment	133.8	133.8	133.8
08-3	Electrical machinery and equipment	123.0	123.0	123.2
08-4	Other machinery and equipment	129.8	129.8	130.1
09-1	Household furniture, durable	145.7	145.7	145.2
09-2	Other household durable goods	140.4	140.4	140.2
10-1	Motor vehicles	150.3	150.3	150.4
10-2	Motor vehicle parts and engines	130.8	130.8	130.6
11-1	Aircraft, guided missiles, and parts	141.9	141.9	141.4
11-2	Other transportation equipment	116.7	116.7	116.4
12-1	Toys, sporting goods, small arms, ammo	117.8	117.8	117.1
12-2	Photographic equipment and supplies	107.7	107.7	107.8
15-4	Other miscellaneous products	131.9	131.9	131.1

1/ Data for Sept. 1996 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision 4 months after original publication.

2/ Prices of some items in this grouping are lagged 1 month.

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Summary Data from the Producer Price Index News Release January 1997

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Table 3. Producer Price Indexes for selected commodity groupings
(1982=100 unless otherwise indicated)

Commodity Code	Grouping	Unadjusted Indexes 1/		
		July 1996	Oct. 1996	Nov. 1996
	Finished Goods (1967=100)	369.1	372.0	371.9
	All commodities	128.0	127.9	128.1
	MAJOR COMMODITY GROUPS			
01	Farm products and processed foods and feeds	133.3	130.8	129.1
02	Processed foods and feeds	126.5	125.0	126.8
		134.8	135.9	134.9
	Industrial commodities			
03	Textile products and apparel	127.8	127.4	127.9
04	Hides, skins, leather, and related products	142.6	142.9	142.9
05	Fuels and related products and power 2/	149.4	152.8	153.6
06	Chemicals and allied products	95.9	96.1	96.1
07	Rubber and plastic products	142.0	142.0	141.5
08	Lumber and wood products	123.9	121.9	121.9
09	Pulp, paper, and allied products	175.8	175.8	175.5
10	Metals and metal products	140.0	140.0	140.4
11	Machinery and equipment	130.4	130.4	129.5
12	Furniture and household durables	126.1	126.2	126.1
13	Nonmetallic mineral products	141.5	141.9	142.0
14	Transportation equipment	141.5	141.7	141.8
15	Miscellaneous products	138.3	142.5	140.2
	Industrial commodities less fuels and related products and power	130.3	130.6	130.6
	Crude materials for further processing			
01-1	Fruits and melons, fresh and dry vegetables, and crop nuts	130.8	126.3	122.5
01-2	Grains	110.4	110.6	112.2
01-3	Slaughter poultry	99.6	100.0	100.2
01-4	Plant and animal fibers	151.1	144.1	143.1
01-5	Chicken eggs	118.2	119.9	121.1
01-6	Hay, haycands, and silages	116.7	116.0	115.7
01-7	Other farm products	138.5	138.4	139.2
01-8	Forest products	140.3	140.8	141.6
01-9	Cotton	160.3	167.8	161.4
02-1	Cattle and hides, skins, and leather products	110.0	109.1	110.4
02-2	Hogs, poultry, and fish	123.4	124.0	122.2
02-3	Processed poultry	117.0	118.3	118.7
02-4	Sugar and confectionery	134.3	135.4	135.2
02-5	Beverages and beverage materials	116.0	115.9	116.0
02-6a	Packaged beverage materials	125.3	125.3	125.5
02-6b	Alcoholic beverages	138.2	138.2	138.2
02-7	Fats and oils	141.8	141.1	141.1
02-8	Other foodstuffs and related products	81.3	78.9	80.2
02-9	Other leather and related products	142.8	142.8	142.8
03-1	Gas fuels 2/	82.0	84.5	84.6
03-2	Electric power	132.8	132.8	132.8
03-3	Refined petroleum products	99.5	94.5	94.6
03-4	Drugs and pharmaceuticals	215.4	215.3	215.3
03-5	Agricultural chemicals and products	129.9	131.3	131.1
03-6	Other chemicals and allied products	112.5	113.8	113.8
03-7	Rubber and rubber products	121.4	121.3	121.3
03-8	Rubber and rubber products	130.6	130.6	130.8
03-9	Plastic products	138.0	138.0	138.2
04-1	Leather	138.2	138.2	138.2
04-2	Textile products	141.8	141.1	141.1
05-1	Lumber	81.3	78.9	80.2
05-2	Plywood	132.8	132.8	132.8
05-3	Millwork	94.5	94.5	94.6
05-4	Other wood products	215.4	215.3	215.3
05-5	Pulp, paper, and paperboard	129.9	131.3	131.1
05-6	Converted paper and paperboard products	112.5	113.8	113.8
05-7	Newsprint	121.4	121.3	121.3
05-8	Paper mill chemicals	130.6	130.6	130.8
05-9	Miscellaneous pulp, paper, and allied products	138.0	138.0	138.2
06-1	Iron and steel	142.8	142.8	142.8
06-2	Nonferrous metals	143.3	143.3	143.3
06-3	Metal containers	142.4	142.4	142.4
06-4	Hardware	153.4	153.4	153.4
06-5	Plumbing equipment and supplies	121.1	121.1	121.1
06-6	Structural metal products	129.5	129.5	129.6
06-7	Miscellaneous metal products	140.4	140.4	140.5
07-1	Fabricated ferrous plate	140.4	140.4	140.5
07-2	Fabricated nonferrous plate	119.4	119.4	119.4
07-3	Fabricated structural metal products	138.6	138.6	138.6
07-9	Other miscellaneous products	142.5	142.5	142.5

1/ Data for July 1996 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision four months after original publication.

2/ Prices of some items in this grouping are lagged 1 month.

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Summary Data from the Producer Price Index News Release November 1996

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Table 3. Producer price indexes for selected commodity groupings

(1982=100 unless otherwise indicated)

Commodity code	Grouping	Feb. 1996	May 1996	June 1996
	Finished Goods (1967=100)	363.1	367.1	369.3
	All commodities	126.2	126.2	127.9
	MAJOR COMMODITY GROUPS			
01	Farm products and processed foods and feeds	126.8	131.8	130.9
02	Farm products	116.4	122.7	120.9
	Processed foods and feeds	132.5	132.6	134.8
	Industrial commodities			
03	Textile products and apparel	126.5	127.0	127.8
04	Hides, skins, leather, and related products	174.9	171.9	171.8
05	Fuels and related products and power 2/	149.5	149.9	149.3
06	Chemicals and allied products	80.9	80.5	80.8
07	Rubber and plastic products	130.7	132.6	132.8
08	Lumber and wood products	123.1	123.7	124.2
09	Pulp, paper and allied products	122.2	122.9	123.1
10	Metals and metal products	133.8	135.1	135.4
11	Machinery and equipment	127.3	126.9	126.4
12	Furniture and household durables	128.9	128.6	128.6
13	Nonmetallic mineral products	137.7	141.6	141.9
14	Miscellaneous products	144.4	144.8	145.0
15	Industrial commodities less fuels and related products and power	139.1	139.9	140.7
	OTHER COMMODITY GROUPINGS			
01-1	Fruits and melons, fresh and dry vegetables, and tree nuts	152.7	136.5	125.5
01-2	Grains	142.5	146.5	144.5
01-3	Slaughter livestock	96.5	93.9	91.8
01-4	Slaughter poultry	126.8	128.4	128.7
01-5	Plant and animal fibers	156.7	158.4	155.7
01-6	Chicken eggs	158.8	152.5	158.2
01-7	Hay, hayseeds, and oilseeds	127.4	135.2	140.9
01-8,9	Other foodstuffs	128.1	128.4	129.4
02-1	Cereal and bakery products	127.4	127.4	128.1
02-2	Processed poultry	122.8	123.2	123.4
02-3	Sugar and confectionery	122.0	122.6	122.6
02-4	Packaged beverage materials	135.9	135.9	135.9
02-43	Fats and oils	134.5	134.4	134.7
02-7	Apparel	128.9	128.9	128.7
03-41	Other leather and related products	138.1	138.1	135.6
04-5	Gasoline	125.2	125.8	125.3
05-1	Commercial electric power	89.6	89.6	89.8
05-7	Refined petroleum products	176.9	171.1	170.7
06-3	Industrial chemicals	61.4	61.4	61.4
06-5	Drugs and pharmaceuticals	215.4	216.7	216.9
06-7	Agricultural chemicals and products	152.6	152.6	153.2
06-8	Other chemicals and allied products	132.4	132.4	132.5
07-1,5	Rubber and rubber products	116.2	116.2	116.2
07-13	Tires sold for use on motor vehicles	122.3	122.3	122.3
07-2	Miscellaneous rubber products	135.5	135.5	135.4
07-4	Plastic products	139.5	139.5	139.7
08-1	Lumber	146.8	148.2	149.1
09-1	Paper and products, excluding building paper and board	150.9	148.4	147.6
09-15	Converted paper and paperboard products	158.8	157.7	157.6
10-1	Iron and steel	115.5	126.5	126.8
10-2	Nonferrous metals	148.3	162.8	158.8
10-23	Nonferrous mill shapes	142.2	142.2	142.2
11-1	Metalworking machinery and equipment	141.6	141.6	141.6
11-2	General purpose machinery and equipment	142.3	142.3	142.3
11-4	Special industry machinery, except metalworking	124.6	124.6	124.7
11-7	Electrical machinery and equipment	124.6	124.6	123.7
11-9	Miscellaneous machinery and equipment	128.2	128.2	128.2
12-4	Other household durable goods	147.1	147.1	147.1
13-1	Concrete ingredients	156.7	156.7	156.1
14-1	Transportation equipment, n.e.c.	139.5	139.5	139.5
15-1	Toys, sporting goods, small arms, etc.	114.5	114.5	114.5
15-4	Photographic equipment and supplies	138.2	138.2	138.3
15-6	Other miscellaneous products	151.3	150.8	150.9

1/ Data for Feb. 1996 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision 4 months after original publication.

2/ Prices of some items in this grouping are lagged 1 month.

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Summary Data from the Producer Price Index News Release June 1996

This news release from the Bureau of Labor Statistics of the U.S. Department of Labor provides summary data from the Producer Price Index. Full detail and a summary text appear in the monthly periodical *Producer Price Indexes*, available for $35 per year from New Orders, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15220-7954. PPI data also are available online, on diskette, and on tape. For information, write BLS, 2 Massachusetts Ave. N.E., Washington, DC 20212. For recorded messages about PPI data, call (202) 606-STAT. For PPI definitions and methodology, see chapter 14 of the *BLS Handbook of Methods*, BLS Bulletin 2414, $15, available from Publications Sales Center, P.O. Box 2145, Chicago, IL 60680. For information for the sensory impaired, call voice phone (202) 606-STAT, or TDD message referral 1-(800) 326-2577.

Table 3. Producer price indexes for selected commodity groupings
(1982=100 unless otherwise indicated)

Commodity code	Grouping	Unadjusted Index 1/		
		Dec. 1995	March 1996	April 1996
	Finished Goods (1967=100)	362.2	365.5	367.1
	All Commodities	125.7	126.6	127.5
	MAJOR COMMODITY GROUPS			
01	Farm products and processed foods and feeds	125.4	126.7	127.9
02	Processed foods and feeds	118.5	119.5	121.2
	Industrial commodities	118.2	118.3	118.6
03	Textile products and apparel	125.8	126.2	127.6
04	Hides, skins, leather, and related products	121.3	122.1	122.1
05	Fuels and related products and power 2/	77.9	79.5	80.2
06	Chemicals and allied products	140.2	141.6	140.2
07	Rubber and plastic products	124.3	123.7	123.5
08	Lumber and wood products	173.5	171.4	169.6
09	Pulp, paper, and allied products	176.7	174.4	174.4
10	Metals and metal products	133.6	131.8	131.6
11	Machinery and equipment	123.0	123.4	123.4
12	Furniture and household durables	129.3	129.8	130.8
13	Nonmetallic mineral products	139.7	139.4	139.5
14	Transportation equipment	141.7	141.6	141.7
15	Miscellaneous products	146.9	146.2	146.2
	Industrial commodities less fuels and related products and power	139.9	138.9	138.7
	OTHER COMMODITY GROUPINGS			
01-1	Fruits and melons, fresh and dry vegetables	115.5	130.8	126.1
01-2	Grains	119.4	119.4	122.2
01-3	Slaughter livestock	132.5	133.9	136.2
01-4	Plant and animal fibers	137.9	138.8	138.9
01-5	Chickens	138.8	137.9	142.2
01-6	Eggs, nayweeds, and oilseeds	133.8	134.9	136.4
01-9	Other farm products	161.7	162.5	162.5
02-1	Cereal and bakery products	169.2	169.2	169.1
02-2	Meats, poultry, and fish	112.5	111.1	110.6
02-3	Processed poultry	118.8	118.8	113.8
02-4	Miscellaneous processed foods	139.3	139.1	139.1
02-5	Packaged beverage materials	137.8	135.1	135.8
02-7	Fats and oils	131.4	131.4	133.6
02-8	Alcoholic beverages	122.6	122.6	123.2
02-9	Other processed foods	146.3	146.3	148.8
05-1	Coal	78.7	77.8	77.5
05-2	Electric power	82.9	84.1	84.5
05-4	Refined petroleum products	59.8	62.2	62.5
05-5	Crude petroleum	213.8	213.2	213.6
06-1	Drugs and pharmaceuticals	153.7	153.7	153.9
06-2	Agricultural chemicals and products	131.5	131.7	132.0
06-7	Other chemicals and allied products	116.6	116.6	116.1
07-1	Rubber and rubber products	135.9	135.9	135.7
07-11	Rubber, except natural rubber	106.8	106.8	106.8
07-13	Natural rubber products	142.3	142.3	142.4
07-2	Plastic products	140.8	140.8	140.8
08-1	Lumber	168.2	169.8	171.2
09-1	Pulp, paper, and products, excluding building	151.8	152.8	153.0
09-15	Paper and board	144.2	145.3	145.9
10-1	Iron and steel	141.2	141.3	138.3
10-2	Nonferrous metals	144.6	143.8	125.9
10-25	Nonferrous mill shapes	145.6	145.6	140.6
11-3	Metalworking machinery and equipment	141.4	142.5	142.8
11-4	Special industry machinery and equipment	140.8	140.8	140.8
11-7	Electrical machinery and equipment	151.8	152.0	152.4
11-9	Miscellaneous machinery	124.3	124.3	125.0
13-12	Other nonmetallic minerals, except fuels	137.7	137.8	138.4
14-1	Motor vehicles and equipment	134.9	134.9	134.9
15-1	Toys, sporting goods, small arms, etc.	120.6	120.5	120.1
15-9	Other miscellaneous products	174.3	174.3	174.3
		132.9	132.8	132.6

1/ Data for 1995 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision 4 months after original publication.

2/ Prices of some items in this grouping are lagged 1 month.

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Summary Data from the Producer Price Index News Release April 1996

This news release from the Bureau of Labor Statistics of the U.S. Department of Labor provides summary data from the Producer Price Index. Full detail and a summary text appear in the monthly periodical *Producer Price Indexes*, available for $35 per year from: New Orders, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15220-7954. PPI data also are available online, on diskette, and on tape. For information, write BLS, 2 Massachusetts Ave., N.E., Washington, DC 20212. For recorded messages about PPI data, call (202) 606-STAT. For PPI definitions and methodology, see chapter 15 of the *BLS Handbook of Methods*, BLS Bulletin 2414, $15, available from Publications Sales Center, P.O. Box 2145, Chicago, IL 60680. For information for the sensory impaired, call voice phone (202) 606-STAT, or TDD message referral 1-(800) 326-2577.

Table 3. Producer price indexes for selected commodity groupings
(1982=100 unless otherwise indicated)

Commodity code	Grouping	Unadjusted indexes 1/		
		Sept. 1994	Dec. 1994	Jan. 1995
	Finished goods (1967=100)	359.5	359.5	355.9
	All commodities	121.8	121.8	122.6
	MAJOR COMMODITY GROUPS			
01	Farm products and processed foods and feeds	117.1	116.1	117.9
02	Farm products and fields	101.5	105.6	103.5
	Processed foods and feeds	125.0	124.3	125.1
	Industrial commodities	121.7	122.4	123.4
03	Textile products and apparel	118.7	118.8	119.3
04	Hides, skins, leather, and related products	150.8	153.6	154.3
05	Fuels and related products and power 2/	79.9	78.1	76.3
06	Chemicals and allied products 2/	136.4	138.4	139.7
07	Rubber and plastic products 2/	118.5	120.6	120.7
08	Lumber and wood products	178.3	179.4	179.3
09	Pulp, paper, and allied products	156.5	159.1	162.1
10	Metals and metal products	126.5	126.5	127.1
11	Machinery and equipment	120.2	120.7	121.2
12	Furniture and household durables	128.1	128.4	128.6
13	Nonmetallic mineral products	135.6	138.4	138.4
14	Transportation equipment	141.6	142.5	143.0
15	Miscellaneous products			135.0
	Industrial commodities less fuels and related products and power	131.3	135.6	136.8
	OTHER COMMODITY GROUPINGS			
01-1	Fruits and melons, fresh and dry vegetables, and tree nuts	92.2	156.7	138.3
01-2	Grains	96.2	95.3	96.5
01-3	Slaughter livestock	91.3	91.6	98.4
01-4	Slaughter poultry	114.2	114.2	108.8
01-5	Plant and animal fibers	132.6	132.6	144.5
01-6	Eggs	98.8	98.8	92.5
01-7	Milled rice, and oilseeds	102.6	102.5	101.2
01-8	Oilseeds	88.7	86.3	88.2
01-9	Other farm products	153.4	160.2	160.2
02-1	Cereal and bakery products	138.9	141.3	141.4
02-2	Meats, poultry, and fish	118.7	119.8	120.8
02-3	Dairy products, fresh	115.7	117.1	118.8
02-5	Processed fruits and vegetables	133.9	131.2	131.7
02-6	Sugar and confectionery	129.7	129.6	130.0
02-4	Beverages and beverage materials	140.4	147.6	145.7
-02-7	Packaged beverage materials	129.6	135.6	135.7
-02-8	Fats and oils	137.5	137.9	123.2
-02-9	Other foods	69.8	68.2	68.3
03-1	Apparel	127.1	127.1	127.9
03-2	Textile fabrics	97.4	97.4	97.2
04-1	Hides, skins, leather, and related products	206.4	206.5	206.5
05-1	Fuels and power 2/	152.6	155.6	128.5
05-2	Coal	112.2	113.1	113.8
05-3	Gas fuels 2/	118.4	118.4	114.4
05-4	Electric power	129.0	130.1	130.5
05-7	Refined petroleum products	126.4	126.4	127.1
06-1	Industrial chemicals	83.8	87.4	87.4
06-3	Drugs and pharmaceuticals	206.4	206.5	207.5
06-5	Agricultural chemicals and products	121.4	121.4	121.4
06-6	Other chemicals and allied products	152.6	155.6	128.5
07-1	Rubber and rubber products	112.2	113.1	113.8
07-11	Rubber, except natural rubber	118.4	118.4	114.4
07-13	Miscellaneous rubber products	129.0	130.1	130.5
07-2	Plastic products	126.4	126.4	127.1
08-1	Lumber	184.7	184.7	184.9
09-1	Pulp, paper, and products, excluding building paper and board	136.3	143.8	144.2
09-2	Converted paper and paperboard products	130.1	143.2	144.2
10-1	Iron and steel	121.1	121.6	127.0
10-26	Nonferrous metals	131.2	144.7	149.4
11-3	Metalworking machinery and equipment	130.3	130.3	131.2
11-4	General purpose machinery and equipment	137.8	137.8	137.9
11-5	Special industry machinery	135.2	136.0	136.0
11-6	Electrical machinery and equipment	125.2	127.6	128.0
11-9	Miscellaneous machinery and equipment	125.3	125.3	125.3
12-6	Commercial furniture	141.5	141.5	141.5
13-2	Concrete ingredients	129.8	129.8	130.2
14-1	Motor vehicles and equipment	129.8	129.8	131.0
15-1	Toys, sporting goods, small arms, etc.	122.5	122.5	122.5
15-4	Photographic equipment and supplies	115.7	115.7	115.6
15-9	Other miscellaneous products	129.8	129.8	130.1

1/ Data for Sept. 1994 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision 4 months after original publication.

2/ Prices of some items in this grouping are lagged 1 month.

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Summary Data from the Producer Price Index News Release January 1995

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Table 3. Producer price indexes for selected commodity groupings
(1982=100 unless otherwise indicated)

Commodity code	Grouping	Unadjusted Index 1/ Sept. 1993	Dec. 1993	Jan. 1994
	Finished Goods (1967=100)	147.6	150.3	149.1
	All commodities	119.7	119.6	119.8
	MAJOR COMMODITY GROUPS			
01	Farm products and processed foods and feeds	118.3	121.7	121.2
02	Farm products	106.1	112.5	111.3
	Processed foods and feeds	124.5	125.2	126.1
03	Industrial commodities	118.8	117.9	118.5
04	Textile products and apparel	114.1	113.6	113.7
05	Hides, skins, leather, and related products	140.1	140.4	140.4
06	Fuels and related products and power 2/	83.9	79.4	79.8
07	Chemicals and allied products	128.1	128.8	128.1
08	Rubber and plastic products	114.2	114.0	114.6
09	Lumber and wood products	147.1	150.9	150.7
10	Pulp, paper, and allied products	129.5	130.6	130.7
11	Metals and metal products	126.4	126.6	126.7
12	Machinery and equipment	126.8	126.9	126.9
13	Furniture and household durables	118.7	118.8	118.8
14	Nonmetallic mineral products	131.7	131.8	131.8
15	Transportation equipment	133.0	133.2	133.2
	Miscellaneous products			
	Industrial commodities less fuels and related products and power	129.1	130.3	130.8
	OTHER COMMODITY GROUPINGS			
01-1	Fruits and melons, fresh and dry vegetables	107.3	121.4	108.6
01-2	Grains	92.2	116.4	116.9
01-3	Slaughter livestock	105.2	99.2	100.2
01-4	Slaughter poultry	129.6	128.4	130.5
01-5	Plant and animal fibers	93.2	94.0	94.1
01-6	Eggs, nuts, and miscellaneous	103.5	102.7	102.4
01-7	Fluid milk	138.6	139.2	139.2
01-8	Processed fruits and vegetables	130.5	132.6	132.6
01-81	Processed fruits and vegetables, excluding frozen concentrated juices	135.2	135.2	135.2
01-9	Other farm products	115.6	115.2	115.9
02-1	Cereal and bakery products	135.2	135.2	135.2
02-2	Processed poultry	126.4	126.4	126.4
02-5	Sugar and confectionary	120.7	120.7	120.7
02-6	Beverages and beverage materials	103.7	103.7	103.7
02-7	Fats and oils	118.7	122.1	122.1
03-81	Apparel	123.3	123.3	123.3
04-4	Other leather and related products	121.6	121.6	121.6
05-3	Gas fuels 2/	78.2	74.2	74.2
05-4	Electric power	145.8	145.8	145.8
05-7	Refined petroleum products	61.1	53.9	53.9
06-3	Basic organic chemicals	202.3	202.3	202.3
06-5	Agricultural chemicals and chemical products	105.5	112.6	113.7
06-7	Other chemicals and allied products	101.8	101.8	101.8
07-11	Rubber and rubber products	111.8	111.8	111.8
07-12	Miscellaneous rubber products	110.3	110.3	110.3
07-2	Plastic products	122.8	122.8	122.8
08-1	Lumber, plywood, and prefabricated buildings	179.8	179.8	179.8
09-1	Pulp, paper, and products, excluding building paper and board	126.6	126.9	126.8
09-15	Converted paper and paperboard products	123.4	123.4	123.4
10-1	Iron and steel	115.6	115.6	115.6
10-25	Nonferrous mill shapes	119.6	119.6	119.6
11-3	Nonferrous wire and cable	112.8	112.8	112.8
11-4	Metalworking machinery and equipment	134.1	134.1	134.1
11-6	General purpose machinery and equipment	132.7	132.7	132.7
11-7	Special industry machinery and equipment	126.1	126.1	126.1
11-9	Agricultural machinery and equipment	120.6	120.6	120.6
12-4	Other household durable goods	123.4	123.4	123.4
13-2	Concrete ingredients	134.5	134.5	134.5
14-1	Motor vehicles and equipment	125.9	125.9	125.9
15-1	Tires, tubes, tread and repair material	126.4	126.4	126.4
15-4	Photographic equipment and supplies	118.6	118.6	118.6
15-9	Other miscellaneous products	124.6	124.6	124.9

1/ Data for Sept. 1993 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision 4 months after original publication.

2/ Prices of some items in this grouping are lagged 1 month.

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1321 CAMERON ST.
ALEXANDRIA VA 22314

Summary Data from the Producer Price Index News Release January 1994

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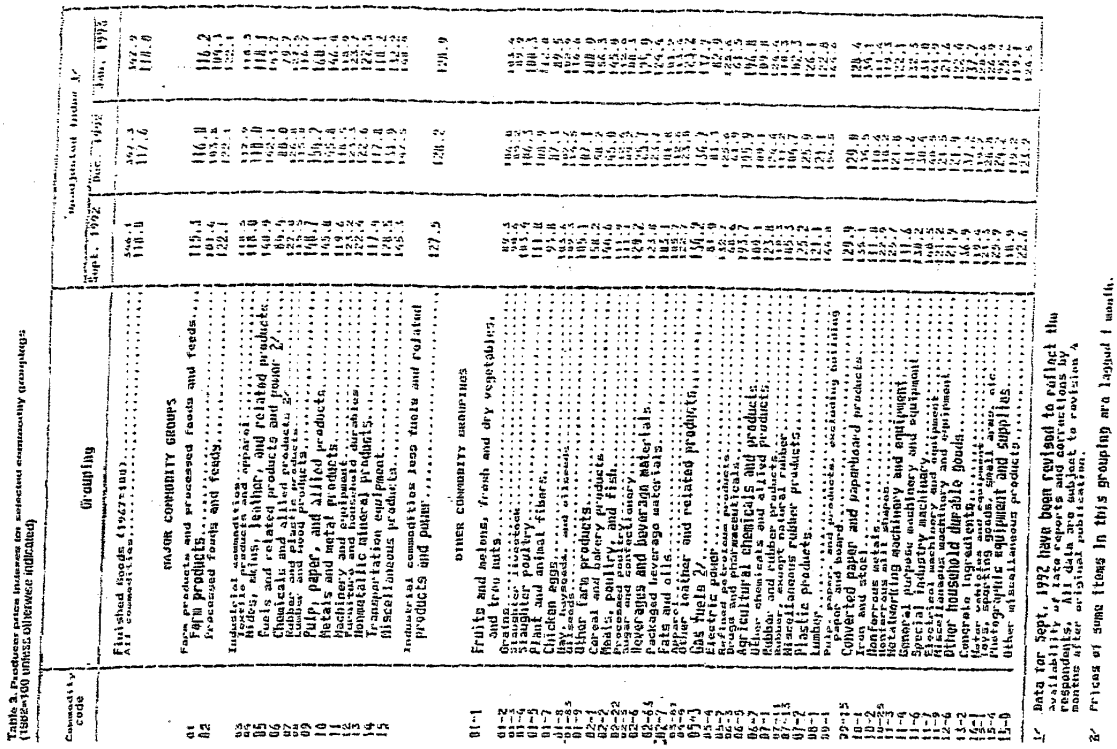


Table 3. Producer price indexes for selected commodity groupings
(1982=100 unless otherwise indicated)

Commodity code	Grouping	Unadjusted Index 1/ Sept. 1992	Dec. 1992	Jan. 1993
	Finished goods (1967=100)	116.8	117.6	118.0
	All commodities	116.8	117.6	118.0
	MAJOR COMMODITY GROUPS			
01	Farm products and processed foods and feeds	115.1	116.8	116.2
02	Farm products	101.6	103.8	104.1
	Processed foods and feeds	122.1	122.1	122.1
03	Industrial commodities	118.5	118.8	119.3
	Textile products and apparel	118.0	118.0	118.7
05	Hides, skins, leather, and related products	140.9	142.1	142.1
06	Fuels and related products and power 2/	89.6	89.0	89.0
07	Chemicals and allied products	122.9	122.8	123.2
08	Rubber and plastic products	136.8	136.8	136.8
09	Lumber and wood products	146.7	146.7	146.7
10	Pulp, paper, and allied products	119.4	119.4	119.4
11	Metals and metal products	123.6	123.5	123.7
12	Machinery and equipment	122.6	122.6	122.5
13	Nonmetallic mineral products	117.9	117.8	118.2
14	Transportation equipment	128.5	131.9	132.6
15	Miscellaneous products	140.5	140.5	140.6
	Industrial commodities less fuels and related products and power	127.5	128.2	128.9
	OTHER COMMODITY GROUPINGS			
01-1	Fruits and melons, fresh and dry vegetables and tree nuts	89.5	106.8	103.9
01-2	Grains	84.4	85.5	85.9
01-3	Slaughter livestock	103.4	100.3	100.3
01-4	Slaughter poultry	111.8	114.8	114.8
01-5	Plant and animal fibers	91.8	89.1	89.5
01-6	Chicken eggs	103.5	102.6	102.4
01-7	Hay, hayseeds, and oilseeds	105.1	105.1	108.9
01-8	Other farm products	106.2	106.2	106.3
02-1	Cereal and bakery products	111.3	111.3	111.3
02-2	Meats, poultry, and fish	128.2	128.2	128.1
02-3	Processed poultry	123.6	123.7	124.9
02-4	Dairy products	124.4	124.4	124.4
02-5	Processed fruits and vegetables	145.1	145.1	145.1
02-6	Sugar and confectionery	155.7	155.7	155.7
02-7	Beverages and beverage materials	136.2	136.2	136.2
02-8	Packaged beverage materials	81.9	81.9	82.0
02-9	Fats and oils	136.7	136.7	136.7
03-1	Other leather and related products	82.9	82.9	82.9
05-1	Gas fuels 2/	48.6	48.6	48.6
05-2	Electric power	193.7	193.7	193.7
05-3	Refined petroleum products	100.1	100.1	100.1
05-4	Crude fuels	123.8	123.8	124.4
06-1	Drugs and pharmaceuticals	165.3	165.3	165.3
06-2	Agricultural chemicals and products	125.2	125.2	126.3
06-3	Other chemicals and allied products	121.1	121.1	121.1
06-7	Rubber and rubber products	144.8	144.8	144.8
07-11	Miscellaneous plastic products	129.9	129.9	129.8
07-13	Miscellaneous rubber products	156.1	156.1	156.1
07-2	Plastic products	111.8	111.8	112.3
08-1	Lumber	125.7	125.7	125.7
09-1	Pulp, paper, and products, excluding building	121.1	121.1	121.1
10-1	Converted paper and paperboard products	129.8	129.8	129.4
10-2	Iron and steel scrap	106.5	106.5	106.5
10-3a	Nonferrous metals	111.8	111.8	111.1
10-3b	Nonferrous mill shapes	118.2	118.2	119.3
11-4	Metalworking machinery and equipment	121.8	121.8	122.1
11-6	General purpose machinery and equipment	131.4	131.4	131.5
11-7	Special industry machinery	138.6	138.6	138.6
11-9	Miscellaneous machinery	141.8	141.8	141.8
12-6	Miscellaneous machinery and equipment	121.2	121.2	121.2
13-2	Other household durable goods	124.9	124.9	124.9
14-1	Complete ingredients	131.4	131.4	132.4
14-2	Motor vehicles and equipment	127.5	127.5	127.5
15-4	Toys, sporting and amusement goods	126.8	126.8	126.8
15-5	Photographic equipment and supplies	129.9	129.9	129.9
15-9	Other miscellaneous products	118.9	119.2	119.1
		122.6	122.6	124.5

1/ Data for Sept. 1992 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision 4 months after original publication.

2/ Prices of some items in this grouping are lagged 1 month.

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1321 CAMERON ST.
ALEXANDRIA VA 22314

Summary Data from the Producer Price Index News Release January 1993

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Table 3. Producer price indexes for selected commodity groupings
(1982=100 unless otherwise indicated)

Commodity code	Grouping	Unadjusted index 1/			Unadjusted index 1/	
		Dec. 1991	March 1992	April 1992	March 1992	April 1992
	Finished goods (1967=100)	342.1	342.9	342.9	342.9	342.9
	All commodities	115.9	116.3	116.3	116.3	116.3
	MAJOR COMMODITY GROUPS					
01	Farm products and processed foods and feeds	116.5	116.8	115.8	115.8	115.8
02	Processed foods and feeds	120.6	120.9	120.9	120.9	120.9
		121.4	122.0	122.2	122.2	122.2
	Industrial commodities					
03	Textile products and apparel	116.1	115.8	116.3	116.3	116.3
05	Hides, skins, leather and related products	137.4	137.6	137.6	137.6	137.6
06	Fuels and related products and power 2/	139.1	140.2	139.0	139.0	139.0
07	Chemicals and allied products 2/	76.2	76.2	77.2	77.2	77.2
08	Rubber and plastic products	125.7	124.5	124.9	124.9	124.9
09	Lumber and wood products	115.9	115.6	114.4	114.4	114.4
10	Pulp, paper, and allied products	144.6	144.3	144.3	144.3	144.3
11	Metals and metal products	142.7	142.7	142.7	142.7	142.7
12	Machinery and equipment	118.7	119.4	119.4	119.4	119.4
13	Furniture and household durables	123.2	123.5	125.4	125.4	125.4
14	Nonmetallic mineral products	121.7	121.9	122.1	122.1	122.1
15	Transportation equipment	129.4	129.4	129.4	129.4	129.4
16	Miscellaneous products	143.4	144.1	144.1	144.1	144.1
	Industrial commodities less fuels and related products and power	126.2	127.0	127.1	127.0	127.1
	OTHER COMMODITY GROUPINGS					
01-1	Fruits and melons, fresh and dry vegetables	88.7	104.1	98.2	98.2	98.2
01-2	Grains	97.7	108.5	102.7	102.7	102.7
01-3	Slaughter livestock	97.7	107.0	105.4	105.4	105.4
01-4	Slaughter poultry	106.1	105.4	102.8	102.8	102.8
01-5	Cotton, wool, and other fibers	118.2	92.4	89.8	89.8	89.8
01-6	Hay, hayseeds, and oilseeds	106.8	111.7	100.3	100.3	100.3
01-7	Other farm products	103.0	118.4	107.9	107.9	107.9
01-8	Nursery and floral products	141.3	169.9	140.8	140.8	140.8
01-9	Poultry and eggs	110.0	112.8	112.6	112.6	112.6
02-1	Processed poultry	105.3	106.9	107.4	107.4	107.4
02-2	Sugar and confectionery	128.8	127.5	126.2	126.2	126.2
02-3	Beverages and beverage materials	124.2	124.7	124.7	124.7	124.7
02-4	Fats and oils	108.9	111.8	107.3	107.3	107.3
02-5	Other foodstuffs	120.6	121.4	121.7	121.7	121.7
02-6	Alcoholic beverages	83.6	136.4	133.8	133.8	133.8
02-7	Manufactured animal feeds	121.9	73.1	76.7	76.7	76.7
02-8	Prepared animal feeds	63.4	59.2	121.5	121.5	121.5
02-9	Crude vegetable products	184.5	184.5	91.9	91.9	91.9
03-1	Drugs and pharmaceuticals	119.6	119.6	169.6	169.6	169.6
03-2	Other chemicals and allied products	110.2	111.1	111.2	111.2	111.2
04-1	Rubber and rubber products	122.4	122.4	122.5	122.5	122.5
04-2	Miscellaneous plastic products	105.1	105.1	105.1	105.1	105.1
04-3	Plastic products	124.4	124.4	124.5	124.5	124.5
05-1	Lumber, plywood, and prefabricated wood products	120.5	120.5	120.2	120.2	120.2
05-2	Pulp, paper, and products, excluding building	128.5	128.5	129.2	129.2	129.2
05-15	Converted paper and paperboard products	130.0	130.0	128.4	128.4	128.4
10-1	Iron and steel	112.3	112.3	153.6	153.6	153.6
10-25	Nonferrous metals	121.6	121.6	112.5	112.5	112.5
11-3	Metalworking machinery	122.8	122.8	122.1	122.1	122.1
11-4	General purpose machinery and equipment	128.5	128.5	124.6	124.6	124.6
11-5	Special industry machinery and equipment	128.4	128.4	130.3	130.3	130.3
11-6	Special industry machinery, n.e.c.	116.9	116.9	138.8	138.8	138.8
11-7	Electrical machinery and equipment	120.9	120.9	121.5	121.5	121.5
12-6	Miscellaneous machinery and equipment	121.5	121.5	121.5	121.5	121.5
13-2	Concrete, building and paving products	135.2	135.2	119.6	119.6	119.6
14-1	Motor vehicles and equipment	118.2	118.2	124.7	124.7	124.7
15-1	Ships, sporting goods, small arms, etc.	124.9	124.9	125.5	125.5	125.5
15-4	Miscellaneous manufactured commodities	121.8	121.8	121.6	121.6	121.6
15-9	Miscellaneous products	126.9	126.9	121.9	121.9	121.9

1/ Data for Dec. 1991 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision 4 months after original publication.

2/ Prices of some items in this grouping are lagged 1 month.

(e)Correction. Data for chicken eggs shown in the January, February, and March 1992 releases were incorrect. Correct data are as follows: September 1991 105.6; October 1991 105.0; November 1991 102.1; January 1992 91.9; and February 1992 94.1.

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April 1992

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Table C

QUARTERLY INDEXES OF CHARGEOUT PRICES AND WAGE RATES (1977=100)

WEST

	1Q99	2Q99	3Q99	4Q99	1Q00	2Q00	3Q00	4Q00	1Q01	2Q01	3Q01	4Q01
Wage rates	280.4	280.5	286.4	288.1	293.6	293.6	297.8	297.8	308.9	309.9	311.4	311.4
Wage supplements	379.6	379.7	366.3	366.1	415.6	415.6	416.1	416.2	415.9	416.4	423.8	423.9
Fuel	124.7	155.3	172.5	206.2	225.6	247.7	260.9	313.5	281.8	261.6	244.2	234.3
Materials and supplies	229.3	229.1	233.1	231.5	227.5	226.4	229.4	230.0	229.9	234.9	235.5	235.6
Equipment rents	241.1	239.1	240.2	239.3	239.0	240.9	240.9	240.2	240.7	243.6	243.8	
Purchased services	290.7	290.8	294.3	293.8	305.8	305.6	309.0	309.1	316.6	318.1	320.5	
Depreciation	374.6	362.2	369.2	373.3	384.7	383.7	387.0	392.0	403.4	404.7	404.8	
Interest	422.4	419.2	423.5	393.7	435.1	428.7	425.8	398.4	401.7	394.8	401.7	
Taxes (other than income and payroll)	216.2	197.4	207.5	189.5	214.9	305.3	240.9	159.5	214.5	284.6	271.2	
All other operating expenses	189.0	191.5	195.4	197.2	199.8	203.1	206.0	208.3	211.7	209.8	205.4	
Wage rates and supplements	303.7	303.8	307.2	306.9	322.0	322.0	325.4	325.4	334.4	335.3	338.0	338.0
All materials (incl. fuel)	163.3	181.2	192.8	212.0	229.3	244.6	254.9	282.3	269.8	257.0	244.9	237.9
Matl. prices & wage rates combined (excl. fuel)	269.6	269.6	276.7	276.1	279.7	279.5	283.6	283.6	292.6	294.3	295.6	296.7
Matl. prices & wage rates combined (incl. fuel)	230.2	245.9	255.6	263.7	277.1	283.8	290.9	307.3	304.1	299.1	294.7	291.6
Materials prices, wage rates and supplements combined (excl. fuel)	290.7	290.8	294.3	293.8	305.8	305.6	309.0	309.1	316.6	318.1	320.5	320.5
Materials prices, wage rates and supplements combined (incl. fuel) - OMPW	262.7	269.5	276.1	283.1	302.7	308.7	315.0	329.5	326.7	322.3	319.4	316.7
Taxes, purchased serv. and other expenses	226.6	225.6	230.0	226.6	235.3	245.7	242.2	235.6	245.4	251.7	249.0	
Equip. rents, deprec. and interest	322.5	316.4	320.2	317.1	327.6	327.4	328.1	325.2	329.8	330.8	332.0	
Equip. rents, taxes, deprec., purch. serv., interest & other expenses	278.7	275.0	279.2	276.9	285.6	290.6	289.2	284.5	291.7	295.4	294.7	
Total excl. fuel	288.9	287.0	290.8	289.4	299.8	302.5	303.3	300.7	308.2	310.9	311.7	
Total excl. interest	268.2	270.3	275.8	279.7	282.9	299.0	301.8	308.6	310.4	310.1	307.9	
Total excl. interest and depreciation	254.9	256.5	263.9	267.6	280.8	287.3	290.2	297.0	298.0	297.4	295.1	
Railroad Cost Recovery Index	273.6	275.5	281.0	283.7	298.5	304.2	306.8	312.3	314.3	313.7	311.8	

0703

2Q01 Fuel Price .7981 x 2Q01 Fuel Index 261.6 ÷ 266.7 2000 = .7712

2000 Fuel 932,271,000 ÷ 1,168,149,348 Gallons = .7981

Table C

QUARTERLY INDEXES OF CHARGEOUT PRICES AND WAGE RATES (1977=100)

WEST

	1Q96	2Q96	3Q96	4Q96	1Q97	2Q97	3Q97	4Q97	1Q98	2Q98	3Q98	4Q98
Wage rates	266.1	270.9	278.3	278.8	275.0	274.4	279.3	279.5	279.4	278.9	282.4	
Wage supplements	376.6	379.1	367.9	368.1	381.6	381.4	380.7	380.8	405.6	405.4	379.3	
Fuel	182.4	216.1	193.1	231.5	217.1	203.1	182.9	197.5	172.6	163.3	153.3	
Materials and supplies	222.5	223.9	226.8	226.9	228.2	230.6	233.3	233.8	234.0	231.3	232.7	
Equipment rents	239.1	239.5	239.5	239.3	238.0	235.3	236.0	237.1	238.0	240.0		
Purchased services	279.8	283.6	287.1	287.5	287.4	287.4	290.9	291.2	295.5	294.7		
Depreciation	318.7	317.6	314.3	253.1	314.4	295.7	349.6	327.6	340.9	359.7		
Interest	319.0	286.8	350.4	356.7	321.7	348.7	360.4	383.8	394.1	415.7		
Taxes (other than income and payroll)	267.1	246.1	250.5	212.3	244.5	206.7	206.0	215.9	273.7	264.3		
All other operating expenses	194.3	196.9	197.2	197.6	198.1	195.9	195.9	196.3	192.6	192.3		
Wage rates and supplements	291.8	296.2	299.8	300.2	300.0	299.3	303.0	303.2	308.5	308.1	305.2	
All materials (incl. fuel)	194.8	213.9	202.5	223.5	216.2	209.8	199.0	207.8	193.3	186.8	181.4	
Matl. prices & wage rates combined (excl. fuel)	257.0	261.0	267.5	267.9	265.2	265.2	269.6	269.9	269.8	268.9	271.9	
Matl. prices & wage rates combined (incl. fuel)	243.5	254.0	254.2	262.8	257.6	254.5	252.8	256.7	250.4	247.4	247.1	
Materials prices, wage rates and supplements combined (excl. fuel)	279.8	283.6	287.1	287.5	287.6	287.4	290.9	291.2	295.5	294.7	292.6	
Materials prices, wage rates and supplements combined (incl. fuel) - QMPW	267.0	276.5	275.1	282.6	280.0	277.3	275.7	279.1	277.2	274.5	270.5	
Taxes, purchased serv. and other expenses	231.6	231.7	235.3	229.2	233.0	227.5	228.8	230.2	236.9	235.3		
Equip. rents, deprec. and interest	287.8	282.9	298.5	266.9	284.3	279.7	301.9	297.5	304.3	315.4		
Equip. rents, taxes, deprec., purch. serv., interest & other expenses	262.8	260.3	270.2	250.8	261.9	256.8	269.0	267.4	274.2	279.9		
Total excl. fuel	274.8	275.5	282.3	272.5	278.4	275.7	283.8	283.1	288.8	291.1		
Total excl. interest	266.3	271.6	272.5	267.9	273.4	268.2	272.9	273.2	275.0	275.2		
Total excl. interest and depreciation	258.4	264.4	264.5	267.5	268.9	263.2	262.7	265.3	266.0	264.2		
Railroad Cost Recovery Index	268.2	272.2	276.1	271.1	275.1	271.0	276.0	277.0	279.2	280.1		

Table C

QUARTERLY INDEXES OF CHARGEOUT PRICES AND WAGE RATES (1977=100)

WEST

	1Q94	2Q94	3Q94	4Q94	1Q95	2Q95	3Q95	4Q95	1Q96	2Q96	3Q96	4Q96
Wage rates	258.1	258.2	262.9	262.9	254.1	254.7	257.1	257.2	266.1	270.9		
Wage supplements	372.6	372.6	375.4	375.4	393.9	394.2	389.6	389.6	376.6	379.1		
Fuel	168.3	171.2	170.7	185.6	170.3	178.5	171.2	182.2	182.4	216.1		
Materials and supplies	223.5	222.9	225.2	224.1	221.6	222.9	226.7	225.1	222.5	223.9		
Equipment rents	224.1	224.7	225.8	226.3	229.7	235.7	237.3	238.9	239.1			
Purchased services	273.6	273.5	277.4	277.2	274.7	275.4	276.9	276.6	279.8			
Depreciation	249.4	246.5	249.8	253.4	263.4	272.6	282.0	327.6	316.7			
Interest	265.0	268.2	272.8	276.7	265.7	284.0	295.6	318.5	319.0			
Taxes (other than income and payroll)	232.3	230.4	222.5	201.7	245.0	205.3	251.8	256.3	267.1			
All other operating expenses	183.8	184.9	186.3	187.1	189.9	192.5	192.8	193.0	194.3			
Wage rates and supplements	283.7	283.8	288.1	288.2	285.9	286.4	287.4	287.4	291.8	296.2		
All materials (incl. fuel)	186.6	189.9	195.0	197.2	197.8	199.4	199.5	195.8	194.8	213.9		
Matl. prices & wage rates combined (excl. fuel)	251.1	251.0	255.1	254.6	247.3	248.1	250.8	250.5	257.0	261.0		
Matl. prices & wage rates combined (incl. fuel)	235.3	236.7	241.8	242.7	233.2	235.8	236.2	236.3	243.5	254.0		
Materials prices, wage rates and supplements combined (excl. fuel)	273.6	273.5	277.4	277.2	274.7	275.4	276.9	276.6	279.8	283.6		
Materials prices, wage rates and supplements combined (incl. fuel) - QMPW	258.6	259.9	264.7	265.6	260.5	262.8	262.4	264.3	267.0	276.5		
Taxes, purchased serv. and other expenses	221.7	222.0	223.3	221.3	224.8	221.3	227.9	228.5	231.6			
Equip. rents, deprec. and interest	242.6	244.6	247.2	250.5	258.5	262.7	268.8	291.0	287.8			
Equip. rents, taxes, deprec., purch. serv., interest & other expenses	234.8	235.9	237.9	238.4	241.8	244.8	251.2	262.9	262.6			
Total excl. fuel	257.4	257.8	260.9	261.0	261.5	263.4	267.4	273.3	274.8			
Total excl. interest	249.8	250.9	254.6	255.2	254.3	256.5	258.9	264.9	266.3			
Total excl. interest and depreciation	248.4	249.4	253.0	253.3	251.4	252.7	254.4	255.9	258.4			
Railroad Cost Recovery Index	250.4	251.6	255.3	256.0	254.9	257.5	260.3	266.8	268.2			

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Table C

QUARTERLY INDEXES OF CHARGEOUT PRICES AND WAGE RATES (1977=100)

WEST

	1Q/91	2Q/91	3Q/91	4Q/91	1Q/92	2Q/92	3Q/92	4Q/92	1Q/93	2Q/93	3Q/93	4Q/93
Wage rates	216.4	217.1	229.4	229.8	234.3	234.3	232.3	232.1	253.2	253.2	253.6	253.6
Wage supplements	348.9	349.3	355.6	354.0	347.8	349.1	350.4	350.3	389.6	389.6	379.6	379.6
Fuel	226.3	174.9	164.8	195.6	166.3	174.3	195.2	201.9	177.4	198.8	169.3	205.8
Materials and supplies	163.0	156.9	208.6	203.3	203.3	204.6	215.0	212.6	214.3	210.6	219.5	224.1
Equipment rents	213.5	215.4	215.4	218.3	218.9	216.8	217.1	222.9	224.7	221.2	222.4	
Purchased services	229.8	228.9	249.4	248.1	250.0	250.5	251.8	251.1	271.2	270.3	271.0	
Depreciation	224.2	225.2	227.4	228.9	233.1	226.2	230.5	227.5	237.8	238.5	236.9	
Interest	336.9	321.2	329.7	322.3	305.3	299.2	278.2	282.5	249.2	273.9	259.8	
Taxes (other than income and payroll)	182.0	155.5	167.8	177.9	199.6	187.3	144.7	151.2	180.6	162.3	185.2	
All other operating expenses	180.8	179.2	178.9	179.0	178.5	180.3	181.3	181.5	182.3	184.1	183.1	
Wage rates and supplements	245.5	246.1	257.2	257.2	259.5	259.8	258.5	258.3	283.3	283.3	281.5	281.5
All materials (incl. fuel)	185.8	158.9	179.9	191.5	178.0	182.3	197.2	199.1	188.5	192.5	187.4	206.6
Matl. prices & wage rates combined (excl. fuel)	204.0	202.9	225.9	224.7	228.0	228.4	229.7	228.9	245.0	244.0	246.7	247.9
Matl. prices & wage rates combined (incl. fuel)	210.1	198.8	215.2	220.5	217.3	219.2	224.4	225.2	233.2	234.9	232.9	241.3
Materials prices, wage rates and supplements combined (excl. fuel)	229.8	228.9	249.4	248.1	250.0	250.5	251.8	251.1	271.2	270.3	271.0	272.0
Materials prices, wage rates and supplements combined (incl. fuel)	233.1	223.1	238.5	243.0	239.3	241.1	246.0	246.6	259.0	260.6	257.4	264.8
Taxes, purchased serv. and other expenses	197.8	193.6	202.6	203.5	206.4	206.1	202.3	202.8	214.2	212.7	215.1	
Equip. rents, deprec. and interest	242.8	241.3	243.7	244.2	243.2	238.4	236.6	238.8	237.9	240.9	238.3	
Equip. rents, taxes, deprec., purch. serv., interest & other expenses	222.2	219.3	225.2	225.9	227.0	224.5	221.6	223.0	228.5	229.2	229.2	
Total excl. fuel	227.8	225.9	239.8	239.5	240.9	240.1	239.5	239.7	253.2	253.0	253.4	
Total excl. interest	226.2	219.4	231.0	234.3	233.2	233.4	235.9	236.7	247.9	248.2	246.8	
Total excl. interest and depreciation	224.6	217.2	229.6	233.8	231.3	232.3	234.6	235.7	246.9	247.2	245.8	
Railroad Cost Recovery Index	230.1	223.0	234.6	237.5	235.8	235.8	237.4	238.4	248.0	249.2	247.4	

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*Locomotive Data Menu

More technical data can be found at the Railway Technical Web Pages site.

How Diesel-Electric Locomotives work

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Eastern Railroad Motive Power Rosters

*For very detailed technical info, I strongly suggest you check out the book "How Diesel-Electric Locomotives Operate: The Last 25 Years. Including ACs" from PEAT. It is *the* resource for the serious railfan.

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The AC Revolution FAQ

The statistics make a good point to start on with this section. Just compare the performance of 3 DC units with the 4 AC units. TE stands for tractive effort.

	C40-8W	C44-9W*	SD70M	AC4400CW	SD70MAC	AC6000CW	SD90MAC-H
Starting TE	140,000	159,000	159,000	180,000	175,500	180,000	200,000
Continuous TE	109,000	118,000	109,000	145,000	137,000	166,000	170,000
Adhesion	27%	30%	30%	35%	35%	39%	40%
Horsepower	4000	4400	4000	4400	4000	6000	6000

*High-tractive effort version.

Why are locomotives with AC traction motors better then conventional DC units? AC traction motors lack the brushes and commutators of DC versions. This means that AC motors can withstand much higher thermal loads than DC units, develop more tractive effort, and require less maintenance.

Benefits of AC traction over DC:

1. Higher tractive effort and adhesion: AC traction motors, in conjunction with new wheel-slip control systems that can only work with AC motors, increase adhesion from about 25% for the average locomotive to around 35%. This translates into more tractive effort per horsepower than DC models. AC units also produce less amperage to maintain the same level of tractive effort as a DC motor. This allows more amperage to be developed without overheating the traction motors. Therefore, more TE can be developed in an AC unit when compared to a DC unit with the same prime mover.

2. Reduced maintenance costs: The lack of commutator brushes reduces maintenance costs and increases the availability of the locomotive. This helps compensate for the higher purchase price of the AC units when compared to DC.

3. AC units have more advanced dynamic brakes that can be used to bring a train to a complete stop without the use of air brakes. The dynamics can operate even with a failed grid, unlike DC dynamic brakes.

4. AC units are more fuel efficient than DC locomotives. This is because they produce more TE per horsepower than a DC unit.

5. AC units eliminate the need to reduce speed when going over grade crossings because of the risk of flashover.

6. The need for high-speed gearing is eliminated in AC units.

7. AC units can develop more TE per horsepower at any speed, when compared to DC systems. TE does not drop off as much or as quickly with AC units as speed increases and therefore they are at home pulling fast freights or lugging slow coal trains over difficult grades. They are particularly well suited to drag service.

8. Unit reduction: In some service, 1 AC unit can replace 2-3 DC units. This replacement ratio is quite complex and depends on many factors. Overall efficiency must be taken into account. For example, lets say a train requires 6000 horsepower and 4 locomotives are available: 2 SD40-2s and 2 AC4400CWs. If the two AC4400CWs are assigned to the freight run, over 2800 horsepower is wasted. But if the two SD40-2s are assigned, all horsepower is used with none wasted.

6000 horspower AC units vs. 4300/4400 hp AC units

Both builders offer 2 comparable AC models. The AC4400CW and AC6000CW are built by GE, while the SD70MAC and SD90MAC-H are produced by EMD. Although it might seem surprising at first, the AC4400 and SD70MAC are more suitable for drag service than the AC6000CW and SD90MAC-H. The very high horsepower per axle of the 6000 hp models makes them perfect for high-speed intermodal service. This is because at speeds less than 20 m.p.h. wheel slip can be a problem when you have 1000 hp per axle, even with advanced wheel slip control systems. This is especially a problem with very heavy loads, such as unit coal trains. In addition, the high hp per ton of unit wait enables the 6000 hp units to achieve the high speeds necessary for intermodal traffic. The AC4400CW and SD70MAC, on the other hand, have about 735 hp per axle. This means reduced wheel slip when starting a heavy train. It is because of these facts that both UP and CSX have assigned the 6000 hp units primarily to high-speed service and the lower hp AC units to drag service.

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Any questions? There will be a 50 question exam tomorrow.

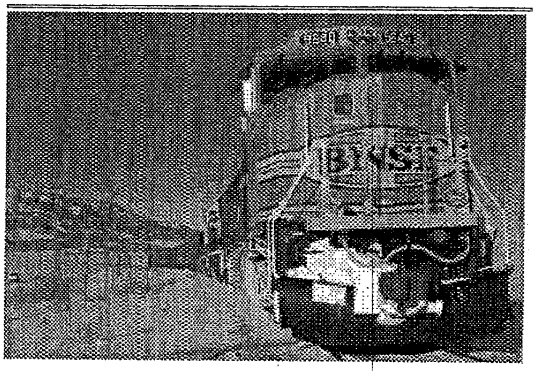
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storyARCHIVE

A.C. Rules!

Diesel locomotives are turning in unprecedented performances thanks to alternating-current propulsion systems

Special Report by Greg McDonnell



Three BNSF SD70MAC's, led by brand-new 9840, head a coal train stopped at Palmer Lake, Colo. BN's big order for 70MAC's in early 1993 began the A.C. revolution. Tom Danneman photo.

- Departing Powder River unit train
- A.C.'s advantages
- Two inverter banks, or six?
- 4744+202+268+450=9500
- A new "diesel that did it"
- 6000 or bust

A LIGHT DRIZZLE SPATTERS the windshield of Union Pacific General Electric AC4400CW 6583 as engineer Don Crowe notches out the big diesel's desktop throttle and gets eastbound coal train CRMAE-11-075 on the move. Departing the

Powder River Coal Company's Rochelle (Wyo.) loadout, this is the definitive "heavy-haul" unit train. A distributed power, or "DP" train in UP parlance, the CRMAE has 138 MCHX aluminum bathtub gons loaded with low-sulphur bituminous coal, bracketed by AC4400's 6583 and 6857 on the head end, and radio-controlled General Motors SD9043MAC 8167 as helper on the rear. Bound for New Madrid, Mo., CRMAE-11-075 tips the scales at a whopping 18,919 tons gross weight. Crowe has his hands full.

Steel rails glisten in the soft spring rain, and the six-motor GE's shudder as they get underway. "Doin' the boogie shake," says conductor Dave Prahl, as the 42-inch wheels claw at 136-pound rail. Crowe has the sanders working, and the 415,000-pound machines maintain a sure footing, shouting to the heavens as they grind up the North Antelope Mine lead toward Nacco Junction and the Powder River main line (or "Orin Line"). At the rear, 8167 shoves with all its might, doing its part to keep the heavy train moving. "That rear motor's pushin' like a son of a bitch," says Crowe, and the digital display on a control console screen confirms it. Shouldered up against the rear of the train, the 90MAC is in Run 8, "diggin' for potatoes," as the man once said, and producing 130,000 pounds of tractive effort in the process.

Threading the crossovers at Nacco Junction, CRMAE swings onto "Main Three," the third track of BNSF's Orin Subdivision, and comes face-to-face with one of the most challenging grades in the whole Powder River Basin: Logan Hill. Logan is legendary among Powder River railroaders, and in the not-too-distant past, the mere thought of tackling the 7-mile, 1-percent grade with just three units and more than 18,000 tons would make even the most seasoned veteran's blood run cold. Only a few years ago, a train like this would have demanded about 18,000 h.p. in the form of four C44-9W's, five SD50's, or at least six SD40-2's. By those standards, CRMAE is nearly 5000 h.p. shy, yet Crowe is unintimidated. He's got distributed power, a good run at the hill, 13,100 high-tech horses in the company notch... and, one of the most important technological advances in railroading since Rudolph Diesel came knocking on

the door: alternating current, or "A.C.," traction.

Almost overnight--or so it seems--A.C. traction has revolutionized heavy-haul railroading. In the seven years since General Motors outshopped the first all-new heavy-haul A.C. locomotives--four SD60MAC prototypes painted as BN 9500-9503--North American railroads have purchased or ordered nearly 3000 high-horsepower A.C.'s. If the current trend continues--and it shows no sign of slowing--A.C. diesels will soon outnumber GM SD40-2's on U.S. railroads. Booming traffic, productivity and performance gains, the horsepower race, and the need to replace aging locomotive fleets have all contributed to the burgeoning sales of A.C. locomotives. However, the key to the A.C. success story can be found right where steel wheel meets steel rail in one of the most basic principles of railroading--adhesion.

A.C.'s ADVANTAGES

Adhesion is the percentage of a locomotive's weight on driving wheels that is converted into tractive effort--and it's where A.C. traction shines. Contemporary D.C. locomotives--GM SD70's and SD75's, and GE Dash 8's and Dash 9's, for example--can achieve a maximum of about 30 percent adhesion on dry rail. By comparison, GM SD9043MAC's and GE AC4400's average 34 to 38 percent adhesion in almost all weather conditions, and that, A.C. proponents say, is just the beginning. While some studies indicate that D.C. adhesion performance may have reached its practical peak in the 30-percent range, A.C. locomotives have produced up to 45 percent adhesion under test conditions. The upper limits of A.C. traction are still unknown, but design engineers speak enthusiastically of achieving 50 percent adhesion factors in the foreseeable future.

A.C. traction motors are simpler, more efficient, and more reliable than the D.C. motors that have been used in conventional North American diesel-electrics since the dawn of dieseldom. Robust by nature, the A.C. traction motor consists of a motor frame, known as a "stator," and a rotating armature, or "rotor." Resembling a D.C.-motor armature turned inside out, the stator converts

incoming electric energy into a moving magnetic field within the motor. Drawn by the magnetic force, the rotor spins in correspondence with the moving field, its speed and direction determined by the power delivered to the motor.

A ruthlessly efficient machine, the A.C. traction motor lacks the brushes and commutators found in D.C. motors. This not only eliminates a maintenance issue, but also removes the potential for short circuits, flashovers, and ground relays to which D.C. motors are prone. In addition, A.C. motors are less likely to slip, are almost immune to stall damage, and hopefully will be capable of running a million miles between overhauls. (No North American A.C. diesels have reached that service life, but the "million-mile" goal remains.) One of the biggest advantages, though, is the extreme thermal load that A.C. motors can withstand. Short-time ratings--limitations put on the length of time that a traction motor can operate under a heavy load before suffering damage from overheating--are a thing of the past with A.C. traction.

"The true thermal limit of A.C. motors has not yet been found in North American heavy-haul railroading." So says Mike Iden, UP's general director, locomotive engineering and quality. As evidence, he offers the remarkable events of May 5, 1998. Extenuating circumstances forced the railroad to dispatch eastbound coal train CEYPS-05 out of Phippsburg, Colo., on the old Rio Grande Craig Branch, with four, rather than the required five, units. With four AC4400's in distributed-power mode (two on the head end and two 75 cars back), the 108-car train was pitted against the more than 2 percent grade in Toponas Canyon with one less unit than normal. As the units battled upgrade, the train's speed dropped to 0.2 mph--yes, two-tenths of a mile per hour--but did not stall. In an incredible all-out display of just what A.C. units can do, the four GE's struggled uphill at an excruciating 3.5 inches-per-second. In the end, it was not the locomotives, but the metallurgy that failed, as the lead knuckle on the first car fractured, bringing the train to a halt.

The event recorder from the lead unit, Southern

Pacific AC4400 202, reveals that the locomotive was producing between 170,000 and 180,000 pounds of tractive effort the entire time. None of the four units' 24 A.C. traction motors overheated. "This situation," notes Iden with considerable understatement, "would have been impossible with D.C. motors."

Some analysts argue that D.C. traction has reached its practical limits with the 4300-4400 h.p., six-motor application in the SD75 and the C44-9. However, there is no disputing the fact that today's sophisticated A.C.-drive locomotives would not be possible without technological advances made with D.C.-traction diesels, specifically with regard to computerized functions and on-board microprocessors. The average high-tech, late-1990's A.C. diesel-electric locomotive has more than 20 on-board computers or microprocessors controlling everything from throttle and brake commands to cab heaters and air-conditioning. Without computers to regulate and manage the D.C.-to-A.C. inverters that are the heart of the A.C.-traction system--and often require 500 or more "on/off" commands per second--the use of A.C. traction motors in heavy-haul service would be virtually impossible.

The A.C. locomotive is a complex machine that actually produces "real" A.C. current, converts it to D.C. and then back to a crude form of A.C., before it is delivered to the traction motors. In both A.C. and conventional D.C. locomotives, the main alternator produces A.C. current, which is delivered to rectifiers and converted to D.C. power. In D.C. locomotives, this current is then routed directly to the traction motors. In A.C.'s, the D.C. power from the rectifiers is delivered to banks of inverters, whose GTO's ("Gated Turn On" devices) "chop" the D.C. power to effectively produce the three-phase A.C. power which is fed to the traction motors. Each inverter bank requires a total of six GTO's--three positive, three negative.

TWO INVERTER BANKS, OR SIX?

There are fundamental differences between the inverter packages and A.C. traction control systems employed by General Motors and General Electric

A.C. diesels. GM units are equipped with one inverter bank per truck, for a total of 12 GTO's in two inverter banks. GE's employ one inverter bank per traction motor, giving the Erie-built A.C.'s a massive wall of 36 GTO's in 6 inverter banks. These are contained in the huge box behind the cab on the left side of the locomotive, a feature that makes GE A.C.'s readily distinguishable from their D.C. Dash 9 brethren. Further differentiating the two systems, GM inverters are liquid-cooled, while GE's are air-cooled.

General Electric's system of motor control has a number of advantages, not the least of which is the ability to isolate or cut out individual traction motors and even adjust the output and speed of each traction motor individually. In fact, an AC4400 with one traction motor cut out can continue to operate at full 4400 h.p. with the remaining five motors. GE's control system has a higher computing workload than the GM/Siemens control system, however, because it has to regulate all of the six motors individually. In comparison, if a GM A.C. develops problems with a traction motor, inverter, or related equipment, the entire truck must be cut out. The heavy-duty nature of the GM/Siemens A.C. equipment does compensate in part for the loss of an entire truck, as the remaining truck can operate with about 60 percent of total horsepower. Do these differences between motor-control and truck-control really make a difference in day-to-day operations? The jury of railroaders appears to be undecided.

Wheel size and wear is another area where the products of the two builders differ. GM's truck-control system requires that all wheels on a truck set must be kept within 1/4-inch diameter difference, whereas GE's can tolerate up to the FRA maximum of 3/4-inch wheel-diameter difference. This means that wheel-truing work is much more critical on a GM A.C. locomotive than on a GE A.C. unit.

General Motors has the edge when it comes to trucks. GM's patented HTCR "High-Traction Radial Truck" has been heralded as one of the most significant advancements in locomotive suspension and adhesion-enhancing hardware. Now standard

for all new six-axle GM locomotives, the self-steering HTCR-II truck not only reduces wheel and rail wear, truck stress and shock, but it increases adhesion performance by minimizing weight-shift and better balancing traction motor loads. GM predicts that the HTCR-II will double wheel life and run almost a million miles between overhauls.

While all General Motors A.C. locomotives have been built with radial trucks, GE has lagged behind in developing its own steerable truck. Most GE A.C.'s have been delivered with rigid "HiAd" trucks that, in the opinion of most railroaders, run a distant second to GM's HTCR. GE's own steerable truck was finally introduced in 1996, but is not yet standard, and many roads, including Union Pacific, continue to take delivery of A.C.'s riding on GE's so-called "rollerblade" HiAd trucks.

4744+202+268+450=9500

The quest for higher adhesion and tractive effort has been the driving force behind the development of A.C.-traction diesel locomotives. Partnered with Brown Boveri (predecessor to today's ABB), Bombardier, and the Canadian government's Development Corporation, Canadian Pacific led the way in 1984, extensively rebuilding Montreal Locomotive Works M640 4744, a conventional D.C. locomotive, into an A.C.-traction testbed. In November 1984, 4744 emerged from CP Rail's Angus Shop, still with its unique 18-cylinder, 4000 h.p. Alco 251 engine, but with its electrical and control systems radically altered. Converted from C-C to A1A-A1A truck configuration, the big Alco traded its six GE 752 D.C. traction motors for four Brown Boveri FRA4073 three-phase asynchronous squirrel-cage A.C. traction motors.

A testbed in the true sense, 4744 was never intended as a pilot for any conversion schemes, but rather as a vehicle to evaluate A.C. propulsion and the performance and durability of A.C. traction motors. CP ran exhaustive tests and road trials with the 4744 and eventually released the pioneer A.C. diesel into general service. Like other roster one-of-a-kinds, the 4744 spent a good portion of its later years in Montreal transfer service, often teamed up with fellow orphans RSD17 8921 and Caterpillar

re-engined M636 4711. Engine failure sidelined the 4744 in March 1992, and CP subsequently retired the historic unit. Aware of its significance, not only as the first heavy-haul A.C. diesel locomotive in North America but also as the first 4000 h.p. unit and the only M640 built, CP earmarked 4744 for preservation and recently donated it to the Canadian Railway Museum at Delson/St. Constant, Quebec.

Flexing its newfound A.C. muscle in road trials and revenue service, CP 4744 hit the road in early 1985. ABB, meanwhile, involved itself with a second experiment, equipping Amtrak F40PH 202 with A.C. motors. In the very early days of A.C. experimentation, the big builders remained strangely silent. However, GM's Electro-Motive Division had been quietly researching A.C. propulsion since the late 1970's and soon created an alliance with Siemens AG of Germany, with the goal of designing and producing A.C.-traction passenger and heavy-haul locomotives for the North American market.

Tapping Siemens' experience in the development and application of A.C. traction technology in Europe, EMD took a commanding lead in the race to develop a North American A.C. locomotive. By 1987, EMD had its own A.C. testbed on the road. "Research vehicle" 268 was built utilizing a former Amtrak SDP40F outfitted with Siemens A.C. equipment, including six current-source traction inverters and six A.C. traction motors. The first six-motor A.C. locomotive in North America, 268 underwent exhaustive testing for several years before passing the torch to a small fleet of built-new EMD A.C. prototypes.

America's first new A.C. locomotives, a pair of slope-faced EMD F69PHAC experimentals, rolled out of La Grange in 1988. They tested extensively at the Department of Transportation's Pueblo (Colo.) facility, then went to work hauling passengers as Amtrak 450 and 451 in fall 1990. Still GM-owned, the two units logged thousands of miles and volumes of invaluable test data and operating experience in Amtrak service before being ordered back to La Grange, Ill., in 1991.

The F69's came home to La Grange in its darkest hour. General Motors was seriously considering divesting itself of its locomotive business, and the company's smaller London (Ontario) plant had been GM's main locomotive assembly facility since 1988. By 1991, locomotive construction at EMD's legendary La Grange plant had all but ended. In the spring of that year, though, there were two very significant locomotives under construction on the shop floor there.

At a glance, they looked little different from the run-of-the-mill SD60M's being churned out of London, but in fact the two SD60MAC prototypes being carefully assembled at La Grange were different--different enough to change the course of locomotive history and reverse the fortunes of their builder. Completed in June 1991 as Burlington Northern 9500 and 9501, the two SD60MAC's were the first new heavy-haul A.C.-traction locomotives in North America. Like standard SD60M's, they packed a 3800 h.p. 710 engine and EMD microprocessor control systems, dynamic brakes, and the now-standard comfort cab. Behind the cab, electrical compartment doors secreted a maze of Siemens' A.C. traction circuitry, inverters, and GTO thyristors. Below the frame, they were like nothing else on rails. Riding on EMD's new HTCR steerable radial truck and outfitted with six A.C. traction motors, the SD60MAC was arguably the most innovative locomotive to roll out of La Grange since the FT demonstrators of 1939.

Ironically, it was not adhesion, but "motor durability" that prompted BN to request an SD60 with A.C. traction motors. BN was looking for a tougher traction motor, one that could hold up in severe operating conditions such as snow and heavy moisture without suffering ground relays. "Our original goal was to equal an SD60M," says an EMD man who worked on the original project. "The high adhesion performance came as somewhat of a surprise."

EMD dispatched the first two SD60MAC's to the Pueblo test track and commissioned two more identical units, which were built at London and outshopped in June 1992 as BN 9502 and 9503.

Painted in a modified version of BN green and white that incorporated both the BN and GM logos, the quartet of "60MAC" prototypes hit the road in August 1992 with a prophetic message emblazoned across their hoods: "The Future Today With Siemens A.C. Technology."

Barnstorming on BN and then across North America, the green-and-white demos set the industry on its ear, delivering at the railhead what A.C. proponents had promised on paper. Under strictly controlled test conditions, the SD60MAC's had achieved adhesion ratings up to 45 percent; in real workaday service, they produced adhesion factors in the mid-30's and made good on GM's promise that three MAC's could replace five SD40-2's in heavy-haul coal service. Skeptics questioned the viability and value (at an extra $500,000 per locomotive) of A.C. traction in North American service, but Burlington Northern anted up. After seeing what the 9500's could do, BN rocked the railroading world, placing an unprecedented $675 million order for 350 4000 h.p. A.C.-drive SD70MAC's. With the stroke of a pen, Burlington Northern launched the A.C. revolution.

A NEW "DIESEL THAT DID IT"

Railroaders, from CEO's to engineers and shop workers, have drawn parallels between the rise of A.C. traction and the shift from steam to diesel. Technologically, the 415,000-pound SD70MAC, with its 4000 h.p. 16-710G3B prime mover, 1TB2630 A.C. traction motors, self-steering HTCR radial trucks, and EM2000 microprocessor control is far removed from the FT. Yet, the SD70MAC is the A.C. generation's version of the portholed pioneer diesel. Indeed, for what it meant to its builder and the railroad industry as a whole, the SD70MAC, like the FT, is "the diesel that did it."

The BN order gave EMD a much-needed shot in the arm and, coincident or not, General Motors ceased talk of spinning off its locomotive division. In the eyes of some observers, the "Grinstein green" SD70MAC's that began rolling out of London in November 1993 were not only technologically historic, they were the saviors that kept EMD in the General Motors fold. A.C. sales

have been so successful that GM has farmed out assembly work to Bombardier's plant in Sahagun, Mexico, and also to the Super Steel plant near Schenectady, N.Y., where previously, only passenger units have been built. In addition, Conrail and Canadian Pacific have been contracted to assemble some of their own units in company shops in Altoona, Pa., and Calgary, Alberta.

General Motors may have been first out of the gate with A.C. diesels, but General Electric wasn't far behind. Unlike GM, GE had previous experience with A.C. technology in the fields of transit and heavy, off-highway vehicles. As a result, GE was able to assemble its own design team to develop and produce an A.C.-traction system for locomotives. With the emergence of GE's first A.C.-drive diesel locomotive, AC4400CW testbed No. 2000, from the Erie plant in June 1993, the battle for A.C. supremacy was on.

Weighing in at 420,000 pounds, packing a 4400 h.p. GE 7FDL16 prime mover, and boasting a maximum tractive effort of 145,000 lbs. at 9.9 mph, GE's AC4400 went head-to-head with the competition, claiming a slight edge over the 4000 h.p. SD70MAC's 137,000-lb. continuous tractive effort rating. Decked out in a striking dress of silver with red and blue lightning stripes, the AC4400 prototype went through rigorous trials on GE's 4-mile test track east of Erie, as well as in road service on regional Buffalo & Pittsburgh.

Within a year, GE had gained significant ground. CSX signed up for 250 GE A.C.'s, including 216 AC4400's and 34 6000 h.p. AC6000CW's, a model that at the time existed only on paper. Chicago & North Western ordered 35 AC4400's for duty in Powder River Basin coal service, and UP tested the water with an unusually conservative order for 3 AC4400's. GM, meanwhile, kept churning out SD70MAC's for BN and logged its second A.C. order, 28 5000 h.p. SD80MAC's for Conrail. Other than prototypes EMD 8000 and 8001 (later sold to Conrail), these have been the only 80MAC's built.

A.C. traction quickly proved its worth as BN 70MAC's and North Western AC4400's went to work hauling coal out of the Powder River Basin,

but these 4000 and 4400 h.p. behemoths were just the beginning. The A.C. traction systems of both builders were capable of handling far more horsepower than existing locomotives could deliver, and the spark of this untapped potential re-ignited the horsepower race. The competition became so intense that the two builders made the unprecedented move of cataloguing 6000 h.p. locomotives, GM's SD90MAC and GE's AC6000CW, while the designs were still on the drawing board.

6000 OR BUST

To complicate matters, neither builder had an existing engine that could be satisfactorily upgraded to 6000 h.p. In the quest for new high-horsepower prime movers, GM and GE embarked on engine development programs that, if anything, were even more ambitious than their A.C. projects. For its 6000 h.p. prime mover, General Motors forsook its longtime loyalty to two-cycle power and designed an all-new four-stroke power plant, the 16-cylinder, 265mm bore, 300mm stroke, GM-16V265H engine. General Electric, meanwhile, struck a partnership with Deutz MWM of Mannheim, Germany, to jointly develop its new engine, the 16-cylinder, 250mm bore, 320mm stroke 7HDL16A engine. As with all previous GE engines, the four-stroke HDL is produced at GE's Grove City (Pa.) engine plant.

Prior to releasing production versions of the new 6000 h.p. models, GM and GE fielded prototype 90MAC and AC6000 testbeds. London outshopped six pre-production UP 90MAC's, testing them at La Grange, Pueblo, and finally in road service. General Electric built its own AC6000 testbed (GE No. 6000), along with three for CSX (Nos. 600-602) and 10 for UP (7000-7009). These units provided invaluable test and "real life" performance data and have resulted in numerous changes and refinements to the new engine designs. After more than two years of road tests, the 265H and the HDL engines are now in regular production.

If the 265H and HDL are just now entering full production, and only a handful of pre-production units were built, what are all those UP

"SD90MAC's" and "AC6000CW's" on the road? Answer: "convertibles." These are upgradable versions of the SD90MAC and AC6000CW--the GM's built with 4380 h.p. 710 engines, the GE's with 4400 h.p. FDL's. A source of confusion among railroaders and train-watchers alike, these "convertibles" are configured to accommodate the new 6000 h.p. prime movers when, and if, the railroad chooses to upgrade them. [See "The Name Game," page 73.]

Don't look for the new 6000 h.p. units in heavy-haul drag service--not right away, anyway. The intended role of the high-horsepower A.C.'s is to replace 3000 h.p. units in high-speed mainline service on a one-for-two basis. As a result, reliability has become an even bigger issue with the builders. "Reliability is a keystone," says GE AC6000 project manager Bob Herman--and so it is. For the concept to meet its full potential, the new 6000 h.p. locomotives will have to achieve nearly unprecedented levels of reliability.

While heavy-haul and high-horsepower A.C. traction applications have grabbed the most attention, A.C.-drive diesels have also moved into the passenger trade. Amtrak and Metro-North have each taken delivery of 18 GE Genesis-style, dual-mode (650-volt D.C. third-rail electric, and diesel-electric) P32AC-DM's for New York-area passenger duty. Long Island has recently received 23 GM DE30AC's (straight diesel), built at Super Steel in Schenectady, and has 18 DM30AC's (dual-mode) on order. In the case of passenger locomotives, the A.C. inverters supply power not only to the traction motors but also to the train's heating, lighting, and air-conditioning systems.

A.C. traction is not for everyone [see "D.C. Diehards," page 69], but most of the railroads that have bought into the A.C. concept have done so in a big way. BNSF has nearly 600 SD70MAC's and more on order, while CSX has more than 400 GE and GM A.C.'s and is likely to take title to Conrail's 45 MAC's. Canadian Pacific, already with 284 AC4400's, has at least 60 more on order, along with 61 SD9043MAC's, most of which are to be built at the road's Ogden Shops in Calgary. No one has caught A.C. fever like UP, though. Along with

a substantial number of AC4400's inherited from C&NW and SP, UP has purchased AC4400's, AC6044's, and SD9043MAC's by the hundreds to assemble by far the largest A.C. fleet anywhere. At this writing, UP's A.C. roster numbers 1109 units and should close out 1998 at 1175 units.

The builders tout A.C. traction as "the greatest leap in technology since the diesel" and flash statistics and charts on replacement ratios, tractive-effort curves, and life-cycle costs. However, there is no better testament to A.C. than its performance in the Powder River Basin, where men and machines are pushed to their working limits 365 days a year, and where A.C. locomotives handle about 50 percent of BNSF coal traffic and an estimated 97 percent of UP coal trains. Here, in one of the busiest and toughest theaters in railroading, there's a new anthem--A.C. rules!

GREG McDONNELL of Cambridge, Ontario, is a TRAINS Special Correspondent. He has written extensively on the subject of diesel locomotives.

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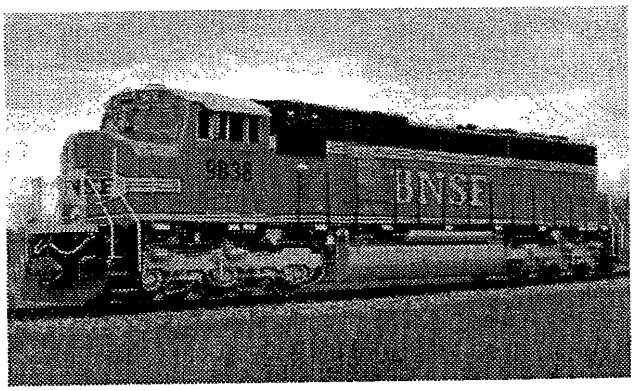
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SD70MAC

4000HP AC Freight Locomotive



General Information | Basic Features | Optional Features

PERFORMANCE SPECIFICATIONS

- 4000 THP locomotive equipped with a 16-710G3B-ES engine
- Higher tractive and braking effort capability
  - 137,000 lbs continuous TE
  - 175,500 lbs starting TE
  - 81,000 lbs braking effort
- 11% improvement in fuel efficiency over SD40-2, 16-645E3B engine

RELIABILITY AND SERVICEABILITY

- True 92-day maintenance intervals
- AC motors doubles traction motor life
  - No running maintenance required
  - No brushes, commutator, or rotor insulation
  - No flashovers/ground relays
- Truck inverter control
  - High level of reliability with less parts
- 1 million mile overhaul with radial truck

- 6 year engine overhaul period
- EM2000 advanced microprocessor control
  - increased speed and efficiency
  - reduced parts and increased reliability

SAFETY ASPECTS

- Satisfies all FRA/AAR crashworthiness requirements
- Optional impact resistant fuel tank minimizes spills and leakage
- Lowest cab sound and vibration levels in industry (WhisperCab™)
- 1 million lb. buff load capacity
- 1 million lb. collision posts for increased crew protection
- Frame mounted anti-climbers improve crew and equipment protection

PERFORMANCE IMPACT

- The SD70MAC provides unit reduction, fuel savings and additional revenue tonnage capability over SD40-2 locomotives
- Train simulation results and actual field demonstrations indicate:
  - 3 SD70MAC's can replace 5 SD40-2's in high tractive effort operations
  - Operation of fewer units results in significant maintenance and operating savings

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OPENING VARIABLE COSTS

LOSS & DAMAGE

REDACTED

II-A-1

OPENING
VARIABLE COSTS

FREIGHT BILLS

0736

REDACTED

II-A-1

OPENING VARIABLE COSTS

TRAIN ACTIVITY REPORTS

Train Activity Reports

Load & Empty
Between Mine and Hettinger

REDACTED

Train Activity Reports

Load & Empty
Between Hettinger and Big Stone

REDACTED

Train Activity Reports

Helpers

REDACTED

Train Activity Reports

C Loads

REDACTED

III-A
STAND-ALONE TRAFFIC GROUP

III - A - 2

BNSF TRAFFIC FILE RECORD LAYOUT AND FIELD DEFINITIONS

REDACTED

BNSF TRAIN EVENT FILE RECORD LAYOUT AND FIELD DESCRIPTIONS

REDACTED

BNSF TONNAGE AND RATE FORECASTS DATED 10/18/02

REDACTED

Utility Plant Capacity Information

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2001

Gannon
P.O. Box 111
Tampa FL 33619
Tel: 813-228-4111 Fax: 813-228-1670
Plant Consumption (000s tons):
2000 - 2,434 (Proj.)
1999 - 2,637
1998 - 2,848
1999 Coal Capacity (MW): 1,270
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 482
BTU/LB: 12,649
%Sulfur: 1.18
%Ash: 7.99
Coal Analysis:
BTU/LB: Avg: 12,855, Min: 12,550, Max: 13,327
%Ash: Avg: 7.32, Min: 3.70, Max: 8.00
%Sulfur: Avg: 1.10, Min: 0.57, Max: 1.32
Volatility: Avg: 30.00
Moisture: Max: 8.00
Ash Soft Temp: Max: 2,400
Size: Avg: 2 x 0
Transportation:
Rail
Rail Service : CSX
Receipt Point: Sutton,Tampa Bay
Supply Origin: KY

GEORGIA

GEORGIA POWER CO.
241 Ralph McGill N.E.
Atlanta GA 30308-3374
www.georgiapowerco.com
Tel: 404-506-7738, 404-506-7785
Fax: 404-506-6948
R. H. Haubein, Exec. VP., Southern Co. Generation, 404-506-6526
Corporate Consumption (000s tons):
2000 - 28,134 (Proj.)
1999 - 28,134
1998 - 30,080
1999 Coal Capacity (MW): 10,520
Coal Received by Company (1999):
Tons (000s) : 30,087
BTU/LB: 11,722
%Sulfur: 0.80
%Ash: 9.26
Contract Coal: 44%
Spot Coal: 56%

Arkwright
P.O. Box 4323
Macon GA 31208
Tel: 912-477-1155
Harvey Derrick, Plant Mgr.
Plant Consumption (000s tons):
2000 - 98 (Proj.)
1999 - 98
1998 - 108
1999 Coal Capacity (MW): 181
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 126
BTU/LB: 12,977
%Sulfur: 1.74
%Ash: 8.59
Transportation:
Rail, Barge
Rail Service : NS
Receipt Point: Macon
River Service: Ocmulgee
Mile Point: 7.00

Bowen
P.O. Box 71
Taylorsville GA 30178
Tel: 404-386-3890
G. L. Ussery, Plant Mgr.
Plant Consumption (000s tons):
2000 - 7,161 (Proj.)
1999 - 7,161
1998 - 7,830
1999 Coal Capacity (MW): 3,499
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 7,436
BTU/LB: 12,312
%Sulfur: 0.88
%Ash: 11.19
Transportation:
Rail
Rail Service : CSX
Receipt Point: Taylorsville

Hammond
P.O. Box 121
Coosa GA 30129
Tel: 404-235-1161
P. P. Boren Jr., Plant Mgr.
Plant Consumption (000s tons):
2000 - 1,376 (Proj.)
1999 - 1,376
1998 - 1,287
1999 Coal Capacity (MW): 953
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 1,550
BTU/LB: 12,831
%Sulfur: 0.84
%Ash: 9.65
Transportation:
Rail, Barge
Rail Service : NS
Receipt Point: Krannert
River Service: Coosa
Mile Point: 10.00

Harlee Branch
P.O. Box 990
Milledgeville GA 31061
Tel: 404-485-2441
K. M. Stefanini, Plant Mgr.
W. M. Grenade, Asst. Plant Mgr.
Plant Consumption (000s tons):
2000 - 2,660 (Proj.)
1999 - 2,660
1998 - 3,289
1999 Coal Capacity (MW): 1,746
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 2,760
BTU/LB: 12,406
%Sulfur: 1.26
%Ash: 10.36
Transportation:
Rail
Rail Service : NS, CSX
Receipt Point: Harllee

McDonough
5551 S. Cobb Dr.
Smyrna GA 30080
Tel: 404-792-5310
D. R. Garrett, Plant Mgr.
Plant Consumption (000s tons):
2000 - 1,069 (Proj.)
1999 - 1,069
1998 - 1,331
1999 Coal Capacity (MW): 598
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 1,125
BTU/LB: 13,025
%Sulfur: 1.04
%Ash: 7.39
Transportation:
Rail, Barge
Rail Service : NS, CSX
River Service: Chattahoochee
Supply Origin: KY

Mitchell
5200 Radium Springs Rd.
Albany GA 31705
Tel: 912-436-2472
W. C. Mashburn, Plant Mgr.
Plant Consumption (000s tons):
2000 - 216 (Proj.)
1999 - 216
1998 - 240
1999 Coal Capacity (MW): 218
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 233
BTU/LB: 12,781
%Sulfur: 1.23
%Ash: 8.91
Transportation:
Rail, Barge
Rail Service : CSX
Receipt Point: Albany
River Service: Flint

Scherer
P.O. Box 206
Juliette GA 31046
Tel: 912-994-0022
A. R. James, Plant Mgr.
H. M. Derrick, Asst. Plant Mgr.
Plant Consumption (000s tons):
2000 - 9,911 (Proj.)
1999 - 9,911
1998 - 10,025
1999 Coal Capacity (MW): 818
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 10,311
BTU/LB: 10,234
%Sulfur: 0.46
%Ash: 7.15
Transportation:
Rail
Rail Service : NS

Wansley
P.O. Box 150
Roopville GA 30170
Tel: 404-854-4441
W. C. Sewell Jr., Plant Mgr.
L. E. Carlton, Asst. Plant Mgr.
Plant Consumption (000s tons):
2000 - 3,695 (Proj.)
1999 - 3,695
1998 - 3,973
1999 Coal Capacity (MW): 1,019
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 4,154
BTU/LB: 12,395
%Sulfur: 0.99
%Ash: 10.15
Transportation:
Rail, Barge
Rail Service : NS
River Service: Chattahoochee

Yates
P.O. Box 718
Newnan GA 30264
Tel: 404-253-2111
M. J. Knowles, Plant Mgr.
Plant Consumption (000s tons):
2000 - 1,947 (Proj.)
1999 - 1,947
1998 - 1,995
1999 Coal Capacity (MW): 1,488
Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 2,391
BTU/LB: 12,838
%Sulfur: 0.92
%Ash: 10.27
Transportation:
Rail, Barge
Rail Service : NS
River Service: Chattahoochee
Supply Origin: GA

SAVANNAH ELECTRIC & POWER CO.
600 E. Bay St.
P.O. Box 968
Savannah GA 31402
www.southernco.com
Tel: 912-232-7171, 912-232-6133
Fax: 912-238-2219
Corporate Consumption (000s tons):
2000 - 752 (Proj.)
1999 - 752
1998 - 898
1999 Coal Capacity (MW): 386
Coal Received by Company (1999):
Tons (000s) : 679
BTU/LB: 12,058
%Sulfur: 0.83
%Ash: 11.10
Spot Coal: 100%

McIntosh
P.O. Box 166
Rincon GA 31326
Tel: 912-232-7171
Plant Consumption (000s tons):
2000 - 310 (Proj.)
1999 - 310
1998 - 485
1999 Coal Capacity (MW): 178
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 305
BTU/LB: 11,462
%Sulfur: 0.94
%Ash: 15.92

Plant Kraft (Port Wentworth)
P.O. Box 4102
Port Wentworth GA 31407
Tel: 902-232-7171
Plant Consumption (000s tons):
2000 - 442 (Proj.)
1999 - 442
1998 - 412
1999 Coal Capacity (MW): 208
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 374
BTU/LB: 12,545
%Sulfur: 0.74
%Ash: 7.16

ILLINOIS

AMEREN-CIPS
1901 Chouteau Ave.
P.O. Box 66149
St Louis MO 63166-6149
www.ameren.com
Rowdy L. Smith, Coal Planning & Procurement Dir., 314-554-2171
Robert K. Neff, Transportation Dir., 314-554-2342

Transportation:
Rail
Rail Service : IC, PVT RR
Receipt Point: Baldwin
Supply Origin: IL

Havana
P.O. Box 368
Havana IL 62644
Tel: 309-543-2227 Fax: 309-543-3921
A. K. Millis, Plant Mgr.
Plant Consumption (000s tons):
2000 - 700 (Proj.)
1999 - 700
1998 - 920
1999 Coal Capacity (MW): 488
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 765
BTU/LB: 11,656
%Sulfur: 0.51
%Ash: 9.34
Transportation:
Rail, Barge
Rail Service : I & M
Receipt Point: Havana
River Service: Illinois
Mile Point: 118.50
Supply Origin: CO, UT

Hennepin
P.O. Box 288
Hennepin IL 61327
Tel: 815-339-9215 Fax: 815-339-2772
D. P. Thompson, Plant Mgr.
Plant Consumption (000s tons):
2000 - 489 (Proj.)
1999 - 489
1998 - 742
1999 Coal Capacity (MW): 306
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 526
BTU/LB: 10,474
%Sulfur: 2.33
%Ash: 9.68
Transportation:
Barge
Receipt Point: Hennepin
River Service: Illinois
Mile Point: 212.20
Supply Origin: IL

Vermilion
P.O. Box 250
Collison IL 61858
Tel: 217-354-2141 Fax: 217-354-2169
D. P. Thompson, Plant Mgr.
Plant Consumption (000s tons):
2000 - 296 (Proj.)
1999 - 296
1998 - 475
1999 Coal Capacity (MW): 74
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 314
BTU/LB: 10,733
%Sulfur: 1.29
%Ash: 9.28
Transportation:
Truck
Receipt Point: Collison
Receipt Comments: Truck
Supply Origin: IL

Wood River
P.O. Box 151
East Alton IL 62024
Tel: 618-462-9251 Fax: 618-462-4849
Steven E. Rasor, Plant Mgr.
Plant Consumption (000s tons):
2000 - 713 (Proj.)
1999 - 713
1998 - 990
1999 Coal Capacity (MW): 500
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 687
BTU/LB: 11,788
%Sulfur: 0.72
%Ash: 8.11
Transportation:
Rail, Barge
Rail Service : NS
Receipt Point: Federal
River Service: Mississippi
Mile Point: 194.00
Supply Origin: IL, CO, UT

KINCAID GENERATION, L.L.C.
Corporate Consumption (000s tons):
2000 - 430 (Proj.)
Coal Received by Company (1999):
Tons (000s) : 3,130

Kincaid
P.O. Box 80
Kincaid IL 62540
Tel: 217-237-4311 Fax: 217-237-2235
Thomas Campbell, Senior Coal Buyer
thomasmcampbell@ucm.com
Plant Consumption (000s tons):
2000 - 430 (Proj.)
1998 - 430
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 3,130
Coal Analysis:
BTU/LB: Avg: 11,400
%Ash: Avg: 8.00
%Sulfur: Avg: 0.35
Volatility: Avg: 0.35
Moisture: Avg: 10.00
Ash Soft Temp: Avg: 2,100
Fines: Avg: 30.00
Size: Avg: 3 x 0
Transportation:
Rail, Truck
Rail Service : IMRL
Receipt Point: Plant
Unit Train: 120 cars
Supply Origin: Uinta Basin,IL; Hanna Basin and PRB in 1999
Previously mine-mouth plant only

MIDWEST GENERATION
1 Financial Place
440 S. LaSalle St., Suite 3500
Chicago IL 60605
Tel: 312-583-6000
Corporate Consumption (000s tons):
2000 - 12,438 (Proj.)
1999 - 12,438
Coal Received by Company (1999):
Tons (000s) : 23,184
BTU/LB: 4,978
%Sulfur: 0.23
%Ash: 3.00

Crawford
3501 Pulaski Rd.
Chicago IL 60623
Tel: 773-247-7272 Fax: 773-247-2336
Plant Consumption (000s tons):
2000 - 816 (Proj.)
1999 - 816
1998 - 1,321
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 1,454
Coal Analysis:
BTU/LB: Avg: 8,800
%Ash: Avg: 4.50
%Sulfur: Avg: 0.28
Volatility: Avg: 0.35
Moisture: Avg: 28.00
Ash Soft Temp: Avg: 2,100
Fines: Avg: 28.00
Size: Avg: 3 x 0
Transportation:
Rail, Barge
Rail Service : UP,BN,EJE
Receipt Point: Romeoville, IL
Unit Train: 115 cars
River Service: Illinois
Mile Point: 318.70
Supply Origin: PRB
Barge from Romeoville to station

Fisk
1111 Cermak Rd.
Chicago IL 60608
Tel: 312-738-4122 Fax: 312-738-2248
Plant Consumption (000s tons):
2000 - 616 (Proj.)
1999 - 616
1998 - 868
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 8,644
Coal Analysis:
BTU/LB: Avg: 8,800
%Ash: Avg: 4.50
%Sulfur: Avg: 0.28
Volatility: Avg: 0.35
Moisture: Avg: 28.00
Ash Soft Temp: Avg: 2,200
Fines: Avg: 30.00
Size: Avg: 3 x 0
Transportation:
Rail, Barge
Rail Service : BN,UP,EJE
Receipt Point: Romeoville, IL
Unit Train: 115 cars
River Service: Illinois
Mile Point: 322.40
Supply Origin: PRB
Barge from Romeoville to Fisk station

Joliet
1800 Channahon Rd.
Joliet IL 60436
Tel: 815-741-9000 Fax: 815-741-2267
Plant Consumption (000s tons):
2000 - 3,130 (Proj.)
1999 - 3,130
1998 - 2,972
No Scrubbers
Ash Disposal Onsite
Coal Received by Plant (1999):
Tons (000s) : 3,709
BTU/LB: 8,768
%Sulfur: 0.37
%Ash: 5.38
Coal Analysis:
BTU/LB: Avg: 8,800
%Ash: Avg: 4.50
%Sulfur: Avg: 0.28
Volatility: Avg: 0.35
Moisture: Avg: 28.00
Ash Soft Temp: Avg: 2,150
Fines: Avg: 28.00
Size: Avg: 3 x 0
Transportation:
Rail
Rail Service : IC,BNSF,UP,EJE
Receipt Point: Plains
Unit Train: 126 cars
Supply Origin: PRB

Powerton
13082 E. Manito Rd.
Pekin IL 61554
Tel: 309-346-2165 Fax: 309-477-5268
Plant Consumption (000s tons):
2000 - 4,101 (Proj.)
1999 - 4,101
1998 - 3,182
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 4,114
BTU/LB: 8,814
%Sulfur: 0.43
%Ash: 5.39
Coal Analysis:
BTU/LB: Avg: 8,700
%Ash: Avg: 5.00
%Sulfur: Avg: 0.30
Volatility: Avg: 0.35
Moisture: Avg: 28.00
Ash Soft Temp: Avg: 2,050
Fines: Avg: 30.00
Size: Avg: 3 x 0
Transportation:
Rail, Truck
Rail Service : IMRL
Receipt Point: Plant
Unit Train: 115 cars
Supply Origin: PRB, ILB
Truck IL coal.

Waukegan
10 Greenwood Ave.
Waukegan IL 60087
Tel: 847-662-6201 Fax: 847-662-2354
Plant Consumption (000s tons):
2000 - 1,993 (Proj.)
1999 - 1,993
1998 - 2,577
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 2,101
BTU/LB: 8,699
%Sulfur: 0.42
%Ash: 5.47
Coal Analysis:
BTU/LB: Avg: 8,700
%Ash: Avg: 5.00
%Sulfur: Avg: 0.30
Volatility: Avg: 0.35
Moisture: Avg: 28.00
Ash Soft Temp: Avg: 2,100
Fines: Avg: 30.00
Size: Avg: 3 X 0
Transportation:
Rail
Rail Service : UP
Receipt Point: Plant
Unit Train: 126 cars
Supply Origin: PRB

Will County
529 E. Romeo Rd.
Romeoville IL 60441
Tel: 815-886-1010 Fax: 815-886-2265
Plant Consumption (000s tons):
2000 - 1,782 (Proj.)
1999 - 1,782
1998 - 3,001
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 3,162
BTU/LB: 8,967
%Sulfur: 0.40
%Ash: 5.04
Coal Analysis:
BTU/LB: Avg: 8,800
%Ash: Avg: 4.75
%Sulfur: Avg: 0.30
Volatility: Avg: 0.35
Moisture: Avg: 28.00

Ash Soft Temp: Avg: 2,100
Fines: Avg: 30.00
Size: Avg: 3 X 0
Transportation:
Rail, Barge
Rail Service : EJE
Receipt Point: Plant
Unit Train: 115 cars
River Service: Illinois
Mile Point: 296.40
Supply Origin: PRB
Transloads barge coal for other ComEd stations.

SOUTHERN ILLINOIS POWER COOP.
Rt. 4, P.O. Box 807
Marion IL 62959
Tel: 618-964-1448 Fax: 618-964-1867
Tim Reeves, Exec. VP & GM
Howard McDonnel, Power Prod. Dept. Mgr.
Corporate Consumption (000s tons):
2000 - 736 (Proj.)
1999 - 736
1998 - 848
1999 Coal Capacity (MW): 272
Coal Received by Company (1999):
Tons (000s) : 775
BTU/LB: 10,708
%Sulfur: 2.82
%Ash: 16.83
Contract Coal: 63%
Spot Coal: 37%

Marion
P.O. Box 607, Rt.4
Lake Of Egypt Rd.
Marion IL 62959
Tel: 618-964-1448
Plant Consumption (000s tons):
2000 - 736 (Proj.)
1999 - 736
1998 - 848
1999 Coal Capacity (MW): 272
Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 775
BTU/LB: 10,708
%Sulfur: 2.82
%Ash: 16.83
Coal Analysis:
BTU/LB: Avg: 10,000, Min: 7,090, Max: 13,037
%Ash: Avg: 13.00, Min: 6.90, Max: 35.00
%Sulfur: Avg: 3.00, Min: 1.12, Max: 6.08
Moisture: Avg: 10.00
Ash Soft Temp: Avg: 2,450
Size: Max: 6

SPRINGFIELD WATER LIGHT & POWER
201 Municipal Bldg.
Springfield IL 62757
www.cwlp.com
Tel: 217-789-2116 Fax: 217-789-2136
Corporate Consumption (000s tons):
2000 - 1,128 (Proj.)
1999 - 1,073
1998 - 1,062
1999 Coal Capacity (MW): 463
Coal Received by Company (1999):
Tons (000s) : 1,100
BTU/LB: 10,461
%Sulfur: 3.01
%Ash: 9.30
Contract Coal: 100%

Dallman
3100 Stevenson Dr.
Springfield IL 62707
Tel: 217-757-8670
Jeff Hillebrenner, Fuel Mgr.
Plant Consumption (000s tons):
2000 - 962 (Proj.)
1999 - 974
1998 - 938
1999 Coal Capacity (MW): 388
Scrubbers
Ash Disposal Onsite
Coal Received by Plant (1999):
Tons (000s) : 1,005
BTU/LB: 10,461
%Sulfur: 3.00
%Ash: 9.29
Coal Analysis:
BTU/LB: Avg: 10,500, Min: 10,000
%Ash: Avg: 10.00, Min: 9.00
%Sulfur: Avg: 3.00, Min: 2.92
Moisture: Avg: 18.00
Ash Soft Temp: Avg: 1,950
Size: Avg: 2 x 0
Transportation:
Supply Origin: IL

Lakeside
3100 Stevenson Dr.
Springfield IL 62707
Plant Consumption (000s tons):
2000 - 166 (Proj.)
1999 - 102
1998 - 124
1999 Coal Capacity (MW): 75
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 103
BTU/LB: 10,460
%Sulfur: 3.12
%Ash: 9.47
Coal Analysis:
BTU/LB: Avg: 10,500, Min: 10,000
%Ash: Avg: 10.00, Min: 9.00
%Sulfur: Avg: 3.00, Min: 2.98
Moisture: Avg: 18.00
Ash Soft Temp: Avg: 1,950
Size: Avg: 2 x 0
Transportation:
Supply Origin: IL

INDIANA

COMMONWEALTH EDISON CO. OF IN.
1 First National Plaza
P.O. Box 767
Chicago IL 60690-0767
www.ceco.com
Tel: 312-394-4321 Fax: 312-394-3110
James Small, VP, 630-663-5797
Thomas Campbell, Senior Coal Buyer, 630-663-5795
thomasmcampbell@ucm.com
Corporate Consumption (000s tons):
1998 - 1,100
1999 Coal Capacity (MW): 614

Stateline (IN)
103rd & Lake Michigan
Hammond IN 46320
Tel: 219-659-0035
General Location: 103rd St and Lake Michigan, Hammond, IN 46320
Plant Consumption (000s tons):
2000 - 1,100 (Proj.)
1999 Coal Capacity (MW): 614
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 1,400
Coal Analysis:
BTU/LB: Avg: 8,800
%Ash: Avg: 4.50
%Sulfur: Avg: 0.30
Volatility: Avg: 0.35
Moisture: Avg: 28.00
Ash Soft Temp: Avg: 2,100
Fines: Avg: 30.00
Size: Avg: 3 x 0
Transportation:
Rail
Rail Service : EJE
Receipt Point: Plant By Rail
Unit Train: 115 cars
Supply Origin: PRB

HOOSIER ENERGY RURAL ELECTRIC COOP.
7398 N. St. Rd. 37
Bloomington IN 47404
hepn.com
Mailing Address:
P.O. Box 908
Bloomington IN 47402
Tel: 812-876-2021 Fax: 812-876-3476
Dale D. Winter, VP, Power Prod., 812-876-0273
Harold D. Leitze, Department Mgr., Fuels, 812-876-0285
hleitz@hepn.com
Shirley Adkins, Fuels Coord., 812-876-0233
Corporate Consumption (000s tons):
2000 - 3,869 (Proj.)
1999 - 3,836
1998 - 3,999
1999 Coal Capacity (MW): 1,313
Coal Received by Company (1999):
Tons (000s) : 3,863
BTU/LB: 11,171
%Sulfur: 2.91
%Ash: 10.04
Contract Coal: 96%
Spot Coal: 4%

Merom
Hwy. 54 W.
P.O. Box 7
Merom IN 47882-0007
Tel: 812-356-4291 Fax: 812-356-4298
Rick Johnson, Material Handling Supv.
Karl Back, Opers. Mgr.
Plant Consumption (000s tons):
2000 - 3,229 (Proj.)
1999 - 3,210
1998 - 3,265
1999 Coal Capacity (MW): 1,080
Scrubbers
Ash Disposal Onsite
Coal Received by Plant (1999):
Tons (000s) : 3,239
BTU/LB: 11,170
%Sulfur: 3.21
%Ash: 10.45
Coal Analysis:
BTU/LB: Avg: 11,000, Min: 10,400
%Ash: Avg: 12.00, Min: 6.10, Max: 14.00
%Sulfur: Avg: 4.00, Min: 1.50, Max: 4.20
Volatility: Avg: 34.00
Moisture: Avg: 12.00, Max: 16.00
Ash Soft Temp: Avg: 2,100
Fines: Avg: 40.00
Size: Avg: 2 x 0
Capacity: 12,000 tpd
Transportation:
Rail, Truck
Rail Service : INRD, INSO, SOO, AWW
Receipt Point: Merom
Unit Train: 100 cars, 3-4/wk
Receipt Comments: Truck
Supply Origin: IN

Ratts
P.O. Box 126
Petersburg IN 47567
Tel: 812-354-8491 Fax: 812-354-3777
Rick Roop, Plant Mgr.
Ron Wilson, Opers. Supt.
Plant Consumption (000s tons):
2000 - 640 (Proj.)
1999 - 626
1998 - 734
1999 Coal Capacity (MW): 233
No Scrubbers
Ash Disposal Onsite
Coal Received by Plant (1999):
Tons (000s) : 624
BTU/LB: 11,177
%Sulfur: 1.35
%Ash: 7.96
Coal Analysis:
BTU/LB: Avg: 11,000, Min: 10,600
%Ash: Avg: 10.00, Max: 12.00
%Sulfur: Avg: 1.30, Max: 1.40
Volatility: Avg: 34.00
Moisture: Avg: 14.00, Max: 19.00
Ash Soft Temp: Avg: 2,100
Fines: Avg: 25.00, Max: 40.00
Size: Avg: 2 x 0
Capacity: 2,500 tpd
Transportation:
Receipt Comments: Conveyor
Supply Origin: IN

INDIANA MICHIGAN POWER CO.
1 Summit Square
P.O. Box 60
Fort Wayne IN 46801
Tel: 800-311-4634
P. M. O'Brien, VP, Coal, 614-324-6800
Steven J Lewis Jr., Sr. VP, Natural Gas & Coal Trading, 614-324-4510
Corporate Consumption (000s tons):
2000 - 10,283 (Proj.)
1999 - 11,443
1998 - 11,922
1999 Coal Capacity (MW): 3,595
Coal Received by Company (1999):
Tons (000s) : 11,850
BTU/LB: 9,891
%Sulfur: 0.47
%Ash: 6.28
Contract Coal: 77%
Spot Coal: 23%

Breed
P.O. Box 158
Fairbanks IN 47849
Tel: 812-268-4396
No Scrubbers
Coal Analysis:
BTU/LB: Avg: 10,850
%Ash: Avg: 11.00
%Sulfur: Avg: 4.00
Volatility: Min: 25.00
Moisture: Avg: 13.50
Ash Soft Temp: Max: 2,250
Size: Avg: 1 1/4
Transportation:
Rail
Rail Service : CSX
Receipt Point: Breed
Supply Origin: IN

KANSAS

Muscatine
1700 Industrial Connect
Muscatine IA 52761
Tel: 319-263-2631 Fax: 319-262-3524
Ray Danz, Mfg., Power Generation
Plant Consumption (000s tons):
2000 - 795 (Proj.)
1999 - 795
1998 - 853
1999 Coal Capacity (MW): 276
Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 1,146
BTU/LB: 8,244
%Sulfur: 0.88
%Ash: 6.71
Coal Analysis:
BTU/LB: Avg: 8,350, Min: 8,100, Max: 11,100
%Ash: Min: 6.20, Max: 10.00
%Sulfur: Avg: 1.20, Min: 0.85, Max: 2.00
Moisture: Avg: 29.50, Min: 13.95, Max: 32.00
Ash Soft Temp: Avg: 2,200, Min: 2,095, Max: 2,400
Fines: Avg: 35.00, Max: 40.00
Size: Min: 2 x 0, Max: 3 x 0
Capacity: 3816 tpd
Transportation:
Rail, Barge
Rail Service : BNSF,CP
Receipt Point: Muscatine
Unit Train: 120 Rapid discharge aluminum cars with rotary couplers
Have total flexibility to receive coal via rail or barge
River Service: Mississippi
Mile Point: 453.00
Supply Origin: PRB, IN

PELLA MUNIC POWER & LIGHT DEPT.
717 Main St.
P.O. Box 345
Pella IA 50219
Tel: 515-628-4173, 515-628-9844
Fax: 515-628-9935
Corporate Consumption (000s tons):
2000 - 61 (Proj.)
1999 - 61
1998 - 52
1999 Coal Capacity (MW): 27
Coal Received by Company (1999):
Tons (000s) : 61
BTU/LB: 8,500
%Sulfur: 0.29
%Ash: 5.52
Contract Coal: 100%

Pella
Pella IA 50219
Tel: 515-628-9844 Fax: 515-628-9935
Gordon Shinn, Electrical Dir.
Verlan Mathes, Asst. Plant Supt.
Bob Boyd, Asst. Plant Supt.
Plant Consumption (000s tons):
2000 - 61 (Proj.)
1999 - 61
1998 - 52
1999 Coal Capacity (MW): 27
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 61
BTU/LB: 8,500
%Sulfur: 0.29
%Ash: 5.52
Capacity: 5000 tpm
1997 Total - 49K(8400 btu), 12K(13000 btu)

EMPIRE DISTRICT ELECTRIC CO.
602 Joplin St.
P.O. Box 127
Joplin MO 64802
www.empiredistrict.com
Tel: 417-625-5100 Fax: 417-625-5169
Virgil E. Brill, VP, Energy Supply
Paul Moix, Fuels Contract Engr.
Corporate Consumption (000s tons):
2000 - 1,025 (Proj.)
1999 - 1,025
1998 - 1,049
1999 Coal Capacity (MW): 319
Coal Received by Company (1999):
Tons (000s) : 1,015
BTU/LB: 9,276
%Sulfur: 0.64
%Ash: 5.57
Contract Coal: 100%

Riverton
P.O. Box 28
Riverton KS 66770
Tel: 316-848-3456
Bruce Baker, Plant Mgr.
Plant Consumption (000s tons):
2000 - 294 (Proj.)
1999 - 294
1998 - 294
1999 Coal Capacity (MW): 88
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 299
BTU/LB: 9,559
%Sulfur: 0.89
%Ash: 5.78
Coal Analysis:
BTU/LB: Avg: 8,800, Max: 12,000
%Ash: Avg: 5.00, Max: 14.00
%Sulfur: Avg: 0.25, Max: 4.50
Moisture: Avg: 28.00
Ash Soft Temp: Avg: 2,180, Max: 2,200
Transportation:
Truck
Riverton's Units are pulverizers, and burns a blend of 65% PRB coal that is trucked from Asbury, and 35% local coal blend

KANSAS CITY BOARD OF PUBLIC UTILITIES
700 Minnesota Ave.
Kansas City KS 66101
www.bpu.com
Tel: 913-573-9000 Fax: 913-573-9990
Corporate Consumption (000s tons):
2000 - 1,221 (Proj.)
1999 - 1,392
1998 - 1,554
1999 Coal Capacity (MW): 557
Coal Received by Company (1999):
Tons (000s) : 1,368
BTU/LB: 8,514
%Sulfur: 0.38
%Ash: 5.28
Contract Coal: 77%
Spot Coal: 23%

Kaw
2015 Kansas Ave.
Kansas City KS 66105
1999 Coal Capacity (MW): 100
No Scrubbers
Transportation:
Rail
Rail Service : KCS
Plant on cold standby

Nearman Creek
4240 N. 55 St.
Kansas City KS 66104
Tel: 913-573-9785
Plant Consumption (000s tons):
2000 - 1,100 (Proj.)
1999 - 817
1998 - 1,050
1999 Coal Capacity (MW): 235
No Scrubbers
Ash Disposal Onsite
Coal Received by Plant (1999):
Tons (000s) : 790
BTU/LB: 8,244
%Sulfur: 0.42
%Ash: 5.28
Coal Analysis:
BTU/LB: Avg: 8,300
%Ash: Avg: 5.00
%Sulfur: Avg: 0.35
Volatility: Avg: 33.00
Moisture: Avg: 30.00
Ash Soft Temp: Avg: 2,185
Capacity: 3200 tpd
Transportation:
Rail
Rail Service : BN,UP
Receipt Point: Plant
Unit Train: 96 hours,115 cars
Supply Origin: Powder River Basin

Quindaro
3601 N. 12th St.
Kansas City KS 66104
Tel: 913-573-9300
Plant Consumption (000s tons):
2000 - 517 (Proj.)
1999 - 575
1998 - 504
1999 Coal Capacity (MW): 222
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 579
BTU/LB: 8,900
%Sulfur: 0.32
%Ash: 5.29
Coal Analysis:
BTU/LB: Avg: 8,850
%Ash: Avg: 6.00
%Sulfur: Avg: 0.28
Volatility: Avg: 33.10
Moisture: Avg: 27.10
Ash Soft Temp: Avg: 2,165
Transportation:
Rail, Barge
Rail Service : UP
Unit Train: 110 cars, 7 day cycle
Supply Origin: PRB
Plans call for a switch to Powder River Basin Coal in 1999.

KANSAS CITY POWER & LIGHT CO.
1201 Walnut St.
P.O. Box 418679
Kansas City MO 64141-9679
www.kcpl.com
Tel: 816-556-2200 Fax: 816-556-2228
A. D. Jennings, Chairman & Pres.
M. Jackson, Senior VP, Power Supply
J. S. Latz, Svcs.
F. L. Branca, VP, Wholesale & Transmission Svcs.
John Stolwyk, Fuels Analyst
Corporate Consumption (000s tons):
2000 - 9,286 (Proj.)
1999 - 9,286
1998 - 10,476
1999 Coal Capacity (MW): 2,316
Coal Received by Company (1999):
Tons (000s) : 10,317
BTU/LB: 8,693
%Sulfur: 0.46
%Ash: 5.76
Contract Coal: 24%
Spot Coal: 76%

La Cygne
RR No. 1
La Cygne KS 66040-9803
Tel: 913-757-4451 Fax: 816-556-2602
F. D. Crawford, Plant Mfg.
G. R. Jackson, Supt., Opers.
Plant Consumption (000s tons):
2000 - 5,043 (Proj.)
1999 - 5,043
1998 - 4,927
1999 Coal Capacity (MW): 730
Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 5,471
BTU/LB: 8,641
%Sulfur: 0.61
%Ash: 6.30
Transportation:
Rail
Rail Service : KCS, BNSF, UP
Supply Origin: IL, WY, KS

SUNFLOWER ELECTRIC POWER CORP.
310 W. 13th St.
P.O. Box 980
Hays KS 67601
www.sunflower.net
Tel: 785-628-2845 Fax: 785-623-3395
Carroll L. Waggoner, Senior Mgr. Power Mktg. & Regulation, 785-623-3313
Corporate Consumption (000s tons):
2000 - 1,362 (Proj.)
1999 - 1,362
1998 - 1,537
1999 Coal Capacity (MW): 349
Coal Received by Company (1999):
Tons (000s) : 1,561
BTU/LB: 8,465
%Sulfur: 0.31
%Ash: 5.39
Contract Coal: 100%

Holcomb
P.O. Box 430
Holcomb KS 67851
Tel: 316-277-2590 Fax: 316-277-4594
Brad Schimke, Senior Mgr., Power Prod.
Plant Consumption (000s tons):
2000 - 1,362 (Proj.)
1999 - 1,362
1998 - 1,537
1999 Coal Capacity (MW): 349
Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 1,561
BTU/LB: 8,465
%Sulfur: 0.31
%Ash: 5.39
Coal Analysis:
BTU/LB: Avg: 8,369, Min: 8,250
%Ash: Avg: 6.00, Min: 5.00
%Sulfur: Avg: 0.47, Min: 0.30
Size: Avg: 2
Transportation:
Rail
Rail Service : BNSF
Receipt Point: Holcomb Station
Supply Origin: PRB, WY

Big Cajun No.2
112 Telly St.
New Roads LA 70760
Tel: 225-296-1751 Fax: 225-296-1754
Tony McMinn, Mgr., Fuels & Analytical Services
Plant Consumption (000s tons):
2000 - 6,211 (Proj.)
1999 - 6,211
1998 - 6,355
1999 Coal Capacity (MW): 1,450
No Scrubbers
Ash Disposal Onsite
Coal Received by Plant (1999):
Tons (000s) : 6,090
BTU/LB: 8,340
%Sulfur: 0.46
%Ash: 5.77
Transportation:
Rail, Barge
Rail Service : BNSF
Receipt Point: New Roads
Unit Train: Cajun Owned Trains
River Service: Mississippi
Mile Point: 264.00
Supply Origin: WY

CENTRAL LOUISIANA ELECTRIC CO.
2030 Donahue Ferry Rd.
P.O. Box 5000
Pineville LA 71361-5000
www.cleco.com
Tel: 318-484-7400 Fax: 318-484-7465
Darrell Dubroc, GM, Wholesale Merchant Opers.,Cleco Generation Svcs., 318-427-1902
darrell.dubroc@cleco.com
Kristyl Gray Antony, Mgr., Fuels,Cleco Generation Svcs., 318-427-1734
Richard A. Riche, Mgr., Fuel Resources, 318-427-1733
William Stewart, Dir., Coal & Transportation, Cleco Generation Svcs., 318-427-1732
bill.stewart@cleco.com
Corporate Consumption (000s tons):
2000 - 4,288 (Proj.)
1999 - 4,288
1998 - 5,499
1999 Coal Capacity (MW): 528
Coal Received by Company (1999):
Tons (000s) : 3,988
BTU/LB: 7,597
%Sulfur: 0.82
%Ash: 10.87
Contract Coal: 100%

Dolet Hills
963 Power Plant Rd.
Mansfield LA 71052-9606
Tel: 318-871-3160
Steve Gauthier, Supt.
Plant Consumption (000s tons):
2000 - 2,481 (Proj.)
1999 - 2,481
1998 - 3,520
1999 Coal Capacity (MW): 360
Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 2,458
BTU/LB: 6,962
%Sulfur: 0.91
%Ash: 12.50

Rodemacher
275 Rademacher Rd.
Lena LA 71447-9708
Mike Marcantel, Supt.
Plant Consumption (000s tons):
2000 - 1,807 (Proj.)
1999 - 1,807
1998 - 1,979
1999 Coal Capacity (MW): 167
Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 1,530
BTU/LB: 8,616
%Sulfur: 0.67
%Ash: 8.25

ENTERGY - GULF STATES, INC.
10055 Grogans Mill Rd.
Parkwood II BLDG, Ste. 300
The Woodlands TX 77380
www.entergy.com
Tel: 281-297-3562
Charles W. Jewell Jr., Dir., Coal Supply
Daniel B. Gray, Admin Fuel Transportation, 281-297-3516
Hank Walters, Admin Coal, 281-297-3520
Corporate Consumption (000s tons):
2000 - 2,056 (Proj.)
1999 - 2,056
1998 - 1,995
1999 Coal Capacity (MW): 430
Coal Received by Company (1999):
Tons (000s) : 2,343
BTU/LB: 8,629
%Sulfur: 0.45
%Ash: 6.49
Contract Coal: 100%

Nelson
P.O. Box 429
Lake Charles LA 70669
Tel: 318-494-6001
Plant Consumption (000s tons):
2000 - 2,056 (Proj.)
1999 - 2,056
1998 - 1,995
1999 Coal Capacity (MW): 430
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 2,343
BTU/LB: 8,629
%Sulfur: 0.45
%Ash: 6.49
Coal Analysis:
BTU/LB: Avg: 8,600
%Ash: Avg: 5.50
%Sulfur: Avg: 0.50
Volatility: Avg: 32.04
Moisture: Avg: 28.70
Size: Avg: 2
Transportation:
Rail
Rail Service : BNSF, KCS, UP
Receipt Point: FOB Mine
Supply Origin: PRB

MARYLAND

BALTIMORE GAS & ELECTRIC CO.
P.O. Box 1475
Baltimore MD 21203
www.bge.com
Tel: 410-234-7664, 410-234-5000
B. A. Barnaba, Dir. , Fuel Procurement Unit, 410-787-5222
J. A. Beauvais, Principal Fuel Buyer, Fuel Procurement Unit, 410-787-5497
T.L. C. Robey, Principal Fuel Buyer , Fuel Procurement Unit, 410-787-5426
C. R. Duckett, Senior Buyer , Fuel Procurement Unit, 410-787-5429
L. S. Ireland, Fuel Planner , Fuel Procurement Unit, 410-787-5372
Corporate Consumption (000s tons):
2000 - 5,450 (Proj.)
1999 - 5,372
1998 - 5,230
1999 Coal Capacity (MW): 2,265
Coal Received by Company (1999):
Tons (000s) : 5,608
BTU/LB: 12,725
%Sulfur: 0.88
%Ash: 10.54
Contract Coal: 99%
Spot Coal: 1%

Brandon Shores
Rt. 173
Baltimore MD 21226
Tel: 410-787-5372 Fax: 410-787-5319
Plant Consumption (000s tons):
2000 - 3,458 (Proj.)
1999 - 3,669
1998 - 3,320
1999 Coal Capacity (MW): 1,370
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 3,793
BTU/LB: 12,569
%Sulfur: 0.71
%Ash: 11.50
Coal Analysis:
BTU/LB: Min: 12,000
%Ash: Max: 12.00
Volatility: Min: 25.00, Max: 40.00
Moisture: Max: 7.00
Ash Soft Temp: Min: 2,100
Fines: Max: 17.00
Size: Avg: 2 x 0
Other: Max 1.2 Lbs. SO_2 per million BTU
Transportation:
Rail, Barge
Rail Service : CSX
River Service: Chesapeake Bay, Patapsco
Supply Origin: WV, KY

Crane
Carroll Island Rd.
Baltimore MD 21027
Tel: 410-787-5372 Fax: 410-787-5319
Plant Consumption (000s tons):
2000 - 798 (Proj.)
1999 - 802
1998 - 760
1999 Coal Capacity (MW): 400
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 810
BTU/LB: 13,235
%Sulfur: 1.71
%Ash: 7.34
Coal Analysis:
BTU/LB: Min: 12,300
%Ash: Min: 5.00, Max: 10.00
%Sulfur: Max: 3.50
Volatility: Min: 17.00, Max: 40.00
Moisture: Max: 7.00
Ash Soft Temp: Max: 2,500
Fines: Max: 17.00
Size: Avg: 2 x 0
Other: Max 3.5 Lbs. SO_2 per million BTU, Max 2500 F. Ash Fluid Temp.
Transportation:
Rail
Rail Service : NS
Supply Origin: WV, PA

Wagner
Rt. 173
Baltimore MD 21226
Tel: 410-787-5372 Fax: 410-787-5319
Plant Consumption (000s tons):
2000 - 1,194 (Proj.)
1999 - 901
1998 - 1,150
1999 Coal Capacity (MW): 495
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 1,005
BTU/LB: 12,912
%Sulfur: 0.89
%Ash: 9.45
Coal Analysis:
BTU/LB: Min: 12,500
%Ash: Max: 10.00
%Sulfur: Max: 1.00
Volatility: Min: 22.00, Max: 40.00
Moisture: Max: 7.00
Ash Soft Temp: Min: 2,100
Fines: Max: 17.00
Size: Avg: 2 x 0
Transportation:
Rail, Barge
Rail Service : CSX
River Service: Patapsco
Supply Origin: WV

POTOMAC EDISON CO.
10435 Downsville Pike
P.O. Box 168
Williamsport MD 21795-0168
Tel: 301-790-3400 Fax: 301-790-6109
Michael H. Hess, Dir., Fuels, 724-853-5280
Michael B. Delmar, Mgr. Fuels, 724-850-6250
Corporate Consumption (000s tons):
2000 - 134 (Proj.)
1999 - 152
1998 - 126
1999 Coal Capacity (MW): 115
Coal Received by Company (1999):
Tons (000s) : 122
BTU/LB: 12,318
%Sulfur: 0.97
%Ash: 12.77
Contract Coal: 69%
Spot Coal: 31%

Smith
P.O. Box 168
Williamsport MD 21795-0169
Tel: 301-582-5900 Fax: 301-582-5909
K. C. Geraghty, Regional Mgr.
Plant Consumption (000s tons):
2000 - 134 (Proj.)
1999 - 152
1998 - 126
1999 Coal Capacity (MW): 115
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 122
BTU/LB: 12,318
%Sulfur: 0.97
%Ash: 12.77
Coal Analysis:
BTU/LB: Avg: 12,000
%Ash: Avg: 14.00
%Sulfur: Avg: 1.00
Moisture: Avg: 7.00
Size: Avg: 5
Transportation:
Receipt Point: Williamsport
Supply Origin: MD,PA

MISSISSIPPI

MISSISSIPPI POWER CO.
2992 W. Beach
P.O. Box 4079
Gulfport MS 39501
www.mspower.com
Tel: 228-864-1211 Fax: 228-865-5658
A. J. Dearman, VP, Power Generation and Delivery, 228-865-5964
ajdearma@southernco.com
Robert R. Hardman, Fuels Mgr., 228-865-5216
rrhardma@southernco.com
Corporate Consumption (000s tons):
2000 - 4,718 (Proj.)
1999 - 4,718
1998 - 4,672
1999 Coal Capacity (MW): 1,250
Coal Received by Company (1999):
Tons (000s) : 5,388
BTU/LB: 10,809
%Sulfur: 0.71
%Ash: 6.31
Contract Coal: 85%
Spot Coal: 15%

Jack Watson
P.O. Box 4079
Lorraine Rd.
Gulfport MS 39501
Tel: 228-897-6100 Fax: 228-897-6302
J. W. Cook, Plant Mfg.
jwcook@southernco.com
Plant Consumption (000s tons):
2000 - 2,039 (Proj.)
1999 - 2,039
1998 - 2,060
1999 Coal Capacity (MW): 750
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 2,228
BTU/LB: 11,775
%Sulfur: 1.13
%Ash: 6.20
Coal Analysis:
BTU/LB: Avg: 12,000, Min: 11,400
%Ash: Avg: 8.00, Min: 2.70, Max: 13.00
%Sulfur: Avg: 1.00, Min: 0.50, Max: 2.80
Volatility: Avg: 32.00, Min: 28.00
Moisture: Avg: 10.00, Max: 12.00
Ash Soft Temp: Avg: 2,400, Min: 2,250
Size: Avg: 2 x 0
Transportation:
Barge
Receipt Point: Gulfport
River Service: Mississippi, Tombigbee
Mile Point: 88.00

Victor J. Daniel
P.O. Box 950
Escatawpa MS 39552-0950
Tel: 228-474-3001 Fax: 228-474-3029
J. R. Bradley, Plant Mgr.
jrbradle@southernco.com
Plant Consumption (000s tons):
2000 - 2,679 (Proj.)
1999 - 2,679
1998 - 2,613
1999 Coal Capacity (MW): 500
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 3,160
BTU/LB: 10,128
%Sulfur: 0.42
%Ash: 6.38
Coal Analysis:
BTU/LB: Avg: 11,045, Min: 9,325, Max: 12,500
%Ash: Avg: 6.00, Min: 4.27, Max: 10.90
%Sulfur: Avg: 0.60, Min: 0.33, Max: 0.70
Volatility: Avg: 29.00
Moisture: Avg: 10.00
Ash Soft Temp: Avg: 2,300
Size: Avg: 2 x 0
Transportation:
Rail
Rail Service : CSX, MSE, BNSF
Receipt Point: Escatawpa

SOUTH MISSISSIPPI ELECTRIC POWER ASSN.
P.O. Box 15849
Hattiesburg MS 39404-5849
Tel: 601-268-2083 Fax: 601-261-2374
Joey Ward, Dir., Fuels
Marcus Ware, Mgr., Prod.
Corporate Consumption (000s tons):
2000 - 844 (Proj.)
1999 - 844
1998 - 1,011
1999 Coal Capacity (MW): 400
Coal Received by Company (1999):
Tons (000s) : 1,039
BTU/LB: 12,381
%Sulfur: 0.88
%Ash: 9.69
Contract Coal: 79%
Spot Coal: 22%

Morrow
P.O. Box 15849
Okahola Rd.
Purvis MS 39475
Tel: 601-268-2307 Fax: 601-261-2351
Plant Consumption (000s tons):
2000 - 844 (Proj.)
1999 - 844
1998 - 1,011
1999 Coal Capacity (MW): 400
Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 1,039
BTU/LB: 12,381
%Sulfur: 0.88
%Ash: 9.69
Coal Analysis:
BTU/LB: Avg: 12,400, Min: 12,250, Max: 12,540
%Ash: Avg: 8.96, Min: 7.89, Max: 10.00
%Sulfur: Avg: 0.84, Min: 0.71, Max: 1.10
Moisture: Max: 12.00
Ash Soft Temp: Min: 2,150, Max: 2,800
Fines: Avg: 40.00
Size: Avg: 1 1/2 x 0
Capacity: 3800 tpd
Transportation:
Rail
Rail Service : NS
Receipt Point: Richburg
Supply Origin: KY

MISSOURI

AMERENENERGY
400 S. 4th St.
St. Louis MO 63102-1826
www.ameren.com
Tel: 314-621-3222 Fax: 314-554-4075
Charles D. Naslund, VP, Power Plants, 314-554-4058
R. A. Kelley, VP, Energy Supply, 314-554-4188
Michael G. Mueller, Mgr., Fossil Fuel, 314-554-4174
G. L. Waters, Asst. Secy., 314-554-2715
Corporate Consumption (000s tons):
1999 - 17,041
1998 - 17,285

Labadie
P.O. Box 67
Labadie MO 63055
Tel: 314-992-8201 Fax: 314-992-8204
Plant Consumption (000s tons):
1999 - 8,013
1998 - 8,272
No Scrubbers
Coal Received by Plant (1999):
BTU/LB: 8,736
%Sulfur: 0.24
%Ash: 4.94
Transportation:
Rail
Rail Service : UP
Receipt Point: Labadie, MO
Supply Origin: WY

Meramec
8200 Fine Rd.
Saint Louis MO 63129
Tel: 314-992-7201 Fax: 314-992-7222
Plant Consumption (000s tons):
2000 - 1,656 (Proj.)
1999 - 1,844
1998 - 1,343
No Scrubbers
Coal Received by Plant (1999):
BTU/LB: 9,531
%Sulfur: 0.51
%Ash: 5.13
Transportation:
Rail, Barge
Rail Service : UP,C, BN
Receipt Point: St. Louis County, MO
River Service: Mississippi
Mile Point: 161.60
Supply Origin: IL, WY

Rush Island
100 Big Hollow Rd.
Festus MO 63028
Tel: 314-992-9201 Fax: 314-992-9293
Plant Consumption (000s tons):
1999 - 4,693
1998 - 4,830
No Scrubbers
Coal Received by Plant (1999):
BTU/LB: 8,468
%Sulfur: 0.31
%Ash: 5.29
Transportation:
Rail
Rail Service : BN
Receipt Point: Rush Tower, MO
Supply Origin: WY

Sioux
8501 N. State, Rt. 94
West Alton MO 63386-1009
Tel: 314-992-6201 Fax: 314-992-6302
Plant Consumption (000s tons):
2000 - 2,443 (Proj.)
1999 - 2,491
1998 - 2,840
No Scrubbers
Coal Received by Plant (1999):
BTU/LB: 9,648
%Sulfur: 0.90
%Ash: 5.90
Transportation:
Rail
Rail Service : BN
Receipt Point: West Alton, MO
Supply Origin: IL, WY

ASSOCIATED ELECTRIC COOP., INC.
2814 S. Golden
P.O. Box 754
Springfield MO 65801-0754
www.aeci.org
Tel: 417-881-1204 Fax: 417-885-9229
James (Jim) Jura, GM
Gary Fulks, Dir. of Engr. & Opers.
Ted Hilmes, Fuels Mgr.
Bruce Stone, Dir. of Power Prod.
Corporate Consumption (000s tons):
2000 - 8,323 (Proj.)
1999 - 8,323
1998 - 8,891
1999 Coal Capacity (MW): 1,735
Coal Received by Company (1999):
Tons (000s) : 9,141
BTU/LB: 8,887
%Sulfur: 0.19
%Ash: 4.37
Contract Coal: 100%

New Madrid
P.O. Box 159
New Madrid MO 63869
Tel: 314-643-2211
Duane Highley, Plant Mgr.
Tom Watkins, Yard Supt.
Plant Consumption (000s tons):
2000 - 3,760 (Proj.)
1999 - 3,760
1998 - 4,519
1999 Coal Capacity (MW): 600
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 4,352
BTU/LB: 8,887
%Sulfur: 0.19
%Ash: 4.36
Transportation:
Barge
Rail Service : UP
River Service: Mississippi
Mile Point: 884.00
Supply Origin: WY

Thomas Hill
Rt. 1, Box 87
Clifton Hill MO 65244
Tel: 816-261-4211 Fax: 816-261-4211
Mark Mayhew, Yard Supt.
Jerry Pinegar, Plant Mgr.
Plant Consumption (000s tons):
2000 - 4,563 (Proj.)
1999 - 4,563
1998 - 4,372
1999 Coal Capacity (MW): 1,135
Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 4,789
BTU/LB: 8,887
%Sulfur: 0.19
%Ash: 4.38
Transportation:
Rail
Rail Service : BNSF
Supply Origin: WY

CENTRAL ELECTRIC POWER COOP.
2106 Jefferson St.
P.O. Box 269
Jefferson City MO 65102
www.aeci.org/central
Tel: 573-634-2454 Fax: 573-634-3892

Colstrip
P.O. Box 38
Colstrip MT 59323
Tel: 406-748-2780
Benny L. Lewis, Fuels Mgmnt. Dir.
Mike Hayworth, Results Engr.
Plant Consumption (000s tons):
2000 - 8,831 (Proj.)
1999 - 8,831
1998 - 9,956
1999 Coal Capacity (MW): 825
Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 9,326
BTU/LB: 8,458
%Sulfur: 0.77
%Ash: 10.10
Coal Analysis:
BTU/LB: Avg: 8,556, Min: 8,300, Max: 8,718
%Ash: Avg: 9.04, Min: 7.91, Max: 12.00
%Sulfur: Avg: 0.68, Min: 0.62, Max: 1.00
Moisture: Max: 30.00
Ash Soft Temp: Min: 2,200, Max: 2,500
Size: Avg: 3 1/2
Capacity: 33,600 tpd
Transportation:
Receipt Point: Mine Mouth Plant, Western Energy Co.
Supply Origin: MT

Corette
P.O. Box 30495
Billings MT 59107
Tel: 406-252-0591
Dan Gatch, Supt.
Plant Consumption (000s tons):
2000 - 617 (Proj.)
1999 - 617
1998 - 395
1999 Coal Capacity (MW): 163
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 640
BTU/LB: 8,675
%Sulfur: 0.21
%Ash: 4.46
Coal Analysis:
BTU/LB: Avg: 8,320, Min: 8,300, Max: 9,000
%Ash: Avg: 4.50, Min: 1.00, Max: 8.00
%Sulfur: Avg: 0.22, Max: 0.30
Moisture: Avg: 29.00, Max: 35.00
Ash Soft Temp: Min: 2,200, Max: 2,500
Size: Avg: 3 1/2
Capacity: 2,040 tpd
Transportation:
Rail
Rail Service : BNSF
Unit Train: 75 cars, 8/mth
Supply Origin: WY

NEBRASKA

FREMONT DEPT. OF UTILITIES
400 E. Military
P.O. Box 1468
Fremont NE 68025
Tel: 402-727-2600, 402-727-2644
Fax: 402-727-2667
Bob Realph, Prod. Supt., 402-727-2644
Dick Svatora, Opers. Supv., 402-727-2642
Corporate Consumption (000s tons):
2000 - 269 (Proj.)
1999 - 264
1998 - 195
1999 Coal Capacity (MW): 130
Coal Received by Company (1999):
Tons (000s) : 249
BTU/LB: 8,778
%Sulfur: 0.20
%Ash: 4.47
Contract Coal: 95%
Spot Coal: 5%

Fremont No.1
P.O. Box 725
Fremont NE 68025
Tel: 402-727-2600 Fax: 402-727-2667
General Location: 1st and Luther
No Scrubbers
Coal Analysis:
BTU/LB: Min: 8,583, Max: 12,200
%Ash: Min: 5.00, Max: 8.45
%Sulfur: Min: 0.40, Max: 0.65
Volatility: Min: 35.00, Max: 50.00
Moisture: Min: 8.00, Max: 30.00
Ash Soft Temp: Min: 2,000, Max: 2,400
Fines: Min: 20.00, Max: 60.00
Size: Avg: 2 x 0
Transportation:
Rail
Rail Service : UP
Supply Origin: CO, WY

Wright
2701 E. 1st St.
Fremont NE 68025
Plant Consumption (000s tons):
2000 - 269 (Proj.)
1999 - 264
1998 - 195
1999 Coal Capacity (MW): 130
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 249
BTU/LB: 8,778
%Sulfur: 0.20
%Ash: 4.47
Coal Analysis:
BTU/LB: Avg: 8,450, Min: 8,200, Max: 8,500
%Ash: Avg: 4.00, Min: 3.90, Max: 4.50
%Sulfur: Avg: 0.25, Min: 0.20, Max: 0.32
Moisture: Avg: 29.00, Min: 28.00, Max: 31.00
Size: Min: 2 x 0
Transportation:
Rail Service : UP
Unit Train: 2-3 Trains per month for 9 months (110 cars)
Supply Origin: WY

GRAND ISLAND UTILITIES
100 E. 1st. St.
P.O. Box 1968
Grand Island NE 68802-1968
www.giud.com
Tel: 308-385-5444, 308-381-5487
Fax: 308-385-5488
Gary R. Mader, Utility Dir.
Corporate Consumption (000s tons):
2000 - 325 (Proj.)
1999 - 325
1998 - 339
1999 Coal Capacity (MW): 110
Coal Received by Company (1999):
Tons (000s) : 352
BTU/LB: 8,299
%Sulfur: 0.37
%Ash: 5.41
Spot Coal: 100%

Platte
P.O. Box 1968
1035 W. Wildwood Dr.
Grand Island NE 68801-9802
Tel: 308-385-5468 Fax: 308-385-5353
Tim Luchsinger, Asst. Utility Dir.
tglcgi@kdsi.net
Plant Consumption (000s tons):
2000 - 325 (Proj.)
1999 - 325
1998 - 339
1999 Coal Capacity (MW): 110
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 352
BTU/LB: 8,299
%Sulfur: 0.37
%Ash: 5.41
Coal Analysis:
BTU/LB: Avg: 8,412, Min: 7,800, Max: 10,000
%Ash: Avg: 6.26, Min: 4.69, Max: 7.00
%Sulfur: Avg: 0.34, Min: 0.29, Max: 0.38
Moisture: Max: 32.00
Size: Avg: 2 x 0
Transportation:
Rail
Rail Service : UP
Receipt Point: Powder River Basin

HASTINGS UTILITIES
1228 N. Denver Ave.
P.O. Box 289
Hastings NE 68902
Tel: 402-463-1371 Fax: 402-463-1705
Mark W. Barfknecht, Dir. of Fin.
Corporate Consumption (000s tons):
2000 - 299 (Proj.)
1999 - 335
1998 - 292
1999 Coal Capacity (MW): 76
Coal Received by Company (1999):
Tons (000s) : 399
BTU/LB: 8,307
%Sulfur: 0.35
%Ash: 5.47
Contract Coal: 100%

Whelan Energy Center
Hastings NE 68901
Tel: 402-463-1371 Fax: 402-463-1705
Marvin Schultes, Utilities Mgr.
Glen Horner, Prod. Supt.
Allen W. Meyer, Dir., Opers.
Plant Consumption (000s tons):
2000 - 299 (Proj.)
1999 - 335
1998 - 292
1999 Coal Capacity (MW): 76
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 399
BTU/LB: 8,307
%Sulfur: 0.35
%Ash: 5.47
Transportation:
Rail
Rail Service : UP, BNSF
Receipt Point: Hastings Energy Center
Supply Origin: PRB

NEBRASKA PUBLIC POWER DISTRICT
1414 15th St.
P.O. Box 499
Columbus NE 68602-0499
www.nppd.com
Tel: 402-564-8561 Fax: 402-563-5551
Sam Peterson, Station Mgr., 308-386-2441
Bill Fehrman, VP, Fossil Opers., 308-535-5320
wjfehrm@nppd.com
Corporate Consumption (000s tons):
2000 - 5,700 (Proj.)
1999 - 5,230
1998 - 6,163
1999 Coal Capacity (MW): 1,592
Coal Received by Company (1999):
Tons (000s) : 6,051
BTU/LB: 8,616
%Sulfur: 0.26
%Ash: 4.49
Contract Coal: 87%
Spot Coal: 13%

Gentleman
P.O. Box 68
Sutherland NE 69165
Tel: 308-386-2441 Fax: 308-386-5275
Sam Peterson, Station Mgr.
Tom D. Brunz, Prod. Consultant
Plant Consumption (000s tons):
2000 - 4,800 (Proj.)
1999 - 4,431
1998 - 5,271
1999 Coal Capacity (MW): 1,363
No Scrubbers
Ash Disposal Onsite
Coal Received by Plant (1999):
Tons (000s) : 5,133
BTU/LB: 8,590
%Sulfur: 0.27
%Ash: 4.47
Coal Analysis:
BTU/LB: Avg: 8,900, Min: 8,350
%Ash: Max: 6.50
Size: Avg: 2 x 0
Capacity: 19,000 tpd
Transportation:
Rail
Rail Service : BNSF, UP
Receipt Point: Gentleman Station
Unit Train: 115-135 cars, 7-10/wk
Supply Origin: WY

Sheldon
P.O. Box 88
4500 West Pella Rd.
Hallam NE 68368
Tel: 402-787-2555 Fax: 402-787-7888
Glen Baete, Plt. Mgr.
Plant Consumption (000s tons):
2000 - 900 (Proj.)
1999 - 799
1998 - 892
1999 Coal Capacity (MW): 229
No Scrubbers
Ash Disposal Onsite
Coal Received by Plant (1999):
Tons (000s) : 918
BTU/LB: 8,760
%Sulfur: 0.21
%Ash: 4.62
Coal Analysis:
BTU/LB: Avg: 8,900, Min: 8,350, Max: 11,500
%Ash: Avg: 4.50, Min: 4.00, Max: 6.50
%Sulfur: Avg: 0.30, Max: 0.50
Moisture: Avg: 27.00
Size: Avg: 2 x 0
Capacity: 3,200 tpd
Transportation:
Rail
Rail Service : UP
Receipt Point: Hallam
Unit Train: 115 cars, 6-8/mth
Supply Origin: WY

MINNKOTA POWER COOP, INC.
P.O. Box 13200
Grand Forks ND 58208-3200
www.minnkota.com
Tel: 701-795-4000 Fax: 701-795-4215
David Loer, GM
Corporate Consumption (000s tons):
2000 - 4,079 (Proj.)
1999 - 4,079
1998 - 4,130
1999 Coal Capacity (MW): 674
Coal Received by Company (1999):
Tons (000s) : 4,468
BTU/LB: 6,641
%Sulfur: 0.89
%Ash: 8.92
Contract Coal: 100%

Young
P.O. Box 127
Center ND 58530
Tel: 701-794-8711 Fax: 701-794-7258
Stuart Libby, Plant Mgr.
slibby@minnkota.com
Plant Consumption (000s tons):
2000 - 4,079 (Proj.)
1999 - 4,079
1998 - 4,130
1999 Coal Capacity (MW): 674
Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 4,468
BTU/LB: 6,641
%Sulfur: 0.89
%Ash: 8.92
Transportation:
Receipt Point: Center

MONTANA DAKOTA UTILITIES CO.
400 N. 4th St.
Bismarck ND 58501-4092
www.mdu.com
Tel: 701-222-7900 Fax: 701-222-7886
Terry D Hildestad, Pres. & CEO,
701-530-1410
Bruce Imsdahl, VP, Energy Supply
Corporate Consumption (000s tons):
2000 - 2,863 (Proj.)
1999 - 2,863
1998 - 3,045
1999 Coal Capacity (MW): 254
Coal Received by Company (1999):
Tons (000s) : 3,132
BTU/LB: 6,973
%Sulfur: 1.00
%Ash: 8.34
Contract Coal: 100%

Coyote
P.O. Box 339
Beulah ND 58523
Tel: 701-873-2571
Plant Consumption (000s tons):
2000 - 2,219 (Proj.)
1999 - 2,219
1998 - 2,346
1999 Coal Capacity (MW): 104
Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 2,442
BTU/LB: 6,975
%Sulfur: 1.10
%Ash: 8.65
Coal Analysis:
BTU/LB: Avg: 6,950, Min: 6,812
%Ash: Avg: 7.84, Min: 7.20
%Sulfur: Avg: 1.17, Min: 0.84
Size: Avg: 3 x 0
Transportation:
Supply Origin: ND

Heskett
P.O. Box 40
Mandan ND 58554
Tel: 701-663-9576
Alan Welte, Station Supt.
Plant Consumption (000s tons):
2000 - 456 (Proj.)
1999 - 456
1998 - 423
1999 Coal Capacity (MW): 100
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 500
BTU/LB: 7,067
%Sulfur: 0.72
%Ash: 6.96
Coal Analysis:
BTU/LB: Avg: 7,026, Min: 6,848
%Ash: Avg: 8.21, Min: 6.70
%Sulfur: Avg: 0.99, Min: 0.60
Size: Avg: 3 x 0
Transportation:
Rail
Rail Service : BNSF
Receipt Point: Mandan
Supply Origin: ND

OHIO

AMERICAN MUN POWER-OHIO, INC.
P.O. Box 728
Marietta OH 45750
www.amp-ohio.org
Tel: 614-374-8913 Fax: 614-374-4063
Corporate Consumption (000s tons):
2000 - 773 (Proj.)
1999 - 773
1998 - 855
1999 Coal Capacity (MW): 213
Coal Received by Company (1999):
Tons (000s) : 832
BTU/LB: 11,583
%Sulfur: 4.70
%Ash: 15.05

Richard H. Gorsuch
P.O. Box 728
Marietta OH 45750
Tel: 614-374-8913 Fax: 614-374-4063
Gilbert Woods, Plant Mgr.
Plant Consumption (000s tons):
2000 - 773 (Proj.)
1999 - 773
1998 - 855
1999 Coal Capacity (MW): 213
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 832
BTU/LB: 11,583
%Sulfur: 4.70
%Ash: 15.05
Coal Analysis:
BTU/LB: Avg: 12,150
%Ash: Avg: 10.00
%Sulfur: Avg: 4.00
Volatility: Avg: 35.00
Moisture: Avg: 5.00
Fines: Avg: 30.00
Size: Avg: 2 x 0
Capacity: 46,000 tpm
Transportation:
Truck
Receipt Point: Plant
Supply Origin: Strip Mine

CARDINAL OPERATING CO.
1 Riverside Plaza
P.O. Box 16631
Columbus OH 43216
Tel: 614-223-1368
P. M. O'Brien, VP, Coal, 614-324-6800
Steven J Lewis Jr., Sr. VP, Natural Gas & Coal Trading, 614-324-4510
Corporate Consumption (000s tons):
2000 - 3,435 (Proj.)
1999 - 3,435
1998 - 4,321
Coal Received by Company (1999):
Tons (000s) : 3,574
BTU/LB: 12,264
%Sulfur: 1.55
%Ash: 11.89
Contract Coal: 92%
Spot Coal: 8%

Cardinal
P.O. Drawer B
Brilliant OH 43913
Tel: 614-598-4164
Plant Consumption (000s tons):
2000 - 3,435 (Proj.)
1999 - 3,763
1998 - 4,321
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 3,814
BTU/LB: 12,281
%Sulfur: 1.54
%Ash: 11.97
Coal Analysis:
BTU/LB: Avg: 12,000
%Ash: Avg: 13.00
Volatility: Min: 25.00
Moisture: Avg: 7.00
Ash Soft Temp: Min: 2,200
Size: Avg: 1 1/4
Transportation:
Rail, Barge
Rail Service : NS
River Service: Ohio
Mile Point: 77.00
Supply Origin: OH, WV, PA, KY

CITY OF DOVER
122 E. 3rd St.
Dover OH 44622
www.doverohio.com
Tel: 216-343-7725 Fax: 216-343-4626
Dave Douglas, Service Dir., 330-343-6725
Paul Wilson, Supt. Dist. & Transm., 440-343-7725
Corporate Consumption (000s tons):
2000 - 34 (Proj.)
1999 - 34
1998 - 44
1999 Coal Capacity (MW): 20

Dover
303 E. Broadway
Dover OH 44622
Plant Consumption (000s tons):
2000 - 34 (Proj.)
1999 - 34
1998 - 44
1999 Coal Capacity (MW): 20
No Scrubbers

CLEVELAND ELECTRIC ILLUM CO.
76 S. Main St.
Akron OH 44308-1890
www.centerior.com
Tel: 330-384-5100 Fax: 330-384-5279
James Parks, Mgr. Fuel Supply Dept.
Corporate Consumption (000s tons):
2000 - 2,407 (Proj.)
1999 - 2,407
1998 - 4,308
1999 Coal Capacity (MW): 2,337
Coal Received by Company (1999):
Tons (000s) : 2,231
BTU/LB: 12,795
%Sulfur: 2.59
%Ash: 8.42
Contract Coal: 82%
Spot Coal: 18%

Ashtabula
2133 Lake Rd.
Ashtabula OH 44004-3899
Tel: 216-622-9800
Ron N. Kantorak, Consolidated Plants Mgr.
Plant Consumption (000s tons):
2000 - 305 (Proj.)
1999 - 305
1998 - 363
1999 Coal Capacity (MW): 440
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 322
BTU/LB: 12,351
%Sulfur: 3.83
%Ash: 9.01
Transportation:
Rail
Rail Service : CR
Receipt Point: Ceico
Supply Origin: OH, PA, VA

Eastlake
10 Erie Rd.
Eastlake OH 44095-1700
Tel: 216-622-9800
Ron N. Kantorak, Consolidated Plants Mgr.
Plant Consumption (000s tons):
2000 - 1,985 (Proj.)
1999 - 1,985
1998 - 2,434
1999 Coal Capacity (MW): 1,045
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 1,778
BTU/LB: 12,850
%Sulfur: 2.51
%Ash: 8.42
Transportation:
Rail
Rail Service : CR
Receipt Point: Willoughby
Supply Origin: OH, WV, KY

Lake Shore
E. 70th St.
Cleveland OH 44103-1084
Tel: 216-222-9800
Ron N. Kantorak, Consolidated Plants Mgr.
Plant Consumption (000s tons):
2000 - 117 (Proj.)
1999 - 117
1998 - 133
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 132
BTU/LB: 13,130
%Sulfur: 0.63
%Ash: 7.00
Transportation:
Rail
Rail Service : CR
Receipt Point: Cleveland
Supply Origin: WV, KY

COLUMBUS SOUTHERN POWER CO.
215 N. Front St.
Columbus OH 43215
Tel: 614-223-1000
P. M. O'Brien, VP. Coal. 614-324-6800
Steven J Lewis Jr., Sr. VP. Natural Gas & Coal Trading. 614-324-4510
Corporate Consumption (000s tons):
2000 - 3,773 (Proj.)
1999 - 4,095
1998 - 4,397
1999 Coal Capacity (MW): 2,045
Coal Received by Company (1999):
Tons (000s) : 4,119
BTU/LB: 11,972
%Sulfur: 2.68
%Ash: 8.92
Contract Coal: 77%
Spot Coal: 13%

Conesville
47201 Cr 273
Conesville OH 43811
Tel: 614-829-2378
Plant Consumption (000s tons):
2000 - 3,616 (Proj.)
1999 - 3,944
1998 - 4,213
1999 Coal Capacity (MW): 1,945
Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 3,951
BTU/LB: 12,005
%Sulfur: 2.68
%Ash: 9.13
Coal Analysis:
BTU/LB: Min: 11,700
%Ash: Max: 9.00
%Sulfur: Min: 2.00
Volatility: Min: 25.00
Moisture: Max: 11.00
Size: Avg: 2 x 0
Transportation:
Receipt Point: Conesville Plant
Receipt Comments: Truck
Supply Origin: OH

Picway
9301 U.S. Rt. 23
Lockbourne OH 43137
Tel: 614-491-3524
Plant Consumption (000s tons):
2000 - 157 (Proj.)
1999 - 151
1998 - 184
1999 Coal Capacity (MW): 100
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 168
BTU/LB: 11,204
%Sulfur: 2.74
%Ash: 11.83
Coal Analysis:
BTU/LB: Avg: 11,200
%Ash: Avg: 12.00
Volatility: Min: 25.00
Moisture: Avg: 10.00
Ash Soft Temp: Min: 2,125
Size: Avg: 2 x 0
Transportation:
Supply Origin: OH

DAYTON POWER & LIGHT CO.
1900 Dryden Rd.
P.O. Box 1807
Dayton OH 45401
www.waytogo.com
Tel: 937-224-6000 Fax: 937-331-4816
H. E. Miracle, Senior Business Analyst
Dave Englebrecht. Corp. Analysis, Prod. Fuel, 937-259-7229
Corporate Consumption (000s tons):
2000 - 7,395 (Proj.)
1999 - 7,395
1998 - 8,243
1999 Coal Capacity (MW): 1,715
Coal Received by Company (1999):
Tons (000s) : 7,050
BTU/LB: 11,565
%Sulfur: 0.78
%Ash: 14.62
Contract Coal: 70%
Spot Coal: 30%

Hutchings
9200 Chautauqua Rd.
Miamisburg OH 45342
Tel: 513-865-6200
Plant Consumption (000s tons):
2000 - 224 (Proj.)
1999 - 224
1998 - 295
1999 Coal Capacity (MW): 414
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 128
BTU/LB: 12,387
%Sulfur: 0.86
%Ash: 9.92
Transportation:
Rail
Rail Service : CR
Receipt Point: Miamisburg

Killen
P.O. Box 147
Manchester OH 45144
Tel: 513-549-3911
Plant Consumption (000s tons):
2000 - 1,670 (Proj.)
1999 - 1,670
1998 - 2,010
1999 Coal Capacity (MW): 447
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 1,632
BTU/LB: 11,849
%Sulfur: 0.62
%Ash: 13.81
Transportation:
Barge
River Service: Ohio
Mile Point: 389.80

Stuart
P.O. Box 158
Aberdeen OH 45101
Tel: 513-549-2641
Plant Consumption (000s tons):
2000 - 5,501 (Proj.)
1999 - 5,501
1998 - 5,938
1999 Coal Capacity (MW): 854
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 5,289
BTU/LB: 11,457
%Sulfur: 0.83
%Ash: 14.99
Transportation:
Barge
River Service: Ohio
Mile Point: 404.00

DUQUESNE LIGHT CO.
411 Seventh Ave.
P.O. Box 1930
Pittsburgh PA 15230-1930
www.dqe.com
Tel: 412-393-6000 Fax: 412-393-6021
Richard M. Liconti, GM, Fossil Fuels, 412-393-6281
Charles K. Blankenship, Mgr., Fuels Planning, 412-393-6279
Charles (Chuck) Compagnon, Mfg., Admin., 412-393-6275
Roger E. McHugh, Mgr. Warwick Project, 412-393-4329
Corporate Consumption (000s tons):
2000 - 4,214 (Proj.)
1999 - 4,214
1998 - 2,037
1999 Coal Capacity (MW): 1,075
Coal Received by Company (1999):
Tons (000s) : 4,485
BTU/LB: 12,485
%Sulfur: 1.75
%Ash: 10.46
Contract Coal: 33%
Spot Coal: 67%

Avon Lake
33570 Lake Rd.
Avon Lake OH 44012-1198
Tel: 216-622-9800
Ron N. Kantorak, Consolidated Plants Mgr.
Plant Consumption (000s tons):
2000 - 1,291 (Proj.)
1999 - 1,291
1998 - 1,379
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 1,283
BTU/LB: 12,750
%Sulfur: 1.01
%Ash: 9.05
Transportation:
Rail
Rail Service : NS
Receipt Point: Avon Lake
Supply Origin: OH, KY, VA

Niles
1047 Belmont Ave.
Niles OH 44446
Tel: 330-652-4301
Charles D. Lasky, Mgr.
Plant Consumption (000s tons):
2000 - 481 (Proj.)
1999 - 481
1998 - 586
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 502
BTU/LB: 11,819
%Sulfur: 2.76
%Ash: 12.87
Transportation:
Supply Origin: PA, OH

HAMILTON DEPT. OF PUBLIC UTILITIES
40 High St.
Hamilton OH 45011
Tel: 513-868-5907 Fax: 513-867-7300
Tom P'Simer, Elect. Prod. Supt.
Corporate Consumption (000s tons):
2000 - 129 (Proj.)
1999 - 129
1998 - 172
1999 Coal Capacity (MW): 86
Coal Received by Company (1999):
Tons (000s) : 138
BTU/LB: 12,421
%Sulfur: 0.92
%Ash: 9.88
Contract Coal: 100%

Hamilton
960 N. 3rd St.
Hamilton OH 45011
Tel: 513-868-5867 Fax: 513-867-7345
Tom P'Simer, Elect. Prod. Supt.
Dan Needhan, Asst. Elect. Prod. Supt.
Mike Perry, Asst. Elect. Prod. Supt.
Plant Consumption (000s tons):
2000 - 129 (Proj.)
1999 - 129
1998 - 172
1999 Coal Capacity (MW): 86
Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 138
BTU/LB: 12,421
%Sulfur: 0.92
%Ash: 9.88
Coal Analysis:
BTU/LB: Avg: 12,500, Min: 12,000, Max: 12,886
%Ash: Avg: 9.31, Min: 8.20, Max: 12.00
%Sulfur: Avg: 0.70, Min: 0.68, Max: 0.75
Volatility: Max: 36.00
Moisture: Max: 6.00
Ash Soft Temp: Avg: 2,650
Fines: Max: 30.00
Size: Avg: 4 x 0
Capacity: 25 tph
Transportation:
Barge, Truck
Receipt Point: Hamilton
River Service: Ohio
Supply Origin: WV, KY

OHIO EDISON CO.
76 S. Main St.
Akron OH 44308-1890
www.ohioedison.com
Tel: 330-384-5100 Fax: 330-384-5279
James Parks, Mgr. Fuel Supply Dept.
Corporate Consumption (000s tons):
2000 - 6,220 (Proj.)
1999 - 6,220
1998 - 7,023
1999 Coal Capacity (MW): 2,784
Coal Received by Company (1999):
Tons (000s) : 6,513
BTU/LB: 12,363
%Sulfur: 1.48
%Ash: 11.73

Burger
57246 Ferry Landing Rd.
Shadyside OH 43947-9700
Tel: 614-671-2900
Dennis J. Fuster, Mgr., Consolidated Plants
Plant Consumption (000s tons):
2000 - 715 (Proj.)
1999 - 715
1998 - 776
1999 Coal Capacity (MW): 416
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 778
BTU/LB: 12,330
%Sulfur: 3.23
%Ash: 10.69
Transportation:
Barge
River Service: Ohio
Mile Point: 102.30
Supply Origin: OH, PA, WV

Sammis
P.O. Box 176
Stratton OH 43961
Tel: 614-537-1546
Dennis J. Fuster, Mgr., Consolidated Plants

Plant Consumption (000s tons):
2000 - 5,506 (Proj.)
1999 - 5,506
1998 - 5,661
1999 Coal Capacity (MW): 2,102
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 5,735
BTU/LB: 12,367
%Sulfur: 1.24
%Ash: 11.87
Transportation:
Barge
River Service: Ohio
Mile Point: 53.20
Supply Origin: PA, KY, WV

OHIO POWER CO.
301 Cleveland Ave. S.W.
Canton OH 44702
Tel: 330-456-8173
P. M. O'Brien, VP, Coal, 614-324-6800
Steven J Lewis Jr., Sr. VP, Natural Gas & Coal Trading, 614-324-4510
Corporate Consumption (000s tons):
2000 - 12,896 (Proj.)
1999 - 13,780
1998 - 15,461
1999 Coal Capacity (MW): 6,255
Coal Received by Company (1999):
Tons (000s) : 14,505
BTU/LB: 11,865
%Sulfur: 2.47
%Ash: 11.78
Contract Coal: 77%
Spot Coal: 23%

Gavin
P.O. Box 271
Cheshire OH 45620
Tel: 614-367-7331
Plant Consumption (000s tons):
2000 - 5,874 (Proj.)
1999 - 6,171
1998 - 7,090
1999 Coal Capacity (MW): 2,600
Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 6,637
BTU/LB: 11,362
%Sulfur: 3.42
%Ash: 12.08
Coal Analysis:
BTU/LB: Avg: 11,000
%Ash: Avg: 13.00
%Sulfur: Min: 1.00
Volatility: Min: 25.00
Moisture: Avg: 7.00
Ash Soft Temp: Min: 2,350
Size: Avg: 2 x 0
Transportation:
Rail, Barge
Rail Service : CSX
River Service: Ohio
Mile Point: 259.00
Supply Origin: OH, WV

Muskingum River
P.O. Box 140
Beverly OH 45715
Tel: 614-984-2321
Plant Consumption (000s tons):
2000 - 2,155 (Proj.)
1999 - 2,448
1998 - 3,016
1999 Coal Capacity (MW): 1,425
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 2,534
BTU/LB: 12,051
%Sulfur: 2.16
%Ash: 12.20
Coal Analysis:
Volatility: Min: 25.00
Moisture: Avg: 7.00
Size: Avg: 1 1/2 x 0
Other: 11,500 Btu And 2200 Ast Are For Unit #5, Units 1-4 2200 ash soft tem.
Transportation:
Rail
Rail Service : CSX
Receipt Comments: Truck/Conveyor
Supply Origin: OH
Units 1-4 are wet bottom design and requires low AST coals. Unit 5 is dry bottom and requires higher AST coals. Unit 5 is dry bottom and requires higher AST coals.

OHIO VALLEY ELECTRIC CORP.
P.O. Box 468
Piketon OH 45661
Tel: 740-289-7200 Fax: 740-289-7253
D. L. Hart, VP & Asst. to Pres., 614-223-1092
Charles A Ebetino Jr., Sr. VP, Fuel Supply, 740-687-3000
D. E. Jones, VP Opers., 740-289-7211
F. L. Stokes, Chief Prod. Environ. Engr., 740-289-7249
Corporate Consumption (000s tons):
2000 - 2,721 (Proj.)
1999 - 3,038
1998 - 2,952
1999 Coal Capacity (MW): 1,086
Coal Received by Company (1999):
Tons (000s) : 2,914
BTU/LB: 12,845
%Sulfur: 2.46
%Ash: 8.13
Contract Coal: 65%
Spot Coal: 35%

Kyger Creek
P.O. Box 81
Cheshire OH 45631
Tel: 740-367-5050
R. E. Amburgey, Plant Mgr.
Plant Consumption (000s tons):
2000 - 2,721 (Proj.)
1999 - 3,038
1998 - 2,952
1999 Coal Capacity (MW): 1,086
No Scrubbers
Ash Disposal Onsite
Coal Received by Plant (1999):
Tons (000s) : 2,914
BTU/LB: 12,845
%Sulfur: 2.46
%Ash: 8.13
Transportation:
Barge
River Service: Ohio
Mile Point: 260.00
Supply Origin: OH, WV, PA, KY, VA

ORRVILLE MUNICIPAL UTILITIES
207 N. Main
P.O. Box 107
Orrville OH 44667
www.orrville.com
Tel: 330-684-5100 Fax: 330-684-5122
Dan Preising, Dir., Utilities, 330-684-5012
preising@orrville.com
Jeff A. Brediger, Electric Utility Mgr., 330-684-5101
brediger@orrville.com
Jim Hall, Purch. Mgr.
hall@orrville.com
Corporate Consumption (000s tons):
2000 - 200 (Proj.)
1999 - 202
1998 - 197
1999 Coal Capacity (MW): 72
Coal Received by Company (1999):
Tons (000s) : 186
BTU/LB: 11,609
%Sulfur: 3.50
%Ash: 10.19
Contract Coal: 100%

Orrville
1100 Perry St.
Orrville OH 44667
Tel: 330-684-5100 Fax: 330-684-5122
Joe Messenger, Maint. Supt.
Jeff A. Brediger, Electric Utility Mgr.
brediger@orrville.com
Plant Consumption (000s tons):
2000 - 200 (Proj.)
1999 - 202
1998 - 197
1999 Coal Capacity (MW): 72
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 186
BTU/LB: 11,609
%Sulfur: 3.50
%Ash: 10.19
Coal Analysis:
BTU/LB: Avg: 11,500, Min: 11,300
%Ash: Avg: 10.00, Min: 6.57, Max: 12.00
%Sulfur: Avg: 3.39, Min: 2.00, Max: 4.00
Volatility: Avg: 50.00
Moisture: Avg: 10.00, Max: 11.00
Ash Soft Temp: Avg: 2,350
Size: Avg: Crushed ROM and Stoker
Transportation:
Receipt Point: Orrville
Supply Origin: OH

PAINESVILLE ELECTRIC DIV.
7 Richmond
P.O. Box 601
Painesville OH 44077-0601
www.painesville.com
Tel: 440-639-4828 Fax: 440-357-1966
Ken Newton, Sr. Engr., Opers.
electplant@painesville.com
Corporate Consumption (000s tons):
2000 - 87 (Proj.)
1999 - 92
1998 - 94
1999 Coal Capacity (MW): 54
Coal Received by Company (1999):
Tons (000s) : 94
BTU/LB: 12,517
%Sulfur: 2.55
%Ash: 8.39
Contract Coal: 100%

Painesville
P.O. Box 601
325 Richmond St.
Painesville OH 44077
Paul Morton, Generation Supv.
pmorton@painesville.com
Ken Newton, Sr. Engr., Opers.
electplant@painesville.com
George Machuta, Sr. Engr., Maint.
electplant@painesville.com
Plant Consumption (000s tons):
2000 - 87 (Proj.)
1999 - 87
1998 - 94
1999 Coal Capacity (MW): 54
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 94
BTU/LB: 12,517
%Sulfur: 2.55
%Ash: 8.39
Coal Analysis:
BTU/LB: Avg: 12,500
%Ash: Avg: 8.00, Min: 6.00, Max: 10.00
%Sulfur: Max: 3.00
Size: Min: 2 x 0
Capacity: 300 tons/day
Transportation:
Receipt Point: Plant
Supply Origin: OH

THE CINCINNATI GAS & ELECTRIC CO.
139 E. 4th St.
P.O. Box 960
Cincinnati OH 45201-0960
www.cinenergy.com
Tel: 606-372-5733, 606-372-5725
Fax: 606-372-5878
J. Thomas Mason, GM, Fuel Dept.
John R. Kreinest, Fuel Procurement Mgr., 606-372-5725
Corporate Consumption (000s tons):
2000 - 10,755 (Proj.)
1999 - 11,862
1998 - 11,592
1999 Coal Capacity (MW): 4,530
Coal Received by Company (1999):
Tons (000s) : 11,871
BTU/LB: 12,031
%Sulfur: 2.08
%Ash: 11.34
Contract Coal: 61%
Spot Coal: 39%

Beckjord
757 U.S. Rt. 52
New Richmond OH 45157-9709
Tel: 513-467-5000 Fax: 513-467-5121
James Messmer, Station Mgr.
Plant Consumption (000s tons):
2000 - 2,786 (Proj.)
1999 - 3,093
1998 - 3,101
1999 Coal Capacity (MW): 1,164
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 3,106
BTU/LB: 12,046
%Sulfur: 1.01
%Ash: 11.87
Coal Analysis:
BTU/LB: Min: 11,000, Max: 13,391
%Ash: Min: 6.50, Max: 19.20
%Sulfur: Min: 0.62, Max: 4.91
Volatility: Min: 32.00
Ash Soft Temp: Min: 2,100
Fines: Max: 35.00
Size: Max: 2 x 0
Transportation:
Barge
Receipt Point: New Richmond
River Service: Ohio
Mile Point: 452.90
Supply Origin: OH, KY, PA, IN, WV

Miami Fort
Brower Rd.
North Bend OH 45052-0128
Tel: 513-467-4900 Fax: 513-467-4931
Dan McNeal, Station Mgr.
Plant Consumption (000s tons):
2000 - 3,242 (Proj.)
1999 - 3,528
1998 - 3,042
1999 Coal Capacity (MW): 1,292
No Scrubbers

Plant Consumption (000s tons):
2000 - 96 (Proj.)
1999 - 96
1998 - 247
1999 Coal Capacity (MW): 75
No Scrubbers
Coal Received by Plant (1999):
Tons (000s): 1
BTU/LB: 11,090
%Sulfur: 1.16
%Ash: 23.20
Transportation:
Receipt Point: Holtwood
Supply Origin: PA

Martins Creek
P.O. Box 257
Martins Creek PA 18063
Tel: 610-498-2282 Fax: 610-774-5807
Thomas Eppehimer, Plant Supt.
Plant Consumption (000s tons):
2000 - 339 (Proj.)
1999 - 339
1998 - 469
1999 Coal Capacity (MW): 313
No Scrubbers
Coal Received by Plant (1999):
Tons (000s): 303
BTU/LB: 13,192
%Sulfur: 2.05
%Ash: 8.17
Coal Analysis:
BTU/LB: Min: 12,500
%Ash: Max: 14.00
%Sulfur: Max: 2.30
Volatility: Min: 28.00
Moisture: Max: 7.00
Ash Soft Temp: Min: 2,400
Size: Avg: 2 x 0
Transportation:
Rail
Rail Service: CR
Receipt Point: Martins Creek
Supply Origin: PA

Montour
P.O. Box 128
Washingtonville PA 17884
Tel: 717-437-1200 Fax: 717-437-1225
Gregory L. Smith, Plant Supt.
Plant Consumption (000s tons):
2000 - 2,940 (Proj.)
1999 - 2,940
1998 - 3,469
1999 Coal Capacity (MW): 1,625
No Scrubbers
Coal Received by Plant (1999):
Tons (000s): 3,036
BTU/LB: 12,840
%Sulfur: 1.91
%Ash: 10.88
Coal Analysis:
BTU/LB: Min: 12,500
%Ash: Max: 14.00
%Sulfur: Max: 2.39
Volatility: Min: 22.00
Moisture: Max: 7.00
Ash Soft Temp: Min: 2,400
Size: Avg: 2 x 0
Transportation:
Rail
Rail Service: CR
Supply Origin: PA

PENNSYLVANIA POWER CO.
1st Energy Corp / Sterling Office Park
367 Ghent Rd. - Ste. 3A
Akron OH 44333
www.pennpower.com
Tel: 330-384-5100 Fax: 330-384-5279
James Parks, Mgr. Fuel Supply Dept.
Corporate Consumption (000s tons):
2000 - 5,022 (Proj.)
1999 - 5,022
1998 - 6,772
1999 Coal Capacity (MW): 2,505
Coal Received by Company (1999):
Tons (000s): 3,868
BTU/LB: 12,053
%Sulfur: 3.63
%Ash: 12.64
Contract Coal: 95%
Spot Coal: 5%

Mansfield
P.O. Box 128
Shippingport PA 15077
Tel: 412-643-5000
Donald R. Schneider, Mgr., Consolidated Plants
Plant Consumption (000s tons):
2000 - 5,022 (Proj.)
1999 - 5,022
1998 - 6,026
1999 Coal Capacity (MW): 2,158
Scrubbers
Coal Received by Plant (1999):
Tons (000s): 3,868
BTU/LB: 12,053
%Sulfur: 3.63
%Ash: 12.64
Transportation:
Barge
River Service: Ohio
Mile Point: 33.20
Supply Origin: OH, PA, WV

SITHE NORTHEAST
335 Madison Ave.
New York NY 10017
Tel: 212-351-0000
Corporate Consumption (000s tons):
2000 - 11,778 (Proj.)
1999 - 11,778
Coal Received by Company (1999):
Tons (000s): 12,197
BTU/LB: 12,589
%Sulfur: 1.92
%Ash: 11.84

Conemaugh
P.O. Box K
New Florence PA 15701
Tel: 412-235-2711
John E. Gritzer, Station Dir.
Plant Consumption (000s tons):
2000 - 4,295 (Proj.)
1999 - 4,295
1998 - 4,973
Scrubbers
Ash Disposal Onsite
Coal Received by Plant (1999):
Tons (000s): 4,684
BTU/LB: 12,658
%Sulfur: 2.29
%Ash: 11.62
Transportation:
Supply Origin: PA

Keystone
P.O. Box 161
Shelocta PA 15774
Tel: 412-354-2191
J. J. Wagner Jr., Station Dirr.
Plant Consumption (000s tons):
2000 - 4,424 (Proj.)
1999 - 4,424
1998 - 4,859
No Scrubbers
Coal Received by Plant (1999):
Tons (000s): 4,551
BTU/LB: 12,477
%Sulfur: 1.70
%Ash: 12.74
Transportation:
Supply Origin: PA

Portland
P.O. Box 238
Portland PA 18351-0238
Tel: 717-897-6113 Fax: 215-921-6758
Vincent Foglia, Station Dir.
Plant Consumption (000s tons):
2000 - 751 (Proj.)
1999 - 751
1998 - 743
No Scrubbers
Coal Received by Plant (1999):
Tons (000s): 698
BTU/LB: 13,095
%Sulfur: 1.64
%Ash: 7.03
Coal Analysis:
BTU/LB: Avg: 13,108, Min: 12,500, Max: 13,425
%Ash: Avg: 8.50, Min: 5.86, Max: 11.18
%Sulfur: Avg: 1.53, Min: 1.08, Max: 1.77
Volatility: Min: 26.00
Moisture: Max: 7.00
Ash Soft Temp: Avg: 2,250
Transportation:
Rail
Rail Service: CR
Receipt Point: Portland
Unit Train: 130 Car Split Trains (80 cars)
Supply Origin: PA, Pittsburgh Seam

Seward
P.O. Box 405
New Florence PA 15944
Tel: 814-446-5641
Richard D. Imler, Station Dir.
Plant Consumption (000s tons):
2000 - 318 (Proj.)
1999 - 318
1998 - 519
No Scrubbers
Coal Received by Plant (1999):
Tons (000s): 322
BTU/LB: 12,304
%Sulfur: 1.62
%Ash: 14.25
Transportation:
Receipt Point: Seward
Supply Origin: PA

Shawville
P.O. Box 750
Shawville PA 16830
Tel: 814-765-6508
Kenneth W. Billotte, Station Dir.
Plant Consumption (000s tons):
2000 - 1,338 (Proj.)
1999 - 1,338
1998 - 1,645
No Scrubbers
Ash Disposal Onsite
Coal Received by Plant (1999):
Tons (000s): 1,333
BTU/LB: 12,332
%Sulfur: 1.79
%Ash: 13.32
Transportation:
Receipt Point: Shawville
Supply Origin: PA

Titus
P.O. Box 16001
Reading PA 19640-0001
Tel: 610-378-8400
Joseph DeGangi Jr., Plant Mgr.
Plant Consumption (000s tons):
2000 - 515 (Proj.)
1999 - 515
1998 - 523
No Scrubbers
Coal Received by Plant (1999):
Tons (000s): 482
BTU/LB: 13,226
%Sulfur: 1.37
%Ash: 6.81
Coal Analysis:
BTU/LB: Avg: 13,108, Min: 12,500, Max: 13,425
%Ash: Avg: 8.50, Min: 5.86, Max: 11.18
%Sulfur: Avg: 1.53, Min: 1.08, Max: 1.77
Volatility: Min: 26.00
Moisture: Max: 7.00
Ash Soft Temp: Avg: 2,250
Transportation:
Rail
Rail Service: CR
Receipt Point: Reading
Unit Train: Part of 130 Car Split Trains (50 cars)
Supply Origin: PA, Pittsburgh Seam

Warren
P.O. Box 145
Warren PA 16365
Tel: 814-723-1550
W. A. Arford, Station Dir.
Plant Consumption (000s tons):
2000 - 137 (Proj.)
1999 - 137
1998 - 160
No Scrubbers
Coal Received by Plant (1999):
Tons (000s): 127
BTU/LB: 12,288
%Sulfur: 1.77
%Ash: 11.95
Transportation:
Receipt Point: Warren
Supply Origin: PA

SUNBURY HOLDINGS, L.L.C.
Corporate Consumption (000s tons):
2000 - 804 (Proj.)
1999 - 804
Coal Received by Company (1999):
Tons (000s): 386
BTU/LB: 10,892
%Sulfur: 1.17
%Ash: 20.76

Sunbury
Old Trail
General Delivery
Shamokin Dam PA 17876
Tel: 717-884-1200 Fax: 717-884-1207
Domenico B. Agatone Jr., Plant Supt.
Plant Consumption (000s tons):
2000 - 804 (Proj.)
1999 - 804
1998 - 1,215
No Scrubbers
Coal Received by Plant (1999):
Tons (000s): 386
BTU/LB: 10,892
%Sulfur: 1.17
%Ash: 20.76
Transportation:
Rail
Rail Service: CR
Receipt Point: Shamokin Dam
Supply Origin: PA

1717

TEXAS

CENTRAL POWER & LIGHT CO.
539 N. Carancahua St.
P.O. Box 2121
Corpus Christi TX 78403
www.csw.com
Tel: 512-881-5300 Fax: 512-881-9300
Mike Fields, Plant Mgr., 361-788-5100
Mel Wolfschlag, Opers. Supt., 361-788-5100
Chuck West, Coal Representative, 214-777-3947
Marguerite Mills, Dir., Solid Fuels, 214-777-3852
Jerry Lybarger, Coal Mgr., 214-777-3040
Corporate Consumption (000s tons):
2000 - 2,541 (Proj.)
1999 - 2,441
1998 - 2,343
1999 Coal Capacity (MW): 600
Coal Received by Company (1999):
Tons (000s) : 2,664
BTU/LB: 9,795
%Sulfur: 0.47
%Ash: 5.24
Spot Coal: 100%

Coleto Creek
P.O. Box 8
Fannin TX 77960
Tel: 512-788-5100 Fax: 512-645-8790
Chuck West, Coal Representative
Mike Fields, Plant Mgr.
Sonny Williamson, Coal Yard Supv.
Mel Wolfschlag, Opers. Supt.
Plant Consumption (000s tons):
2000 - 2,541 (Proj.)
1999 - 2,441
1998 - 2,443
1999 Coal Capacity (MW): 600
No Scrubbers
Ash Disposal Onsite
Coal Received by Plant (1999):
Tons (000s) : 2,664
BTU/LB: 9,795
%Sulfur: 0.47
%Ash: 5.24
Coal Analysis:
BTU/LB: Avg: 10,500, Min: 8,300, Max: 13,000
%Ash: Avg: 7.00, Max: 12.00
%Sulfur: Avg: 0.25, Min: 0.15, Max: 0.64
Moisture: Avg: 16.00, Min: 1.50, Max: 32.50
Ash Soft Temp: Avg: 2,300, Min: 2,000
Size: Avg: 3.0
Capacity: 7,500 tpd
Transportation:
Rail
Rail Service : UP
Receipt Point: Coleto Creek, TX
Unit Train: 115-125 cars, 3-4/wk
Supply Origin: CO, TX (Pet Coke)

LOWER COLORADO RIVER AUTHORITY
3700 Lake Austin Blvd.
Austin TX 78703
www.lcra.org
Mailing Address:
P.O. Box 220
Austin TX 78767
Tel: 512-473-3200, 512-473-3298
Joe Beal, GM, 512-473-3244
Dudley C. Piland Jr., Mgr., GenCo, 512-473-3207
Dan G. Kuehn, Mgr., Fuels & Energy Risk Mgmnt., 512-473-4025
Joe D. Bricker, Mgr., Fayette Power Project, 409-249-8375
Corporate Consumption (000s tons):
2000 - 6,700 (Proj.)
1999 - 5,445
1998 - 5,670
1999 Coal Capacity (MW): 1,561
Coal Received by Company (1999):
Tons (000s) : 7,289
BTU/LB: 8,569
%Sulfur: 0.34
%Ash: 5.52
Contract Coal: 51%
Spot Coal: 49%

Fayette
P.O. Box 519
La Grange TX 78945
Tel: 979-249-3111 Fax: 979-249-8392
Joe D. Bricker, Mgr., Fayette Power Project
Ken Taylor, Mgr., FPP Maint.
Jane Luedecke, Mgr., FPP Maint.
Gerald Pargac, Mgr., Opers. (Metro)
Mike Glaser, Mgr. FPP Business Svcs.
Plant Consumption (000s tons):
2000 - 6,700 (Proj.)
1999 - 5,445
1998 - 5,670
1999 Coal Capacity (MW): 1,561
Scrubbers
Ash Disposal Onsite
Coal Received by Plant (1999):
Tons (000s) : 7,289
BTU/LB: 8,569
%Sulfur: 0.34
%Ash: 5.52
Coal Analysis:
BTU/LB: Avg: 8,562, Min: 8,181
%Ash: Avg: 5.53, Min: 4.90
%Sulfur: Avg: 0.37, Min: 0.26
Transportation:
Rail
Rail Service : UP, BNSF
Receipt Point: Fayette Power Project/Halsted
Supply Origin: WY, TX

RELIANT ENERGY HL&P
1111 Louisiana St.
P.O. Box 1700
Houston TX 77251-1700
www.reliantenergy.com
Tel: 713-207-1111 Fax: 713-207-9720
Carla J. Mitcham, VP, Fuel & Energy Mgmnt., 713-207-3700
Allan J. Harper, Dir., Coal & Lignite Fuels, 713-207-3713
Corporate Consumption (000s tons):
2000 - 17,733 (Proj.)
1999 - 19,443
1998 - 19,396
1999 Coal Capacity (MW): 4,324
Coal Received by Company (1999):
Tons (000s) : 20,124
BTU/LB: 7,721
%Sulfur: 0.67
%Ash: 10.48

Limestone
Hwy. 39
Jewett TX 75846
Plant Consumption (000s tons):
2000 - 7,887 (Proj.)
1999 - 8,632
1998 - 8,614
1999 Coal Capacity (MW): 1,627
Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 8,938
BTU/LB: 6,591
%Sulfur: 1.05
%Ash: 17.06
Capacity: 28,000 tpd
Transportation:
Rail
Receipt Point: Jewitt Mine
Receipt Comments: Conveyor belt
Supply Origin: TX

W.A. Parish
Smithers Lake Rd.
Thompsons TX 77481
Plant Consumption (000s tons):
2000 - 9,847 (Proj.)
1999 - 10,811
1998 - 10,783
1999 Coal Capacity (MW): 2,697
Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 11,186
BTU/LB: 8,624
%Sulfur: 0.36
%Ash: 5.22
Capacity: 35,000 tpd
Transportation:
Rail
Rail Service : BNSF, UP
Supply Origin: WY
Accepting UP RR in 1997

SAN ANTONIO PUBLIC SERVICE
145 Navarro
P.O. Box 1771
San Antonio TX 78296-1771
www.citypublicservice.com
Tel: 210-353-2000 Fax: 210-353-4632
Mark D. Werner, Dir. of Fuels, Generation Control & Bulk Power Sales, 210-978-2878
Arthur Butcher, Project Engr., 210-978-2756
Corporate Consumption (000s tons):
2000 - 5,948 (Proj.)
1999 - 5,759
1998 - 5,325
1999 Coal Capacity (MW): 1,385
Coal Received by Company (1999):
Tons (000s) : 6,900
BTU/LB: 8,421
%Sulfur: 0.33
%Ash: 5.75
Contract Coal: 99%
Spot Coal: 1%

Deely
9599 Gardner Rd.
San Antonio TX 78220
Tel: 210-978-2000 Fax: 210-978-3931
W. C. Gunst, Senior VP
Plant Consumption (000s tons):
2000 - 3,700 (Proj.)
1999 - 3,413
1998 - 3,277
1999 Coal Capacity (MW): 830
Scrubbers
Ash Disposal Onsite
Coal Received by Plant (1999):
Tons (000s) : 5,582
BTU/LB: 8,422
%Sulfur: 0.33
%Ash: 5.75
Coal Analysis:
BTU/LB: Avg: 8,350, Min: 8,150
%Ash: Avg: 6.60, Min: 4.60
%Sulfur: Avg: 0.37, Min: 0.17
Moisture: Avg: 29.70
Size: Avg: 2 x 0
Capacity: 12,000 tpd
Transportation:
Rail
Rail Service : UP
Receipt Point: Elmendorf, Texas
Unit Train: 130 cars, approx. every 10 days
Supply Origin: PRB

J.K. Spruce
9599 Gardner Rd.
San Antonio TX 78220
Tel: 210-978-2000 Fax: 210-978-3931
W. C. Gunst, Senior VP
Plant Consumption (000s tons):
2000 - 1,977 (Proj.)
1999 - 2,346
1998 - 2,048
1999 Coal Capacity (MW): 555
Scrubbers
Ash Disposal Onsite
Coal Received by Plant (1999):
Tons (000s) : 840
BTU/LB: 8,418
%Sulfur: 0.35
%Ash: 5.76
Coal Analysis:
BTU/LB: Avg: 8,268, Min: 8,150
%Ash: Avg: 6.60, Min: 4.60
%Sulfur: Avg: 0.37, Min: 0.17
Moisture: Avg: 29.70
Size: Avg: 2 x 0
Transportation:
Rail Service : UP
Receipt Point: Elmendorf, Texas
Unit Train: 130 car trains every 10 days
Supply Origin: Colorado ROJO Complex in PRB

SAN MIGUEL ELECTRIC COOP., INC.
P.O. Box 280
Jourdanton TX 78026
Tel: 830-784-3411 Fax: 830-784-3411
Howard Ashcraft, Pres.
Marshall Darby, GM
John Palfy, Mine Mgr., 830-784-3545
Michael Kezar, Admin. Fuels Mgr.
Corporate Consumption (000s tons):
2000 - 3,257 (Proj.)
1999 - 3,308
1998 - 3,545
1999 Coal Capacity (MW): 409
Coal Received by Company (1999):
Tons (000s) : 3,420
BTU/LB: 5,265
%Sulfur: 1.76
%Ash: 26.86
Contract Coal: 100%

San Miguel
P.O. Box 280
Jourdanton TX 78026
Tel: 830-784-3411
Marshall Darby, GM
Michael Kezar, Admin. Fuels Mgr.
Ron Magel, Chief Engr.
Steve Ralls, Electrical & Instrument Opers. Mgr.
Dennis Hodges, Maint. Mgr.
Plant Consumption (000s tons):
2000 - 3,257 (Proj.)
1999 - 3,308
1998 - 3,545
1999 Coal Capacity (MW): 409
Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 3,420
BTU/LB: 5,265

%Sulfur: 1.76
%Ash: 26.86
Transportation:
Receipt Point: San Miguel Plant Truck Hopper

SOUTHWESTERN ELECTRIC POWER CO.
P.O. Box 660164
Dallas TX 75266-0164
www.csw.com
Tel: 214-777-1000
Marguerite Mills, Dir., Solid Fuels, 214-777-3852
Corporate Consumption (000s tons):
2000 - 12,100 (Proj.)
1999 - 11,019
1998 - 12,073
1999 Coal Capacity (MW): 2,762
Coal Received by Company (1999):
Tons (000s) : 11,693
BTU/LB: 7,971
%Sulfur: 0.55
%Ash: 7.38
Contract Coal: 91%
Spot Coal: 9%

Pirkey
P.O. Box 165
Hallsville TX 75650
Tel: 903-935-3181
Ken R. Howsen, Mgr. Liquite
Arne Melson, Plant Mgr.
Plant Consumption (000s tons):
2000 - 3,500 (Proj.)
1999 - 3,241
1998 - 3,543
1999 Coal Capacity (MW): 650
Scrubbers
Ash Disposal Onsite
Coal Received by Plant (1999):
Tons (000s) : 3,246
BTU/LB: 6,566
%Sulfur: 1.20
%Ash: 14.54
Capacity: 13000 tpd
Transportation:
Receipt Point: Pirkey
Supply Origin: Sabine Mine

Welsh
P.O. Box 221
Cason TX 75686
Tel: 214-856-6637
Jim Trimble, Plant Mgr.
Plant Consumption (000s tons):
2000 - 6,300 (Proj.)
1999 - 5,735
1998 - 6,223
1999 Coal Capacity (MW): 1,584
No Scrubbers
Ash Disposal Onsite
Coal Received by Plant (1999):
Tons (000s) : 6,364
BTU/LB: 8,493
%Sulfur: 0.31
%Ash: 4.67
Coal Analysis:
BTU/LB: Avg: 8,425, Min: 8,125, Max: 8,813
%Ash: Avg: 4.55, Min: 4.20, Max: 6.50
%Sulfur: Avg: 0.34, Min: 0.19, Max: 0.48
Volatility: Min: 32.60
Moisture: Max: 32.00
Size: Avg: Top Size 2
Capacity: 21000 tpd
Transportation:
Rail
Rail Service : BNSF, KCS
Receipt Point: Welsh
Supply Origin: WY

TEXAS MUNICIPAL POWER AGENCY
P.O. Box 7000
Bryan TX 77805
www.texasmpa.org
Tel: 409-873-2013 Fax: 409-873-1186
Earle Bagley, Fuel & Land Resources Mgr., 409-873-1126
Joe Schultz, Senior Mining Engr., 409-873-1147
Corporate Consumption (000s tons):
2000 - 1,705 (Proj.)
1999 - 1,705
1998 - 1,553
1999 Coal Capacity (MW): 444
Coal Received by Company (1999):
Tons (000s) : 1,751
BTU/LB: 8,432
%Sulfur: 0.32
%Ash: 5.59
Contract Coal: 34%
Spot Coal: 66%

Gibbons Creek
P.O. Box 7000
Bryan TX 77830
Tel: 409-873-2013 Fax: 409-873-1186
Bill Fox, Plant Mgr.
Plant Consumption (000s tons):
2000 - 1,705 (Proj.)
1999 - 1,705
1998 - 1,553
1999 Coal Capacity (MW): 444
Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 1,751
BTU/LB: 8,432
%Sulfur: 0.32
%Ash: 5.59
Transportation:
Rail
Rail Service : BNSF
Receipt Point: Rotary car dumper at power plant
Supply Origin: WY, PRB

TEXAS-NEW MEXICO POWER CO.
4100 Int'l Plaza
P.O. Box 2943
Fort Worth TX 76113
Tel: 817-731-0099 Fax: 817-737-1384
Corporate Consumption (000s tons):
2000 - 1,480 (Proj.)
1999 - 1,480
1998 - 1,740
1999 Coal Capacity (MW): 349
Coal Received by Company (1999):
Tons (000s) : 1,323
BTU/LB: 6,777
%Sulfur: 0.91
%Ash: 18.44

TNP One
Hwy. 6
P.O. Box 37
Bremond TX 76629
Plant Consumption (000s tons):
2000 - 1,480 (Proj.)
1999 - 1,480
1998 - 1,740
1999 Coal Capacity (MW): 349
Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 1,323
BTU/LB: 6,777
%Sulfur: 0.91
%Ash: 18.44

WEST TEXAS UTILITIES CO.
301 Cypress, P.O. Box 841
Abilene TX 79604-0841
www.csw.com
Tel: 915-674-7000 Fax: 915-674-7714
Mark Barton, Plant Mgr., 940-886-2725
Roy Blackshear, Opers. Supt., 940-886-2727
Chuck West, Coal Representative, 214-777-3947
Marguerite Mills, Dir., Solid Fuels, 214-777-3852
Jerry Lybarger, Coal Mgr., 214-777-3040
Corporate Consumption (000s tons):
2000 - 2,900 (Proj.)
1999 - 2,716
1998 - 2,993
1999 Coal Capacity (MW): 666
Coal Received by Company (1999):
Tons (000s) : 2,888
BTU/LB: 8,413
%Sulfur: 0.39
%Ash: 5.40
Contract Coal: 100%

Oklaunion
P.O. Box 1798
Vernon TX 76384
Jerry Lybarger, Coal Mgr.
Chuck West, Coal Representative
Marguerite Mills, Dir., Solid Fuels
Mark Barton, Plant Mgr.
Roy Blackshear, Opers. Supt.
Plant Consumption (000s tons):
2000 - 2,900 (Proj.)
1999 - 2,716
1998 - 2,993
1999 Coal Capacity (MW): 666
Scrubbers
Ash Disposal Onsite
Coal Received by Plant (1999):
Tons (000s) : 2,888
BTU/LB: 8,413
%Sulfur: 0.39
%Ash: 5.40
Coal Analysis:
BTU/LB: Avg: 8,300, Min: 8,100, Max: 8,865
%Ash: Avg: 5.30, Min: 4.28, Max: 6.00
%Sulfur: Avg: 0.34, Min: 0.25, Max: 1.21
Volatility: Avg: 30.00
Moisture: Avg: 30.00, Max: 32.50
Ash Soft Temp: Avg: 2,200
Size: Avg: minus 2
Capacity: 270,000 tpm
Transportation:
Rail Service : BNSF
Receipt Point: Power plant dumper
Unit Train: 115 cars, 5-6/wk
Supply Origin: PRB, WY

XCEL ENERGY (SOUTHWESTERN PUBLIC SERVICE CO.)
600 S. Tyler
P.O. Box 1261
Amarillo TX 79170
Tel: 806-378-2121 Fax: 806-378-2995
Duane L. Richards, Dir., Coal Supply, 303-296-3416
Karen Roberts, Regional Mgr., Coal Supply, 806-378-2505
Corporate Consumption (000s tons):
2000 - 9,160 (Proj.)
1999 - 8,960
1998 - 8,998
1999 Coal Capacity (MW): 2,266
Coal Received by Company (1999):
Tons (000s) : 8,960
BTU/LB: 8,794
%Sulfur: 0.34
%Ash: 5.37
Contract Coal: 40%
Spot Coal: 60%

Harrington
P.O. Box 1261
Amarillo TX 79170
Tel: 806-383-1006 Fax: 806-381-6295
Plant Consumption (000s tons):
2000 - 4,442 (Proj.)
1999 - 4,404
1998 - 4,592
1999 Coal Capacity (MW): 1,130
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 4,404
BTU/LB: 8,910
%Sulfur: 0.35
%Ash: 5.41
Coal Analysis:
BTU/LB: Avg: 8,676, Min: 7,900, Max: 9,000
%Ash: Avg: 5.44, Min: 3.20, Max: 5.60
%Sulfur: Avg: 0.33, Min: 0.21, Max: 0.57
Volatility: Min: 29.00, Max: 35.00
Moisture: Min: 24.00, Max: 33.00
Size: Avg: 2 x 0
Capacity: 16,500 tpd
Transportation:
Rail
Rail Service : BNSF
Receipt Point: Harrington Station
Unit Train: 5 unit trains, 115-118 coal cars each
Supply Origin: WY

Tolk
P.O. Box 429
Muleshoe TX 79371
Tel: 806-965-2194 Fax: 806-796-3339
Plant Consumption (000s tons):
2000 - 4,718 (Proj.)
1999 - 4,556
1998 - 4,406
1999 Coal Capacity (MW): 1,136
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 4,557
BTU/LB: 8,682
%Sulfur: 0.33
%Ash: 5.33
Coal Analysis:
BTU/LB: Avg: 8,662, Min: 7,900, Max: 9,000
%Ash: Avg: 5.24, Min: 3.20, Max: 5.60
%Sulfur: Avg: 0.32, Min: 0.21, Max: 0.57
Volatility: Min: 29.00, Max: 35.00
Moisture: Min: 24.00, Max: 33.00
Size: Avg: 2 x 0
Capacity: 18,430 tpd
Transportation:
Rail
Rail Service : BNSF
Receipt Point: Mill
Unit Train: 6 unit trains, 115-118 cars/train
Supply Origin: WY

UTAH

DESERET GENERATION & TRANSMISSION COOP.
5295 S. 300 W., Ste. 500
Murray UT 84107
www.deseretgt.com
Tel: 801-892-6500 Fax: 801-892-6599

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VIRGINIA ELECTRIC & POWER CO.
Innsbrook Technical Center
5000 Dominion Blvd.
Glen Allen VA 23060-6711
www.vapower.com
Tel: 804-771-3000 Fax: 804-771-3166
W. R. Cartwright, Sr. VP, Fossil & Hydro, 804-273-3590
Norman Askew, Pres. & CEO, 804-771-3193
Thomas D. Leonard, Mgr., Fuel Procurement & Transportation, 804-273-4101
thomas_leonard@vapower.com
Fredrick W (Rick) Clark JR, Team Leader Fuel Supply, 804-273-4131
Corporate Consumption (000s tons):
2000 - 12,227 (Proj.)
1999 - 12,127
1998 - 13,600
1999 Coal Capacity (MW): 5,527
Coal Received by Company (1999):
Tons (000s) : 12,482
BTU/LB: 12,570
%Sulfur: 1.61
%Ash: 10.75
Contract Coal: 68%
Spot Coal: 32%

Bremo Bluff
Rt. 656
Bremo Bluff VA 23022-0098
Tel: 804-842-3201
Plant Consumption (000s tons):
2000 - 492 (Proj.)
1999 - 492
1998 - 527
1999 Coal Capacity (MW): 254
No Scrubbers
Ash Disposal Onsite
Coal Received by Plant (1999):
Tons (000s) : 522
BTU/LB: 12,522
%Sulfur: 1.83
%Ash: 9.30
Coal Analysis:
BTU/LB: Avg: 12,236, Min: 11,400, Max: 13,247
%Ash: Avg: 12.23, Min: 11.0, Max: 16.0
%Sulfur: Avg: 1.07, Max: 1.50
Volatility: Max: 40.00
Moisture: Max: 8.00
Ash Soft Temp: Avg: 2,550
Fines: Max: 20.00
Size: Avg: 2 x 0
Transportation:
Rail
Rail Service : CSX
Receipt Point: Bremo
Supply Origin: KY, WV, VA
Alternate fuel quality specifications are being considered/accepted.

Chesapeake Energy Center
2701 Vepco St.
Norfolk VA 23323-6199
Tel: 804-485-6700
Plant Consumption (000s tons):
2000 - 1,497 (Proj.)
1999 - 1,497
1998 - 1,568
1999 Coal Capacity (MW): 650
No Scrubbers
Ash Disposal Onsite
Coal Received by Plant (1999):
Tons (000s) : 1,548
BTU/LB: 12,885
%Sulfur: 1.31
%Ash: 8.36
Coal Analysis:
BTU/LB: Avg: 12,880, Min: 12,500, Max: 13,650
%Ash: Avg: 9.44, Min: 6.60, Max: 11.00
%Sulfur: Avg: 1.03, Min: 0.70, Max: 1.50
Volatility: Min: 25.00, Max: 40.00
Moisture: Max: 8.00
Ash Soft Temp: Avg: 2,550
Fines: Max: 20.00
Size: Avg: 2 x 0
Transportation:
Rail
Rail Service : NS, CSX
Receipt Point: Portsmouth
Supply Origin: KY, WV, VA

Chesterfield
P.O. Box V
Chester VA 23831-0496
Tel: 804-796-2081
Plant Consumption (000s tons):
2000 - 2,424 (Proj.)
1999 - 2,424
1998 - 2,807
1999 Coal Capacity (MW): 1,353
No Scrubbers
Ash Disposal Onsite
Coal Received by Plant (1999):
Tons (000s) : 2,635
BTU/LB: 12,718
%Sulfur: 1.73
%Ash: 8.18
Coal Analysis:
BTU/LB: Avg: 12,785, Min: 12,500, Max: 13,421
%Ash: Avg: 9.04, Min: 6.90, Max: 11.00
%Sulfur: Avg: 1.15, Min: 0.70, Max: 1.50
Volatility: Min: 25.00, Max: 40.00
Moisture: Max: 8.00
Ash Soft Temp: Avg: 2,550
Fines: Max: 20.00
Size: Avg: 2 x 0
Transportation:
Rail
Rail Service : CSX, NS
Receipt Point: Wheelwright
Supply Origin: KY, WV, VA
Alternate fuel quality specifications are being considered/accepted.

Clover
P.O. Box 245
Clover VA 24523-0245
Tel: 804-454-2036
Plant Consumption (000s tons):
2000 - 2,197 (Proj.)
1999 - 2,197
1998 - 2,314
1999 Coal Capacity (MW): 880
Scrubbers
Ash Disposal Onsite
Coal Received by Plant (1999):
Tons (000s) : 2,264
BTU/LB: 12,668
%Sulfur: 1.06
%Ash: 9.18
Coal Analysis:
BTU/LB: Avg: 12,500, Min: 12,000, Max: 14,000
%Ash: Avg: 10.00, Min: 5.50, Max: 13.00
%Sulfur: Avg: 1.30, Min: 0.50, Max: 1.70
Volatility: Avg: 32.0, Min: 28.0, Max: 36.0
Moisture: Min: 2.50, Max: 8.00
Ash Soft Temp: Avg: 2,750, Min: 2,550
Size: Min: 2 x 0
Transportation:
Rail
Rail Service : NS, CSX
Receipt Point: Clover
Supply Origin: VA, KY, WV

Possum Point
19000 Possum Point Rd.
Dumfries VA 22026-2899
Tel: 703-221-3181
Plant Consumption (000s tons):
2000 - 801 (Proj.)
1999 - 801
1998 - 819
1999 Coal Capacity (MW): 353
No Scrubbers
Ash Disposal Onsite
Coal Received by Plant (1999):
Tons (000s) : 794
BTU/LB: 12,464
%Sulfur: 1.76
%Ash: 9.45
Coal Analysis:
BTU/LB: Avg: 12,869, Min: 12,500, Max: 13,522
%Ash: Avg: 9.58, Min: 5.90, Max: 11.00
%Sulfur: Avg: 1.02, Min: 0.70, Max: 1.50
Volatility: Min: 25.00, Max: 40.00
Moisture: Max: 8.00
Ash Soft Temp: Avg: 2,550
Fines: Max: 20.00
Size: Avg: 2 x 0
Transportation:
Rail
Rail Service : CSX, NS
Receipt Point: Possum Point
Supply Origin: KY, WV, VA

Yorktown
P.O. Box 571
Yorktown VA 23690-0571
Tel: 804-898-2500
Plant Consumption (000s tons):
2000 - 668 (Proj.)
1999 - 668
1998 - 742
1999 Coal Capacity (MW): 375
No Scrubbers
Ash Disposal Onsite
Coal Received by Plant (1999):
Tons (000s) : 700
BTU/LB: 12,788
%Sulfur: 2.01
%Ash: 8.02
Coal Analysis:
BTU/LB: Avg: 13,016, Min: 12,500, Max: 13,741
%Ash: Avg: 9.08, Min: 6.40, Max: 11.00
%Sulfur: Avg: 1.36, Min: 0.70, Max: 1.50
Volatility: Min: 25.00, Max: 40.00
Moisture: Max: 8.00
Ash Soft Temp: Avg: 2,500
Fines: Max: 20.00
Size: Avg: 2 x 0
Transportation:
Rail
Rail Service : CSX, NS
Receipt Point: Amoco, VA
Supply Origin: KY, WV, VA

WASHINGTON

CITY OF TACOMA
1171 Taylor Way
P.O. Box 11007
Tacoma WA 98411
www.ci.tacoma.wa.us
Tel: 253-502-8601 Fax: 253-502-8607
Dave Fruhger, 253-502-8996
Richelle Krienke, 253-502-8717
Corporate Consumption (000s tons):
1999 - 20
1998 - 5
1999 Coal Capacity (MW): 50
Coal Received by Company (1999):
Tons (000s) : 13,709
Spot Coal: 100%

City of Tacoma Steam Plant
1171 Taylor Way
Tacoma WA 98421
Laurie Hannan, Thermal Plant Mgr.
Plant Consumption (000s tons):
1999 - 20
1998 - 5
1999 Coal Capacity (MW): 50
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 14
Coal Analysis:
BTU/LB: Avg: 10,000
%Ash: Avg: 12.00, Max: 12.00
%Sulfur: Avg: 0.80, Max: 0.80
Volatility: Avg: 33.00
Moisture: Avg: 13.00
Size: Avg: 3", Max: 3"
Transportation:
Rail, Barge
Rail Service : BNSF
Receipt Point: 1171 Taylor Way, Tacoma
River Service: Hylebos
Receipt Comments: Barge
Supply Origin: Canada,

PACIFICORP
700 N.E. Multnomah St. No. 1600
Portland OR 97232-4116 .
www.pacificorp.com
Tel: 503-731-2000 Fax: 503-464-6255
Dee W Jense, Pres., 801-220-4617
Terry C. Hudgens, VP, Thermal Resources, 801-220-4970
Neil D. Getzelman, GM, Thermal Fuels, 801-220-4608
Corporate Consumption (000s tons):
2000 - 28,116 (Proj.)
1999 - 27,451
1998 - 31,945
1999 Coal Capacity (MW): 6,218
Coal Received by Company (1999):
Tons (000s) : 28,114
BTU/LB: 9,562
%Sulfur: 0.57
%Ash: 9.72
Contract Coal: 96%
Spot Coal: 4%

Centralia - Pacificorp
913 Big Hanaford Rd.
Centralia WA 98531
Tel: 206-736-9901 Fax: 801-220-4578
Rich Woolley, Plant Mgr.
Plant Consumption (000s tons):
2000 - 5,124 (Proj.)
1999 - 5,759
1998 - 6,106
1999 Coal Capacity (MW): 693
No Scrubbers
Coal Received by Plant (1999):
Tons (000s) : 5,659
BTU/LB: 8,232
%Sulfur: 0.75
%Ash: 12.02
Transportation:
Rail
Rail Service : BNSF
Receipt Point: Centralia
Supply Origin: WA

WEST VIRGINIA

APPALACHIAN POWER CO.
40 Franklin Rd., P.O. Box 2021
Roanoke VA 24022-2121
Tel: 540-985-2300

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%Volatility: Min: 30
%Moisture: Min: 8.5, Max: 9
Fines: Max: 40
Size: Max: 4 x 0
Transportation:
Rail
Receipt Point: Lakeland
Supply Origin: KY
Rail Service: CSX
Unit Train: 2 Sets

ORLANDO UTILITIES COMMISSION
500 S. Orange Ave.
Orlando FL 32802
Tel: 407-423-9100, Fax: 407-236-9616
www.ouc.com
Jan C. Aspuru, Dir., Fuel Svcs., 407-384-4081
Charles Bolick, 407-384-4155
Mindy Furer, Mgr. Property Acctg., 407-423-9100, mfurer@ouc.com
Robert C. Haven, GM & CEO, 407-423-9100
Ron Zell, Mgr., System Opers. & Planning, 407-384-4063
Corporate Consumption (tons):
2001 - 2,200,000 (Proj)
2000 - 2,200,000
1999 - 2,200,000
2000 Coal Capacity (MW): 940
Coal Received by Company (2000):
Tons: 2,400,000
BTUs/Lb: 12,800
%Ash: 9
%Sulfur: 1
Lbs SO_2: 2

Stanton Energy Center
5100 Alafaya Trail
Orlando, FL 32831
Tel: 407-658-6444, Fax: 407-244-8794
Matt Blankner, SEC Maint. Mgr., 407-658-6444
Vince Gallucci, Dir. Stanton Energy Center, 407-658-6444
Fred Haddad, VP Power Resources, 407-658-6444
Plant Consumption (tons):
2001 - 2,200,000 (Proj)
2000 - 2,200,000
1999 - 2,200,000
2000 Coal Capacity (MW): 940
Coal Received by Plant (2000):
Tons: 2,400,000
BTUs/Lb: 12,800
%Ash: 9.
%Sulfur: 1.15
Lbs SO_2: 2
Coal Analysis:
BTUs/Lb: Min: 12,400, Avg: 12,776, Max: 12,800
%Ash: Min: 7.1, Avg: 8.65, Max: 12
%Sulfur: Min: 0.63, Avg: 1.02, Max: 1.3
%Volatility: Avg: 30
Ash Soft Temp: Min: 2,025
Transportation:
Rail
Receipt Point: Hazard, Big Sandy
Supply Origin: Central Appalachia
Rail Service: CSX
Unit Train: 95 cars

SEMINOLE ELECTRIC COOP., INC.
16313 N. Dale Mabry Hwy.
Tampa FL 33618
Tel: 813-963-0994, Fax: 813-264-7906
www.seminole-electric.com
Jim Duren, VP, Tech Div., 813-963-0994
John Twitchell, Dir., Opers., 813-963-0994
Steven Wallace, Mgr. of System Opers., 813-963-0994
Daniel White, Fuel Supply Coord., 813-963-0994
Robert Woodall, Mgr., Fuel Supply, 813-963-0994
Corporate Consumption (tons):
2001 - 3,748,000 (Proj)
2000 - 3,506,000
1999 - 3,013,057
2000 Coal Capacity (MW): 1,304
Coal Received by Company (2000):
Tons: 3,575,000
BTUs/Lb: 12,588
%Ash: 8
%Sulfur: 3

Seminole
P.O. Box 1577
Palatka, FL 32078
Fax: 813-264-7906
Plant Consumption (tons):
2001 - 3,748,000 (Proj)
2000 - 3,506,000
1999 - 3,571,970
2000 Coal Capacity (MW): 1,304
Ash Disposal On Site
Plant uses scrubbers
Coal Received by Plant (2000):
Tons: 3,575,000
BTUs/Lb: 12,588
%Ash: 7.55
%Sulfur: 2.9
Coal Analysis:
BTUs/Lb: Min: 11,700, Avg: 12,197, Max: 13,500
%Ash: Min: 5.6, Avg: 8.16, Max: 10.5
%Sulfur: Min: 1, Avg: 2.72, Max: 3.8
%Volatility: Min: 32, Max: 36
%Moisture: Max: 12
Size: Avg: 2 x 0
Transportation:
Rail
Receipt Point: Palatka
Rail Service: CSX

ST. JOHNS RIVER POWER PARK
11201 New Berlin Rd.
Jacksonville FL 32226
Tel: 904-665-7420, Fax: 904-665-7349
www.jea.com
Randy Boswell, VP, Power Supply Svcs., 904-665-7420
Donald Drake, Professional Engr., 904-665-6271
Robert Johns, Fuels Administrator, 904-665-7420
Bud Para, Dir., SJRPP Fuels, 904-665-7420
Raymond Tull, CPA - Gen. Accounting, 904-665-7309, tullre@jea.com
Corporate Consumption (tons):
2001 - 3,360,000 (Proj)
2000 - 3,400,080
1999 - 3,193,670
2000 Coal Capacity (MW): 1,358
Coal Received by Company (2000):
Tons: 3,177,000

St. Johns River Power
Tel: 904-665-8700, Fax: 904-665-8719
Jim Jackson, Group Leader, Bulk Materials Production, 904-665-8700
Plant Consumption (tons):
2001 - 3,360,000 (Proj)
2000 - 3,400,080
1999 - 3,193,670
2000 Coal Capacity (MW): 1,358
Ash Disposal On Site
Plant uses scrubbers
Coal Received by Plant (2000):
Tons: 3,177,000
Coal Analysis:
BTUs/Lb: Min: 11,800
%Ash: Min: 6, Max: 15
%Sulfur: Min: 0.5, Max: 3.5
%Volatility: Min: 23, Max: 40
%Moisture: Min: 4, Max: 15
Ash Soft Temp: Min: 2,300
Capacity: 11,506 tpd
Pollution Control: ESP
Transportation:
Rail, Barge
Receipt Point: Jacksonville
Rail Service: CSX
Unit Train: 90 Aluminum cars
River Service: St. Johns
Mile Point: 14.6
Projected coal requirements don't include pet coke

TAMPA ELECTRIC CO.
702 N. Franklin St.
P.O. Box 111
Tampa FL 33602
Tel: 813-228-4111, 813-223-0800
www.teconet.com
Phil Barringer, Asst. Controller, 813-228-4111
Harold Besch, Sr. Generation Planning Tech., 813-228-4460
Sharon Beuris, 813-228-4769
Rod Burkhardt, Fuels Mgr., 813-641-5015
J. Chronister, Supv., Fin. Reprtg., 813-228-1609
T. Hernandez, Mgr. Gen. Planning, 813-228-4449
Carl Himes, 813-228-4765
Kent Hobart, 813-228-4220
Lester Lefler, VP, Controller, 813-228-4111
Joy McCleod, 813-228-4767
Hugh Smith, Dir. of Fuels, 813-223-0800
Stock Symbol: TE
Exchange: NYSE
Corporate Consumption (tons):
2000 - 6,855,959
1999 - 7,319,380
2000 Coal Capacity (MW): 3,093
Coal Received by Company (2000):
Tons: 3,678,220
BTUs/Lb: 12,409
%Ash: 8
%Sulfur: 2

Big Bend
Plant Consumption (tons):
2000 - 4,611,641
1999 - 4,054,950
2000 Coal Capacity (MW): 1,823
Plant uses scrubbers
Coal Analysis:
BTUs/Lb: Min: 11,500, Max: 12,600
%Ash: Max: 10
%Sulfur: Max: 3
%Volatility: Avg: 36
%Moisture: Max: 10
Ash Soft Temp: Min: 2,000, Max: 2,300
Size: Avg: 2 x 0
Pollution Control: ESP, Medium-Sulfur Coal, Flue Gas Desulfurization on 1 Unit, Coal Blending System
Receipt Point: Tampa Bay
Supply Origin: KY, WV, IL, IN

Gannon
Plant Consumption (tons):
2000 - 2,244,318
1999 - 2,637,120
2000 Coal Capacity (MW): 1,270
Coal Analysis:
BTUs/Lb: Min: 12,550, Avg: 12,855, Max: 13,327
%Ash: Min: 3.7, Avg: 7.32, Max: 8
%Sulfur: Min: 0.57, Avg: 1.1, Max: 1.32
%Volatility: Avg: 30
%Moisture: Max: 8
Ash Soft Temp: Max: 2,400
Size: Avg: 2 x 0
Pollution Control: ESP, Low-Sulfur Coal
Transportation:
Rail
Receipt Point: Sutton,Tampa Bay
Supply Origin: KY
Rail Service: CSX

GEORGIA

GEORGIA POWER CO.
241 Ralph McGill N.E.
Atlanta GA 30308-3374
Tel: 404-506-7738, 404-506-7785
Fax: 404-506-6948
www.georgiapower.com
Tommy Davis, 205-868-5945
R. Haubein, Exec. VP., Southern Co. Generation, 404-506-6526
Linda Merkl, Analyst, 205-257-5705
Cynthia Mickelbury, 404-506-7737
Jan Miller, 404-526-6690
Hal Peek, Senior Engr., 404-506-7880
Jean Rakestraw, 404-526-7762
Sam Reagan, Fuel Contracts & Trans Admin, 404-526-7759
William Smith, Mgr. of Bulk Power Mktg., 404-526-2322
Janice Wolfe, Fin. Acct & Rep Mgr., 404-506-2322
Stock Symbol: SO
Exchange: NYSE
Corporate Consumption (tons):
2000 - 32,139,813
1999 - 28,133,666
2000 Coal Capacity (MW): 10,520

Arkwright
P.O. Box 4323
Macon, GA 31208
Tel: 912-477-1155
Harvey Derrick, Plant Mgr.
Plant Consumption (tons):
2000 - 125,154
1999 - 98,312
2000 Coal Capacity (MW): 181
Pollution Control: ESP
Transportation:
Rail, Barge
Receipt Point: Macon
Rail Service: NS
River Service: Ocmulgee
Mile Point: 7

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Ash Disposal On Site
Plant uses scrubbers
Coal Analysis:
BTUs/Lb: Min: 10,800
%Ash: Max: 10.5
%Sulfur: Max: 3.3
%Moisture: Max: 16
Fines: Min: 10, Max: 25
Ash Soft Temp: Min: 2,150, Avg: 2,200
Size: Min: 2 x 0
Capacity: 19,200 tpd
Pollution Control: ESP
Transportation:
Rail, Truck
Receipt Point: Petersburg
Supply Origin: Illinois Basin
Rail Service: ISRR

Pritchard
4040 Blue Bluff Rd.
Martinsville, IN 46151-7887
Tel: 765-342-3163, Fax: 765-342-2311
Stephen Butcher, Plant Mgr., 765-342-3163
Plant Consumption (tons):
2000 - 784,404
1999 - 659,000
2000 Coal Capacity (MW): 302
Ash Disposal On Site
Coal Analysis:
BTUs/Lb: Min: 10,800
%Ash: Max: 9.5
%Sulfur: Max: 1.3
%Moisture: Max: 17
Fines: Min: 10, Max: 25
Ash Soft Temp: Avg: 2,200
Size: Min: 2 x 0
Capacity: 3,200 tpd
Pollution Control: ESP on 4 Units, No. 2 Oil Conversion Planned on 2 Units
Transportation:
Rail, Truck
Receipt Point: Campbells, IN
Supply Origin: Illinois Basin
Rail Service: ISRR,CP,INRD

Stout
700 S. Harding St.
Indianapolis, IN 46217-3333
Tel: 317-788-5200, Fax: 317-788-5267
William Watson, Plant Mgr., 317-788-5200
Plant Consumption (tons):
2000 - 1,631,773
1999 - 1,717,000
2000 Coal Capacity (MW): 698
Ash Disposal On Site
Coal Analysis:
BTUs/Lb: Min: 10,800
%Ash: Max: 9.5
%Sulfur: Avg: 1.3, Max: 2.5
%Moisture: Max: 17
Fines: Min: 10, Max: 25
Ash Soft Temp: Avg: 2,300
Size: Min: 2 x 0
Capacity: 7,350 tpd
Pollution Control: ESP on 3 Boilers, No. 2 Oil Conversion on Remaining Equipment. Mech. Collect. on 2 Boilers Which Are Dual Fueled.
Transportation:
Rail, Truck
Receipt Point: Indianapolis
Supply Origin: Illinois Basin
Rail Service: INRD,CR,ISSR,CP

LOGANSPORT MUNICIPAL UTILITIES
601 E. Broadway, Ste. 101
Logansport IN 46947
Tel: 219-753-6231
Roger Cantu, Mainte. Supervisor,
Greg Wengert, Chief Engr.,
Corporate Consumption (tons):
2001 - 95,000 (Proj)
2000 - 91,890
1999 - 97,375
2000 Coal Capacity (MW): 167,896

Logansport
Logansport, IN 46947
Tel: 219-753-6231, Fax: 219-753-9828
Plant Consumption (tons):
2001 - 95,000 (Proj)
2000 - 91,890
1999 - 97,380
2000 Coal Capacity (MW): 39
Pollution Control: ESP
Transportation:
Truck
Receipt Point: Logansport, IN
Supply Origin: Brazil, IN

NORTHERN INDIANA PUBLIC SERVICE
801 E. 86th Ave.
Merrillville IN 46410
www.nipsco.com
Lawrence Barna, Principal, Fuel Resources, 219-647-5307, ljbarna@nipsco.com
Manager Fuel Supply, Mgr. Fuel Supply, 219-647-5300
Robert Jessen, 219-853-5076
Terry Lahman, Opers. Analysis Engr., 219-853-5453, tdlahman@nipsco.com
William O'Malley, 219-853-5660
Richard Spring, Dir. Electric Prod., 219-647-5510
Kevin Strnatka, Mgr., Fuel Supply, 219-647-5638, kastrnatka@nipsco.com
Beth Ann Swindle, Acquisition Analyst
David Vajda, Controller, 219-647-5520
Stock Symbol: NI
Exchange: NYSE
Corporate Consumption (tons):
2000 - 8,987,778
1999 - 9,049,920
2000 Coal Capacity (MW): 3,628
Coal Received by Company (2000):
Tons: 4,540,600
BTUs/Lb: 10,047
%Ash: 6
%Sulfur: 1

Bailly
246 Bailly Station Rd.
Chesterton, IN 46304-9754
Tel: 219-787-7301
Plant Consumption (tons):
2000 - 1,341,591
1999 - 1,395,160
2000 Coal Capacity (MW): 616
Plant uses scrubbers
Pollution Control: ESP
Transportation:
Rail
Receipt Point: Bailly
Supply Origin: IL, IN, WY
Rail Service: CSS

Michigan City
100 N. Wabash
Michigan City, IN 46360
Tel: 219-873-7204
Manager - Operations, 219-873-7373
Plant Consumption (tons):
2000 - 1,525,548
1999 - 1,266,350
2000 Coal Capacity (MW): 540
Pollution Control: ESP
Transportation:
Rail
Receipt Point: Michigan City, IN
Supply Origin: WY
Rail Service: CSS, NS

Mitchell
1 N. Clark Rd., Gary, IN 46401
5265 Hohman Ave.
Hammond, IN 46320-1775
Tel: 219-977-5005
Manager - Operations, 219-977-5016
Plant Consumption (tons):
2000 - 1,123,902
1999 - 1,048,460
2000 Coal Capacity (MW): 529
Pollution Control: ESP
Transportation:
Rail
Receipt Point: D.H. Mitchell, Gary, IN
Supply Origin: WY
Rail Service: EJE

Schahfer
2723 E. 1500 N.
Wheatfield, IN 46392
Tel: 219-956-5101
Manager - Operations - Units 14-15, 219-956-5103
Manager - Operations - Units 17-18, 219-956-5163
Plant Consumption (tons):
2000 - 4,996,737
1999 - 5,339,950
2000 Coal Capacity (MW): 1,943
Plant uses scrubbers
Coal Received by Plant (2000):
Tons: 2,616,100
BTUs/Lb: 10,152
%Ash: 6.63
%Sulfur: 1.28
Lbs SO_2: 3
Pollution Control: ESP
Transportation:
Rail
Receipt Point: Wheatfield
Supply Origin: WY, IL, IN, WV, PA, OH
Rail Service: NS

PSI ENERGY, INC.
1000 E. Main St.
Plainfield IN 46168
Tel: 317-839-9611, Fax: 317-838-2637
www.cinergy.com
David Bosse, Fuel Mktg. Specialist, 513-287-3019, dfbosse@cinergy.com
Jeff Conrad, 317-838-1726
Diane Douglas, Supv., 513-287-3031
Ben Flora, Partnership & Fuel Supv., 317-838-2200
Kent Freeman, Mgr. Rate Svcs, 317-838-1565
Doug Hils, Mgr., Control Area Opers., 513-287-2149
Lee Howe, Supv., Gen. Accounting, 317-838-1617
Humphry Ingleman, 513-287-1467
John Kreinest, Mgr., Fuel Supply - River Stations, 859-372-5725, jkreinest@cinergy.com
J. Thomas Mason, GM, Fuel Dept., 859-372-5733, tmason@cinergy.com
James Messmer, Station Mgr., 812-949-6402
R. C. Morton, Contract Mgr., Fuel Supply Inland Stations, 317-838-1241
Dan Rimstidt, Gen. Mgr., 859-372-6957
Rebecca L. Step, Mgr., Fuel Transportation, 317-838-1782
John Steffen, VP & Comptroller, 513-287-2560
Stock Symbol: CIN
Exchange: NYSE
Corporate Consumption (tons):
2000 - 16,673,163
1999 - 14,123,845
2000 Coal Capacity (MW): 5,850
Coal Received by Company (2000):
Tons: 8,087,900
BTUs/Lb: 11,144
%Ash: 9
%Sulfur: 1

Cayuga
P.O. Box 188
Cayuga, IN 47928
Tel: 317-492-3301, Fax: 317-492-3208
David Elkins, Station Mgr., 317-492-3159
Plant Consumption (tons):
2000 - 3,029,210
1999 - 3,000,000
2000 Coal Capacity (MW): 1,062
Ash Disposal On Site
Coal Received by Plant (2000):
Tons: 1,594,000
BTUs/Lb: 10,791
%Ash: 9.13
%Sulfur: 1.29
Lbs SO_2: 3
Pollution Control: ESP
Transportation:
Rail
Receipt Point: Cayuga
Supply Origin: IN
Rail Service: CSX

Edwardsport
R.R. 1 Box 198a
Edwardsport, IN 47528
Tel: 812-735-5444, Fax: 812-735-1132
W. Hammond, Station Mgr., 812-735-1126
Plant Consumption (tons):
2000 - 329,013
1999 - 200,000
2000 Coal Capacity (MW): 109
Ash Disposal On Site
Coal Received by Plant (2000):
Tons: 144,400
BTUs/Lb: 11,112
%Ash: 8.43
%Sulfur: 1.23
Lbs SO_2: 3
Pollution Control: ESP on 2 Units, 1 Unit Converted To Oil
Receipt Point: Edwardsport
Supply Origin: IN

Gallagher
P.O. Box 409
New Albany, IN 47150
Tel: 812-944-8471, Fax: 812-949-6404
James Messmer, Station Mgr., 812-949-6402
Plant Consumption (tons):
2000 - 1,388,691
1999 - 1,138,912
2000 Coal Capacity (MW): 600
Coal Received by Plant (2000):
Tons: 733,700
BTUs/Lb: 12,273
%Ash: 8.31
%Sulfur: 1.93

Nearman Creek
4240 N. 55 St.
Kansas City, KS 66104
Tel: 913-573-9785
Plant Consumption (tons):
2000 - 1,107,852
1999 - 816,600
2000 Coal Capacity (MW): 235
Ash Disposal On Site
Coal Received by Plant (2000):
Tons: 82,038,200
BTUs/Lb: 8,384
%Ash: 5.19
%Sulfur: 0.35
Lbs SO_2: 1
Coal Analysis:
BTUs/Lb: Avg: 8,300
%Ash: Avg: 5
%Sulfur: Avg: 0.35
%Volatility: Avg: 33
%Moisture: Avg: 30
Ash Soft Temp: Avg: 2,185
Capacity: 3,200 tpd
Transportation:
Rail
Receipt Point: Plant
Supply Origin: Powder River Basin
Rail Service: BN,UP
Unit Train: 96 hours,115 cars

Quindaro
3601 N. 12th St.
Kansas City, KS 66104
Tel: 913-573-9300
Plant Consumption (tons):
2000 - 520,748
1999 - 575,190
2000 Coal Capacity (MW): 222
Coal Received by Plant (2000):
Tons: 26,695,500
BTUs/Lb: 8,763
%Ash: 5.01
%Sulfur: 0.29
Lbs SO_2: 1
Coal Analysis:
BTUs/Lb: Avg: 8,850
%Ash: Avg: 6
%Sulfur: Avg: 0.28
%Volatility: Avg: 33.1
%Moisture: Avg: 27.1
Ash Soft Temp: Avg: 2,165
Pollution Control: ESP & Mech. Collect.
Transportation:
Rail, Barge
Supply Origin: PRB
Rail Service: UP
Unit Train: 110 cars, 7 day cycle

KANSAS CITY POWER & LIGHT CO.
1201 Walnut St.
Kansas City MO 64106
Tel: 816-556-2200, Fax: 816-556-2228
www.kcpl.com
Bernard Beaudoin, CFO, 816-556-2200
F. Branca, VP, Wholesale & Transmission Svcs.
Frank Branca, VP, 816-556-2200
Phil Cacioppo, Generation Planning Engr., 816-556-2856, pcc0793@kcpl.com
Samuel Cowley, VP, 816-556-2200
Maryanne Fokken, 816-556-2687
Todd Fridley, 816-654-1208
Lisa Harre, Supv. of Corp Reporting, 816-556-2522
Darren Ives, 816-556-2522
M. Jackson, Senior VP, Power Supply
Marcus Jackson, VP, 816-556-2200
A. Jennings, Chairman & Pres.
A. Drue Jennings, CEO, 816-556-2200
J. Latz, Svcs.
Neil Roadman, Controller, 816-556-2200
Sonta Roukas, 816-556-2738
Richard Schnakenberg, 816-556-2770
Lee Sippel, Mgr Ops Plan Budget, 816-556-2856
Bruce Sisk, Energy Accounting Analyst, 816-654-1217
John Stolwyk, Fuels Analyst, 816-556-2200
Ronald Wasson, VP, 816-556-2200
Stock Symbol: KLT
Exchange: NYSE
Corporate Consumption (tons):
2000 - 9,605,438
1999 - 9,286,254
2000 Coal Capacity (MW): 2,316
Coal Received by Company (2000):
Tons: 4,277,000
BTUs/Lb: 8,950
%Ash: 6
%Sulfur: 1

Lacygne
RR.1
La Cygne, KS 66040-9803
Tel: 913-757-4451, Fax: 816-556-2602
F. Crawford, Plant Mfg.
G. Jackson, Supt., Opers.
Plant Consumption (tons):
2000 - 5,540,063
1999 - 4,927,178
2000 Coal Capacity (MW): 730
Plant uses scrubbers
Coal Received by Plant (2000):
Tons: 2,537,000
BTUs/Lb: 9,193
%Ash: 9.18
%Sulfur: 1.54
Lbs SO_2: 1
Pollution Control: Wet Limestone Scrubber, Unit 1: Electric Precip. Unit 2: ESP
Transportation:
Rail
Supply Origin: IL, WY, KS
Rail Service: KCS, BNSF, UP

SUNFLOWER ELECTRIC POWER CORP.
310 W. 13th St.
Hays KS 67601
Tel: 785-628-2845, Fax: 785-623-3395
www.sunflower.net
Susan Braun, 785-623-3383
Thomas Hestermann, Senior Rate Analyst, 785-628-2845
Sidney Severson, 785-628-2845
Carroll Waggoner, Senior Mgr. Power Mktg. & Regulation, 785-623-3313
Corporate Consumption (tons):
2000 - 1,482,558
1999 - 1,361,983
2000 Coal Capacity (MW): 349
Coal Received by Company (2000):
Tons: 755,452
BTUs/Lb: 8,461
%Ash: 5

Holcomb
P.O. Box 430
Holcomb, KS 67851
Tel: 316-277-2590, Fax: 316-277-4594
Brad Schimke, Senior Mgr., Power Prod., 316-277-2590
Jeff Weber, 316-277-2590
Plant Consumption (tons):
2000 - 1,482,558
1999 - 1,537,130
2000 Coal Capacity (MW): 349
Plant uses scrubbers
Coal Analysis:
BTUs/Lb: Min: 8,250, Avg: 8,369
%Ash: Min: 5, Avg: 6
%Sulfur: Min: 0.3, Avg: 0.47
Size: Avg: 2
Transportation:
Rail
Receipt Point: Holcomb Station
Supply Origin: PRB, WY
Rail Service: BNSF

WESTERN RESOURCES INC.
818 Kansas Ave.
Topeka KS 66601
Tel: 785-575-8400
www.wstnres.com
Bruce Akin, Budgets & Reporting Mgr., 785-575-6354
John Ayers, Senior Mgr., Gas & Oil, 785-575-1677
Geri Brown, Bulk Power Planning Analyst, 785-575-1961
Jerry Courington, Controller, 785-575-6365
Patty Denny, 785-575-1626
Ms. Joe Hunt
Les Morgan, VP, Generation Svcs., 785-575-1630, les_morgan@wstnres.com
William Jack Reid, Dir., Fuels, 785-575-1631
Patty Sheehan, Reg. Comp. & Rept Anly, 785-575-1626
Ron Teeter, Dir., Coal, 785-575-6598
Stock Symbol: WR
Exchange: NYSE
Corporate Consumption (tons):
2000 - 11,751,810
1999 - 9,283,677
2000 Coal Capacity (MW): 2,984
Coal Received by Company (2000):
Tons: 5,398,000
BTUs/Lb: 9,352
%Ash: 5

Jeffrey Energy Center
P.O. Box 40
25905 Jeffrey Rd.
St. Marys, KS 66536
Tel: 785-456-6100, Fax: 785-575-1530
Dave Neufeld, Dir., Jeffery Energy Center
Plant Consumption (tons):
2000 - 9,439,848
1999 - 8,258,630
2000 Coal Capacity (MW): 2,189
Ash Disposal On Site
Plant uses scrubbers
Coal Received by Plant (2000):
Tons: 4,129,000
BTUs/Lb: 8,372
%Ash: 4.7
%Sulfur: 0.34
Lbs SO_2: 1
Coal Analysis:
BTUs/Lb: Avg: 8,300
Lbs SO_2: Avg: 0.43
%Volatility: Avg: 31
%Moisture: Avg: 31.1
Ash Soft Temp: Avg: 2,225
Size: Avg: 2 x 0
Capacity: 34,100 tpd
Pollution Control: Particulate:Cold Side ESP/SO_2 Wet Limestone FGD
Transportation:
Rail
Receipt Point: Jeffrey
Supply Origin: WY
Rail Service: BNSF, UP
Unit Train: 119 cars, 7 Operating Sets

Lawrence Energy Center
P.O. Box 249
1250 N. 1800 Rd.
Lawrence, KS 66044
Tel: 785-843-6000
Mark Yates, Mgr., Lawrence Energy Center, 785-331-4700
Plant Consumption (tons):
2000 - 1,523,597
1999 - 1,352,540
2000 Coal Capacity (MW): 557
Ash Disposal On Site
Plant uses scrubbers
Coal Received by Plant (2000):
Tons: 855,000
BTUs/Lb: 9,850
%Ash: 5.17
%Sulfur: 0.36
Lbs SO_2: 1
Coal Analysis:
BTUs/Lb: Min: 10,800, Avg: 11,200
Lbs SO_2: Min: 1, Avg: 0.77
%Volatility: Min: 34, Avg: 34.6
%Moisture: Min: 11, Avg: 10.2
Ash Soft Temp: Min: 2,570, Avg: 2,690
Capacity: 6,712 tpd
Pollution Control: Unit 3 Particulate: Cold Side ESP, Unit 4 Wet Scrubber/SO_2 Wet Limestone FGD,Unit 5 Nox Low Nox Burners Particulate Wet Scrubber SO_2 Wet Limestone
Transportation:
Rail
Receipt Point: Lawrence
Supply Origin: CO, MT
Rail Service: UP, BNSF
Unit Train: 105-135 cars, 5 Operating Sets

Tecumseh Energy Center
P.O. Box 38
Tecumseh, KS 66542
Tel: 785-379-5106
Mike Brouhard, Mgr.,Tecumseh Energy Center, 785-379-6494
Plant Consumption (tons):
2000 - 788,365
1999 - 643,150
2000 Coal Capacity (MW): 238
Ash Disposal On Site
Coal Received by Plant (2000):
Tons: 414,000
BTUs/Lb: 9,834
%Ash: 5.2
%Sulfur: 0.35
Lbs SO_2: 1
Coal Analysis:
BTUs/Lb: Min: 10,800, Avg: 11,200
Lbs SO_2: Min: 1, Avg: 0.77
%Volatility: Min: 34, Avg: 34.6
%Moisture: Min: 11, Avg: 10.2
Ash Soft Temp: Min: 2,570, Avg: 2,690
Capacity: 3,406 tpd
Pollution Control: ESP
Transportation:
Rail
Receipt Point: Tecumseh
Supply Origin: CO, MT
Rail Service: UP, BNSF
Unit Train: 105-135 cars, 5 Operating Sets

1724

John Kreinest, Fuel Procurement Mgr., 606-372-5725, jkreinest@cinergy.com
J. Thomas Mason, GM, Fuel Dept., 606-372-5733, tmason@cinergy.com
John Steffen, VP & Comptroller, 513-287-2560
Barbra Vice, 513-287-3724
Joyce Wimmers, 513-287-1704
Stock Symbol: CIN
Exchange: NYSE
Corporate Consumption (tons):
2000 - 11,617,746
1999 - 11,861,960
2000 Coal Capacity (MW): 4,530

East Bend
Rte. 338
Rabbit Hash, KY 41091-0142
Tel: 513-467-4830, Fax: 513-467-4767
Carl Cassell, Station Mgr., ccassell2@cinergy.com
Plant Consumption (tons):
2000 - 1,841,590
1999 - 1,871,500
2000 Coal Capacity (MW): 648
Plant uses scrubbers
Coal Received by Plant (2000):
Tons: 1,193,600
BTUs/Lb: 12,088
%Ash: 11.11
%Sulfur: 1.74
Lbs SO_2: 4
Coal Analysis:
BTUs/Lb: Min: 11,000, Avg: 12,121, Max: 13,442
%Ash: Min: 6, Avg: 11, Max: 22.9
%Sulfur: Min: 0.57, Avg: 2.21, Max: 4.91
%Volatility: Min: 32
Fines: Max: 35
Ash Soft Temp: Avg: 2,100
Size: Max: 2 x 0
Pollution Control: ESP, Flue-Gas Desulf. and Cooling Tower
Transportation:
Barge
Supply Origin: KY, PA, OH, IN, WV
River Service: Ohio
Mile Point: 510.9

LOUISIANA

CAJUN ELECTRIC POWER COOP., INC.
10719 Airline Hwy.
Baton Rouge LA 70895
Tel: 225-291-3060, Fax: 225-296-1746
Celeste Canezaro, Opers. Analyst, 225-638-6326
Gordon Chustz, Mfg. of Corp. Acctng., 225-291-3060
J. Daniel Jewell, System Operator, 225-638-6326
Joseph Price, VP, Fuel Resources & Power Mktg., 225-291-3060
Corporate Consumption (tons):
2000 - 1,684,626
1999 - 6,211,242
2000 Coal Capacity (MW): 1,450

Big Cajun 2
112 Telly St.
New Roads, LA 70760
Tel: 225-296-1751, Fax: 225-296-1754
Tony McMinn, Mgr., Fuels & Analytical Svcs., 225-296-1751
Plant Consumption (tons):
2000 - 1,684,626
1999 - 6,354,964
2000 Coal Capacity (MW): 1,450
Ash Disposal On Site
Coal Received by Plant (2000):
Tons: 1,980,235
BTUs/Lb: 8,281
%Ash: 5.7
%Sulfur: 0.37
Lbs SO_2: 1
Transportation:
Rail, Barge
Receipt Point: New Roads
Supply Origin: WY
Rail Service: BNSF
Unit Train: Cajun Owned Trains
River Service: Mississippi
Mile Point: 264

CENTRAL LOUISIANA ELECTRIC CO.
2030 Donahue Ferry Rd.
Pineville LA 71360-5226
Tel: 318-484-7400, Fax: 318-484-7465
www.cleco.com
Kristyl Gray Antony, Mgr.-Fuels,Cleco Generation Svcs., 318-427-1734
Stephanie Armand, Adm. Elec. Prod. Servs., 318-838-2511
Darrell Dubroc, GM-Wholesale Merchant Opers.,Cleco Generation Svcs., 318-427-1902
Robert Duncan, VP, 318-484-7400
David Eppler, VP, 318-484-7659
Owen Fallon, Mfg. of Rates, 318-484-7400
Leonard Fontenot, VP, 318-484-7400
Mark MacDonald, Dir.-Power Mktg., 318-427-1738
Lee Ann Mitchell, 318-484-7489
Charles Murray, Dir.-Gen. Accounting & Tax., 318-484-7400
Gregory Nesbitt, CEO, 318-484-7400
Richard Riche, Mgr.-Fuel Resources, 318-427-1733
William Stewart, Dir.-Coal & Transportation, Cleco Generation Svcs., 318-427-1732
Amy Taylor, 318-484-7538
David Warner, VP, 318-484-7400
Kate Wells, 318-484-7480
Stock Symbol: CNL
Exchange: NYSE
Corporate Consumption (tons):
2000 - 5,805,218
1999 - 4,288,450
2000 Coal Capacity (MW): 528

Dolet Hills
963 Power Plant Rd.
Mansfield, LA 71052-9606
Tel: 318-871-3160
Steve Gauthier, Supt., 318-871-2207
Plant Consumption (tons):
2000 - 3,703,293
1999 - 3,520,038
2000 Coal Capacity (MW): 360
Plant uses scrubbers
Pollution Control: ESP

Rodemacher
275 Rademacher Rd.
Lena, LA 71447-9708
Mike Marcantel, Supt., 318-793-1135
Plant Consumption (tons):
2000 - 2,101,925
1999 - 1,979,456
2000 Coal Capacity (MW): 167
Coal Received by Plant (2000):
Tons: 1,149,000
BTUs/Lb: 8,744
%Ash: 5.42
%Sulfur: 0.43
Lbs SO_2: 2

ENTERGY - GULF STATES, INC.
10055 Grogans Mill Rd.
Parkwood II Bldg, Ste. 300
The Woodlands TX 77380
Tel: 281-297-3562
www.entergy.com
Scott Forbes, Dir. Regulatory Reporting, 409-839-3021
Norma Gasquet, 504-576-4292
Roy Giangrosso, Dir. of Coal Supply, 409-827-5122
Daniel Gray, Admin Fuel Transportation, 281-297-3516
Charles Jewell, Dir., Coal Supply, 281-297-3562
Charles John, 504-576-7175
Kathryn Parham, Mgr. of Gen. Accounting, 504-569-4891
Annwood Reedy, Mgr. External Reporting, 504-576-4447
Hank Walters, Admin Coal, 281-297-3520
Bruce Wilhelm, 281-297-3547
B. Willis, VP & Controller, 409-838-6631
Stock Symbol: ETR
Exchange: NYSE
Corporate Consumption (tons):
2000 - 2,471,958
1999 - 2,055,971
2000 Coal Capacity (MW): 430

Nelson
P.O. Box 429
Lake Charles, LA 70669
Tel: 318-494-6001
Plant Consumption (tons):
2000 - 2,471,958
1999 - 1,995,225
2000 Coal Capacity (MW): 430
Coal Received by Plant (2000):
Tons: 1,077,940
BTUs/Lb: 8,718
%Ash: 5.69
%Sulfur: 0.46
Lbs SO_2: 1
Coal Analysis:
BTUs/Lb: Avg: 8,600
%Ash: Avg: 5.5
%Sulfur: Avg: 0.5
%Volatility: Avg: 32.04
%Moisture: Avg: 28.7
Size: Avg: 2
Pollution Control: ESP
Transportation:
Rail
Receipt Point: FOB Mine
Supply Origin: PRB
Rail Service: BNSF, KCS, UP

TAMPA ELECTRIC CO.
702 N. Franklin St.
Tampa FL 33602
Tel: 813-228-4111, 813-223-0860
www.teconet.com
Phil Barringer, Asst. Controller, 813-228-4111
Harold Besch, Sr. Generation Planning Tech., 813-228-4460
Sharon Beuris, 813-228-4769
Rod Burkhardt, Fuels Mgr., 813-641-5015
J. Chronister, Supv., Fin. Reprtg., 813-228-1609
T. Hernandez, Mgr. Gen. Planning, 813-228-4449
Carl Himes, 813-228-4765
Kent Hobart, 813-228-4220
Lester Lefler, VP, Controller, 813-228-4111
Joy McCleod, 813-228-4767
Hugh Smith, Dir. of Fuels, 813-223-080
Stock Symbol: TE
Exchange: NYSE
Corporate Consumption (tons):
2000 - 6,855,959
1999 - 7,319,380
2000 Coal Capacity (MW): 3,093
Coal Received by Company (2000):
Tons: 3,678,220
BTUs/Lb: 12,409
%Ash: 8
%Sulfur: 2

Big Bend Transfer Facility
Davant, LA 70046

MARYLAND

ALLEGHENY ENERGY
10435 Downsville Pike
Hagerstown MD 21740-1766
Tel: 301-790-3400, Fax: 301-790-6089
www.alleghenyenergy.com
Michael B. Delmar, Mgr., Fuels, 412-858-1467
Claude Frantz, Supv., Fuels, 724-838-6766
Arnold Henthorn, 304-367-3435
Michael H. Hess, Dir., Fuels, 412-858-1471
Albert F. Kave, Dir., Gen. Planning, 412-858-1109
Thomas J. Kloc, Controller, 301-665-2711
Stock Symbol: AYP
Exchange: NYSE
Corporate Consumption (tons):
2001 - 20,022,210 (Proj)
2000 - 18,489,375
1999 - 17,682,534
Coal Received by Company (2000):
Tons: 17,742,000
BTUs/Lb: 12,319
%Ash: 11
%Sulfur: 3

Smith
P.O. Box 168
Williamsport, MD 21795-0169
Tel: 301-582-5900, Fax: 301-582-5909
L.D. Hull, Regional Dir., 301-582-5956
Plant Consumption (tons):
2000 - 243,000
1999 - 151,820
2000 Coal Capacity (MW): 115
Coal Received by Plant (2000):
Tons: 242,000
BTUs/Lb: 12,442
%Ash: 12.03
%Sulfur: 0.96
Lbs SO_2: 2
Coal Analysis:
BTUs/Lb: Avg: 12,000
%Ash: Avg: 14
%Sulfur: Avg: 1
%Moisture: Avg: 7
Size: Avg: 5

R. Slater, VP, 816-233-8888
Michael Smith, Supt., Engr., 816-387-6264
T. Steinbecker, CEO, 816-233-8888
L. Stoll, CFO, 816-233-8888
Larry Stoll, VP, Fin., 816-233-8888
D. Svuba, VP, 816-233-8888
Dwight Svuba, VP, Energy Supply, 816-387-6204
Gary Swope, Mgr. Purch. & Stores, 816-233-8888
J. Weisensee, Fin. & Acctg. Mgr., 816-387-6240
Stock Symbol: SAJ
Exchange: NYSE
Corporate Consumption (tons):
2000 - 312,639
1999 - 933,860
2000 Coal Capacity (MW): 113
Coal Received by Company (2000):
Tons: 167,800
BTUs/Lb: 9,259
%Ash: 5

Lake Road
1413 Lower Lake Rd.
St. Joseph, MO 64504
Tel: 816-238-0025, Fax: 816-238-1506
Michael Ceglenski, Supt., Maint., 816-387-6263
John Modlin, Dir., Fuels, 816-387-6275
James Parker, Supt. Opers., 816-387-6451
Michael Smith, Supt., Engr., 816-387-6264
Dwight Svuba, VP, Energy Supply, 816-387-6204
Plant Consumption (tons):
2000 - 312,639
1999 - 415,000
2000 Coal Capacity (MW): 113
Coal Received by Plant (2000):
Tons: 167,800
BTUs/Lb: 9,259
%Ash: 5.19
%Sulfur: 0.27
Lbs SO_2: 1
Coal Analysis:
BTUs/Lb: Min: 8,700, Avg: 11,000, Max: 12,000
%Ash: Min: 5, Avg: 6, Max: 15
%Sulfur: Min: 0.2, Avg: 0.2, Max: 0.72
%Volatility: Min: 25, Avg: 35, Max: 37
%Moisture: Max: 15
Ash Soft Temp: Max: 2,350
Size: Avg: 2 X 0
Capacity: 1,600 tpd
Pollution Control: ESP
Transportation:
Rail
Receipt Point: St. Joseph, MO
Supply Origin: PRB; Hanna,
Rail Service: UP
Unit Train: 120 cars weekly

UNION ELECTRIC CO.
1901 Chouteau Ave.
St. Louis MO 63103
Tel: 314-621-3222, Fax: 314-554-4075
www.ameren.com
Warner Baxter, Controller, 314-554-6302
Mark Blair, Office Supv., 314-554-3356
D. Brandt, VP, 314-621-3222
Carl Fisk, 314-554-2782
Allen Fitch, Mgr. of Gen. Accounting, 314-554-2158
Glen Justice, 314-554-3278
R. Kelley, VP, Energy Supply, 314-554-4188
C. Mueller, CEO, 314-621-3222
Michael Mueller, Mgr., Fossil Fuel, 314-554-4174
Charles Naslund, VP, Power Plants, 314-554-4058
R. Piening, VP, 314-621-3222
D. Schnell, VP, 314-621-3222
C. Schukai, VP, 314-621-3222
James Thompson, Secy., 314-554-2619
G. Waters, Asst. Secy., 314-554-2715
Stock Symbol: UEP
Exchange: NYSE
Corporate Consumption (tons):
2000 - 18,219,883
1999 - 17,041,000
Coal Received by Company (2000):
Tons: 8,192,000
BTUs/Lb: 9,342
%Ash: 5
%Sulfur: 1

Labadie
P.O. Box 67
Labadie, MO 63055
Tel: 314-992-8201, Fax: 314-992-8204
Plant Consumption (tons):
2000 - 8,950,491
1999 - 8,013,000
Coal Received by Plant (2000):
Tons: 3,698,000
BTUs/Lb: 8,674
%Ash: 5.08
%Sulfur: 0.27
Lbs SO_2: 1
Pollution Control: 700 Ft. Tall Stacks; ESP Fly Ash Collect., Coal Blending, SO3 Injection System.
Transportation:
Rail
Receipt Point: Labadie, MO
Supply Origin: WY
Rail Service: UP

Meramec
8200 Fine Rd.
St. Louis, MO 63129
Tel: 314-992-7201, Fax: 314-992-7222
Plant Consumption (tons):
2000 - 1,751,389
1999 - 1,844,000
Coal Received by Plant (2000):
Tons: 914,000
BTUs/Lb: 9,670
%Ash: 5.45
%Sulfur: 0.55
Lbs SO_2: 1
Pollution Control: ESP For Fly Ash Collect., Low Sulfur Coal
Transportation:
Rail, Barge
Receipt Point: St. Louis County, MO
Supply Origin: IL, WY
Rail Service: UP,C, BN
River Service: Mississippi
Mile Point: 161.6

Rush Island
100 Big Hollow Rd.
Festus, MO 63028
Tel: 314-992-9201, Fax: 314-992-9293
Plant Consumption (tons):
2000 - 4,877,094
1999 - 4,693,000
Coal Received by Plant (2000):
Tons: 2,245,000
BTUs/Lb: 8,362
%Ash: 5.53
%Sulfur: 0.4
Lbs SO_2: 1
Pollution Control: 700 Ft. Tall Stacks, ESP; Fly Ash Collection; Low-Sulfur Coal; SO3 Injection System.
Transportation:
Rail
Receipt Point: Rush Tower, MO
Supply Origin: WY
Rail Service: BN

Sioux
8501 N. State, Rte. 94
West Alton, MO 63386-1009
Tel: 314-992-6201, Fax: 314-992-6302
Plant Consumption (tons):
2000 - 2,640,909
1999 - 2,491,000
Coal Received by Plant (2000):
Tons: 1,335,000
BTUs/Lb: 10,660
%Ash: 5.86
%Sulfur: 1.18
Lbs SO_2: 2
Pollution Control: 600 Ft. Tall Stacks; ESP Fly Ash Collect., Coal Blending
Transportation:
Rail
Receipt Point: West Alton, MO
Supply Origin: IL, WY
Rail Service: BN

UTILICORP UNITED, INC.
10700 E. M350 Hwy.
Kansas City MO 64138
Tel: 816-421-6600, 816-737-7519
Fax: 816-737-7637
www.utilicorp.com
Beverlee Agut, Mgr. Fin. Rpt., 816-737-7975
Jerry Boehm, Dir.-Opers. & Support, 816-936-8605, jboehm@utilicorp.com
James Brook, VP, 816-421-6600
John Browning, VP, Prod., 816-737-7512
Charles Dempster, Pres., 816-421-6600
Doug Evanson, Mgr. Corp. Acct., 816-691-3535
Richard Green, Chairman, 816-421-6600
Robert Green, Mgmnt. Exec. VP, 816-421-6600
Robert Howell, VP, 816-421-6600
Sharon Lading, 816-737-7651
John McKinney, Dir., Admin Svcs., 816-737-7512
James Miller, VP, 816-421-6600
Philip Rogers, Mgr., Coal Procurement, 913-936-8741
Judith Samayoa, VP
Lisa Starkebaum, Accountant, 816-737-7963
Dan Streek, Mgr.-Corp. Acct, 816-421-6600
Stock Symbol: UCU
Exchange: NYSE
Corporate Consumption (tons):
2000 - 1,645,305
1999 - 1,495,155
2000 Coal Capacity (MW): 562

Sibley
33200 E. Johnson Rd.
Sibley, MO 64088
Tel: 816-249-6196
Plant Consumption (tons):
2000 - 1,645,305
1999 - 1,584,063
2000 Coal Capacity (MW): 524
Coal Received by Plant (2000):
Tons: 713,291
BTUs/Lb: 9,767
%Ash: 5.93
%Sulfur: 0.37
Lbs SO_2: 1
Coal Analysis:
BTUs/Lb: Min: 8,452, Avg: 11,000, Max: 12,334
%Ash: Min: 4.26, Avg: 10, Max: 10.2
%Sulfur: Min: 0.18, Avg: 1, Max: 3.15
%Moisture: Avg: 14
Ash Soft Temp: Min: 2,000, Max: 2,200
Size: Avg: 1 1/2
Pollution Control: ESP
Transportation:
Rail
Receipt Point: Sibley
Supply Origin: IL, UT, WY
Rail Service: BNSF
Unit Train: 115 cars

MONTANA

MONTANA DAKOTA UTILITIES CO.
400 N. 4th St.
Bismarck ND 58501-4092
Tel: 701-222-7900, Fax: 701-222-7845
www.mdu.com
Gerald Gress, Power Prod. Mgr.
Bruce Imsdahl, VP, Energy Supply
Gary Paulsen, System Opers. Mgr.
Stock Symbol: MDU
Exchange: NYSE
Corporate Consumption (tons):
2001 - 1,599,000 (Proj)
2000 - 2,862,571
1999 - 2,862,571
2000 Coal Capacity (MW): 340
Coal Received by Company (2000):
Tons: 769,000
BTUs/Lb: 4,826
%Ash: 8
%Sulfur: 1

Lewis & Clark
P.O. Box 808
Sidney, MT 59270
Tel: 406-482-1614
Craig Herbert, Station Mgr.
Plant Consumption (tons):
2001 - 264,000 (Proj)
2000 - 318,000
1999 - 276,463
2000 Coal Capacity (MW): 50
Coal Received by Plant (2000):
Tons: 318,000
BTUs/Lb: 6,726
%Ash: 2.77
%Sulfur: 0.18
Lbs SO_2: 2
Coal Analysis:
BTUs/Lb: Avg: 6,550
%Ash: Avg: 8.55
%Sulfur: Avg: 0.53
Size: Avg: 3 x 0
Pollution Control: Mech. Dust Collect., Flooded Disc Scrubber, 250 Foot Stack
Transportation:
Truck
Supply Origin: MT

Muskingum River
P.O. Box 158
Beverly, OH 45715
Tel: 614-984-2321
Plant Consumption (tons):
2000 - 3,516,050
1999 - 2,448,000
2000 Coal Capacity (MW): 1,425
Coal Received by Plant (2000):
Tons: 1,582,500
BTUs/Lb: 11,937
%Ash: 12.45
%Sulfur: 1.78
Lbs SO_2: 3
Coal Analysis:
%Volatility: Min: 25
%Moisture: Avg: 7
Size: Avg: 1 1/2 x 0
Pollution Control: ESP, Tall Stack, Cooling Tower
Transportation:
Rail, Truck, Conveyor
Supply Origin: OH
Rail Service: CSX
Units 1-4 are wet bottom design and requires low AST coals. Unit 5 is dry bottom and requires higher AST coals. Unit 5 is dry bottom and requires higher AST coals.

Picway
9301 U.S. Rte. 23
Lockbourne, OH 43137
Tel: 614-491-3524
Plant Consumption (tons):
2000 - 215,490
1999 - 151,000
2000 Coal Capacity (MW): 100
Coal Received by Plant (2000):
Tons: 106,200
BTUs/Lb: 11,503
%Ash: 10.06
%Sulfur: 2.07
Lbs SO_2: 5
Coal Analysis:
BTUs/Lb: Avg: 11,200
%Ash: Avg: 12
%Volatility: Min: 25
%Moisture: Avg: 10
Ash Soft Temp: Min: 2,125
Size: Avg: 2 x 0
Pollution Control: ESP on Unit #5
Supply Origin: OH

AMERICAN MUN POWER-OHIO, INC.
2600 Airport Rd.
Columbus OH 43219
Tel: 614-374-8913, Fax: 614-374-4063
www.amp-ohio.org
Carl Denison, Plant Mtg., 740-374-8913
Scott Kiesewetter, Perf. Supt., 614-337-6222
Caroll Scheer, VP Opers., 614-337-6222
Brett Spurgeon, 614-337-6222
Robert Trippe, VP, Fin., 614-337-6222
Corporate Consumption (tons):
2000 - 860,959
1999 - 772,738
2000 Coal Capacity (MW): 213
Coal Received by Company (2000):
Tons: 432,500
BTUs/Lb: 11,906
%Ash: 14
%Sulfur: 2

Richard H. Gorsuch
P.O. Box 728
Marieta, OH 45750
Tel: 614-374-8913, Fax: 614-374-4063
Gilbert Woods, Plant Mgr.
Plant Consumption (tons):
2000 - 860,959
1999 - 854,797
2000 Coal Capacity (MW): 213
Coal Received by Plant (2000):
Tons: 432,500
BTUs/Lb: 11,906
%Ash: 13.63
%Sulfur: 2.03
Lbs SO_2: 8
Coal Analysis:
BTUs/Lb: Avg: 12,150
%Ash: Avg: 10
%Sulfur: Avg: 4
%Volatility: Avg: 35
%Moisture: Avg: 5
Fines: Avg: 30
Size: Avg: 2 x 0
Capacity: 46,000 tpm
Transportation:
Truck
Receipt Point: Plant
Supply Origin: Strip Mine

DAYTON POWER & LIGHT CO.
1900 Dryden Rd.
Dayton OH 45439
Tel: 937-224-6000, Fax: 937-331-4816
www.waytogo.com
Dave Englebrecht, Corp. Analysis-Prod. Fuel, 937-259-7229
J. Hayes, Asst. Controller, 937-227-2791
Thomas Horan, Supv. Gen Accounting, 937-331-4791
Bonita Hupman, Mgr., Gen. Accounting, 937-331-4804
Nancy McFarland, 937-331-4797
S. Miller, Mgr, Plant Betterment, 937-224-6000
H. Miracle, Senior Business Analyst, 937-224-6000
Patrick O'Loughlin, Dir., Energy Svcs., 937-331-4364
C. Sledd, Senior Prod. Analyst, 937-224-6000
James Tomasiak, Mgr.-Fuel/Nat. Gas Supply, 937-259-7228
Lisa Wilson, 937-259-7171
Stock Symbol: DPL
Exchange: NYSE
Corporate Consumption (tons):
2000 - 8,513,500
1999 - 7,395,187
2000 Coal Capacity (MW): 1,715

Hutchings
9200 Chautauqua Rd.
Miamisburg, OH 45342
Tel: 513-865-6200
Plant Consumption (tons):
2000 - 398,779
1999 - 294,841
2000 Coal Capacity (MW): 414
Coal Received by Plant (2000):
Tons: 180,700
BTUs/Lb: 12,751
%Ash: 9.08
%Sulfur: 0.83
Lbs SO_2: 1
Pollution Control: ESP
Transportation:
Rail
Receipt Point: Miamisburg
Rail Service: CR

Killen
P.O. Box 147
Manchester, OH 45144
Tel: 513-549-3911
Plant Consumption (tons):
2000 - 1,912,027
1999 - 2,009,630
2000 Coal Capacity (MW): 447
Coal Received by Plant (2000):
Tons: 1,122,700
BTUs/Lb: 11,718
%Ash: 13.93
%Sulfur: 0.65
Lbs SO_2: 1
Pollution Control: ESP
Transportation:
Barge
River Service: Ohio
Mile Point: 389.8

Stuart
P.O. Box 158
Aberdeen, OH 45101
Tel: 513-549-2641
Plant Consumption (tons):
2000 - 6,202,694
1999 - 5,938,053
2000 Coal Capacity (MW): 854
Coal Received by Plant (2000):
Tons: 3,306,600
BTUs/Lb: 11,344
%Ash: 14.99
%Sulfur: 0.85
Lbs SO_2: 1
Pollution Control: ESP
Transportation:
Barge
River Service: Ohio
Mile Point: 404

HAMILTON DEPT. OF PUBLIC UTILITIES
40 High St.
Hamilton OH 45011
Tel: 513-868-5907, Fax: 513-867-7300
Bruce Hemmerich, Utility Business Admin., 513-868-5907, bruce.hemmerich@usa.net
Tom P'Simer, Elect. Prod. Supt., 513-868-5907
Pat Russell, Clerk, 513-868-5863
Corporate Consumption (tons):
2000 - 136,017
1999 - 128,835
2000 Coal Capacity (MW): 86

Hamilton
960 N. 3rd St.
Hamilton, OH 45011
Tel: 513-868-5867, Fax: 513-867-7345
Dan Needhan, Asst.Elect. Prod. Supt.
Tom P'Simer, Elect. Prod. Supt., 513-868-5907
Mike Perry, Asst. Elect. Prod. Supt.
Plant Consumption (tons):
2000 - 136,017
1999 - 172,132
2000 Coal Capacity (MW): 86
Plant uses scrubbers
Coal Received by Plant (2000):
Tons: 40,466
BTUs/Lb: 12,297
%Ash: 10.8
%Sulfur: 0.75
Lbs SO_2: 1
Coal Analysis:
BTUs/Lb: Min: 12,000, Avg: 12,500, Max: 12,886
%Ash: Min: 8.2, Avg: 9.31, Max: 12
%Sulfur: Min: 0.68, Avg: 0.7, Max: 0.75
%Volatility: Max: 36
%Moisture: Max: 6
Fines: Max: 30
Ash Soft Temp: Avg: 2,650
Size: Avg: 4 x 0
Capacity: 25 tpm
Pollution Control: Vop Precipitators
Transportation:
Barge, Truck
Receipt Point: Hamilton
Supply Origin: WV, KY
River Service: Ohio

OHIO EDISON CO.
76 S. Main St.
Akron OH 44308-1890
Tel: 330-384-5100, Fax: 330-384-5279
www.firstenergycorp.com
Anthony Alexander, VP, 216-384-5100
H. Peter Burg, VP, 216-384-5100
Patricia Caprez, 216-384-3807
Edward Davis, Senior Analyst, 614-223-1368
Kevin Dockerty, 216-384-3738
M. Enos, Prod Op Technologist, 330-384-5769
Brad Everts, 216-384-5206
Anthony Gorant, VP, 216-384-5100
Willard Holland, CEO, 216-384-5100
Michael Hyrnick, Mgr., Fuel Supply Dept., 330-384-5784
Richard Krause, Prod. Dept Mgr., 330-384-5769
Philip Lombardo, Dir. Gen. Accounting Svcs., 216-384-5301
Robert McWhorter, VP, 216-384-5100
James Parks, Mgr. Fuel Supply Dept., 330-384-5100
Bill Shonk, 216-384-5472
Debra Tull, Business Analyst B, 330-336-9809
Harvey Wagner, Controller, 330-384-5296
Gene Yee, 330-384-5326
Stock Symbol: OEC
Exchange: NYSE
Corporate Consumption (tons):
2000 - 6,331,997
1999 - 6,220,269
2000 Coal Capacity (MW): 2,784
Coal Received by Company (2000):
Tons: 3,405,000
BTUs/Lb: 11,715
%Ash: 15
%Sulfur: 2

Burger
57246 Ferry Landing Rd.
Shadyside, OH 43947-9700
Tel: 614-671-2900
Dennis Fuster, Mgr., Consolidated Plants
Plant Consumption (tons):
2000 - 866,348
1999 - 776,362
2000 Coal Capacity (MW): 416
Coal Received by Plant (2000):
Tons: 480,800
BTUs/Lb: 11,393
%Ash: 16.87
%Sulfur: 2.05
Lbs SO_2: 5
Pollution Control: ESP, Tall Stack
Transportation:
Barge
Supply Origin: OH, PA, WV
River Service: Ohio
Mile Point: 102.3

Edgewater
200 Oberlin Ave.
Lorain, OH 44052
Tel: 216-246-7000
H. Tanner, Plant Supt.
Coal Received by Plant (2000):
Tons: 324,800
BTUs/Lb: 688
Pollution Control: ESP
Supply Origin: OH

Sammis
P.O. Box 176
Stratton, OH 43961
Tel: 614-537-1546
Dennis Fuster, Mgr., Consolidated Plants, 740-671-2900
Plant Consumption (tons):
2000 - 5,465,649
1999 - 5,660,686
2000 Coal Capacity (MW): 2,102
Coal Received by Plant (2000):
Tons: 2,729,700
BTUs/Lb: 11,701
%Ash: 15.23
%Sulfur: 1.12
Lbs SO_2: 2
Pollution Control: ESP Tall Stacks, Fabric Filters (Baghouses)
Transportation:
Barge
Supply Origin: PA, KY, WV
River Service: Ohio
Mile Point: 53.2

OHIO VALLEY ELECTRIC CORP.
P.O. Box 468
3932 US Rte. 23
Piketon OH 45661
Tel: 740-289-7200, Fax: 740-289-7253
D.L. Hart, VP & Asst. to Pres., 614-223-1092
D. Jones, VP Opers., 740-289-7211
Corporate Consumption (tons):
2001 - 3,076,000 (Proj)
2000 - 3,177,300
1999 - 3,038,100
2000 Coal Capacity (MW): 1,086
Coal Received by Company (2000):
Tons: 3,122,600
BTUs/Lb: 12,789
%Ash: 9
%Sulfur: 2
Lbs SO_2: 3

Kyger Creek
P.O. Box 81
Gallipolis, OH 45631
Tel: 740-367-5050
R. Amburgey, Plant Mgr., 740-367-5311
Plant Consumption (tons):
2001 - 3,076,000 (Proj)
2000 - 3,177,300
1999 - 3,038,100
2000 Coal Capacity (MW): 1,086
Ash Disposal On Site
Coal Received by Plant (2000):
Tons: 3,122,600
BTUs/Lb: 12,789
%Ash: 8.85
%Sulfur: 2.19
Lbs SO_2: 3
Pollution Control: ESP, Fuel Management
Transportation:
Barge
Supply Origin: OH, WV, PA, KY, VA
River Service: Ohio
Mile Point: 260

ORION POWER MIDWEST
2000 Cliff Mine Rd., Ste. 200
Pittsburgh PA 15275
www.orionpower.com
Stock Symbol: ORN
Exchange: NYSE
Corporate Consumption (tons):
2000 - 1,376,217
1999 - 4,746,754
2000 Coal Capacity (MW): 1,075
Coal Received by Company (2000):
Tons: 1,587,700
BTUs/Lb: 12,390
%Ash: 11
%Sulfur: 2

Avon Lake
33570 Lake Rd.
Avon Lake, OH 44012-1198
Tel: 216-6229800
Plant Consumption (tons):
2000 - 362,923
1999 - 1,378,678
Coal Received by Plant (2000):
Tons: 417,100
BTUs/Lb: 12,754
%Ash: 9.47
%Sulfur: 1.29
Lbs SO_2: 2
Pollution Control: ESP
Transportation:
Rail
Receipt Point: Avon Lake
Supply Origin: OH, KY, VA
Rail Service: NS

Niles
1047 Belmont Ave.
Niles, OH 44446
Tel: 330-652-4301
Plant Consumption (tons):
2000 - 153,392
1999 - 585,634
Coal Received by Plant (2000):
Tons: 194,500
BTUs/Lb: 12,050
%Ash: 13
%Sulfur: 3.28
Lbs SO_2: 5
Pollution Control: ESP
Supply Origin: PA, OH

ORRVILLE MUNICIPAL UTILITIES
207 N. Main
P.O.Box 107
Orrville OH 44667
Tel: 330-684-5100, Fax: 330-684-5122
www.orrville.com
Jeff Brediger, Electric Utility Mgr., 330-684-5101, brediger@orrville.com
Jim Hall, Purch. Mgr., 330-684-5100, hall@orrville.com
Tim Neal, Accountant, 330-684-5000, neal@orrville.com
Dan Preising, Dir., Utilities, 330-684-5012, preising@orrville.com
Corporate Consumption (tons):
2001 - 200,000 (Proj)
2000 - 206,600
1999 - 201,500
2000 Coal Capacity (MW): 72
Coal Received by Company (2000):
Tons: 191,000
BTUs/Lb: 11,500
%Ash: 11
%Sulfur: 4
Lbs SO_2: 6

Orrville
1100 Perry St.
Orrville, OH 44667
Tel: 330-684-5100, Fax: 330-684-5122
Jeff Brediger, Electric Utility Mgr., 330-684-5101, brediger@orrville.com
Joe Messenger, Maint. Supt., 330-684-5113, messenger@orrville.com
Plant Consumption (tons):
2001 - 200,000 (Proj)
2000 - 206,600
1999 - 201,500
2000 Coal Capacity (MW): 72
Coal Received by Plant (2000):
Tons: 191,000
BTUs/Lb: 11,500
%Ash: 11
%Sulfur: 4
Lbs SO_2: 6
Coal Analysis:
BTUs/Lb: Min: 11,300, Avg: 11,500
%Ash: Min: 6.57, Avg: 10, Max: 12
%Sulfur: Min: 2, Avg: 3.39, Max: 4
%Volatility: Avg: 50
%Moisture: Avg: 10, Max: 11
Ash Soft Temp: Avg: 2,350
Size: Avg: Crushed ROM and Stoker
Pollution Control: ESP
Transportation:
Truck
Receipt Point: Orrville
Supply Origin: OH

PAINESVILLE ELECTRIC DIV.
7 Richmond
Painesville OH 44077-0601
Tel: 440-639-4828, Fax: 440-357-1966
www.painesville.com
Virginia Brennan, 440-352-9301
Thomas Green, Electric Supt., 440-639-4892, tgreen@harborcom.net
Paul Morton, Generation Supv., 440-639-4917
Ken Newton, 440-639-4827, tgreen@harborcom.net
Corporate Consumption (tons):
2000 - 93,616
1999 - 92,400
2000 Coal Capacity (MW): 54
Coal Received by Company (2000):
Tons: 52,510
BTUs/Lb: 12,769
%Ash: 8
%Sulfur: 2

Painesville
P.O. Box 601
325 Richmond St.
Painesville, OH 44077
George Machuta, Sr. Engr., Maint., 440-639-4828
Paul Morton, Generation Supv., 440-639-4917
Ken Newton, Sr. Engr., Opers., 440-639-4828
Plant Consumption (tons):
2000 - 93,616
1999 - 87,254
2000 Coal Capacity (MW): 54
Coal Received by Plant (2000):
Tons: 52,510
BTUs/Lb: 12,769
%Ash: 8.17
%Sulfur: 1.86
Lbs SO_2: 4
Coal Analysis:
BTUs/Lb: Avg: 12,500
%Ash: Min: 6, Avg: 8, Max: 10
%Sulfur: Max: 3
Size: Min: 2 x 0
Capacity: 300 tons/day
Receipt Point: Plant
Supply Origin: OH

THE CINCINNATI GAS & ELECTRIC CO.
139 E. 4th St.
Cincinnati OH 45202
Tel: 606-372-5733, 606-372-5725
Fax: 606-372-5878
www.cinergy.com
Bill Barnhart, Fuel Procurement, 513-287-3442
Diane Douglas, Supv., 513-287-3031
Daniel Herche, Controller, 513-287-2361
Bob Hoffmann, 513-287-3046
John Kreinest, Fuel Procurement Mgr., 606-372-5725, jkreinest@cinergy.com
J. Thomas Mason, GM, Fuel Dept., 606-372-5733, tmason@cinergy.com
John Steffen, VP & Comptroller, 513-287-2560
Barbra Vice, 513-287-3724
Joyce Wimmers, 513-287-1704
Stock Symbol: CIN
Exchange: NYSE
Corporate Consumption (tons):
2000 - 11,617,746
1999 - 11,861,960
2000 Coal Capacity (MW): 4,530

Beckjord
757 U.S. Rte. 52
New Richmond, OH 45157-9709
Tel: 513-467-5000, Fax: 513-467-5121
James Messmer, Station Mgr., 513-467-5020
Plant Consumption (tons):
2000 - 3,091,917
1999 - 3,093,300
2000 Coal Capacity (MW): 1,164
Coal Received by Plant (2000):
Tons: 2,065,800
BTUs/Lb: 12,060
%Ash: 11.6
%Sulfur: 1.27
Lbs SO_2: 2
Coal Analysis:
BTUs/Lb: Min: 11,000, Max: 13,391
%Ash: Min: 6.5, Max: 19.2
%Sulfur: Min: 0.62, Max: 4.91
%Volatility: Min: 32
Fines: Max: 35
Ash Soft Temp: Min: 2,100
Size: Max: 2 x 0
Pollution Control: ESP
Transportation:
Barge
Receipt Point: New Richmond
Supply Origin: OH, KY, PA, IN, WV
River Service: Ohio
Mile Point: 452.9

Miami Fort
Brower Rd.
North Bend, OH 45052-0128
Tel: 513-467-4900, Fax: 513-467-4931
Dan McNeal, Station Mgr., 513-467-4926
Plant Consumption (tons):
2000 - 3,630,838
1999 - 3,528,300
2000 Coal Capacity (MW): 1,292

Steam Power Plants

Coal Received by Plant (2000):
Tons: 2,348,600
BTUs/Lb: 11,846
%Ash: 13.16
%Sulfur: 1.1
Lbs SO_2: 2
Coal Analysis:
BTUs/Lb: Min: 11,000, Max: 14,028
%Ash: Min: 4.2, Max: 19.2
%Sulfur: Min: 0.54, Max: 4.91
%Volatility: Min: 32
Fines: Max: 35
Ash Soft Temp: Min: 2,100
Size: Max: 2 x 0
Pollution Control: ESP
Transportation:
Barge
Receipt Point: North Bend
Supply Origin: KY, PA, OH, WV, IN
River Service: Ohio
Mile Point: 490.3

W.H. Zimmer
1781 U.S. Rte. 52
Moscow, OH 45153-9705
Tel: 513-467-5200, Fax: 513-467-5183
Robert Moreland, Station Mgr., 513-467-5188
Plant Consumption (tons):
2000 - 3,053,401
1999 - 3,368,900
2000 Coal Capacity (MW): 1,426
Plant uses scrubbers
Coal Received by Plant (2000):
Tons: 2,301,800
BTUs/Lb: 12,135
%Ash: 10.41
%Sulfur: 2.73
Lbs SO_2: 6
Coal Analysis:
BTUs/Lb: Min: 10,500, Max: 13,844
%Ash: Min: 6.2, Max: 15
%Sulfur: Min: 2.7, Max: 8.6
%Volatility: Min: 25
Fines: Max: 35
Ash Soft Temp: Min: 2,000
Size: Avg: 2 x 0
Pollution Control: ESP, Flue Gas Desulf., and Cooling Tower
Transportation:
Barge
Receipt Point: Moscow
Supply Origin: OH, PA, KY, WV
River Service: Ohio
Mile Point: 443.1

THE ILLUMINATING CO.
76 S. Main St.
Akron OH 44308-1890
Tel: 330-384-5100, Fax: 330-384-5279
www.firstenergycorp.com
Sylvia Davis, Supv., 216-447-2552
Larry Denko
David Depew, Project Costs Analyst, 216-447-2552
George Doner, 440-449-5000
Steven Dumek, Project Accountant, 216-447-2693
Ray Fink, Mgr. of Fuel Purchases, 216-447-3534
Raymond Jirousek, Ops. & Engineering, 216-447-2693
Robert Lester, Fuel Rep. Fuel Procurement, 216-447-3539
James Parks, Mgr. Fuel Supply Dept., 330-384-5100
Conrad Peklar, 216-447-2705
Sue Rutt, 216-447-2717
John Sommer, 216-447-3303
Debra Tull, Business Analyst B, 330-336-9809
Roy Vanallen, 216-447-3601
Harvey Wagner, Controller, 330-384-5296
Stock Symbol: CX
Exchange: NYSE
Corporate Consumption (tons):
2000 - 3,286,095
1999 - 2,406,845
2000 Coal Capacity (MW): 2,337

Ashtabula
2133 Lake Rd.
Ashtabula, OH 44004-3899
Tel: 216-622-9800
Ron Kantorak, Consolidated Plants Mgr., 440-604-9812
Plant Consumption (tons):
2000 - 739,022
1999 - 362,703
2000 Coal Capacity (MW): 440
Coal Received by Plant (2000):
Tons: 337,200
BTUs/Lb: 9,070
%Ash: 5.3
%Sulfur: 0.4
Lbs SO_2: 6
Pollution Control: ESP
Transportation:
Rail
Receipt Point: Ceico
Supply Origin: OH, PA, VA
Rail Service: CR

Eastlake
10 Erie Rd.
Eastlake, OH 44095-1700
Tel: 216-622-9800
Ron Kantorak, Consolidated Plants Mgr., 440-604-9812
Plant Consumption (tons):
2000 - 2,305,136
1999 - 2,433,856
2000 Coal Capacity (MW): 1,045
Coal Received by Plant (2000):
Tons: 1,091,300
BTUs/Lb: 11,066
%Ash: 8.12
%Sulfur: 1.14
Lbs SO_2: 4
Pollution Control: ESP
Transportation:
Rail
Receipt Point: Willoughby
Supply Origin: OH, WV, KY
Rail Service: CR

Lake Shore
E. 70th St.
Cleveland, OH 44103-1084
Tel: 216-222-9800
Ron Kantorak, Consolidated Plants Mgr., 440-604-9812
Plant Consumption (tons):
2000 - 241,937
1999 - 133,253
Coal Received by Plant (2000):
Tons: 87,500
BTUs/Lb: 10,207
%Ash: 5.2
%Sulfur: 0.39
Lbs SO_2: 1
Pollution Control: ESP
Transportation:
Rail
Receipt Point: Cleveland
Supply Origin: WV, KY
Rail Service: CR

TOLEDO EDISON CO.
300 Madison Ave.
Toledo OH 43652-0001
Tel: 419-249-5000, Fax: 419-249-5398
www.centerior.com
Sylvia Davis, Supv., 216-447-2552
George Doner, 440-449-5000
Steven Dumek, Project Accountant, 216-447-2693
Ray Fink, Mgr. of Fuel Purchases, 216-447-3534
Raymond Jirousek, Ops. & Engineering, 216-447-2693
Robert Lester, Fuel Rep. Fuel Procurement, 216-447-3539
J. Molnar, Supt., Energy Service, 216-447-3529
J. Murray, VP, Energy Supply, 216-447-3529
Conrad Peklar, 216-447-2705
John Sommer, 216-447-3303
Richard Soucie, Mgr. of Fuel Procurement, 419-249-5000
Debra Tull, Business Analyst B, 330-336-9809
Roy Vanallen, 216-447-3601
Harvey Wagner, Controller, 330-384-5296
Stock Symbol: CX
Exchange: NYSE
Corporate Consumption (tons):
2000 - 1,638,837
1999 - 1,658,090
2000 Coal Capacity (MW): 639
Coal Received by Company (2000):
Tons: 813,600
BTUs/Lb: 9,034
%Ash: 5

Bay Shore
P.O. Box 4701
Oregon, OH 43616-1099
Tel: 419-249-5711
Plant Consumption (tons):
2000 - 1,638,837
1999 - 1,642,307
2000 Coal Capacity (MW): 639
Coal Received by Plant (2000):
Tons: 813,600
BTUs/Lb: 9,034
%Ash: 5.04
%Sulfur: 0.28
Lbs SO_2: 1

OKLAHOMA

AMERICAN ELECTRIC POWER
1 Riverside Plaza
Columbus OH 43215-2373
Tel: 614-223-1000
Stock Symbol: AEP
Exchange: NYSE
Corporate Consumption (tons):
2000 - 77,007,187
1999 - 73,648,128
2000 Coal Capacity (MW): 24,573
Coal Received by Company (2000):
Tons: 3,865,504
BTUs/Lb: 11,192
%Ash: 10
%Sulfur: 1

Northeastern
P.O. Box 220
Oologah, OK 74053
Tel: 918-443-2465
Plant Consumption (tons):
2000 - 3,757,856
1999 - 4,021,901
2000 Coal Capacity (MW): 900
Coal Received by Plant (2000):
Tons: 1,573,640
BTUs/Lb: 8,790
%Ash: 5.05
%Sulfur: 0.27
Capacity: 12,000 tpd
Transportation:
Rail
Receipt Point: Oologah
Supply Origin: WY
Rail Service: BNSF, UP

GRAND RIVER DAM AUTHORITY
226 W. Dwain Willis Rd.
Vinita OK 74301
Tel: 918-256-5545, Fax: 918-256-5289
www.grda.com
Ron Coker, GM, 918-256-5545
Steve Gibe, Supt. Opers. & Off-System Mktg., 918-479-5249
Jack Marcy, Asst. GM, 918-256-5545
Frankie Scott, Accountant III, 918-256-5545
Corporate Consumption (tons):
2000 - 4,007,117
1999 - 3,562,883
2000 Coal Capacity (MW): 812

Grand River Dam
P.O. Box 609
Chouteau, OK 74337
Tel: 918-476-5840
Plant Consumption (tons):
2000 - 4,007,117
1999 - 3,747,854
2000 Coal Capacity (MW): 812
Plant uses scrubbers
Coal Analysis:
BTUs/Lb: Min: 8,100, Avg: 8,260, Max: 13,609
%Ash: Min: 4.31, Avg: 5.26, Max: 7.32
%Sulfur: Min: 0.17, Avg: 0.5, Max: 0.5
%Moisture: Max: 30
Size: Avg: 4 x 0
Pollution Control: Flakt Scrubber & Flue Gas Desulfurization System.
Transportation:
Rail
Supply Origin: WY
Rail Service: UP, BNSF

OKLAHOMA GAS & ELECTRIC CO.
101 N. Robinson
Oklahoma City OK 73102
Tel: 405-272-9741, Fax: 405-272-3198
www.tulsaweb.com/oge.htm
Darrell Anthony, 580-443-2109
Les Brown, 405-553-2112
B. Bunce, VP, 405-272-3000
Steven Gerdes
J. Harlow, CEO, 405-272-3000
Terry Henry, Supv Sys Stdies, 405-272-3510
Diana Jones, 405-272-3429
Jesse Langston, Client Mgr., Corp. Planning, 405-553-3220
Dennis Mitchell, 405-272-3684
S. Moore, VP, 405-272-3000
Rae Rice, Supv. External Reporting, 405-272-3557
Donald Rowlett, Controller Corp. Acctg., 405-553-3604
P. Ryan, Vice Chairman, 405-272-3000

Elrama
P.O. Box 800
Elrama, PA 15038
Tel: 412-384-5380, Fax: 412-393-4105
Plant Consumption (tons):
2000 - 231,044
1999 - 1,123,485
Plant uses scrubbers
Coal Received by Plant (2000):
Tons: 158,000
BTUs/Lb: 12,194
%Ash: 12.16
%Sulfur: 2.23
Lbs SO_2: 4
Coal Analysis:
BTUs/Lb: Min: 12,000, Avg: 12,404, Max: 13,212
%Ash: Min: 10, Avg: 11.76, Max: 13
%Sulfur: Min: 0.56, Avg: 2.07, Max: 2.3
%Volatility: Min: 29, Max: 36
%Moisture: Max: 6
Ash Soft Temp: Min: 2,300, Max: 2,700
Size: Avg: 4 x 0, Max. 35% - 1/4 x 0
Pollution Control: Flue Gas Desulfurization Units, Wet Scrubbers
Transportation:
Barge
Receipt Point: Elrama
Supply Origin: PA, WV
River Service: Monongahela
Mile Point: 25.1

New Castle
P.O. Box 891
West Pittsburgh, PA 16160
Tel: 412-652-5531
Plant Consumption (tons):
2000 - 228,031
1999 - 745,199
Coal Received by Plant (2000):
Tons: 583,100
BTUs/Lb: 12,054
%Ash: 12.72
%Sulfur: 2.74
Lbs SO_2: 3
Pollution Control: Electro. and Polishing Precips.
Supply Origin: OH, PA

PECO ENERGY CO.
2301 Market St.
Philadelphia PA 19103
Tel: 215-841-4000
Fax: 215-841-4234, 215-841-4188
www.peco.com
William Bardeen, VP, 215-841-4000
Don Burns, Tech Buyer, 610-640-6140
Lauren Catrino, Mfg. of Gen. Accounting, 215-841-6480
John Deker, 610-595-8994
James Durham, VP, 215-841-4000
Jean Gibson, VP & Controller, 215-841-4810
Donna Hartel, 215-841-5043
K. Keiser, Mgr., Electric Prod. Purch., 215-841-5417
J. Madara, VP, Engr. & Prod., 215-841-5003
Corbin McNeill, Pres., 215-841-4000
G. Moffitt, Purch. Mgr., 215-841-5312
Joseph Paquette, CEO, 215-841-4000
Morton Rimerman, VP, Fin & Treas., 215-841-6480
Dickinson Smith, VP, 215-841-4000
A. Solecki, VP, Inform. Systems & Gen. Svcs., 215-841-5300
Susan Wade, Mgr., External Reporting, 215-841-5696
Michelle Williams, Secy., 215-841-6462
Stock Symbol: PE
Exchange: NYSE
Corporate Consumption (tons):
2000 - 1,385,042
1999 - 1,075,105
2000 Coal Capacity (MW): 895
Coal Received by Company (2000):
Tons: 593,000
BTUs/Lb: 13,179
%Ash: 8
%Sulfur: 2

Cromby
Twp. Line & Cromby Rd.
Phoenixville, PA 19460
Tel: 215-933-8995, Fax: 215-841-4422
K. Keiser, Mgr., Electric Prod. Purch., 215-841-5417
Plant Consumption (tons):
2000 - 319,767
1999 - 328,240
2000 Coal Capacity (MW): 188
Plant uses scrubbers
Coal Received by Plant (2000):
Tons: 143,000
BTUs/Lb: 13,170
%Ash: 7.79
%Sulfur: 1.89
Lbs SO_2: 3
Coal Analysis:
BTUs/Lb: Min: 12,800, Avg: 12,842, Max: 13,401
%Ash: Min: 6, Avg: 9.6, Max: 10
%Sulfur: Min: 0.56, Avg: 2.39, Max: 2.4
%Volatility: Avg: 30
%Moisture: Avg: 6
Fines: Max: 50
Ash Soft Temp: Avg: 2,125
Size: Avg: 2 x 0
Pollution Control: Mech. Collect. & ESP, Scrubber and Magnesium Oxide SO_2 Removal System-Unit 1
Transportation:
Rail, Barge
Receipt Point: Royersford
Supply Origin: WV, PA
Rail Service: CR
River Service: Schuylkill

Eddystone
Industrial Hwy.
Eddystone, PA 19013
Tel: 215-595-8100, Fax: 215-841-4422
K. Keiser, Mgr., Electric Prod. Purch., 215-841-5417
Plant Consumption (tons):
2000 - 1,065,275
1999 - 1,045,472
2000 Coal Capacity (MW): 707
Plant uses scrubbers
Coal Received by Plant (2000):
Tons: 450,000
BTUs/Lb: 13,188
%Ash: 7.75
%Sulfur: 1.86
Lbs SO_2: 3
Coal Analysis:
BTUs/Lb: Min: 12,516, Avg: 12,800, Max: 13,602
%Ash: Min: 6.08, Avg: 10, Max: 12.42
%Sulfur: Min: 0.56, Avg: 2.4, Max: 2.79
%Volatility: Avg: 30
%Moisture: Avg: 6
Fines: Max: 50
Ash Soft Temp: Avg: 2,125
Size: Avg: 2 x 0
Pollution Control: Mech. Collect. and ESP & Magnesium Oxide SO_2 Removal System-Units 1 & 2
Transportation:
Rail, Barge
Receipt Point: Eddystone
Supply Origin: WV, PA
Rail Service: CR
River Service: Delaware (Oil)

PENNSYLVANIA POWER CO.
FirstEnergy Corp
367 Ghent Rd., Ste. 3A
Akron OH 44333
Tel: 330-384-5100, Fax: 330-384-5279
www.firstenergycorp.com
C. Brown, Gen. Coord Oper, 724-656-5408
Michael Hyrnick, Mgr., Fuel Supply Dept., 330-384-5784
Wayne Park, 724-656-4395
James Parks, Mgr. Fuel Supply Dept., 330-384-5100
Jack Reed, VP, 724-656-5408
Bob Stoller, 216-384-5783
Harvey Wagner, Controller, 330-384-5296
Marni Watkins, 724-656-5497
Stock Symbol: OEC
Exchange: NYSE
Corporate Consumption (tons):
2000 - 6,680,769
1999 - 5,022,342
2000 Coal Capacity (MW): 2,505
Coal Received by Company (2000):
Tons: 3,553,200
BTUs/Lb: 12,082
%Ash: 13
%Sulfur: 3

Mansfield
P.O. Box 128
Shippingport, PA 15077
Tel: 412-643-5000
Richard Krause, Plant Mgr., 724-643-5000
Donald Schneider, Mgr., Consolidated Plants, 724-643-5000
Plant Consumption (tons):
2000 - 6,680,769
1999 - 6,026,315
2000 Coal Capacity (MW): 2,158
Plant uses scrubbers
Coal Received by Plant (2000):
Tons: 2,970,100
BTUs/Lb: 12,109
%Ash: 12.5
%Sulfur: 3.07
Lbs SO_2: 6
Pollution Control: Thiosorbic Lime FGD SO_2 Removal System, Overfire Air Nox Control, ESP
Transportation:
Barge
Supply Origin: OH, PA, WV
River Service: Ohio
Mile Point: 33.2

PPL GENERATION, LLC
2 N. 9th St.
Allentown PA 18101-1179
Tel: 610-774-5151, Fax: 610-774-5141
www.pplweb.com
John Biggar, Exec. VP & CFO, 215-774-5240
Robert G. Byram, VP, 610-774-5151
William F. Hecht, CEO, 610-774-5151
Ronald E. Hill, CFO, 610-774-5151
Lisa Johnson, 610-774-6917
Frank A. Long, VP, 610-774-5151
J.J. McCabe, VP & Controller, 610-774-5646
Dennis J. Murphy, VP/COO, Eastern Fossil & Hydro, 610-774-4316
Erik Rander, 610-774-5245
Gracher L. Selby, Fuel Costs & Studies Specialist, 610-774-7035, gselby@pplweb.com
Thomas J. Smith, Staff Accountant, 610-774-5291
Michael W. Snovitch, Mgr. Fossil Fuel Supply, 610-774-5415
Ben E. Stothart, Mgr. Coal Supply, 610-774-5500
Julie Stroth, 610-774-6917
Stock Symbol: PPL
Exchange: NYSE
Corporate Consumption (tons):
2001 - 6,048,235 (Proj)
2000 - 6,048,235
1999 - 6,048,235
2000 Coal Capacity (MW): 3,981
Coal Received by Company (2000):
Tons: 6,957,000
BTUs/Lb: 12,813
%Ash: 12
%Sulfur: 1

Brunner Island
P.O. Box 221
York Haven, PA 17370
Tel: 717-266-7500, Fax: 717-266-7519
Gregory L. Smith, Plant Supt.
Plant Consumption (tons):
2000 - 3,423,000
1999 - 3,081,000
2000 Coal Capacity (MW): 1,500
Ash Disposal On Site
Coal Received by Plant (2000):
Tons: 3,091,000
BTUs/Lb: 12,741
%Ash: 10.5
%Sulfur: 1.03
Lbs SO_2: 2
Coal Analysis:
BTUs/Lb: Min: 12,500
%Ash: Max: 14
%Sulfur: Max: 2.38
Lbs SO_2: Max: 3.4
%Volatility: Min: 28
%Moisture: Max: 7
Ash Soft Temp: Min: 2,400
Size: Avg: 2 x 0
Pollution Control: ESP
Transportation:
Rail
Supply Origin: PA/WV
Rail Service: NS

Holtwood
482 Old Holtwood Rd.
Holtwood, PA 17532
Tel: 717-284-6200, Fax: 717-284-6234
Harry Spagnola, Plant Supt., 717-284-6200
Plant Consumption (tons):
1999 - 125,000
2000 Coal Capacity (MW): 75
Coal Received by Plant (2000):
Tons: 1,000
BTUs/Lb: 11,090
%Ash: 23.2
%Sulfur: 1.16
Lbs SO_2: 2
Pollution Control: Mech. & ESP & Scrubbers
Receipt Point: Holtwood
Supply Origin: PA

RELIANT ENERGY HL&P
1111 Louisiana St.
Houston TX 77002
Tel: 713-207-1111, Fax: 713-207-9720
www.reliantenergy.com
Tammie Barger, 713-945-7452
J. Brian, V P & Comptroller, 713-220-5612
James Brian, VP & Controller, 713-207-7575
Darrel Free, 713-228-9211
Allan Harper, Dir., Coal & Lignite Fuels, 713-207-3713, allan-harper@reliantenergy.com
Vikki Hawkins, Transmission Analyst, 713-207-2755
Robin Kazinski, 713-207-6597
Yolanda Lopez, Senior Analyst, 713-220-5198
Carla Mitcham, VP, Fuel & Energy Mgmnt., 713-207-3700, janie-mitcham@reliantenergy.com
Phyllis Morrow, Supervising Accounting, 713-220-5612
Randy Smith, Div. Mgr., 713-945-8190
D. Tees, VP, Energy Prod., 713-945-8190
Stock Symbol: HOU
Exchange: NYSE
Corporate Consumption (tons):
2000 - 18,098,090
1999 - 19,443,060
2000 Coal Capacity (MW): 4,324

Limestone
Hwy. 39
Jewett, TX 75846
Plant Consumption (tons):
2000 - 8,548,367
1999 - 8,632,460
2000 Coal Capacity (MW): 1,627
Plant uses scrubbers
Capacity: 28,000 tpd
Pollution Control: Electro. Precip, Wet Scrubber
Transportation:
Rail, Conveyor
Receipt Point: Jewitt Mine
Supply Origin: TX

Parish
Smithers Lake Rd.
Thompsons, TX 77481
Plant Consumption (tons):
2000 - 9,549,723
1999 - 10,810,610
2000 Coal Capacity (MW): 2,697
Plant uses scrubbers
Coal Received by Plant (2000):
Tons: 5,095,800
BTUs/Lb: 8,629
%Ash: 5.46
%Sulfur: 0.42
Lbs SO_2: 1
Capacity: 35,000 tpd
Pollution Control: Wet Scrubber, Baghouse
Transportation:
Rail
Supply Origin: WY
Rail Service: BNSF, UP

SAN ANTONIO PUBLIC SERVICE
145 Navarro
San Antonio TX 78296-1771
Tel: 210-978-2000, Fax: 210-978-4632
www.citypublicservice.com
Arthur Butcher, Project Engr., 210-978-2756
Phyllis Daylong, Energy Representative, 210-978-4653
Bill Geisler, 210-978-3288
Patricia Major, Asst. Secy./Treas., 210-978-2646
Roland Moreno, Dir. of Fin. Planning & Reporting, 210-978-2299
Jack Morris, Fuels Analyst, 210-978-2707
Donald Schnitz, Mgr. of Gas Engr. & Fuels, 210-978-2266
Barbra Stover, Mgr. Public Relations, 210-978-2484
Mark Werner, Dir. of Fuels, Generation Control & Bulk Power Sales, 210-978-2878
Corporate Consumption (tons):
2000 - 5,768,658
1999 - 5,759,300
2000 Coal Capacity (MW): 1,385
Coal Received by Company (2000):
Tons: 2,807,000
BTUs/Lb: 8,498
%Ash: 6

Deely
9599 Gardner Rd.
San Antonio, TX 78220
W. Gunst, Senior VP
Plant Consumption (tons):
2000 - 3,428,147
1999 - 3,412,843
2000 Coal Capacity (MW): 830
Ash Disposal On Site
Plant uses scrubbers
Coal Received by Plant (2000):
Tons: 5,581,680
BTUs/Lb: 8,422
%Ash: 5.75
%Sulfur: 0.33
Lbs SO_2: 1
Coal Analysis:
BTUs/Lb: Min: 8,150, Avg: 8,350
%Ash: Min: 4.6, Avg: 6.6
%Sulfur: Min: 0.17, Avg: 0.37
%Moisture: Avg: 29.7
Size: Avg: 2 x 0
Capacity: 12,000 tpd
Pollution Control: ESP, Tall Stack
Transportation:
Rail
Receipt Point: Elmendorf, Texas
Supply Origin: PRB
Rail Service: UP
Unit Train: 130 cars, approx. every 10 days

J.K. Spruce
9599 Gardner Rd.
San Antonio, TX 78220
Tony Calle, 210-978-3886
W. Gunst, Senior VP, 210-978-2000
Plant Consumption (tons):
2000 - 2,340,511
1999 - 2,346,460
2000 Coal Capacity (MW): 555
Ash Disposal On Site
Plant uses scrubbers
Coal Received by Plant (2000):
Tons: 840,320
BTUs/Lb: 8,418
%Ash: 5.76
%Sulfur: 0.35
Lbs SO_2: 1
Coal Analysis:
BTUs/Lb: Min: 8,150, Avg: 8,268
%Ash: Min: 4.6, Avg: 6.6
%Sulfur: Min: 0.17, Avg: 0.37
%Moisture: Avg: 29.7
Size: Avg: 2 x 0
Transportation:
Rail
Receipt Point: Elmendorf, Texas
Supply Origin: Colorado ROJO Complex in PRB
Rail Service: UP
Unit Train: 130 car trains every 10 days

SAN MIGUEL ELECTRIC COOP., INC.
P.O. Box 280
Jourdanton TX 78026
Tel: 830-784-3411, Fax: 830-784-3411
Howard Ashcraft, Pres., 830-784-3411
Mac Coalson, Pres., 830-784-3411
Marshall Darby, GM, 830-784-3411
D. Eubanks, GM/Atascosa Mining Co., 830-784-3403
Clifton Karnei, GM, 830-784-3411
Michael Kezar, Admin. Fuels Mgr., 830-784-3411
John Palfy, Mine Mgr., 830-784-3545
Kathy Pavlovsky, Accounting Mgr., 830-784-3411
Corporate Consumption (tons):
2000 - 3,505,143
1999 - 3,308,040
2000 Coal Capacity (MW): 409
Coal Received by Company (2000):
Tons: 1,938,577
BTUs/Lb: 5,209
%Ash: 26
%Sulfur: 2

San Miguel Plant
Marshall Darby, GM, 830-784-3411
Dennis Hodges, Maint. Mgr., 830-784-3411
Michael Kezar, Admin. Fuels Mgr., 830-784-3411
Ron Magel, Chief Engr., 830-784-3411
Steve Ralls, Electrical and Instrument Opers. Mgr., 830-784-3411
Plant Consumption (tons):
2000 - 3,505,143
1999 - 3,308,040
2000 Coal Capacity (MW): 409
Plant uses scrubbers
Coal Received by Plant (2000):
Tons: 1,938,577
BTUs/Lb: 5,209
%Ash: 25.8
%Sulfur: 1.77
Lbs SO_2: 7
Receipt Point: San Miguel Plant Truck Hopper

SOUTHWESTERN PUBLIC SERVICE CO.
600 S. Tyler
Amarillo TX 79101
Tel: 806-378-2121, Fax: 806-378-2995
Lester Baldock, Mgr., Revenue Requirements, 806-378-2121
Doyle Bunch, VP, 806-378-2121
Becky Buttle, 806-378-2969
Bill Helton, CEO, 806-378-2121
Paula Huffhines, Case Analyst, 806-378-2520
Henry Jansen, WSPP, 806-354-6308
Ralph Jeppson, Prod. Coord., 806-378-2121
Barry Johnson, Team Leader, Coal Supply & Transportation Fuels, 806-378-2575
Kenneth Ladd, Senior VP, 806-378-2121
Ken Lindemann, Analytical Svcs., 806-378-2121
Bettye Lowry, 806-378-2578
Teresa Madden, Principal Acctg Officer, 303-294-2338
Karen Roberts, Fuels Mgr., 806-378-2505, karenr@swps.com
Lori Roybal, 303-294-2339
Gary Schwark, Mgr., 303-294-2095
Coyt Webb, Pres., 806-378-2121
David Wilks, VP, 806-378-2121
Stock Symbol: SPS
Exchange: NYSE
Corporate Consumption (tons):
2000 - 9,218,522
1999 - 8,131,384
2000 Coal Capacity (MW): 2,266
Coal Received by Company (2000):
Tons: 5,236,700
BTUs/Lb: 8,790
%Ash: 5

Harrington
P.O. Box 1261
Amarillo, TX 79170
Tel: 806-383-1006, Fax: 806-381-6295
George Faulkner, Plant Mgr., 806-383-1006
Plant Consumption (tons):
2000 - 4,639,222
1999 - 4,586,847
2000 Coal Capacity (MW): 1,130
Coal Received by Plant (2000):
Tons: 2,599,800
BTUs/Lb: 8,905
%Ash: 5.26
%Sulfur: 0.28
Lbs SO_2: 1
Coal Analysis:
BTUs/Lb: Min: 7,900, Avg: 8,676, Max: 9,000
%Ash: Min: 3.2, Avg: 5.44, Max: 5.6
%Sulfur: Min: 0.21, Avg: 0.33, Max: 0.57
%Volatility: Min: 29, Max: 35
%Moisture: Min: 24, Max: 33
Size: Avg: 2 x 0
Capacity: 16,500 tpd
Pollution Control: ESP, Baghouse
Transportation:
Rail
Receipt Point: Harrington Station
Supply Origin: WY
Rail Service: BNSF
Unit Train: 5 unit trains, 115-118 coal cars each

Tolk
P.O. Box 429
Muleshoe, TX 79371
Tel: 806-965-2194, Fax: 806-796-3339
Dan Lusk, Plant Mgr., 806-965-2194
Plant Consumption (tons):
2000 - 4,579,300
1999 - 4,496,424
2000 Coal Capacity (MW): 1,136
Coal Received by Plant (2000):
Tons: 2,636,900
BTUs/Lb: 8,674
%Ash: 5.16
%Sulfur: 0.32
Lbs SO_2: 1
Coal Analysis:
BTUs/Lb: Min: 7,900, Avg: 8,662, Max: 9,000
%Ash: Min: 3.2, Avg: 5.24, Max: 5.6
%Sulfur: Min: 0.21, Avg: 0.32, Max: 0.57
%Volatility: Min: 29, Max: 35
%Moisture: Min: 24, Max: 33
Size: Avg: 2 x 0
Capacity: 18,430 tpd
Pollution Control: Baghouse
Transportation:
Rail
Receipt Point: Mill

Ash Soft Temp: Avg: 2,550
Size: Avg: 2 x 0
Pollution Control: ESP
Transportation:
Rail
Receipt Point: Wheelwright
Supply Origin: KY, WV, VA
Rail Service: CSX, NS
Alternate fuel quality specifications are being considered/accepted.

Clover
P.O. Box 245
Clover, VA 24523-0245
Tel: 434-454-2036
Plant Consumption (tons):
2000 - 2,554,717
1999 - 2,313,808
2000 Coal Capacity (MW): 880
Ash Disposal On Site
Plant uses scrubbers
Coal Received by Plant (2000):
Tons: 1,504,258
BTUs/Lb: 12,844
%Ash: 9.73
%Sulfur: 1
Lbs SO_2: 2
Coal Analysis:
BTUs/Lb: Min: 12,000, Avg: 12,500, Max: 14,000
%Ash: Min: 5.5, Avg: 10, Max: 13
%Sulfur: Min: 0.5, Avg: 1.3, Max: 1.7
%Volatility: Min: 28, Avg: 32, Max: 36
%Moisture: Min: 2.5, Max: 8
Ash Soft Temp: Min: 2,550, Avg: 2,750
Size: Min: 2 x 0
Transportation:
Rail
Receipt Point: Clover
Supply Origin: VA, KY, WV
Rail Service: NS, CSX

Possum Point
19000 Possum Point Rd.
Dumfries, VA 22026-2899
Tel: 703-221-3181
Plant Consumption (tons):
2000 - 871,677
1999 - 818,745
2000 Coal Capacity (MW): 353
Ash Disposal On Site
Coal Received by Plant (2000):
Tons: 424,301
BTUs/Lb: 12,889
%Ash: 8.65
%Sulfur: 0.99
Lbs SO_2: 3
Coal Analysis:
BTUs/Lb: Min: 12,500, Avg: 12,869, Max: 13,522
%Ash: Min: 5.9, Avg: 9.58, Max: 11
%Sulfur: Min: 0.7, Avg: 1.02, Max: 1.5
%Volatility: Min: 25, Max: 40
%Moisture: Max: 8
Fines: Max: 20
Ash Soft Temp: Avg: 2,550
Size: Avg: 2 x 0
Pollution Control: ESP
Transportation:
Rail
Receipt Point: Possum Point
Supply Origin: KY, WV, VA
Rail Service: CSX, NS

Yorktown
P.O. Box 571
Yorktown, VA 23690-0571
Tel: 804-898-2500
Plant Consumption (tons):
2000 - 834,863
1999 - 742,074
2000 Coal Capacity (MW): 375
Ash Disposal On Site
Coal Received by Plant (2000):
Tons: 312,622
BTUs/Lb: 12,835
%Ash: 10.08
%Sulfur: 1.29
Lbs SO_2: 3
Coal Analysis:
BTUs/Lb: Min: 12,500, Avg: 13,016, Max: 13,741
%Ash: Min: 6.4, Avg: 9.08, Max: 11
%Sulfur: Min: 0.7, Avg: 1.36, Max: 1.5
%Volatility: Min: 25, Max: 40
%Moisture: Max: 8
Fines: Max: 20
Ash Soft Temp: Avg: 2,500
Size: Avg: 2 x 0
Pollution Control: ESP
Transportation:
Rail
Receipt Point: Amoco, VA
Supply Origin: KY, WV, VA
Rail Service: CSX, NS

POTOMAC ELECTRIC POWER CO.
1900 Pennsylvania Ave. N.W., No. 528
Washington DC 20068
Tel: 202-872-2000
www.pepco.com
Stock Symbol: POM
Exchange: NYSE
Corporate Consumption (tons):
2000 - 5,616,032
1999 - 5,909,286
2000 Coal Capacity (MW): 3,082
Coal Received by Company (2000):
Tons: 3,077,000
BTUs/Lb: 13,235
%Ash: 8
%Sulfur: 1

Potomac River
1400 N. Royal St.
Alexandria, VA 22314
Tel: 202-872-2000
Plant Consumption (tons):
2000 - 851,615
1999 - 934,364
2000 Coal Capacity (MW): 514
Coal Received by Plant (2000):
Tons: 520,000
BTUs/Lb: 13,258
%Ash: 8.02
%Sulfur: 0.74
Lbs SO_2: 1
Transportation:
Rail
Rail Service: NS

WASHINGTON

CITY OF TACOMA
1171 Taylor Way
Tacoma WA 98421
Tel: 253-502-8601, Fax: 253-502-8607
www.ci.tacoma.wa.us
Mark Crisson, Light Supt., 253-502-8355
Joan Fitzpatrick, Senior Fin. Analyst, 253-502-8114, jfitzpat@ci.tacoma.wa.us
Dave Fruhger, 253-502-8996
Richelle Krienke, 253-502-8717
Barbara Manglona, Fin. Analyst. 253-502-8415
Pete Richardson. Power Mgr.. 253-502-8355
Barbara Serr, Utilities Economist, 253-502-8324
George Whitener. 253-502-8294
Corporate Consumption (tons):
1999 - 19,760
2000 Coal Capacity (MW): 50

Steam Plant 2
1171 Taylor Way
Tacoma, WA 98421
Laurie Hannan, Thermal Plant Mgr., 253-502-8601
Plant Consumption (tons):
1999 - 19,760
2000 Coal Capacity (MW): 50
Coal Received by Plant (2000):
Tons: 13,710
Coal Analysis:
BTUs/Lb: Avg: 10,000
%Ash: Avg: 12, Max: 12
%Sulfur: Avg: 0.8, Max: 0.8
%Volatility: Avg: 33
%Moisture: Avg: 13
Size: Avg: 3", Max: 3"
Transportation:
Rail, Barge
Receipt Point: 1171 Taylor Way, Tacoma
Supply Origin: Canada,
Rail Service: BNSF
River Service: Hylebos

PACIFICORP
700 N.E. Multnomah St., No. 1600
Portland OR 97232-4116
Tel: 503-731-2000, Fax: 503-464-6255
www.pacificorp.com
John Bohling, Senior VP, Generation Resources, 503-731-2102
Frederick Buckman, CEO, 503-731-2000
D. Case, Mgr Pwr Stat & Acct. 503-464-5643
Alan Clayton, 801-220-4056
L. Criddle, Dir. Fin. Accounting, 801-220-4056
Matt Fechner, 503-813-6856
Neil Getzelman, GM, Thermal Fuels, 801-220-4608
William Glasgow, Pres., 503-731-2000
A. Gleason, CEO, 503-731-2000
Robert Hall, Stat Supv., 503-464-5643
Terry Hudgens, VP, Thermal Resources, 801-220-4970
Dee Jense, Pres., 801-220-4617
Tarcy Lee, Dispatch Mgr.-Dispatch Opers., 503-251-5188
Paul Lorenzini, VP, 503-731-2000
Peter McGreggor, Load Research & Regulatory Statistics Supv., 503-464-6865
Brett Morgan, 801-220-4619
Jim Nelson, Mgr. Gen. Acctg., 801-220-4066
Chris Rickett, 801-220-4149
Charles Robinson, Pres., 503-731-2000
Deloy Shepherd, 801-220-4628
Betty Strand, 503-464-6878
David Taylor, 801-220-2947
Verl Topham, VP, 503-731-2000
Stock Symbol: PPW
Exchange: NYSE
Corporate Consumption (tons):
2000 - 27,898,073
1999 - 27,451,400
2000 Coal Capacity (MW): 6,218

Centralia - Pacificorp
913 Big Hanaford Rd.
Centralia, WA 98531
Tel: 206-736-9901, Fax: 801-220-4578
Rich Woolley, Plant Mgr.
Plant Consumption (tons):
2000 - 2,225,472
1999 - 5,759,370
2000 Coal Capacity (MW): 693
Coal Received by Plant (2000):
Tons: 1,871,000
BTUs/Lb: 8,589
%Ash: 9.54
%Sulfur: 0.66
Lbs SO_2: 2
Pollution Control: ESP
Transportation:
Rail
Receipt Point: Centralia
Supply Origin: WA
Rail Service: BNSF

WEST VIRGINIA

ALLEGHENY ENERGY
10435 Downsville Pike
Hagerstown MD 21740-1766
Tel: 301-790-3400, Fax: 301-790-6089
www.alleghenyenergy.com
Michael B. Delmar, Mgr., Fuels, 412-858-1467
Claude Frantz, Supv., Fuels, 724-838-6766
Arnold Henthorn, 304-367-3435
Michael H. Hess, Dir., Fuels, 412-858-1471
Albert F. Kave, Dir., Gen. Planning, 412-858-1109
Thomas J. Kloc, Controller, 301-665-2711
Stock Symbol: AYP
Exchange: NYSE
Corporate Consumption (tons):
2001 - 20,022,210 (Proj)
2000 - 18,489,375
1999 - 17,682,534
Coal Received by Company (2000):
Tons: 17,742,000
BTUs/Lb: 12,319
%Ash: 11
%Sulfur: 3

Albright
P.O. Box 125
Albright, WV 26519-0125
Tel: 304-329-4200, Fax: 304-329-4278
L.M. Lohr, Regional Dir., 304-598-5224
Plant Consumption (tons):
2000 - 677,770
1999 - 516,120
2000 Coal Capacity (MW): 209
Coal Received by Plant (2000):
Tons: 677,000
BTUs/Lb: 12,535
%Ash: 11.57
%Sulfur: 1.5
Lbs SO_2: 2
Coal Analysis:
BTUs/Lb: Avg: 12,000
%Ash: Avg: 14
%Sulfur: Avg: 1.8
%Moisture: Avg: 7
Size: Avg: 5 x 0
Pollution Control: ESP
Receipt Point: Albright
Supply Origin: WV, PA, MD

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2003

%Sulfur: 2.65
Coal Analysis:
BTUs/Lb: Min: 11,700, Avg: 12,197, Max: 13,500
%Ash: Min: 5.6, Avg: 8.16, Max: 10.5
%Sulfur: Min: 1, Avg: 2.72, Max: 3.8
%Volatility: Min: 32, Max: 36
%Moisture: Max: 12
Size: Avg: 2 x 0
Transportation:
Rail
Receipt Point: Palatka
Rail Service: CSX

ST. JOHNS RIVER POWER PARK
11201 New Berlin Rd.
Jacksonville FL 32226
Tel: 904-665-7420, Fax: 904-665-7349
www.jea.com
Randy Boswell, VP, Power Supply Svcs., 904-665-7420
Donald Drake, Professional Engr., 904-665-6271
Robert Johns, Fuels Administrator, 904-665-7420
Bud Para, Dir., SJRPP Fuels, 904-665-7420
Raymond Tull, CPA - Gen. Accounting, 904-665-7309, tullre@jea.com
Corporate Consumption (tons):
2001 - 3,368,964
2000 - 3,400,080
2001 Coal Capacity (MW): 1,358
Coal Received by Company (2001):
Tons: 2,782,600
BTUs/LB: 12,350
%Ash: 9
%Sulfur: 1

St. Johns River Power Plant
Tel: 904-665-8700, Fax: 904-665-8719
Duval County
Jim Jackson, Group Leader, Bulk Materials Production, 904-665-8700
Plant Consumption (tons):
2001 - 3,368,964
2000 - 3,400,080
2001 Coal Capacity (MW): 1,358
Ash Disposal On Site
Plant uses scrubbers
Coal Received by Plant (2001):
Tons: 2,782,600
BTUs/LB: 12,350
%Ash: 9.36
%Sulfur: 1.13
Coal Analysis:
BTUs/Lb: Min: 11,800
%Ash: Min: 6, Max: 15
%Sulfur: Min: 0.5, Max: 3.5
%Volatility: Min: 23, Max: 40
%Moisture: Min: 4, Max: 15
Ash Soft Temp: Min: 2,300
Capacity: 11,506 tpd
Pollution Control: ESP
Transportation:
Rail, Barge
Receipt Point: Jacksonville
Rail Service: CSX
Unit Train: 90 Aluminum cars
River Service: St. Johns
Mile Point: 14.6
Projected coal requirements don't include pet coke

TAMPA ELECTRIC CO.
702 N. Franklin St.
Tampa FL 33602
Tel: 813-228-4111, 813-223-0800
www.teconet.com
Phil Barringer, Asst. Controller, 813-228-4111
Harold Besch, Sr. Generation Planning Tech., 813-228-4460
Sharon Beuris, 813-228-4769
Rod Burkhardt, Fuels Mgr., 813-641-5015
J. Chronister, Supv., Fin. Reprtg., 813-228-1609
T. Hernandez, Mgr. Gen. Planning, 813-228-4449
Carl Himes, 813-228-4765
Kent Hobart, 813-228-4220
Lester Lefler, VP, Controller
Joy McCleod, 813-228-4767
Hugh Smith, Dir. of Fuels, 813-223-0800
Owned By: TECO Energy, Inc.
Stock Symbol: TE
Exchange: NYSE
Corporate Consumption (tons):
2001 - 7,283,512
2000 - 6,855,959
2001 Coal Capacity (MW): 3,093
Coal Received by Company (2001):
Tons: 6,209,910
BTUs/LB: 11,975
%Ash: 9
%Sulfur: 2

Big Bend
P.O. Box 111
Tampa, FL 33570
Tel: 813-228-4111, Fax: 813-228-1670
Hillsborough County
Plant Consumption (tons):
2001 - 4,099,034
2000 - 4,611,641
2001 Coal Capacity (MW): 1,823
Plant uses scrubbers
Coal Received by Plant (2001):
Tons: 373,014
BTUs/LB: 11,486
%Ash: 8.43
%Sulfur: 2.5
Coal Analysis:
BTUs/Lb: Min: 11,500, Max: 12,600
%Ash: Max: 10
%Sulfur: Max: 3
%Volatility: Avg: 36
%Moisture: Max: 10
Ash Soft Temp: Min: 2,000, Max: 2,300
Size: Avg: 2 x 0
Pollution Control: ESP, Medium-Sulfur Coal, Flue Gas Desulfurization on 1 Unit, Coal Blending System
Receipt Point: Tampa Bay
Supply Origin: KY, WV, IL, IN

Gannon
P.O. Box 111
Tampa, FL 33619
Tel: 813-228-4111, Fax: 813-228-1670
Hillsborough County
Plant Consumption (tons):
2001 - 2,614,771
2000 - 2,244,318
2001 Coal Capacity (MW): 1,270
Coal Received by Plant (2001):
Tons: 379,098
BTUs/LB: 12,693
%Ash: 8.5
%Sulfur: 1.19
Coal Analysis:
BTUs/Lb: Min: 12,550, Avg: 12,855, Max: 13,327
%Ash: Min: 3.7, Avg: 7.32, Max: 8
%Sulfur: Min: 0.57, Avg: 1.1, Max: 1.32
%Volatility: Avg: 30
%Moisture: Max: 8
Ash Soft Temp: Max: 2,400
Size: Avg: 2 x 0
Pollution Control: Low-Sulfur Coal, Precip. on 6 Units
Transportation:
Rail
Receipt Point: Sutton,Tampa Bay
Supply Origin: KY
Rail Service: CSX

Polk
State Rd. 37
Mulberry, FL 33860-0775
Polk County
Plant Consumption (tons):
2001 - 569,707

GEORGIA

GEORGIA POWER CO.
241 Ralph McGill N.E.
Atlanta GA 30308-3374
Tel: 404-506-7738, 404-506-7785
Fax: 404-506-6948
www.georgiapowerco.com
Tommy Davis, 205-868-5945
R. Haubein, Exec. VP., Southern Co. Generation, 404-506-6526
Linda Merkl, Analyst, 205-257-5705
Cynthia Mickelbury, 404-506-7737
Jan Miller, 404-526-6690
Hal Peek, Senior Engr., 404-506-7880
Jean Rakestraw, 404-526-7762
Sam Reagan, Fuel Contracts & Trans Admin, 404-526-7759
William Smith, Mgr. of Bulk Power Mktg., 404-526-2322
Janice Wolfe, Fin. Acct & Rep Mgr., 404-506-2322
Owned By: Southern Co.
Stock Symbol: SO
Exchange: NYSE
Corporate Consumption (tons):
2001 - 29,929,085
2000 - 32,139,813
2001 Coal Capacity (MW): 10,520
Coal Received by Company (2001):
Tons: 31,247,800
BTUs/LB: 12,471
%Ash: 10
%Sulfur: 1

Arkwright
P.O. Box 4323
Macon, GA 31208
Tel: 912-477-1155
Bibb County
Harvey Derrick, Plant Mgr.
Plant Consumption (tons):
2001 - 89,995
2000 - 125,154
2001 Coal Capacity (MW): 181
Coal Received by Plant (2001):
Tons: 184,100
BTUs/LB: 12,763
%Ash: 10.8
%Sulfur: 2.09
Pollution Control: ESP
Transportation:
Rail, Barge
Receipt Point: Macon
Rail Service: NS
River Service: Ocmulgee
Mile Point: 7

Bowen
P.O. Box 71
Taylorsville, GA 30178
Tel: 404-386-3890
Bartow County
R. Moore, Plant Mgr., 770-386-3890
G. Ussery, Plant Mgr., 770-386-3890
Plant Consumption (tons):
2001 - 7,710,587
2000 - 8,330,890
2001 Coal Capacity (MW): 3,499
Coal Received by Plant (2001):
Tons: 7,909,500
BTUs/LB: 12,230
%Ash: 11.59
%Sulfur: 0.98
Transportation:
Rail
Receipt Point: Taylorsville
Rail Service: CSX

Hammond
P.O. Box 121
Coosa, GA 30129
Tel: 404-235-1161
Floyd County
P. Boren, Plant Mgr., 706-235-1161
Plant Consumption (tons):
2001 - 1,688,017
2000 - 2,015,770
2001 Coal Capacity (MW): 953
Coal Received by Plant (2001):
Tons: 1,764,700
BTUs/LB: 12,811
%Ash: 9.71
%Sulfur: 0.81
Pollution Control: ESP
Transportation:
Rail, Barge
Receipt Point: Krannert
Rail Service: NS
River Service: Coosa
Mile Point: 10

Harlee Branch
P.O. Box 990
Milledgeville, GA 31061
Tel: 404-485-2441
Putnam County
W. Grenade, Asst. Plant Mgr.
K. Stefanini, Plant Mgr., 404-485-2441
Plant Consumption (tons):
2001 - 3,100,340
2000 - 3,377,503
2001 Coal Capacity (MW): 1,746
Coal Received by Plant (2001):
Tons: 3,194,000
BTUs/LB: 12,497
%Ash: 10.34
%Sulfur: 1.04
Pollution Control: ESP
Transportation:
Rail
Receipt Point: Harllee
Rail Service: NS, CSX

McDonough-Atkinson
5551 S. Cobb Dr.
Smyrna, GA 30080
Tel: 404-792-5310
Cobb County
Plant Consumption (tons):
2001 - 1,074,005
2000 - 1,317,187
2001 Coal Capacity (MW): 598
Coal Received by Plant (2001):
Tons: 1,182,800
BTUs/LB: 12,777
%Ash: 8.75
%Sulfur: 1.06
Pollution Control: ESP All Units

Stock Symbol: EDE
Exchange: NYSE
Corporate Consumption (tons):
2001 - 883,837
2000 - 1,098,222
2001 Coal Capacity (MW): 319
Coal Received by Company (2001):
Tons: 718,212
BTUs/LB: 10,434
%Ash: 7
%Sulfur: 1

Riverton
P.O. Box 28
Riverton, KS 66770
Tel: 316-848-3456
Cherokee County
Bruce Baker, Plant Mgr.
Plant Consumption (tons):
2001 - 300,898
2000 - 296,355
2001 Coal Capacity (MW): 88
Coal Received by Plant (2001):
Tons: 196,693
BTUs/LB: 10,446
%Ash: 7.99
%Sulfur: 1.6
Coal Analysis:
BTUs/Lb: Avg: 8,800, Max: 12,000
%Ash: Avg: 5, Max: 14
%Sulfur: Avg: 0.25, Max: 4.5
%Moisture: Avg: 28
Ash Soft Temp: Avg: 2,180, Max: 2,200
Pollution Control: ESP
Transportation:
Truck
Riverton's Units are pulverizers, and burns a blend of 65% PRB coal that is trucked from Asbury, and 35% local coal blend

KANSAS CITY BOARD OF PUBLIC UTILITIES
700 Minnesota Ave.
Kansas City KS 66101
Tel: 913-573-9000, Fax: 913-573-9990
www.bpu.com
Russell Dowell, Fin. & Budget Admin., 913-573-9430, rdowell@compuserve.com
Blake Elliott, Sr. Planning Engr., 913-573-6837
William Kamm, Dir. of Prod. Support Svcs., 913-573-6802
Elizabeth Monger, Mgr. of Rates & Regulations, 913-573-9051
Lanny Uden, Mgr. of Engineering, 913-573-9842
Corporate Consumption (tons):
2002 - 167,000 (Proj)
2001 - 1,623,428
2000 - 1,653,231
2001 Coal Capacity (MW): 438
Coal Received by Company (2001):
Tons: 1,307,100
BTUs/LB: 8,436
%Ash: 5
Lbs SO_2: 1

Nearman Creek
4240 N. 55 St.
Kansas City, KS 66104
Tel: 913-573-9785
Wyandotte County
Plant Consumption (tons):
2002 - 1,150,000 (Proj)
2001 - 1,115,233
2000 - 1,107,852
2001 Coal Capacity (MW): 235
Ash Disposal On Site
Coal Received by Plant (2001):
Tons: 1,057,668
BTUs/LB: 8,055
%Ash: 5.11
%Sulfur: 0.38
Lbs SO_2: 1
Coal Analysis:
BTUs/Lb: Avg: 8,050
%Ash: Avg: 5
%Sulfur: Avg: 0.35
%Lbs SO_2: Avg: 0.87
%Volatility: Avg: 33
%Moisture: Avg: 31.5
Ash Soft Temp: Avg: 2,185
Size: Avg: 2 x 0
Capacity: 3,500 tpd
Pollution Control: ESP
Transportation:
Rail
Receipt Point: Plant
Supply Origin: Powder River Basin
Rail Service: BN,UP
Unit Train: 96 hours,115 cars

Quindaro
3601 N. 12th St.
Kansas City, KS 66104
Tel: 913-573-9300
Wyandotte County
Plant Consumption (tons):
2002 - 570,000 (Proj)
2001 - 508,195
2000 - 520,748
2001 Coal Capacity (MW): 203
Coal Received by Plant (2001):
Tons: 512,255
BTUs/LB: 8,816
%Ash: 5.34
%Sulfur: 0.29
Lbs SO_2: 1
Coal Analysis:
BTUs/Lb: Avg: 8,800
%Ash: Avg: 5.4
%Sulfur: Avg: 0.28
%Lbs SO_2: Avg: 0.636
%Volatility: Avg: 33.1
%Moisture: Avg: 27.1
Ash Soft Temp: Avg: 2,165
Size: Avg: 2 x 0
Pollution Control: ESP
Transportation:
Rail
Receipt Point: Plant
Supply Origin: PRB
Rail Service: UP
Unit Train: 110 cars, 7 day cycle

KANSAS CITY POWER & LIGHT CO.
1201 Walnut St.
Kansas City MO 64106
Tel: 816-556-2200
www.kcpl.com
W. Ed Blunk, Supervisor, Fuel Planning, 816-556-2324, ed.blunk@kcpl.com
Dave Laffere, Supervisor, Fuel Logistics, 816-556-2871, dave.laffere@kcpl.com
John Stolwyk, Sr. Fuels Analyst, 816-556-2338, john.stolwyk@kcpl.com
Mary Britt Turner, Mgr., Fuels, 816-556-2874, mary.turner@kcpl.com
Owned By: Great Plains Energy
Stock Symbol: GXP
Exchange: NYSE
Corporate Consumption (tons):
2001 - 10,154,585
2000 - 9,605,438
Coal Received by Company (2001):
Tons: 8,065,000

La Cygne Plant
RR.1
La Cygne, KS 66040-9803
Linn County
Plant Consumption (tons):
2001 - 4,695,512
2000 - 5,540,063
2001 Coal Capacity (MW): 1,578
Ash Disposal On Site
Plant uses scrubbers
Coal Received by Plant (2001):
Tons: 3,858,000
BTUs/LB: 9,312
%Ash: 9.51
%Sulfur: 1.62
Pollution Control: Wet Limestone Scrubber, Unit 1: ESP Unit 2: ESP
Transportation:
Rail, Truck
Supply Origin: WY, KS
Rail Service: KCS, BNSF

SUNFLOWER ELECTRIC POWER CORP
.310 W. 13th St.
Hays KS 67601
Tel: 785-628-2845, Fax: 785-623-3395
www.sunflower.net
Susan Braun, 785-623-3383
Thomas Hestermann, Senior Rate Analyst, 785-628-2845
Sidney Severson, 785-628-2845
Carroll Waggoner, Senior Mgr. Power Mktg. & Regulation, 785-623-3313
Corporate Consumption (tons):
2001 - 1,535,722
2000 - 1,482,558
2001 Coal Capacity (MW): 349
Coal Received by Company (2001):
Tons: 1,362,963
BTUs/LB: 8,470
%Ash: 5

Holcomb
P.O. Box 430
Holcomb, KS 67851
Tel: 316-277-2590, Fax: 316-277-4594
Finney County
Brad Schimke, Senior Mgr., Power Prod, 316-277-2590
Jeff Weber, 316-277-2590
Plant Consumption (tons):
2001 - 1,535,722
2000 - 1,482,558
2001 Coal Capacity (MW): 349
Plant uses scrubbers
Coal Received by Plant (2001):
Tons: 1,362,963
BTUs/LB: 8,470
%Ash: 5.27
%Sulfur: 0.31
Coal Analysis:
BTUs/Lb: Min: 8,250, Avg: 8,369
%Ash: Min: 5, Avg: 6
%Sulfur: Min: 0.3, Avg: 0.47
Size: Avg: 2
Transportation:
Rail
Receipt Point: Holcomb Station
Supply Origin: PRB, WY
Rail Service: BNSF

WESTARY ENERGY
818 Kansas Ave.
Topeka KS 66601
Tel: 785-575-8400
www.wr.com
Chuck Hodson, Exec. Dir., Safety & Support Svcs., 785-575-1656, chuck_hodson@wr.com
Jerry Kroeker, Mgr., Fuels, 785-575-1864, jerry_kroeker@wr.com
Randy Rahm, Dir., Fuel Svcs., 785-575-8140, randy_rahm@wr.com
Owned By: Western Resources, Inc
Stock Symbol: WR
Exchange: NYSE
Corporate Consumption (tons):
2002 - 13,535,599 (Proj)
2001 - 13,970,240
2000 - 11,751,810
2001 Coal Capacity (MW): 3,151
Coal Received by Company (2001):
Tons: 13,942,000
BTUs/LB: 9,487
%Ash: 6

Jeffrey Energy Center
P.O. Box 40
25905 Jeffrey Rd.
St. Marys, KS 66536
Tel: 785-456-6100, Fax: 785-575-1530
Pottawattamie County
Dave Neufeld, Exec. Dir., 785-456-6105, dave_neufeld@wr.com
Plant Consumption (tons):
2001 - 9,441,376
2000 - 9,439,848
2001 Coal Capacity (MW): 2,340
Ash Disposal On Site
Plant uses scrubbers
Coal Received by Plant (2001):
Tons: 11,179,507
BTUs/LB: 8,407
%Ash: 4.95
%Sulfur: 0.37
Coal Analysis:
BTUs/Lb: Avg: 8,300
%Lbs SO_2: Avg: 0.43
%Volatility: Avg: 31
%Moisture: Avg: 31.1
Ash Soft Temp: Avg: 2,225
Size: Avg: 2 x 0
Capacity: 34,100 tpd
Pollution Control: Particulate: Cold Side ESP/SO2 Wet Limestone FGD
Transportation:
Rail
Receipt Point: Jeffrey
Supply Origin: WY
Rail Service: BNSF, UP
Unit Train: 119 cars, 7 Operating Sets

Lawrence Energy Center
P.O. Box 249
Lawrence, KS 66044
Tel: 785-331-4700
Douglas County
Mark Yates, Mgr., 785-331-4715, mark_yates@wr.com
Plant Consumption (tons):
2002 - 2,206,000 (Proj)
2001 - 1,774,909
2000 - 1,523,597
2001 Coal Capacity (MW): 579
Ash Disposal On Site
Plant uses scrubbers
Coal Received by Plant (2001):
Tons: 1,934,000
BTUs/LB: 10,033
%Ash: 7.01
%Sulfur: 0.37

1735

Tamara Quinn, Fuel Buyer-Illinois Basin, 423-751-4701
Richard Rea, Mgr. Coal Acquisition & Supply, 423-751-2651
Jack Thompson, Fuel Buyer-Appalachian Basin
Corporate Consumption (tons):
2001 - 44,398,540
2000 - 41,372,841
2001 Coal Capacity (MW): 17,407
Coal Received by Company (2001):
Tons: 45,562,751
BTUs/LB: 9,563

GRT Transfer Facility
U.S. 62 At Lake City
Grand Rivers, KY
Tel: 502-362-4264
Livingston County
Coal Received by Plant (2001):
Tons: 8,140,875

Paradise
P.O. Box 800
Drakesboro, KY 42337
Tel: 502-476-3300, Fax: 615-751-3837
Muhlenberg County
Travis Baker, Plant Mgr., 270-476-3320
Plant Consumption (tons):
2001 - 7,005,396
2000 - 6,019,874
2001 Coal Capacity (MW): 2,558
Plant uses scrubbers
Coal Received by Plant (2001):
Tons: 7,601,714
Coal Analysis:
BTUs/Lb: Min: 9,800, Avg: 11,000, Max: 11,090
%Ash: Min: 14.22, Avg: 15, Max: 25
%Sulfur: Min: 2, Avg: 2.8, Max: 5.5
%Volatility: Avg: 33
%Moisture: Min: 10, Max: 13
Ash Soft Temp: Avg: 2,400
Size: Avg: 6 x 1, 12 x 1
Pollution Control: ESP, Cooling Towers, Scrubbers
Transportation:
Barge, Truck
Supply Origin: KY, PRB
River Service: Green
Mile Point: 100

Shawnee
P.O. Box 2000
Paducah, KY 42001
Tel: 502-443-3626, Fax: 502-444-0127
McCracken County
Ted Whitaker, Plant Mgr., 270-575-8005
Plant Consumption (tons):
2001 - 3,876,656
2000 - 3,936,307
2001 Coal Capacity (MW): 1,750
Coal Received by Plant (2001):
Tons: 4,018,150
Coal Analysis:
BTUs/Lb: Min: 10,700, Avg: 11,000
%Ash: Min: 6.45, Max: 15
%Sulfur: Min: 0.6, Avg: 0.91, Max: 2.8
%Volatility: Min: 32
%Moisture: Max: 13
Ash Soft Temp: Avg: 1,950
Size: Avg: 2 x 0
Pollution Control: Compliance Coal; Baghouses
Transportation:
Rail
Supply Origin: KY, PRB
Rail Service: PAL, BNSF, IC

THE CINCINNATI GAS & ELECTRIC CO.
139 E. 4th St.
Cincinnati OH 45202
Tel: 606-3725733, 606-372-5725
Fax: 606-372-5878
www.cinergy.com
Bill Barnhart, Fuel Procurement, 513-287-3442
Diane Douglas, Supv., 513-287-3031
Daniel Herche, Controller, 513-287-2361
Bob Hoffmann, 513-287-3046
John Kreinest, Fuel Procurement Mgr., 606-372-5725, jkreinest@cinergy.com
J. Thomas Mason, GM, Fuel Dept., 606-372-5733, tmason@cinergy.com
John Steffen, VP & Comptroller, 513-287-2560
Barbra Vice, 513-287-3724
Joyce Wimmers, 513-287-1704
Owned By: Cinergy Corp.
Stock Symbol: CIN
Exchange: NYSE
Corporate Consumption (tons):
2001 - 11,144,451
2000 - 11,617,746
2001 Coal Capacity (MW): 4,530
Coal Received by Company (2001):
Tons: 9,965,400
BTUs/LB: 11,891
%Ash: 12
%Sulfur: 2

East Bend
Rte. 338
Rabbit Hash, KY 41091-0142
Tel: 513-467-4830, Fax: 513-467-4767
Boone County
Carl Cassell, Station Mgr., 513-467-4830, ccassell2@cinergy.com
Plant Consumption (tons):
2001 - 1,737,115
2000 - 1,841,590
2001 Coal Capacity (MW): 648
Plant uses scrubbers
Coal Received by Plant (2001):
Tons: 1,535,400
BTUs/LB: 11,929
%Ash: 11.03
%Sulfur: 2.05
Coal Analysis:
BTUs/Lb: Min: 11,000, Avg: 12,121, Max: 13,442
%Ash: Min: 6, Avg: 11, Max: 22.9
%Sulfur: Min: 0.57, Avg: 2.21, Max: 4.91
%Volatility: Min: 32
Fines: Max: 35
Ash Soft Temp: Avg: 2,100
Size: Max: 2 x 0
Pollution Control: ESP and Flue-Gas Desulf. and Cooling Tower
Transportation:
Barge
Supply Origin: KY, PA, OH, IN, WV
River Service: Ohio
Mile Point: 510.9

LOUISIANA

CAJUN ELECTRIC POWER COOP., INC.
10719 Airline Hwy.
Baton Rouge LA 70895
Tel: 225-291-3060, Fax: 225-296-1746
Celeste Canezaro, Opers. Analyst, 225-638-6326
Gordon Chustz, Mfg. of Corp. Acctng., 225-291-3060
J. Daniel Jewell, System Operator, 225-638-6326
Joseph Price, VP, Fuel Resources & Power Mktg., 225-291-3060
Corporate Consumption (tons):
2001 - 7,220,295
2000 - 1,684,626
2001 Coal Capacity (MW): 1,450

Big Cajun 2
112 Telly St.
New Roads, LA 70760
Tel: 225-296-1751, Fax: 225-296-1754
Pointe Coupee County
Tony McMinn, Mgr., Fuels & Analytical Svcs., 225-296-1751
Plant Consumption (tons):
2001 - 7,220,295
2000 - 1,684,626
2001 Coal Capacity (MW): 1,450
Ash Disposal On Site
Transportation:
Rail, Barge
Receipt Point: New Roads
Supply Origin: WY
Rail Service: BNSF
Unit Train: Cajun Owned Trains
River Service: Mississippi
Mile Point: 264

CENTRAL LOUISIANA ELECTRIC CO, INC
2030 Donahue Ferry Rd.
Pineville LA 71360-5226
Tel: 318-484-7400, Fax: 318-484-7465
www.cleco.com
Kristyl Gray Antony, Mgr.-Fuels,Cleco Generation Svcs., 318-427-1734
Stephanie Armand, Adm. Elec. Prod. Servs., 318-838-2511
Darrell Dubroc, GM-Wholesale Merchant Opers.,Cleco Generation Svcs., 318-427-1902
Robert Duncan, VP, 318-484-7400
David Eppler, VP, 318-484-7659
Owen Fallon, Mfg. of Rates
Leonard Fontenot, VP, 318-484-7400
Mark MacDonald, Dir.-Power Mktg., 318-427-1738
Lee Ann Mitchell, 318-484-7489
Charles Murray, Dir.-Gen. Accounting & Tax., 318-484-7400
Gregory Nesbitt, CEO, 318-484-7400
Richard Riche, Mgr.-Fuel Resources, 318-427-1733
William Stewart, Dir.-Coal & Transportation, Cleco Generation Svcs., 318-427-1732
Amy Taylor, 318-484-7538
David Warner, VP, 318-484-7400
Kate Wells, 318-484-7480
Stock Symbol: CNL
Exchange: NYSE
Corporate Consumption (tons):
2001 - 5,345,432
2000 - 5,805,218
2001 Coal Capacity (MW): 528
Coal Received by Company (2001):
Tons: 5,602,118
BTUs/LB: 7,834
%Ash: 9
%Sulfur: 1

Dolet Hills
963 Power Plant Rd.
Mansfield, LA 71052-9606
Tel: 318-871-3160
De Soto County
Steve Gauthier, Supt., 318-871-2207
Plant Consumption (tons):
2001 - 3,605,952
2000 - 3,703,293
2001 Coal Capacity (MW): 360
Plant uses scrubbers
Coal Received by Plant (2001):
Tons: 3,754,174
BTUs/LB: 6,880
%Ash: 13.61
%Sulfur: 0.98
Pollution Control: ESP

Rodemacher
275 Rademacher Rd.
Lena, LA 71447-9708
Rapides County
Mike Marcantel, Supt., 318-793-1135
Plant Consumption (tons):
2001 - 1,739,480
2000 - 2,101,925
2001 Coal Capacity (MW): 167
Coal Received by Plant (2001):
Tons: 1,847,944
BTUs/LB: 8,788
%Ash: 5.25
%Sulfur: 0.41

ENTERGY - GULF STATES, INC.
10055 Grogans Mill Rd.
Parkwood II BLDG, Ste. 300
The Woodlands TX 77380
Tel: 281-297-3562
www.entergy.com
Scott Forbes, Dir. Regulatory Reporting, 409-839-3021
Norma Gasquet, 504-576-4292
Roy Giangrosso, Dir. of Coal Supply, 409-827-5122
Daniel Gray, Admin Fuel Transportation, 281-297-3516
Charles Jewell, Dir., Coal Supply, 281-297-3562
Charles John, 504-576-7175
Kathryn Partam, Mgr. of Gen. Accounting, 504-569-4891
Annwood Reedy, Mgr. External Reporting, 504-576-4447
Hank Walters, Admin Coal, 281-297-3520
Bruce Wilhelm, 281-297-3547
B. Willis, VP & Controller, 409-838-6631
Owned By: Entergy Corp.
Stock Symbol: ETR
Exchange: NYSE
Corporate Consumption (tons):
2001 - 2,288,383
2000 - 2,471,958
2001 Coal Capacity (MW): 430
Coal Received by Company (2001):
Tons: 1,721,420
BTUs/LB: 8,776
%Ash: 5

Nelson
P.O. Box 429
Lake Charles, LA 70669
Tel: 318-494-6001
Calcasieu County
Plant Consumption (tons):
2001 - 2,288,383
2000 - 2,471,958
2001 Coal Capacity (MW): 430
Coal Received by Plant (2001):
Tons: 1,721,420
BTUs/LB: 8,776
%Ash: 5.17
%Sulfur: 0.38

TENNESSEE VALLEY AUTHORITY
1101 Market St.
Chattanooga TN 37402-2801
Tel: 423-751-2651. Fax: 423-751-3837
www.tva.gov
Steve Blackburn, Mgr. Fuel Devel., 423-751-6015
Mike Hendon. Mgr. Coal Acquisition, 423-751-2475
Greg Nicely. Fuel Buyer-Western Basin, 423-751-7633
Tamara Quinn. Fuel Buyer-Illinois Basin, 423-751-4701
Richard Rea. Mgr. Coal Acquisition & Supply, 423-751-2651
Jack Thompson, Fuel Buyer—Appalachian Basin
Corporate Consumption (tons):
2001 - 44,398,540
2000 - 41,372,841
2001 Coal Capacity (MW): 17,407
Coal Received by Company (2001):
Tons: 45,562,751
BTUs/LB: 9,563

Cahokia Terminal
St. Louis County
Coal Received by Plant (2001):
Tons: 21,595
BTUs/LB: 11,918
%Ash: 7.5
%Sulfur: 0.42

UNION ELECTRIC CO.
1901 Chouteau Ave.
St. Louis MO 63103
Tel: 314-621-3222. Fax: 314-554-4075
www.ameren.com
Warner Baxter, Controller, 314-554-6302
Mark Blair, Office Supv., 314-554-3356
D. Brandt, VP, 314-621-3222
Carl Fisk, 314-554-2782
Allen Fitch, Mgr. of Gen. Accounting, 314-554-2158
Glen Justice, 314-554-3278
R. Kelley, VP, Energy Supply, 314-554-4188
C. Mueller, CEO, 314-621-3222
Michael Mueller, Mgr., Fossil Fuel, 314-554-4174
Charles Naslund, VP, Power Plants, 314-554-4058
R. Piening, VP, 314-621-3222
D. Schnell, VP, 314-621-3222
C. Schukai, VP, 314-621-3222
James Thompson, Secy., 314-554-2619
G. Waters, Asst. Secy., 314-554-2715
Owned By: Ameren Corp.
Stock Symbol: UEP
Exchange: NYSE
Corporate Consumption (tons):
2001 - 18,680,346
2000 - 18,219,883
2001 Coal Capacity (MW):
Coal Received by Company (2001):
Tons: 17,224,100
BTUs/LB: 9,223
%Ash: 6
%Sulfur: 1

Labadie
P.O. Box 67
Labadie, MO 63055
Tel: 314-992-8201. Fax: 314-992-8204
Franklin County
Plant Consumption (tons):
2001 - 9,402,037
2000 - 8,950,491
Coal Received by Plant (2001):
Tons: 8,459,000
BTUs/LB: 8,697
%Ash: 5.27
%Sulfur: 0.35
Pollution Control: 700 Ft. Tall Stacks; ESP Fly Ash Collect., Coal Blending, SO3 Injection System.
Transportation:
Rail
Receipt Point: Labadie, MO
Supply Origin: WY
Rail Service: UP

Meramec
8200 Fine Rd.
St. Louis, MO 63129
Tel: 314-992-7201, Fax: 314-992-7222
St. Louis County
Plant Consumption (tons):
2001 - 2,001,500
2000 - 1,751,389
Coal Received by Plant (2001):
Tons: 1,822,100
BTUs/LB: 9,933
%Ash: 6.58
%Sulfur: 0.94
Pollution Control: ESP For Fly Ash Collect., Low Sulfur Coal
Transportation:
Rail, Barge
Receipt Point: St. Louis County, MO
Supply Origin: IL, WY
Rail Service: UP,C, BN
River Service: Mississippi
Mile Point: 161.6

Rush Island
100 Big Hollow Rd.
Festus, MO 63028
Tel: 314-992-9201, Fax: 314-992-9293
Jefferson County
Plant Consumption (tons):
2001 - 4,475,350
2000 - 4,877,094
Coal Received by Plant (2001):
Tons: 4,257,000
BTUs/LB: 8,388
%Ash: 5.51
%Sulfur: 0.51
Pollution Control: 700 Ft. Tall Stacks, ESP; Fly Ash Collection; Low-Sulfur Coal; SO3 Injection System.
Transportation:
Rail
Receipt Point: Rush Tower, MO
Supply Origin: WY
Rail Service: BN

Sioux
8501 N. State, Rte. 94
West Alton, MO 63386-1009
Tel: 314-992-6201, Fax: 314-992-6302
St. Charles County
Plant Consumption (tons):
2001 - 2,801,459
2000 - 2,640,909
Coal Received by Plant (2001):
Tons: 2,686,000
BTUs/LB: 9,874
%Ash: 6.06
%Sulfur: 0.98
Pollution Control: 600 Ft. Tall Stacks; ESP Fly Ash Collect., Coal Blending
Transportation:
Rail
Receipt Point: West Alton, MO
Supply Origin: IL, WY
Rail Service: BN

MONTANA

MONTANA DAKOTA UTILITIES CO.
400 N. 4th St.
Bismarck ND 58501-4092
Tel: 701-222-7900, Fax: 701-222-7845
www.mdu.com
Gerald Gress, Power Prod. Mgr., 701-222-7900
Bruce Imsdahl, VP, Energy Supply, 701-222-7900
Gary Paulsen, System Opers. Mgr., 701-222-7900
Owned By: MDU Resources Group, Inc.
Stock Symbol: MDU
Exchange: NYSE
Corporate Consumption (tons):
2002 - 618,000 (Proj)
2001 - 648,000
2000 - 769,807
2001 Coal Capacity (MW): 165
Coal Received by Company (2001):
Tons: 875,871
BTUs/LB: 6,882
%Ash: 8
%Sulfur: 1
Lbs SO_2: 10

Lewis & Clark
P.O. Box 808
Sidney, MT 59270
Tel: 406-433-1614
Richland County
Craig Herbert, Station Mgr., 406-433-1614
Plant Consumption (tons):
2002 - 252,000 (Proj)
2001 - 315,494
2000 - 318,095
2001 Coal Capacity (MW): 50
Coal Received by Plant (2001):
Tons: 315,494
BTUs/LB: 6,540
%Ash: 9.45
%Sulfur: 0.53
Lbs SO_2: 8
Coal Analysis:
BTUs/Lb: Avg: 6,540
%Ash: Avg: 9.45
%Sulfur: Avg: 0.53
%Lbs SO_2: Avg: 7.9
%Moisture: Avg: 36.89
Size: Avg: 3 x 0
Pollution Control: Mech. Dust Collect., Flooded Disc Scrubber, 250 Foot Stack
Transportation:
Truck
Supply Origin: MT

MONTANA POWER CO.
40 E. Broadway St.
Butte MT 59701-9394
Tel: 406-723-5421, Fax: 406-496-5049
www.mtpower.com
R. Bennie, Treas., 406-723-5421
D. Berube, CEO, 406-723-5421
John Burke, Mgr., Fin. Reporting, 406-497-2437
R. Cromer, Pres., 406-723-5421
Leo Doran, Dir., Contract and Accounting, 406-748-5127
Mike Enterline, Colstrip Project Div. VP, 406-748-5055
Cathy Falvey, 406-723-5421
Kathy Falvey, 406-497-2735
Robert Gannon, Pres., 406-723-5421
Robert Hindley, SeniorTech. Engr., 406-723-5421
Ernie Kindt, Mgr.-Tax & Fin., 406-723-5454
Cheryl Lambertson, 406-723-5421
Henry Lemieux, Opers. Mgr., 406-748-5055
Benny Lewis, Fuels Mgmnt. Dir., 406-748-5055
James Murphy, Pres., 406-723-5421
A. Neil, VP, 406-723-5421
T. Olson, Business Svcs. Mgr., 406-748-2780
J. Pederson, VP, CFO & CIO, 406-723-5421
Todd Schmidt, 406-723-5454
Pete Simonich, Opers. Mgr., 406-748-5055
Steve Skinner, 406-723-5421
Larry Thompson, Mgr. Generation Department, 406-723-5421
G. Thorson, Colstrip Project Div. VP, 406-748-5055
Jon Williamson, 406-723-5421
Owned By: Montana Power Co.
Stock Symbol: MTP
Exchange: NYSE
Corporate Consumption (tons):
2001 - 10,266,960
2001 Coal Capacity (MW): 988
Coal Received by Company (2001):
Tons: 2,445,000
BTUs/LB: 8,490
%Ash: 9
%Sulfur: 1

Colstrip
P.O. Box 38
Colstrip, MT 59323
Tel: 406-748-2780
Rosebud County
Dwight Carlson, Fuels Engr., 406-748-2780
Mike Hayworth, Results Engr., 406-748-2780
Benny Lewis, Fuels Mgmnt. Dir., 406-748-5055
Plant Consumption (tons):
2001 - 9,607,285
2001 Coal Capacity (MW): 825
Plant uses scrubbers
Coal Received by Plant (2001):
Tons: 2,445,000
BTUs/LB: 8,490
%Ash: 9.43
%Sulfur: 0.7
Coal Analysis:
BTUs/Lb: Min: 8,300, Avg: 8,556, Max: 8,718
%Ash: Min: 7.91, Avg: 9.04, Max: 12
%Sulfur: Min: 0.62, Avg: 0.68, Max: 1
%Moisture: Max: 30
Ash Soft Temp: Min: 2,200, Max: 2,500
Size: Avg: 3 1/2
Capacity: 33,600 tpd
Pollution Control: Wet Scrubbers
Receipt Point: Mine Mouth Plant, Western Energy Co.
Supply Origin: MT

Corette
P.O. Box 30495
Billings, MT 59107
Tel: 406-252-0591
Yellowstone County
Lee Alt, Supt., 406-252-0591
Dan Gatch, Supt., 406-655-2504
Plant Consumption (tons):
2001 - 659,675
2001 Coal Capacity (MW): 163

Robert McWhorter, VP, 216-384-5100
James Parks, Mgr. Fuel Supply Dept., 330-384-5100
Bill Shonk, 216-384-5472
Debra Tull, Business Analyst B, 330-336-9809
Harvey Wagner, Controller, 330-384-5296
Gene Yee, 330-384-5326
Owned By: FirstEnergy Corp.
Stock Symbol: OEC
Exchange: NYSE
Corporate Consumption (tons):
2001 - 6,288,643
2000 - 6,331,997
2001 Coal Capacity (MW): 2,784

Burger
57246 Ferry Landing Rd.
Shadyside, OH 43947-9700
Tel: 614-671-2900
Belmont County
Dennis Fuster, Mgr., Consolidated Plants, 740-671-2900
Plant Consumption (tons):
2001 - 854,652
2000 - 866,348
2001 Coal Capacity (MW): 416
Pollution Control: ESP, Tall Stack
Transportation:
Barge
Supply Origin: OH, PA, WV
River Service: Ohio
Mile Point: 102.3

Sammis
P.O. Box 176
Stratton, OH 43961
Tel: 614-537-1546
Jefferson County
Dennis Fuster, Mgr., Consolidated Plants, 740-671-2900
Plant Consumption (tons):
2001 - 5,433,991
2000 - 5,465,649
2001 Coal Capacity (MW): 2,102
Pollution Control: ESP Tall Stacks, Fabric Filters (Baghouses)
Transportation:
Barge
Supply Origin: PA, KY, WV
River Service: Ohio
Mile Point: 53.2

OHIO VALLEY ELECTRIC CORP.
P.O. Box 468
3932 US Rte. 23
Piketon OH 45661
Tel: 740-289-7200, Fax: 740-289-7253
D.L. Hart, VP & Asst. to Pres., 614-223-1092
D. Jones, VP Opers., 740-289-7212
Owned By: Ohio Valley Electric Corp.
Corporate Consumption (tons):
2001 - 3,067,400
2000 - 3,177,300
2001 Coal Capacity (MW): 1,086
Coal Received by Company (2001):
Tons: 3,171,200
BTUs/LB: 12,295
%Ash: 8
%Sulfur: 2
Lbs SO_2: 3

Kyger Creek
P.O. Box 372
Cheshire, OH 45620
Tel: 740-367-5050
Gallia County
R. Amburgey, Plant Mgr., 740-367-5311
Plant Consumption (tons):
2001 - 3,067,400
2000 - 3,177,300
2001 Coal Capacity (MW): 1,086
Ash Disposal On Site
Coal Received by Plant (2001):
Tons: 3,171,200
BTUs/LB: 12,295
%Ash: 8.23
%Sulfur: 2.08
Lbs SO_2: 3
Pollution Control: ESP, Fuel Management
Transportation:
Barge
Supply Origin: OH, WV, PA, KY, VA, WY
River Service: Ohio
Mile Point: 260

ORRVILLE MUNICIPAL UTILITIES
207 N. Main
P.O.Box 107
Orrville OH 44667
Tel: 330-684-5100, Fax: 330-684-5122
www.orrville.com
Jeff Brediger, Electric Utility Mgr., 330-684-5101, brediger@orrville.com
Scott Myers, Purch. Mgr., 330-684-5100, myers@orrville.com
Tim Neal, Accountant, 330-684-5000, neal@orrville.com
Dan Preising, Dir., Utilities, 330-684-5012, preising@orrville.com
Corporate Consumption (tons):
2002 - 200,000 (Proj)
2001 - 188,000
2000 - 206,600
2001 Coal Capacity (MW): 72
Coal Received by Company (2001):
Tons: 180,188
BTUs/LB: 11,528
%Ash: 10
%Sulfur: 4

Orrville
1100 Perry St.
Orrville, OH 44667
Tel: 330-684-5100, Fax: 330-684-5122
Wayne County
Jeff Brediger, Electric Utility Mgr., 330-684-5101, brediger@orrville.com
Joe Messenger, Plant. Supt., 330-684-5111, messenger@orrville.com
Plant Consumption (tons):
2002 - 200,000 (Proj)
2001 - 188,000
2000 - 206,600
2001 Coal Capacity (MW): 72
Coal Received by Plant (2001):
Tons: 180,188
BTUs/LB: 11,528
%Ash: 10.09
%Sulfur: 3.87
Coal Analysis:
BTUs/Lb: Min: 11,300, Avg: 11,500
%Ash: Min: 6.57, Avg: 10, Max: 12
%Sulfur: Min: 2, Avg: 3.39, Max: 4
%Volatility: Avg: 50
%Moisture: Avg: 10, Max: 11
Ash Soft Temp: Avg: 2,350
Size: Avg: Crushed ROM and Stoker
Pollution Control: ESPs
Transportation:
Truck
Receipt Point: Orrville
Supply Origin: OH

PAINESVILLE ELECTRIC DIV.
7 Richmond
Painesville OH 44077-0601
Tel: 440-639-4828, Fax: 440-357-1966
www.painesville.com
Virginia Brennan, 440-352-9301
Thomas Green, Electric Supt., 440-639-4892, tgreen@harborcom.net
Paul Morton, Generation Supv., 440-639-4917
Ken Newton, 440-639-4827, tgreen@harborcom.net
Corporate Consumption (tons):
2000 - 93,616
2001 Coal Capacity (MW): 54
Coal Received by Company (2001):
Tons: 88,080
BTUs/LB: 12,414
%Ash: 7
%Sulfur: 3

Painesville
P.O. Box 601
325 Richmond St.
Painesville, OH 44077
Lake County
George Machuta, Sr. Engr., Maint., 440-639-4828
Paul Morton, Generation Supv., 440-639-4917
Ken Newton, Sr. Engr., Opers., 440-639-4828
Plant Consumption (tons):
2000 - 93,616
2001 Coal Capacity (MW): 54
Coal Received by Plant (2001):
Tons: 88,080
BTUs/LB: 12,414
%Ash: 7.39
%Sulfur: 2.56
Coal Analysis:
BTUs/Lb: Avg: 12,500
%Ash: Min: 6, Avg: 8, Max: 10
%Sulfur: Max: 3
Size: Min: 2 x 0
Capacity: 300 tons/day
Receipt Point: Plant
Supply Origin: OH

RELIANT ENERGY MID-ATLANTIC
1001 Broad St.
Johnstown PA 15907-1050
Tel: 814-533-8000
www.reliant.com
John E. Bechtold, Mgr.-Fuels, 814-533-8266, jbechtold@reliant.com
Owned By: Reliant Resources, Inc.
Stock Symbol: RRI
Exchange: NYSE
Corporate Consumption (tons):
2001 - 12,282,396
2000 - 11,778

Avon Lake
33570 Lake Rd.
Avon Lake, OH 44012
Lorain County
John E. Bechtold, Mgr.-Fuels
Plant Consumption (tons):
2001 - 1,452,921
2000 - 362,923
Coal Analysis:
BTUs/Lb: Min: 12,500
%Ash: Min: 10, Max: 12
%Lbs SO_2: Min: 1.1, Max: 3
%Moisture: Max: 8

Niles
1047 Belmont Ave.
Niles, OH 44446
Trumbull County
John E. Bechtold, Mgr.-Fuels, 814-533-8266, jbechtold@reliant.com
Plant Consumption (tons):
2001 - 576,213
2000 - 153,392
Coal Analysis:
BTUs/Lb: Min: 12,000
%Ash: Min: 10, Max: 12
%Sulfur: Max: 3
%Moisture: Max: 8

THE CINCINNATI GAS & ELECTRIC C
139 E. 4th St.
Cincinnati OH 45202
Tel: 606-372-5733, 606-372-572
Fax: 606-372-5878
www.cinergy.com
Bill Barnhart, Fuel Procurement, 513-287-3442
Diane Douglas, Supv., 513-287-303
Daniel Herche, Controller, 513-287-2
Bob Hoffmann, 513-287-3046
John Kreinest, Fuel Procurement Mgr, 606-372-5725, jkreinest@cinergy.com
J. Thomas Mason, GM, Fuel Dept., 606-372-5733, tmason@cinergy.c
John Steffen, VP & Comptroller, 513-287-2560
Barbra Vice, 513-287-3724
Owned By: Cinergy Corp.
Stock Symbol: CIN
Exchange: NYSE
Corporate Consumption (tons):
2001 - 11,144,451
2000 - 11,617,746
2001 Coal Capacity (MW): 4,530
Coal Received by Company (2001):
Tons: 9,965,400
BTUs/LB: 11,891
%Ash: 12
%Sulfur: 2

Beckjord
757 U.S. Rte. 52
New Richmond, OH 45157-9709
Tel: 513-467-5000, Fax: 513-467-5
Clermont County
James Messmer, Station Mgr., 513-467-5020
Plant Consumption (tons):
2001 - 2,686,389
2000 - 3,091,917
2001 Coal Capacity (MW): 1,164
Coal Received by Plant (2001):
Tons: 2,415,300
BTUs/LB: 11,830
%Ash: 13.22
%Sulfur: 1.24
Coal Analysis:
BTUs/Lb: Min: 11,000, Max: 13,391
%Ash: Min: 6.5, Max: 19.2
%Sulfur: Min: 0.62, Max: 4.91
%Volatility: Min: 32
Fines: Max: 35
Ash Soft Temp: Min: 2,100
Size: Max: 2 x 0
Pollution Control: ESP
Transportation:
Barge
Receipt Point: New Richmond
Supply Origin: OH, KY, PA, IN, WV
River Service: Ohio
Mile Point: 452.9

Dennis Mitchell, 405-272-3684
S. Moore, VP, 405-272-3000
Rae Rice, Supv. External Reporting, 405-272-3557
Donald Rowlett, Controller Corp. Acctg., 405-553-3604
P. Ryan, Vice Chairman, 405-272-3000
Patrick Ryan, Exec. VP & Chief Operating Officer, 405-272-3510
A. Strecker, CFO, 405-272-3000
D. Young, Controller, 405-272-3000
Owned By: OGE Energy Corp.
Stock Symbol: OGE
Exchange: NYSE
Corporate Consumption (tons):
2001 - 10,117,855
2000 - 10,194,686
2001 Coal Capacity (MW): 2,855
Coal Received by Company (2001):
Tons: 7,752,731
BTUs/LB: 8,786
%Ash: 5

Muskogee
5501 Three Fork Rd.
Ft. Gibson, OK 74434
Muskogee County
Plant Consumption (tons):
2001 - 5,823,371
2000 - 5,952,994
2001 Coal Capacity (MW): 1,717
Coal Received by Plant (2001):
Tons: 4,662,528
BTUs/LB: 8,779
%Ash: 5.
%Sulfur: 0.24

Sooner
Rte. 1 Box. 83
Red Rock, OK 74651
Noble County
Plant Consumption (tons):
2001 - 4,294,484
2000 - 4,241,692
2001 Coal Capacity (MW): 1,138
Coal Received by Plant (2001):
Tons: 3,090,203
BTUs/LB: 8,792
%Ash: 4.98
%Sulfur: 0.25

WESTERN FARMERS ELECTRIC COOP.
N.E. 7th St.
Anadarko OK 73005
Tel: 405-247-3351
Fax: 405-247-2053, 405-247-9251
www.wfec.com
Dan Fleming, Coal And Rail Super., 580-873-2201
T. Mendenhall, Dir. Coal Supply, 405-247-3351
Tom Moore, Dir. of System Operation, 405-247-3351
Richard Ross, Dir. of Gas Supply, 405-247-4333
J. Shafer, Mgr., 405-247-3351
Thomas Stevenson, GM, 405-247-3351
Ray Walters, 405-247-3351
Ben Weatherill, 580-873-2201
Corporate Consumption (tons):
2001 - 1,574,533
2000 - 1,719,662
2001 Coal Capacity (MW): 400
Coal Received by Company (2001):
Tons: 1,401,649
BTUs/LB: 8,748
%Ash: 5

Hugo
P.O. Box 219
Ft. Towson, OK 74735
Choctaw County
Plant Consumption (tons):
2001 - 1,574,533
2000 - 1,719,662
2001 Coal Capacity (MW): 400
Coal Received by Plant (2001):
Tons: 1,401,649
BTUs/LB: 8,748
%Ash: 4.91
%Sulfur: 0.32
Supply Origin: WY

OREGON

PORTLAND GENERAL ELECTRIC CO.
121 S W Salmon St.
Portland OR 97204
Tel: 503-464-8000, Fax: 503-464-2605
www.portlandgeneral.com
Tom Shewski, Mgr., Fuel Supply & Transportation, 503-464-7399
Owned By: Enron Corp.
Stock Symbol: ENE
Exchange: NYSE
Corporate Consumption (tons):
2001 - 2,490,485
2000 - 2,000,000
2001 Coal Capacity (MW): 530
Coal Received by Company (2001):
Tons: 2,636,000
BTUs/LB: 9,749
%Ash: 7

Boardman
P.O. Box 499
Boardman, OR 97818
Tel: 503-481-1211, Fax: 503-481-1209
Morrow County
Loren Mayer, Plant Mgr.
Thomas Meyers, Mgr, Opers., 541-481-1225
Tom Shewski, Mgr., Fuel Supply & Transportation
Larry Smythe, Mgr., Maint., 541-481-1262
Plant Consumption (tons):
2001 - 2,490,485
2000 - 2,240,530
2001 Coal Capacity (MW): 530
Coal Received by Plant (2001):
Tons: 2,636,000
BTUs/LB: 9,749
%Ash: 7.12
%Sulfur: 0.4
Coal Analysis:
BTUs/Lb: Min: 8,000, Avg: 8,500, Max: 11,422
%Ash: Min: 4.2, Avg: 5.79, Max: 10
%Sulfur: Min: 0.17, Avg: 0.35, Max: 0.5
%Volatility: Min: 30
%Moisture: Max: 30
Size: Avg: minus 3
Capacity: 7,000 tpd
Pollution Control: Western Low Sulfur Coal Precipitator
Transportation:
Rail
Receipt Point: Boardman Generating Station
Supply Origin: PRB
Rail Service: UP & BNSF

PENNSYLVANIA

ALLEGHENY ENERGY
10435 Downsville Pike
Hagerstown MD 21740-1766
Tel: 301-790-3400, Fax: 301-790-6089
www.alleghenyenergy.com
Michael B. Delmar, Mgr., Fuels, 412-858-1467
Michael H. Hess, Dir., Fuels, 412-858-1471
Albert F. Kave, Dir., Gen. Planning, 412-858-1109
Thomas Kloc, Controller, 301-665-2711
Stock Symbol: AYP
Exchange: NYSE
Corporate Consumption (tons):
2001 - 18,200,667
2000 - 18,489,375
2001 Coal Capacity (MW): 7,517
Coal Received by Company (2001):
Tons: 18,437,924
BTUs/LB: 12,451
%Ash: 11
%Sulfur: 3

Armstrong
Kittanning, PA 16201-0489
Tel: 724-868-3200, Fax: 724-868-3248
Armstrong County
P.J. Kotsenas, Regional Dir., 724-868-3281
Plant Consumption (tons):
2001 - 828,000
2000 - 940,938
2001 Coal Capacity (MW): 356
Coal Received by Plant (2001):
Tons: 888,000
BTUs/LB: 12,347
%Ash: 11.72
%Sulfur: 1.91
Coal Analysis:
BTUs/Lb: Avg: 12,000
%Ash: Avg: 14
%Sulfur: Avg: 2.2
%Moisture: Avg: 7
Size: Avg: 5
Pollution Control: ESP
Transportation:
Rail, Truck
Receipt Point: Reesedale
Supply Origin: PA, WV
Rail Service: PS

Hatfield Power Station
P.O. Box 728
Masontown, PA 15461-0728
Tel: 724-966-3000, Fax: 724-966-3033
Greene County
T. Seighman, Regional Mgr., 724-966-3009
Plant Consumption (tons):
2001 - 4,234,000
2000 - 3,708,000
2001 Coal Capacity (MW): 1,710
Coal Received by Plant (2001):
Tons: 4,195,000
BTUs/LB: 12,821
%Ash: 9.36
%Sulfur: 1.99
Coal Analysis:
BTUs/Lb: Avg: 12,700
%Ash: Avg: 11
%Sulfur: Avg: 2.4
%Moisture: Avg: 6.5
Pollution Control: ESP
Transportation:
Barge
Receipt Point: Masontown
Supply Origin: PA, WV, OH
River Service: Monongahela
Mile Point: 79

Mitchell
P.O. Box 282
Monongahela, PA 15063-0282
Tel: 724-258-0400, Fax: 724-258-04
Washington County
T. Seighman, Regional Mgr., 724-966-3009
Plant Consumption (tons):
2001 - 655,000
2000 - 701,000
2001 Coal Capacity (MW): 288
Plant uses scrubbers
Coal Received by Plant (2001):
Tons: 680,000
BTUs/LB: 12,542
%Ash: 10.51
%Sulfur: 3.07
Coal Analysis:
BTUs/Lb: Avg: 12,000
%Ash: Avg: 14
%Sulfur: Avg: 4
%Moisture: Avg: 7
Pollution Control: ESP
Transportation:
Barge
Receipt Point: Courtney
Supply Origin: WV, PA, OH
River Service: Monongahela
Mile Point: 29.1

PECO ENERGY CO.
2301 Market St.
Philadelphia PA 19103
Tel: 215-841-4000, Fax: 215-841-423
215-841-4188
www.peco.com
William Bardeen, VP, 215-841-4000
Don Burns, Tech Buyer, 610-640-614(
Lauren Catrino, Mfg. of Gen. Accounting, 215-841-6480
John Deker, 610-595-8994
James Durham, VP, 215-841-4000
Jean Gibson, VP & Controller, 215-841-4810
Donna Hartel, 215-841-5043
K. Keiser, Mgr., Electric Prod. Purch., 215-841-5417
J. Madara, VP, Engr. & Prod., 215-841-5003
Corbin McNeill, Pres., 215-841-4000
G. Moffitt, Purch. Mgr., 215-841-5312
Joseph Paquette, CEO, 215-841-4000
Morton Rimerman, VP, Fin & Treas., 215-841-6480
Dickinson Smith, VP, 215-841-4000
A. Solecki, VP, Inform. Systems & Ge Svcs., 215-841-5300
Susan Wade, Mgr., External Reporting 215-841-5696
Michelle Williams, Secy., 215-841-64(
Owned By: PECO Energy Co.
Stock Symbol: PE
Exchange: NYSE
Corporate Consumption (tons):
2001 - 1,659,256
2000 - 1,385,042
2001 Coal Capacity (MW): 895
Coal Received by Company (2001):
Tons: 208,000
BTUs/LB: 12,914
%Ash: 9
%Sulfur: 2

Cromby
Twp. Line and Cromby Rd.
Phoenixville, PA 19460
Tel: 215-933-8995, Fax: 215-841-4422
Chester County
K. Keiser, Mgr., Electric Prod. Purch., 215-841-5417
Plant Consumption (tons):
2001 - 336,526
2000 - 319,767
2001 Coal Capacity (MW): 188
Plant uses scrubbers
Coal Received by Plant (2001):
Tons: 13,000
BTUs/LB: 12,748
%Ash: 9.46
%Sulfur: 2.23
Coal Analysis:
BTUs/Lb: Min: 12,800, Avg: 12,842, Max: 13,401
%Ash: Min: 6, Avg: 9.6, Max: 10
%Sulfur: Min: 0.56, Avg: 2.39, Max: 2.4
%Volatility: Avg: 30
%Moisture: Avg: 6
Fines: Max: 50
Ash Soft Temp: Avg: 2,125
Size: Avg: 2 x 0
Pollution Control: Mech. Collect. & ESP, Scrubber and Magnesium Oxide SO2 RemovalSystem-Unit 1
Transportation:
Rail, Barge
Receipt Point: Royersford
Supply Origin: WV, PA
Rail Service: CR
River Service: Schuylkill

Eddystone
Industrial Hwy.
Eddystone, PA 19013
Tel: 215-595-8100, Fax: 215-841-4422
Delaware County
K. Keiser, Mgr., Electric Prod. Purch., 215-841-5417
Plant Consumption (tons):
2001 - 1,322,730
2000 - 1,065,275
2001 Coal Capacity (MW): 707
Plant uses scrubbers
Coal Received by Plant (2001):
Tons: 195,000
BTUs/LB: 13,021
%Ash: 8.13
%Sulfur: 1.54
Coal Analysis:
BTUs/Lb: Min: 12,516, Avg: 12,800, Max: 13,602
%Ash: Min: 6.08, Avg: 10, Max: 12.42
%Sulfur: Min: 0.56, Avg: 2.4, Max: 2.79
%Volatility: Avg: 30
%Moisture: Avg: 6
Fines: Max: 50
Ash Soft Temp: Avg: 2,125
Size: Avg: 2 x 0
Pollution Control: Mech. Collect. & ESP and Magnesium Oxide SO2 RemovalSystem-Units 1 & 2
Transportation:
Rail, Barge
Receipt Point: Eddystone
Supply Origin: WV, PA
Rail Service: CR
River Service: Delaware (Oil)

PENNSYLVANIA POWER CO.
FirstEnergy Corp
367 Ghent Rd. - Ste. 3A
Akron OH 44333
Tel: 330-384-5100, Fax: 330-384-5279
www.firstenergycorp.com
C. Brown, Gen. Coord Oper., 724-656-5408
Michael Hyrnick, Mgr., Fuel Supply Dept., 330-384-5784
Wayne Park, 724-656-4395
James Parks, Mgr. Fuel Supply Dept., 330-384-5100
Jack Reed, VP, 724-656-5408
Bob Stofler, 216-384-5783
Harvey Wagner, Controller, 330-384-5296
Marni Watkins, 724-656-5497
Owned By: FirstEnergy Corp.
Stock Symbol: OEC
Exchange: NYSE
Corporate Consumption (tons):
2001 - 5,754,904
2000 - 6,680,769
2001 Coal Capacity (MW): 2,505

Mansfield
P.O. Box 128
Shippingport, PA 15077
Tel: 412-643-5000
Beaver County
Richard Krause, Plant Mgr., 724-643-5000
Donald Schneider, Mgr., Consolidated Plants, 724-643-5000
Plant Consumption (tons):
2001 - 5,754,904
2000 - 6,680,769
2001 Coal Capacity (MW): 2,158
Plant uses scrubbers
Pollution Control: Thiosorbic Lime FGD SO2 Removal System, Overfire Air Nox Control, Electro.IPrecip.
Transportation:
Barge
Supply Origin: OH, PA, WV
River Service: Ohio
Mile Point: 33.2

PPL GENERATION, LLC
2 N. 9th St.
Allentown,PA 18101-1179
Tel: 610-774-5151, Fax: 610-774-5141
www.pplweb.com
John E. Biggar, Exec. VP & CFO, 610-774-5240
Lawerence T. DeSimone, 610-774-5500
William F. Hecht, CEO, 610-774-5151
J.J. McCabe, VP & Controller, 610-774-5646
Dennis J. Murphy, VP/COO, Eastern Fossil & Hydro, 610-774-4316
Gracher L. Selby, Fuel Costs & Studies Specialist, 610-774-7035, glselby@pplweb.com
Michael W. Snovitch, Mgr. Fossil Fuel Supply, 610-774-5415
Owned By: PPL Corp.
Stock Symbol: PPL
Exchange: NYSE
Corporate Consumption (tons):
2002 - 7,142,000 (Proj)
2001 - 6,048,235
2000 - 6,048,235
2001 Coal Capacity (MW): 3,981
Coal Received by Company (2001):
Tons: 7,385,000
BTUs/LB: 12,765
%Sulfur: 2

Brunner Island
P.O. Box 221
York Haven, PA 17370
Tel: 717-266-7500, Fax: 717-266-7519
York County
Gregory L. Smith, Plant Supt., 717-266-7510, glsmith@pplweb.com
Plant Consumption (tons):
2002 - 3,288,000 (Proj)
2001 - 2,299,000
2000 - 3,423,000
2001 Coal Capacity (MW): 1,495
Ash Disposal On Site
Coal Received by Plant (2001):
Tons: 2,646,343
BTUs/LB: 12,652
%Ash: 11
%Sulfur: 1.58
Lbs SO_2: 1
Coal Analysis:
BTUs/Lb: Min: 12,500
%Ash: Max: 14
%Sulfur: Max: 2.38
%Lbs SO_2: Max: 3.4
%Volatility: Min: 28
%Moisture: Max: 7
Ash Soft Temp: Min: 2,400
Size: Avg: 2 x 0
Pollution Control: ESP
Transportation:
Rail
Supply Origin: PA/WV
Rail Service: NS

Martins Creek
P.O. Box 257
Martins Creek, PA 18063
Tel: 610-498-2282, Fax: 610-774-5807
Northampton County
Thomas Eppehimer, Plant Supt., 610-498-6255, tgeppehimer@pplweb.com
Plant Consumption (tons):
2002 - 565 (Proj)
2001 - 513,512
2000 - 550,000
2001 Coal Capacity (MW): 150,000
Ash Disposal On Site
Coal Received by Plant (2001):
Tons: 602,525
BTUs/LB: 12,876
%Ash: 10.3
%Sulfur: 1.79
Lbs SO_2: 1
Coal Analysis:
BTUs/Lb: Min: 12,500
%Ash: Max: 14
%Sulfur: Max: 2.3
%Lbs SO_2: Max: 3.4
%Volatility: Min: 28
%Moisture: Max: 7
Ash Soft Temp: Min: 2,400
Size: Avg: 2 x 0
Pollution Control: ESP
Transportation:
Rail
Receipt Point: Martins Creek
Supply Origin: PA
Rail Service: NS

Montour
P.O. Box 128
Washingtonville, PA 17884
Tel: 717-437-1200, Fax: 717-437-1225
Montour County
Harry Spagnola, Plant Supt., 570-437-1201, hfspagnola@pplweb.com
Plant Consumption (tons):
2002 - 3,290,000 (Proj)
2001 - 3,235,723
2000 - 3,598,000
2001 Coal Capacity (MW): 1,500,000
Ash Disposal On Site
Coal Received by Plant (2001):
Tons: 4,045,458
BTUs/LB: 12,820
%Ash: 10,700.
%Sulfur: 1.82
Lbs SO_2: 1
Coal Analysis:
BTUs/Lb: Min: 12,500
%Ash: Max: 14
%Sulfur: Max: 2.39
%Lbs SO_2: Max: 3.4
%Volatility: Min: 22
%Moisture: Max: 7
Ash Soft Temp: Min: 2,400
Size: Avg: 2 x 0
Pollution Control: ESP
Transportation:
Rail
Supply Origin: PA
Rail Service: NS

RELIANT ENERGY MID-ATLANTIC
1001 Broad St.
Johnstown PA 15907-1050
Tel: 814-533-8000
www.reliant.com
John E. Bechtold, Mgr.-Fuels, 814-533-8266, jbechtold@reliant.com
Owned By: Reliant Resources, Inc.
Stock Symbol: RRI
Exchange: NYSE
Corporate Consumption (tons):
2001 - 12,282,396
2000 - 11,778

Cheswick
P.O. Box 65
Cheswick, PA 15024
Allegheny County
John E. Bechtold, Mgr.-Fuels, 814-533-8266, jbechtold@reliant.com
Plant Consumption (tons):
2001 - 1,459,940
2000 - 400,827
Coal Analysis:
BTUs/Lb: Min: 12,500
%Ash: Max: 10
%Sulfur: Max: 1.7
%Moisture: Max: 8

Conemaugh
Rte. 2008, P.O. Box K
New Florence, PA 15944
Westmoreland County
Robert W. Wagner, 724-357-1721, rwagner@kcpo.com
Plant Consumption (tons):
2001 - 4,818,121
2000 - 4,295
Coal Analysis:
BTUs/Lb: Min: 11,500, Max: 13,000
%Ash: Min: 8, Max: 25
%Lbs SO_2: Max: 8.5
%Volatility: Min: 17, Max: 36
%Moisture: Max: 6

Elrama
P.O. Box 800
Elrama, PA 15038
Washington County

%Sulfur: Min: 1.6, Avg: 1.7, Max: 1.9
%Volatility: Min: 30
%Moisture: Avg: 12
Ash Soft Temp: Avg: 1,950
Size: Avg: 2 x 0
Pollution Control: ESP
Transportation:
Barge
Supply Origin: KY, CO, IL
River Service: Tennessee
Mile Point: 100

Kingston
Kingston, TN 37763
Tel: 615-376-6135, Fax: 615-751-3837
Roane County
Earl Deskin, Plant Mgr., 865-717-2500
Plant Consumption (tons):
2001 - 3,692,579
2000 - 3,907,352
2001 Coal Capacity (MW): 1,700
Coal Received by Plant (2001):
Tons: 4,130,237
Coal Analysis:
BTUs/Lb: Min: 11,000, Avg: 11,592, Max: 13,634
%Ash: Min: 3.5, Max: 15
%Sulfur: Min: 0.8, Avg: 1.31, Max: 1.5
%Volatility: Min: 32
%Moisture: Avg: 13
Ash Soft Temp: Avg: 1,950
Size: Avg: 2 x 0
Pollution Control: ESP
Transportation:
Rail, Truck
Supply Origin: TN, KY, VA
Rail Service: CSX, NS

TEXAS

AMERICAN ELECTRIC POWER
1 Riverside Plaza
Columbus OH 43215-2373
Tel: 614-223-1000
www.aep.com
Stock Symbol: AEP
Exchange: NYSE
Corporate Consumption (tons):
2001 - 71,596,891
2000 - 77,007,187
2001 Coal Capacity (MW): 24,573
Coal Received by Company (2001):
Tons: 55,273,308
BTUs/LB: 11,097
%Ash: 10
%Sulfur: 1

Coleto Creek
P.O. Box 8
Fannin, TX 77960
Tel: 512-788-5100, Fax: 512-645-8790
Goliad County
Plant Consumption (tons):
2001 - 2,246,576
2000 - 2,530,308
2001 Coal Capacity (MW): 600
Ash Disposal On Site
Coal Received by Plant (2001):
Tons: 1,534,533
BTUs/LB: 10,350
%Ash: 6.9
%Sulfur: 0.4
Coal Analysis:
BTUs/Lb: Min: 8,300, Avg: 10,500, Max: 13,000
%Ash: Avg: 7, Max: 12
%Sulfur: Min: 0.15, Avg: 0.25, Max: 0.64
%Moisture: Min: 1.5, Avg: 16, Max: 32.5
Ash Soft Temp: Min: 2,000, Avg: 2,300
Size: Avg: 3.0
Capacity: 7,500 tpd
Pollution Control: ESP, Evap. Ponds, Monitoring For Nitrous Oxide and Sulfur Dioxide
Transportation:
Rail
Receipt Point: Coleto Creek, TX
Supply Origin: CO, TX (Pet Coke)
Rail Service: UP
Unit Train: 115-125 cars, 3-4/wk

Oklaunion
P.O. Box 1798
Vernon, TX 76384
Wilbarger County
Plant Consumption (tons):
2001 - 2,476,765
2000 - 2,716,986
2001 Coal Capacity (MW): 666
Ash Disposal On Site
Plant uses scrubbers
Coal Received by Plant (2001):
Tons: 1,573,459
BTUs/LB: 8,495
%Ash: 5.31
%Sulfur: 0.33
Coal Analysis:
BTUs/Lb: Min: 8,100, Avg: 8,300, Max: 8,865
%Ash: Min: 4.28, Avg: 5.3, Max: 6
%Sulfur: Min: 0.25, Avg: 0.34, Max: 1.21
%Volatility: Avg: 30
%Moisture: Avg: 30, Max: 32.5
Ash Soft Temp: Avg: 2,200
Size: Avg: minus 2
Capacity: 270,000 tpm
Pollution Control: ESP
Transportation:
Rail
Receipt Point: Power plant dumper
Supply Origin: PRB, WY
Rail Service: BNSF
Unit Train: 115 cars, 5-6/wk

Pirkey
P.O. Box 165
Hallsville, TX 75650
Tel: 903-935-3181
Harrison County
Plant Consumption (tons):
2001 - 3,079,184
2000 - 3,592,804
2001 Coal Capacity (MW): 650
Ash Disposal On Site
Plant uses scrubbers
Coal Received by Plant (2001):
Tons: 2,698,000
BTUs/LB: 6,710
%Ash: 13.55
%Sulfur: 1.44
Capacity: 13,000 Tpd
Pollution Control: ESP
Receipt Point: Pirkey
Supply Origin: Sabine Mine

Welsh
P.O. Box 221
Cason, TX 75686
Tel: 214-856-6637
Titus County
Plant Consumption (tons):
2001 - 6,483,085
2000 - 6,679,116
2001 Coal Capacity (MW): 1,584
Ash Disposal On Site
Coal Received by Plant (2001):
Tons: 5,058,000
BTUs/LB: 8,585
%Ash: 4.66
%Sulfur: 0.3
Coal Analysis:
BTUs/Lb: Min: 8,125, Avg: 8,425, Max: 8,813
%Ash: Min: 4.2, Avg: 4.55, Max: 6.5
%Sulfur: Min: 0.19, Avg: 0.34, Max: 0.48
%Volatility: Min: 32.6
%Moisture: Max: 32
Size: Avg: Top Size 2
Capacity: 21,000 tpd
Pollution Control: ESP
Transportation:
Rail
Receipt Point: Welsh
Supply Origin: WY
Rail Service: BNSF, KCS

LOWER COLORADO RIVER AUTHORITY
3700 Lake Austin Blvd.
Austin TX 78703
Tel: 512-473-3200, 512-473-3298
www.lcra.org
Heather Bailey, 512-473-3327
Janice Bauerle, Senior Accounting Specialist, 512-473-3200
Joe Beal, GM, 512-473-3244
Micky Bell, 512-473-3571
Joe Bricker, Mgr., Fayette Power Project, 409-249-8375
Ray Faught, Asset Mgmnt. Supr., 512-473-3542, ray.faught@lcra.org
Dan Kuehn, Mgr., Fuels & Energy Risk Mgmnt., 512-473-4025
Dudley Piland, Mgr., GenCo, 512-473-3207
Corporate Consumption (tons):
2001 - 7,026,271
2000 - 7,178,888
2001 Coal Capacity (MW): 1,561
Coal Received by Company (2001):
Tons: 4,437,000
BTUs/LB: 8,477
%Ash: 5

Fayette (Sam Seymour)
P.O. Box 519
La Grange, TX 78945
Tel: 979-249-3111, Fax: 979-249-8392
Fayette County
Joe Bricker, Mgr., Fayette Power Project, 409-249-8375
Mike Glaser, Mgr. FPP Business Svcs., 409-249-8655
Jane Luedecke, Mgr., FPP Maint., 409-249-8430
Gerald Pargac, Mgr., Opers. (Metro), 409-249-8360
Ken Taylor, Mgr., FPP Maint., 409-249-8377
Plant Consumption (tons):
2001 - 7,026,271
2000 - 7,178,888
2001 Coal Capacity (MW): 1,561
Ash Disposal On Site
Plant uses scrubbers
Coal Received by Plant (2001):
Tons: 4,437,000
BTUs/LB: 8,477
%Ash: 5.48
%Sulfur: 0.33
Coal Analysis:
BTUs/Lb: Min: 8,181, Avg: 8,562
%Ash: Min: 4.9, Avg: 5.53
%Sulfur: Min: 0.26, Avg: 0.37
Pollution Control: ESP
Transportation:
Rail
Receipt Point: Fayette Power Project/ Halsted
Supply Origin: WY, TX
Rail Service: UP, BNSF

RELIANT ENERGY HL&P
1111 Louisiana St.
Houston TX 77002
Tel: 713-207-1111, Fax: 713-207-9720
www.reliantenergy.com
Tammie Barger, 713-945-7452
James Brian, VP & Controller, 713-207-7575
Darrel Free, 713-228-9211
Allan Harper, Dir., Coal & Lignite Fuels, 713-207-3713, allan-harper@reliantenergy.com
Vikki Hawkins, Transmission Analyst, 713-207-2755
Robin Kazinski, 713-207-6597
Yolanda Lopez, Senior Analyst, 713-220-5198
Carla Mitcham, VP, Fuel & Energy Mgmt., 713-207-3700, janie-mitcham@reliantenergy.com
Phyllis Morrow, Supervising Accounting, 713-220-5612
Randy Smith, Div. Mgr., 713-945-8190
D. Tees, VP, Energy Prod., 713-945-8190
Owned By: Reliant Energy Inc.
Stock Symbol: HOU
Exchange: NYSE
Corporate Consumption (tons):
2001 - 16,283,824
2000 - 18,098,090
2001 Coal Capacity (MW): 4,324
Coal Received by Company (2001):
Tons: 13,755,500
BTUs/LB: 7,696
%Ash: 11
%Sulfur: 1

Limestone
Hwy. 39
Jewett, TX 75846
Limestone County
Plant Consumption (tons):
2001 - 6,938,814
2000 - 8,548,367
2001 Coal Capacity (MW): 1,627
Plant uses scrubbers
Coal Received by Plant (2001):
Tons: 6,222,300
BTUs/LB: 6,739
%Ash: 15.79
%Sulfur: 1.21
Capacity: 28,000 tpd
Pollution Control: ESP, Wet Scrubber
Transportation:
Rail, Conveyor
Receipt Point: Jewitt Mine
Supply Origin: TX

Parish
Smithers Lake Rd.
Thompsons, TX 77481
Ft. Bend County
Plant Consumption (tons):
2001 - 9,345,010
2000 - 9,549,723
2001 Coal Capacity (MW): 2,697
Plant uses scrubbers
Coal Received by Plant (2001):
Tons: 7,533,200
BTUs/LB: 8,652
%Ash: 5.22

Superior Coal Dock Information



Location: St. Louis Bay, at the mouth of the St. Louis River (Lake Superior), Superior, Wisconsin
Operator:
Midwest Energy Resources Company
P.O. Box 787
Superior, WI 54880
(715) 392-9807 Fax: (715) 392-9137
Owner:
Midwest Energy Resources Company
Contacts:
Fred Shusterich, President
Bob Sarvela, Manager-Transportation & Marketing
Railroad Connection(s): Burlington Northern Santa Fe and Union Pacific
Dock Length: 1,200 feet
Dumping Machine: 1 rotary McDowell Wellman, 5,000 TPH
Loading System: Traveling shiploader with shuttle boom

Restrictions on Coal, Coke Size: Maximum top size of 4 inches.
Practical Max. Annual Capacity: 25.5 million tons
2002 Coal Shipments: 18.4 million tons
Ground Storage: 7.0 million tons
Coal can be dumped from railcars to storage or can be moved directly to vessels.
Handles Barges and Vessels: Yes
No. of Barges/Vessels Loaded Simultaneously: One
Type of Trimming Chute: Angled, rotating
Hours of Operation:
Days per Week: 7
Hours per Day: 24
Maximum Vessel Size:
Length: 1,105 ft. Beam: 105 ft.
Draft: 28 ft.

The Detroit Edison Company receives approximately 8.0 million tons of coal per year through the terminal.

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REPORT OF THE PRESIDENT

2002 was another disappointing year for U.S.-flag Great Lakes carriers and Great Lakes shipping in general. Even though the U.S.-flag iron ore float increased 2.7 percent to 48.2 million net tons, that total still represented a decrease of nearly 25 percent compared to 1997 – *i.e.*, before the United States became the dumping ground for the world's excess steelmaking capacity. The Lakes grain trade, one of the linchpins of the overseas trade, plummeted to 12.1 million tons, the lowest level recorded since the St. Lawrence Seaway opened in 1959. The only real bright spot was another banner year for shipments of low-sulfur coal out of Superior, Wisconsin. Loads at Superior Midwest Energy Terminal (SMET) topped 18 million tons. As such, 2002 marks the ninth consecutive year in which SMET has set a new record for annual shipments.

Speaking of annual shipments, readers will note a major change in the way this Annual Report presents its statistics. Starting with 2002, LCA is computing its cargo statistics based on a calendar year, rather than a navigation season. The navigation season approach was valid when the Lakes closed for the winter, but in recent years, we have seen iron ore ship virtually year-round out of Escanaba, Michigan. Lake Erie coal docks have continued to ship into February. The cement trade stops just briefly, so it is time that our statistics reflect this reality.

The change in the way LCA tracks cargo movement is indicative of the Association's commitment to the present and the future. The struggles of the past few years would have many organizations in a survival mode, but LCA and its members are committed to the future of Great Lakes shipping. Therefore, we continue to work on many issues that will decide how that future plays out, and hopefully, our actions will produce satisfactory results.

Restoring cargo totals to previous levels is really beyond LCA's abilities. The iron ore trade will rebound only when the steel trade is consistently conducted on a free **but fair** basis. The tariffs that have been imposed on some steel imports have produced a climate that encourages investment and consolidation. The investors who molded ISG out of the remnants of LTV Steel would not have done so without the tariff program. The new company has been successful enough that it is acquiring Bethlehem Steel. AK Steel and U.S. Steel are vying for ownership of National Steel. These are encouraging developments, but they will come at a price. Consolidation will trim employment in the steel industry. That's an unfortunate, but unavoidable fact.

The struggles of the past few years would have many organizations in a survival mode, but LCA and its members are committed to the future of Great Lakes shipping.

Nonetheless, the tariff program is slated to expire in 2005, and there are some shortsighted individuals who are calling for its early retirement. Both prospects are troubling as long as the root cause – excess steelmaking production throughout the world – remains unaddressed. Congress and the Administration had better keep a very close watch on the world steel market, or our domestic industry will remain very much at risk.

On a more uplifting note, 2002 saw design of the new icebreaker that will replace the MACKINAW progress smoothly. In fact, Marinette Marine started cutting steel for the new MACKINAW in April. The vessel is expected to undergo sea trials in the fall of 2005 and enter service in 2006. The new MACKINAW will be a great boon to Great Lakes shipping. Not only will she be a worthy successor in terms of icebreaking capabilities, she will be able to perform other Coast Guard missions such as placement and maintenance of Aids to Navigation, Search and Rescue, Environmental Response, as well as general law enforcement.

Efforts to build a second Poe-sized lock at Sault Ste. Marie, Michigan continued in 2002. The holdup is reconfirmation of the project's benefit/cost ratio, necessitated by the slump in steel production. Iron ore cargos through the Soo Locks increased 17 percent to 45.2 million tons in 2002, and America's steel industry is by no means running full out, so it's no stretch to say that the

2002 COAL TRADE

Coal shipments on the Great Lakes totaled 41.9 million net tons in 2002, a decrease of 5.5 percent, compared to 2001, but essentially on track with the 5-year average. The decrease was almost entirely the result of reduced demand for eastern coal shipped from Lake Erie ports. Loadings at Toledo, Sandusky, Ashtabula and Conneaut slipped below 20 million tons, a decrease of 15.5 percent compared to 2001 and 10.9 percent below the 5-year average. High inventories at Canadian powerplants lessened demand for Lake Erie coal.

On the other hand, Superior Midwest Energy Terminal (SMET) had another banner year. Its shipments of low sulfur coal topped 18 million tons. While this tally represents an increase over 2001 and the 5-year average, its real significance is that the dock has now set a new record for annual shipments nine years in a row.

SMET also set a new record for the most coal to be shipped by a single dock in one month when it loaded 2,548,173 net tons in July. The previous record dated back 56 years to October 1946 when the Chesapeake & Ohio dock in Toledo handled 2,468,619 net tons of coal.

Coal loadings at South Chicago decreased by four or five boatloads, compared to 2001, but topped the dock's 5-year average by the equivalent of one cargo.

COAL SHIPMENTS: CALENDAR YEARS 2002 - 1998 AND 5-YEAR AVERAGE (net tons)

Port/Dock	2002	2001	2000	1999	1998	5-Year Average
Lake Superior						
Superior						
Superior Midwest Energy Terminal...	18,079,010	16,925,015	16,366,427	16,096,709	15,675,329	16,628,498
Thunder Bay						
Canadian National	1,887,269	1,783,635	666,755	1,063,571	1,205,792	1,321,404
	19,966,279	**18,708,650**	**17,033,182**	**17,160,280**	**16,881,121**	**17,949,902**
Lake Michigan						
South Chicago						
KCBX Terminals	**2,465,634**	**2,582,492**	**2,331,838**	**2,514,507**	**2,298,683**	**2,438,630**
Lake Erie						
Toledo						
CSX	4,344,434	4,633,463	5,709,600	5,016,489	5,865,825	5,113,962
Sandusky						
Norfolk Southern	4,351,450	4,853,076	3,870,187	4,621,839	5,167,509	4,572,812
Ashtabula						
Norfolk Southern	5,123,312	6,199,573	6,647,360	6,082,754	7,647,130	6,340,025
Conneaut						
Bessemer & Lake Erie	5,661,176	7,378,062	6,396,683	5,561,752	4,194,069	5,838,348
	19,480,372	**23,064,174**	**22,623,830**	**21,282,834**	**22,874,533**	**21,865,147**
Totals – All Lakes	**41,912,285**	**44,355,316**	**41,988,850**	**40,957,621**	**42,054,337**	**42,253,679**

Great Lakes Dry-Bulk Commerce: 2002 - 1998 And 5-Year Average (net tons)

Commodity	2002	2001	2000	1999	1998	5-Year Average
IRON ORE						
From Lake Superior	46,249,620	40,895,075	50,838,371	48,119,165	53,085,555	47,837,557
From Lake Michigan	4,070,538	6,207,512	7,784,336	7,548,724	7,807,811	6,683,784
From Eastern Canada	8,597,065	8,570,932	10,942,001	11,632,374	12,226,734	10,393,821
Total Iron Ore	**58,917,223**	**55,673,519**	**69,564,708**	**67,300,263**	**73,120,100**	**64,915,162**
COAL						
From Lake Superior	19,966,279	18,708,650	17,033,182	17,160,280	16,881,121	17,949,902
From Lake Michigan	2,465,634	2,582,492	2,331,838	2,514,507	2,298,683	2,438,630
From Lake Erie	19,480,372	23,064,174	22,623,830	21,282,834	22,874,533	21,865,148
Total Coal	**41,912,285**	**44,355,316**	**41,988,850**	**40,957,621**	**42,054,337**	**42,253,680**
STONE						
From U.S. Ports	29,384,428	29,673,942	30,204,986	30,657,078	33,777,184	30,739,523
From Canadian Ports	6,863,570	7,180,562	7,116,220	6,585,998	5,922,573	6,733,784
Total Stone	**36,247,998**	**36,854,504**	**37,321,206**	**37,243,076**	**39,699,757**	**37,473,307**
SALT	7,211,435	7,671,321	6,093,660	7,016,358	8,766,829	7,351,920
CEMENT	5,341,759	5,470,198	5,578,697	5,639,981	5,587,004	5,523,527
POTASH	587,296	563,882	668,858	606,014	801,829	649,575
GRAIN	12,094,537	14,011,286	15,099,337	15,866,884	15,585,978	14,531,604
TOTAL	**162,312,533**	**164,600,026**	**176,335,316**	**174,630,197**	**185,615,834**	**172,698,775**

To convert iron ore to gross tons, multiply by .89286.

Updated 3/21/03

ggn@lcaships.com

WEF For All Coal Fired Units (1995-1999)

[redacted]

1982-1998 Historical Availability Statistics

Fossil-Steam Units: Coal Primary, All MW Sizes

Figure 2a

Year	Number of Util.	Units	WSF	WAF	WEAF	WSOF	WFOF	WFOR	WEFOR	Starts Attempts	Starts Actual	Capacity (Net, MW) Max	Capacity (Net, MW) Dep	Net Generation MWHr/U-Yr
1982	105	804	72.40	79.82	75.01	13.27	6.91	8.71	13.15	24.46	24.28	289	287	1,337,733
1983	108	814	73.02	80.82	76.72	12.82	6.35	8.00	11.84	23.70	23.40	291	290	1,385,920
1984	111	831	74.03	81.02	77.43	12.34	6.62	8.21	11.52	22.62	22.34	296	294	1,436,089
1985	116	843	74.34	81.15	78.07	12.64	6.20	7.69	10.49	21.57	21.23	297	295	1,462,045
1986	121	851	73.70	81.77	78.69	12.38	5.84	7.34	10.30	21.97	21.76	300	298	1,441,832
1987	124	857	74.78	81.88	79.06	12.49	5.62	6.99	9.59	20.25	19.96	301	299	1,523,077
1988	126	861	76.37	83.12	80.10	12.03	4.85	5.97	8.85	21.36	21.10	305	303	1,598,692
1989	126	881	76.48	83.50	80.57	11.42	5.05	6.20	8.86	27.83	27.51	303	302	1,591,318
1990	126	880	77.47	83.87	80.99	11.40	4.73	5.76	8.15	19.88	19.50	306	305	1,602,343
1991	128	885	76.87	84.06	81.33	11.68	4.26	5.25	7.52	19.22	18.89	308	306	1,587,497
1992	128	884	76.85	84.29	81.88	11.90	3.82	4.73	6.65	18.54	18.15	310	309	1,622,294
1993	128	885	78.81	84.18	81.47	11.30	4.51	5.42	7.67	18.83	18.78	310	309	1,675,630
1994	130	894	78.72	84.31	81.54	11.57	4.12	4.97	7.35	19.06	18.77	307	306	1,626,155
1995	126	879	79.46	85.11	82.68	10.61	4.27	5.11	7.11	18.82	18.39	312	311	1,669,449
1996	125	882	82.09	86.14	83.55	9.66	4.19	4.86	6.90	19.94	19.46	312	311	1,739,246
1997	125	883	83.61	86.63	83.93	8.91	4.46	5.06	7.18	18.10	17.07	313	311	1,791,807
1998	125	872	84.23	86.60	83.69	8.88	4.51	5.09	7.44	16.05	15.72	314	313	1,856,320
1999	124	842	83.63	85.59	82.91	9.98	4.43	5.02	7.05	17.02	15.91	318	317	1,872,707
1995-1999:			82.73	86.02	83.38	9.61	4.37	5.01	7.12	17.81	17.13	315	314	1,796,608
1990-1999:			80.30	85.09	82.42	10.58	4.32	5.10	7.28	18.49	17.97	313	312	1,718,804
1982-1999:			77.95	83.66	80.67	11.35	4.98	6.01	8.58	20.26	19.84	309	307	1,626,421

III - A - 3

BNSF's Response to OTTER TAIL's Document Requests

REDACTED

INTERLINE COAL MOVEMENT REVENUE DIVISION DATA

REDACTED

MILES FOR INTERLINE DIVISION MOVEMENTS

1760

REDACTED

STCC COMMODITY CODES FOR NON-COAL INTERLINE DIVISION TRAFFIC

1795

FOR STATE COMMISSION NUMBERS, SEE ITEM 1.04
(For Cancellation Notice of State Commission Numbers See Item 1.04)

ICC STCC 6001-W
(Cancels ICC STCC 6001-V
to the extent indicated in Item 1.06)

STANDARD TRANSPORTATION COMMODITY CODE TARIFF STCC 6001-W

(Cancels Standard Transportation Commodity Code Tariff STCC 6001-V
to the extent indicated in Item 1.06)

ISSUED BY:

ASSOCIATION OF AMERICAN RAILROADS
ECONOMICS, POLICY & STATISTICS DEPARTMENT, AGENT
TARIFF STCC 6001-W

This Tariff applies only in connection with and for account of Carriers participating in Tariffs making reference hereto by ICC Numbers or State Commission Numbers.

PRODUCT CLASS CODES 01 THROUGH 48 & CLASS CODE 50 TARIFF

NOTICES

FOR CODING INFORMATION ON HAZARDOUS MATERIALS OR SUBSTANCES,
SEE DIRECTORY OF HAZARDOUS MATERIALS SHIPPING DESCRIPTIONS

ISSUED DECEMBER 12, 1994 **EFFECTIVE JANUARY 1, 1995**

K. Eric Wolfe, Issuing Officer
Harvey A. Levine, Alternate Issuing Officer
Association of American Railroads
Economics, Policy & Statistics Department
50 F Street, NW
Washington, DC 20001-1564

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ALPHABETIC LISTING OF PRODUCT CLASS COMMODITY CODES

DESCRIPTION	STCC NUMBER	
FRUIT SECTIONS, CITRUS, FRESH, CHILLED	20 371 31	•
FRUIT SHIPPING REFREGERATOR BOXES, WOODEN, NEW FRUIT SHIPPING REFRIGERATOR BOXES, WOODEN, OLD	24 411 22	•
FRUIT SHIPPING BASKETS AND HAMPERS, NEC, SHEET OR STAVE VENEER, OTHER THAN ROUND BOTTOM BUSHEL	24 413 29	•
FRUIT SHIPPING BASKETS OR HAMPERS, NEC, FIBREBOARD AND WOOD COMBINED, WITH COVERS	24 413 17	•
FRUIT SYRUP, NEC	20 871 75	
FRUIT TARTS, BAKED, NOT FROZEN	20 511 23	•
FRUIT TILL BASKETS OR BOXES, MOLDED PULP	26 514 10	•
FRUIT TURNOVERS, NOT BAKED, FROZEN	20 381 20	•
FRUIT WAX COATINGS	28 423 14	
FRUIT, ARTIFICIAL	39 621 34	•
FRUIT, CACTUS, FRESH	01 299 90	•
FRUIT, CANNED OR PRESERVED, IN JUICE OR SYRUP, OR IN LIQUID, OTHER THAN BRINE OR ALCOHOLIC LIQUOR	20 331 10	
FRUIT, CRUSHED, CANNED OR PRESERVED	20 871 28	
FRUIT, DRAINED, OTHER THAN CANDIED, CRYSTALLIZED, GLAZED OR STUFFED	20 331 15	
FRUIT, DRIED, AND NUTS OR NUT MEATS COMBINED, MIXES, NOT CANDIED	20 341 70	•
FRUIT, FRESH, COLD PACK (FROZEN)	20 371 30	•
FRUIT, IN LIQUOR OR SYRUP, WITH MORE THAN 5% ALCOHOL	20 331 20	
FRUIT, IN SOLUTION	20 331 25	
FRUIT, NEC, FRESH	01 299 90	•
FRUIT, NEC, IN BRINE	20 352 91	•
FRUITS AND VEGETABLES, CANNED OR PRESERVED, IN MIXED LOADS	20 339 91	
FRUITS, CITRUS, NEC, FRESH	01 219 90	•
FRUITS, DAIRY PRODUCTS, FISH, MEATS, POULTRY OR VEGETABLES COMBINED, FREEZE-DEHYDRATED OR FREEZE-DRIED	20 999 77	•
FRUITS, DECIDUOUS, NEC, FRESH	01 229 90	•
FRUITS, FREEZE-DEHYDRATED OR FREEZE-DRIED	20 341 20	•
FRUITS, FRESH OR COOKED, FROZEN, IN MIXED LOADS WITH VEGETABLES, FRESH OR COOKED, OR FRUIT JUICE, UNFERMENTED, FROZEN OR SEMI-FROZEN	20 379 25	•
FRUITS, NEC, DEHYDRATED, DRIED OR EVAPORATED, OTHER THAN CANDIED, CRYSTALLIZED, GLAZED OR STUFFED	20 341 90	•
FRUITS, NEC, PICKLED IN VINEGAR	20 352 90	•
FRUITS, TROPICAL, NEC, FRESH	01 239 90	•
FRYERS, CHICKEN, CAST ALUMINUM	33 612 33	•
FRYERS, DEEP-WELL, ELECTRIC	36 343 18	•
FRYING PANS, ELECTRIC, NEC, OTHER THAN GLASS CERAMIC	36 343 20	•
FRYING PANS, SHEET STEEL	34 612 36	
FUEL ANTI-KNOCK COMPOUNDS, MOTOR, NEC	29 912 45	
FUEL BLANKET ASSEMBLIES, NUCLEAR REACTOR, NOT IRRADIATED, WITH NON-IRRADIATED FUEL OR WITHOUT FUEL	34 439 87	•
FUEL CELLS, RUBBER OR WITH FABRIC, NEC	30 619 74	•
FUEL DUCTS (PASSAGES), POWER BOILER, SINGLE, IRON OR STEEL, 10 GAUGE OR THICKER	34 433 45	•
FUEL ECONOMIZERS	34 336 22	•
FUEL ELEMENTS, NUCLEAR REACTOR, IRRADIATED, REQUIRING PROTECTIVE SHIELDING	28 197 10	
FUEL FILTER OR FILTER CARTRIDGE OR ELEMENT PARTS, INTERNAL COMBUSTION ENGINE, STEEL, SEPARATE OR COMBINED, VIZ. TUBE GUIDES, RELIEF VALVE HOUSINGS, END CAPS, COVER ASSEMBLIES, RELIEF VALVE ASSEMBLIES, BRACKETS, RETAINERS, STEMS, COVER PLATES, OR CHECK VALVE SPRINGS, NOT WIRE	35 999 53	•
FUEL LIGHTING LIQUIDS, SEMI-LIQUIDS OR PASTES	28 999 18	

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SECTION 1 PART 1

ALPHABETIC LISTING OF PRODUCT CLASS COMMODITY CODES

DESCRIPTION	STCC NUMBER	
GAS RANGE OR STOVE HEAT REGULATORS	38 221 10	•
GAS SHIPPING CYLINDERS, STEEL, UNDER PRESSURE, NEC, OLD	41 114 20	
GAS SOLUTIONS, TEAR	28 188 35	
GAS STOVE MANIFOLDS, WITHOUT VALVES, NOT ENAMELED NOR PLATED	34 336 40	•
GAS STOVES, CAST ALUMINUM BODY AND CAST IRON OR STEEL WIRE GRATES	36 311 40	•
GAS SYSTEM RESERVOIR TANKS, LIQUEFIED PETROLEUM, HOUSEHOLD OR INDUSTRIAL, IRON OR STEEL, CAPACITY NOT LESS THAN 120 GALLONS	34 434 25	•
GAS TRAPS, IRON OR STEEL BODY, OTHER THAN P-TRAPS, S-TRAPS, OR U-TRAPS	34 942 14	•
GAS WELL DRILLING BITS, OTHER THAN WITH INDUSTRIAL DIAMOND TIPS, ROTARY, NEC, WITH CARBIDE TIPS	35 331 83	•
GAS WELL DRILLING MUD TREATING COMPOUNDS, NEC	28 998 55	
GAS WELL DRILLING MUD, NEC	32 952 20	
GAS WELL PIPE CAPS, RUBBER AND STEEL	35 331 26	•
GAS WELL PUMP LINERS, OLD, USED	41 114 84	
GAS, ACETYLENE	28 132 10	
GAS, ARGON, COMPRESSED	28 134 15	
GAS, ARGON, LIQUID, OTHER THAN COMPRESSED	28 134 65	
GAS, BUTANE, LIQUEFIED	29 121 10	
GAS, BUTENE (BUTYLENE), LIQUEFIED, OR ISOBUTENE (ISOBUTYLENE), LIQUEFIED	29 121 22	
GAS, CARBON DIOXIDE, LIQUEFIED	28 133 20	•
GAS, CARBON, COMPRESSED, ELECTROSTATICALLY SEPARATED, FILTERED OR GRANULATED, DRY, NOT ACTIVATED, NOT DYES NOR DYESTUFFS	28 996 10	
GAS, CARBON, NEC, DRY, NOT ACTIVATED, NOT DYES NOR DYESTUFFS	28 996 13	
GAS, CARBONIC ACID	28 133 20	•
GAS, CHLORINE, LIQUEFIED	28 128 15	
GAS, COAL	29 121 30	
GAS, HELIUM, COMPRESSED	28 134 45	
GAS, HELIUM, LIQUID, OTHER THAN COMPRESSED	28 134 70	
GAS, HYDROCARBON, NEC	28 139 92	
GAS, HYDROGEN	28 134 60	
GAS, LIQUEFIED NATURAL	13 121 10	
GAS, LIQUEFIED PETROLEUM, NEC, COMPRESSED	29 121 90	
GAS, METHYL MERCAPTAN	28 139 50	
GAS, MONOCHLOROTRIFLUORO-ETHYLENE	28 139 64	
GAS, MUSTARD (DICHLORODIETHYL SULFIDE)	28 188 45	
GAS, NEON	28 134 75	
GAS, NITROGEN, COMPRESSED	28 139 52	
GAS, NITROGEN, LIQUID, NOT COMPRESSED	28 139 68	
GAS, OLIFIANT, LIQUID	29 121 20	
GAS, OXYGEN, COMPRESSED	28 139 80	
GAS, OXYGEN, LIQUID, OTHER THAN COMPRESSED	28 139 70	
GAS, PINTSCH	29 121 31	
GAS, PROPANE, LIQUEFIED	29 121 11	
GAS, TRIFLUOROCHLORO-ETHYLENE	28 139 64	
GAS, VINYL CHLORIDE, INHIBITED	28 139 66	
GASEOUS FLUID FILTER CARTRIDGES OR ELEMENTS, OTHER THAN AIR FILTER CARTRIDGES OR ELEMENTS, GLASS FIBRE	35 999 72	•
GASES, COMPRESSED, NEC, NOT POISON	28 139 90	
GASES, DISPERSANT, NEC, FLAMMABLE	28 139 80	
GASES, FLUOROETHANE, FLAMMABLE	28 139 84	
GASES, FLUOROMETHANE, NONFLAMMABLE	28 139 87	
GASKETS AND FORMS, SEWER PIPE JOINT, STEEL	33 219 12	•
GASKETS, LEATHER, LEATHER AND STEEL, OR LEATHER, METAL AND AND FELT COMBINED	32 931 35	•
GASKETS, NEC	32 931 48	•
GASKETS, NICKEL PLATED, NEC	32 931 51	•
GASKETS, PLUMBING FIXTURE SEALING OR SETTING, WAX OR WAX COMPOUND	32 931 65	•
GASKETS, RUBBER, NEC, OR RUBBER AND STEEL COMBINED	32 931 36	•
GASOHOL	29 111 50	
GASOLINE ADDITIVES, CONTAINING LESS THAN 50% BY WEIGHT OF PETROLEUM	28 998 85	
GASOLINE DISPENSING UNITS, AIRPORT	35 611 10	•
GASOLINE FILTERS	35 999 52	•

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SECTION 1 PART 1

ALPHABETIC LISTING OF PRODUCT CLASS COMMODITY CODES

DESCRIPTION	STCC NUMBER	
HEADS, BROOM, BROOM CORN	39 911 15	•
HEADS, BUOY, STEEL	34 439 17	•
HEADS, BURNER, GAS COOKING, ALUMINUM	36 311 13	•
HEADS, BURNER, GAS RANGE, ALUMINUM	36 311 13	•
HEADS, CIRCULAR, WOODEN	24 999 61	•
HEADS, CONDUCTOR PIPE, ALUMINUM	34 445 10	•
HEADS, CORN PICKUP, HARVESTER-THRESHER OR	35 225 52	•
HEADS, CUTTER, SAND OR GRAVEL PUMP	35 611 74	•
HEADS, DOLL	39 421 15	•
HEADS, DRILL BIT, OIL, WATER OR GAS WELL	35 331 36	•
HEADS, DRIVE PIPE, OIL, WATER OR GAS WELL	35 331 40	•
HEADS, EXHAUST PIPE, PLATE OR SHEET STEEL	35 199 28	•
HEADS, EXHAUST PIPE, CAST IRON	35 999 28	•
HEADS, GOLF CLUB, WOODEN, UNFINISHED	39 494 20	•
HEADS, HYDRAULIC CYLINDER, STEEL	35 999 29	•
HEADS, MILLINERY OR WIG DISPLAY, STORAGE OR STYLING, EXPANDED PLASTIC	30 716 68	•
HEADS, PILE DRIVER OR EXTRACTOR (PULLER), OR COMBINED WITH PILE DRIVERS (PILE DRIVER HAMMERS), PILE EXTRACTORS (PULLERS), OR PILE DRIVER OR EXTRACTOR (PULLER) CLAMPS, CYLINDERS, GRIPS, PISTONS, RAMS, RETAINERS, SIDE STRAPS, OR TIE RODS	35 314 56	•
HEADS, REACTOR VESSEL TANK, STEEL, NOT IRRADIATED, WITHOUT MECHANISM	34 435 10	•
HEADS, ROCKET, EMPTY, SOLID OR FILLED WITH INERT MATERIAL	37 691 30	
HEADS, ROCKET, EXPLOSIVE	37 691 25	
HEADS, SEWING MACHINE	36 361 10	•
HEADS, SHOE STITCHING MACHINE, OLD OR USED VALUE ONLY FOR RECONDITIONING, SALVAGE OR SCRAP, VALUE NOT TO EXCEED $50 EACH	41 114 69	
HEADS, SPOOL, NEC, IRON OR STEEL	34 998 71	•
HEADS, SPRINKLER, LAWN, GARDEN OR IRRIGATION, METAL	34 298 65	•
HEADS, TAIL OIL	28 612 77	
HEADS, TANK OR BOILER, IRON OR STEEL, UNFINISHED, WITH OR WITHOUT BRACES OR LUGS ATTACHED	33 122 41	•
HEADS, TANK, SILVER-CLAD OR SPUN STEEL	34 439 59	•
HEADS, WAR, EXPLOSIVE	37 691 25	
HEALTH PRODUCTS AND PAPER TISSUES, SANITARY, MIXED LOADS	26 471 90	
HEARSES, MOTOR	37 119 20	•
HEARTS, HOG, FRESH OR CHILLED	20 119 20	•
HEARTS, PEANUT (PEANUT GERMS), FOR ANIMAL OR POULTRY FEED	20 999 24	•
HEAT CONTROL SYSTEMS, METAL HEATING OR MELTING	35 671 34	•
HEAT DETECTORS, WITH OR WITHOUT BUILT-IN EMERGENCY LIGHTING UNITS	36 621 64	•
HEAT DEVELOPERS, SPIRAL, IRON OR STEEL	34 433 36	•
HEAT EXCHANGER FITTINGS, ELBOW, INLET OR OUTLET HEAT EXCHANGER SECTIONS, CAST IRON	34 431 50	•
HEAT EXCHANGER TUBE BUNDLES, BRASS BRONZE OR COPPER	34 431 60	•
HEAT EXCHANGERS OR EXTRACTORS, FIREPLACE GRATE TYPE, WITH OR WITHOUT BLOWER FAN, STEEL	34 282 30	•
HEAT EXCHANGERS, AIR, GAS OR LIQUID, NEC	34 431 70	•
HEAT EXCHANGERS,NAVAL REACTOR SYSTEM,NOT IRRADIATED	34 431 75	•
HEAT INDICATOR METERS, INTERNAL COMBUSTION ENGINE HEAT INDICATOR METERS, TRANSFORMER	38 219 66	•
HEAT RAY LAMPS, ELECTRIC	36 411 25	•
HEAT REGULATORS, STOVE OR RANGE, ELECTRIC OR GAS	38 221 10	•
HEAT TRANSFER AGENTS OR MEDIA, NEC, CONSISTING OF DIPHENYL AND DIPHENYL OXIDE MIXTURES, ETHYLENE GLYCOL, GLYCOL ETHER, O-DICHLOROBENZENE, PROPYLENE GLYCOL OR SILICATE ESTER	28 999 17	
HEAT TRANSFER CELLS OR UNITS, AIR COOLING	35 857 35	
HEAT TRANSFER OR BRAZING SALTS	28 999 35	

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SECTION 1 PART 1

ALPHABETIC LISTING OF PRODUCT CLASS COMMODITY CODES

DESCRIPTION	STCC NUMBER	
LININGS, FIREPLACE, OUT-DOOR, SHEET STEEL, KNOCKED DOWN	34 449 22	•
LININGS, FLINTSTONE, SILICA OR SILEX	32 552 30	•
LININGS, GRINDING MACHINE, RUBBER AND IRON	35 412 35	•
LININGS, HEAD, COOPERAGE, WOODEN, NOT COILED	24 292 15	•
LININGS, HOG STOMACH	20 149 61	•
LININGS, LADLE, CINDER OR HOT METAL, CAST IRON	33 219 69	•
LININGS, RESERVOIR OR DITCH, ASPHALT COMPOSITION	29 511 15	
LININGS, SHIRT OR SHIRT COLLAR, COTTON, CUT OR DIE CUT, NOT DYED	23 961 33	•
LININGS, SHODDY, JUTE AND COTTON OR JUTE AND SHODDY, FINISHED, IN ORIGINAL PIECE	22 999 16	•
LININGS, VAULT	34 921 40	•
LINK BELT BOX WATER ELEVATOR PUMPS	35 611 32	•
LINKS, BED SPRING FABRIC, STEEL WIRE	34 814 54	•
LINKS, CHAIN OR SPROCKET, STEEL	34 815 59	•
LINKS, CONNECTING, ANCHOR CHAIN, IRON OR STEEL	34 815 60	•
LINKS, COUPLING, CABLE, CHAIN, ROPE OR GUY WIRE, IRON OR STEEL	34 298 57	•
LINKS, LAP, STEEL	34 815 40	•
LINOLEUM BINDING, METAL	34 298 19	•
LINOLEUM CEMENT	28 911 16	
LINOLEUM FACING OR FLOOR COVERING, OTHER THAN TILE OR TILING, NOT WOVEN	39 921 30	•
LINOLEUM PASTE	28 911 16	
LINOLEUM REFUSE, SCRAP OR WASTE	40 291 51	
LINOLEUM SCRAP LINOLEUM WASTE	40 291 51	
LINSEED OIL CAKE OR MEAL OR CRUSHED OR GROUND CAKE, OR CAKE SCREENINGS	20 939 15	
LINSEED OIL FOOTS, SEDIMENTS OR TANK BOTTOMS, LIQUID OR SOLIDIFIED	20 939 43	
LINSEED OIL, LIQUID OR SOLIDIFIED	20 931 10	
LINSEED SCREENINGS	20 939 52	
LINSEEDS (FLAXSEEDS)	01 142 10	•
LINT CONDENSERS, COTTON GIN	35 596 67	•
LINTERS PULP, COTTON	26 111 40	
LINTERS PULP, COTTON, BLENDED WITH VEGETABLE FIBRE PULP, NEC	26 111 45	
LINTERS, COTTON, BLEACHED OR DYED	22 999 28	•
LINTERS, COTTON, NOT BLEACHED NOR DYED	20 915 10	•
LIPS, DIPPER, POWER SHOVEL, NEC	35 314 62	•
LIQUEFIED GAS STORAGE TANKS, NEC, STEEL, INSULATED	34 434 70	•
LIQUEFIED PETROLEUM GAS, NEC, COMPRESSED	29 121 90	
LIQUEURS	20 871 90	
LIQUID BEVERAGE PREPARATIONS, NEC	20 871 90	
LIQUID BULK COMMODITY SHIPPING CONTAINERS, ALUMINUM, USED, NON-REVENUE MOVEMENT RETURNED EMPTY	42 111 33	•
LIQUID CEMENT, NEC	28 911 90	
LIQUID CLEANSER	28 422 60	
LIQUID COCKTAIL MIX, NON-ALCOHOLIC, NOT BEVERAGES, DESIGNED AS A BASE OR FLAVORING FOR ALCOHOLIC MIXED DRINKS	20 871 18	
LIQUID COMPRESSORS, OLD, USED, HAVING VALUE ONLY FOR RECONDITIONING	41 115 10	•
LIQUID COOLERS OR EQUALIZERS, NEC	35 614 37	•
LIQUID DRY CLEANER	28 422 60	
LIQUID FLAVORING COMPOUNDS OR EXTRACTS, NEC LIQUID FLAVORING EXTRACTS, NEC	20 871 25	
LIQUID FUEL MIXTURE, CONSISTING OF GROUND OR PULVERIZED COAL AND PETROLEUM RESIDUAL FUEL OIL	29 915 01	•
LIQUID IMITATION FLAVORS, NEC	20 871 25	
LIQUID MEAT TENDERIZERS	20 999 63	•
LIQUID PLASTIC PRODUCTS, NEC	30 719 39	•
LIQUID ROSIN FATTY ACIDS, NOT ESTERIFIED, LIQUID OR SOLIDIFIED	28 994 27	
LIQUID ROSIN, ESTERIFIED, NOT FATTY ACID ESTERS, LIQUID OR SOLIDIFIED	28 612 29	
LIQUID ROSIN, OTHER THAN CRUDE, NOT ESTERIFIED, LIQUID OR SOLIDIFIED	28 612 30	

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SECTION 1 PART 1

ALPHABETIC LISTING OF PRODUCT CLASS COMMODITY CODES

DESCRIPTION	STCC NUMBER	
PERSIAN BARK, GROUND OR POWDERED	28 311 81	
PERSIAN MELONS, FRESH	01 398 90	•
PERSIMMONS, FRESH	01 229 90	•
PERSIMMONS, FRESH, COLD PACK (FROZEN)	20 371 30	•
PERSONAL EFFECTS, MILITARY	41 116 25	
PERSONNEL CARRIERS, ARMORED, MILITARY	37 114 25	•
PERSONNEL ENTRANCE OR EXIT DOORS, AIRCRAFT	37 299 71	
PESTICIDE CONTAMINATED SOIL, NEC, DRY	40 291 94	
PET CARRIERS OR CASES, PLASTIC	31 611 69	•
PETALITE ORE, CRUDE	14 919 23	
PETRIFIED WOOD SPECIMENS	39 998 56	•
PETRO ALKYLATE DETERGENT INTERMEDIATE	28 151 54	
PETROLATUM OR PETROLATUM PREPARATIONS, NOT MEDICINAL PETROLATUM PREPARATIONS, NOT MEDICINAL	29 119 46	
PETROLATUM-ROSIN-PARAFFIN WAX COMPOUNDS CONSISTING OF NOT LESS THAN 60% ROSIN	29 119 37	
PETROLATUM, MEDICINAL	28 311 76	
PETROLEUM ABSORPTION OIL, BELT OIL,COMPRESSION OIL, CORDAGE OIL,FLOOR OIL, HARNESS OIL,LEATHER OIL, NEATS FOOT OIL,PUTTY OIL, TANNERS OIL,TOBACCO OIL, TRANSFORMER OIL,OR WOOL OIL	29 919 15	
PETROLEUM ADHESIVE OR COATING, DUST ARRESTING AIR FILTERING ELEMENT	29 919 70	
PETROLEUM AXLE GREASE	29 115 25	
PETROLEUM BY-PRODUCT, NEC CONSISTING OF IMPURE BUTANE, BUTYLENE OR BUTADIENES FOR FURTHER PROCESSING	29 121 81	
PETROLEUM CARBON BLACK OIL	29 119 50	
PETROLEUM CHLORINATED PARAFFIN	29 119 40	
PETROLEUM COATING, DUST ARRESTING, AIR FILTERING ELEMENT	29 919 70	
PETROLEUM COKE BRIQUETTES	29 911 12	
PETROLEUM COKE, CALCINED, GROUND OR NOT GROUND	29 913 15	
PETROLEUM COKE, NOT CALCINED, NOT GROUND, NOT ACTIVATED	29 913 14	
PETROLEUM CONDENSATE	29 119 76	
PETROLEUM CRACKING, DISTILLING, REFINING OR SEPARATING CHAMBERS, CYLINDERS, TOWERS OR VESSELS	35 595 20	•
PETROLEUM DISTILLATE FUEL OIL, DIESEL OIL OR GAS OIL, NOT SUITABLE FOR ILLUMINATING PURPOSES	29 113 15	
PETROLEUM DISTILLATES AND DISULFIDE OIL SOLUTION, RESIDUAL	40 251 23	
PETROLEUM ETHER (BENZINE OR LIGROIN)	29 119 10	
PETROLEUM FATTY ACIDS	28 994 63	
PETROLEUM FLOTATION REAGENTS, EMULSIFIED	28 999 24	
PETROLEUM FUEL OIL FLUE DUST	29 919 83	
PETROLEUM GAS OIL	29 113 15	
PETROLEUM GAS, LIQUEFIED, NEC, COMPRESSED	29 121 90	
PETROLEUM GREASE, NEC	29 115 35	
PETROLEUM HYDROCARBON RESIN	28 211 68	
PETROLEUM HYDROCARBON OR POLYMER RESINS, NOT COMMERCIALLY SUITABLE FOR EXTRUDING OR MOLDING PURPOSES, IN FLAKE, LIQUID, LUMP, POWDER OR SOLID MASS FORM	28 211 32	
PETROLEUM INK OIL	29 119 78	
PETROLEUM ISOPENTANE OR PENTANE	29 121 25	
PETROLEUM JELLY	29 119 46	
PETROLEUM JELLY, MEDICINAL	28 311 76	
PETROLEUM LUBRICATING GREASE, OTHER THAN AXLE GREASE	29 115 30	
PETROLEUM LUBRICATING OIL	29 114 15	
PETROLEUM MERCAPTANS	28 189 30	
PETROLEUM MINERS OIL STOCK (MINERS OIL)	29 119 67	
PETROLEUM NAPHTHA, NAPHTHA DISTILLATE OR NAPHTHA SOLVENTS	29 119 82	
PETROLEUM OIL ADDITIVE, CONTAINING MORE THAN 50 PERCENT BY WEIGHT OF PETROLEUM	29 912 30	
PETROLEUM OIL FATTY ALCOHOLS, NEC, INEDIBLE, LIQUID OR SOLIDIFIED	28 184 91	

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SECTION 1 PART 1

ALPHABETIC LISTING OF PRODUCT CLASS COMMODITY CODES

DESCRIPTION	STCC NUMBER	
PLANTS, ROSE, BARE-ROOT	01 912 22	•
PLANTS, SEWAGE TREATMENT	35 899 65	•
PLANTS, STRAWBERRY	01 917 25	•
PLANTS, TREATMENT, SEWAGE	35 899 65	•
PLANTS, VEGETABLE OR BERRY, NEC	01 917 30	•
PLANTS, WATER PUMPING, HOUSEHOLD	35 611 82	•
PLAQUES, FIBREBOARD WALLBOARD, PAINTED WITH PICTURES, DESIGNS OR SYMBOLS, NOT FRAMED	39 999 29	•
PLASMA, BLOOD, DEHYDRATED	28 311 22	
PLASMA, BLOOD, LIQUID, FROZEN OR CHILLED	28 311 23	
PLASTER ACCELERATOR OR RETARDER	32 759 15	•
PLASTER ARCHITECTURAL MODELS	39 411 87	•
PLASTER MIXING MACHINES, WITH OR WITHOUT WHEELS, OR MOUNTED ON VEHICLES	35 316 10	•
PLASTER OF PARIS	32 752 48	•
PLASTER OF PARIS MOLDS	35 441 70	•
PLASTER REINFORCEMENT BARS OR RODS, IRON OR STEEL	33 124 68	•
PLASTER REINFORCEMENT BAR FABRIC OR BAR MESH, IRON OR STEEL	34 499 67	•
PLASTER SPRAYING OUTFITS, MOUNTED ON HAND TRUCKS OR NOT MOUNTED	41 111 64	
PLASTER WORK, ARCHITECTURAL	32 999 25	•
PLASTER, CALCINED	32 752 45	•
PLASTER, DENTAL	38 431 45	•
PLASTER, LAND (GROUND GYPSUM)	32 752 30	•
PLASTER, PATCHING	32 752 47	•
PLASTER, STUCCO	32 752 49	•
PLASTER, WALL	32 752 46	•
PLASTERBOARD JOINT COMPOUNDS OR SYSTEMS	32 753 20	•
PLASTERBOARD TOPPING CEMENT, DRY	32 412 25	•
PLASTERBOARD, GYPSUM	32 754 37	•
PLASTERBOARD, STEEL FACED, NOT FURTHER PAINTED THAN PRIMED	32 753 46	•
PLASTERING FIBRE, NEC	39 999 52	•
PLASTIC ADHESIVE REPAIR KITS, CONSISTING OF NOT LESS THAN 40% LIQUID PLASTICS AND NOT MORE THAN 10% OF GLASS FIBRES OR GLASS FIBRE CLOTH OR TAPE	41 111 07	
PLASTIC ADHESIVE, CONSISTING OF PAPER COATED OR IMPREGNATED PLASTIC ADHESIVE	28 911 66	
PLASTIC ARTICLES, NEC, EXPANDED	30 716 43	•
PLASTIC BABY DRINKING CUPS, NON-TIPPABLE, WEIGHTED WITH CAST IRON	30 711 37	•
PLASTIC BLOCK, PLATE, RODS, SHEETS, TUBES OR UNFINISHED SHAPES, EXPANDED, NEC	30 716 31	•
PLASTIC BLOWING COMPOUND, DRY	28 183 75	
PLASTIC BOWLS, CUPS, DISHES OR TUMBLERS, NEC	30 711 35	•
PLASTIC BRIEF CASES, ENVELOPES OR PORTFOLIOS, EACH NOT OVER 1/8 INCH THICK EXCLUDING THICKNESS OF CLOSING DEVICE, WITHOUT CARRYING GRIPS OR HANDLES	31 611 33	•
PLASTIC CLAY	32 952 25	
PLASTIC CLOTHES PINS, WITH METAL SPRINGS	30 719 20	•
PLASTIC CRUTCH OR FURNITURE TIPS	30 719 71	•
PLASTIC CUPS OR TUMBLERS, CELLULAR, EXPANDED OR FOAMED	30 711 48	•
PLASTIC DOWNSPOUTS	30 719 31	•
PLASTIC DRINKING STRAWS	30 719 83	•
PLASTIC FILE FOLDERS	30 719 33	•
PLASTIC FILM	30 714 12	•
PLASTIC FILM OR SHEETING AND COTTON CLOTH, LAMINATED	22 119 58	•
PLASTIC FILM, SHEETING OR SHEETS, NOT EXPANDED, NOT WOVEN, NEC, SEPARATE OR COMBINED WITH PAPER, NOT FINISHED ARTICLES	30 714 45	•
PLASTIC FLAKES, GRANULES, LUMPS, PELLETS, POWDER OR SOLID MASS, NOT EXPANDED	28 211 63	
PLASTIC FURNITURE TIPS	30 719 71	•
PLASTIC GARDEN OR WATER HOSE, WITH FITTINGS, INSIDE DIAMETER NOT MORE THAN 1 INCH	30 412 25	•
PLASTIC GUTTERS	30 719 31	•
PLASTIC LUBRICATING ADDITIVES	28 182 68	
PLASTIC MATTRESS CORES OR FORMS, CELLULAR, EXPANDED OR FOAMED	30 716 70	•
PLASTIC PASTE	28 211 65	

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SECTION 1 PART 1

ALPHABETIC LISTING OF PRODUCT CLASS COMMODITY CODES

DESCRIPTION	STCC NUMBER	
RAILWAY CAR WHEEL TIRES, STEEL	33 911 32	•
RAILWAY CAR WHEELS, IRON OR STEEL, ATTACHED TO AXLES, WITHOUT BEARINGS, GEARS OR OTHER POWER ATTACHMENTS	37 426 76	
RAILWAY CAR WHEELS, OLD, IRON OR STEEL, VALUE FOR REMELTING PURPOSES	40 211 52	
RAILWAY CARS MOVED ON OWN WHEELS, BOX, CABOOSE, EIGHT-WHEELED, FLAT, WITH FIXED OR STATIONARY RACKS, COVERED HOPPER, LIVE STOCK, SLATTED, OR REFRIGERATOR OR FREIGHT CARS, NEC	37 422 25	
RAILWAY CARS, ARTICULATED, NEC	37 422 05	
RAILWAY CARS, AIR BRAKE INSTRUCTION, MOVED ON OWN WHEELS, CONSISTING OF PASSENGER CARS EQUIPPED WITH STANDARD AIR BRAKE APPLIANCES WITH OPERATIVE SETS TO ILLUSTRATE THE OPERATION AND DETAIL CONSTRUCTION	37 424 33	
RAILWAY CARS, COAL, COKE, DUMP, FLAT, GONDOLA OR OPEN TOP HOPPER, MOVED ON OWN WHEELS	37 422 35	
RAILWAY CARS, DAMAGED OR WRECKED, MOVED ON OWN WHEELS	41 113 55	
RAILWAY CARS, MORE THAN 4 WHEELS, NEC, BODIES KNOCKED DOWN, NOT MOVED ON OWN WHEELS	37 422 72	
RAILWAY CARS, NEC, SET UP NOT MOVED ON OWN WHEELS	37 422 90	
RAILWAY CARS, RADIOACTIVE MATERIAL SHIPPING, MOVED ON OWN WHEELS, VIZ. SPECIALLY DESIGNED AND EQUIPPED FLAT CARS WITH PERMANENTLY OR SEMI-PERMANENTLY AFFIXED CONTAINER OR CONTAINERS, AND FRAMEWORK AS A SHIELD AGAINST RADIOACTIVE MATERIALS	37 422 51	
RAILWAY CATTLE GUARDS, STEEL OR STEEL AND WOOD	33 128 35	•
RAILWAY CHAIR OR PASSENGER CARS, NEC, MOVED ON OWN WHEELS	37 421 90	
RAILWAY CINDER, DUMP, FURNACE CHARGING, HOT METAL, LADLE, MINE, PIT, PLANTATION, PUSH OR SLAG CARS OR FOUR-WHEELED FREIGHT CARS, NEC, NOT MOVED ON OWN WHEELS	37 422 45	
RAILWAY COACH CARS, NEC, MOVED ON OWN WHEELS	37 421 38	
RAILWAY CROSSING SOUND WARNING SIGNALS	36 621 66	•
RAILWAY DRY KILN CARS OR TRUCKS, NEC, IRON, MIXED WITH BAFFLES, IRON BEAMS, CASTINGS, CHANNELS, PIPE, PIPE FITTINGS, POSTS, RAILS, STEAM TRAPS, VALVES, VENTILATORS, MOTORS, FANS, ELECTRICAL EQUIPMENT, DUCT WORK AND COPPER TUBING	37 422 75	
RAILWAY ELECTRIC OR GASOLINE MOTOR CARS, OR OTHER SELF-PROPELLED CARS, MOVED ON OWN WHEELS	37 423 22	
RAILWAY ELECTRIC OR STEAM AIR BRAKE EQUIPMENT, NEC	37 428 25	
RAILWAY EQUIPMENT, MINIATURE, NOT TOYS	41 111 59	
RAILWAY EXPRESS CARS, NEC, MOVED ON OWN WHEELS	37 421 31	
RAILWAY FARE REGISTER	38 219 42	•
RAILWAY FIRE EXTINGUISHER CARS, 4 WHEEL	37 424 25	
RAILWAY FLAT CAR LOG BUNKS	37 428 59	
RAILWAY FOLDER CABINETS	25 179 37	•
RAILWAY FREIGHT CAR LINERS, CLOTH	37 428 57	
RAILWAY FREIGHT CAR DOOR PROTECTION RETAINING DOORS (GRAIN DOORS) OR STRIPS, STEEL STRAPPING AND PAPER	37 428 64	
RAILWAY FREIGHT CAR ROOF LINERS, ASBESTOS PAPER AND PLASTIC FILM	37 428 58	
RAILWAY GASOLINE MOTOR CARS, NOT MOVED ON OWN WHEELS, KNOCKED DOWN	37 423 21	
RAILWAY HOPPER CAR HATCH COVERS, ALUMINUM, TROUGH TYPE OR LID OR ROUND TYPE	37 429 45	
RAILWAY HOT METAL OR LADLE CARS, WITH MORE THAN 4 WHEELS, NOT MOVED ON OWN WHEELS	37 422 10	
RAILWAY LIVE STOCK CARS, NOT SLATTED, MOVED ON OWN WHEELS	37 422 20	

For explanation of abbreviations and reference marks, see last two pages of this tariff.
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DRI-WEFA RCAF Forecast

DRI-WEFA July, 2001 Forecast

Table 1
Long-Term Railroad Cost Adjustment Factor Outlook
(1980=100.0)

	History					Forecast									
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Labor	213.8	215.2	229.6	229.3	233.9	244.5	252.0	261.0	270.7	280.9	292.0	303.3	314.2	325.1	336.6	349.1
Percent Change	2.4	0.7	6.7	-0.1	2.0	4.5	3.1	3.6	3.7	3.8	3.9	3.9	3.6	3.5	3.5	3.7
Fuel	73.7	85.4	82.9	66.4	67.5	99.9	96.7	92.9	94.6	98.3	101.4	105.8	110.6	115.6	121.2	127.1
Percent Change	1.7	15.9	-2.9	-19.9	1.6	48.1	-3.2	-3.9	1.8	3.9	3.2	4.3	4.5	4.5	4.8	4.9
Materials & Supplies	143.5	144.2	146.8	148.5	148.3	146.7	147.4	148.8	150.9	152.6	154.2	155.9	157.7	159.8	161.9	164.3
Percent Change	0.6	0.5	1.8	1.1	-0.1	-1.1	0.5	0.9	1.4	1.1	1.1	1.1	1.2	1.3	1.3	1.5
Equipment Rents	170.8	172.8	172.8	173.9	173.0	175.3	178.8	181.5	184.4	187.3	190.1	192.8	195.8	198.9	202.1	205.6
Percent Change	4.4	1.2	0.0	0.6	-0.5	1.3	2.0	1.5	1.6	1.6	1.5	1.5	1.6	1.6	1.6	1.7
Depreciation	148.9	151.7	148.0	149.1	149.6	150.9	154.1	156.5	158.9	161.6	164.3	167.2	170.4	173.1	175.8	178.7
Percent Change	4.3	1.9	-2.5	0.7	0.3	0.9	2.1	1.5	1.5	1.7	1.7	1.8	1.9	1.6	1.5	1.6
Interest	126.5	124.5	118.3	108.2	101.0	94.2	83.8	88.5	92.8	91.2	88.3	86.0	86.2	88.1	92.5	94.7
Percent Change	-5.0	-1.6	-4.9	-8.6	-6.6	-6.7	-11.0	5.6	4.8	-1.8	-3.2	-2.5	0.2	2.3	5.0	2.4
Other Expenses	155.1	155.5	156.0	155.8	156.4	159.9	161.4	163.8	166.6	169.1	171.6	174.1	176.7	179.5	182.7	185.9
Percent Change	4.3	0.2	0.3	-0.1	0.4	2.3	0.9	1.5	1.7	1.5	1.5	1.4	1.5	1.6	1.8	1.7
RCAF Unadjusted (a)	97.2	97.3	100.7	99.8	100.1	104.8	106.3	108.9	112.0	115.0	118.2	121.6	124.9	128.4	132.1	136.0
Percent Change	3.5	0.1	3.5	-0.9	0.2	4.7	1.4	2.5	2.8	2.7	2.8	2.8	2.8	2.8	2.9	3.0
RCAF Adjusted (a)	73.9	69.9	68.6	63.7	59.0	58.9	58.0	58.1	59.0	60.5	61.7	62.5	63.2	63.7	64.2	64.8
Percent Change	-1.8	-5.4	-1.9	-7.1	-7.4	-0.1	-1.6	0.3	1.5	2.6	1.9	1.4	1.0	0.8	0.9	1.0
RCAF-5 (a)	72.2	68.4	66.9	63.0	58.5											
Percent Change	-1.3	-5.2	-2.2	-5.9	-7.1											

a. 1997:4=100.0

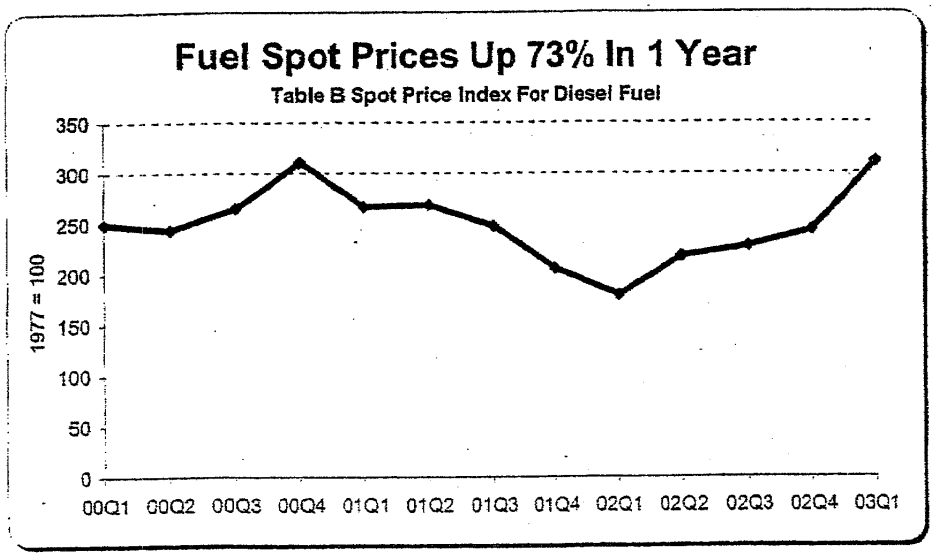
AAR RAILROAD ALL INCLUSIVE INDEX WEIGHTS

1806

March 2003

ASSOCIATION
OF AMERICAN
RAILROADS

AAR RAILROAD COST INDEXES



Including Series RCR,
The All-Inclusive Index,
and The Rail Cost Adjustment Factor

Table D

SECOND QUARTER 2003 ALL-INCLUSIVE INDEX

The components and values of the All-Inclusive Index in the second quarter 2003 are shown below. The projected second quarter index of 101.1 is 1.9 percent higher than the first quarter 2003 forecast.

	2001 Weights	2003Q1 Forecast	2003Q2 Forecast	Percent Change
Labor	37.8 %	269.7	270.4	0.3 %
Fuel	10.5	100.7	130.4	29.5
Materials & Supplies	4.6	144.2	152.6	5.8
Equipment Rents	10.5	175.2	175.9	0.4
Depreciation	10.6	149.6	149.1	-0.3
Interest	3.8	98.6	98.6	0.0
Other	22.2	162.2	162.1	-0.1
Weighted Average				
a. 1980 = 100		193.2	196.9	
b. 1980 = 100 (linked)		190.6	194.3 [1]	
c. 4Q02 = 100		99.2	101.1 [2]	1.9

[1] 2003Q2 linked index of 194.3 = relative change (2003Q2 index of 196.9 / 2003Q1 index of 193.2) times 2003Q1 linked index of 190.6. Linking is necessitated by periodic changes in external weighting.

[2] 4Q02 based index = 2003Q2 index (194.3) / 4Q02 linking factor (192.1) times 100 = 101.1. 4Q97 based index is 112.2 and the 4Q92 based index is 123.8.

USDA PPI FORECAST

United States Department of Agriculture

Office of the Chief Economist

Staff Report WAOB-2003-1

USDA Agricultural Baseline Projections to 2012

Interagency Agricultural Projections Committee

World Agricultural Outlook Board, Chair
Economic Research Service
Farm Service Agency
Foreign Agricultural Service
Office of the Chief Economist
Office of Budget and Program Analysis
Risk Management Agency
Agricultural Marketing Service
Natural Resources Conservation Service
Cooperative State Research, Education, and Extension Service

USDA Baseline →

Table 1. U.S. macroeconomic assumptions

Item	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
GDP, billion dollars												
Nominal	10,082	10,429	10,860	11,421	12,057	12,730	13,439	14,188	14,979	15,815	16,696	17,627
Real 1996 chained dollars	9,215	9,418	9,663	9,972	10,271	10,579	10,896	11,223	11,560	11,907	12,264	12,632
percent change	0.3	2.2	2.6	3.2	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Disposable personal income												
Nominal (billions)	7,393	7,777	8,112	8,534	9,012	9,516	10,049	10,612	11,206	11,834	12,473	13,146
percent change	3.8	5.2	4.3	5.2	5.6	5.6	5.6	5.6	5.6	5.6	5.4	5.4
Nominal per capita, dollars	25,859	26,907	27,758	28,884	30,170	31,512	32,915	34,414	35,982	37,620	39,259	40,970
percent change	2.6	4.1	3.2	4.1	4.5	4.5	4.5	4.6	4.6	4.6	4.4	4.4
Real (billion 1996 chained)	6,748	7,031	7,221	7,460	7,691	7,929	8,175	8,428	8,690	8,959	9,219	9,486
percent change	1.8	4.2	2.7	3.3	3.1	3.1	3.1	3.1	3.1	3.1	2.9	2.9
Real per capita, 96 dollars	23,602	24,326	24,711	25,248	25,748	26,257	26,777	27,333	27,902	28,482	29,018	29,564
percent change	0.6	3.1	1.6	2.2	2.0	2.0	2.0	2.1	2.1	2.1	1.9	1.9
Consumer spending												
Real (billion 1996 chained)	6,377	6,562	6,720	6,921	7,122	7,328	7,541	7,760	7,985	8,216	8,455	8,700
percent change	2.5	2.9	2.4	3.0	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
Inflation measures												
GDP price index, chained	109.4	110.7	112.4	114.5	117.4	120.3	123.3	126.4	129.6	132.8	136.1	139.5
percent change	2.4	1.2	1.5	1.9	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
CPI-U, 82-84=100	177.1	180.8	185.2	189.8	194.5	199.4	204.4	209.5	214.7	220.1	225.6	231.2
percent change	2.8	2.1	2.4	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
PPI, finished goods 82=100	140.7	138.6	141.1	143.9	146.9	150.0	153.2	156.4	159.7	163.0	166.4	169.9
percent change	2.0	-1.5	1.8	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
PPI, crude goods 82=100	121.0	111.9	108.0	109.4	110.7	112.1	113.5	114.9	116.4	117.8	119.3	120.8
percent change	0.3	-7.5	-3.5	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Crude oil price, $/barrel												
Refiner acq. cost, imports	22.0	23.6	25.8	26.4	27.2	27.9	28.7	29.5	30.4	31.2	32.1	33.0
percent change	-20.5	7.3	9.2	2.4	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Real cost, 1996 chained dollars	20.1	21.3	23.0	23.1	23.1	23.2	23.3	23.4	23.4	23.5	23.6	23.6
percent change	-22.3	6.0	7.6	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Labor compensation per hour												
nonfarm business, 92=100	136.6	140.1	146.5	152.3	158.2	164.4	170.8	177.4	184.4	191.5	199.0	206.8
percent change	2.7	2.6	4.6	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Interest rates, percent												
3-month T-bills	3.4	1.7	1.9	4.4	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
3-month commercial paper	3.8	1.8	2.1	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
Bank prime rate	7.0	4.8	4.8	7.3	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8
Treasury bonds (10-year)	4.9	4.8	4.9	5.7	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
Moody's Aaa bonds	7.2	6.6	6.5	7.0	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
Civilian unemployment												
rate, percent	4.8	5.9	6.1	6.0	5.5	5.3	5.3	5.3	5.3	5.3	5.3	5.3
Nonfarm payroll emp., millions	131.9	132.6	133.6	135.6	137.2	138.9	140.5	142.2	143.9	145.6	147.4	149.0
percent change	0.0	0.5	0.8	1.5	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1
Total population, million	285.9	289.1	292.2	295.4	298.7	302.0	305.3	308.4	311.4	314.6	317.7	320.9
percent change	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0

Domestic macroeconomic assumptions were completed in October 2002.

DRI-WEFA July, 2001 Forecast

Table 1
Long-Term Railroad Cost Adjustment Factor Outlook
(1980=100.0)

	History					Forecast										
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Labor	213.8	215.2	229.6	229.3	233.9	244.5	252.0	261.0	270.7	280.9	292.0	303.3	314.2	325.1	336.6	349.1
Percent Change	2.4	0.7	6.7	-0.1	2.0	4.5	3.1	3.6	3.7	3.8	3.9	3.9	3.6	3.5	3.5	3.7
Fuel	73.7	85.4	82.9	66.4	67.5	99.9	96.7	92.9	94.6	98.3	101.4	105.8	110.6	115.6	121.2	127.1
Percent Change	1.7	15.9	-2.9	-19.9	1.6	48.1	-3.2	-3.9	1.8	3.9	3.2	4.3	4.5	4.5	4.8	4.9
Materials & Supplies	143.5	144.2	146.8	148.5	148.3	146.7	147.4	148.8	150.9	152.6	154.2	155.9	157.7	159.8	161.9	164.3
Percent Change	0.6	0.5	1.8	1.1	-0.1	-1.1	0.5	0.9	1.4	1.1	1.1	1.1	1.2	1.3	1.3	1.5
Equipment Rents	170.8	172.8	172.8	173.9	173.0	175.3	178.8	181.5	184.4	187.3	190.1	192.8	195.8	198.9	202.1	205.6
Percent Change	4.4	1.2	0.0	0.6	-0.5	1.3	2.0	1.5	1.6	1.6	1.5	1.5	1.6	1.6	1.6	1.7
Depreciation	148.9	151.7	148.0	149.1	149.6	150.9	154.1	156.5	158.9	161.6	164.3	167.2	170.4	173.1	175.8	178.7
Percent Change	4.3	1.9	-2.5	0.7	0.3	0.9	2.1	1.5	1.5	1.7	1.7	1.8	1.9	1.6	1.5	1.6
Interest	126.5	124.5	118.3	108.2	101.0	94.2	83.8	88.5	92.8	91.2	88.3	86.0	86.2	88.1	92.5	94.7
Percent Change	-5.0	-1.6	-4.9	-8.6	-6.6	-6.7	-11.0	5.6	4.8	-1.8	-3.2	-2.5	0.2	2.3	5.0	2.4
Other Expenses	155.1	155.5	156.0	155.8	156.4	159.9	161.4	163.8	166.6	169.1	171.6	174.1	176.7	179.5	182.7	185.9
Percent Change	4.3	0.2	0.3	-0.1	0.4	2.3	0.9	1.5	1.7	1.5	1.5	1.4	1.5	1.6	1.8	1.7
RCAF Unadjusted (a)	97.2	97.3	100.7	99.8	100.1	104.8	106.3	108.9	112.0	115.0	118.2	121.6	124.9	128.4	132.1	136.0
Percent Change	3.5	0.1	3.5	-0.9	0.2	4.7	1.4	2.5	2.8	2.7	2.8	2.8	2.8	2.8	2.9	3.0
RCAF Adjusted (a)	73.9	69.9	68.6	63.7	59.0	58.9	58.0	58.1	59.0	60.5	61.7	62.5	63.2	63.7	64.2	64.8
Percent Change	-1.8	-5.4	-1.9	-7.1	-7.4	-0.1	-1.6	0.3	1.5	2.6	1.9	1.4	1.0	0.8	0.9	1.0
RCAF-5 (a)	72.2	68.4	66.9	63.0	58.5											
Percent Change	-1.3	-5.2	-2.2	-5.9	-7.1											

a. 1997:4=100.0

EIA AEO 2003
GDP/IPD Forecast

DOE/EIA-0383(2003)

Annual Energy Outlook 2003

With Projections to 2025

January 2003

Energy Information Administration
Office of Integrated Analysis and Forecasting
U.S. Department of Energy
Washington, DC 20585

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Table 20. Macroeconomic Indicators
(Billion 1996 Chain-Weighted Dollars, Unless Otherwise Noted)

Indicators	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
GDP Chain-Type Price Index (1996=1.000)	1.069	1.094	1.109	1.140	1.169	1.195	1.219	1.242	1.264	1.288	1.313	1.342	1.375
Real Gross Domestic Product	9191	9215	9440	9743	10074	10361	10667	11017	11408	11810	12258	12671	13082
Real Consumption	6224	6377	6572	6742	6928	7151	7379	7615	7860	8123	8412	8683	8964
Real Investment	1763	1575	1586	1688	1819	1888	1960	2085	2222	2348	2499	2645	2779
Real Government Spending	1583	1640	1709	1751	1778	1790	1810	1829	1849	1870	1895	1911	1935
Real Exports	1137	1076	1063	1148	1227	1287	1378	1459	1556	1669	1784	1902	2021
Real Imports	1536	1492	1539	1630	1714	1788	1889	1992	2085	2188	2301	2418	2550
Real Disposable Personal Income	6630	6748	7047	7161	7249	7421	7626	7848	8094	8350	8637	8905	9181
AA Utility Bond Rate (percent)	7.91	7.43	6.90	6.93	8.08	8.10	7.77	7.59	7.42	7.27	7.24	7.24	7.26
Real Yield on Government 10 Year Bonds (percent)	4.85	3.51	3.72	4.06	5.34	5.10	5.12	5.25	5.39	5.30	5.26	5.18	5.11
Real Utility Bond Rate (percent)	6.32	5.45	4.95	4.74	5.83	5.61	5.54	5.57	5.51	5.42	5.35	5.22	5.06
Energy Intensity (thousand Btu per 1996 dollar of GDP)													
Delivered Energy	7.91	7.74	7.65	7.59	7.46	7.36	7.28	7.19	7.08	6.98	6.87	6.77	6.68
Total Energy	10.82	10.57	10.34	10.26	10.10	9.96	9.86	9.74	9.58	9.42	9.24	9.10	8.96
Consumer Price Index (1982-4=1.00)	1.72	1.77	1.80	1.86	1.92	1.97	2.01	2.05	2.10	2.14	2.19	2.24	2.30
Unemployment Rate (percent)	4.02	4.79	5.90	6.00	5.51	5.57	5.63	5.42	5.08	4.83	4.41	4.15	4.32
Housing Starts (millions)	1.82	1.80	1.84	1.81	1.88	1.90	1.94	2.02	2.08	2.09	2.17	2.21	2.10
Single-Family	1.23	1.27	1.33	1.27	1.25	1.22	1.24	1.27	1.29	1.30	1.34	1.35	1.28
Multifamily	0.34	0.33	0.31	0.28	0.33	0.34	0.35	0.39	0.42	0.43	0.47	0.48	0.47
Mobile Home Shipments	0.25	0.19	0.20	0.25	0.30	0.34	0.36	0.36	0.36	0.36	0.37	0.37	0.35
Commercial Floorspace, Total (billion square feet)	68.5	70.2	71.9	73.5	74.9	76.1	77.2	78.3	79.4	80.5	81.8	83.1	84.4
Value of Shipments (billion 1996 dollars)													
Total Industrial	5719	5425	5332	5545	5758	5882	6060	6277	6480	6704	6959	7198	7430
Non-Manufacturing	1341	1346	1329	1320	1334	1340	1358	1402	1441	1471	1506	1542	1573
Manufacturing	4378	4079	4003	4225	4423	4542	4702	4875	5039	5233	5453	5656	5857
Energy Intensive	1113	1086	1085	1115	1131	1141	1153	1174	1195	1223	1256	1286	1309
Non-Intensive	3264	2993	2918	3110	3292	3402	3549	3701	3844	4010	4197	4370	4547
Unit Sales Light-Duty Vehicles (million)	17.36	17.11	16.65	17.08	17.12	16.50	16.92	17.39	17.37	17.59	18.27	18.45	18.54
Millions of People													
Population with Armed Forces Overseas	275.7	278.2	280.7	283.2	285.6	288.1	290.5	293.0	295.4	297.8	300.2	302.7	305.1
Population (aged 16 and over)	213.1	215.4	217.8	220.1	222.4	224.8	227.3	229.7	232.1	234.4	236.8	238.7	240.7
Employment, Non-Agriculture	131.3	131.7	130.8	132.6	135.3	137.0	138.6	140.7	142.9	144.7	147.1	149.3	150.5
Employment, Manufacturing	18.3	17.5	16.6	16.8	17.2	17.4	17.4	17.6	17.7	17.7	17.9	18.1	18.1
Labor Force	140.9	141.8	142.6	144.7	146.8	148.7	150.5	152.2	153.7	155.2	156.5	157.6	158.8

Table 20. Macroeconomic Indicators
(Billion 1996 Chain-Weighted Dollars, Unless Otherwise Noted)
GDP = Gross domestic product.
Btu = British thermal unit.
N/A = Not applicable.
Sources: 2000 and 2001: Global Insight macroeconomic model CTL0802. Projections: Energy Information Administration, AEO2003 National Energy Modeling System run aeo2003.d110502c.

BNSF Transportation Contracts for Adjustment Mechanism

REDACTED

THE BURLINGTON NORTHERN AND SANTA FE RAILWAY COMPANY
COMMON CARRIER PRICING AUTHORITY BNSF 90043

Effective Date:	On or after January 1, 2001, upon expiration of Contract BN-C-2900.
Expiration Date:	One year from the effective date, unless renewed or extended.
Commodity:	Raw sub-bituminous Coal, STCC 11-21-Series (excluding artificially dried or processed coal).
Origins:	Wyoming Powder River Basin Mines listed in Attachment A, subject to diversion restrictions identified below.
Destination	Pawnee Steam Generating Station located near Brush, CO.
Route:	BNSF Direct.
Rate:	$9.24 in U.S. Dollars per net ton of coal in shipper supplied cars with a minimum average lading per car of 100 tons per car, subject to quarterly adjustment to reflect changes in the RCAF-U on or after January 1, 2001. $8.98 in U.S. Dollars per net ton of coal in shipper supplied cars with a minimum average lading of 116 tons per car, subject to quarterly adjustment to reflect changes in the RCAF-U on or after January 1, 2001.

Freight charges will be assessed on the basis of the applicable minimum weight per trainload or the actual weight of coal per trainload whichever is greater. The aforementioned rate is subject to a minimum annual volume of 2,000,000 tons per year. In the event the minimum annual volume is not achieved, fallback rates of $10.16 per net ton and $9.88 per net ton respectively shall apply retroactively, and accounting shall be made within 30 days following the end of the calendar year in which retroactive application is required.

Railcar Supply and Tender Requirements:

Shipper provided railcars shall be suitable for loading not less than 100 net tons of coal per steel carload. Shipper provided railcars shall be suitable for loading not less than 116 net tons of coal per aluminum carload. The minimum tender for a train of shipper railcars is 118 such railcars and a maximum tender of 123 railcars.

Claims for damage to or destruction of shipper railcars shall be handled in accordance with the procedures set forth in the field manual and office manual of the Association of American Railroads Interchange Rules, as amended from time-to-time. Notwithstanding the foregoing BNSF shall not be liable for loss or damage caused by defects in design, materials, or workmanship of Shipper-supplied equipment or otherwise due events of force Majeure to improper loading or unloading performed by Shipper, its agent, contractor or consignee.

Trainload and Railcar Weights:

Weights shall be ascertained at origin by shipper, its agent, or the coal mine operator, at no charge to BNSF, and will be provided to BNSF via either electronic data interchange or facsimile upon release of a loaded train. BNSF shall have the right to inspect and certify the origin scales. The minimum weight per trainload is 11,800 net tons of coal for steel cars and 13,688 net tons for aluminum cars.

BNSF/OTP 40857
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Loading:

Shipper or its agent shall be responsible for the provision of appropriate loading facilities. All cars in each shipment shall be tendered to BNSF (or its agent or contractor) for loaded movement within four (4) hours of actual or constructive placement for loading at origin ("Loading Free Time"). Actual placement is made when an empty train arrives at the designated loading point at origin and the train crew requests loading instructions. If actual placement is prevented due to any cause attributable to shipper, its agents, or the mine operator, BNSF (or its agent or contractor) may constructively place the train at any available hold point. In the event of constructive placement, loading free time shall begin when BNSF (or its agent or contractor) notifies shipper, its agents, or the mine operator that the train has arrived at the hold point and shall end when the train is actually placed at origin. Shipper shall pay a charge of $535 per hour or fraction thereof that a train is held in excess of loading free time.

Unloading:

Shipper or its agent shall be responsible for the provision of appropriate unloading facilities. All cars in each shipment shall be tendered to BNSF (or its agent or contractor) for empty movement within six and one half (6.5) hours of actual or constructive placement for unloading at destination ("Unloading Free Time"). Actual placement is made when a loaded train arrives at the designated unloading point at destination and the train crew requests unloading instructions. If actual placement is prevented due to any cause attributable to shipper or its agents BNSF (or its agent or contractor) may constructively place the train at any available hold point. In the event of constructive placement, unloading free time shall begin when BNSF (or its agent or contractor) notifies shipper or its agents that the train has arrived at the hold point and shall end when the train is actually placed at destination. Shipper shall pay a charge of $535 per hour or fraction thereof that a train is held in excess of unloading free time.

Accessorial Services:

Coal unit train accessorial services and charges therefor, other than specified in this common carrier authority, shall be as described in BNSF Authority 6041-Series or successors thereto, except that no change in destination shall be permitted.

Billing and Payment:

BNSF will bill each shipment under the terms of the Uniform Straight Bill of Lading. All railcars for each shipment are to be billed on one (1) Bill of Lading. This Common Carrier Authority BNSF 90043, correct address and patron code must be shown on the bill of lading to insure accurate billing. Freight charges will be billed by BNSF and paid by shipper within fifteen (15) days of receipt of invoice by wire transfer. In the event that shipper does not make timely payment, or if adverse credit conditions occur, which in BNSF's judgement could affect shipper's ability to meet payment terms, BNSF may require shipper to pay cash in advance of service for all amounts for which shipper is liable under this Common Carrier Authority.

Other Provisions.

Shipments made under the provisions of this Common Carrier Authority are subject to the Uniform Freight Classification 6000-Series or its successor, applicable tariffs, statutes, federal regulatory rules and regulations, AAR rules, and other accepted practices within the railroad industry as may be amended from time-to-time.

Shipments shall be deemed to be in service to the Origin served by the immediately preceding shipment; provided, however, diversion to any other qualified Origin as set forth in Attachment A, is authorized without additional charge to Shipper, in the event reasonable notice (by telephone or otherwise) is given to BNSF operating personnel prior to departure of empty trains from Shipper's Pawnee facility of intention to divert the empty train to a specifically identified alternate Origin.

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Attachment A
(BNSF 90043)

Wyoming Powder River Basin Coal Origins

Coal Mine	BNSF Origin
Buckskin	Buckskin Jct.
Rawhide	Rawhide Jct.
Eagle Butte	Eagle Jct.
Dry Fork	Dry Fork Jct.
Fort Union	Union Jct.
Clovis Point	East Gillette Jct.
Caballo	Caballo Jct.
Belle Ayr	Belle Ayr Jct.
Caballo Rojo	Rojo Jct.
Cordero	Cordero Jct.
Coal Creek	Coal Creek Jct.
Jacobs Ranch	Jacobs Jct.
Black Thunder	Thunder Jct.
North Antelope / Rochelle	Nacco Jct.
North Rochelle	Rochelle
Antelope	Converse Jct.

BNSF/OTP 40859
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BNSF Contracts Used for Competitive Rate Analysis

REDACTED

BNSF
2003-2007 LONG RANGE PLAN

REDACTED

Excerpts from STB Docket No. 42022 FMC

28578
EB

SERVICE DATE – May 12, 2000

This decision will be printed in the bound volumes of
the STB printed reports at a later date.

SURFACE TRANSPORTATION BOARD

DECISION

STB Docket No. 42022

FMC WYOMING CORPORATION AND FMC CORPORATION
v.
UNION PACIFIC RAILROAD COMPANY

STB Ex Parte No. 346 (Sub-No. 29A)

RAIL GENERAL EXEMPTION AUTHORITY—PETITION OF AAR
TO EXEMPT RAIL TRANSPORTATION OF SELECTED COMMODITY GROUPS

PETITION FOR PARTIAL REVOCATION OF EXEMPTION FOR COKE

Decided: May 10, 2000

The Board addresses a complaint challenging the reasonableness of 16 rates. The Board finds that the defendant railroad has market dominance over the transportation involved with respect to 15 of the rates, but not with respect to the rate applicable to the transportation of coke. The Board further finds that the 15 rates that are subject to maximum rate regulation are unreasonably high. Maximum reasonable rates are prescribed and reparations are ordered.

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receive from that traffic in 1997 and on the likely growth in volumes and revenues over the 20-year SAC analysis period. These issues are discussed below.[61]

1. Base-Year Revenues

For movements where the ORR's lines would replicate all of the UP's lines used to provide the transportation, the parties assume that the ORR revenues would be the same as UP's revenues on that traffic. However, as noted above, the ORR would not replicate the entire UP system, and thus some shipments in the ORR's traffic group would have to be interchanged with what would remain of UP in order to complete the transportation. For such crossover traffic, the revenues would need to be divided between UP and ORR.

FMC used the same (modified mileage prorate) method that has been used in prior SAC cases to estimate the revenues that the SARR would earn from a crossover movement.[62] FMC argues that, without specific information on UP's division of total shipment revenue on UP's actual

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[61] On November 24, 1999, UP requested that we reopen the record for receipt of a tendered study prepared by FMC's economic consultant, L.E. Peabody & Associates (LEPA), for the Alliance for Rail Competition (ARC). That report contained volume and rate projections for all Class I railroads for the period 1998-2005. Those projections are substantially lower than the projections used for the same years in this proceeding. UP contends that the projections in the ARC study are more representative of what the ORR could expect, and tenders the ARC report to impeach the credibility of LEPA's traffic projections here.

FMC, in a reply filed December 8, 1999, pointed out that the ARC study was not specific to the traffic in the ORR traffic group, but covered all traffic carried by all Class I railroads. FMC submits that the projections in the ARC study would have been higher if the internal UP data had been available to LEPA. We agree with FMC that UP's new evidence does not bear directly on the ORR traffic. Therefore, we deny UP's untimely request to reopen the record.

[62] Under the modified mileage block prorate method, a carrier obtains one mileage block of "credit" for each 100 miles (or portion thereof) that it handles the shipment (e.g., a railroad handling a shipment 101 or 199 miles would get 2 blocks credit). Originating and terminating carriers get credit for an additional block to cover the added cost associated with originating and terminating traffic. Total blocks for any movement are divided into total revenue to develop a revenue per block, which is then multiplied by each carrier's block count to develop its share of revenues. This is the best procedure for allocating revenues to carriers where market-based divisions are not available. See McCarty at 9; Bituminous Coal–Hiawatha, UT to Moapa, NV, 10 I.C.C.2d 259, 268 (1994) (Nevada Power II).

Excerpts from STB Docket No. 42051 WPL

30829
EB

SERVICE DATE - LATE RELEASE SEPTEMBER 13, 2001

STB PRINTED VERSION

This decision will be printed in the bound volumes of the STB printed reports at a later date.

SURFACE TRANSPORTATION BOARD

DECISION

STB Docket No. 42051

WISCONSIN POWER AND LIGHT COMPANY
v.
UNION PACIFIC RAILROAD COMPANY

Decided: September 12, 2001

The Board finds that the defendant railroad has market dominance over the transportation at issue and that the challenged rate is unreasonably high. Maximum reasonable rates are prescribed and reparations are ordered.

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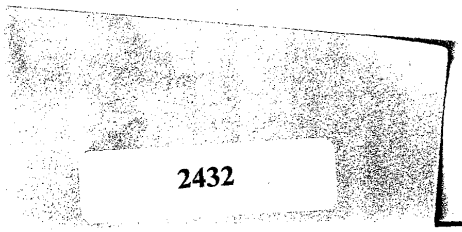
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a. Base-Year Revenues

The parties disagree on the portion of UP's base-year (1999) revenues that should be allocated to the EWRR for crossover traffic.[56] While they agree on using the modified mileage block proration methodology,[57] UP contends that WPL misapplied that methodology in its opening evidence and ignored revenue adjustments in the waybill records. On rebuttal, WPL adjusted its revenue estimates to correct for these errors. However, WPL notes that UP without explanation adjusted the distances for certain movements reflected in the UP traffic tapes produced during discovery, thereby affecting the revenue shares determined by the mileage proration.[58] As a result of UP's mileage adjustments, the parties' base-year revenue estimates for the EWRR differ by approximately $11.5 million.

Because UP provided no explanation for its mileage adjustments, we use WPL's revised base-year revenues for the EWRR, developed from the traffic tapes provided by UP during discovery, as the starting point for estimating EWRR revenues for the 2000-2019 period.

b. Forecast Revenues

The parties' forecasts of the EWRR's future revenues differ due to the various issues discussed below.

i. Year 2000—UP and WPL disagree on the rate levels applicable to certain shippers in 2000. UP argues that WPL's opening evidence relied on out-of-date rates for six shippers. In its rebuttal evidence, WPL agreed with UP's updates for five of the shippers, but rejected UP's

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[56] Crossover traffic is current UP traffic that would (hypothetically) move in interline UP/EWRR service. The majority of EWRR traffic would be crossover traffic.

[57] Under the modified mileage block proration method, a carrier participating in a multi-carrier (interline) movement obtains one mileage block of "credit" for each 100 miles (or portion thereof) that it handles the shipment (e.g., when a railroad's participation in a movement is between 101 and 199 miles, it would get 2 blocks credit). Originating or terminating carriers get credit for an additional block to cover the added costs associated with originating or terminating traffic. A carrier's share of the revenue for a movement is determined by multiplying the total movement revenue by the carrier's number of mileage blocks and dividing that product by the total number of mileage blocks for all participating carriers.

[58] For several movements, UP has multiple routes between the same origin and destination on its line. In computing the EWRR's revenue share, WPL derived the mileages for each actual movement from the traffic tapes, by dividing car-mile figures by the number of carloads or ton-mile figures by the number of net tons.

revised rate for City Public Service of San Antonio (CPSSA) on grounds that UP had not provided any documentation of the rate reduction UP claimed this shipper received in 2000.

We agree that UP has not supported its claim that the CPSSA rate was reduced.[59] There is no record of a UP/CPSSA agreement,[60] even though it would be highly unusual for a commercial transaction involving millions of dollars not to be reduced to writing. Therefore, we use WPL's revised estimate of the 2000 rate levels for these six shippers as the best evidence of record.

For the other shippers in the EWRR traffic group, both parties developed 2000 revenues from base-year (1999) data. WPL did this by constructing the rate that would be applicable to each utility based on the rate escalation clauses in the contracts.[61] (Other than WPL, each shipper in the EWRR traffic group moves its traffic under a transportation contract with UP.) UP used a different procedure,[62] which it claims shows that rates for the EWRR traffic group declined in 2000 as a result of competition and a soft coal market.

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[59] For UP's discussion of this issue, see UP Reply V.S. Boone, at 6.

[60] UP informed WPL that the rate reduction agreement would be reduced to writing, but the record does not contain any such documentation. WPL Reb. W.P. Crowley 4612-15.

[61] WPL first calculated a base rate for each origin/destination (O/D) pair by dividing the 1999 revenues for that O/D pair by the total tons moved in 1999. WPL then escalated the 1999 base rate using a plant-specific escalation factor—the relationship between the RCAF-U (the rail cost adjustment factor, unadjusted for changes in railroad productivity, published quarterly by the Board) and the escalation clause contained in the contract. Where actual contracts were not provided by UP during discovery (13 contracts), WPL assumed that the rates would escalate at the average escalation factor contained in the contracts that UP had disclosed.

[62] UP first developed the ratio of revenue per revenue ton mile (R/RTM) from the first 6 months of 2000 to same period for 1999. It applied this ratio to the 1999 rates to calculate rates for 2000; then divided those 2000 rates by the length of haul to develop R/RTM for 2000; and finally multiplied 2000 R/RTM by the ton-miles of traffic it forecasted that the EWRR would carry in 2000 to develop 2000 revenues.

There are several movements for which UP could not use this methodology because the data for 1999 or 2000 were not available. For those movements, UP developed 2000 rates by escalating 1999 rates by the average escalation factor from all contracts produced by UP during discovery—the same procedure WPL used when specific contract data was unavailable. However, even where UP used WPL's methodology, its numbers differed from WPL's due to UP's application of a modified mileage proration procedure based on mileages not derived from the traffic tapes produced during discovery—an application that, as discussed above, we reject.

We reject UP's convoluted procedure. We see no reason to rely on such mathematical machinations when actual contract information is available. We use WPL's figures that consist of the actual 2000 rates for the five shippers that had new rates in 2000, and for the other movements escalate base-year rates by using the contract-specific escalator or rate schedule contained in the current contracts or, where escalation factors are not available, the average escalation factor in the contracts of the EWRR traffic group.

ii. 2001-2019 Period—The parties do not agree on the EWRR revenues for 2001 and beyond because they disagree on the rate for the Associated Electric Cooperative (AEC) and the procedure for escalating rates.

UP asserts that it has made a rate concession to AEC, to become effective in 2002, that should be reflected in the SAC analysis. WPL objects that a final agreement has not been reached. We agree that UP has not supported the rate concession to AEC. Moreover, it is not clear that a true rate concession has even been proposed, as the draft of the agreement between UP and AEC includes an apparently countervailing provision under which UP could purchase the shipper's coal cars at a price significantly below market value. Therefore, we assume that the existing rate is the best indicator of what the future rate will be. See Coal Rate Guidelines, 1 I.C.C.2d at 544.

For all traffic in the group, WPL used contract-specific information to project EWRR rates for each year that the existing contracts would be in effect. (For the 13 shippers for which escalation clauses had not been disclosed by UP during discovery, WPL inflated the rates by the average escalation factor in other contracts.) UP claims that WPL used incorrect escalation factors for four shippers (Oklahoma Gas & Electric, Nebraska Public Power District, Lower Colorado River Authority, and Union Electric), and UP supplied the correct escalation factors for those shippers. Moreover, for Commonwealth Edison/Midwest Generation (ComEd) traffic, UP contends that, notwithstanding the escalation provisions in the contracts, a 1999 compact calls for a rate freeze until the expiration of the existing contracts, and thus no escalator should be applied. For all other shippers, UP inflated rates using an average escalation factor for the period of the existing contracts.

WPL accepts UP's corrections to the contract escalation factors for the four shippers mentioned above. As for ComEd, WPL maintains that the 1999 compact applies only to one EWRR destination—the ComEd Kincaid plant—and not to other ComEd plants. Thus, WPL continues to apply the escalation factor in the existing contracts to ComEd plants other than Kincaid. For all other shippers, WPL continues to use a contract-specific approach for as long as the current contracts are scheduled to be in effect.

We agree that, where specific information is available for individual movements, that data is the best evidence. Thus, where available, we use the escalation factors from specific contracts to inflate rates for the duration of each contract. Furthermore, after reviewing the 1999

ComEd compact, we agree that the only EWRR plant to which the rate freeze clearly applies is the Kincaid plant.[63] And where no movement-specific rate or escalation factor is available, we apply the average of the escalation factors from those contracts that are available. Thus, we use WPL's revised evidence on the level of rates during the pendency of existing contracts.

Upon expiration of the existing contracts, UP contends that the market would require the EWRR to grant significant rate concessions. UP states that, for eight plants in the EWRR traffic groups where contracts recently expired, the renegotiated rates were an average of 7.7% lower than in the previous contract and the new contracts were for an average of 4 years. On the assumption that this trend would continue, resulting in repeated rate decreases for all of the EWRR traffic over the 20-year analysis period,[64] UP calculated that the revenues for the traffic group would be 12.8% less in 2019 than base-year revenues.

WPL argues that UP's 7.7% downward adjustment is based on a selected sample that is biased because it does not reflect seven other recently renegotiated contracts.[65] On rebuttal, WPL submitted its own analysis of the rate changes that can be expected after current contracts expire. For traffic it considers captive, WPL assumed that rates would escalate by 52% of the RCAF-U.[66] For traffic it considers competitive, WPL developed market rates[67] and escalated those rates annually by 100% of UP's forecast of its changes in costs.

UP complains that WPL's captive traffic rate adjustment is based on only two contracts and that WPL's market rate adjustment for competitive movements fails to reflect competitive pressures that have forced UP to reduce rates as contracts expire.[68]

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[63] While several contracts are referenced in the compact, we cannot determine on this record that those contracts relate to traffic in the EWRR group.

[64] For Union Electric, UP maintains that, because of fierce competition from BNSF, the EWRR would need to reduce rates at the end of 2001 by even more to retain that traffic.

[65] Citing a June 12, 2000 Traffic World article, WPL also contends that competition for Union Electric's traffic is not as fierce as UP states and that a rate reduction of the magnitude suggested by UP would be unnecessary.

[66] The RCAF-U is a composite index of industry-wide railroad costs.

[67] To calculate a market rate, WPL used the lower of the average rate per ton-mile for all competitive coal traffic having contract renewals during the 1999-2002 time period or the rate per ton-mile the competitive shipper paid at the end of the current contract.

[68] UP Brief, at 12.

We reject UP's assumption that rates would decrease by 7.7% every 4 years. We find that UP's development of its 7.7% factor was flawed and unreliable.[69] Furthermore, because the record does not contain a comparison of the other terms in the expired and current contracts, we cannot determine the extent to which the rate reductions referenced by UP were due to competitive circumstances or some other reason (e.g., changed service requirements, such as a switch to shipper-supplied cars that would lower the carrier's costs). Finally, we are troubled by UP's exclusion of information on rates in seven additional contracts that have recently expired.[70]

We also reject WPL's rebuttal evidence. The escalation factor of 52% of the RCAF-U is unreliable, as it is based on only two contracts.[71] In addition, WPL provided no support for its assumption that rates for competitive coal traffic would escalate at 100% of UP's forecast of its changes in costs. Indeed, by increasing rates on competitive traffic using this escalation factor, the rates on competitive traffic would eventually eclipse the rates on captive traffic. This is counter intuitive, as shippers of competitive traffic have more options, and therefore more negotiating leverage, than captive traffic shippers.

In the absence of better evidence, we assume that the rate trends reflected in the existing contracts will continue. See Coal Rate Guidelines, 1 I.C.C.2d at 544. Therefore, after expiration of a contract, we use the average of all escalation factors contained in unexpired contracts to project the rates for that traffic for the remainder of the SAC analysis period.

C. Operating Costs

After selecting the traffic group and the broad parameters of the EWRR network configuration, and determining the traffic volumes and revenues associated with the traffic group selected, WPL developed an operating plan for how the EWRR would handle this traffic. UP has challenged WPL's evidence in major respects. **Appendix C, Table C-1** summarizes the parties' differing estimates of the annual operating costs that would need to be incurred to operate the EWRR, as well as the figures we use for our SAC analysis.

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[69] UP overstated the Entergy rate reduction; the contract rate contained in the excerpt from the Fourth Addendum to ICC-WPRI-0065 contains a different rate than UP used in this case. UP Reply W.P. Gaskins 778-783. Furthermore, the claimed reduction for the Coleto Creek plant was based on the first 3 years of the contract and overstated the reduction over the life of the 6-year contract. UP Reply V.S. Gaskins, Exh. DWG-16.

[70] See WPL Reb. V.S. Crowley, at 58.

[71] We note that WPL has argued that UP's use of eight contracts is not representative of the entire shipper group.

III-B
STAND-ALONE RAILROAD SYSTEM

III - B - 1

BNSF Track Charts

REDACTED

Capacity Management

Executive summary

How well a country uses its capital ought to be extremely important to its citizens and policymakers. While labor productivity is a topic of constant debate and was the subject of earlier McKinsey Global Institute studies, far less attention has been paid to questions about the productivity of a nation's capital stock.

"Capital" actually has two interrelated meanings: physical capital (machinery and buildings) and financial capital (stocks and bonds), which lays claim on physical capital and the income it generates. Capital productivity is the measure of how well physical capital is used in providing goods and services. Productive use of physical capital and labor are the two most important sources of a nation's material standard of living.

In addition, how well a nation uses its physical capital affects the return that people get on the money they save. The higher the returns, the less they need to save for the future and the more they can consume today. This is especially critical because most developed countries have a rapidly growing proportion of retirees. Very small differences in rates of return create large differences in future retirement income.

To measure how productively major economies use capital and to understand the causes for differences in performance, the McKinsey Global Institute has studied capital productivity in Germany, Japan and the U.S. We analyzed economywide performance and also conducted case studies in five industries: auto, food processing, retail, telecommunications and electric utilities.

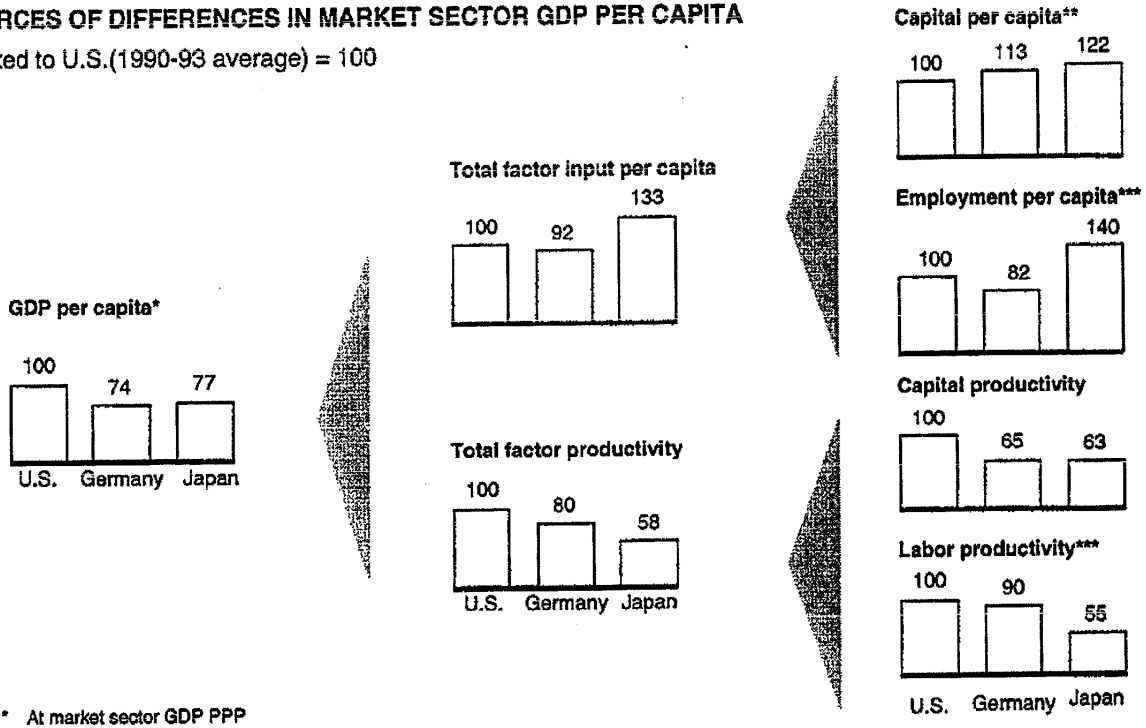
Our principal findings are:

- Significant differences exist in capital productivity across nations: productivity in Germany and Japan is about two-thirds U.S. levels.
- Managers in Japan and Germany could close most of the gap without a single change in regulation but do not because of lack of incentives and lack of market pressure.
- Combining this work with the previous work of MGI on labor productivity, we find that the U.S. achieves leading economic performance by having higher productivity in both labor *and* capital. Japan's low productivity is due to sub-par performance in both factors, while Germany's lower overall productivity stems primarily from less productive use of a very high level of capital (**Exhibit 1**).
- Higher capital productivity in the U.S. has led to higher financial returns, which have more than compensated for lower savings and investment rates by generating more capital income (**Exhibit 2**). As a result, the U.S. has maintained greater financial wealth and consumed more at the same time.

Exhibit 1

SOURCES OF DIFFERENCES IN MARKET SECTOR GDP PER CAPITA

Indexed to U.S.(1990-93 average) = 100



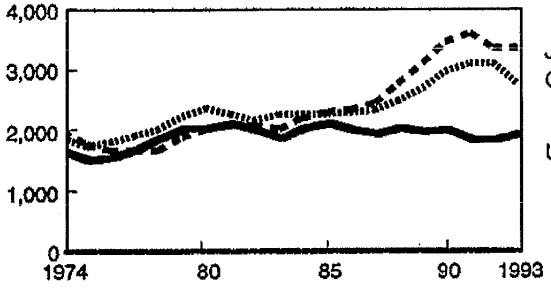
* At market sector GDP PPP
** At nonresidential structures and equipment PPP
*** Adjusted for differences in hours worked

Source: O'Mahony; Bureau of Economic Analysis; Statistisches Bundesamt; Economic Planning Agency; OECD; McKinsey analysis

Exhibit 2

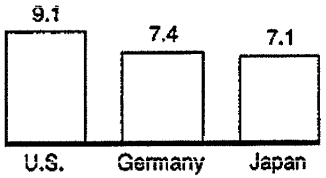
ACCUMULATED CAPITAL INCOME IN THE MARKET SECTOR 1974-93

Market sector gross business investment levels
1990 U.S.$ per capita*

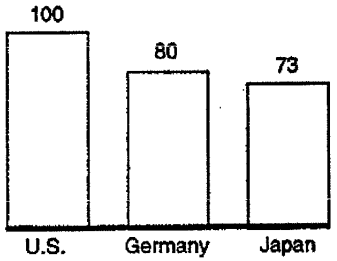


	Average
Japan	$2,331
Germany	2,288
U.S.	1,899

Financial return in corporate sector**
Percent



Simulated accumulated capital income (1974-93) ***
Indexed to U.S. = 100



* At GDP PPP

** Calculated as the real internal rate of return to all investments (debt and equity) in the corporate sector over the time period from 1974-93. The measure includes both income and appreciation returns and is post corporate tax and preindividual income tax

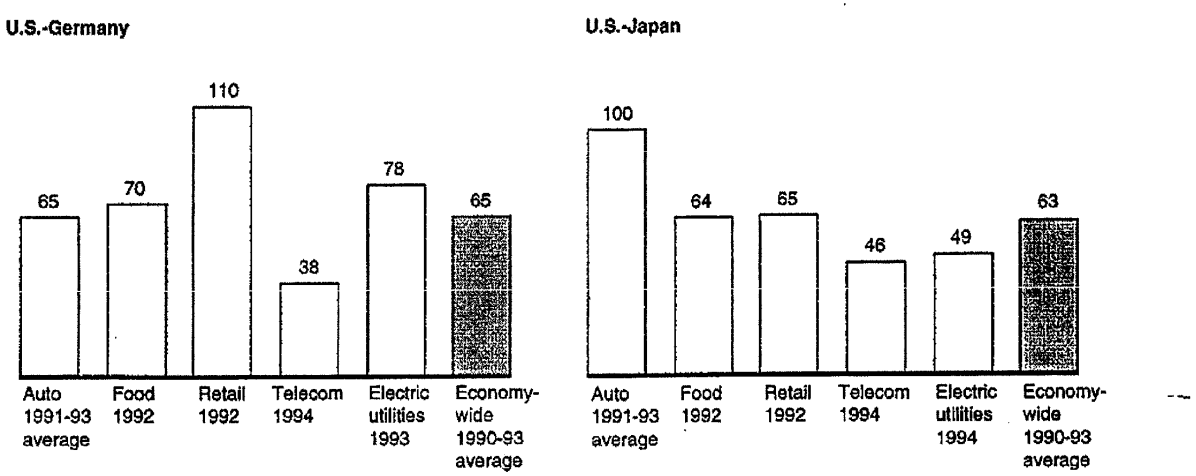
*** This represents a simulation that compounds and sums annual investment levels at each country's financial return until 1993. This capital income has been partly consumed and partly reinvested

Source: O'Mahony; Bureau of Economic Analysis; Statistisches Bundesamt; Economic Planning Agency; OECD; McKinsey analysis

Exhibit 3

SUMMARY OF CAPITAL PRODUCTIVITY RESULTS*

Indexed to U.S. = 100



* For latest year in which data was available. Averages taken where there was significant volatility in results due to changes in the business cycle

Source: McKinsey analysis

The following sections summarize our findings about differences in capital productivity and how those differences affect economic and financial performance.

CAPITAL PRODUCTIVITY AND STANDARDS OF LIVING

Two paradoxes

The differing overall economic performance of the three countries poses two important paradoxes:

- Why is Japan's GDP per capita not higher than that of the U.S. when Japan has saved so much more and worked so hard?
- Why has German labor productivity not exceeded U.S. levels when Germany has invested so much more capital per worker?

The resolution of the Japan paradox is straightforward. GDP per capita is simply a product of labor and capital, and how productively they are used (Exhibit 1). Although Japan invests more capital and uses more labor than either the U.S. or Germany, extremely low productivity in both capital and labor drags down their GDP. Japan has a market sector GDP per capita similar to that of Germany, and only 77 percent of U.S. levels. Simply put, the Japanese invest a lot of money and a lot of time and energy and get comparatively little back in return.

Germany's situation is different. As Exhibit 1 shows, Germany uses far more capital than the U.S. but works significantly less. As a result, there is about 40 percent more plant and equipment for each worker hour than in the U.S. We would expect, therefore, that German labor would be more productive. It is not, however, because capital has not been used efficiently and effectively. This explains the German labor productivity paradox and shows up as capital productivity that is only two-thirds of the U.S. level.

The combination of much lower capital productivity and slightly lower labor productivity results in an overall productivity level in the German market sector that is 20 percent below the U.S. level. As shown in Exhibit 1, this lower overall productivity is the primary reason why Germany's market sector GDP per capita is 26 percent below U.S. levels. The other, less important, reason is lower labor inputs. In this sense, capital productivity is the most important factor in understanding Germany's lower GDP per capita.

Analysis of individual industries supports our overall results (**Exhibit 3**). For both Germany and Japan, in four out of our five case studies, capital productivity was significantly below U.S. levels.

Exhibit 4

SUMMARY OF CAUSALITY ANALYSIS

● Important in explaining capital productivity differences
○ Secondary in explaining capital productivity differences
x Not important

		Auto	Food	Retail	Telecom	Electric utilities	Summary
IV. External factors affecting industry dynamics	**Macroeconomic environment**	○	x	●	x	○	○
	Product market factors						
	• Demand factors	x	○	x	x	○	x
	• Competition laws/enforcement	x	○	x	○	x	x
	• Monopoly regulation	x	x	x	●	●	●
	• Regulation/market interference	●	○	●	○	x	●
	Labor market factors						
	• Skills	x	x	x	x	x	x
	• Demographics	●	x	x	x	x	x
	• Rules/unionism	○	○	x	x	x	x
	Capital market factors						
	• Sources of funding/market for corporate control	x	○	●	x	x	○
	• Ownership/governance mechanisms	x	●	○	●	●	●
	Upstream and downstream market factors	x	●	○	N/A	x	○
III. Industry dynamics (Level and nature of competition for customers, capital, and labor)	**Product market**	●	●	●	○	N/A	●
	Labor market	●	○	x	x	x	x
	Capital market						
	• Alignment of goals with productivity	○	●	●	●	●	●
	• Ongoing improvement pressure	x	x	x	x	x	x
	• Forcing of exit	x	●	●	x	x	○
II. Managerial decisions	**Marketing**	●	●	●	●	●	●
	Industry chain management	●	○	●	N/A	x	○
	Production technique	●	x	○	x	x	x
	Capital expenditure decision making	○	●	x	○	●	○
	Operations effectiveness	●	○	●	x	○	●
I. Components of differences in productivity	**Capacity created with assets**	●	○	●	○	●	●
	Capacity utilization	●	●	○	●	●	●

Source: McKinsey analysis

Managers' choice

Detailed industry analysis also permits us to understand why capital productivity really differs. **Exhibit 4** summarizes the hierarchy of factors that caused productivity differences. Surprisingly, we found that managers in Japan and Germany could achieve performance close to U.S. levels if they ran their companies differently, which they appear to be free to do. Formal external constraints, such as labor laws and rules, do not fundamentally restrict improvement opportunities.

Capital productivity shows up in two ways: the amount of assets used to create a given level of capacity, and the extent to which that capacity is utilized. Different levels of capacity utilization explain 70 percent of the productivity gap between Germany and the U.S., while Japan's lower productivity is almost equally accounted for by each of the two factors. We found that managers' actions, especially their marketing decisions and the effectiveness of their operational processes, directly affect performance on both variables (**Exhibit 5**).

Why is marketing so important? Good decisions on pricing and product lines can influence demand to increase capacity utilization, which in turn means higher productivity. For example, in electric utilities, time-of-use pricing reduces peak loads and raises average utilization of power plants. Marketing can also increase the value to the consumer of each unit produced, as it does in retail through effective merchandising and new format development.

Excellent "shopfloor" operational practices are also crucial. For instance, Toyota's production system illustrates the many ways that effectiveness in operations can raise capital productivity. Interestingly, the same operational practices that improve labor productivity boost capital productivity as well. Thus, we find that high capital productivity is not achieved by throwing in more labor, nor vice versa.

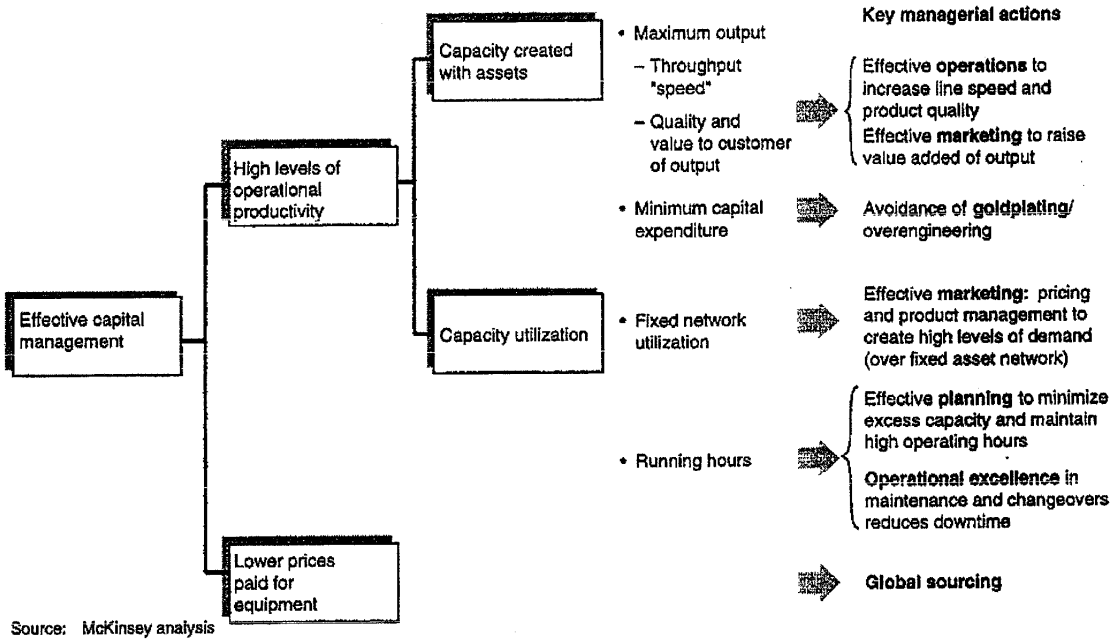
We also found that for many German firms ineffective investment planning lowered capacity utilization, and "goldplating" and overengineering were common. For example, the phone cables of Deutsche Telekom must be able to withstand being run over by a tank. We found other examples of goldplating in the auto industry.

These results further explain the two paradoxes above. Goldplated or underutilized equipment in Germany does not improve labor productivity. In addition, the U.S. achieves higher overall productivity, especially relative to Japan, through better marketing and operational practices that improve both labor and capital productivity at the same time. Amassing more resources, without changing managerial practices, does not improve productivity.

Although not impacting physical productivity, global sourcing of equipment is another way to improve financial return on capital. German and Japanese managers tend to buy their equipment locally. Yet they could vastly reduce equipment prices by buying more on the global market. The potential savings range from 10 percent in the food industry to as much as 60 percent in telecom.

Exhibit 5

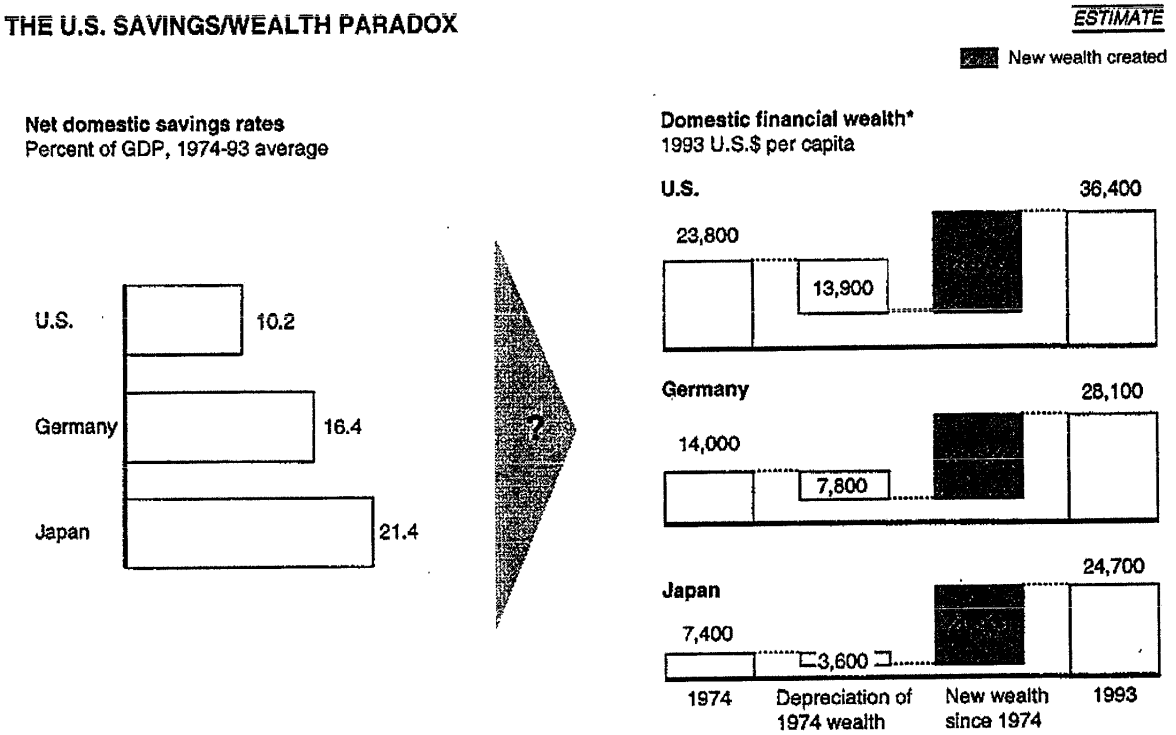
SUMMARY OF CRITICAL FACTORS IN EXPLAINING DIFFERENCES IN PERFORMANCE



Source: McKinsey analysis

Exhibit 6

THE U.S. SAVINGS/WEALTH PARADOX



* Household net financial wealth invested in domestic business at GDP-PPP

Source: Federal Reserve Flow of Funds; Deutsche Bundesbank; Economic Planning Agency; OECD National Accounts; McKinsey analysis

Motivating managers

We do not believe that managers in one country are any more skilled, or have acted any more rationally, than in another. Rather, they have responded to the pressures and incentives placed upon them by their environments. Productivity differences across countries arise because economic systems create different dynamics of innovation, improvement and creative destruction.

A competitive product market is critical in creating a positive dynamic. Low entry barriers, intense competition on price/value trade-offs and frequent start-ups and exits spur managers to improve productivity. In all of our "non-monopoly" case studies – food, auto, retail – the more intense the product market competition, the higher the productivity. Regulations, from zoning to trade protection, were often the basic cause of differences in the nature of competition, because they raised entry barriers and constrained managerial actions.

Interestingly, in the regulated monopoly industries – telecom and electric utilities – performance differences across countries were significant. We found that higher performance levels in the U.S. were attributable to the fact that firms were owned by private investors, not the government, and that regulators focused on maintaining low prices. Both of these factors combined put more pressure on U.S. managers to use their resources well.

The capital market is also important in stimulating higher productivity. More so in the U.S. than elsewhere, the capital market boosts productivity because it gives managers a clear primary objective – financial performance – that generally guides them to use their resources productively. Furthermore, the U.S. capital market complements the competitive pressures of the product market by cutting off funds to failing firms. Consequently, the high levels of productivity attained in most U.S. industries do not square with the "conventional wisdom" that the U.S. capital market undermines economic performance by forcing firms to be too focused on short-term results.

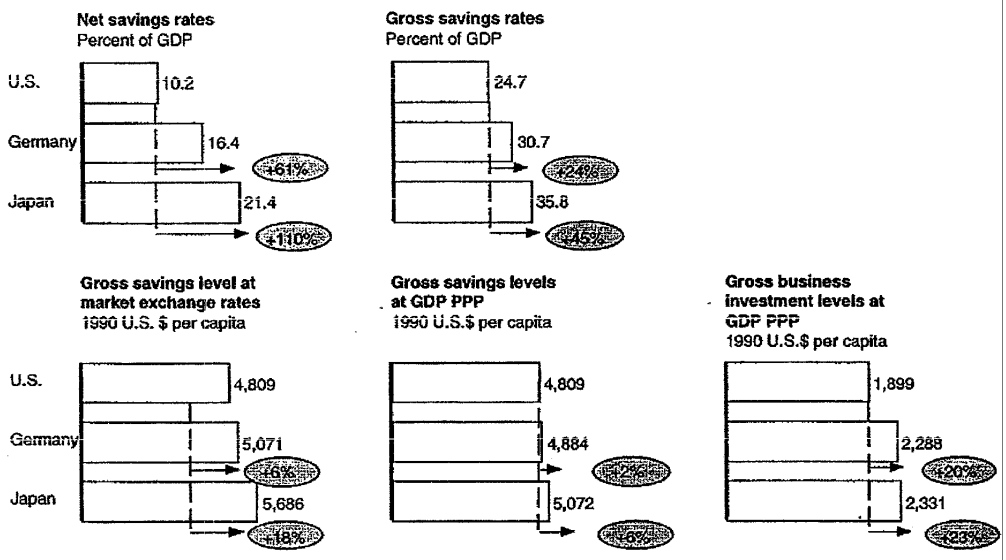
CAPITAL PRODUCTIVITY AND WEALTH

Capital also has the role as the storage device for saving some of current income for future consumption. The accumulation of these savings represents the wealth of a nation. The connection between savings and wealth raises another paradox: how could the U.S., which has saved relatively little, have created more new wealth than the other two countries (**Exhibit 6**)? As the exhibit shows, a large part of U.S. wealth existing in 1970 was eroded by underlying physical depreciation. This depreciation was offset by the creation of more new wealth than in Germany and Japan.

The explanation of higher U.S. wealth and the resolution of the paradox lies in combining the right savings numbers with the differences in capital productivity. First, U.S. savings invested in the business sector have not actually been as dramatically low relative to Germany and Japan as popular wisdom suggests,

Exhibit 7

DOMESTIC SAVINGS RATES AND INVESTMENT LEVELS 1974-93 AVERAGE

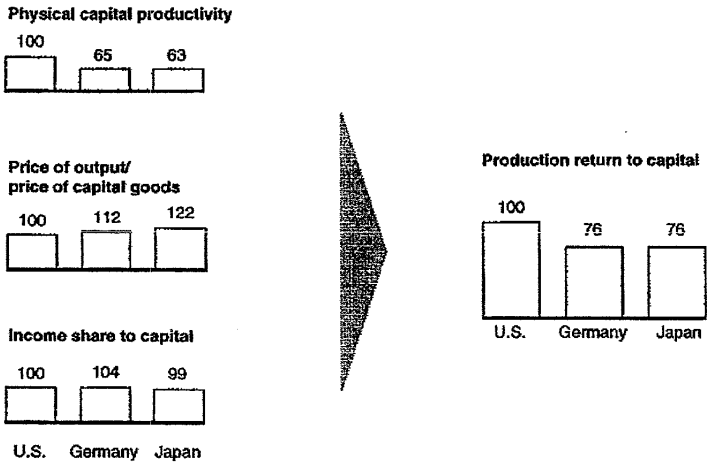


Source: McKinsey analysis

Exhibit 8

PRODUCTION RETURN TO CAPITAL

Indexed to U.S. (1990-93 average) = 100



Source: O'Mahony; Bureau of Economic Analysis; Statistisches Bundesamt; Economic Planning Agency; OECD; McKinsey analysis

once they are measured on a per capita basis and equalized for purchasing power. Commonly published net domestic savings rates feature the well-known, very large differences among Germany, Japan and the U.S. Germany's *net* domestic savings rate has been more than 60 percent higher than that of the U.S., and Japan's has been more than double.

This picture is misleading, however, when we want to explain per capita levels of new wealth creation because it is based on net rather than gross and on rates rather than levels. We care about *new* wealth creation because it, not *net* wealth creation, reflects the total, real performance of an economy. New wealth is generated from all new (gross) investment, including investment that replaces old capital. Net wealth takes into account the wearing out of old capital assets (depreciation). However, depreciation is a "fact of life" that depends on the level of initial wealth. Replacing depreciated assets is as much a part of the real performance of an economy as the addition of net wealth. To analyze new wealth created on a per capita basis thus requires starting with gross investment on a per capita basis. These numbers paint a very different picture from net savings rates (**Exhibit 7**). Between 1974 and 1993, gross business investment levels have been only about 20 percent higher in Germany and Japan than in the U.S.

Thus, our approach starts by measuring the levels of new capital invested in business and calculates new income generated, accounting for the consumption of capital in the production process as a reduction in the return generated. We analyzed only wealth generated by businesses, because other forms of wealth (real estate, government infrastructure) cannot be managed through an active production process to create income to capital.

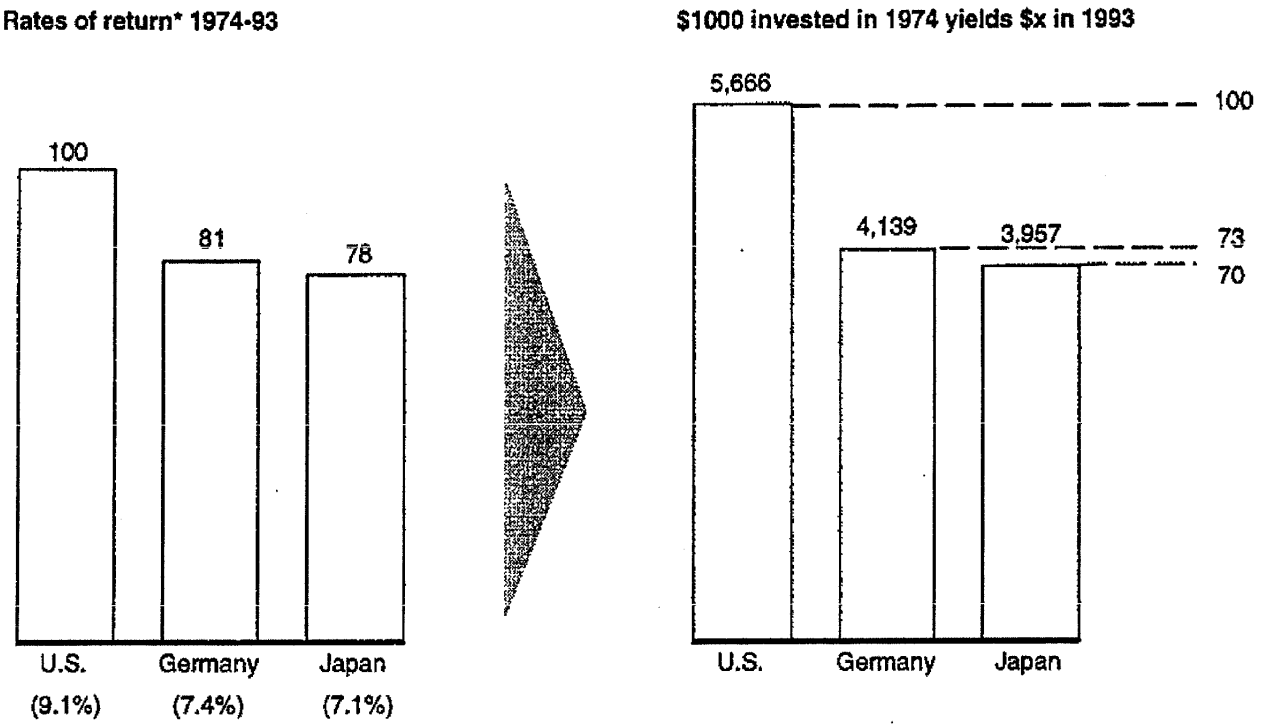
Second, higher capital productivity in the U.S. means that savings worked harder and generated higher capital income, despite the somewhat lower savings.

Our measures of financial performance demonstrate that the U.S. has earned higher returns to capital than the other two countries. By incorporating into our measure of physical capital productivity the prices of outputs and capital inputs, as well as how much of the income generated goes to capital, we can calculate the financial return that investors get in a one-year period. This static measure, which we call the production return to capital, shows that over 1990 to 1993, capital in Germany and Japan earned roughly three-quarters of what it did in the U.S. (**Exhibit 8**).

We have also calculated a dynamic measure of financial return, the real internal rate of return. This measure is dynamic because it relates current income to past investments and is market based because it includes the appreciation in the value of financial assets. This appreciation is linked to expectations of future earnings, as reflected in increases in stock market prices. Again, we see marked differences in performance over the period 1974 to 1993, with Germany and Japan earning roughly 80 percent of U.S. levels (**Exhibit 9**). German performance is consistently lower than the U.S., while for Japan, our results are sensitive to the

Exhibit 9

RATES OF RETURN AND ACCUMULATION OF CAPITAL
Indexed to U.S. = 100



* Calculated as the real internal rate of return for the entire corporate sector of each economy over the period 1974-93. The measure includes returns to both debt and equity

Source: McKinsey analysis

time period measured because of high income to capital in the early 1970s and the stock market "bubble" in the late 1980s.

These two measures of return, taken together, offer several striking conclusions. Both show marked differences in performance between countries. While each measure has its limitations and irreducible sensitivity to assumptions persists, the similarity of results from both static and dynamic measures strengthens the findings.

Differences in physical capital productivity explain the higher returns to capital. Because the income share to capital is roughly the same in the three economies, the higher financial performance in the U.S. is attributable to "a larger pie being created" and not to capital's "taking a larger share of the pie." Moreover, this correlation between productivity and return supports our observation in the case studies that a clear managerial goal of high financial performance is generally consistent with high levels of productivity.

Finally, these different rates of return compound to significant differences in wealth creation, and help explain the U.S. "savings/wealth" paradox. Higher returns create more capital income, allowing the U.S. to create more new wealth while saving less and thus consuming more today (Exhibit 2). Moreover, this higher wealth has been achieved while maintaining the highest labor productivity.

Because we have studied GDP per capita levels and not growth rates, our results have no implications for the relationship between savings rates and GDP growth.

IMPLICATIONS

These results offer clear implications for policymakers, corporations and investors in all three countries.

Policymakers should recognize the importance of capital productivity to overall standards of living and to financial returns to investors. As economies all over the world increasingly have to rely on funded pension systems, higher financial returns to investors will become a critical requirement for securing adequate retirement benefits. Policymakers can help investors exert performance pressure on managers of public corporations by improving the quality and clarity of information that investors receive in public filings.

To improve national productivity performance, governments should foster product market competition by eliminating regulations that raise barriers to entry and protect existing corporations. In the case of regulated monopolies, policymakers can increase the performance pressure on managers through the use of price cap (price reduction) regulation or prudence reviews. Finally, remaining government-owned firms should be privatized to create investor pressure on managers, which in turn should increase productivity.

Corporations should establish explicit performance goals that include both financial and operational measures of capital and asset productivity. What gets measured gets done. A growing body of research suggests that capital productivity measures such as Return on Invested Capital are key drivers of returns to investors. Adoption of these measures would go a long way to getting managers to use capital better.

Particularly in Germany and Japan, the bias to procure locally, resulting in significant cost penalties for capital goods relative to global sourcing, should be addressed. In addition, more closely linking investment decisions to customer requirements should help avoid unwarranted goldplating. Finally, a relentless focus on asset and capacity utilization, both through better marketing and adopting global best practice in shopfloor operations, should have significant impact on asset and capital productivity. In this regard, pursuit of global opportunities will provide both a window on global best practice as well as additional markets to reap the benefits of improved productivity performance.

Investors, particularly institutional investors that manage pension funds, should recognize the high cost of lower financial returns. They should demand to be better informed, seeking better financial as well as operational information on capital and asset productivity. They should also become insistent advocates of good investment performance, as they represent all of us who are dependent on investment performance for a secure retirement.

Production and Operations Management

Manufacturing and Services

Eighth Edition

Richard B. Chase
University of Southern California

Nicholas J. Aquilano
University of Arizona

F. Robert Jacobs
Indiana University

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3. Disney thought that Monday would be a light day for visitors and Friday a heavy one so it allocated staff accordingly; the reality was the reverse. The problem is compounded by the fact that the number of visitors in the high season can be 10 times the number in the low season. Inflexible labor schedules in France also aggravate the problem.
4. Disney built expensive trams along a lake to take guests from the hotels to the park. But people prefer to walk.
5. "We were told that Europeans don't take breakfast, so we downsized the restaurants," recalls one executive. But crowds showed up for a full breakfast. Disney was trying to serve 2,500 breakfasts in 350-seat restaurants at some hotels. Lines were horrendous. Disney reacted quickly with prepackaged breakfast delivery services.
6. The parking space was too small for buses. Restrooms were built for 50 drivers, though there were 200 drivers on peak days.

These problems have now all been solved. Thanks to over 50 million visitors, who enjoy the new rides like Space Mountain, Disneyland Paris is now a great success. Mickey and Minnie, it turns out, are pretty much universal celebrities. ●

Sources: Peter Gumbel and Richard Turner, "Mouse Trap," *The Wall Street Journal*, March 10, 1994, p A1. Updated from the following articles: Staff Reporter, "The Kingdom Inside a Republic," *The Economist*, April 13, 1996, pp. 66–67; and an Associated Press release "Paris' Mickey Has Better Mousetrap," April 20, 1997.

How much should a plant be able to produce? How many customers should a service facility be able to serve? What kinds of problems arise as the production system expands? Whether we are talking about Euro Disney near Paris, France, or Clint's Machine Shop in Paris, Texas, such capacity questions are of major concern to their managers. In this chapter, we look at capacity from a strategic perspective—that is, how manufacturing and service firms plan capacity over the long run. We begin by discussing the nature of capacity from an OM perspective.

CAPACITY MANAGEMENT IN OPERATIONS

Capacity

A dictionary definition of **capacity** is "the ability to hold, receive, store, or accommodate." In a general business sense, it is most frequently viewed as the amount of output that a system is capable of achieving over a specific period of time. In a service setting, this might be the number of customers that can be handled between 12 o'clock and 1 o'clock in the afternoon. In manufacturing, this might be the number of automobiles that can be produced in a single shift.

When looking at capacity, operations managers need to look at both resource input *and* product outputs. The reason is that, for planning purposes, real (or effective) capacity is dependent on what is to be produced. For example, a firm that makes multiple products inevitably can produce more of one kind than of another with a given level of resource inputs. Thus, while the management of an automobile factory may state that their facility has 10,000 labor hours available per year, they are also thinking that these labor hours can be used to make either 50,000 two-door models or 40,000 four-door models (or some mix of the two- and four-door models). This reflects their knowledge of what their current technology and labor force inputs can produce and the product mix that is to be demanded from these resources.

Time Horizons for Capacity Planning

Capacity planning is generally viewed in three time durations:

Long range—greater than one year. Where productive resources take a long time to acquire or dispose of, such as buildings, equipment, or facilities. Long-range capacity planning requires top management participation and approval.

Intermediate range—monthly or quarterly plans for the next 6 to 18 months. Here, capacity may be varied by such alternatives as hiring, layoffs, new tools, minor equipment purchases, and subcontracting.

Short range—less than one month. This is tied into the daily or weekly scheduling process and involves making adjustments to eliminate the variance between planned output and actual output. This includes alternatives such as overtime, personnel transfers, and alternative production routings.

An operations management view also emphasizes the time dimension of capacity. This is evidenced in the common distinction drawn between long-range, intermediate-range, and short-range capacity planning. (See the box "Time Horizons for Capacity Planning.") Capacity must also be stated relative to some period of time.

Finally, capacity planning itself has different meaning to individuals at different levels within the operations management hierarchy. The vice president of manufacturing is concerned with aggregate capacity of all factories within the firm. The vice president's concern relates mainly to the financial resources required to support these factories. You will study this process when you cover capital budgeting during your finance course.

FINANCE

The plant manager (PM) is concerned with the capacity of the individual plant. The PM must decide how best to use this capacity to meet the anticipated demand for products. Since short-term demand may greatly exceed short-term capacity during peak demand periods during the year, the PM must determine when and how much inventory to build in anticipation of these peaks. We will deal with this topic in depth when we cover aggregate planning in Chapter 14.

At a lower level, the first-level supervisor is concerned with capacity of the equipment and manpower mix at the department level. This person will work out detailed work schedules to accommodate the daily flow of work. We will study this scheduling process in Chapter 17.

While there is no one person with the job title "capacity manager," there are several managerial positions charged with the effective use of capacity. Capacity is a relative term, and in an operations management context, may be defined as *the amount of resource inputs available relative to output requirements over a particular period of time.* Note that this definition makes no distinction between efficient and inefficient use of capacity. In this respect, it is consistent with how the government Bureau of Economic Analysis defines "maximum practical capacity" used in its surveys: "That output attained within the normal operating schedule of shifts per day and days per week including the use of high cost inefficient facilities"[1]

[1] In gathering capacity statistics, the Bureau of Economic Analysis asks two questions of surveyed firms: (1) At what percentage of manufacturing capacity did your company operate in (month and year)? (2) At what percentage of (month and year) manufacturing capacity would your company have preferred to operate in order to achieve maximum profits or other objective? See "Survey of Current Business," an annual publication of the *U.S. Department of Commerce Journal.*

The Wealth of a Nation

Why is productivity important? How does it relate to capacity?

Politicians and business leaders perpetually joust over which nation's workers are more productive. They pay far less attention to equally important questions about who uses capital most productively. By "capital" we mean both physical capital (machinery and buildings) and financial capital (stocks and bonds).

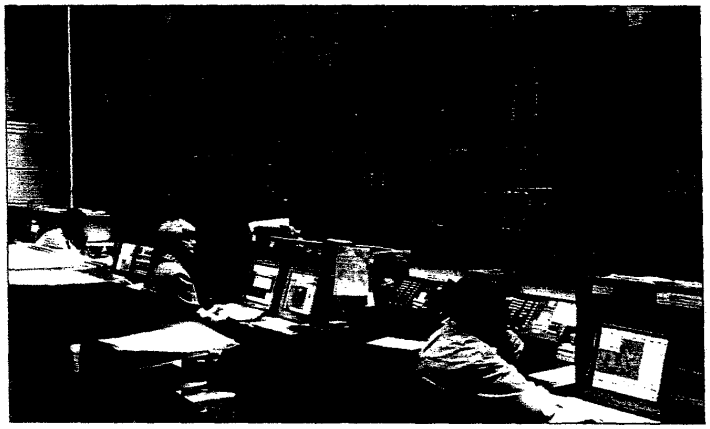
Bill Lewis of the McKinsey Global Institute in Washington, D.C., argues that the productive use of capital—along with labor—not only enhances a nation's material standard of living, it also determines the return that its citizens get on their savings. The higher the returns you earn, the less you need to save for the future and the more you can consume today. In the U.S., rates of return on both debt and equity capital averaged 9.1 percent between 1974 and 1993, compared to 7.4 percent for Germany and 7.1 percent for Japan. You might think about it in this way: If you invested $1,000 in the U.S. in 1974, by 1993 you would have $5,666, compared to $4,139 in Germany and $3,597 in Japan.

Why has the U.S. used its capital so well? The answer lies in the way American managers market their products and run their factories. High productivity comes from the clever and subtle trade-offs they make between giving customers what they want and operating efficiently.

For example, Japanese electric utilities—which trail their U.S. counterparts by better than 50 percent in capital productivity—keep massive generating capacity in reserve in order to meet the huge demand for power on the hottest summer days. Much of this capacity lies unused for the rest of the year. In the U.S., utilities reduce such peaks through clever pricing schemes and incentives for the consumers to cool their homes more efficiently.

In telecommunications, the U.S. leads both Germany and Japan in capital productivity by well over 50 percent. Innovations like 800 numbers, faxes, and cheap long-distance service mean that the U.S. phone wires are packed with calls. Higher use means a higher return on the billions of dollars invested in telephone networks.

So why do managers in Germany operate with this excess of capital and capacity? Mr. Lewis argues that it is not because they're less savvy or skilled;



The telecommunications system of AT&T provides interstate and intrastate long-distance calling, voice-messaging, and language translation services to 80 million U.S. consumers.

rather, it is because of the system in which they operate. In the U.S., low entry barriers, intense competition on price and value, and frequent startups and bankruptcies spur managers to use their capital well. In the McKinsey Institute study, data from case studies in food, auto, and retail industries indicate that the more competitive the product market, the better the productivity. Regulations ranging from zoning to trade protection were often the basic cause of poor performance in Germany and Japan, because they made it harder for competitors to enter and drive out inefficient management.

Mr. Lewis argues that it's the U.S.'s higher capital productivity that makes the difference. It leads to higher returns on savings, which allow Americans to create more new wealth while saving less and consuming more. Americans wind up wealthier because their money works harder. A neat trick if there ever was one.

Source: Adapted from an editorial by Bill Lewis. "The Wealth of Nations." *The Wall Street Journal*, June 7, 1996.

A recent report by the McKinsey Global Institute (see box titled "The Wealth of a Nation") indicates that how well a company, or a group of companies, manages long-term capacity, may impact the generation of wealth in a country. These findings tie together the notions of productivity, which were discussed in Chapter 2, with capacity management issues discussed in this chapter.

Strategic Capacity Planning

The objective of **strategic capacity planning** is to provide an approach for determining the overall capacity level of capital intensive resources—facilities, equipment, and overall labor force size—that best supports the company's long-range competitive strategy. The capacity level selected has a critical impact on the firm's response rate, its cost structure, its inventory policies, and its management and staff support requirements. If capacity is inadequate, a company may lose customers through slow service or by allowing competitors to enter the market. If capacity is excessive, a company may have to reduce prices to stimulate demand, or else underutilize its workforce, carry excess inventory, or seek additional, less profitable products to stay in business.

CAPACITY PLANNING CONCEPTS

Best Operating Level

The term *capacity* implies an attainable rate of output, for example 300 cars per day, but says nothing about how long that rate can be sustained. Thus, we do not know if this 300 cars per day is a one-day peak or a six-month average. To avoid this problem, the concept of **best operating level** is used. This is the level of capacity for which the process was designed and thus is the volume of output at which average unit cost is minimum. Determining this minimum is difficult because it involves a complex trade-off between the allocation of fixed overhead costs and the cost of overtime, equipment wear, defect rates, and other costs.

Capacity Utilization Rate

An important measure is the **capacity utilization rate,** which reveals how close a firm is to its best operating point (i.e., design capacity):

$$\textit{Capacity utilization rate} = \frac{\textit{Capacity used}}{\textit{Best operating level}}$$

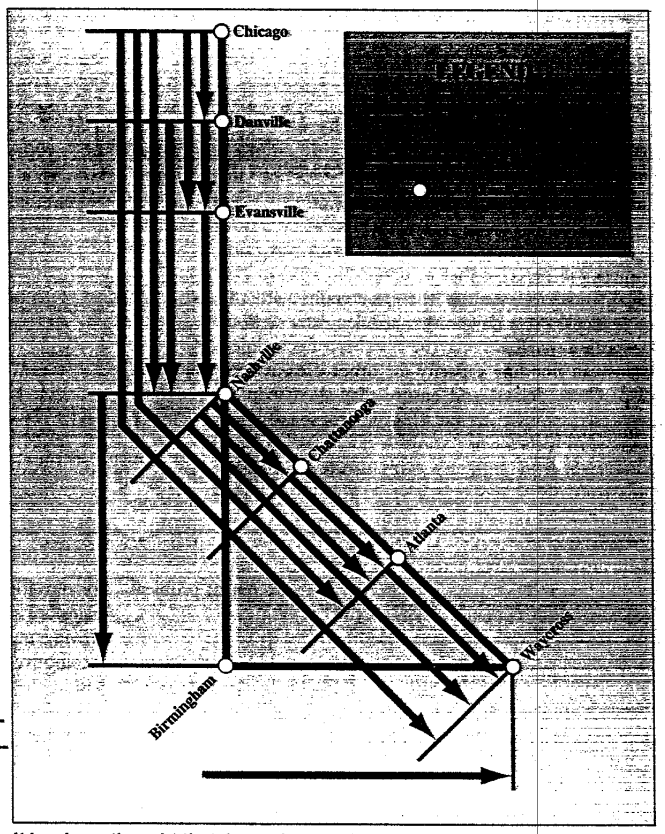
Adding **flexibility** to the scheduled railroad

With tools like priority switching and dynamic car routing, railroads can produce highly reliable service without sacrificing train capacity utilization.

By Dr. Edwin R. "Chip" Kraft, for Railway Age

Few railroads have fully embraced the concept of scheduled operations. While they recognize the value of adhering to plan, they still wish to retain some flexibility in their operations.

Flexibility is not a bad thing. Scheduling everything can lead to an increase in train starts and crew expense. By foregoing opportunities to cancel or consolidate trains "on the fly," some railroads feel they may be missing opportunities for cost savings. Today's railroads usually try to size their operating plans for an average day's loading. Since demand varies, some days there's too much traffic, leading to capacity overflows and missed connections. Other days, there aren't enough cars to fill trains. That can lead to delays holding for tonnage, or to annulments, consolidations, and missed connections in downstream yards. Either way, service suffers. One way to deal with these problems is to implement priority switching and/or dynamic car routing in yards.



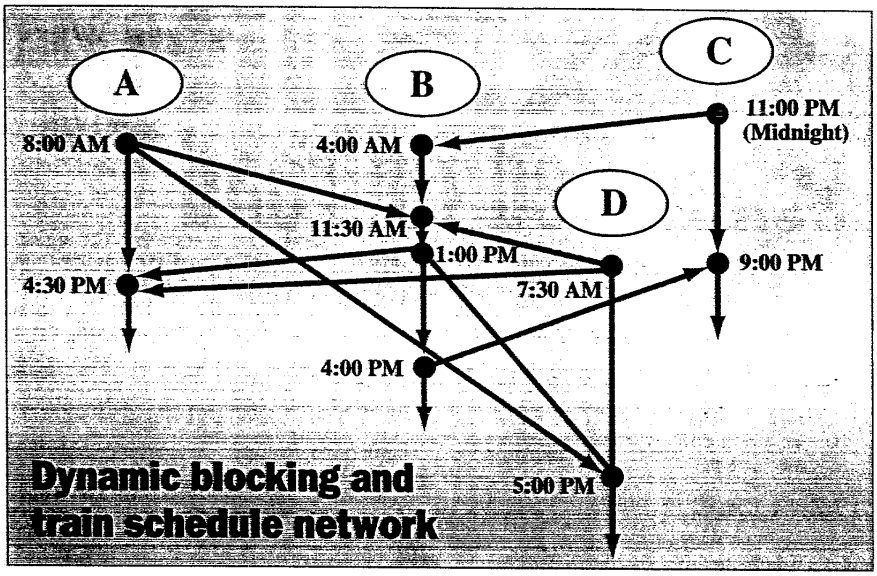
It has been thought that dynamic car scheduling would only be useful on a widely spread-out network, but in fact the availability of alternative train schedule paths, not physical routings, is what matters. Dynamic car scheduling may prove most useful on complex linear corridors with numerous intermediate terminals. For example, this illustration shows multiple routing possibilities in CSXT's Chicago to Waycross corridor—demonstrating the numerous combinations of schedule paths that may exist.

Start small and build up

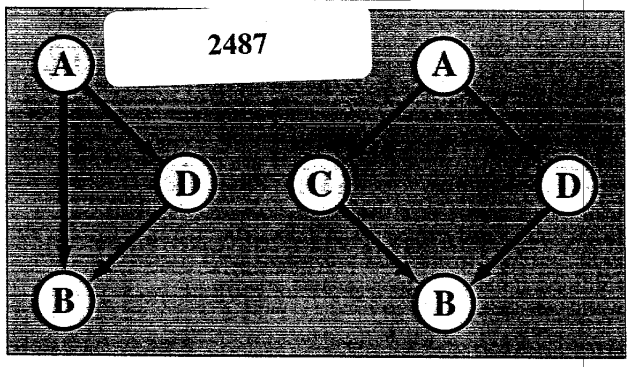
Whether there's a need for canceling or consolidating trains depends on how the operating plan is constructed. If too much capacity is built into the plan, there will be very few capacity overflows, but lots of opportunities for canceling or consolidating trains. If a scheduled railroad were sized for such peak loading, it wouldn't be efficient or financially sustainable. A better approach to planning a scheduled railroad follows some basic rules:

■ Size the operating plan conservatively. Reducing the number of planned trains reduces opportunities for canceling or consolidating regular trains. Scheduled trains should always tend to run heavy, rather than light, providing an incentive to operate those trains on time. Extra trains can be used to increase capacity when demand is higher than expected. Such trains may be predefined to the car scheduling system, but service commitments should never be based on trains that aren't guaranteed to operate. Retaining the ability to operate extra trains allows a railroad to remain flexible to meet traffic demand surges. Operation of extra trains does not conflict with the reliability goals of a scheduled railroad.

■ Low-volume blocks that don't operate every day add to operating expense but make no contribution to reliability. Simplify the operating plan to eliminate low-volume blocks that don't justify the effort needed to build them in yards.



These two graphics illustrate a three-dimensional space-time network, like the kind utilized for dynamic car scheduling applications. Most of the time with dynamic car scheduling (59% of the time in a simulation), a different intermediate yard is substituted with no net increase in car handling. Only 41% of the time did a diversion to another block cause an increase in handling. In all those cases, the additional recommended handling was a tightly-scheduled connection that would cause the car to be delivered sooner than it could be with any other available path.



■ If the operating plan differs every day, customers will perceive that as unreliable service. The ideal situation is to run the same trains with the same blocks every day using scheduled extra sections on peak days. Reducing the number of scheduled trains can free line capacity for other uses, reduce dispatching delays, and ensure that all scheduled trains run consistently full. This improves reliability by reducing line congestion and may even allow some traffic growth to be accommodated on existing infrastructure. Scheduling fewer trains also ensures there will be a sufficient number of locomotives and crews to operate them. If fewer trains are scheduled, then instead of having to determine which trains should be cancelled or consolidated, the management problem becomes one of coping with capacity overflows.

What to do with those extra cars?

■ Dynamic routing: If other trains moving in the same direction have room, the blocking could be changed on overflow cars to allow those cars to ride on those trains instead. A rerouted car moves different block/same day compared to its original trip plan.

■ Priority switching: If all trains moving in that direction are maxed out, cars with guaranteed delivery times must have first access to available train capacity. By holding back low-priority cars, space can be reserved for more important connections. A priority-switched car moves same block/different day compared to its original trip plan.

■ If locomotives and crews are available, capacity might be increased by adding locomotives onto an existing train, or by running extra trains. However, with dynamic routing and priority switching, running extra trains would only be a last resort.

Reducing the number of planned trains tends to "meter" traffic across the system. Unless extra trains are operated, traffic congestion can't propagate. While running extra trains might solve a problem at one place, they might relocate the problem to the next yard. To prevent that, a computer-assisted process for developing a tactical operations plan is needed. If extra trains are scheduled into a yard, enough capacity to handle all arriving traffic should also be scheduled outbound. Crews and locomotives will be needed in the yard to switch the extra cars within the required time frame, without impacting regularly scheduled work. If this can't be done, it might be better to let low-priority cars sit at origin, or not pull them from customer sidings or accept them in interchange, until sufficient network capacity can be found to move them to their destinations.

Controllable yard operations

Implementation of dynamic routing may require investment in a flexible car scheduling system that recognizes the customer service commitment for every shipment. The goal is to find a set of trip plans to best utilize capacity—adjusting traffic to fit trains that have already been scheduled, rather than adjusting trains to fit the traffic. A dynamic car scheduling system would recognize capacity constraints in trains and yards, model yard connections in a realistic way (not just by using cutoff times), and be able to find economical alternative routings where train capacity still exists.

These requirements may pose a significant operating challenge. Yards must be able to precisely control not only train

blocking, but also selection of which cars are taken on each train. "Cherry picking" high-priority cars or trying to change blocking at the trim end of classification yards is not practical. So, the challenge of dynamic routing and priority switching (in conventional yards) is that decisions need to be made hours ahead of time, before cars come to the hump to be switched. Making decisions this far ahead of time requires strict adherence to the operating plan and very high data integrity.

The easiest way to priority switch in a conventional yard is to send low-priority cars in excess of train capacity into a rehump track, instead of classifying them into outbound trains. While this increases a yard's workload, the cost of re-humping a few cars is much lower than running additional trains or the cost of service failures if priority cars are left behind.

A more-flexible approach to priority switching is multiple-stage switching. This allows precision control over train blocking and permits last-minute selection of cars taken. Since cars are humped twice, the decision on which cars to take can be deferred until the second humping. If multiple-stage switching is used in a specially designed yard with long tracks, the need for flat-switching cars at the trim end of the yard can be eliminated. Further, cars can be safely inspected and repaired in the classification yard, so inbound arriving trains can be humped right away, without waiting for inbound inspection. This method of priority switching is less sensitive to data integrity, and is tolerant of last-minute operational changes or disruptions. Priority decisions could be made locally, based on a simple set of rules, making priority switching feasible even for railroads that don't have advanced computer systems or car scheduling capabilities. (The multiple-stage approach is more fully described in two pending U.S. patent applications. See www.railreliability.com.)

Better interline cooperation

Railroads need to work together to improve handling of interchange traffic. They can't predict the number of cars that will arrive, or effectively plan their locomotive and crew assignments if their interline partners are running ad-hoc operations. There's still a need to develop an industry-wide consensus on exactly what a scheduled railroad is (or isn't) with respect to the way interline shipments are handled.

One possible framework for such a consensus is already in place: Railinc's Interline Service Management (ISM) system. ISM functions much like an industry-wide car scheduling system. Its main drawback is a lack of sufficient flexibility. ISM presumes that each car can have only one possible trip plan. A more flexible ISM framework is needed that is compatible with dynamic car scheduling and revenue management systems.

To improve carload service, some simple methods for priority switching and dynamic routing could be quickly implemented. Low priority cars can be sent into rehump tracks to prevent train capacity overflows, for example. Car scheduling systems could be reprogrammed to be able to recognize at least a few alternate routes. These measures, in conjuction with a scheduled operation, would allow for immediate improvements in carload service quality.

Edwin R. "Chip" Kraft, a Senior Associate at Reebie Associates, holds a Ph.D. in Systems Engineering from the University of Pennsylvania. He has worked for CSX Transportation, Union Pacific, and Amtrak.

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First publish date: 05/02/2003

BNSF Grants Union Pacific Trackage Rights to UPRR in MO, AR

Author: TO News from STB

The Burlington Northern and Santa Fe Railway Company (BNSF) has agreed to grant temporary overhead trackage rights to Union Pacific Railroad Company (UP) over BNSF's rail lines between BNSF milepost 141.7 near Rockview, MO, and BNSF milepost 422.2 near Jonesboro, AR, a distance of approximately 181.6 miles.

The parties intended to consummate the transaction on April 16, 2003; however, the earliest the transaction could have been consummated was April 21, 2003, the effective date of the exemption. The temporary trackage rights will allow UP to facilitate maintenance work on its lines.

DEPARTMENT OF TRANSPORTATION

Research and Special Programs Administration

[Docket No. RSPA–97–2426]

Pipeline Safety: National Pipeline Mapping System

AGENCY: Office of Pipeline Safety, Research and Special Programs Administration, DOT.

ACTION: Notice; availability of operator and repository standards for National Pipeline Mapping System.

SUMMARY: The Office of Pipeline Safety (OPS) finalized "Standards for Pipeline and Liquefied Natural Gas Operator Submissions" and "Standards for the NPMS National and State Repositories" in March 1999. Copies of the National Pipeline Mapping System (NPMS) operator and repository standards are available for viewing and downloading from the NPMS Web site at www.npms.rspa.dot.gov/submissions/standards.htm and from the Docket Management System's home page at *http://dms.dot.gov.* from the NPMS National Repository at (703) 317–6205.

ADDRESSES: Paper copies of the NPMS operator and repository standards are available from the NPMS National Repository at (703) 317–6205 or from the Dockets Facility, U.S. Department of Transportation, Plaza 401, 400 Seventh Street, SW, Washington, DC 20590–0001. The Dockets Facility is located on the plaza level of the Nassif Building in Room 401, 400 Seventh Street, SW, Washington, DC. The Dockets Facility is open from 10:00 a.m. to 5:00 p.m., Monday through Friday, except on Federal holidays.

FOR FURTHER INFORMATION CONTACT: Steve Fischer, OPS, (202) 366–6267 or Richard Huriaux, OPS, (202) 366–4565, regarding the subject matter of this notice.

SUPPLEMENTARY INFORMATION: The National Pipeline Mapping System is a voluntary initiative that relies on pipeline operators to submit hard copy or digital pipeline data. The NPMS, when complete, will contain locational information for all natural gas and hazardous liquid transmission pipelines operating in the United States. The Office of Pipeline Safety (OPS) created NPMS standards that describe how an operator should prepare and submit pipeline data and how the NPMS repositories will process and maintain the pipeline data. The "Standards for Pipeline and Liquefied Natural Gas Operator Submissions" and "Standards for the NPMS National and State Repositories" were finalized in March 1999.

The NPMS consists of a National Repository and fifteen state repositories, including Alabama, California, Connecticut, Illinois, Kansas, Kentucky, Louisiana, Maine, Minnesota, New Jersey, Oklahoma, Pennsylvania, Texas, Virginia, and Washington. The state repositories process state pipeline data. The National Repository processes pipeline data for states without a state repository and integrates national and state data.

The NPMS will serve as a decision support tool to enable OPS to understand the relationship between pipelines and their environments, to plan effective pipeline inspection programs, to effectively respond to gas and hazardous liquid releases, and to quickly and accurately respond to requests for pipeline information. The NPMS will also serve as a community education tool that will enable local officials to make better planning and emergency response decisions.

Issued in Washington, DC on July 11, 2001.

Stacey L. Gerard,

Associate Administrator for Pipeline Safety.

[FR Doc. 01–17800 Filed 7–16–01; 8:45 am]

BILLING CODE 4910–60–P

DEPARTMENT OF TRANSPORTATION

Surface Transportation Board

[STB Finance Docket No. 34053 (Sub-No. 1)]

Union Pacific Railroad Company—Trackage Rights Exemption—The Burlington Northern and Santa Fe Railway Company

AGENCY: Surface Transportation Board.

ACTION: Notice of Exemption.

SUMMARY: The Board, under 49 U.S.C. 10502, exempts the trackage rights described in STB Finance Docket No. 34053[1] to permit the trackage rights to expire on November 30, 2001, in accordance with the agreement of the parties.

DATES: This exemption will be effective on August 16, 2001.

Petitions to reopen must be filed by August 6, 2001.

ADDRESSES: An original and 10 copies of all pleadings referring to STB Finance Docket No. 34053 (Sub-No. 1) must be filed with the Surface Transportation Board, Office of the Secretary, Case Control Unit, 1925 K Street, NW., Washington, DC 20423–0001. In addition, a copy of all pleadings must be served on petitioners' representatives (1) Robert T. Opal, 1416 Dodge Street, Room 830, Omaha, NE 68179, and (2) Yolanda Grimes Brown, 2500 Lou Menk Drive, P.O. Box 961039, Fort Worth, TX 76161–0039.

FOR FURTHER INFORMATION CONTACT: Joseph H. Dettmar (202) 565–1600. [TDD for the hearing impaired 1–800–877–8339.]

SUPPLEMENTARY INFORMATION: Additional information is contained in the Board's decision. To purchase a copy of the full decision, write to, call, or pick up in person from: Da-To-Da Office Solutions, Room 405, 1925 K Street, NW., Washington, DC 20006. Telephone: (202) 293–7776. [Assistance for the hearing impaired is available through TDD services 1–800–877–8339.]

Board decisions and notices are available on our website at "WWW.STB.DOT.GOV."

Decided: July 10, 2001.

By the Board, Chairman Morgan, Vice Chairman Clyburn, and Commissioner Burkes.

Vernon A. Williams,

Secretary.

[FR Doc. 01–17847 Filed 7–16–01; 8:45 am]

BILLING CODE 4915–00–P

[1] On June 8, 2001, the Union Pacific Railroad Company (UP) filed a notice of exemption under the Board's class exemption procedures at 49 CFR 1180.2(d)(7). The notice covered the agreement by BNSF to grant temporary overhead trackage rights to UP over 235 miles of BNSF's rail line between BNSF milepost 885.2 near Bakersfield, CA, and BNSF milepost 1120.54 near Stockton, CA. *See Union Pacific Railroad Company—Trackage Rights Exemption—The Burlington Northern and Santa Fe Railway Company,* STB Finance Docket No. 34053 (STB served June 22, 2001). The trackage rights agreement is scheduled to expire November 30, 2001. The trackage rights operations under the exemption were scheduled to be consummated on June 17, 2001.

DEPARTMENT OF THE TREASURY

Submission for OMB Review; Comment Request

July 5, 2001.

The Department of Treasury has submitted the following public information collection requirement(s) to OMB for review and clearance under the Paperwork Reduction Act of 1995, Public Law 104–13. Copies of the submission(s) may be obtained by calling the Treasury Bureau Clearance Officer listed. Comments regarding this information collection should be addressed to the OMB reviewer listed and to the Treasury Department Clearance Officer, Department of the Treasury, Room 2110, 1425 New York Avenue, NW., Washington, DC 20220.

31303
EB

SERVICE DATE - OCTOBER 6, 2000

SURFACE TRANSPORTATION BOARD

DECISION

STB Finance Docket No. 33926 (Sub-No. 1)

THE BURLINGTON NORTHERN AND SANTA FE RAILWAY COMPANY–
TRACKAGE RIGHTS EXEMPTION–UNION PACIFIC RAILROAD COMPANY

Decided: September 27, 2000

By petition filed September 6, 2000, The Burlington Northern and Santa Fe Railway Company (BNSF) and the Union Pacific Railroad Company (UP) (collectively petitioners) request that the Board permit the trackage rights arrangement exempted in STB Finance Docket No. 33926[1] to extend only until November 11, 2000.

According to petitioners, the trackage rights arrangement exempted in STB Finance Docket No. 33926 is necessary because BNSF will be performing maintenance and repairs on its main line and will utilize the trackage rights over UP's lines as alternate routes for BNSF's traffic during that time. However, BNSF states that UP is willing to grant operating rights on its trackage only during the period of maintenance and repair on BNSF's line. Petitioners maintain that operating crew constraints on UP dictate that BNSF's operations over UP's line be handled as trackage rights rather than as a detour or other similar arrangement. Petitioners further maintain that, without approval of temporary trackage rights, it is unlikely that any other arrangement can be reached to allow BNSF to operate over UP's line, and BNSF would face the possibility of severe congestion and service disruption on its main line.

Although the petitioners have expressly agreed on the term of the proposed trackage rights arrangement, trackage rights approved under the class exemption normally remain

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[1] On September 6, 2000, BNSF filed a notice of exemption under the Board's class exemption procedures at 49 CFR 1180.2(d)(7). The notice covered the agreement by UP to grant temporary overhead trackage rights to BNSF over approximately 245 miles of UP's lines as follows: (1) between East Portland, OR, in the vicinity of UP's milepost 770.34, and Oakridge, OR, in the vicinity of UP's milepost 580.5 (UP's Brooklyn Subdivision); and (2) between Oakridge, in the vicinity of UP's milepost 580.5 and Chemult, OR, in the vicinity of UP's milepost 502.9 (UP's Cascade Subdivision). See The Burlington Northern and Santa Fe Railway Company–Trackage Rights Exemption–Union Pacific Railroad Company, STB Finance Docket No. 33926 (STB served Sept. 15, 2000). The trackage rights agreement is scheduled to expire on November 11, 2000. The trackage rights operations under the exemption were scheduled to be consummated on September 15, 2000.

effective indefinitely regardless of any durational contract provisions. Occasionally, trackage rights exemptions have been granted for a limited term rather than in perpetuity. See Union Pacific Railroad Company–Trackage Rights Exemption–The Burlington Northern and Santa Fe Railway Company, STB Finance Docket No. 33879 (Sub-No. 1) (STB served June 23, 2000); The Burlington Northern and Santa Fe Railway Company–Trackage Rights Exemption–Union Pacific Railroad Company, STB Finance Docket No. 33833 (Sub-No. 1) (STB served Feb. 4, 2000); Union Pacific Railroad Company–Trackage Rights Exemption–The Burlington Northern and Santa Fe Railway Company, STB Finance Docket No. 33748 (Sub-No. 1) (STB served June 15, 1999); The Burlington Northern and Santa Fe Railway Company–Trackage Rights Exemption–Union Pacific Railroad Company, STB Finance Docket No. 33699 (Sub-No. 1) (STB served Feb. 5, 1999).

Under 49 U.S.C. 10502, we may exempt a person, class of persons, or a transaction or service, in whole or in part, when we find that: (1) continued regulation is not necessary to carry out the rail transportation policy of 49 U.S.C. 10101; and (2) either the transaction or service is of limited scope, or regulation is not necessary to protect shippers from the abuse of market power.

BNSF's trackage rights have already been authorized under the class exemption at 49 CFR 1180.2(d)(7). See Railroad Consolidation Procedures, 1 I.C.C.2d 270 (1985). Limiting the term of the trackage rights is consistent with the limited scope of the transaction previously exempted and will have no adverse impact on shippers on the line as the trackage rights that are the subject of the exemption are for overhead traffic only. Therefore, we will grant the petition and permit the trackage rights exempted in STB Finance Docket No. 33926 to expire on November 11, 2000.

This action will not significantly affect either the quality of the human environment or the conservation of energy resources.

It is ordered:

1. Under 49 U.S.C. 10502, we exempt the trackage rights described in STB Finance Docket No. 33926, as discussed above, to permit the trackage rights to expire on November 11, 2000.

2. Notice will be published in the Federal Register on October 6, 2000.

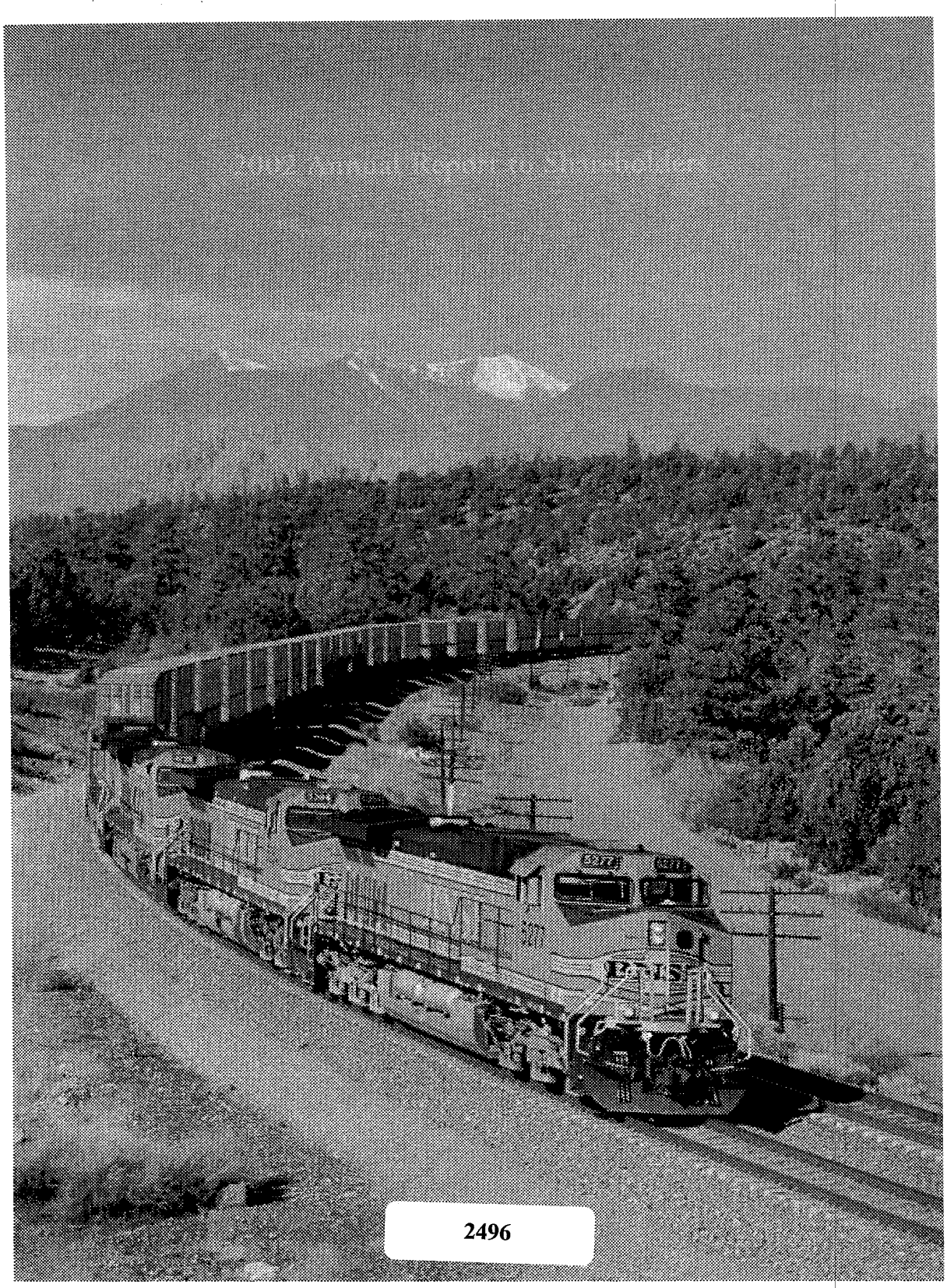
3. This decision is effective on November 5, 2000.

By the Board, Chairman Morgan, Vice Chairman Burkes, and Commissioner Clyburn.

Vernon A. Williams
Secretary

III-B-2

2002 BNSF PRB Originated Tons



2496

Southern Railway Company (KCS) and Canadian National Railway Company (CN) expanding the marketing reach for the organizations.

Consumer Products: The consumer freight business provided approximately 38 percent of freight revenues in 2002 and consisted of the following business sectors:

- *International.* International business consists primarily of container traffic from steamship companies and accounted for approximately 32 percent of total Consumer Products revenues.

- *Direct Marketing.* Direct marketing generated approximately 23 percent of total Consumer Products revenue. This business centers around intermodal traffic contracted from parcel shippers such as United Parcel Service and service for nationwide and regional LTL (less-than-truckload) carriers including Yellow Freight and Roadway Express.

- *Truckload.* Truckload traffic represented approximately 16 percent of total Consumer Products revenue. This traffic is comprised of business through the joint service arrangement with J.B. Hunt, as well as business from Schneider National and other truckload carriers.

- *Intermodal Marketing Companies.* Approximately 12 percent of total Consumer Products revenue was generated through intermodal marketing companies, primarily shipper agents and consolidators.

- *Automotive.* The transportation of both assembled motor vehicles and shipments of vehicle parts to numerous destinations throughout the Midwest, Southwest, West and Pacific Northwest provided about 9 percent of 2002 total Consumer Products revenue.

- *Perishables and Dry Boxcar.* Perishables and Dry Boxcar represented approximately 8 percent of total Consumer Products revenue. This group consists of beverages, canned goods and perishable food items. Other consumer goods handled include cotton, salt, rubber and tires, and miscellaneous boxcar shipments.

Coal: Based on total carloadings and tons hauled since the passage of the Clean Air Act of 1970, BNSF Railway is the largest transporter of low-sulfur coal in the United States. The transportation of coal contributed about 23 percent of 2002 freight revenues. Approximately 90 percent of BNSF Railway's coal traffic originated in the Powder River Basin of Wyoming and Montana during the three years ended December 31, 2002. These coal shipments were destined for coal-fired electric generating stations located primarily in the North Central, South Central and Mountain regions of the United States. BNSF Railway also transports large amounts of low-sulfur coal from the Powder River Basin to markets in the eastern and southeastern portions of the United States. The low-sulfur coal from the Powder River Basin is abundant, inexpensive to mine, clean-burning, and has a low delivered-cost to power plants. Also, deregulation in the electric utility industry is causing power generators to seek lower cost fuel sources and this increases demand for Powder River Basin coal.

Other coal shipments originate principally in Colorado, Illinois, New Mexico and North Dakota and are moved to electrical generating stations and industrial plants in the Mountain and North Central regions.

Industrial Products: Industrial Products' freight business provided approximately 23 percent of BNSF's freight revenues in 2002 and consists of the following four business areas:

- *Building Products.* This sector includes primary forest product commodities such as lumber, plywood, oriented strand board, particleboard, paper products, pulpmill feedstocks, wood pulp and sawlogs, which resulted in approximately 35 percent of total 2002 Industrial Products revenue. Also included in this sector are government, machinery and waste traffic. Commodities from this diverse group primarily originate from the Pacific Northwest, Western Canada, upper Midwest, and the Southeast for shipment mainly into domestic markets. Industries served include construction, furniture, photography, publishing, newspaper and industrial packaging. Shipments of waste, ranging from municipal waste to contaminated soil, are transported to landfills and reclamation centers across the country. The government and machinery business includes aircraft parts, agricultural and construction machinery, military equipment and large industrial machinery.

- *Construction Products.* The construction products sector represented approximately 35 percent of total Industrial Products revenue in 2002. This sector serves virtually all of the commodities included in or resulting from the production of steel along with mineral commodities such as clays, sands, cements, aggregates, sodium compounds and other industrial minerals. Industrial taconite, an iron ore derivative produced in northern Minnesota, scrap steel and coal coke are BNSF Railway's primary input products transported. Finished steel

Perishable commodities also grew, after we acquired 700 state-of-the-art refrigerated boxcars over the past two years. BNSF was the first railroad to use these cars, which offer a global positioning system for precise location information and two-way satellite communication to monitor and adjust temperatures.

Although Coal revenue was 2 percent below 2001, we served 65 utilities and handled nearly 240 million tons of coal in 2002, enough coal to generate about 10 percent of the nation's electricity. Our new 14-million-ton-a year contract with Georgia Power, which takes effect in January 2004, will add about three trains per day from the Powder River Basin in Wyoming to Macon, Ga.

Industrial Products revenue was seriously impacted by the slow recovery in America's industrial sector, although we achieved 6 percent revenue growth in chemicals and plastics. We are also expanding our transload business by as much as 10 percent in key urban markets, with new facilities and a more aggressive focus.

In 2002, our Economic Development group attracted onto our line 130 new or expanded customer facilities. Once in full operation, these facilities are expected to generate more than $100 million annually. The map on the inside front cover of this Annual Report outlines many plants and transload facilities built on our railroad in 2002.

Although our Agricultural Commodities were affected by world market pricing and weak export demand, there were a few bright spots. Our customers added 20 grain shuttle stations, including one in Mexico, bringing our total to 130 stations. We also opened three fertilizer shuttle stations, bringing our total to six. These shuttle stations load and unload 110-car trains within about 15 hours, benefiting our customers and improving our operating efficiency. Another Agricultural Commodities growth area is ethanol, a fuel made from corn, which we're moving to California and other markets from the Midwest.

Ease of Doing Business

Listening to our customers is the foundation for improving ease of doing business. In the second quarter 2002, we rolled out a comprehensive customer survey to gather feedback every 90 days. Overall, customers had good things to say. Of the 2,000 shippers responding to the survey, nearly 95 percent indicated they would consider recommending BNSF to another shipper.

There was also high satisfaction with our suite of e-tools, especially among our largest shippers. Areas for improvement include equipment availability and communication of service changes and new products. To manage our customer survey and several other customer listening tools, we created an "Ease Team" in mid-2002. They work with cross-functional teams across BNSF to identify and respond to customer input.

I am pleased with how much time our marketing group spent with customers and business partners through symposia, including our annual coal conference, five industrial products events, e-tools tutorials, our first-ever transload conference, our annual shortline conference and our Customer Advisory Board semi-annual meetings. Established in fall 1999, the Customer Advisory Board includes 30 customer representatives who offer feedback on strengths and areas for improvement and provide a sounding board for new products, services and policy changes.

These listening activities help differentiate BNSF and reinforce our brand as a customer-focused, quality service provider with the most advanced suite of web tools in the industry. BNSF's latest web tools, known as iPower, were introduced in 2002. Customers use these tools to plan the movement of freight, pay freight bills electronically, and perform all steps in between. We continue to enhance our iPower tools to make doing business easier and more efficient for our customers.

People

For our People initiative, we always start with safety. For 2002, that brings good news. Our injury frequency ratio was reduced by 17 percent, which represents about 200 fewer employee injuries in 2002 than

III-C
OPERATING PLAN

III - C - 1

BNSF Locomotives

2500

Burlington Northern & Santa Fe

2000-2001

Locomotive and Business Car

Review

By: Robert C. Del Grosso

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Front Cover: BNSF's 2000 Employee Special lead by SP 4-8-4 Daylight 4449, toured the Pacific Northwest between July 8-28, 2000. The train was operated exclusively for BNSF employees in appreciation of their accomplishments in making the BNSF Railway the leading railroad in the country. The special train consisted of BNSF's opulent business car fleet in which employees and their families rode in day-long excursions behind this massive steam locomotive, supplemented by BNSF C44-9W 4449. On July 18th, on its return trip between Spokane, Washington and Sandpoint, Idaho, SP 4449 begins the trip as it crosses over the boat marina just before heading across the bridge over majestic Lake Pend Oreille.

Rear Cover: BNSF's three GE AC4400CW's acquired in September 1999 and numbered 5600-5602 were the first three of this model to be entered onto the company roster. No additional units have as yet to be acquired, making sightings of this trio in action a special event. On September 4, 2000, 5600-5602 head up this eastbound empty unit coal train at a brief stop in Pasco, Washington for a crew change. The train is enroute back to Wyoming's Powder River Basin after having delivered a trainload of export coal to Robert's Bank, Vancouver, British Columbia. Both photos by *Robert C. Del Grosso*

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R/N	Model	Page
8301	SD75M/I	116
8639	B40-8	117
3739	GP60	118
8989	SD70MAC	119
9299	SD60M	121
9499	SD70MAC	122
9999	SD70MAC	123

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ries	Model	Page
8599	B39-8	130
0-9099	SD60	131

- - - - - 132

- - - 137

- - - 145

- 147
- - - - 149



w units being repainted into eet units become more eye- As the locomotive repainting trio of C44-9W's leading an lo on June 8, 2000 demon- for its heritage. *Ronald C. Hill*

Motive Power Summary



BNSF's first new locomotives were GE C44-9W's 960-1123 and wore the newly designed Heritage paint scheme. Creation of the Heritage II version, worn by the trailing unit, would relegate the simpler styling to pre-merger standard cab models and labeled as "Heritage I." Displaying these two styles are 1001 and 4333 on perhaps the first visit by the BNSF onto the Utah Railway at Martin, Utah on March 7, 2000. *Frank Keller*

BNSF's motive power fleet totaled some 5,450 locomotives as of December 31, 2000 and hovered at just over sixteen million horsepower. Having acquired 1,786 locomotives since August 1996, BNSF now has one of the youngest fleets in the business. Its fleet modernization program almost complete, locomotive purchases during 2001 are expected to be less than 100.

By January 2000 BNSF's locomotive fleet averaged a fleet-wide mean time between failures of 82 days. C44-9W's averaged 106 days between failures. The SD70MAC fleet posted a 94 mean day performance, up 16 days from the same period in 1999.

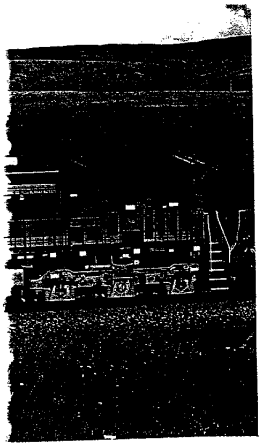
In terms of locomotive utilization, BNSF carload traffic increased 3.5% during the year 2000. It handled that increase with approximately 600 fewer high horsepower locomotives as at least that number were in storage during the entire period as surplus to the railroad's needs.

The large number of new locomotives, the planned phase-out of certain models, and a slackening in overall traffic growth (a trend that began nationwide in mid-1999) enhanced the storage of surplus older high horsepower units. Selected models would later be organized for eventual recall in an organized fashion, called the "Surge Locomotive Fleet." Other medium and high horsepower models were returned to lessor or retired and placed on sale.

Numerous SD70MAC's were reassigned to general train service, mostly grain and intermodal, because of a decline in coal carloadings from Wyoming's Powder River Basin during the first quarter of 2000. These reassignments became common practice until mid-July when most were returned to coal service. Conversely, small numbers of C44-9W's were reassigned into coal service during the same period for reasons unknown.

As the year 2000 drew to a close, solid consists of Heritage-painted motive power lash-ups became a common sight as one-third of the entire fleet wore these colors. With the delivery of fewer new locomotives planned, increasing this percentage will come as a result of repainted pre-merger units.

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order for delivery during the
unit is heading westbound at

ıe high horsepower GE C44-
by the GMLG SD70MAC,
ınd toward standardization of
ɔower fleet system-wide.

ns

AC4400CW	SD40-2
3 (5600-5602)	40 (7300-7339)

in March. They were to be
507-4699 (to fill-in the void
existing C44-9W number

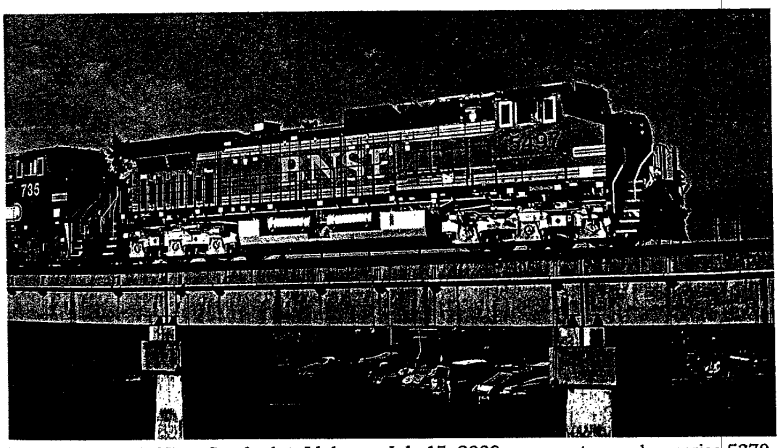
series 4300-4606 and 4700-4999) and 4000-4079 (occupied by the ex-BN B30-7A's 4000-4119, half of which have since been returned to lessor and the other half owned and stored). In May, however, BNSF numbered the latter group downwards from 5499-5370 instead.

C44-9W Acquisition Summary

R/N Series	Delivered to BNSF	Remarks
600-699	From the AT&SF Superfleet	Add-on to C40-8W 800-951 AT&SF Superfleet series.
960-1123	08/96-01/97 in new Heritage I	Add-on to C40-8W 800-951 to keep GE "C-series" in a single number group (600-1123).
700-799	06-09/97 in Superfleet paint	Fill 100-unit vacancy in GE C-series 600-1123.
4700-4719	10/97 in Superfleet paint	New 4700-4999 R/N number series devised and phase-out of Superfleet colors as paint stocks depleted.
4720-4999	01/98-01/99 in Heritage II	Heritage II paint scheme adopted for new wide-cab units.
4300-4606	01/99-12/99 in Heritage II	New 4300-4699 R/N number series extended backward to keep C44-9W's grouped in a single R/N series.
4607-4699	01/00-04/00 in Heritage II	Filled number gap between 4300-4606 and 4700-4999.
5499-5370	04/00-12/00 in Heritage II	Phase-in of new R/N series 5000-5499 to continue grouping C44-9W's. The 5000-5209 series C30-7's and 5220-5222 series SF30C's will have been disposed of by the time any new C44-9W's may be delivered numbered 5369-downward.

Total: 1,194

600-1123, 4300-5499 to be the BNSF GE direct current C-series (C40-8W and C44-9W) roster number groups, the latter expandable both ways should additional units be acquired or a related new model be introduced. Note that the model AC4400CW was assigned the 5600-onwards number series, continuing the grouping of GE high horsepower C-series units.



BNSF C44-9W 5497, at Sandpoint, Idaho on July 15, 2000 represents number series 5370-5499 and numbered from 5499-downwards as delivered by GE. *Robert C. Del Grosso*

SD70MAC

A total of thirty-one SD70MAC's were delivered during 2000 numbered BNSF 8959-8989. 8985-8989 are warranty protection units. They were part of a 217-unit order under Order Number 976814 that includes units 9943-9942, 8873-8876 and 8903-8989.

BNSF Distributed Power Locomotives

2504

REDACTED

BNSF Helper Locomotives

2507

REDACTED

III-C-2

String Diagram Model - Acceleration/ Deceleration

RAILROAD ENGINEERING

Second Edition

WILLIAM W. HAY, Mgt. E., M.S., Ph.D.

Professor Emeritus of Railway Civil Engineering
University of Illinois, Urbana, Illinois

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CHAPTER

10

Acceleration and Deceleration

The time and distance required to bring a train to maximum operating speed following a stop or a speed reduction directly affects overall running time and track capacity, especially in commuting service, where stops are frequent. A slow accelerating locomotive might not attain its maximum operating speed in the short distance between station stops. Switching and yard service, where stops and starts are frequent, also places a premium on rapid acceleration, an advantage inherent in electric and diesel-electric locomotives.

Only that portion of tractive effort not required to overcome other terms of resistance is available for acceleration. Acceleration itself may be considered a form of resistance.

The ability to attain speed is important, but even more important for safe operation is the capability of controlling that speed. A tremendous amount of momentum is stored in a moving train.

THE MECHANICS OF ACCELERATION

In train operation the distance to accelerate to a certain speed and the time required can be computed by rather simple formulas.

1. Acceleration Formulas

Kinetic energy is indicative of the ability to do work. From physics, kinetic energy = $\frac{1}{2}mv^2$; it is a measure of the amount of work required to impart a speed of v fps to

Wo

where F_a = accelerating forc
L = distance in feet
speed of v fps to
m = mass being accel
and g = accelerat

For practical use v should be
the numerical value used for
state of rest then becomes

$$F_a = \frac{\cdot}{2}$$

where W is the weight of t
gives $F_a = 66.8WV^2/L$. This
translation only. The accele
translation to the train an
practice has been to allow
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The only force available is
large portion of which must
train resistance. Only the re
tion. The force necessary tc
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$$F_a =$$

where V_2 and V_1 are the fi
The force of acceleration is
per ton of train weight as give

$$F'_a = F_a/1$$

The distance L required tc
is derived from the foregoing

$$L = (7$$
$$L = (7$$

to impart a speed of v fps to a mass m in pounds, that is,

$$\text{Work} = F_a \times L = \tfrac{1}{2}mv^2 \tag{10.1}$$

where F_a = accelerating force acting on the mass m
L = distance in feet over which the force must act to impart a speed of v fps to the mass m
m = mass being accelerated = w/g, where w = weight in pounds and g = acceleration due to gravity, 32.2 ft/sec/sec.

For practical use v should be expressed in miles per hour, w in tons, and the numerical value used for g. The force necessary to accelerate from a state of rest then becomes

$$F_a = \frac{2000W}{2 \times 32.2L} \times \left(\frac{5280}{3600}\right)^2 V^2$$

where W is the weight of the body in tons. Reducing this expression gives $F_a = 66.8WV^2/L$. This is the expression considering velocity of translation only. The accelerative force must impart both velocity of translation to the train and velocity of rotation to the wheels. The practice has been to allow about 5–6% for rotative effort. With a 5% allowance the expression, in round numbers, becomes

$$F_a = 70WV^2/L \tag{10.2}$$

The only force available is the net tractive effort or drawbar pull, a large portion of which must be utilized in overcoming grade, curve, and train resistance. Only the residual force F_a can be utilized for acceleration. The force necessary to accelerate from one speed to another is obtained from the generalized expression

$$F_a = 70W(V_2^2 - V_1^2)/L \tag{10.3}$$

where V_2 and V_1 are the final and the initial velocities, respectively. The force of acceleration is frequently computed in terms of pounds per ton of train weight as given by the expression

$$F_a' = F_a/W = (70/L)(V_2^2 - V_1^2) \tag{10.4}$$

The distance L required to accelerate from a speed of V_1 to V_2 mph is derived from the foregoing expressions, giving, respectively,

$$L = (70W/F_a)(V_2^2 - V_1^2) \tag{10.5}$$
$$L = (70/F_a')(V_2^2 - V_1^2) \tag{10.6}$$

The time to accelerate is found in a similar manner. The distance L is equal to the product of velocity and time, whereby

$$F_a \times vt = \tfrac{1}{2}mv^2 \qquad (10.7)$$

where t = time in seconds and the other terms are as before. Solving for t,

$$t = mv/2F_a = wv/2F_ag \qquad (10.8)$$

and changing to working units and again allowing 5% for rotative energy,

$$t = 95.6WV/F_a \qquad (10.9)$$

When train weight is known and on a per ton basis

$$t = 95.6V/F_a' \qquad (10.10)$$

If generalized as above,

$$t = 95.6W(V_2 - V_1)/F_a \qquad (10.11)$$

and

$$t = 95.6(V_2 - V_1)/F_a' \qquad (10.12)$$

These same equations can be derived by using Newton's second law of motion, which states that the accelerative force equals the product of the mass and the rate at which the mass is accelerated, that is, $F_a = ma$, or $F_a = wa/g$, where a is the acceleration and the other terms are as before.

Again, from physics $v = at$ and $t = v/a$, where v is velocity in feet per second, t is time in seconds, and L is $at^2/2$, where L is the distance in feet covered in t seconds. Thus $L = a(v/a)^2/2$ or $v^2/2a$. When acceleration is uniform, $a = v^2/2L$.

The force necessary to produce acceleration may be obtained by substituting the value for a in the initial equation, whereby

$$F_a = wv^2/2gL \qquad (10.13)$$

Rearranging terms, converting to working units and to a generalized form,

$$L = wv^2/2F_ag = 70W(V_2^2 - V_1^2)/F_a \qquad (10.14)$$

By substituting for L the value of $v^2/2a$ and then substituting for a the value v/t, the equation for t becomes

$$t = wv^2/F_ag$$

and in generalized form

$$t = 95.6W(V_2 - V_1)/F_a \qquad (10.15)$$

2. Acceleration Curves

Acceleration (and deceleration) curves are used in preparing speed-distance, time-distance, and speed-time curves. The acceleration and deceleration curves would be straight lines if acceleration changed uniformly. But the rate of change is not uniform because the accelerative force F_a is not uniform. F_a is the excess or residual force available for acceleration after all other resistances—train, grade, curve, and so on—have been overcome. Acceleration is thus itself a form of resistance. Its value is a function of tractive effort that decreases as speed increases and of train resistance that increases as speed increases (Figure 10.1). The point where the two curves cross represents the maximum or balancing speed. The ordinate distance between the curves to the left of that point is the force available to accelerate to a higher speed.

Because the rate of change is not uniform and depends on two variables, individual points on the acceleration curve must be obtained

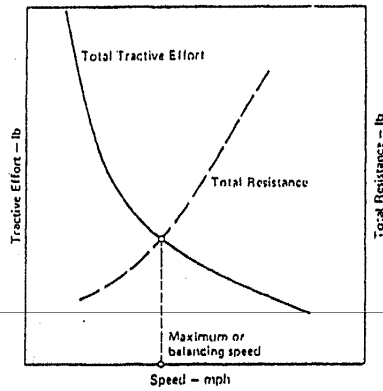


Figure 10.1. Maximum or balancing speed.

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using increasing (or decreasing) speed intervals and computing F_a for the particular combination of tractive effort and resistance at a given speed.

The size of the increment is determined by the degree of accuracy required. For quick estimates by hand an increment of 5–10 mph is acceptable. Tractive effort is computed for the average speed over the increment, 12.5 mph, for example, between 10 and 15 mph, and resistance is conservatively taken at the higher speed limit, 15 mph for the example. The total distance and time to accelerate are the sums of the incremental values. Figure 10.2 shows the process graphically.

For greater accuracy, 1-mph increments should be used. This involves enormous computative work when done by hand, but can be performed rapidly by computer.

A form for computing data for these curves is shown in Table 10.1, using tractive effort data from the tractive effort curve of Chapter 7. Curves for various rates of grade are shown in Figures 10.3 and 10.4.

In plotting speed–distance and time–distance curves, the tractive effort at interval speeds is obtained from the tractive effort curve. Gross resistance of train and engine is subtracted from that tractive effort to give a value of F_a. The average or mean speed over the speed interval selected is used in determining values of tractive effort and resistance when intervals of more than 1 or 2 mph are used. A table similar to the sample calculations in Table 10.1 is prepared for the values of L and t corresponding to the several speed intervals. From this table speed–time and speed–distance curves are plotted. A series of these are necessary, as

Figure 10.2. Graphical display of acceleration computation by increments.

TABLE 10.1 Determination of F_a' (For a Level Track)
(Train of 50–70 Ton Cars Pulled by Four Units of the 2000-hp Diesel-Electric Locomotive of Figure 7.7)

			0.00% Grade				1.00% Grade		
Speed (mph)	Drawbar Pull (lb)	Train Resistance (lb)	F_a (lb)	F_a' (lb/ton)	L^a (ft)	t^a (sec)	F_a' (lb/ton)	L (ft)	t (sec)
10	238,700	11,200	227,500	57.2	49	3.34	37.2	75	5.15
12	198,600	11,550	187,050	47.0	120	7.41	27.0	199	12.25
14	172,550	11,900	160,650	40.2	218	12.16	20.2	393	21.75
16	154,450	12,250	142,200	36.7	340	17.36	16.7	661	33.20
18	138,400	12,950	125,450	31.5	500	23.41	11.5	1,098	49.8
20	126,300	13,300	113,000	28.4	687	30.15	8.4	1,776	72.6
22	116,200	13,650	102,550	25.8	926	37.57	5.8	2,856	105.6
24	106,100	14,350	91,750	23.0	1,218	45.89	3.0	5,096	169.4
26	98,000	14,700	83,300	20.9	1,566	55.04	0.9	13,196	382.4
28	89,850	15,400	74,450	18.7	1,994	65.24			
30	83,750	15,750	68,000	17.0	2,468	76.49			
32	78,400	16,450	61,950	15.5	3,096	88.79			
34	73,500	17,150	56,350	14.2	3,721	102.19			
36	69,350	17,850	51,500	12.9	4,501	116.99			
38	65,200	18,550	46,650	11.7	5,411	133.39			
40	62,650	19,500	43,000	10.8	6,451	151.09			
42	59,250	21,000	38,250	9.6	7,676	170.99			
44	56,300	22,400	33,900	8.5	9,126	193.49			
46	52,550	23,500	28,750	7.2	10,916	220.09			
48	50,350	25,200	25,150	6.3	13,056	250.39			
50	48,150	27,300	21,150	5.3	15,696	286.39			
52	45,950	29,300	16,950	4.26	19,096	331.39			
54	43,750	31,100	12,650	3.17	23,896	391.79			
56	41,550	33,600	7,950	1.98	31,796	488.29			
58	40,150	36,400	3,700	0.93	49,296	694.39			
60	38,700	39,200	500						

$^a L = \frac{10}{F_a'}(V_2^2 - V_1^2), \quad t = \frac{95.6}{F_a'}(V_2 - V_1)$

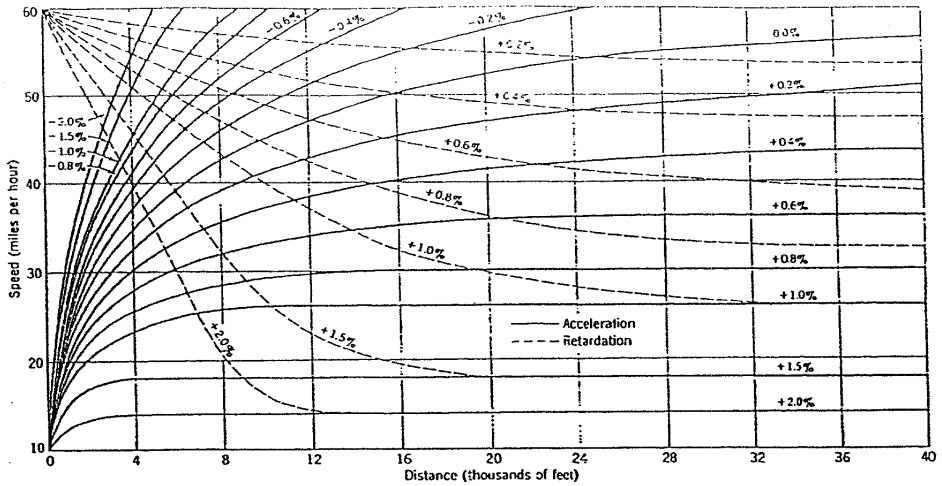


Figure 10.3. Acceleration and deceleration (speed–distance) curves (for four 2000-hp diesel-electric units pulling 50 70-ton cars).

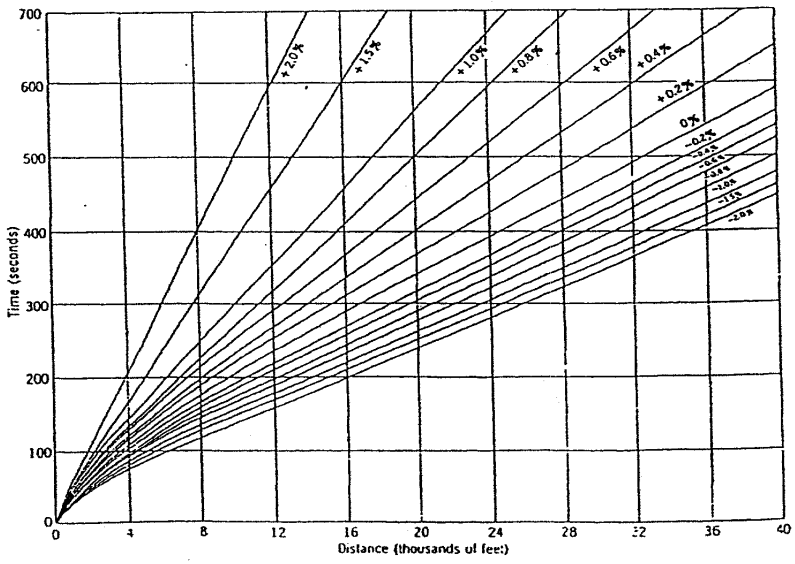


Figure 10.4. Time–distance curves (for four 2000-hp diesel-electric units pulling 50 70-ton cars).

shown in Figures 10.3 and 10.4, for the various gradients. Once prepared, the curves and tables may be used for many studies.

Figure 10.3 shows a maximum speed which cannot be exceeded for a given train on each ascending grade. In the problem example of Section 11 of this chapter the maximum speed on tangent level track is 60 mph, but on an upgrade of 1% it becomes 27 mph. If the given train approaches the 1% grade at a speed of 20 mph, it is possible for the train to accelerate to 27 mph.

If, on the other hand, the train approaches the 1% grade at 60 mph, the train decelerates to 27 mph, since the total resistance for speeds over 27 mph exceeds the drawbar pull available for acceleration (dashed lines in Figure 10.3).

If the drawbar pull in pounds per ton available for acceleration on level track is known, the accelerating or decelerating force in pounds per ton for all speeds from 0 to 60 mph can be determined for any ascending gradient by subtracting the grade resistance in pounds per ton from the drawbar pull on level track (Figure 10.3).

Consider a 1% gradient with a grade resistance of 20 lb/ton. Subtracting this value from the drawbar pull available on tangent level track gives an accelerating force in pounds per ton up to 26 mph. Beyond 26 mph the values are negative, denoting retardation. When these values are substituted in (10.6) and (10.10), the time and distance for deceleration are obtained.

3. Use of Acceleration and Deceleration Curves

Segments of the acceleration and deceleration curves corresponding to the speeds, grades, and distances involved may be transferred to a profile of the line to show the anticipated performance of a train. Before plotting, all stops and speed restrictions due to curvature, city ordinances, railroad crossings, yard limits, and other restrictive features should be spotted on the profile. Units of time plotted against profile distance form a time–distance curve giving the overall elapsed time between any two points or over the entire territory. One large western railroad, in using such curves, found by actual check that the computed value of speed was within 1 or 2 mph of that actually obtained.

These curves are useful tools in predicting the performance of a new locomotive over a district, in computing time and distance for speed reductions and slow orders, in preparing tonnage ratings, in developing schedules, and in studying the effects of relocations and curve and grade revisions. Application of the foregoing procedures to an analysis of an actual profile is shown in Section 11 at the end of this chapter and in Figure 10.3 and Table 10.1.

Another approach to the derivation of speed–distance and time–distance curves is obtained through the use of the relation $t = 95.6WV/F_a$ in (10.6). Since acceleration in miles per hour per second = V/t, acceleration is

$$a = F_a/95.6W$$

If the reciprocal of the acceleration at various speeds and values of F_a is plotted, the area under the curve represents the time required to attain those various speeds, or

$$\int \frac{1}{a}\,dv = \int \frac{1}{dv/dt}\,dv = \int dt = t$$

The area under the curve is most conveniently determined with a mechanical integrator. The time to accelerate to any speed is thus ascertained and may be recorded individually for the various speeds within the period of acceleration.

By plotting speed against time as a speed–time curve, the area under the curve is equal to the product of the speed and the time, or the distance required to accelerate to any speed within the corresponding time. The area under the curve equals distance:

$$\int v\,dt = \int \frac{dL}{dt}\,dt = \int dL = L$$

Thus the distance to accelerate to any speed may be obtained by mechanically integrating the area under the speed–time curve.

4. Train Performance Calculaters

The labor involved in hand calculation has been noted earlier. The entire procedure must be carried out for every change in grade and curvature, for each locomotive type and consist, and for each tonnage rating and train makeup. The process of determining train performance over a line several hundred miles in length can take several man-months. Computer programs for train performance calculations (TPC) have been devised that reduce the time of preparation to a nominal amount.

Such programs perform the foregoing computations for each grade and curve segment of the line and for whatever motive power and tonnage is under study. Input data include full detail of the profile (grades, curvature, speed restrictions, scheduled stops, etc.) along with characteristics of the motive power units (number, weight, horsepower, maximum and minimum speeds, etc.) and of the train consist (number, weight, and type of cars, etc.). Appropriate factors for computing train and grade resistance and tractive effort and drawbar pull with the equa-

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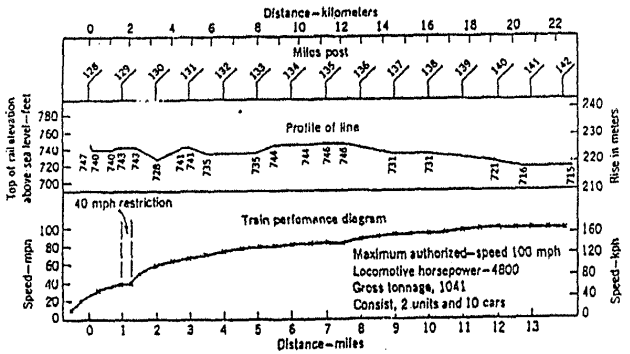


Figure 10.5. Train performance diagram (based on train performance calculator program developed by R. W. Drucker, University of Illinois, 1965—from *An Introduction to Transportation Engineering*, rev. ed., Wiley, New York, 1977, Figure 9.5, p. 335).

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tions for tractive effort, train resistance, drawbar pull, accelerating force F_a, braking force F_b, and distance and time to accelerate and reduce speed, and instructions for the sequential performance of these calculations are entered into the computer storage. Data is received from the computer in the form of a digital printout by mile posts or other designated track segment and/or in the form of speed-distance and time-distance curves displayed with the profile of the line, Figures 10.5 and 10.11.

TPC programs not only permit evaluating a proposed operation but enable the comparison between many different situations—different ruling grades and locations, motive power types, tonnage ratings, train consists, schedules—without the laborious work otherwise entailed or the costly procedure of trial and error.

BRAKING AND STOPPING DISTANCES

A system of air brakes is used on North American railroads to keep under safe control the momentum stored in a moving train. The European system of vacuum brakes is similar but has the disadvantage of having more difficulty in maintaining a vacuum than in maintaining air pressure.

5. Braking Distance

The foregoing equations, with two simple but significant adjustments, can be used to compute braking distance and time. The force F_a is changed to F_r to denote retarding force and the velocity subscripts are reversed to give positive numbers; if not reversed, the negative sign merely indicates a decrease in speed. Alternatively, one can refer to the initial and final velocities V_i and V_f. One can proceed from a fundamental assumption that the work done in stopping a train, that is, reducing its kinetic energy (KE), is

$$\text{KE} = F_r \times L = wv^2/2g \tag{10.16}$$

from which

$$L = 70WV^2/F_r$$

(following earlier procedures); generalizing,

$$L = 70W(V_i^2 - V_f^2)/F_r \tag{10.17}$$

Similarly, for braking time

$$t = 95.6W(V_i - V_f)/F_r \tag{10.18}$$

The problem, of course, is to evaluate the retarding force F_r. It comes from three sources: brake shoe pressure, train resistance, and grade (combined with curve) resistance, so that

$$F_r = F_b + R_t \pm R_g \tag{10.19}$$

where F_r = retarding force in pounds
F_b = braking force or braking pressure in pounds
R_t = train resistance in pounds
R_g = grade resistance (combined with curve resistance) in pounds.

An ascending grade aids retardation, a descending grade reduces retardation, hence the ± sign.

6. Air-Brake System

Air pressure for brake operation is produced by a compressor in the locomotive or MU car that charges a train line. The train line is usually a $1\frac{1}{4}$-in. metal pipe the length of each car, with a flexible hose at

each end for coupling to adjacent cars and with angle cocks to close the line if need be. Brake pipe pressures are variously maintained at 70–110 psi, usually 110 psi today. An air reservoir on each car has two compartments—auxiliary and emergency reservoirs—that are kept charged from the train line, with brakes in the release position. To apply brakes the engineman moves his brake lever, thereby reducing the train line pressure by a small amount, about 5–20 lb for a service application. The reduction in train line pressure activates the brake valve on each car and permits air to flow to the brake cylinder. The brake cylinder piston advances under pressure and, through a system of levers and linkages, the brake shoes apply pressure to the wheel treads (Figure 10.6). Pressure between the auxiliary reservoir and the air-brake cylinder becomes equalized at 50 psi for an initial brake pipe pressure of 70 psi and at 78 psi from a brake pipe pressure of 110 psi, based on a 2500 cu in. auxiliary reservoir volume, a 10-in. brake cylinder and piston diameter, and 8 in. of piston travel. The amount of brake pipe pressure reduction made by the engineman up to the full service (or emergency) reduction determines the equalization pressure and the retarding force being applied by the brake cylinder piston. The piston exerts a retarding force equal to the equalization pressure times the piston area

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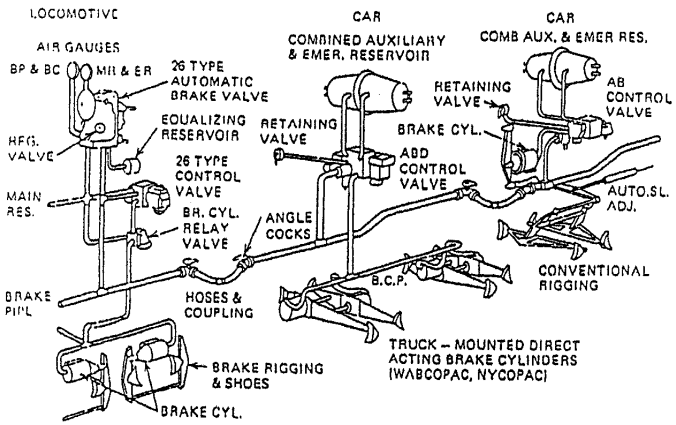


Figure 10.6. Air-brake system (from "Brake-System Operation and Testing Procedures and Their Effects on Train Performance," David G. Blaine and Mark F. Hensely, premeeting paper 71-WA/RT-9, Professional Division, American Society of Mechanical Engineers, New York, 1971 Figure 1, p. 3).

and gives a force of 3927 lb for a 50-psi equalization pressure and a force of 5126 lb for a 78-psi pressure.

When an emergency application is made, the train line is emptied and the brake valve allows the emergency reservoir to equalize with the auxiliary reservoir in the brake cylinders at a faster rate and higher pressure. Emergency equalization pressures may vary from 60 psi, with a 70-psi train line pressure, to 93 psi from a 110-psi train line pressure.

A full service application is had with 20-psi reduction in brake pipe pressure. This occurs with an initial brake pipe pressure of 70 psi at an equalization pressure of 50 psi, 64 psi for 90 lb, and 78 psi for a 110-lb initial brake pipe pressure. The brake cylinder pressure in each case is 50 psi. The brake cylinder pressure to the point of equalization is approximately $2\frac{1}{2}$ times the brake pipe reduction. Thus a 10-lb reduction from 70 psi would be $2\frac{1}{2} \times 10$ psi, or 25 psi; a 20-lb reduction would be $2\frac{1}{2} \times 20$, or 50 psi.

Cars are equipped with retainers that may be set before descending long, heavy grades. Retainers are spring-operated valves that retain brake cylinder pressure at a 10-psi minimum while the engineman releases the brakes in order to rebuild air pressure in the train line and reservoirs. The retainers are cut out at the foot of the descent.

For shorter grades or rolling terrain some retainers are designed with a fourth position that releases the brakes completely but at a slow rate, 85–90 sec, thereby giving the engineman time to rebuild the pressure in his train line.

In "lap" position, between brake pipe pressures of 70 and 50 psi, the brake cylinder is closed to the auxiliary reservoir and exhaust so that the brakes remain partially applied with no pressure change.

The three functions of charge, apply, and release earned the title "triple valve" for the brake valve. Subsequent improvements such as quick-acting and graduated release were incorporated into the AB, ABD, quick-acting, and passenger train valves, all to the end of faster, smoother, and safer operation for higher speeds and longer, heavier trains.

7. Braking Pressure

In stopping a train, a brake shoe bears against the revolving wheel treads with a radial force called the nominal brake shoe pressure P. Friction between the wheel and the brake shoe results in a tangential pull F (Figure 10.7), which is the braking force that resists the rotative motion of the wheel. Tangential pull $F = Pf$, where f is the coefficient of friction between the wheel and the brake shoe. The nominal brake shoe pressure P equals the total force on the piston times the foundation brake rigging leverage ratio. Because of losses in the brake rigging levers,

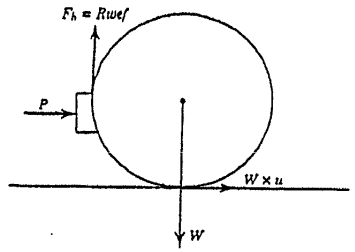


Figure 10.7. Tangential force between the wheel and the brake shoe.

only a portion of the piston force P is available at the brake shoe, so that

$$F_b = Pef \tag{10.20}$$

where e is the efficiency of the brake lever system, usually 90–95%.

The retarding force of the brake shoe cannot be increased indefinitely. Referring again to Figure 10.7, it can be seen that the wheel will continue to roll as long as $W \times u \geq F$, where u is the coefficient of static fraction between the wheel and the rail. $W \times u$ is a maximum when the wheel rolls freely without slipping or sliding. When the wheel slips or slides, $W \times u$ becomes dynamic and of less magnitude.

The minimum stopping distance is therefore obtained only when all wheels roll freely under brake application throughout the stop. Wheels may slide as a result of a lowered coefficient of adhesion due to bad rail conditions, i.e., oil, grease, frost, or moisture on the rails.

Wheels will also slide as the result of excessive braking force. The braking force must be kept below $W \times u$ by a sufficient margin to insure that the wheels do not slide, even if the value of u should drop excessively. The nominal brake shoe pressure P is commonly established, therefore, as a percentage of the empty weight w of the car. If the nominal brake shoe pressure (and thereby F_b) were based on the loaded weight W, the wheels of an empty car would slide. The practice has been to take something less than the empty or tare weight w related to that empty weight by the braking ratio R.

The brake pressure P thus becomes the product of the braking ratio R and the light weight of the car in pounds, that is,

$$P = Rw \tag{10.21}$$

from which a braking ratio can be computed. Because of variations in car weights, both loaded and empty, the selection of a braking ratio and

the braking force therefrom derived must be considered only approximate. Electric and diesel-electric locomotives and passenger cars have an R value of 0.90. Freight cars are braked at 50–75% of their light weight (R = 0.50–0.75); and refrigerator cars at 50–60%. The preferred ratio for all freight cars is 0.60 based on 70-psi initial reservoir pressure and 50-psi brake cylinder equalization pressures. The braking ratio R, sometimes erroneously termed "braking power," is the ratio, expressed decimally, between the light (tare) weight of a car and the nominal weight or pressure used as P. It follows that more distance will be required to stop a train of 60 cars loaded and weighing 70 tons apiece than to stop the same number of empty 20-ton cars.

The value of f, the coefficient of brake friction, is based on the nominal braking pressure. It is not a constant but changes throughout the range of deceleration. Values of the dynamic coefficient of friction between the wheel and the brake shoe can only be determined satisfactorily by experiment. Experiments conducted at the University of Illinois by Professor H. J. Schrader provided values that are still applicable to the more than 50% cast iron brake shoe usage still in service. Experiments with the cast iron shoes have demonstrated that f varies with the speed of the rim of the wheel (and therefore with train speed) and is modified by the pressure between the shoe and the wheel. Under extreme conditions it varies somewhat with the duration of brake shoe application (as in descending a long grade). It differs not only for various shoe materials but for different wheel materials as well. The curves of Figure 10.8 are those obtained by Professor Schrader and reported in the *University of Illinois Experiment Station Bulletin* Nos. 257 and 301 in 1933 and 1938. To facilitate calculations $e \times f$ is plotted against speed, with $e = 0.95$.

About 1955 an asbestos-based composition brake shoe became available for commercial use. It is now in use on almost half the nation's car fleet. Advantages claimed for the composition shoe include a longer shoe life, longer wheel life, and a reduction in thermal stress wheel defects and failures. Smoother braking characteristics arise from a more uniform friction value extending throughout the braking cycle, which permits, in turn, a more uniform rate of retardation.

The brake shoe pressure may be expressed as

$$F_b = F_c \times L \times e \times f \tag{10.22}$$

where F_b = brake shoe pressure in pounds,
F_c = force in pounds exerted by the brake cylinder piston
L = brake rigging leverage
e = brake rigging efficiency
f = coefficient of brake shoe friction.

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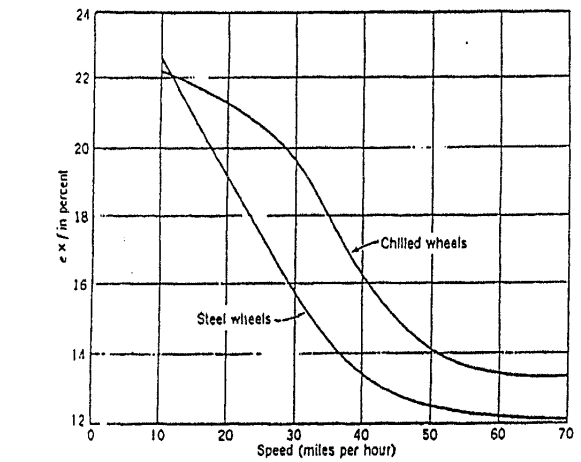


Figure 10.8. (*a*) Values of $e \times f$ with cast iron brake shoes at various speeds for chilled iron and wrought steel wheels (Edward C. Schmidt and Herman J. Schrader, *University of Illinois* (Urbana Campus) *Engineering Experiment Station Bulletin* No. 257) Vol. 30, No. 40, 1933, Urbana, Illinois; (*b*) brake shoe coefficient versus speed for H-friction (Cobra) composition brake shoes and AAR cast iron shoe, 31,300-lb wheel load. (courtesy of the Air Brake Association, *Engineering and Design of Railway Brake Systems*, Chicago, Illinois 1975, Figure 2.5).

The value of F_b may now be written as

$$F_b = Rwef \tag{10.23}$$

R is taken for a basic train line and auxiliary reservoir pressure, usually 90–100 psi for passenger equipment and 70 psi for freight. The actual equalized brake cylinder pressure may be less, as low as 60 psi for passenger equipment and 50 psi for freight. A refinement can be added to the equation by multiplying $Rwef$ by a ratio p, where p is the actual brake cylinder pressure divided by the basic train line and auxiliary reservoir pressure. From this $F_b = pRwef$. However, in view of the approximate values of other terms, this refinement, often omitted is useful, mainly when dealing with higher equalized values that accompany low train line pressure reductions.

It should also be noted that there will be a gradual small train line pressure reduction or gradient due to leakage.

8. Stopping Distance

Train line pressure reduction progresses serially toward the rear of the train, with a corresponding delay in full brake application for the entire train. For short 6–12 car passenger trains the delay may be 3–6 sec, during which time the train will have traveled a distance of approximately $1.467V_l t_b$ ft, where V_l is the initial speed in miles per hour and t_b is the brake application time in seconds.

Problems arise with long freight trains, where the front end of the train may be slowing before brakes on the rear end have begun to apply. With modern brake valves application time may be on the order of 0.10 sec per car (based on a 50-ft car). Brakes would not apply on the last car of a 150-car train until 15 sec after those immediately behind the locomotive. Derailments have occurred in which the rear portion of the train literally "ran into" the front portion.

One solution lies in making brake pipe reductions in small (3–5 lb) increments, thereby allowing slack in the couplers to absorb the run-in from the rear. This is time consuming. Another procedure is to make a heavy application at the beginning of the operation (when adhesion is low) and then release the brakes and make a second and lesser reduction at a lower speed to finish the stop. In the early 1960s a quick release and accelerated service release feature was introduced for long trains (over ~40 cars) that permits a reduction in braking effort on the head end and as the brake reduction progresses toward the rear, thereby keeping the train safely strung out while the stop is accomplished.

If a high-speed passenger train, commuter train, or rapid transit train is equipped with electro-pneumatic brakes, the brake application is practically instantaneous throughout the train, that is, $t_b = 1$ (approximately).

A further refinement in rapid transit equipment is the empty-load brake, whereby the braking ratio varies with the load in the cars. Its application to freight equipment would be helpful but expensive.

As with acceleration, braking distance and time should be computed over short 1–2 mph speed intervals. For short trains, that is, when working with the "center of gravity" of the entire train, the brake application time is added only once [see (10.23)]. When computing F_b for a long train, the number of cars to which braking has progressed may be approximated for each speed increment by assuming a deceleration rate, say, 1.0 mph/sec, over the increment, combined with a brake propagation rate of 0.10 sec per 50-ft car; thus over a 2-mph speed increment the reduction in train line pressure would progress through about 20 cars. For this type of computation a computer is indispensible.

There are factors in the braking formula that are difficult to determine with a high degree of accuracy. The coefficient of friction varies with the instantaneous speed and with the surface condition and type of metal in the wheel and brake shoe. Adhesion depends on conditions of rail and wheel and on the use or misuse of sand. Brake cylinder stroke may vary within wide limits. The rate and time of propagation of brake application vary. Not all brake valves function at the same rate. No two enginemen handle their air in exactly the same way. For these and other reasons, experience has shown that the foregoing theoretical values should be increased 25–35%. Consequently, the final value for the length of stop may be written

$$L_b = \left(1.467V_1t_b + \frac{0.035W(V_1^2 - V_2^2)}{pRw'ef + R_t \pm R_g}\right)1.3 \qquad (10.24)$$

The time T_b in seconds for deceleration may similarly be written

$$T_b = \left(t_b + \frac{0.048W(V_1 - V_2)}{pRw'ef + R_t \pm R_g}\right)1.3 \qquad (10.25)$$

In each case the values of $pRw'ef$, R_t, and R_g must represent the summation of forces for the entire train—cars, locomotive, and tender. Note that the empty car weight w in pounds has been converted to tons w' and, in the foregoing equations, represents the total light or empty weight of the train (or cars on which brakes are applying). R_t and R_g are also then expressed in total tons of resistance for the entire train.

One additional term can be added to obtain *full stopping distance*. This is the engineman's reaction time t_e, the time he takes to respond to a signal or emergency situation. It can vary from 0.5 to 2.5 or 3.0 sec, depending on the individual's alertness, whether wide awake or drowsy or under the influence of drugs or alcohol. Reaction time and distance would be added to the value of T_b, and to L_b.

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9. Braking Distance Curves

Although the computed L_b may be used in location and train performance studies, the wide margin of error is a good reason for not placing too much reliance on the results so obtained. Braking distance curves plotted from actual braking tests should be used wherever these curves are available. Most roads have records of such tests. One railroad has used an average deceleration rate for passenger trains of 5.6 mph per 6 sec, approximately 1.1. mph/sec. Modern rapid transit equipment can reduce at rates that vary from 1.5–3 mph/sec.

When preparing speed-distance and time-distance curves, we must have available a set of retardation curves similar to Figures 10.9 and 10.10, which show braking distances and braking times on all grades to be encountered. Those portions of the braking time and braking distance curves between the initial and final speeds are transferred to the performance study curves for the distances over which retardation takes place.

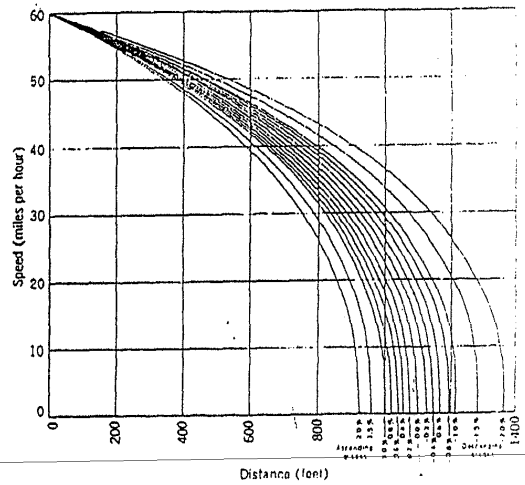


Figure 10.9. Braking distances on various grades (computed for four 3000-hp diesel-electric units pulling 50 70-ton freight cars).

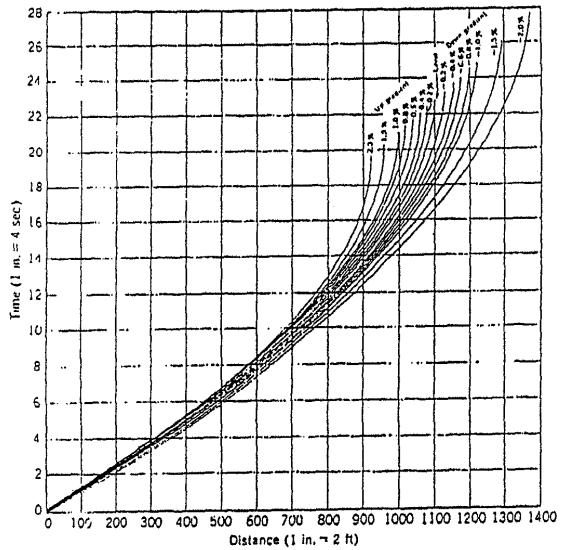


Figure 10.10. Time–distance curves for braking on various grades (computed for four 2000-hp diesel-electric units pulling 50 70-ton cars).

PROBLEM EXAMPLE

The use of acceleration, deceleration, and braking distance curves can best be understood from a problem example.

10. Train Performance Problem

A fragment of a train performance study using the procedures of this chapter appears in the profile and curves of Figure 10.11. Superimposed on the physical profile of a line are the corresponding portions of speed–distance and time–distance curves for the performance of four 2000-hp diesel-electric units pulling 50 70-ton freight cars. The basic curves have already been computed and presented in Figures 10.3 and 10.4. On 12,000 ft of level grade the train accelerates to a speed of 47.4 mph. The corresponding portion of the speed–distance curve for

a 0.0% grade is transferred to the profile by tracing or replotting. There is thus an advantage in using the same scales on the speed–distance curves as are used on the physical profile.

On attaining a speed of 47.4 mph, the train encounters an ascending 0.6% grade that acts to decelerate the train, along the corresponding speed–distance curve from 47.4 mph to some lower speed. After decelerating to 42 mph, the 0.6% grade gives way to one of 0.2%, and the train again accelerates. At a speed of 47 mph the brakes are applied and the braking distance curve (Figure 10.10 for a 0.20% grade) is followed to a stop. The combination of these several portions of speed–distance curves gives a graphic presentation of the demand on the locomotive and its capabilities at every point in the run. The profile shows where limiting conditions occur and where the locomotive is not working to its maximum capacity. Note that where the locomotive is maintaining a constant speed, the speed–distance profile would become a horizontal straight line.

A speed–time curve is plotted in the same way, using the data from Figure 10.4. This curve plotted on the physical profile shows the overall time to traverse the route as the maximum ordinate distance. The time between any two points may also be read graphically. Note that if the train of Figure 10.11 had stopped en route, the continuing time during the stop would have increased on a straight vertical line.

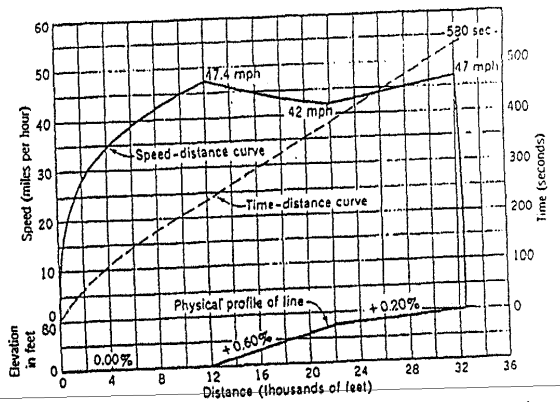


Figure 10.11. Speed–distance and time–distance curves showing the performance of four 2000-hp diesel-electric units pulling 50 70-ton cars).

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CHAPTER

11

Velocity Pr

Trains perform best on le
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of occurrence. The quantit
operation must be fully un
ating personnel.

MOMENTUM

An important aspect of g
train speed.

1. Velocity Head

Mechanics gives the expres
is the velocity in feet per
falling a distance of h_0 ft.
$h_0 = 0.033V^2$. A railroa
falling body for the appl
countered and otherwise
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expression $h_0 = 0.033V^2$
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in the wheels. This quant
By adopting a 5.0% increas

$$h = h_0$$

String Diagram Model - Curves

AMERICAN RAILWAY ENGINEERING ASSOCIATION

Part 2

[1]Train Performance

1992

2.1 RESISTANCE TO MOVEMENT

2.1.1 Level Tangent Track

A railway vehicle moving upon level, tangent track, in still air and at a constant speed encounters certain resistances that must be overcome by the tractive effort of the locomotive.

These resistances include: (1) Rolling friction between wheel and rail. This can be considered a constant for a given quality of track. (2) Bearing resistance. This varies with the weight on each axle and, at low speed, the type, design and lubrication of the bearing. (3) Train dynamic losses. These include flange effects which are associated with lateral motion and the resulting friction and impact of the wheel flanges against the gage side of the rail. They vary with speed, rail alignment, track quality, the surface condition of the rail under load, the horizontal contour of the railhead, contour and condition of the wheel tread, and the tracking effect of the trucks. Also there are miscellaneous losses due to sway, concussion, buffing and slack-action. (4) Air resistance, which varies directly with the cross-sectional area of the vehicle, its length and shape, and the square of its speed. It is also influenced by zones of turbulence related to shape.

Various tests made over the years have shown that the resistance to train movement can be determined using an empirical expression of the following form:

$$R = A + BV + CDV^2$$

where:
- R = train resistance in lbs
- A = rolling resistance component independent of train speed
- B = coefficient used to define train resistance dependent on train speed
- C = streamlining coefficient used to define train resistance dependent on the square of the train speed
- D = aerodynamic coefficient or polynomial function used to further define train resistance, often combined with C
- V = train speed in mph

The predominant but not exclusive contributors to the various coefficients are as follows:

A	B	C & D
—Journal resistance	—Flange friction	—Head-end wind pressure
—Rolling resistance	—Flange impact	—Skin friction on the side of the train
—Track resistance	—Rolling resistance wheel/rail	—Rear drag
	—Wave action of the rail	—Turbulence between cars
		—Yaw angle of wind tunnels

[1]References: Vol. 71, 1970, p. 412; Vol. 93, 1992, p. 129.
[1]Latest page consist: 1 to 4 incl. (1991); 5 to 14 incl. (1970)

2.1.2 Davis Formula—Historic Development

In 1926, W. J. Davis (1) proposed an empirical formula for computing "Tractive Resistance of Electric Locomotives and Cars" moving on straight and level track. His proposed values for the coefficients A, B and CD shown above were as follows:

$$A = 1.3 + \frac{29}{W}$$

B = 0.03 for locomotives or 0.045 for freight cars, and

$$CD = \frac{Ca}{WN}$$

where:

R = Train resistance in lb/ton

W = Axle weight in tons per axle of locomotive or car

N = Number of axles

a = The cross-sectional area of the locomotive or car in square feet

C = The streamlining coefficient

C was given various values, e.g., 0.0024 for lead locomotives or 0.0005 for trailing locomotives and freight cars.

The equation which Davis proposed thus became (for freight cars):

$$R = 1.3 + \frac{29}{W} + 0.045V + \frac{0.0005aV^2}{WN}$$

The original Davis formula has given satisfactory results for older equipment with journal bearings within a speed range between 5 and 40 mph. Tuthill (2) and Totten (3) had adjusted this formula for higher speeds. However, roller bearings, increased dimensions and heavier loading of freight cars, the much higher operating speeds of freight trains, and changes in the track structure have made it desirable to modify the constants in the Davis equation.

Tests in the 1940's and 1950's showed improved results using the following modified Davis Formula (4):

$$R = 0.6 + \frac{20}{W} + 0.01V + \frac{KV^2}{WN}$$

where:

R = resistance in pounds per ton

W = weight per axle in tons

N = number of axles

V = speed in miles per hour

K = combined air resistance coefficient:
0.076 for conventional equipment
0.16 for piggyback
0.0935 for containers

2.1.3 Recent Developments

The original train resistance formula has been retained as to form, but over the years different coefficients have been developed to reflect changes such as higher speeds, more modern equipment, and today's track and truck designs.

The 1990 Canadian National version of the train resistance formula (6) is presented below. When used with the coefficents shown (many of which have been developed in dynamometer car tests), the formula has given reliable results in train performance calculator programs or similar applications.

$$Rr = 1.5 + \frac{18N}{W} + 0.03V + \frac{CaV^2}{10000W}$$

where:
- Rr = the rolling resistance of vehicle in lb/ton
- N = Number of axles
- W = Total weight in tons of locomotive or car
- V = Velocity of train in miles per hour
- C = The Canadian National streamlining coefficient, and
- a = The cross-sectional area of the locomotive or car in square feet

The following table shows the range of values for the C coefficient for various kinds of equipment. Note that these values for C are scaled for use with the Canadian National formula only.

Table of Values of C Coefficient (7)
For Use With Canadian National Train Resistance Formula Only

Degree of Streamlining	Equipment	C Coefficient Leading Eqpt.	Trailing Eqpt.
Nil 1.	Open auto transporter	—	12.3
Nil 2.	Freight locomotive	24.0	5.5
	Mixed consist of freight cars	—	5.0
Low 3.	RDC	19.0	4.0
Low 4.	Conventional passenger incl. loco.	19.0	3.5
Med 5.		14.0	3.0
Med 6.		10.0	2.6
High 7.	High speed passenger	7.6	2.3
High 8.	Maximum possible streamlining	7.0	2.0

When certain types of cars predominate in a train more accurate resistance values for such a train can be obtained by using C coefficients from the following table. The table shows in more detail recommended Canadian National values for C and cross-sectional areas for the various equipment types.

Table of Values of C Coefficient and Areas
for Freight and Passenger Equipment
For Use with Canadian National Train Resistance Formula Only (8)

Type of Equipment	C Coefficient	Area (sf)
Box Car	4.9	140
Bulkhead Flat (loaded)	5.3	140
Bulkhead Flat (empty)	12.0	140
Coal Gondola (loaded)	4.2	105
Coal Gondola (empty)	12.0	105
Covered Hopper	7.1	125
Tank Car	5.5	95
Standard Flat Car (without trailers)	5.0	25
Standard Flat Car (with trailers)	5.0	125
Caboose	5.5	145
Conventional Passenger Coach	3.5	130
Modern Lightweight Passenger Equipment	2.0	110

(Table Cont'd)

Table Continued

Type of Equipment	C Coefficient	Area (sf)
Leading Freight Locomotive	24.0	160
Multi-level Auto Transporter (open)	12.3	150
Multi-level Auto Tranporter (closed)	7.1	170

It will be noted that the C coefficients for empty gondolas and empty bulkhead flats are much larger than those for loaded gondolas and loaded bulkhead flats. This is due to the air swirling inside the empty car and the resulting turbulence.

Through 1988, the Association of American Railroads produced a series of reports as part of its continuing Energy program. These reports developed train resistances based upon the original Davis equation, but with a number of changes in the coefficients. Some of these changes include:

— AAR tests on Class 3 or better track indicated a negligible value for the "B" term, which was dropped.

— Modern roller bearings have a resistance of 16-18 lbs/axle, which is consistent with the 20 lbs/axle used in the modified Davis Formula. These factors change the original Davis formula to:

$$R = 1.3 + \frac{18}{W} + \frac{Cav^2}{WN}$$

— The speed-independent rolling resistance term (1.3) can vary from 2.13 lbs/ton (loaded car) and 1.77 lbs/ton (empty car) without wheel/rail lubrication, down to 0.8 lbs/ton to 0.7 lbs/ton with lubrication for three-piece trucks, and from 1.35 lbs/ton (loaded car) to 0.91 lbs/ton (empty car) for radial, frame braced, and primary aligned truck designs.

— Attributing the third term to aerodynamic resistance, the "C" term can be defined as follows:

$$R \text{ aero} = CV^2 = 0.5\,\rho\,(CDa)\,V^2$$

ρ is air density, which is dependent on air pressure and temperature. The (CDa) term is the drag area of the train (drag coefficient), which is determined by summing the drag areas for all cars in the consist. The Aerodynamic Subroutine of the AAR Train Energy Model version 2.0 expresses the "C" term as a seventh order polynomial function of crosswind yaw angle for each car, and then sums over all cars. Thus the drag areas of different trains will vary considerably, depending on car design, car spacing, wind yaw angle, and train make-up. Test data used to develop this model are available in AAR Report R-685 (9).

Version 2.0 of the AAR Train Energy Model (TEM) incorporates this train resistance subroutine and data. This model permits simulation of train handling and includes fuel consumption, travel time, and speed profile as model output. To run the AAR TEM, the user does not need to gather resistance information.

2.1.4 Starting Resistance

The resistance of journal bearings is much higher at starting than when the vehicle is in motion. Depending upon the weight per axle and the temperature of the bearings, which is in turn a function of both the ambient temperature and the length of time the equipment has been stopped, starting resistance may be as high as 35 lbs per ton below 30 degrees F. An average for light and heavy cars of 25 lbs per ton at starting is a conservative assumption for above-freezing temperatures.

The starting resistance of roller bearings is essentially the same as when they are in motion. In general, a resistance value of 5 lb/ton (or less) should be satisfactory for roller-bearing equipment at above-freezing temperatures.

2.1.5 Curve Resistance and Radial Trucks

The additional train resistance due to curvature amounts to about 0.8 ibs. per ton per degree of curvature for three-piece trucks without wheel/rail lubrication. To put it another way, curve resistance can be said to be the equivalent of a grade of 0.04% per degree. For other than standard gauge track the following relationship applies (10):

$$Rc = 0.17 \text{ (gauge)}$$

where: Rc = Curve resistance in lb/ton per degree of curvature
gauge = gauge in feet

Primary suspension trucks (radial or self-steering, and primary aligned trucks) have less curve resistance. Experience with rail lubricators on curves has shown that their use can be expected to reduce curve resistance for three-piece trucks by as much as 45 to 50 percent. Tests have shown that they will practically eliminate curve resistance on curves of up to 9 degrees. Above 9 degrees, curve resistance is reduced by approximately 7 lb/ton. (11) Some benefit in the form of reduced curve resistance can be obtained from the use of rigid-frame or cross-braced trucks, and tighter tolerances to improve three-piece truck alignment may also reduce resistance. Hence, if curve compensation is being considered, the amount of compensation should be proportionally reduced for locations where wayside rail lubrication will be provided or improved trucks will be used.

2.1.6 Grade Resistance

The additional resistance encountered on ascending gradients is equal to 20 lbs. per ton per percent of grade, and must be added to the other train resistances (4).

2.1.7 Wind Resistance

Though on most lines trains do not move in a constant direction with respect to winds, the possible effect of winds on train resistance should not be ignored. The additional resistance due to head-winds can be accounted for by adding the average wind velocity to the train speed in computing air resistance. Wind-tunnel tests show that side winds at different yaw angles can increase train resistance significantly. The AAR Train Energy Model version 2.0 calculates the aerodynamic resistance "C" term as a seventh order polynomial function of crosswind yaw angle. Material on wind resistance will be found in AAR Report R-685 (9) and other references listed in part 2.1.16.

2.1.8 Tunnels

Tunnels can increase the train resistance considerably. Factors which affect tunnel resistance are train length, tunnel length, the ratio of the cross-sectional area of the train to the cross-sectional area of the tunnel, and tunnel roughness (12). The following table shows Canadian National C values for typical tunnel situations.

TYPICAL VALUES OF C COEFFICIENT IN TUNNELS
FOR USE WITH CANADIAN NATIONAL TRAIN RESISTANCE FORMULA ONLY (6)

Tunnel Length (ft)	Train Type	q = 0.40	q = 0.65
2000	Passenger	4.0	6.0
5000	Passenger	6.3	12.0
2000	Freight	8.0	12.3
5000	Freight	12.6	24.0

In the above table "q" represents the ratio of the cross-sectional area of the train to the cross-sectional area of the tunnel. The freight coefficients above are for average mixed consists. If the values provided in the table of tunnel coefficients above are lower than those given in the preceding table in section 2.1.3 for various types of passenger and freight equipment, the values for the tunnel

coefficients should be adjusted upward to take into account the combined effect of high open air resistance and tunnel influence.

2.1.9 Rail Lubrication

Experience with wayside rail lubricators on curves has shown that their use can reduce curve resistance by as much as 45 to 50 percent, permitting reduced curve compensation.

Various tests have indicated large savings are available by using onboard flange lubrication. Benefits are obtained on tangent as well as curved track and are additional to benefits derived from wayside rail lubrication. Reductions averaging 0.8 lb/ton have been obtained for loaded cars on curves using this technique (13).

A study by MIT found that track lubrication cut energy losses by roughly 25% over most of the operating speed range. The use of radial trucks gave results comparable to track lubrication, except that stability was increased (and losses decreased) at higher speeds on good track. Suspension losses increased for conventional trucks in lubricated curves over that found in dry curves, even though the total resistance was greatly reduced. On class 5 curves, the improvement due to lubrication for curves from 2 to 5 degrees averaged 35% for the AAR wheel (14).

2.1.10 Track Quality, Track Modulus, and Concrete Ties

Higher track quality can reduce train resistance by reducing suspension losses and power losses in the wheel/rail contact area. MIT studies concluded that the level of track roughness has a considerable impact on dynamic resistance at low and moderate speeds on tangent track. On good track at high speeds, the losses are dominated by hunting, and roughness is less important. Curving resistance is less affected by track roughness, for the leading outer wheels are in flange contact beyond 2 or 3 degrees of curvature; on tangent track, roughness increases resistance by bringing the flanges into contact (14). Tests have shown that an increase in track quality from FRA class 4 to class 6 reduced rolling resistance by 0.3 lb/ton at 20 mph to 0.5 lb/ton at 60 mph on tangent track for cars with a gross weight of 104 tons. This increase in track quality reduced rolling resistance on curves of up to 2 degrees by 0.4 lb/ton for the same cars. Beyond 2 degrees little improvement was observed (15).

Track quality can be improved by using concrete ties instead of wooden ties, using continuous welded rail instead of jointed rail, increasing the depth of the ballast section, increasing rail cross-section, and in other ways strengthening the track structure.

Studies have shown that train resistance can be substantially reduced when trains are operated over track with concrete ties rather than wooden ties. The reduction is due to the higher track modulus which implies stiffer track. There results a decrease in energy lost in the car suspension and in the roadbed. The installation of concrete ties in place of wooden ties under 132 lb rail, for example, can decrease rolling resistance by approximately 0.5 lb/ton for cars with a gross weight of 130 tons. For empty cars (25 tons), the reduction under the same circumstances is approximately 0.1 lb/ton (16).

2.1.11 Articulated Cars

Articulated cars can be used to reduce train resistance, due to fewer axles. Examples are found in high speed passenger trains and multiple-unit intermodal cars.

For example, to calculate train resistance for a high speed passenger train consisting of "n" vehicles, where the C coefficient for leading vehicles is Cld and the C coefficient for trailing vehicles is Ctr, the overall C coefficient for such a combination will be:

$$C \text{ combined} = \frac{Cld + (n-1)\,Ctr}{n}$$

Note that lower-case n above refers to the number of vehicles. As usual, upper-case N in the train resistance formula would represent the number of axles in the combination.

2.1.12 Four-Wheel Cars

Four-wheel (two axle) cars can contribute to reduced train resistance due to fewer axles and reduced weight. The use of two-axle cars allows N to be set at 2, rather than 4 as is normally the case, in the train resistance formula. Curve resistance can be increased due to a longer rigid wheelbase, however.

2.1.13 Empty Gondola, Hopper and Bulkhead Flat Cars

As noted in the table in part 2.1.3 above which gives C coefficients for various car types, empty gondolas have a much higher C coefficient than loaded gondolas. This is due to the open space within the empty cars which can trap a good deal of air and cause substantial turbulence. This increase can be of the order of 150% to 200%. (17) The same effect applies in the case of empty open top hopper cars but to a reduced degree.

2.1.14 High Speed Passenger Trains

Streamlining can be used to lower the C coefficient in the train resistance formula. With a high degree of streamlining, the C coefficient for leading vehicles can be reduced by as much as 60% and that for trailing vehicles can be reduced by 33% compared with the coefficients for conventional passenger trains of the style built during the 1950's. (8)

2.1.15 Other Factors

Air conditioning, atmospheric temperature, equipment weight, locomotive contour, passenger train contour, rail support, rail weight and condition, speed on curves, track conditions, and forces due to side winds are other factors which can affect train resistance.

2.1.16 References

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7. *Canadian National Railways Transportation Design Standards*, June 1974.
8. *Canadian National Railways Transportation Design Standards*, October 1986.
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10. *Canadian National Railways Train Performance Calculator Manual*, January 1987.
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13. A. John Peters and Kenneth C. Rownd, "Wheel-Rail Lubrication Research," Transportation Test Center, Presented at the Railroad Energy Technology Conference II at Atlanta, Georgia, May 1986.

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2.2 TRAIN PERFORMANCE CALCULATIONS

2.2.1 Speed-Time-Distance Relations

The procedure required to determine the speed, time and distance relations for a given type of equipment moving over a given route can best be described by means of a numerical example. After considering classical step-by-step method, some suggestions will be made concerning the possible use of a computer to reduce the labor and shorten the time required for the calculations. The following information is required before calculations can begin:

(a) The speed-tractive effort curve for the locomotive to be employed.
(b) The train resistance curve (level, tangent track) for the rolling stock making up the train.
(c) Significant data concerning the track profile, such as the location and degree of curves, the location of grades, the location of stations and places where slow orders prevail.

Let it be assumed that the locomotive is electric, of the rectifier type, weighing 400,000 lb, all on drivers. The train will be made up of fifty 60-ton freight cars. The accompanying curve sheet shows the speed-tractive effort curve for the locomotive and the assumed resistance curve for a 60-ton car. Assume also that the train is to be started and brought up to balancing speed on level, tangent track. Convenient velocity increments will be chosen, say 10 mph initially, changing to smaller increments as balancing speed is approached. Also assume that the pounds-per-ton resistance of the locomotive is the same as the freight car. For each speed increment, the calculations are carried forward in the following order.

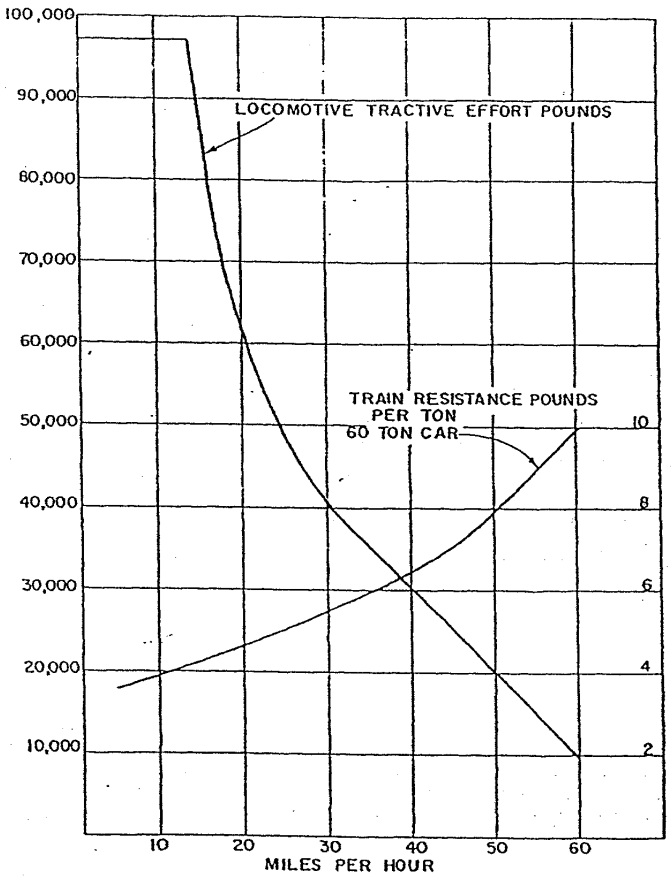
(1) For the average value of the velocity increment, dV, determine from the resistance curve the corresponding pounds per ton, and multiply by the train tonnage, including the locomotive.

(2) Obtain the pounds of tractive effort, T_a, available for producing acceleration by subtracting the value obtained in step 1 from the total tractive effort developed by the locomotive.

(3) Because it takes about 100 lb to accelerate a mass of 1 ton at the rate of 1 mph per second, multiply the total train tonnage by 100 and divide the value obtained in step 2 by the product, i.e., the total train tonnage times 100, obtaining the acceleration, dA.

(4) The time (seconds) required to complete the assumed velocity increment is found by dividing the velocity increment by the acceleration obtained in step 3. $dt = dV \div dA$.

(5) The distance (feet) travelled during this increment is then determined. $dS = 1.47 (V_{av}) (dt)$.


100,000
90,000
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
LOCOMOTIVE TRACTIVE EFFORT POUNDS
TRAIN RESISTANCE POUNDS
PER TON
60 TON CAR
10
8
6
4
2
10
20
30
40
50
60
MILES PER HOUR

1970

The table below shows the calculations carried through four velocity increments. If this procedure is continued up to the balancing speed (which will be about 46 mph on level, tangent track), the total time and the total distance covered will be obtained. However, let it be assumed that at the end of the 4th velocity increment, when the speed has reached 35 mph and the train is 8926 ft from the starting point, a long, uniform grade of 0.5 percent is encountered. This adds 32,000 lb to the train resistance and brings the total resistance up to a value greater than the locomotive tractive effort, so that the speed will begin to reduce. The next line in the table shows how this is handled. A small negative speed increment is assumed, in this case, 2 mph, and the corresponding values of accelerating force, dA, dt, and dS are computed. It will be found that the balancing speed on this grade will become about 25 mph.

The resistive effects of curves can be handled in a similar manner.

TRAIN PERFORMANCE CALCULATIONS

dV	V_m	T_a	dA	dt	t	dS	S
10	5	85,800	0.268	37	37	272	272
10	15	70,000	0.219	46	83	1,014	1,286
10	25	32,000	0.100	100	183	3,675	4,961
5	32.5	19,300	0.060	83	266	3,965	8,926
—2	34	—14,900	—0.0465	43	309	2,149	11,075

Either of the two basic types of computers (analog and digital) may be employed in the study of train performance over a given route. One form of analog computer used for this purpose employs three or more curve-drawing instruments, which are basically potentiometers. These are designed to show distance, velocity, acceleration, power consumption, etc., as functions of time. The basic track data such as location of grades, curves, stations, speed restrictive zones, are first carefully inserted on the distance-time chart. Data related to the equipment to be used, such as train resistance values, locomotive tractive effort, etc., are fed to other curve-drawing instruments, and the operator adjusts the voltage inputs to the various instruments as the charts are advanced by their respective drive motors. (See Art. 2.2.3 for Digital Computer Method)

2.2.1.1 Reference

(1) S. V. Smith, "A New Train Performance Calculator," *Transactions*, American Institute of Electrical Engineers, Vol. 70, 1951.

2.2.2 Velocity Profiles

Another method of analyzing train operation makes use of the so-called velocity profile concept. The energy associated with the momentum of a train moving on level, tangent track at a speed of V mph can be used in propelling the train to a certain height on an ascending grade. In texts dealing with mechanics this height "h" is termed velocity head, and the usual equation relating it to the velocity is given below.

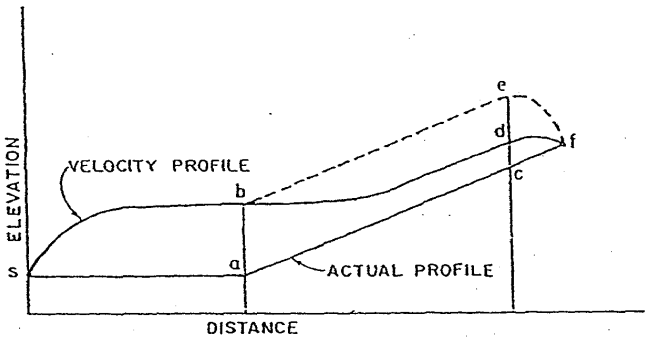
$$h = 0.035\ V^2$$

where h = the head in feet,

V = the train velocity, miles per hour.

Suppose a train is about to accelerate from rest up to its balancing speed on level, tangent track. Its initial velocity head is zero, since it is at rest. By the time it has accelerated to a speed of 10 mph it has acquired a velocity head of 3.5 ft.

If its balancing speed under the assumed operating conditions is 40 mph, when it reaches that speed its velocity head will have become 56 ft. If it soon encounters an upgrade it will decelerate to a lower speed and its velocity head will become less, unless the locomotive can deliver enough additional drawbar pull to overcome the grade resistance, in which case its velocity head will continue to be 56 ft. If the train is now braked to a stop the velocity head will become zero and the velocity profile terminates on the actual profile. This assumed performance is illustrated in the diagram below.



The assumed actual profile is represented by the line s-a-c-f. The curve s-b shows the velocity profile for the period of acceleration and operation at balancing speed. The curve b-d-f shows the effect of encountering the up grade and the final braking period. The dashed line b-e-f shows how the velocity profile would be affected if the locomotive could boost its tractive effort sufficiently to counteract the grade resistance up to the point of brake application.

The relation between the velocity profile and the actual profile for any set of operating conditions is covered by the following rules:

(1) While a train is accelerating, the profiles diverge.

(2) When a train maintains a constant speed, the profiles remain parallel and separated by a distance (head) equal to the velocity head computed for the constant speed.

(3) When a train decelerates, the profiles converge.

The computation of points on a velocity profile curve is a time-consuming process even when special templates are devised and used. If the use of a computer is anticipated the necessary additional instructions should be added to the program previously mentioned in connection with the determination of the speed-time-distance curves.

2.2.2.1 References

(1) V. I. Smart, "The Use of Velocity Profiles." *Railway Review*, Feb. 2, 1924.

(2) *AREA Proceedings*, Vol. 41 (1940), pp. 159–163.

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2.2.3 Train Performance Calculations Using a Digital Computer

2.2.3.1 Introduction

Many railroads are now using digital computers to calculate the running times of trains as a basis for determining and evaluating schedules. The methods have become identified by the term TPC (train performance calculator).

2.2.3.2 Description of the TPC Program

The TPC program determines the performance of individual trains on a given track. By feeding into the computer as input data the station and stopping locations, track elevations and curvature, permissible maximum speeds and permanent and temporary slow orders—all at their proper mileages—of any length of track (track data), together with information regarding the train length, train weight, number of cars and engines, braking forces, the parameters of the equations governing tractive force and train resistance as functions of the speed, and of the fuel consumption as a function of the momentary relative horsepower need (train data), calculations are made at regular, small time intervals of the acceleration, speed reached, distance covered and fuel consumed. The accumulated data are registered as the train proceeds on the track.

A program can be capable of processing up to 30 trains simultaneously. The train characteristics may be changed during the run if a simulation of any change in consist or power is required. The running times calculated by the program represent the performance under average weather and track conditions, assuming average rollability of the equipment and standard resistance data.

The length of the train is taken into account, an important factor in clearing slow orders such as on crossings, switches, etc. The load is assumed evenly distributed throughout the length of the train. The locomotive is operated the best possible way, always hauling the train at the highest speed permitted by the given combination of tractive force and resistance but strictly obeying all the speed restrictions and permanent slow orders, and applying full power no sooner than when the rear end clears the restricted area. The program can look ahead for slow orders and stop points, and will slow down the train at the correct point. In this way, the running times represent an ideal standard to which actual train runs may be compared.

2.2.3.3 Input and Output

The input may be punched on cards and put on magnetic tape with the aid of a special input program which also checks the input for sequence and other errors. The program can be designed to produce one or all of the following output listings:

A summary showing the trip and subdivision mileages, and the accumulated running time and fuel consumption at every station or other pre-selected points, for individual trains; a detail output listing the above data except fuel at pre-selected distances, say every 0.25 mile, and also showing the compensated track elevations, the speed limits and actual train speeds at every point, for up to 5 trains printed side by side; finally all the results of the details output may also be printed in a graphical form as a distance speed chart.

2.2.3.4 TPC Charts

The main objective in developing a TPC program is to provide transportation personnel with a reliable tool by means of which the performance of any kind of train, with any consist, running over any part of the railroad system, can be pre-

dicted quickly and accurately. For this purpose TPC charts are prepared which show the computer results by subdivisions in an easily accessible chart form.

On the TPC charts, the total running times over a subdivision are plotted against the weight to power (or power to weight) ratios of the trains. The weight to power ratio, *W/P*, by definition is the total gross ton weight of the train, including locomotives, divided by the total nominal horsepower of the diesel–electric units. Since, apart from the arbitrary speed restrictions, the performance of any train is governed solely by the relation of the available tractive effort to the total train resistance, and since at any given speed the former is proportional to the horsepower of the diesels and the latter to the train weight, the *W/P* ratio is characteristic of any train with similar type of equipment, and independent of the class of diesel units used within the usual operating speed range where the horsepower is essentially constant.

2.2.3.5 General Form of the Performance Curves

TPC has been used mainly for diesel–electric traction (i.e., constant horsepower engines) but can be used also for other means of traction. In the case of steam power, electric traction or other non-constant-horsepower engines, the running times may be plotted against some other unit than *W/P* (e.g., against number of cars per a special type of locomotive), since the *W/P* ratio as defined above is meaningless if the horsepower is not essentially constant.

Until recently, the weight of standard passenger cars ranged between 70 and 90 tons, with about the same pounds/ton resistance. Thus the performance of passenger trains could be represented by a single curve. In the case of freight trains, however, the widely different average car weights of freight equipment, ranging from 20 tons per car for empties to 130 tons or more per car for loads, makes it necessary to show a family of performance curves, each one representing a certain average car weight. With the recent introduction of lightweight passenger equipment, two or more curves for passenger trains are now necessary in some circumstances.

2.2.3.6 Station-to-Station Times and Fuel Consumption

The fuel consumption for the total run through the subdivision is represented by a single curve, and the data are read in gallons per 1,000 horsepower (nominal) corresponding to any running time or *W/P* ratio. While there are some differences in the specific consumption of different classes of diesel–electric units, the consumption is always proportional to the horsepower-hours expended.

2.2.3.7 Use of the TPC Charts

The generalized form of the TPC charts makes it possible to read directly the running times and fuel consumption of any train, if the train weight, the horsepower of the units and the average car weight (i.e., the number of cars) are known —data that must be available for any type of scheduling. Conversely, the proper combination of weight and power to meet a required running time can be determined readily from the charts.

The performance curves represent the subdivision running times under average track and weather conditions, assuming that the run is made from a standing position at the initial terminal to a stop at the final terminal, excluding any allowance for intermediate stops, except where every train has to stop by regulation. The performance is governed solely by the train and track characteristics and by the speed

limitations and is independent of the human element and non-scheduled delays and meets. The results, therefore, represent the shortest time required for a train with a specified W/P to complete a run over the total length of the subdivision. For this reason, the times are usually referred to as "minimum running times."

2.2.3.8 Other Uses of TPC

The TPC charts with some additional information (such as station dwell times) provide a very useful tool to examine or establish schedules without actually running the trains.

TPC can also be used to establish train resistance coefficients, to measure the effect of track changes and of alternate routes of existing or proposed rail lines, to evaluate new motive power and rolling stock, to analyze accidents, and to determine tonnage ratings.

2.2.3.9 Network Model

The TPC program can form the basis of the input for running trains in a railroad network model. A simplified model concerned with single-track lines employs the Single Track Capacity Analyzer utilizing TPC results for determining the performance of individual trains. This is particularly useful for determining siding locations in centralized traffic control territories.

2.2.4 Dynamometer Car Tests

A dynamometer car is a railway car of special design which may be placed at the head end of a train immediately behind the locomotive. The drawbar pull of the locomotive, which is transmitted to the train through the dynamometer car, can be measured accurately and its value recorded on a moving chart as a function of train speed and distance covered. Instrumentation may also be provided which will record the total work performed, air brake pressure, and other operating variables of special interest. Information secured by this means may be very useful in determining train resistance at various speeds, as well as locomotive efficiency and hauling capacity under varying weather, topographic and loading conditions.

Although used extensively with steam locomotives, the dynamometer car has been used less frequently with diesel locomotives. Because diesel performance deviates only minimally from the manufacturer's specifications, and is less affected by maintenance, and because a diesel has a greater reserve of power at low speeds, the tonnage ratings for diesel locomotives can usually be calculated within an acceptable range of accuracy without requiring check measurements.

The dynamometer car can still be used advantageously to measure the operating characteristics of new designs of equipment.

2.3 FUEL CONSUMPTION

2.3.1 Electric Locomotives

2.3.1.1 Energy and Power Requirements on Straight, Level Track; with Constant Speed Operation
(Under revision)

2.3.1.2 Constant Speed Operation on a Long, Uniform Grade
(Under revision)

2.3.1.3 Effect of Curves
(Under revision)

2.3.1.4 Force Required to Accelerate a Train on Straight, Level Track
(Under revision)

2.3.1.5 Energy Required to Accelerate a Train from Standstill to Its Balancing Speed

This is a long and tedious process if determined from step-by-step calculations. It is likely, however, that much of this work can be eliminated by making certain simplifying assumptions and then programming the data for a computer.

To illustrate the step-by-step method, let it be assumed that the locomotive manufacturer has provided a curve of locomotive tractive effort in pounds at the rim of drivers vs. speed in miles per hour, such as is shown in Fig. 1.

The portion a—b of the curve shows the expected behavior while the controller is in use and it is assumed that the notching-out process is carefully and skillfully handled, so that the current drawn by each motor is held practically constant. The shape of the curve from b to c is governed by the speed-torque relationship of the motors themselves.

For simplicity let it also be assumed that the locomotive train resistance curve has the same equation as the curve for the trailing load; and that the train is accelerating on straight, level track. It then becomes possible to add the locomotive weight to the trailing tonnage and plot total pounds of resistive effort vs. speed. The intersection of these two curves marks the balancing speed, and the vertical distance between the two curves (for example the distance d—e at 10 mph) gives the tractive effort available for acceleration at that speed, giving the magnitude of F in the equation, $F = 100\ WA$,

where

F = accelerating force, in pounds.

W = train weight, in tons.

A = acceleration in miles per hour per second.

Since W is known for the specific trailing load and locomotive being considered, a curve of acceleration vs. speed can easily be plotted. For example, assume the train weight for the illustrative case is 2570 tons. Then the acceleration when $V = 10$ mph is 0.198 mph. Other points can be computed in the same manner, and the acceleration curve of Fig. 1 is obtained.

To obtain points on the speed-time curve, so that the time required to reach balancing speed can be determined, the step-by-step procedure may be employed:

1. Choose a convenient velocity increment, say 10 mph.
2. From the acceleration curve on Fig. 1 read the average acceleration during this velocity interval. For the chosen example this average will be about 0.208.
3. Divide the selected velocity increment by this average acceleration, obtaining 48 sec, which is the time, starting from standstill, to reach 10 mph.
4. Perhaps the next velocity increment should be smaller for greater accuracy, say 5 mph. From the curve the average acceleration is about 0.194 and the time to increase the train speed from 10 to 15 mph will be 26 sec. The total elapsed time is now 74 sec.

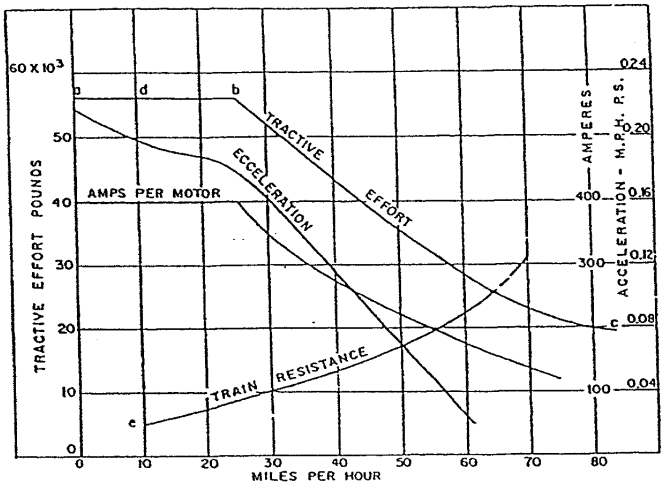


Fig. 1

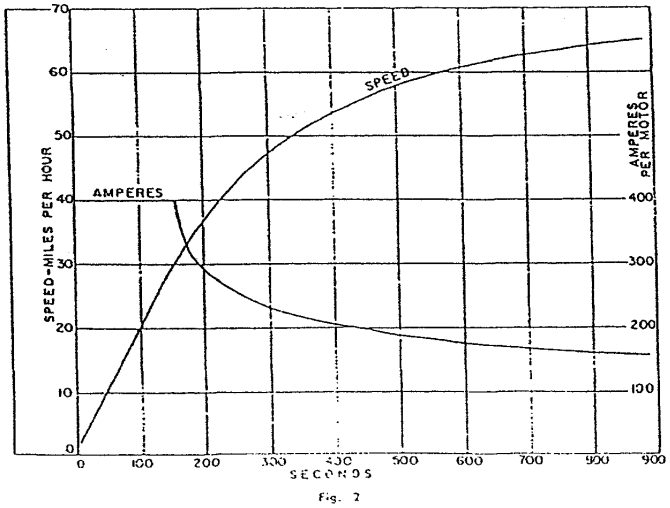


Fig. 2

1970

5. Additional velocity increments should be chosen and this process repeated. The data thus obtained may be plotted. For the chosen example this curve is shown in Fig. 2, and it will be noted that the time to reach the balancing speed of 65 mph is about 885 sec.

The next step in determining energy utilizes the motor current-speed characteristic, which will be furnished by the locomotive manufacturer. A typical one has been plotted in Fig. 1, which indicates that the current per motor may be expected to remain practically constant while the controller is being notched out (up to 25 mph in this case), and then falls off with increasing speed. Using the speed-time curve of Fig. 2, a curve of current vs. time may be obtained, such as is shown on Fig. 2.

To obtain watt-hours of energy drawn from the trolley while accelerating up to balancing speed, the information obtained for one motor in Fig. 2 must be transformed to trolley current for all motors on the locomotive by considering their connection pattern while the controller is in the circuit and also for the subsequent period up to balancing speed.

The final step is multiplication of the trolley ampere-seconds (measured by the area under the curve of trolley current vs. time) by trolley voltage, and then dividing by the average motor efficiency.

This method can be extended to take grades and curves into account.

2.3.1.5.1 References

(1) *Electric Railway Engineering*. T. Ferguson, MacDonald & Evans, London, 1955.

(2) *Electric Transportation*. F. R. Thompson, International Textbook Co., London, 1940.

(3) "The Speed-Time Electrograph," P. C. Cromwell, *Electrical Engineering*, Sept. 1935, p. 923.

(4) "New Train Performance Calculator," S. V. Smith, *Transactions*, American Institute of Electrical Engineers, Vol. 70, 1951.

2.3.2 Diesel-Electric Locomotives

Two approaches for estimating fuel consumption over an existing or proposed line are: (1) The Poole Energy Formula, in which estimates are made of the millions of foot-pounds of work required and application of an empirically determined fuel consumption factor per million foot-pounds, and (2) the throttle position approach, an estimate of the time in each throttle position throughout the run and application of empirically determined gallons consumed per hour in each throttle position.

2.3.2.1 Poole Energy Formula[1]

To estimate fuel consumption using the foot-pounds of energy required to traverse a given line of railroad, follow the procedure outlined below for each direction separately:

(1) Tabulate the gradients (in feet of rise (+) or fall (—)) and degrees of curvature, mile post to mile post.

(2) Start with the sum of the ascending (+) grades (feet).

[1] Cost—*A tool for Railroad Management*, E. C. Poole; Simmons-Boardman Publishing Corp., New York, 1962.

(3) Add the product of 15.84* ft per mile times miles of road.

(4) Add the product of the total degrees of central angle (excluding degrees of curvature on descending grades in excess of 16 ft fall per mile) times 0.04 ft per degree of central angle.

(5) Subtract 60 percent of sum of the feet of fall on descending grades between 0 and 16 ft per mile.

(6) Subtract the product of 11.088 ft (70 percent of 15.84*) times the number of miles of descending grades of 16 ft per mile or more.

(7) Multiply results of steps 2–6 by total train weight in millions of pounds.

(8) For average operating speeds of approximately 35 mph, multiply total energy in foot-pounds by 0.034 gal per million foot-pounds.

2.3.2.2 Fuel Consumption by Throttle Position

At each throttle position a diesel engine injects a metered amount of fuel into the cylinders. The fuel consumption per hour in each throttle position may be obtained from locomotive manufacturers. If one can make a reasonable estimate of the total time in each throttle position, the fuel consumption for a run can be calculated.

The estimate of time in each throttle position may be obtained: (1) by examining the proposed profile in consultation with an experienced road foreman of engines or (2) indicated throttle position on a TPC printout. (See Art. 2.2.3)

* The 15.84 ft of resistance in items 3 and 6 is the resistance for a straight and level mile which was derived from extensive dynamometer tests and is recommended by the AREA.

(4) Attributing the third term to aerodynamic resistance, the "C" term can be defined as follows:

$$R_{aero} = CV^2 = 0.5\rho(CDa)V^2$$

ρ is air density, which is dependent on air pressure and temperature. The (CDa) term is the drag area of the train (drag coefficient), which is determined by summing the drag areas for all cars in the consist. The Aerodynamic Subroutine of the AAR Train Energy Model version 2.0 expresses the "C" term as a seventh order polynomial function of crosswind yaw angle for each car, and then sums over all cars. Thus the drag areas of different trains will vary considerably, depending on car design, car spacing, wind yaw angle, and train make-up. Test data used to develop this model are available in AAR Report R-685 (Bibliography 29).

g. Version 2.0 of the AAR Train Energy Model (TEM) incorporates this train resistance subroutine and data. This model permits simulation of train handling and includes fuel consumption, travel time, and speed profile as model output. To run the AAR TEM, the user does not need to gather resistance information.

2.1.4 STARTING RESISTANCE (1992)

a. The resistance of journal bearings is much higher at starting than when the vehicle is in motion. Depending upon the weight per axle and the temperature of the bearings, which is in turn a function of both the ambient temperature and the length of time the equipment has been stopped, starting resistance may be as high as 35 lb/ton below 30 degrees F. An average for light and heavy cars of 25 lb/ton at starting is a conservative assumption for above-freezing temperatures.

b. The starting resistance of roller bearings is essentially the same as when they are in motion. In general, a resistance value of 5 lb/ton (or less) should be satisfactory for roller-bearing equipment at above-freezing temperatures.

2.1.5 CURVE RESISTANCE AND RADIAL TRUCKS (1992)

a. The additional train resistance due to curvature amounts to about 0.8 lb/ton per degree of curvature for three-piece trucks without wheel/rail lubrication. To put it another way, curve resistance can be said to be the equivalent of a grade of 0.04% per degree. For other than standard gage track the following relationship applies (Bibliography 13):

$$Rc = 0.17\ (gage)$$

where:

Rc = Curve resistance in lb/ton per degree of curvature

gage = gage in feet

b. Primary suspension trucks (radial or self-steering, and primary aligned trucks) have less curve resistance. Experience with rail lubricators on curves has shown that their use can be expected to reduce curve resistance for three-piece trucks by as much as 45 to 50%. Tests have shown that they will practically eliminate curve resistance on curves of up to 9 degrees. Above 9 degrees, curve resistance is reduced by approximately 7 lb/ton (Bibliography 1). Some benefit in the form of reduced curve resistance can be obtained from the use of rigid-frame or cross-braced trucks, and tighter tolerances to improve three-piece truck alignment may also reduce resistance. Hence, if curve compensation is being considered, the amount of compensation should be proportionally reduced for locations where wayside rail lubrication will be provided or improved trucks will be used.

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Speed Limits over the OTRR Lines

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String Diagram Model - Off BNSF Miles

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III-D
OPERATING EXPENSES

III - D - 1

Locomotive Leases

REDACTED

Locomotive Maintenance

2613

BEFORE THE
SURFACE TRANSPORTATION BOARD

RAILROAD COST OF CAPITAL--2002	)	EX PARTE NO. 558 (Sub-No. 6)

COMMENTS OF THE ASSOCIATION OF AMERICAN RAILROADS AND ITS MEMBER RAILROADS

By order served December 12, 2002, the Surface Transportation Board (STB/Board) instituted this proceeding to determine the railroads' cost of capital for the year 2002. That determination, as the Board noted, will enable it to make the statutorily required (49 U.S.C. 10701 (d)(2), 10704(a)(2)) annual individual railroad revenue adequacy determination for 2002. The Board noted further that the cost of capital determination may also be used in various other STB railroad proceedings. See Ex Parte No. 558 (Sub-No. 6) *Railroad Cost of Capital – 2002* (Served December 12, 2002) (Slip Op. 1).

The railroads, through the Association of American Railroads (AAR) are submitting herewith their calculation of (1) the railroads' current 2002 cost of debt capital; (2) the railroads' 2002 current cost of preferred equity capital; (3) the railroads' 2002 cost of common equity capital and (4) the 2002 capital structure mix of the railroad industry on a market value basis.

AAR, through the attached verified statements of Craig F. Rockey, Vice President, Policy and Economics Department of the Association of American Railroads, and David F. Miller, Director - Accounting and Finance, AAR Policy and Economics Department. These statements establish the following:

1. The 2002 cost of debt capital is 6.00 (VS. Miller pp. 2, 14; Rockey pp. 2, 17).

2. The 2002 cost of preferred equity capital is 6.26 (VS. Miller p.18; Rockey p. 2).

3. The 2002 cost of common equity capital is 12.60 (VS. Rockey pp. 2, 17).

4. The capital structure of the railroad industry is 40.9% debt, 2.1% preferred equity and 57.0% common equity. (VS. Miller p. 19; VS. Rockey p. 2). From these data Mr. Rockey concludes that the overall railroad industry cost of capital for 2002 is 9.76% (V. S. Rockey pp. 2, 17).

I. INTRODUCTION

The sole purpose of this proceeding is to determine the cost of capital for 2002. Thus, while the revenue adequacy standards are not at issue in this proceeding, it has been held that the current cost of capital will continue to be the sole standard of revenue adequacy, and that the cost of capital will be computed using the current cost of debt and market value weights. See Ex Parte No. 393 (Sub-No. 1), *Standards for Railroad Revenue Adequacy*, 3 I.C.C. 2d 261 (1986), *aff'd sub. nom., Consolidated Rail Corporation v. United States*, 855 F.2d 78 (3rd Cir. 1988).

II. THE COST OF EQUITY

The Discounted Cash Flow (DCF) methodology has been used in all previous cost of capital proceedings to determine the cost of equity. The validity of the DCF approach is recognized by nearly every rate of return analyst in the United States, and among federal and state regulatory

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Locomotive Servicing

2735

REDACTED

Locomotive Fuel Price Per Gallon

REDACTED

AAR Indices

Table A

ANNUAL INDEXES OF CHARGEOUT PRICES AND WAGE RATES (1977=100)

WEST

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Wage rates	232.1	251.3	250.9	251.0	264.8	273.6	274.2	281.6	282.3	304.6	314.1	316.7
Wage supplements	366.0	377.7	369.1	366.4	373.8	366.2	395.3	367.6	372.4	391.2	441.0	490.0
Fuel	190.4	184.4	185.6	175.0	175.8	205.8	200.1	161.0	164.7	261.9	255.5	220.1
Materials and supplies	183.0	208.9	217.1	223.9	224.1	225.0	231.5	232.3	230.8	228.3	234.0	228.1
Equipment rents	215.6	218.9	222.8	225.7	235.4	239.4	236.6	240.0	239.9	240.3	243.4	242.8
Purchased services	246.9	266.8	267.0	268.2	278.8	283.4	289.9	289.9	290.9	309.1	325.0	334.4
Depreciation	226.4	229.3	240.4	248.3	286.4	300.9	321.8	363.9	369.8	386.9	408.8	427.5
Interest	327.5	291.3	260.6	270.7	291.0	330.4	353.7	420.6	414.7	422.0	396.1	367.6
Taxes (other than income and payroll)	170.6	170.7	176.6	221.7	239.6	244.0	218.3	240.9	202.7	230.0	251.7	265.8
All other operating expenses	179.5	180.4	183.1	185.5	192.0	196.5	196.6	191.6	193.3	204.3	206.6	202.1
Wage rates and supplements	261.5	279.3	277.2	276.7	290.2	295.6	302.1	302.0	303.6	325.8	343.7	355.9
All materials (incl. fuel)	179.0	189.1	193.8	192.2	191.9	208.7	208.4	185.8	187.4	255.3	252.4	225.5
Matl. prices & wage rates combined (excl. fuel)	221.0	242.1	244.1	246.0	256.3	263.5	265.2	271.2	271.4	288.8	297.5	298.6
Matl. prices & wage rates combined (incl. fuel)	216.5	232.3	234.1	233.5	241.5	253.7	253.8	248.5	249.6	295.2	299.6	289.3
Materials prices, wage rates and supplements combined (excl. fuel)	246.9	266.8	267.0	268.2	278.8	283.4	289.9	289.9	290.9	309.1	325.0	334.4
Materials prices, wage rates and supplements combined (incl. fuel) - QMPW	241.0	256.6	257.1	256.1	264.9	274.4	278.7	270.1	271.7	315.4	326.1	323.7
Taxes, purchased serv. and other expenses	202.4	210.5	212.6	219.3	226.7	231.1	230.1	230.4	227.1	240.4	249.4	251.9
Equip. rents, deprec. and interest	243.0	239.3	240.0	246.2	269.0	282.3	290.8	317.7	319.1	327.1	332.2	333.9
Equip. rents, taxes, deprec., purch. serv., interest & other expenses	224.8	227.2	228.7	235.3	250.7	259.7	263.9	278.1	277.2	287.8	295.0	297.1
Total excl. fuel	238.3	250.2	251.0	254.7	268.1	275.0	280.6	288.1	288.2	302.6	314.0	319.6
Total excl. interest	232.5	244.3	246.4	248.3	260.2	268.6	272.3	272.0	272.7	301.5	312.0	312.8
Total excl. interest and depreciation	231.2	243.8	245.0	246.3	255.3	262.9	264.9	260.2	260.4	289.8	299.1	298.3
Railroad Cost Recovery Index	235.9	246.1	246.9	249.1	261.4	270.8	275.1	277.2	277.7	306.4	315.5	315.2

Note: The final annual wage rates and wage supplements are derived from the Annual Wage Statistics and the Annual Report Form R-1, consequently the final annual values may not equal the average of the four quarterly figures. The preliminary annual indexes, which appear in the December publication each year (indicated by a "p"), are averages of the four quarters.

Table C

QUARTERLY INDEXES OF CHARGEOUT PRICES AND WAGE RATES (1977=100)

WEST

	1Q01	2Q01	3Q01	4Q01	1Q02	2Q02	3Q02	4Q02	1Q03	2Q03	3Q03	4Q03
Wage rates	308.9	309.9	311.4	311.4	316.3	316.1	320.6	320.7	319.8			
Wage supplements	415.9	416.4	423.8	423.9	459.7	460.5	462.0	462.1	494.2			
Fuel	281.8	261.6	244.2	234.3	177.0	221.5	219.9	262.0	269.1			
Materials and supplies	229.9	234.9	235.5	235.6	234.6	233.5	226.3	218.0	213.1			
Equipment rents	240.7	243.6	243.8	245.3	244.5	243.3	242.6	240.9				
Purchased services	316.6	318.1	320.5	320.5	329.9	329.8	331.9	330.8				
Depreciation	403.4	404.7	404.8	422.2	422.3	423.7	436.9	427.1				
Interest	401.7	394.8	401.7	386.3	379.7	368.5	372.2	350.1				
Taxes (other than income and payroll)	214.5	284.6	271.2	236.5	252.6	265.4	286.2	258.9				
All other operating expenses	211.7	209.8	205.4	199.5	198.7	201.8	202.7	205.0				
Wage rates and supplements	334.4	335.3	338.0	338.0	349.4	349.3	353.2	353.4	359.3			
All materials (incl. fuel)	269.8	257.0	244.9	237.9	197.0	228.2	224.8	252.1	255.6			
Matl. prices & wage rates combined (excl. fuel)	292.6	294.3	295.6	295.7	299.5	299.1	301.4	300.0	298.4			
Matl. prices & wage rates combined (incl. fuel)	304.1	299.1	294.7	291.6	276.6	290.2	291.4	303.4	304.4			
Materials prices, wage rates and supplements combined (excl. fuel)	316.6	318.1	320.5	320.5	329.9	329.8	331.9	330.8	335.0			
Materials prices, wage rates and supplements combined (incl. fuel) - QMPW	326.7	322.3	319.4	316.7	308.3	320.4	321.7	332.4	337.7			
Taxes, purchased serv. and other expenses	245.4	251.7	249.0	242.7	247.3	250.0	253.3	251.4				
Equip. rents, deprec. and interest	329.8	330.8	332.0	336.3	334.9	333.1	337.5	330.1				
Equip. rents, taxes, deprec., purch. serv., interest & other expenses	291.7	295.4	294.7	293.7	295.3	295.7	299.6	294.9				
Total excl. fuel	308.2	310.9	311.7	311.2	316.5	316.6	319.8	316.7				
Total excl. interest	310.4	310.1	307.9	306.5	302.9	310.2	312.8	317.1				
Total excl. interest and depreciation	298.0	297.4	295.1	292.0	288.1	295.9	297.4	303.0				
Railroad Cost Recovery Index	314.3	313.7	311.8	309.9	306.2	312.8	315.4	318.8				

r - revised

Table C

QUARTERLY INDEXES OF CHARGEOUT PRICES AND WAGE RATES (1977=100)

WEST

	1Q/87	2Q/87	3Q/87	4Q/87	1Q/88	2Q/88	3Q/88	4Q/88	1Q/89	2Q/89	3Q/89	4Q/89
Wage rates	200.2	201.9	202.0	208.2	210.9	210.0	205.1	205.1	205.1	205.1	207.5	
Wage supplements	277.4	278.4	266.9	272.0	304.6	304.1	300.8	300.8	319.0	319.0	322.2	
Fuel	134.8	141.3	157.4	167.9	148.0	151.2	127.4	119.8	144.6	176.4	145.3	
Materials and supplies	141.1	132.6	135.0	135.7	138.7	139.5	144.3	142.2	147.6	142.7	153.2	
Equipment rents	198.8	190.7	191.3	195.1	194.8	192.6	192.9	191.9	193.3	202.2		
Purchased services	202.1	202.3	200.7	205.3	214.2	213.6	210.4	210.1	214.6	213.9		
Depreciation	186.1	191.4	183.1	190.1	207.8	211.6	219.2	225.7	215.8	224.2		
Interest	204.9	199.5	201.1	218.5	212.0	214.8	223.4	243.5	254.9	288.6		
Taxes (other than income and payroll)	130.7	104.1	116.1	144.6	146.8	151.6	144.4	135.6	134.5	148.7		
All other operating expenses	155.5	158.0	159.8	160.4	161.3	164.2	166.4	167.1	170.8	173.6		
Wage rates and supplements	216.5	218.1	215.8	221.2	231.1	230.3	225.8	225.8	230.2	230.2	232.8	
All materials (incl. fuel)	133.3	131.7	140.0	145.0	137.8	139.6	131.7	127.3	141.0	152.4	144.2	
Matl. prices & wage rates combined (excl. fuel)	186.7	186.6	187.1	192.2	195.0	194.4	191.2	190.8	191.7	190.9	194.6	
Matl. prices & wage rates combined (incl. fuel)	180.6	181.4	183.8	189.6	189.6	189.4	183.6	182.4	186.3	189.5	188.9	
Materials prices, wage rates and supplements combined (excl. fuel)	202.1	202.3	200.7	205.3	214.2	213.6	210.4	210.1	214.6	213.9	217.5	
Materials prices, wage rates and supplements combined (incl. fuel)	196.1	197.0	197.1	202.4	208.4	208.1	202.9	201.9	208.4	211.0	211.1	
Taxes, purchased serv. and other expenses	168.7	165.2	167.4	174.5	178.8	180.6	178.9	177.6	180.7	184.0		
Equip. rents, deprec. and interest	198.2	195.9	193.1	200.6	206.6	207.7	212.5	218.2	216.6	229.8		
Equip. rents, taxes, deprec., purch. serv., interest & other expenses	184.1	181.4	180.6	187.8	193.1	194.5	196.6	199.4	199.8	208.8		
Total excl. fuel	196.2	195.4	194.0	199.6	207.2	207.3	206.1	207.0	209.9	212.8		
Total excl. interest	192.6	192.4	192.1	197.6	203.9	204.1	201.0	200.6	204.7	208.5		
Total excl. interest and depreciation	191.7	191.0	191.5	196.8	201.9	201.8	197.7	196.7	202.1	205.4		
Railroad Cost Recovery Index	193.1	192.7	192.5	198.4	204.2	204.5	201.8	202.2	206.6	211.4		

Table J

RAIL COST ADJUSTMENT FACTOR (4Q/97=100)

Quarter	Prelim-[1] inary RCAF	Forecast[2] Error Adjustment	RCAF[3] (Unad- justed)	Productivity Adjustment Factor	RCAF[4] (Adjusted)	PAF-5[5]	RCAF-5[5]
4Q 1997	1.000	0.000	1.000	1.4965	0.668	1.5378	0.650
1Q 1998	0.997	-0.001	0.996	1.5149	0.657	1.5567	0.640
2Q 1998	0.990	0.006	0.996	1.5503	0.642	1.5758	0.632
3Q 1998	1.001	-0.003	0.998	1.5866	0.629	1.5952	0.626
4Q 1998	1.001	0.002	1.003	1.6237	0.618	1.6148	0.621
1Q 1999	0.999	-0.003	0.996	1.6617	0.599	1.6526	0.603
2Q 1999	0.994	-0.001	0.993	1.6850	0.589	1.6913	0.587
3Q 1999	1.006	-0.004	1.002	1.7086	0.586	1.7309	0.579
4Q 1999	1.005	0.006	1.011	1.7325	0.584	1.7714	0.571
1Q 2000	1.036	0.007	1.043	1.7568	0.594	1.7962	0.581
2Q 2000	1.041	0.009	1.050	1.7719	0.593	1.8213	0.577
3Q 2000	1.048	0.002	1.050	1.7871	0.588	1.8468	0.569
4Q 2000	1.059	0.003	1.062	1.8025	0.589	1.8727	0.567
1Q 2001	1.079	0.006	1.085	1.8180	0.597	1.8888	0.574
2Q 2001	1.072	0.004	1.076	1.8305	0.588	1.9050	0.565
3Q 2001	1.079	0.000	1.079	1.8431	0.585	1.9214	0.562
4Q 2001	1.074	0.004	1.078	1.8558	0.581	1.9379	0.556
1Q 2002	1.076	0.000	1.076	1.8686	0.576	1.9513	0.551
2Q 2002	1.064	-0.002	1.062	1.8878	0.563	1.9648	0.541
3Q 2002	1.072	-0.010	1.062	1.9072	0.557	1.9784	0.537
4Q 2002	1.096	0.012	1.108	1.9268	0.575	1.9921	0.556

(Beginning with Q103, the STB used 4Q02 as the RCAF base period. See Table K.)

[1] "Preliminary RCAF" is the All-Inclusive Index (Table D), divided by 100.

[2] The "Forecast Error Adjustment" is the difference between the forecast and actual index levels from two quarters prior (Table E), divided by 100.

[3] The Unadjusted RCAF is the sum of the Preliminary RCAF plus the Forecast Error Adjustment.

[4] The Adjusted RCAF is the Unadjusted RCAF adjusted by the Productivity Adjustment Factor.

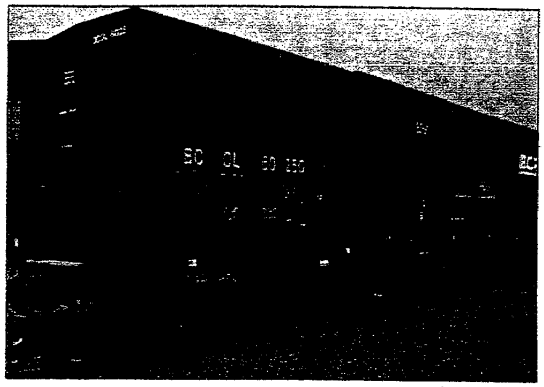
[5] The Surface Transportation Board in its Ex Parte No. 290 (Sub-No. 7) decision served October 3, 1996 created an additional RCAF series (RCAF-5) which reflects productivity-adjusted values as if the agency had used a 5-year rolling average productivity adjustment factor since the second quarter 1989 inception of a productivity-adjusted RCAF. The productivity adjustment factor used in this calculation is called the PAF-5.

III - D - 2

Rail Car Leases and Maintenance

REDACTED

investment views



Boxcars

Plate C 100-ton 50-foot	$350-$400 (fs)
Plate F 100-ton 50-foot	$475-$525 (fs)
Plate F 100 ton 60-foot	$525-$575 (fs)

Coil steel gons

Covered	$475-$545 (fs) (one-year term, low end due to recent weakness in demand)
Uncovered	$425-$495 (fs) (one-year term, low end due to recent weakness in demand)

Locomotives (per day)

EMD SD40	$125
EMD SD40-2	$175-$225 (depending on warranties)
EMD SD60	$300
GE Dash 7	$75
GE Dash 8	$250
GE Dash 9	$350-$400
EMD GP9	$50-$80
EMD GP38-2	$225

Having said all of the above, the question arises as to what we think the good equipment investment opportunities are likely to be in the near future. Before we attempt to answer this question, we need to take a few things into consideration: First: If the purchaser has a current use for the equipment or—even better—a use for it until the end of its likely useful life—shop the market, make your deal, and do it! Second: If, however, you are something of a speculator seeking a reasonable investment, and have shopped the market to the point that you have a good idea of values, what is a prudent investment? Hard to say, but from my view, the following would always be worth a second look:

- Grandfathered boxcars in serviceable condition.
- Good buys on mill gons or aluminum coal cars recently constructed.
- Centerbeam flatcars.
- GP38-2 locos or any four-axle equipment in decent condition.

Rail Equipment Appraisal & Inspection Services

Comprehensive rail equipment inspection and appraisal services for:

- All types of new and used rail cars.
- All models of new and used locomotives.

Call or write for full information.

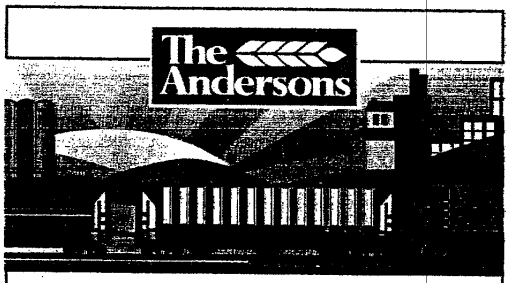
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Back on Track
FCM
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Innovations in Leasing

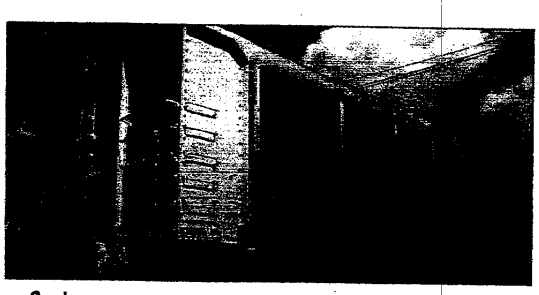
Dateline February 28, 2001: Repurchased by the original ownership group, RailWorks FCM is once again FCM Rail Ltd.

www.fcmrail.com

FCM Rail, Ltd. • 7255 E. Baldwin Road • Grand Blanc, MI 48439
Voice: 810.695.6803 • Fax: 810.695.6807

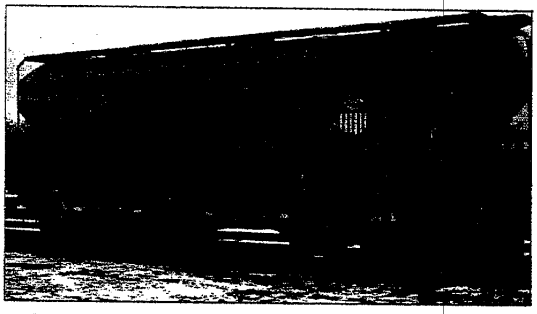
Lease rates and

Each year we cast our nets in the murky sea of equipment lease rates, not knowing what we will pull in. This year was no exception. For the interest of our readers, here is what we have found (all car rates are per month, "fs" means "full service"):



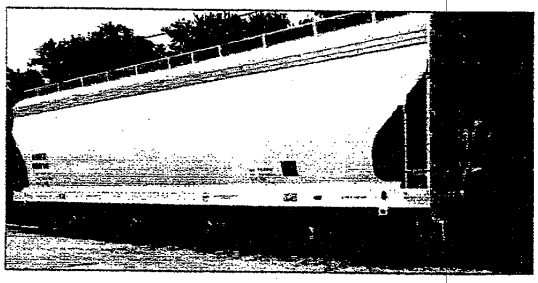
Coal cars

Aluminum BethGon	$350 (net)/$400 (fs)
Aluminum Rapid Discharge	$400 (net)/$450 (fs)
Steel Gon	$175 (net)/$200 (fs)
Steel Rapid Discharge	$200 (net)/$300 (fs)
Mill Gons	$325 (net)/$365 (fs)



Grain cars

4,750 cubic feet	$135 (net)/$185 (fs)
5,100+ cubic feet	$280 (net)/$ 350 (fs)



Plastic pellet cars

5,250 cubic fee	t$300 (fs)
5,800 cubic feet	$325 (net)/$375 (fs)
6,200 cubic feet	$350 (net)/$450 (fs)

Chicago-area switching railroad, has not been much affected. BRC "isn't really in the finished vehicle market. It's mostly steel," said Allen. "We compete mostly for general freight. There's only one or two big plants that we both have access to."

Allen also pointed out that "it's been close to a decade of nonstop mergers" and with all Class 1s moving through Chicago, both switching railroads have been affected by all of them. "But rail is definitely improving," he said. "Once we started getting over the Conrail merger, we found we can compete better with trucks. We've always been able to beat them on price. Now we're finally starting to see improvements on service as well, and we want to get more."

Rate Advantage

Fertilizer shipper looks to take advantage of favorable car lease rates from GATX

One of the biggest fertilizer shippers in the world has decided to take advantage of low railcar lease rates and GATX Rail will be the beneficiary.

IMC Global Inc., which annually ships roughly 8 million tons of potash for use in fertilizers, signed a long-term agreement with GATX that will result in the leasing company being IMC Global's largest railcar supplier. IMC currently leases just under 700 covered hopper cars from GATX and plans to increase that number to 1,600 by next year. The number eventually could go as high as 3,000. IMC leases a total of roughly 5,000 rail cars.

"We are proud of our longstanding relationship with IMC and look forward to an enhanced strategic alliance," said GATX Rail Executive Vice President Jim Earl. "We will be using the wealth of rail, financial and service expertise that we have accumulated to enable us to provide IMC with innovative and cost-effective transportation solutions."

GATX RAIL

IMC Global currently works with about 10 equipment vendors, said company spokesman David Prichard. "We want to pare that down to a handful," he said, noting that lease rates are at their lowest point in 20 years. The monthly cost for a typical, full-service covered hopper lease was $400 to $500 in the 1980s; that cost now is down to roughly $250, Prichard noted.

"So we have an opportunity to reduce the cost of leasing rail cars by locking in more favorable terms in long-term lease agreements," Prichard said. "Paring down" vendors will be a three- to four-year process, he added, because current contracts are all three to five years in length.

— by John Gallagher

Under Control

Class 1 railroads reach agreement with UTU on remote control operations

The United Transportation Union signed a letter of intent with most of the nation's major railroads assigning the work of remote control operations to employees represented by the UTU.

The railroads include Burlington Northern Santa Fe Railway, CSX, Kansas City Southern Railway, Norfolk Southern and Union Pacific Railroad. All are members of the National Carriers Conference Committee, which is the bargaining arm of most of the nation's Class 1 railroads. Remote control allows a locomotive to be operated by a radio transmitter and receiver system while outside the cab.

The UTU and the railroads further have committed to reach a definitive agreement on compensation, training, safety, job protection and any other relevant issues concerning employees affected by the introduction of remote control, according to the union.

Training and certification guidelines already in place cover the use of remote control devices, according to the Federal Railroad Administration. "We don't need to do additional rules. Our regulations already say that if you're going to have employees operating locomotives, they need to be certified and trained, and here are the criteria that railroads need to put in their certification and training programs," said George Gavalla, associate administrator for safety, FRA. "It would be up to the railroads to make modifications to their training and certification that will incorporate the particulars of remote controlled operations." Those modifications would then be subject to FRA approval, Gavalla said.

Unions in the United States long have resisted the use of remote control devices for fear of losing jobs. "A bitter lesson we have learned is that technology cannot be stopped," said UTU President Byron Boyd. "Past attempts by unions to stop new technology, such as the introduction of radios and elimination of cabooses in favor of end-of-train devices, sent the operating unions into full retreat. Carriers may introduce new technology but now when they do so, they will be forced first to negotiate with the United Transportation Union."

— by John Gallagher

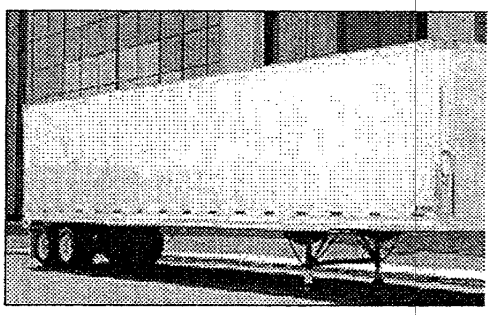
Briefs **The University** of Denver's Intermodal Transportation Institute will reschedule the fall summit meeting of the U.S. and Mexico's secretaries of transportation and Canada's transport minister for spring 2002. The two-day session, originally slated for Oct. 18 and 19, was to bring together Secretary of Transportation Norman Y. Mineta, Canada's Minister of Transport David M. Collenette and Mexico's Secretary of Communications and Transportation Pedro Cerisola y Weber. The new dates will be announced late this year, with sessions open to the media and registered attendees. For a future schedule, panelists and registration information, contact ITI at 303-871-4702 or access on the Internet at www.du.edu/transportation/summit.

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Axle Rockwell TN-4670-Q

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Wheels 22.5 x 8.25 hub piloted steel disc pre-painted white

Oil Seals Stemco Guardian

Tires 295/75R22.5 Bridgestone R-194

Landing Gear Westran LPR-2-33-422 with low-profiles sand shoes and roadside crank

King Pin Subf 3.5" coupler with 36" king pin location

X-Member 12" on center steel 4" I-Beams with 3" I-Beams 8" on center over slider

Floor Monimal 1.375" laminated hardwood. .1275 x 24" steel threshold plate

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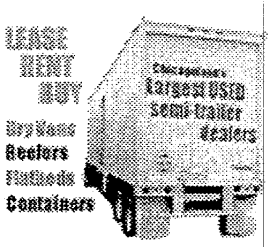
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III - D - 3

Wage Form A & B

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Executive Salaries

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SCHEDULE 14A INFORMATION
UNITED STATES SECURITIES AND EXCHANGE COMMISSION

Proxy Statement Pursuan t to Section 14(a) of
the Securities Exch ange Act of 1934

<TABLE>
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(Name of Person(s) Filing Proxy Statement, if other than the R egistrant)
</TABLE>

2888

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/ / Fee computed on table below pe r Exchange Act Rules 14a -6(i)(4) and 0-11.

as the "Named Executive Officers".

<PAGE>

SUMMARY COMPEN SATION TABLE

<TABLE>
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NAME AND PRINCIPAL POSITION	YEAR	ANNUAL COMPENSATION		LONG-TERM C OMPENSATION AWARDS	ALL OTHER COMPENSATION
		SALARY ($)	BONUS ($)(1)	STOCK OPTIONS (SHARES)	
<S>	<C>	<C>	<C>	< C>	<C>
Thomas F. Power, Jr.,	2000	551,250	104,462	100,000	--
President & Chief	1999	484,750	124,096	55,000	--
Executive Officer (2)	1998	430,000	285,950	6,000	--
J. Reilly McCarren,	2000	300,000	58,590	40,000	--
President & Chief Executive	1999	258,333	66,133	99,000	--
Officer of North American	1998	225,000	149,625	--	--
Operating subsidiaries (3)					
Ronald G. Russ	2000	200,000	31,580	27,000	--
Executive Vice President &	1999	129,467	33,067	20,000	--
Chief Financial Officer	1998	--	--	--	--
James E. Fisk	2000	200,000	31,580	27,000	--
Executive Vice President --	1999	129,467	33,067	20,000	--
Corporate Development	1998	--	--	--	--
Walter C. Kelly,	2000	160,260	32,613	14,800	--
Vice President & Chief	1999	155,000	39,680	10,000	--
Accounting Officer	1998	150,000	79,050	--	--

</TABLE>

2889

(1) Annual bonus amounts were earned and accrued during the fiscal years indicated and paid after the end of e ach applicable fiscal year.

(2) Mr. Power has held this position sinc e September 1, 1999. Prior to that date he served as Executive Vice President and Chief Financial Officer.

(3) Mr. McCarren has held this position s ince September 1, 1999. Prior to that date he served as Executive Vice Pres ident and Chief Operating Officer of the North American operating subsidia ries.

<PAGE>

STOCK OPTION GRANTS IN 2000. The fol lowing table sets forth information concerning the grant of stock options dur ing 2000 to the Named Executive Officers.

OPTION GRANTS IN L AST FISCAL YEAR

<TABLE>
<CAPTION>

2890

NAME	NUMBE R OF SECUR ITIES UNDER LYING OPTI ONS GRAN TED (SHA RES)	PERCENTAGE OF TOTAL OPTIONS GRANTED TO EMPLOYEES IN 0FISCAL YEAR 2000(%)	EXERCISE PRICE ($ PER SHARE)	EXPIRAT ION DATE	POTENTIAL REALIZABLE VALUE AT ASSUMED ANNUAL RATES OF STOCK PRICE APPRECIATION FOR OPTION TERM (1)	
					5%($)	10%($)
<S>	<C>	<C>	<C>	<C>	<C>	<C>
Thomas F. Power, Jr.	100, 000	17.5%	13.00	1/3/20 10	817,563	2,071,865
J. Reilly McCarren	40, 000	7.0%	13.00	1/3/20 10	327,025	828,746
Ronald G. Russ	27, 000	4.7%	13.00	1/3/20 10	220,742	559,404
James E. Fisk	27, 000	4.7%	13.00	1/3/20 10	220,742	559,404
Walter C. Kelly	14, 800	2.6%	13.00	1/3/20 10	120,999	306,636

</TABLE>

---

(1) Potential realizable value is based o n an assumption that the stock price appreciates from the stated exercise price at the annual rate shown (compounded annually) from the date o f grant until the end of the option term. These numbers are calculated ba sed on the requirements promulgated by

LABOR INDEX (RCAF)

	00 Wts.	3Q/01 Original	3Q/01 Rebenched	% Chg	4Q/01	% Chg Original	1Q/02	% Chg	2Q/02	% Chg	3Q/02	% Chg
Straight Time		$21.298	$21.445	0.7%	$21.446	0.7%	$21.529	0.4%		######		#DIV/0!
PFTNW		$5.021	$5.153	2.6%	$5.153	2.6%	$5.174	0.4%		######		#DIV/0!
Total		$26.319	$26.598	1.1%	$26.599	1.1%	$26.703	0.4%	$0.000	######	$0.000	#DIV/0!
Adjustments												
Lump Sum		$0.030	$0.031		$0.032		$0.030					
Back Pay		$0.062	$0.065		$0.066		$0.053					
Other		$0.004	$0.004		$0.004		$0.004					
Total Wages		**$26.415**	**$26.698**	**1.1%**	**$26.701**	**1.1%**	**$26.790**	**0.3%**	**$0.000**	**######**	**$0.000**	**#DIV/0!**
H & W		$3.684	$2.624	-28.8%	$2.624	-28.8%	$3.069	17.0%	$3.069	0.0%	$3.069	0.0%
RR Ret & Medicare		$5.985	$6.474	8.2%	$6.474	8.2%	$6.616	2.2%		######		#DIV/0!
Suppl. Annuities		$0.232	$0.240	3.4%	$0.240	3.4%	$0.231	-3.7%		######		#DIV/0!
Unemp. Insurance		$0.108	$0.145	34.3%	$0.145	34.3%	$0.269	85.5%		######		#DIV/0!
Other		$0.008	$0.009	12.5%	$0.010	25.0%	$0.010	0.0%		######		#DIV/0!
Total		$10.017	$9.492	-5.2%	$9.493	-5.2%	$10.195	7.4%	$3.069	-69.9%	$3.069	0.0%
Adjustments												
Total Suppl.		**$10.017**	**$9.492**	**-5.2%**	**$9.493**	**-5.2%**	**$10.195**	**7.4%**	**$3.069**	**-69.9%**	**$3.069**	**0.0%**
Total Labor		$36.432	$36.190	-0.7%	$36.194	-0.7%	$36.985	2.2%	$3.069	-91.7%	$3.069	0.0%
Wage Rate Index	0.7340	226.1	228.5	1.1%	228.5	1.1%	229.3	0.4%	0.0	######	0.0	#DIV/0!
Suppl Index	0.2660	370.2	350.8	-5.2%	350.8	-5.2%	376.8	7.4%	113.4	-69.9%	113.4	0.0%
Total Labor Index '99 Wts.		262.8										
Total Labor Index '00 Wts.		264.4	261.0	-1.3%	261.0	-1.3%	268.5	2.9%	30.2	-88.8%	30.2	0.0%
Labor Index (Linked)		**256.3**			**253.0**	**-1.3%**	**260.3**	**2.9%**	**29.3**	**-88.7%**	**29.3**	**0.0%**

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NONSMOKING ROOM WITH ONE QUEEN BED STANDARD AMENITIES COMFORT AND QUALITY CANCEL BEFORE 6PM	49.88	1	1	1	**49.88**	Reserve Room
COMFORTABLE ROOM WITH 2 QUEEN BEDS/SMOKING STANDARD AMENITIES/PRIVATE BATH COMFORT AND QUALITY CANCEL BEFORE 6PM	49.88	1	1	1	**49.88**	Reserve Room

2893

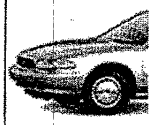
AARP MEMBER AND SENIOR DISCOUNT Rooms (United States Dollars) Rate Detail

ROOM DESCRIPTION	DAILY RATE	ROOMS	ADULTS	DAYS	TOTAL

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COMFORTABLE ROOM WITH 1 QUEEN BED/SMOKING STANDARD AMENITIES/PRIVATE BATH COMFORT AND QUALITY CANCEL BEFORE 6PM	44.89	1	1	1	**44.89**	Reserve Room
NONSMOKING ROOM WITH ONE QUEEN BED STANDARD AMENITIES COMFORT AND QUALITY CANCEL BEFORE 6PM	44.89	1	1	1	**44.89**	Reserve Room
COMFORTABLE ROOM WITH 2 QUEEN BEDS/SMOKING STANDARD AMENITIES/PRIVATE BATH COMFORT AND QUALITY CANCEL BEFORE 6PM	44.89	1	1	1	**44.89**	Reserve Room

FEDERAL AND STATE GOVERNMENT RATE Rooms (United States Dollars) Rate Detail

ROOM DESCRIPTION	DAILY RATE	ROOMS	ADULTS	DAYS	TOTAL	
COMFORTABLE ROOM WITH 1 QUEEN BED/SMOKING STANDARD AMENITIES/PRIVATE BATH COMFORT AND QUALITY CANCEL BEFORE 6PM	44.89	1	1	1	**44.89**	Reserve Room
NONSMOKING ROOM WITH ONE QUEEN BED STANDARD AMENITIES COMFORT AND QUALITY CANCEL BEFORE 6PM	44.89	1	1	1	**44.89**	Reserve Room
COMFORTABLE ROOM WITH 2 QUEEN BEDS/SMOKING STANDARD AMENITIES/PRIVATE BATH COMFORT AND QUALITY CANCEL BEFORE 6PM	44.89	1	1	1	**44.89**	Reserve Room

2894

Materials, Supplies & Equipment

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Federal Reserve Statistical Release

G.19

Consumer Credit

Release Date: May 7, 2003

Release dates | Historical data

Current release *Other formats:* Screen reader | ASCII | PDF (15KB)

G.19
1

CONSUMER CREDIT
March 2003

Consumer credit edged up in March, bringing the increase over the first quarter to a in the fourth quarter of 2002. Revolving credit increased at an annual rate of 5 pe posted a 2-3/4 percent gain.

CONSUMER CREDIT OUTSTANDING 1,2
Seasonally adjusted

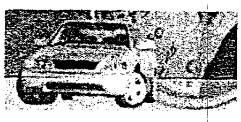
	1998	1999	2000	2001	2002	Q1	Q2
Percent change at annual rate 3,4							
Total	6.0	7.5	10.2	6.9	3.6	4.9	5
Revolving	5.9	6.3	11.6	5.1	1.6	1.7	4
Nonrevolving 5	6.0	8.4	9.1	8.2	5.0	7.3	5
Amount: billions of dollars							
Total	1317.0	1415.5	1559.5	1666.8	1726.4	1687.4	1710
Revolving	562.5	598.0	667.4	701.3	712.4	704.2	712
Nonrevolving 5	754.5	817.5	892.1	965.5	1014.0	983.2	997

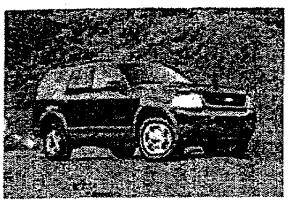
TERMS OF CREDIT AT COMMERCIAL BANKS AND FINANCE COMPANIES 6
Percent except as noted: not seasonally adjusted

Institution, terms, and type of loan							
Commercial banks							
Interest rates							
48-mo. new car	8.72	8.44	9.34	8.50	6.71	7.50	7.
24-mo. personal	13.74	13.39	13.90	13.22	11.59	11.72	12.
Credit card plan							
All accounts	15.71	15.21	15.71	14.89	13.42	13.65	13.
Accounts assessed interest	15.59	14.81	14.91	14.44	13.09	12.98	13.
New car loans at auto finance companies							
Interest rates	6.30	6.66	6.61	5.65	4.29	5.32	5.
Maturity (months)	52.1	52.7	54.9	55.1	56.8	53.9	57
Loan-to-value ratio	92	92	92	91	94	90	
Amount financed (dollars)	19,083	19,880	20,923	22,822	24,747	23,314	23,4

This release is issued around the fifth business day of each month. The exact date a
Footnotes appear on reverse.

edmunds.com New Vehicle Pricing





2002 Ford Explorer Midsize SUV

XLS 2WD 4dr SUV (4.0L 6cyl 5M)

2002 Styles | 2003 Style | Previous Years | Competing Vehicles

Check Latest Incentives & Rebates Zip: 24002 Go

Ratings

Editors' Rating
7.9

Consumer Rating
8.0

Rate This Vehicle

Page 1 of 13
<<prev next>>

1. Prices & Incentives
2. Price with Options
3. True Cost to Own
4. Overview
5. Standard Features
6. Colors
7. Specs & Safety
8. Warranties
9. Car Reviews
10. Car Ratings
11. Consumer Discussions
12. Photos & Video
13. Resale Values

Next Steps
Get a Free Price Quote
Locate a Dealer
Get Low Rate Auto Loans
Free Insurance Quote
Free Warranty Quote

Find a Similar Vehicle
Other Ford Explorer Styles
Other Ford Models
Other Midsize SUVs

- Get a Free Price Quote
- Find a Local Ford Dealer
- Financing As Low As 4.40% APR
- Free Insurance Quote

Car Discuss
Download t

Prices & Incentives

Incentives & Rebates | Competing Vehicles | Financing | Insurance

2002 Ford Explorer
XLS 2WD 4dr SUV (4.0L 6cyl 5M)

	Invoice	MSRP	TMV What is TMV?
National Base Price	$22,451	$24,585	$22,526
Destination Charge	$625	$625	$625
Total (w/o Options)	**$23,076**	**$25,210**	**$23,151** What Others Are Paying

Next Steps

Free Price Quote | What Should I Pay? | Find Local Dealers | Financing

TMV True Market Value Price with Options

Today's APR: 4.40% for 12-36 months See Monthly Payment



Get A Free Price Quote on this 2002 Ford Explorer

FordDirect.com

PowerShopper

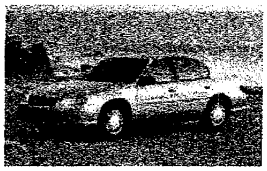
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2003 Chevrolet Malibu

4dr Sedan (3.1L 6cyl 4A)

View All Styles | Compare Styles

Consumer Rating 9.0 RATE IT 19 Reviews

J.D. Power Ratings | View all Ratings | Editors' Review Awards

• Latest Ir
• Competi
• Downloa

Use the links below to research this vehicle

PRICING AND COSTS

- Dealer Price Quotes
- Pricing
- Price with Options
- Incentives & Rebates
- True Cost to Own
- Resale Values
- Payment Calculators

CAR FEATURES

- Standard Features
- Specs
- Compare Styles
- Colors
- Safety
- Photos & Video
- Maintenance
- Standard Warranty

REVIEWS AND RATINGS

- Editors' Review
- Consumer Reviews
- Road Tests & Awards
- Ratings
- Consumer Discussions

NEXT STEPS

Get the Best Price on this Chevrolet Malibu
Search Inventory for this Chevrolet Malibu
Dealer Price Quotes
Can you afford it?
Calculate monthly payment
Free Insurance Quotes
Free Warranty Quote

FIND A RELATED CAR

• Request a Quote on this Chevrolet
• Search Inventory for this Chevrolet
• Calculate Low Payments
• Free Insurance Quote

Invoice & TMV Pricing

See also: Financing | Insurance

STEP 1 Get Edmunds.com Pricing

2003 Chevrolet Malibu
4dr Sedan (3.1L 6cyl 4A)

	MSRP	Invoice	TMV True Market Value® Pricing
Base Price for Zip Code [ ] Change	$18,075	$16,539	$16,708
Typical Options new feature Add/Remove	$995	$896	$904
Destination Charge	$625	$625	$625
Incentives and/or Rebates			Not Available
Total	**$19,695**	**$18,060**	**$18,237**

Price with Options | "What Others Are Paying"

STEP 2 Get Dealer Pricing

Please enter your Zip Code to see a list of Chevrolet dealers near you.

Zip Code [ ] Change

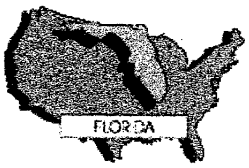
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CUSTOM EXPORT BUSINESS SERVICES

OFFERS

ELECTRIC OR GASOLINE GOLF CARTS

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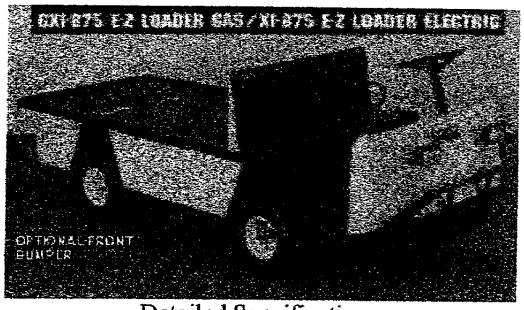
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As agents we are able to offer a varitty of new and used, electrical and gas, Golf, and utility carts.Most units are availiable in Electric or Gas (Petrol). We feature mostly EZ-GO carts which has a reputation of being dependable, innovative and tough since 1954. With almost 50 years of experience and reliability in the industry,why would you consider another name? The Industrial Utility Carts make suitable replacements for the high operating expense of gasoline powered vehicles in many places in the world and for many companies looking to cut cost at large plants or facilities that need to move people. Not to mention they are great on the golf course.

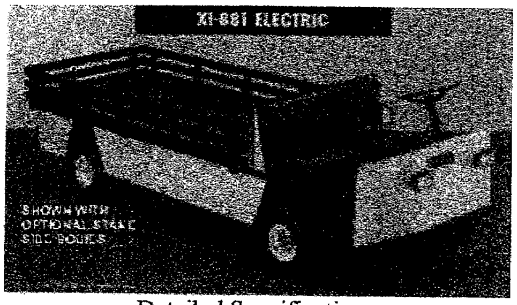
NEW INDUSTRIAL VEHICLES ANC CARRIERS----------USED VEHICLES AND CARRIERS

UTILITY/INDUSTRIAL VEHICLES (NEW)

2002 Model



Detailed Specifications



Detailed Specifications

The electric XI-875 E-Z loader features a soli state speed control and can carry a payload o to 3000 pounds. FOB: $6500.00

The gas powered GXI-875 E-Z loader feature twin cylinder overhead cam engine and can c payload of up to 1,600 pounds. FOB: $8300.0

The electric XI-881 features a direct drive transmission, solid state speed control and a square foot deck. It can carry a payload of up 3000 pounds. $6,500.00

View detailed specifications by clicking on the l to the left.

GXI-875/XI-875 SIZE DIMENSIONS

XI-881 ELECTRIC SIZE DIMENSIONS

GXI-875P GAS/XI-875P ELECTRIC
Cargo/Personnel Carrier
The electric Xi-875P features a solid state speed control and can carry a payload of up to 2000 lbs.. The gas GXI875P featues a twin cyclinder overhead cam engine and can carry a payload of up to 1,600 lbs.
Both cars have a fold down seat for carring passengers or cargo.

Electric: $5,800.00 Gas: $7,800.00

GXI-875P GAS/XI-875P ELECTRIC SIZE DIMENSIONS



Detailed Specifications

The electric XI-835 S/T

Features direct drive transmission, solid state sp control and fold down seat. It can carry a payloa up to 550 lbs.

XI-835 S/T ELECTRIC SIZE DIMENSIONS

Home
Equipment
Tool Department
Housewares
Clocks
Safety Items/Security
Timers/Office Supplies
Got Questions About products or orders?
Mailboxes/Locksets/Janitorial
Plumbing/HeatingDepartment
Paint Department
Telephones,Caller ID, Answering Machines
Pete's Gift Ideas!
Electrical,Lighting
Televisions
Pet Shop/Farm & Ranch/Gardens
Automotive
Sporting Goods
Hand Tools
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Kitchen, Bath, & Storage
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Very rugged, very waterproof.
Water Tight Sealed On/Off Switch

Sealed Beam Spotlight. Heavy-duty black armore hand held spotlight with 400,000 candle power 12 sealed beam bulb. Built-in On/Off rubber covered Plugs into cigarette lighter receptacle. Comes witt coiled cord. Ideal for marine, automotive, and rec vehicle use.

Availability: Usually ships the next business day.

Sealed Beam Spotlight 585939 Regular price: $34.39 Sale price: $:
Add To Cart



Halogen Spotlight Halogen Spotlight. Black impact plastic constuction. Built-in On/Off switc 200,000 candle power quartz halogen bulb. Plu cigarette lighter. Supplied with noncorrosive ha bracket and coiled cord.

Availability: Usually ships the next business d

585947 **$18.99** Add To Cart



Place your order by 12:00 Noon Eastern Time and your order sho by the Next Business Day

Customer Care

To Place your order with a Representative, Please have the 6 digi number or product number ready,

Call our Toll Free number:
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1-866-ASK-PETE

Mon.Tues.Thurs.Fri. 9AM-5PM (Eastern Time)

Wed.Sat. 9AM-4PM(ET)

Product Detail



(Image shown may differ from actual product appearance.)

Craftsman 251 pc. Mechanics Tool Set

$299.99

Additional Offer Available with Rebate(s)

Sears Item #00934251000
Mfr. Model #34251

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Instant Approval Available at Check Out.

CRAFTSMAN

Features	Description
Product Overview:	
Mechanic Tool Set Type	200 pc. and over mechanics tool set
Ind., Kit Or Set	Set
Item Weight	29.0 lbs.
General Warranty	Guaranteed forever
Kit/Set Information:	
Kit or Set Type	Mechanics
Number of Bits	22
Number of Drive Tools	10
Number of Extensions	6
Number of Sockets	153
Number of Wrenches	26
Quantity in Set	251 pc.
General Features:	
Socket Type	Metric/standard
Socket Drive Size	1/4 in., 3/8 in. and 1/2 in.

2904

Drive Socket Depth	Deep and standard
Socket Points	6, 8 & 12
Wrench:	
Number Of Points	12
Combination Type	Open end/box end
Wrench Style	Combination
Wrench Type	Metric/standard

153 sockets in 3 drive sizes, SAE & metric. 26 combo wrenches with the versatility of open and box end designs. 10 drive tools including 3 teardrop ratchets 6 extension bars, magnetic spinner handle.



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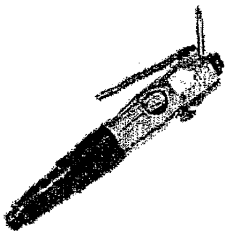
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Product Summary

We'll match any price plus ... click for details



Craftsman Adjustable Clutch Screwdriver

Designed to meet the rigorous needs of assembly, construction and maintenance pros. Adjustable ball clutch combines convenience of a stationary bit locating with precision torque control.

- **Online / Catalog Exclusive!**

Price:

$249.99

Additional offer with rebate(s).

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CRAFTSMAN

View larger image

Product images may differ from actual product appearance.

See Detailed Product Specifications

Availability & Options

- FREE SHIPPING with mail-in rebate. This item typically leaves the warehouse within 2 business days. **Calculate Arrival Time & Shipping Costs** - based on your destination Zip Code.
  About Shipping and Delivery Methods

Learn More

- See detailed product specifications.
- If you would like any applicable Warranty information, please click here.
- For research and advice about this item see our Buying Guide
- See other Craftsman Automotive Air Tools like this one
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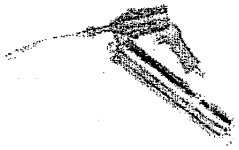
Sears Item #00918562000
Mfr. Model #18562

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2906

Product Summary

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CRAFTSMAN

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Product images may differ from actual product appearance.

Craftsman Trigger Release Pneumatic Grease Gun

Forces grease into fittings with far more power than manual guns. Trigger-release design makes it easier to reach recessed or hard to get at fittings.

Loads any of 3 ways: 14 oz. cartridge (not included), pressure filler or bulk load.

See Detailed Product Specifications

Price:

$29.99

Additional offer with rebate(s).

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Availability & Options

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Sears Item #00916215000
Mfr. Model #16215

Product Summary

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CRAFTSMAN

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Craftsman 3/8 in. Air Ratchet Wrench with 160 rpms

This air drive tool features a new handle design that provides a better grip. Provides up to 45 ft. lb. of working torque and a no-load speed of 150rpm.

Has reversible ball-type socket retainer and finger-controlled throttle. 1/4 in. air inlet. Average 4.0 SCFM at 90 PSI.

See Detailed Product Specifications

Price:

$69.99

Additional offer with rebate(s).

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Sears Item #00919992000
Mfr. Model #19992

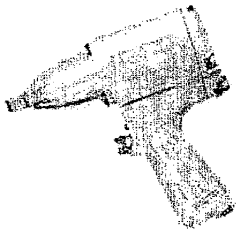
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Product Summary

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CRAFTSMAN

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Craftsman 1/2 in. Heavy Duty Impact Wrench

Designed for heavy equipment maintenance and auto repairs. 25 to 400 ft. lb. of working torque. Special features include supported ring socket retainer and built in power regulator.

Designed for heavy equipment maintenance and auto repairs. 25 to 400 ft. lb. of working torque. Special features include supported ring socket retainer and built in power regulator. Balanced for best power-to-weight ratio. Reversible. 1,300 impacts/min. 8,000 rpm free speed. Avg. 4.0 SCFM at 90 PSI.

See Detailed Product Specifications

Price:

$129.99

Additional offer with rebate(s).

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- Warranty: 1 year repair/90 days commercial use
- If you would like any applicable Warranty information, please click here.
- At Sears, we protect what we sell. Merchandise Replacement Agreements are available for this item.
- For research and advice about this item see our Buying Guide

2910

- See other Craftsman Automotive Air Tools like this one
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Sears Item #00918899000
Mfr. Model #18899

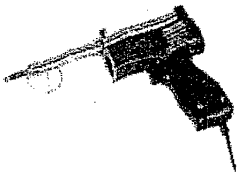
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Product Summary

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CRAFTSMAN

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Craftsman Professional Dual Heat Soldering Gun

Dual 400/150 watts provides high performance under continuous use. Trigger controlled heating element heats 1/4 in. diameter pyramid tip to a rated soldering temperature of 1000 deg. F.

Steel covered copper tip won't bend or lose its shape. 4-1/2 in. long tip and heating element provides extended reach. Easy-to-handle pistol grip design. Built-in work light. Includes tip stand, storage case. 10 ft cord. UL listed, AC. 120 volt.

See Detailed Product Specifications

Price:

$59.99

Additional offer with rebate(s).

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Store Pick-Up Help

Learn More

- See detailed product specifications.
- If you would like any applicable Warranty information, please click here.
- For research and advice about this item see our Buying Guide
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Sears Item #00927320000
Mfr. Model #27320

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Product Summary

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CRAFTSMAN

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Craftsman 4.8 volt Cordless Screwdriver

Features Speed-Lok™ quick connector, a dual gear range with 125/450 rpm, reversibility, adjustable 85 in./lbs. torque and sleeve bearings.

- Comfortable ergonomic contoured handle
- Dual speed capability
- Includes 2 screwdriver bits
- Features a built-in battery
- Internal power supply provides cordless convenience and is simple to recharge

See Detailed Product Specifications

Price:

$39.99

Additional offer with rebate(s).

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- ★ **Save Time - Choose Store Pick-Up:** Enter your Zip Code below to check availability at your local store.

Store Pick-Up Help

Learn More

- See detailed product specifications.
- Warranty: 1 year
- If you would like any applicable Warranty information, please click here.
- At Sears, we protect what we sell. Merchandise Replacement Agreements are available for this item.
- For research and advice about this item see our Buying Guide

- See other Craftsman Power Screwdrivers & Screwguns like this one
- Satisfaction guaranteed, or your money back. Learn about our return policy.

Sears Item #00911164000
Mfr. Model #11164

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Product Detail



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Craftsman Pneumatic Rivet Gun

$399.99

Additional Offer Available with Rebate(s)

Sears Item #00919890000
Mfr. Model #19890

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CRAFTSMAN

Features	Description
Product Overview:	
Automotive Pneumatic Tool Type	Rivet gun
Item Weight	5.33 lbs.
Color:	
Overall Color	Red

The heavy-duty rivet gun develops up to 3,200 lbs. of pull. This riveter also features three nosepieces designed to accept 3/16 and 1/4 in. aluminum and steel pop rivets.

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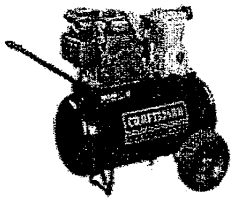
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Product Summary

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CRAFTSMAN PROFESSIONAL

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Craftsman Professional 20 gal. Air Compressor, 5 hp, Horizontal Tank

5 hp Honda GC gas engine power supply, so you're not limited to electric power availability. 20 gal. ASME certified tank for safe operation. 150 psi maximum working pressure.

- Automatic throttle control lowers RMPs during off periods for less pump wear
- 2-cylinder pump with cast iron cylinder sleeves, automotive pistons and rings
- Aluminum finned crankcase and balanced flywheel
- 3 quart fuel tank with shut off valve
- Pneumatic wheels and stationary mount kit for portable operation

Price:
$649.99

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See Detailed Product Specifications

Availability & Options

- This item is typically delivered within 7-10 business days. Special handling is required. **Calculate Arrival Time & Shipping Costs** - based on your destination Zip Code. About Shipping and Delivery Methods

Learn More

- See detailed product specifications.
- If you would like any applicable Warranty information, please click here.
- At Sears, we service what we sell. Protection agreements are available for this item starting at $59.99 per 2YR In-Shop Master Protection Agreement.
- For research and advice about this item see our Buying Guide
- See other Craftsman Portable Tank Compressors like this one

2917

- Satisfaction guaranteed, or your money back.
  Learn about our return policy.

Sears Item #00915726000
Mfr. Model #15726

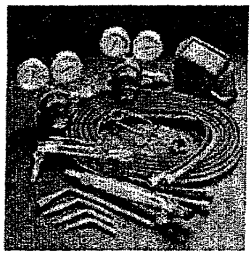
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Product Summary

We'll match any price plus ... click for details



CRAFTSMAN

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Product images may differ from actual product appearance.

Craftsman Deluxe Oxygen/Acetylene Welding Cutting Outfit

Cuts to 6 inches and welds to 1 inch with optional tips.

Features a heavy duty torch handle with reverse-flow check values, cutting attachment, welding mixer, size 3, 5, and 7 welding tips, No. 1 cutting tip, No. 1 heating tip, large oxygen and acetylene regulators, 3/16-in.x 20-ft. hose, striker, goggles and instruction manual.

See Detailed Product Specifications

Availability & Options

- FREE SHIPPING with mail-in rebate. This item typically leaves the warehouse within 2 business days. **Calculate Arrival Time & Shipping Costs** - based on your destination Zip Code.
  About Shipping and Delivery Methods

Learn More

- See detailed product specifications.
- If you would like any applicable Warranty information, please click here.
- For research and advice about this item see our Buying Guide
- See other Craftsman Welders & Accessories like this one
- Satisfaction guaranteed, or your money back. Learn about our return policy.

Sears Item #00920208000
Mfr. Model #20208

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Price:
$299.99

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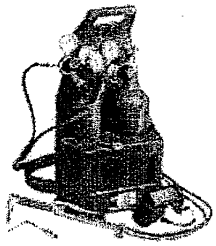
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Product Detail



(Image shown may differ from actual product appearance.)

Harris Port-a-Torch Outfit

$319.99

Sears Item #00920170000
Mfr. Model #4401657

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Harris

Features	Description
Product Overview:	
Portability	Portable
Power Option	No power
Item Weight	37.0 lbs.
General Features:	
Case/Storage Style	Carrying case
Case/Storage Class	Hard shell
Case/Storage Material	Plastic
Welder Accessory:	
Welder Accessories	Port-a-Torch
Hose:	
Length	12 ft.
Included with Item:	
Case	Yes

Everything needed for industrial welding, cutting and brazing, all in a carrying case. Ideal for air conditioning systems, plumbing, farming equipment, auto racing, and

general maintenance repair.



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Product Summary

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CRAFTSMAN

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Product images may differ from actual product appearance.

Craftsman 3NI Auto Dark Welding Helmet

The 3NI auto dark welding helmet is portable and a good accessory for anyone who welds.

- **Online / Catalog Exclusive!**

See Detailed Product Specifications

Availability & Options

- FREE SHIPPING with mail-in rebate. This item typically leaves the warehouse within 2 business days. **Calculate Arrival Time & Shipping Costs** - based on your destination Zip Code.
  About Shipping and Delivery Methods

Learn More

- See detailed product specifications.
- If you would like any applicable Warranty information, please click here.
- For research and advice about this item see our Buying Guide
- See other Craftsman Welders & Accessories like this one
- Satisfaction guaranteed, or your money back. Learn about our return policy.

Sears Item #00920460000
Mfr. Model #20460

Other Items to Consider

- People who were interested in this item were also interested in these products.

  Hobart Welding Helmet, Dale Earnhardt

Price:
$299.99

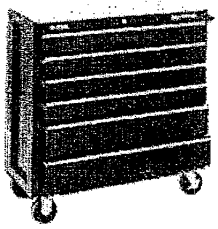
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Product Summary

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CRAFTSMAN

View larger image
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Craftsman 6-Drawer Mobile Tool Cart, 40 in. Wide, Ball Bearing, Black

Drawers are over 36 in. wide to handle bulky tools. Features full-width aluminum drawer pulls for easy access. Ball bearing action drawer slides providing smooth operation under heavy loads.

- Durable I-Frame® construction withstands 50 percent more stress than flat side models
- Full-extension removable drawers
- Griplatch™ drawer retention system provides a positive latch on each drawer
- Heavy duty tubular side handle for easy movement
- Internal locking system with reversible keys
- Long-lasting and attractive baked enamel finish
- Thick and durable work surface lets you work right next to your tools

Price:

$559.99

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See Detailed Product Specifications

Availability & Options

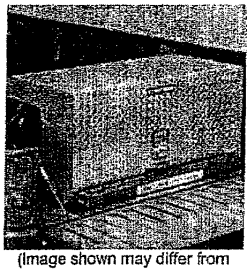
- This item is typically delivered within 7-10 business days. Special handling is required. **Calculate Arrival Time & Shipping Costs** - based on your destination Zip Code. About Shipping and Delivery Methods
- ★ **Save Time - Choose Store Pick-Up:** Enter your Zip Code below to check availability at your local store.

Store Pick-Up Help

Learn More

- See detailed product specifications.

Product Detail



(Image shown may differ from actual product appearance.)

Craftsman Truck Storage Chest, Ball Bearing with Diamond Plate Top and Front

$999.99

Additional Offer Available with Rebate(s)

Sears Item #00959988000
Mfr. Model #59988

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CRAFTSMAN

Features	Description
Product Overview:	
Truck Box Type	Metal
Portability	Stationary
Power Option	No power
Item Weight	271.0 lbs.
General Features:	
Capacity	9,525 cu. in.
Dimensions	43-3/8W x 19-7/8D x 19H in.
No. of Drawers/Compartments	3
Material	16 ga. steel
Color:	
Overall Color	White
Storage:	
Cover Hinge	Gas spring
Locking System	Key

2925

This stylish white chest provides 9,525 cu. in. of organized storage. Designed to fit forward of the wheel well in trucks and vans. Ball bearing drawer slides open easier as load increases.



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Product Detail



(Image shown may differ from actual product appearance.)

Craftsman 5-Drawer Truck Box, Signature Series with All Diamond Plate Exterior

$229.99

Additional Offer Available with Rebate(s)

Sears Item #00959995000
Mfr. Model #59995

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CRAFTSMAN

Features	Description
Product Overview:	
Truck Box Type	Metal
Portability	Stationary
Power Option	No power
Item Weight	57.0 lbs.
General Features:	
Dimensions	7-5/8W x 20-1/2D x 18-7/8H in.
No. of Drawers/Compartments	5
Finish	Powdercoat
Material	16 ga. steel
Color:	
Overall Color	Silver
Storage:	
Locking System	Key

Stylish truck box provides a unique patented system to store tools securely behind a

Product Detail



(Image shown may differ from actual product appearance.)

Craftsman 4-Drawer Rally Portable Chest

$59.99

Additional Offer Available with Rebate(s)

Sears Item #00965398000
Mfr. Model #65398

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CRAFTSMAN

Features	Description
Product Overview:	
Portable Tool Box & Chest Type	Portable Tool Chest
Portability	Portable
Color:	
Overall Color	Black
Storage:	
Unit Lock	Yes
Locking System	Key

4-drawer rally box. 14-1/4 in. high box has 1,840 cu. in. of storage area. Tools not included.

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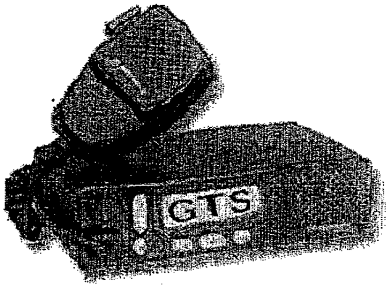
2928

M1225 Radios and Accessories!

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Two-Way Radio Menu

M1225 4 & 20 Channel Radios



- 12.5/25 kHz Switchable
- AdvantagePort Expandability
- 8-Character Alphanumeric LCD with Aliasing
- High/Low Power
- Repeater/Talkaround
- Local/Distance
- Dual Priority User Programmable Channel Scan
- Dual Color Display
- Reliable Durability

Radios include; Power Harness, Bracket, Mic, Mic Clip, a one year warranty and Programming.

With 4 or 20 programmable channels, you can talk on either a 25 or a 12.5 kHz channel allowing a seamless, economical transition to the narrower bandwidth. Two-way users won't want to be without this greatly expanded audio quality at 12.5 kHz.

X-PAND
12.5 or 25 kHz



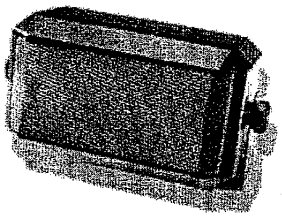
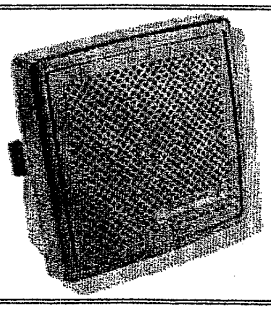
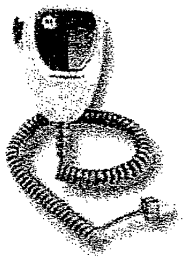
Compresses your voice at one end.
Expands it at the other.
Significantly reduces noise level in the process.

Switchable 12.5/20/25/30 kHz				You Pay	List Price	
	4 Channel	10-25 Watt	M33DGC90E2	$ 325.00	$ 435.00	

2929

VHF		25-40 Watt	M43DGC90E2	$ 365.00	$ 495.00	
	20 Channel	10-25 Watt	M33DGC90J2	$ 415.00	$ 550.00	
		25-40 Watt	M43DGC90J2	$ 455.00	$ 610.00	
UHF	4 Channel	10-25 Watt	M34DGC90E2	$ 375.00	$ 500.00	
		25-40 Watt	M44DGC90E2	$ 420.00	$ 560.00	
	20 Channel	10-25 Watt	M34DGC90J2	$ 465.00	$ 620.00	
		25-40 Watt	M44DGC90J2	$ 500.00	$ 675.00	

M1225 Accessories

Add Item?	Product	Price	Qty
Speakers			
☐	 **7.5 watt external speaker HSN9008**	$ 30.50	1
☐	 **6 watt amplified external speaker HSN1000**	$ 78.75	1
☐	**16pin Accessory Connector kit HLN9457**	$ 5.25	1
Mics			
☐	 **Heavy Duty Palm Microphone HMN1035**	$ 57.50	1

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JOB 1592	SLACK ADJUSTER, GROUP L		QLFR-05
LOC-	MAX UNITS 1	RULE 4	GUAR - -
MATL KIND- UNIT- EACH WGT - 50	WHY MADE CODES 01 02 03 09 12 25 31		
(0) R LABOR .537 HRS OR $ 37.48	(1) NEW GR $417.50		(3) REC GR $313.13
(9) R & R $ 37.48	SCP CREDIT $ 1.00		

JOB 1594	SLACK ADJUSTER, GROUP M		QLFR-06
LOC-	MAX UNITS 1	RULE 4	GUAR - -
MATL KIND- UNIT- EACH WGT - 50	WHY MADE CODES 01 02 03 09 12 25 31		
(0) R LABOR .537 HRS OR $ 37.48	(1) NEW GR $441.50		(3) REC GR $331.13
(9) R & R $ 37.48	SCP CREDIT $ 1.00		

JOB 1612	AB RESERVOIR COMPLETE		QLFR-00
LOC-	MAX UNITS 1	RULE 4	GUAR - -
MATL KIND- IRON UNIT- EACH WGT - 265	WHY MADE CODES 02 03 09 15 31		
(0) R LABOR .622 HRS OR $ 43.42	(1) NEW GR $237.44		(3) REC GR $237.44
(9) R & R $ 48.04	SCP CREDIT $ 5.30		

JOB 1628	AIR BRAKE HOSE-AAR APPROVED		QLFR-00
LOC-	MAX UNITS 2	RULE 5	GUAR - -
MATL KIND- UNIT- EACH WGT -	WHY MADE CODES 03 04 07 15 21 22 25 31		
(0) R LABOR .128 HRS OR $ 8.93	(1) NEW GR $ 15.33		

JOB 1630	AIR BRAKE HOSE 33" OR OVER		QLFR-00
LOC-	MAX UNITS 2	RULE 5	GUAR - -
MATL KIND- UNIT- EACH WGT -	WHY MADE CODES 03 04 07 15 21 22 25 31		
(0) R LABOR .125 HRS OR $ 8.73	(1) NEW GR $ 23.89		

JOB 1648	BRK BEAM HGR TYP-18, CAST IRON		QLFR-00
LOC-18	MAX UNITS 1	RULE 6	GUAR - -
MATL KIND-CSTST UNIT- EACH WGT - 99	WHY MADE CODES 01 02 03 05 25		
(0) R LABOR 1.446 HRS OR $100.93	(1) NEW GR $123.90		(3) REC GR $109.03
	SCP CREDIT $ 1.98		

JOB 1830	BRAKE SHOE CAST IRON HI PHOSPHOROUS	QLFR-00
LOC-	MAX UNITS 8	RULE 12 GUAR - -
MATL KIND- UNIT- EACH WGT -	WHY 01 02 03 25 MADE CODES	
(0) R LABOR .123 HRS OR $ 8.59	(1) NEW GR $ 11.57	

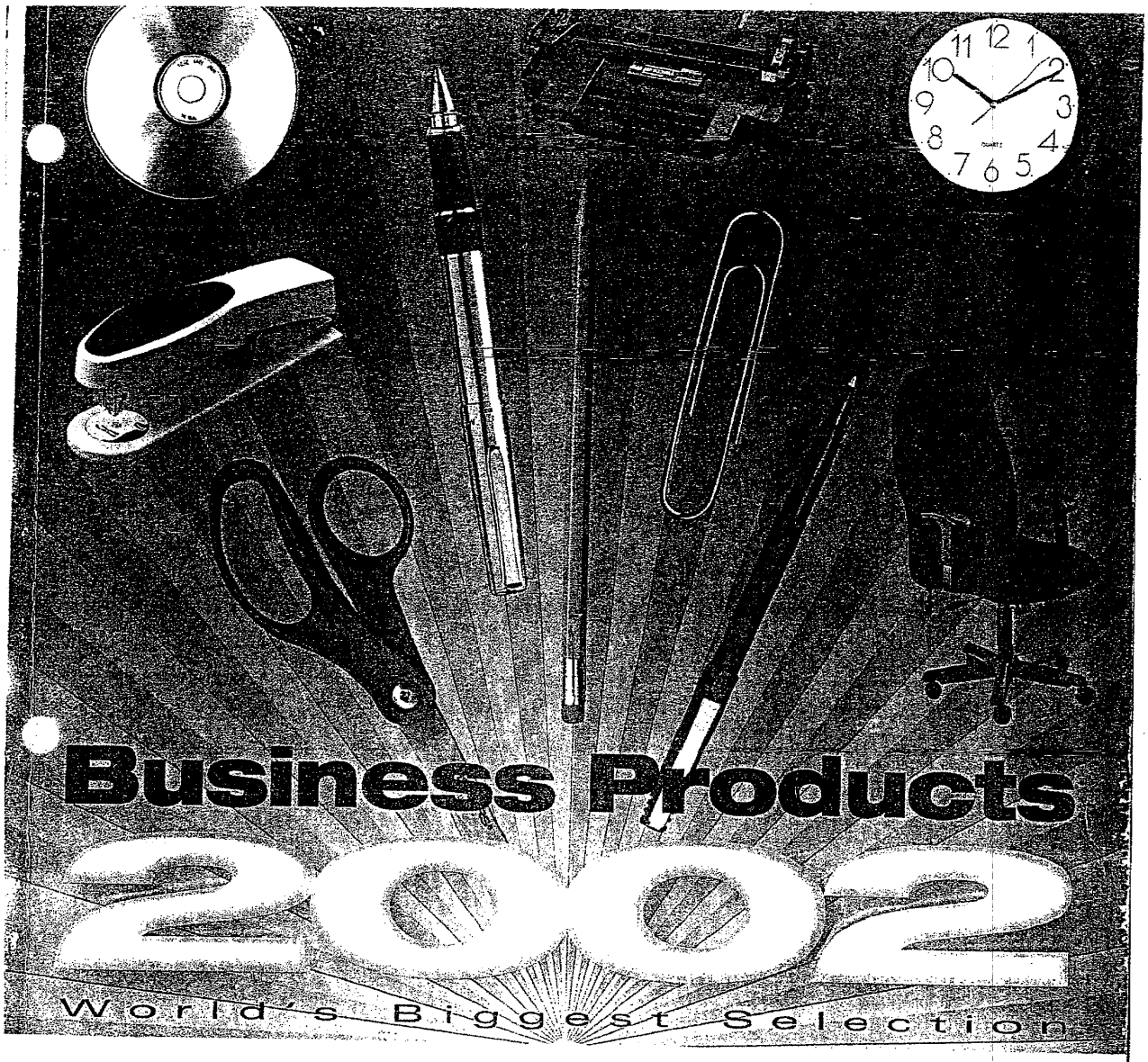
JOB 1838	BRAKE SHOE-COMP. HI-FRCT 1-1/2 IN.	QLFR-00
LOC-	MAX UNITS 8	RULE 12 GUAR - -
MATL KIND- UNIT- EACH WGT -	WHY 01 02 03 25 MADE CODES	
(0) R LABOR .123 HRS OR $ 8.59	(1) NEW GR $ 4.89	

JOB 1840	BRAKE SHOE-COMP, HI-FRCT 2 IN.	QLFR-00
LOC-	MAX UNITS 8	RULE 12 GUAR - -
MATL KIND- UNIT- EACH WGT -	WHY 01 02 03 25 MADE CODES	
(0) R LABOR .123 HRS OR $ 8.59	(1) NEW GR $ 5.50	

JOB 1842	BRK SHOE-COMP-HI-FRCT 1 1/2 IRN INS-RED	QLFR-00
LOC-	MAX UNITS 8	RULE 12 GUAR - -
MATL KIND- UNIT- EACH WGT -	WHY 01 02 03 25 MADE CODES	
(0) R LABOR .123 HRS OR $ 8.59	(1) NEW GR $ 18.00	

JOB 1843	BRK SHOE-COMP-HI-FRCT 2 IRON INS (RED)	QLFR-00
LOC-	MAX UNITS 8	RULE 12 GUAR - -
MATL KIND- UNIT- EACH WGT -	WHY 01 02 03 25 MADE CODES	
(0) R LABOR .123 HRS OR $ 8.59	(1) NEW GR $ 20.00	

JOB 1844	BRAKE SHOE-COMP, LOW FRICTION (YELLOW)	QLFR-00
LOC-	MAX UNITS 8	RULE 12 GUAR - -
MATL KIND- UNIT- EACH WGT -	WHY 01 02 03 25 MADE CODES	
(0) R LABOR .123 HRS OR $ 8.59	(1) NEW GR $ 17.00	

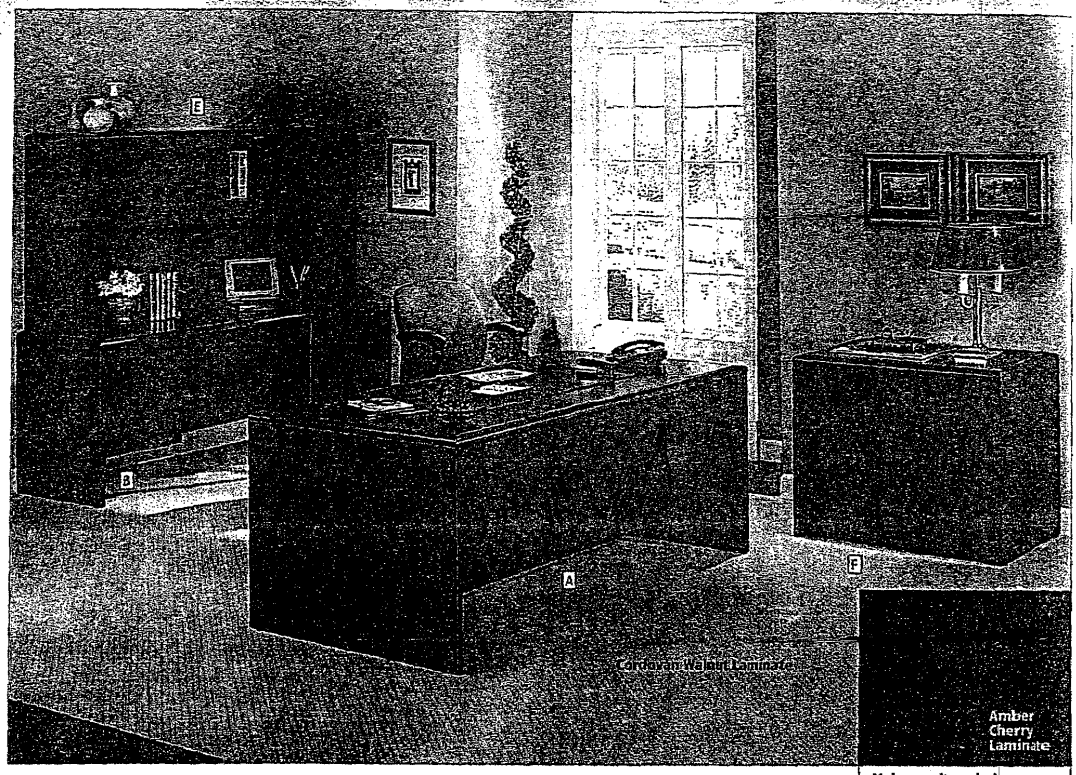


ARZ Business Systems, Inc.

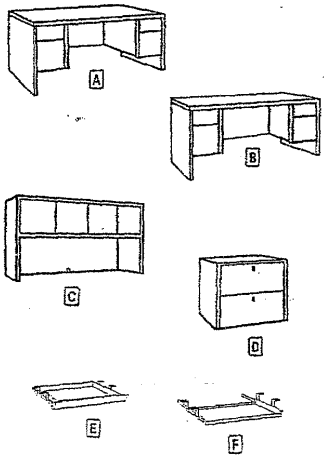
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Office Suites



Unique, mitered edges provide additional impact and wear resistance.



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Furniture with Personality™

ANSI BIFMA

ARROWOOD LAMINATE 2100 SERIES

Arrowood's 2100 Laminate Series, with durable laminate edges, features thermally fused laminate tops and chassis to resist stains, scratches and dents. Contemporary styling with three-quarter height pedestals, flush drawer fronts, and unique mitered edges. Available in Cordovan Walnut or Amber Cherry finish. File drawers have full-extension progressive action slides with precision steel ball bearings. Box drawers have ¾ extension slides with ball bearing rollers. Mitered edges provide additional impact and wear resistance. Leveling glides. Manufacturer's lifetime warranty.

A 72 x 36 Double Pedestal Desk—One box and one file drawer in each locking pedestal. 71¾w x 35¾d x 29½h. Shpg. wt. 295 lbs.

No.	Finish	Each
♦NOF-2136720PCW	Cordovan Walnut	$926.00
♦NOF-213672DPMC	Amber Cherry	926.00

B Kneespace Credenza—One box and one file drawer in each locking pedestal. 71¾w x 23¾d x 29½h. Shpg. wt. 262 lbs.

No.	Finish	Each
♦NOF-212472XPCW	Cordovan Walnut	$798.00
♦NOF-212472XPMC	Amber Cherry	798.00

C Hutch—Fits on top of Kneespace Credenza to provide additional storage space. Four side-hinged doors. Wire dividers. Locking center compartment. 69w x 14⅜d x 36⅜h. Shpg. wt. 220 lbs.

No.	Finish	Each
♦NOF-211572OSCCW	Cordovan Walnut	$736.00
♦NOF-211572OSCMC	Amber Cherry	736.00

D Two-Drawer Lateral File—For letter or legal size hanging files. Locking. 35¾w x 23¾d x 29½h. Shpg. wt. 184 lbs.

No.	Finish	Each
♦NOF-212436LFCW	Cordovan Walnut	$617.00
♦NOF-212436LFMC	Amber Cherry	617.00

E Center Drawer—Fits Double or Single Pedestal Desks. Smooth, quiet suspension. Built-in pencil divider. 24w x 21d x 2¾h. Shpg. wt. 10 lbs.

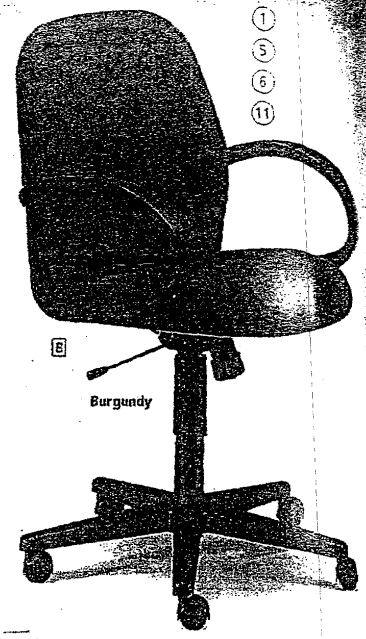
No.	Finish	Each
NOF-2421CDFCW	Cordovan Walnut	$156.00
NOF-2421CDFMC	Amber Cherry	156.00

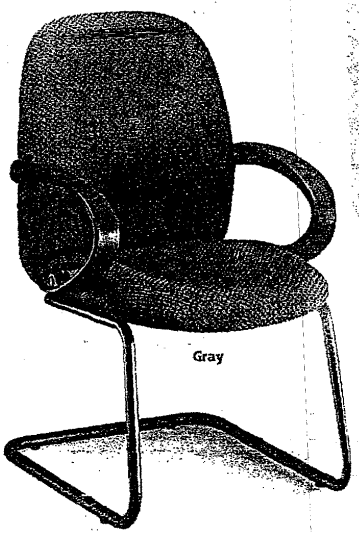
F Keyboard Drawer—Fits Kneespace Credenza or MultiFile Return. Height ranges from 21⅛2" to 31⅛2" in 7⅛2" increments. Black metal. 24w x 14d x 1¼h. Shpg. wt. 15 lbs.
NOF-NAC1424KT .....Each $109.00

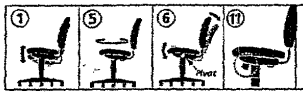
2935

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For a description of the chair feature symbols shown, see page 92.

GLOBAL

ENTERPRISE MANAGEMENT SERIES

Gently sculptured seat and back cushions provide lateral and lumbar support for uncompromised comfort. Impact- and scuff-resistant molded arms, with gently curved tops, enhance user forearm comfort. 54% acrylic, 46% polyester upholstery. Black base and frame.

asters supplied with the chairs on this page are not uitable for all floor types. Alternative casters are available to meet your specific needs. See page 157 for details.

A High Back Swivel/Tilt Chair—Pneumatic seat height adjustment. Tilt tension control. Seat: 20½w x 18½d. Back: 20w x 26h. Overall height 42½" to 47½". Shpg. wt. 35 lbs.

No.	Upholstery	Each
GLB-4560BKCU01	Burgundy	$299.00
GLB-4560BKCU03	Navy	299.00
GLB-4560BKCU06	Gray	299.00

B Low Back Swivel/Tilt Chair—Pneumatic seat height adjustment. Tilt tension control. Seat: 20½w x 18½d. Back: 20w x 21h. Overall height 34½" to 39½". Shpg. wt. 32 lbs.

No.	Upholstery	Each
GLB-4561BKCU01	Burgundy	$285.00
GLB-4561BKCU03	Navy	285.00
GLB-4561BKCU06	Gray	285.00

ASSEMBLY
Items with this symbol require assembly.

C Side Arm Chair—Cantilever base. Seat: 24w x 26d. Back: 20w x 21h. Overall height 33½". Shpg. wt. 31 lbs. ASSEMBLY

No.	Upholstery	Each
GLB-4565BKCU01	Burgundy	$285.00
GLB-4565BKCU03	Navy	285.00
GLB-4565BKCU06	Gray	285.00

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ARZ Business Systems, Inc.

Office Supplies	Office Furniture (New & Used)
Computer Supplies	Computer Furniture
Business Cards	Letterheads
Envelopes (Printed)	Custom Forms

2937

Phone: 301-856-0200 or 1-800-966-0201
FAX: 301-856-6811

A Ticonderoga Yellow Pencil—Distinct black marks, smooth writing, easily erased. Comfortable to hold and use for a tradition of writing. PMA Certified nontoxic.

No.	Lead	No.	Lead
DIX-13881	1 (Soft)	DIX-13883	3 (Firm)
DIX-13882	2 (Med. Soft)	DIX-13884	4 (Extra Firm)
DIX-13885	2.5 (Med. Firm)		

Dozen.....$3.60

Ticonderoga Cedar Pencil—Made with real cedar—guaranteed not to break in sharpeners. Same high-quality writing as the original Ticonderoga. No. 2 lead. PMA Certified nontoxic.

	No.	Finish	Dozen
B	DIX-13912	Maple	$3.60
C	DIX-13913	Millennium Black	3.60

SANFORD

D Mirado® Black Warrior—Premium round cedar pencil with a black matte finish for a sophisticated, professional look. PMA Certified nontoxic. Made in U.S.A.

No.	Lead	No.	Lead
SAN-02253	1 (Soft)	SAN-02255	2.5 (Med. Firm)
SAN-02254	2 (Med. Soft)	SAN-02256	3 (Firm)

Dozen.....$3.72

E Mirado®—Premium pencil made from incense cedar for easy sharpening. Use of the finest lead guarantees the smoothest writing. Yellow hexagon barrel and Pink Pearl® eraser. PMA Certified nontoxic. Made in U.S.A.

No.	Lead	No.	Lead
SAN-02095	1 (Soft)	SAN-02099	3 (Firm)
SAN-02097	2 (Med. Soft)	SAN-02100	4 (Extra Firm)
SAN-02098	2.5 (Med. Firm)		

Dozen.....$3.72

American® Pencil—Quality wood pencil with yellow hexagon barrel. PMA Certified nontoxic. Made in U.S.A.

No.	Lead	Dozen
SAN-12132	#2 (Med. Soft)	$2.79
SAN-12133	#2.5 (Med. Firm)	2.79
Pre-Sharpened		
SAN-12235	#2 (Med. Soft)	2.88

G Earth Write®—The Earth-friendly pencil casing, made from recycled newspaper. 60% post-consumer waste. Formerly Ecowriter. PMA Certified nontoxic. Made in U.S.A.

No.	Lead	Dozen
SAN-12242	#2 (Med. Soft)	$2.39
SAN-12243	#2.5 (Med. Firm)	2.39

H No. 2 Eagle® Pencil—Good quality pencil. Yellow hexagon barrel, medium No. 2 lead, smudge-free eraser. Made in U.S.A.
SAN-22414.....Dozen $1.98

Universal

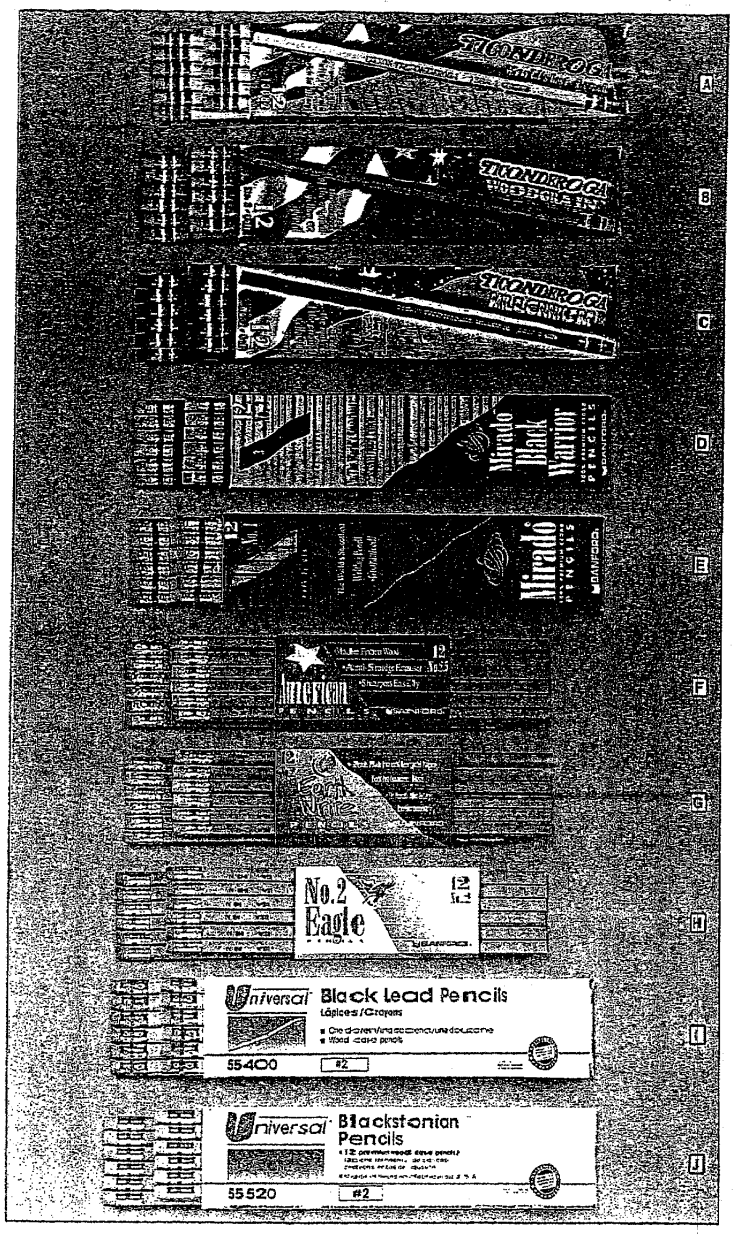
I Economy—No. 2. Yellow hexagon barrel.
UNV-55400.....Dozen $1.89

J Blackstonian—A real wood pencil with bonded core for break-resistant writing. Natural rubber eraser offers clean corrections.

No.	Lead	No.	Lead
UNV-55510	1 (Soft)	UNV-55530	3 (Firm)
55520	2 (Med. Soft)	UNV-55540	4 (Extra Firm)
55525	Medium		

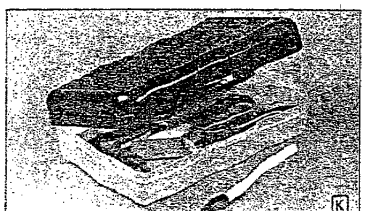
Dozen.....$2.55

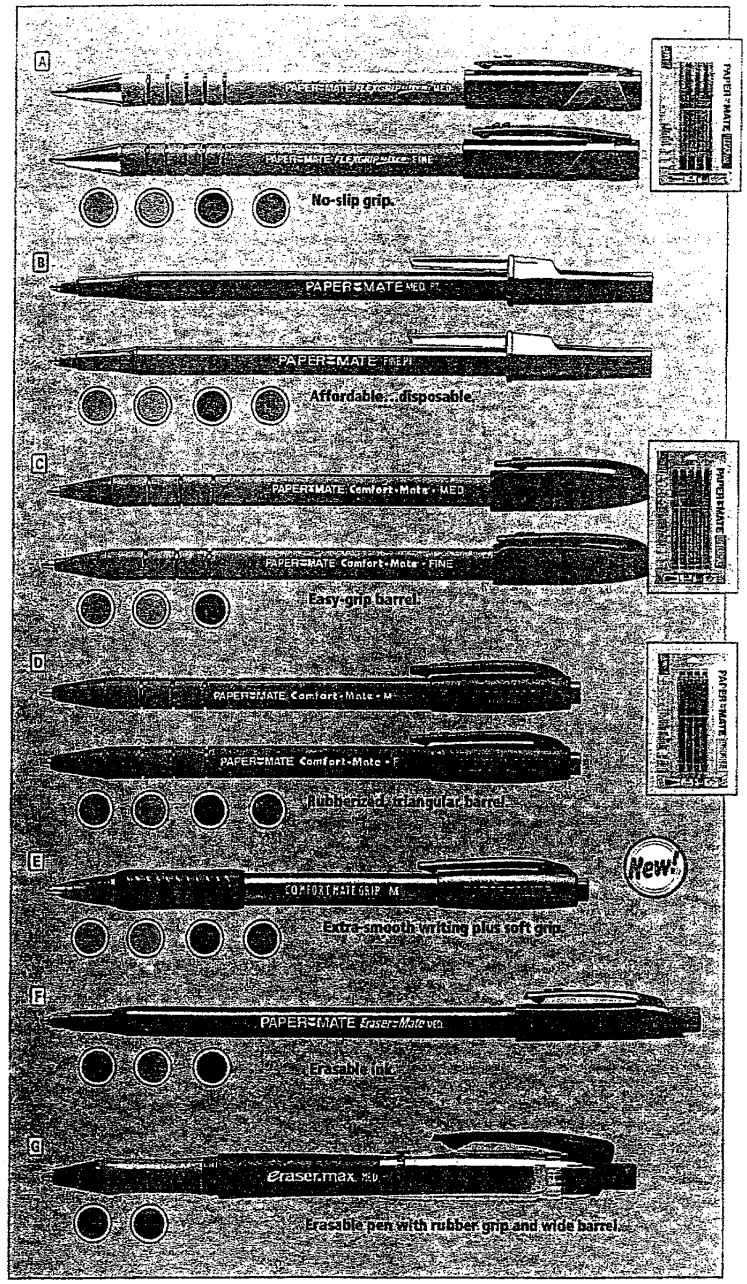
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ROGERS

K Spacemaker® Schoolboxes—The box with the bumps. Kids use to store all sorts of things, from school supplies to baseball cards to doll clothes! With living hinge, clasp closing. 8¼w x 5¾d x 2¼h. Assorted candy colors.
NEW-54640.....Each $2.47





PAPER MATE

A Flexgrip Ultra™ Ball Pens—Rubberized barrel with an innovative design for unsurpassed writing performance and comfort. Lubriglide™ ink for smooth, bold vivid lines. Refillable. [12 Each per box.]

No.	Ink	Point	Each
PAP-961-01	Blue	1.0mm (med.)	$1.39
PAP-962-01	Red	1.0mm (med.)	1.39
PAP-963-01	Black	1.0mm (med.)	1.39
PAP-965-01	Purple	1.0mm (med.)	1.39
PAP-966-01	Blue	.79mm (fine)	1.39
PAP-967-01	Red	.79mm (fine)	1.39
PAP-968-01	Black	.79mm (fine)	1.39

Four-Pen Packs—Medium point.

No.	Ink	Pack
PAP-961-44	Blue	$5.59
PAP-963-44	Black	5.59

B Stick Pens—Quality pen at an economical price. Ideal for home, school or office.

No.	Ink	Point	Dozen
PAP-331-11	Blue	1.0mm (med.)	$3.60
PAP-332-11	Red	1.0mm (med.)	3.60
PAP-333-11	Black	1.0mm (med.)	3.60
PAP-334-11	Green	1.0mm (med.)	3.60
PAP-336-11	Blue	.8mm (fine)	3.60
PAP-337-11	Red	.8mm (fine)	3.60
PAP-338-11	Black	.8mm (fine)	3.60

C Comfort Mate™ Ball Pens—Rubberized triangular barrel, unsurpassed comfort, smooth writing and bold, vivid lines. [12 Each per box.]

Ink	Med. Point	Fine Point	Each
Blue	PAP-611-01	PAP-616-01	$0.71
Red	PAP-612-01	PAP-617-01	.71
Black	PAP-613-01	PAP-618-01	.71

Five-Pen Packs—Medium point.

No.	Ink	Pack
PAP-611-35	Blue	$3.59
PAP-613-35	Black	3.59

D Comfort Mate™ Retractable Ball Pens—Smooth writing comfort with rubberized triangular barrel. Retractable. [12 Each per box.]

Ink	Med. Point	Fine Point	Each
Blue	PAP-631-01	PAP-636-01	$0.89
Red	PAP-632-01	PAP-637-01	.89
Black	PAP-633-01	PAP-638-01	.89
Green	PAP-634-01	----	.89

Four-Pen Packs—Medium point.

No.	Ink	Pack
PAP-631-44	Blue	$3.59
PAP-633-44	Black	3.59

E Comfort Mate™ Grip Retractable Ball Pen—The smooth writing of Lubriglide™ ink combined with the soft feel of a rubber grip. Medium point. [12 Each per box.]

No.	Ink	Each
PAP-641-01	Blue	$1.07
PAP-642-01	Red	1.07
PAP-643-01	Black	1.07
PAP-645-01	Purple	1.07

F Eraser Mate®—Writes at any angle; erases easily. Stainless steel point. Disposable. Medium point. [12 Each per box.]

No.	Ink	Each
PAP-391-01	Blue	$1.49
PAP-392-01	Red	1.49
PAP-393-01	Black	1.49

G Eraser.Max Erasable Pen—Unique tip seal cap prevents dryout, reduces skipping, provides smooth writing and darker lines. Rubber grip and wide barrel. Medium point. [6 Each per box.]

No.	Ink	Each
PAP-581-64	Blue	$1.59
PAP-583-64	Black	1.59

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A Hi-Liter® EverBold™ Pen Style Highlighter—Lasts longer than other pen-type highlighters. Unique free-ink system for even, consistent marks. Visible ink supply shows when it's time to replace. Long-lasting, fade-resistant pigmented ink. [12 Each per box.]

No.	Color	Each
AVE-29591	Fluorescent Yellow	$1.99
AVE-29592	Fluorescent Pink	1.99
AVE-29593	Fluorescent Blue	1.99
AVE-29594	Fluorescent Green	1.99
AVE-29595	Fluorescent Orange	1.99
AVE-29596	Fluorescent Purple	1.99

Four-Color Fluorescent Set—Yellow, pink, orange, purple.
AVE-29548 ..... Set $7.99

B Hi-Liter® Pen Style—20% more ink! Vibrant, long-lasting fluorescent colors. No-fray plastic tip makes highlighting smooth. Still highlights if left uncapped for up to one week. Sturdy clip stores in pocket or binder. [12 Each per box.]

No.	Color	Each
AVE-23591	Fluorescent Yellow	$0.79
AVE-23592	Fluorescent Pink	.79
AVE-23593	Fluorescent Blue	.79
AVE-23594	Fluorescent Green	.79
AVE-23595	Fluorescent Orange	.79
AVE-23596	Fluorescent Purple	.79

Six-Color Fluorescent Set—Two yellow, pink, orange, green, and purple.
AVE-23565 ..... Set $4.74

C Hi-Liter® Glidestik™—Extra smooth highlighting won't bleed through. Use on all papers, including fax, without smearing. Washable, nontoxic. Fluorescent yellow. [12 Each per box.]
AVE-24076 ..... Each $3.10

D Hi-Liter® Comfort Grip—Rubberized cushion grip, quick-dry fluorescent ink. Molded no-fray plastic tip either highlights or underlines. Won't dry out even if left uncapped for up to one week. [12 Each per box.]

No.	Color	Each
AVE-24069	Fluorescent Yellow	$1.42
AVE-24070	Fluorescent Pink	1.42

E Hi-Liter® Fluorescent Desk Style—Durable molded tip highlights or underlines. [12 Each per box.]

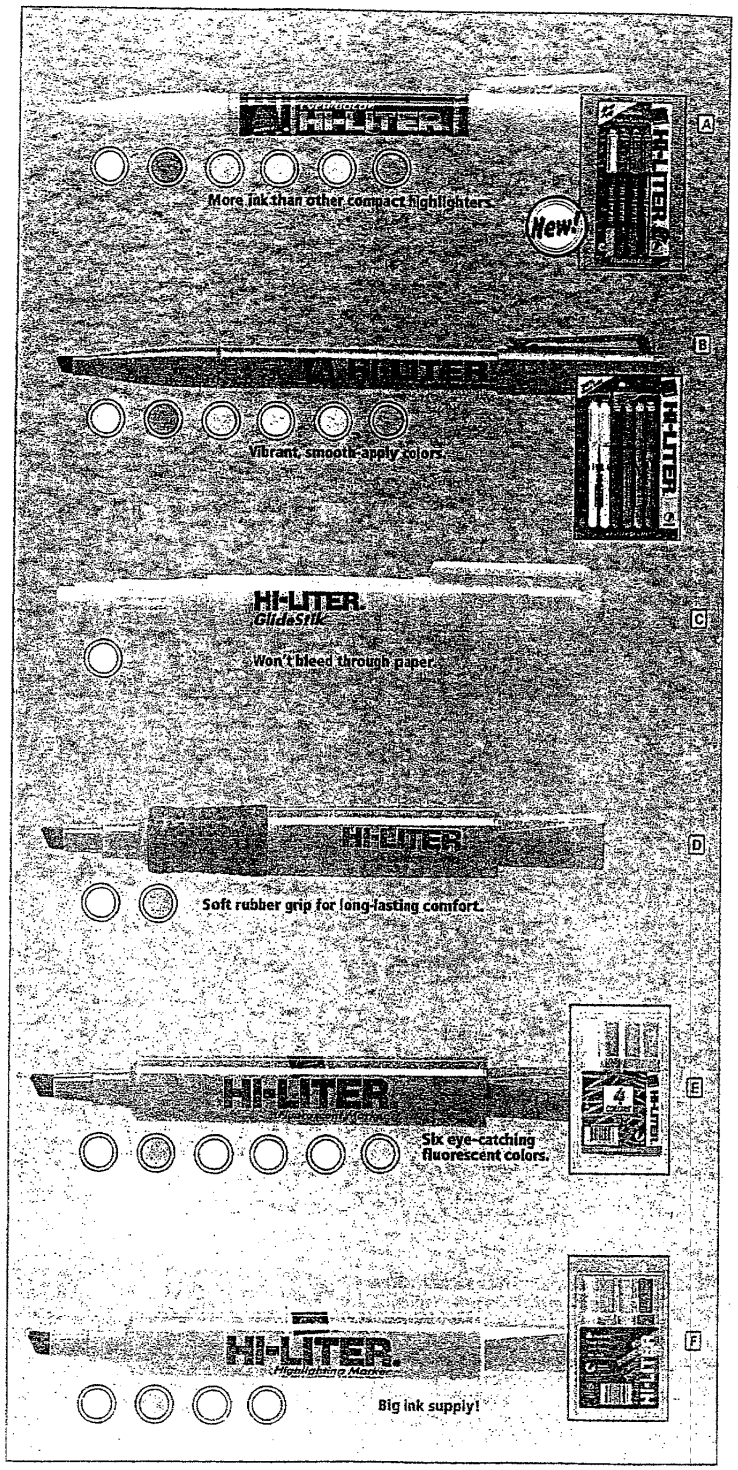
No.	Color	Each
AVE-24000	Fluorescent Yellow	$0.91
AVE-24010	Fluorescent Pink	.91
AVE-24016	Fluorescent Blue	.91
AVE-24020	Fluorescent Green	.91
AVE-24050	Fluorescent Orange	.91
AVE-24060	Fluorescent Purple	.91

Four-Color Fluorescent Set—Yellow, green, pink, orange.
AVE-24052 ..... Set $3.66

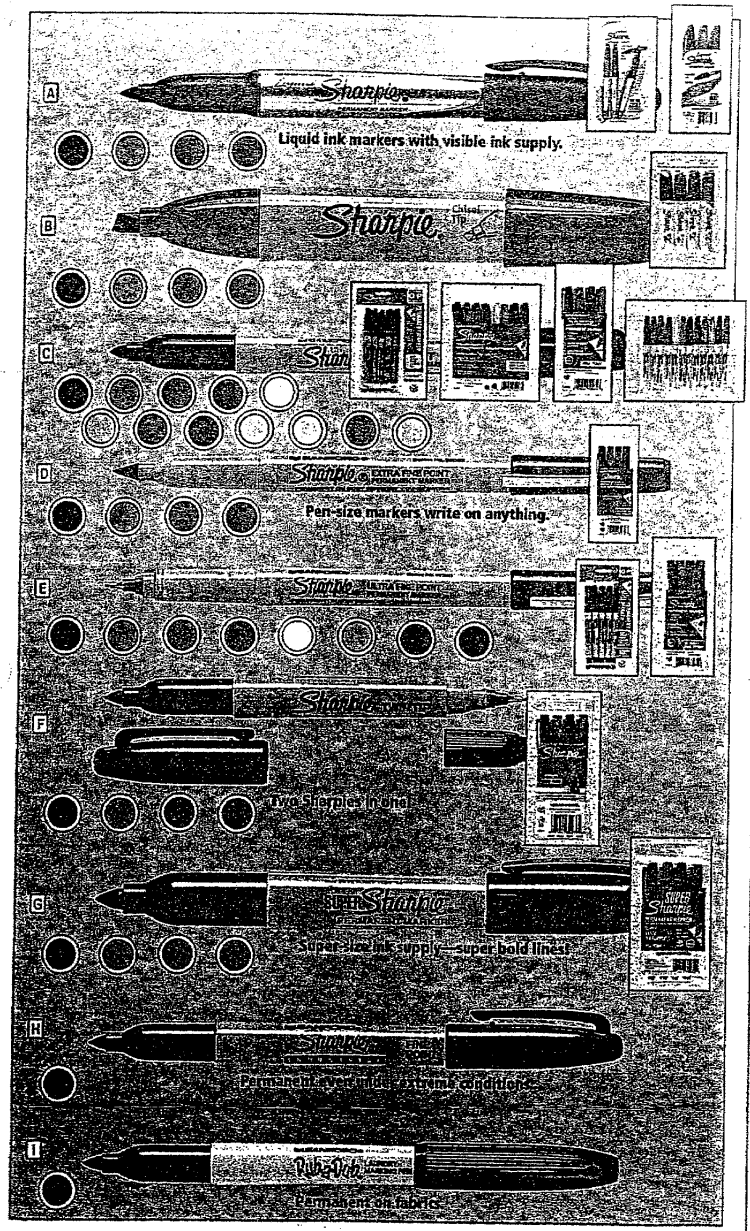
F Hi-Liter® Desk Style—Quick-drying ink won't bleed through paper. Leave cap off for up to one week, won't dry out. Plastic nib. [12 Each per box.]

No.	Color	Each
AVE-07742	Yellow	$0.91
AVE-07749	Pink	.91
AVE-07746	Blue	.91
AVE-07745	Green	.91

Four-Color Set—Yellow, green, pink, blue.
AVE-17752 ..... Set $3.66



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G Super Sharpie® Markers—Super large ink supply. Classic Sharpie® tip marks fine, bold lines up to 4.0mm wide. [12 Each per box.]

No.	Color	Each
SAN-33001	Black	$1.80
SAN-33002	Red	1.80
SAN-33003	Blue	1.80
SAN-33004	Green	1.80

Four-Color Set—Black, red, blue, green, up to 4.0mm wide.
SAN-33074.....Set $7.10

H Sharpie® Industrial Markers—Permanent black ink resists most chemical washes, ultra-violet light and extreme heat or steam (up to 500°F) on metal, foil, glass, film and plastic. [12 Each per box.]
SAN-13601 Fine Point.....Each $1.15
SAN-13801 Extra Fine Point.....Each 1.15

I Rub-A-Dub® Laundry Pen—Won't launder out, even after repeated hot water washings. Black ink, won't spread or feather on cloth. Plastic fiber tip, 1.0mm. [12 Each per box.]
SAN-31101.....Each $1.25

Sharpie
SANFORD PERMANENT MARKERS

SHARPIE® PERMANENT MARKERS

- *Mark Whatever You Want™*
- *AP Certified nontoxic*

A Liquid Ink Sharpie®, Fine Tip, 1.0mm—Permanent on most surfaces, waterproof, quick drying. Visible ink supply, rubberized grip. [12 Each per box.]

No.	Color	No.	Color	Each
SAN-34011	Black	SAN-34013	Blue	$2.29
SAN-34012	Red	SAN-34004	Green	2.29

Liquid Ink Sharpie® Three-Marker Pack—Black, Fine Tip, 1.0mm.
SAN-34474.....Pack $7.25

Liquid Ink Sharpie® Three-Color Set—Black, red, blue, Fine Tip, 1.0mm.
SAN-34073.....Set $7.25

B Sharpie® Chisel Tip—[12 Each per box.]

No.	Color	No.	Color	Each
SAN-38201	Black	SAN-38203	Blue	$1.59
SAN-38202	Red	SAN-38204	Green	1.59

Four-Color Set—Black, red, blue, green. Chisel tip.
SAN-38274.....Set $6.49

C Sharpie® Fine Tip, 1.0mm—[12 Each per box.]

No.	Color	No.	Color	Each
SAN-30001	Black	SAN-30007	Brown	$1.15
SAN-30002	Red	SAN-30008	Purple	1.15
SAN-30003	Blue	SAN-30041	Aqua	1.15
SAN-30004	Green	SAN-30044	Lime	1.15
SAN-30005	Yellow	SAN 30045	Cranberry	1.15
SAN-30006	Orange	SAN-30048	Turquoise	1.15

Five-Marker Pack—Black, Fine Tip, 1.0mm.
SAN-30665.....Pack $5.95

Eight-Color Set—Black, red, blue, green, yellow, orange, brown, purple, Fine Tip, 1.0mm.
SAN-30078.....Set $9.15

Four-Color Set—Black, red, blue, green, Fine Tip, 1.0mm.
SAN-30074.....Set $4.60

12-Color Set—Black, red, blue, green, yellow, orange, brown, purple, aqua, lime, cranberry and turquoise. Fine Tip, 1.0mm.
SAN-30072.....Set $13.80

D Sharpie® Extra Fine Tip, .4mm—[12 Each per box.]

No.	Color	No.	Color	Each
SAN-35001	Black	SAN-35003	Blue	$1.15
SAN-35002	Red	SAN-35004	Green	1.15

Four-Color Set—Black, red, blue, green, Extra Fine Tip, .4mm.
SAN-35074.....Set $4.60

E Ultra® Fine Tip, .2mm—[12 Each per box.]

No.	Color	No.	Color	Each
SAN-37001	Black	SAN-37005	Yellow	$1.15
SAN-37002	Red	SAN-37006	Orange	1.15
SAN-37003	Blue	SAN-37007	Brown	1.15
SAN-37004	Green	SAN-37008	Purple	1.15

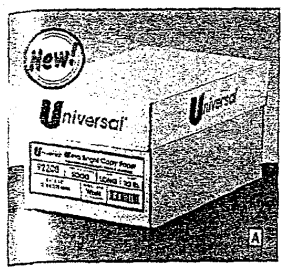
Five-Marker Pack—Black, Ultra Fine Tip, .2mm.
SAN-37665.....Pack $5.95

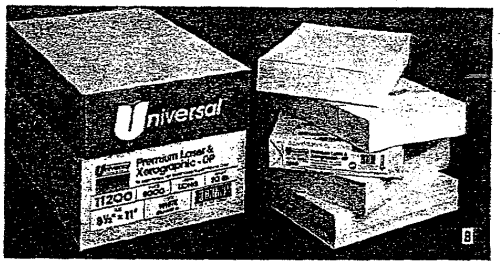
Four-Color Set—Black, red, blue, green, Ultra Fine Tip, .2mm.
SAN-37074.....Set $4.60

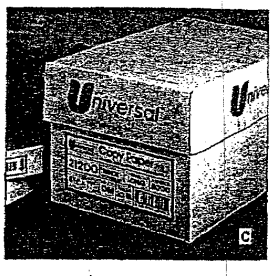
F Sharpie® Twin Tip—Fine marker point on one end, ultra fine point on the other. [12 Each per box.]

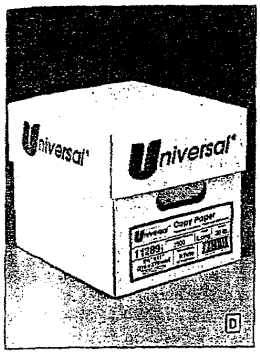
No.	Color	No.	Color	Each
SAN-32001	Black	SAN-32003	Blue	$2.10
SAN-32002	Red	SAN-32004	Green	2.10

Four-Color Twin Tip Set—Black, red, blue, green.
SAN-32274.....Set $8.40

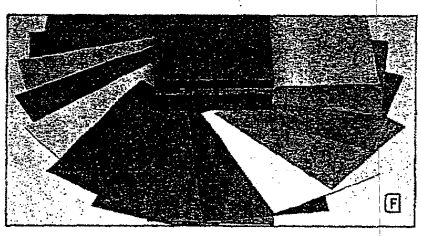


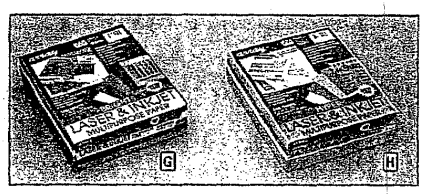












Universal

COPIER/LASER PRINTER PAPER

- *20-lb.*

A Ultra Bright White Copy Paper

- *Brightness rating 92*
- *Enhances business documents*

Exceptional performance in virtually any office machine—plain paper copiers, fax machines and printers. 8½ x 11. 500 sheets per ream.

UNV-92200 .....Ream $10.50

B Premium White Paper

- *Brightness rating 87*
- *Controlled moisture content prevents curling*

For plain paper copiers, duplicators and laser printers. Special wrap preserves freshness. 500 sheets per ream.

No.	Size	Ream
UNV-11200	8½ x 11	$10.50
UNV-14200	8½ x 14	13.45
UNV-17110	11 x 17	20.95
Three-Hole Punched		
UNV-11230	8½ x 11	11.30

C Bulk White Paper

- *Brightness rating 84*
- *For everyday copy needs*
- *Use in copiers, plain paper fax machines and laser printers*
- *500 sheets per ream*

No.	Size	Ctn. Qty.	Carton
UNV-21200	8½ x 11	10 Reams	$ 99.65
UNV-14200	8½ x 14	10 Reams	126.00
UNV-17110	11 x 17	5 Reams	99.65
Three-Hole Punched			
UNV-11230	8½ x 11	10 Reams	107.60

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D Five-Ream Convenience Carton

- *Reusable carry-and-store box*

White, multipurpose paper, brightness rating 84. Ream-wrapped to preserve freshness. 8½ x 11. 500 sheets per ream, five reams per carton.

UNV-11289.....Carton $55.05

E Premium Colored Paper

12 eye-catching colors. For all plain paper copiers and laser printers. Also for offset presses and spirit duplicators. 500 sheets per ream.

No.	Size	Color	Ream
UNV-11202	8½ x 11	Blue	$10.20
UNV-11206	8½ x 11	Buff	10.20
UNV-11201	8½ x 11	Canary	10.20
UNV-11211	8½ x 11	Cherry	10.20
UNV-11205	8½ x 11	Goldenrod	10.20
UNV-11209	8½ x 11	Gray	10.20
UNV-11203	8½ x 11	Green	10.20
UNV-11208	8½ x 11	Ivory	10.20
UNV-11212	8½ x 11	Orchid	10.20
UNV-11204	8½ x 11	Pink	10.20
UNV-11210	8½ x 11	Salmon	10.20
UNV-11207	8½ x 11	Tan	10.20
UNV-11222	8½ x 14	Blue	12.95
UNV-11221	8½ x 14	Canary	12.95
UNV-11223	8½ x 14	Green	12.95
UNV-11224	8½ x 14	Pink	12.95

2942

There's more!
Many new items will become available during the life of this catalog. If you don't see what you need, just give us a call.

RIVERSIDE

F KALEIDOSCOPE MULTIPURPOSE COLORED PAPER

- *Ideal for desktop publishing—designed for laser and ink jet printers and copiers*
- *14 attention-getting colors*

High-quality colored paper for any business need. Heavyweight 24-lb. bond acid-free. 8½ x 11. 500 sheets per ream.

No.	Color	Ream
RIV-02056	Cobalt Blue	$21.99
RIV-02057	Emerald Green	21.99
RIV-02052	Hot Pink	21.99
RIV-02200	Hyper® Yellow	21.99
RIV-02206	Hyper® Pink	21.99
RIV-02212	Hyper® Coral Red	21.99
RIV-02218	Hyper® Orange	21.99
RIV-02224	Hyper® Lime	21.99
RIV-02055	Lemon Yellow	21.99
RIV-02053	Lime	21.99
RIV-02059	Marine Blue	21.99
RIV-02051	Pumpkin	21.99
RIV-02054	Rojo Red	21.99
RIV-02058	Violet	21.99

COLORED BOND PAPER

- *24-lb. bond, acid-free, 8½ x 11*
- *500 sheets per ream*

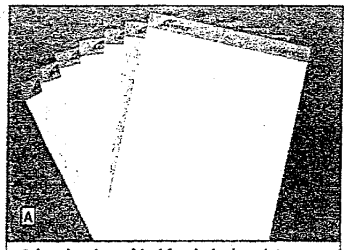
G Array® Bold Colors—Deep hues of intense colors in emerald green, rojo red, lemon yellow, pumpkin, and hot pink.

RIV-01105 .....Ream $23.58

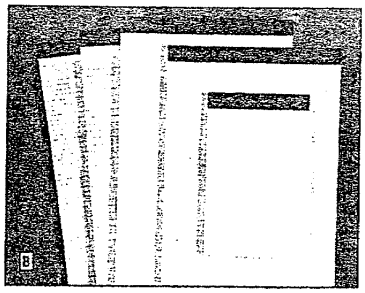
H Hyper® Colors—High-impact bright colors in yellow, pink, coral red, orange, and lime.

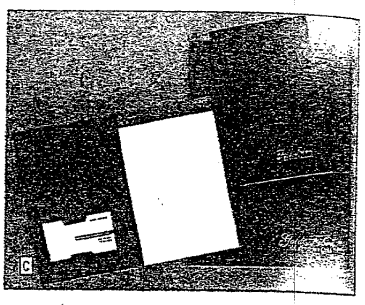
RIV-01135 .....Ream $23.58

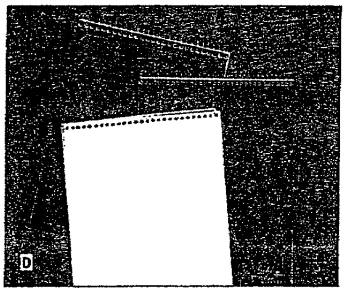
P Pads RULED

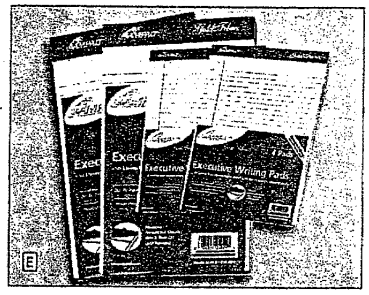


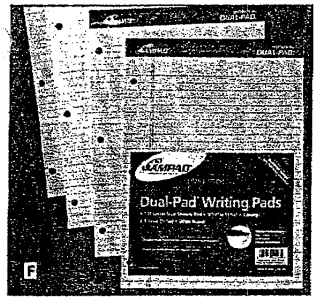
Colored pads are ideal for designing, data reporting and sketching.

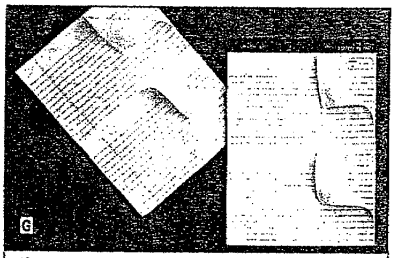












Sheets tear off into full pages, or half pages for short notes.

CAMPAD

EVIDENCE® PASTELS RULED PADS

- *Specially formulated free-sheet paper for smooth writing surface*
- *Color-coordinated rulings and fashion bindings*
- *Extra stiff chipboard back*

A Use color to coordinate, classify. Microperforated sheets for a clean tear. Wide ruled. 16-lb. paper, 50 sheets per pad.

No.	Color	Dozen
5 x 8 Memo Size		
AMP-20-654	Blue	$17.40
AMP-20-404	Canary	17.40
AMP-20-604	Gray	17.40
AMP-20-554	Ivory	17.40
AMP-20-704	Orchid	17.40
AMP-20-754	Rose	17.40
8½ x 11¾ Letter Size		
AMP-20-670	Blue	30.60
AMP-20-420	Canary	30.60
AMP-20-620	Gray	30.60
AMP-20-375	Green Tint	30.60
AMP-20-570	Ivory	30.60
AMP-20-720	Orchid	30.60
AMP-20-770	Rose	30.60

GOLD FIBRE® 16-LB. WATERMARKED RULED PADS

- *Extra smooth for superb writing*
- *Pinhole perforation for clean tear*
- *Extra stiff chipboard backing eliminates the need for a clipboard*
- *Leather grain binding*

B **Without Cover**—50 sheets per pad.

No.	Size	Ruling	Dozen
Canary			
AMP-20-004	5 x 8	Jr. Legal	$21.36
AMP-20-020	8½ x 11¾	Wide	33.36
AMP-20-022	8½ x 11¾	Narrow	41.88
AMP-20-030	8½ x 14	Wide	40.08
AMP-20-034	8½ x 14	Narrow	44.16
White			
AMP-20-070	8½ x 11¾	Wide	33.36

C **Side Bound with Cover**—Pocket inside cover. Canary sheets; wide ruled. 100 sheets per pad.

No.	Size	Cover	Each
AMP-20-046	5 x 8	Burgundy	$3.72
AMP-20-047	5 x 8	Green	3.72
AMP-20-048	8½ x 11¾	Burgundy	5.49
AMP-20-049	8½ x 11¾	Green	5.49

D **Wirebound Legal Pads**—Numbered lines on both sides for reference. Extra stiff chipboard back. 70 heavyweight microperforated white sheets, 8½ x 11¾.

No.	Cover	Each
AMP-20-811	Classic Green	$3.69
AMP-20-813	Designer Burgundy	3.69
AMP-20-815	Designer Green	3.69

GOLD FIBRE® 20-LB. WATERMARKED RULED PADS

- *Highest quality, heavyweight 20-lb. paper*
- *Pinhole perforation for clean sheet removal*
- *Extra stiff chipboard backing*
- *Imprinted gold ink binding*

E 50 sheets per pad, four pads per pack.

No.	Ruling	Color	Pack
5 x 8 Memo Size			
AMP-20-018	Jr. Legal	White	$ 4.25
AMP-20-029	Jr. Legal	Canary	4.25
8½ x 11¾ Letter Size			
AMP-20-031	Wide	White	10.45
AMP-20-032	Wide	Canary	10.45

EVIDENCE® DUAL PADS

F Twice the sheets of other pads, plus super stiff, extra thick chipboard back. 8½ x 11¾, three-hole drilled, microperforated sheets, 100 per pad.

No.	Ruling	Color	Each
AMP-20-223	Medium	Canary	$4.70
AMP-20-323	Medium	White	4.70
AMP-20-243	Wide	Canary	4.70
AMP-20-244	Wide	White	4.70
AMP-20-246	Narrow	Canary	4.70
AMP-20-346	Narrow	White	4.70
AMP-20-245	Law*	Canary	4.70
AMP-20-345	Law*	White	4.70
*3" margin, medium ruling			

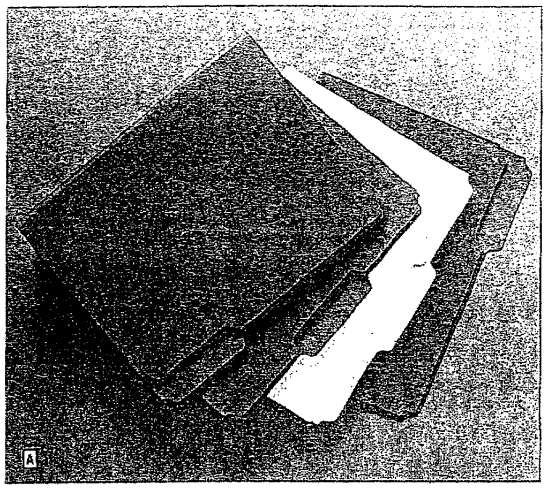
TWIN-PERF™ STYLE PADS

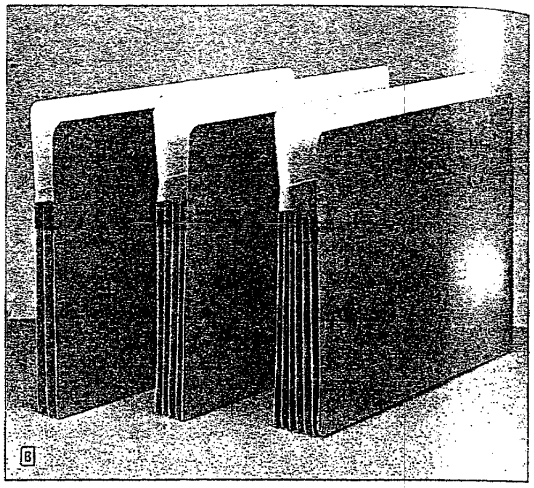
G Two pads in one! Twin microperforations at top and halfway down each page permit use of full letter size sheet or half sheet for memos or short notes. Clean tear perforations for easy sheet removal. 50 sheets per pad. 12 pads per pack.

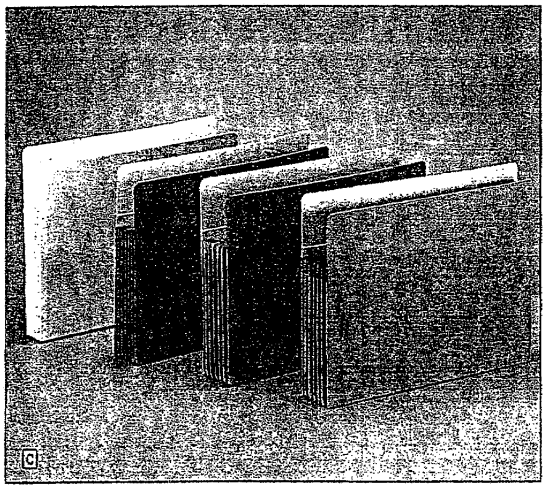
No.	Size	Color	Pack
Numbered Lines and "Prepared by/Date" Section. Wide Ruled with Margin Rule			
AMP-20-411	8½ x 11¾	White	$20.75
Wide Ruled with Margin Rule			
AMP-20-412	8½ x 11¾	White	20.75

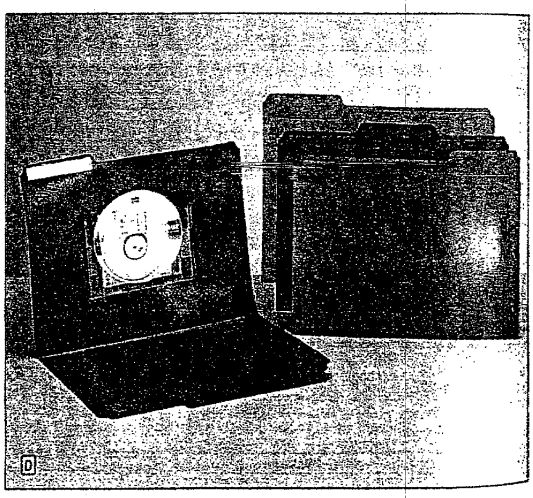
THESE MANUFACTURER LIST PRICES ARE SUBJECT TO CHANGE

F File Folders TOP TAB


A


B


C


D

Smead

POLY FILE FOLDERS

A Top Tab File Folders—Tough and durable enough to withstand frequent use. Standard letter size with ⅓ cut tabs. 24 folders per box.

No.	Color	Box
SMD-10501	Red	$19.35
SMD-10502	Green	19.35
SMD-10503	Blue	19.35
SMD-10504	Yellow	19.35
SMD-10500	Assorted*	20.02

**Six each: blue, green, red and yellow*

DROP FRONT TOP TAB FILE POCKETS

• *Contains at least 10% post-consumer waste*

Ideal for bulky records. Top half of front folds down for easy access to contents. Expansion files with 6¼" high side gussets.

B Redrope Gussets—50 file pockets per box.

No.	Size	Capacity	Each
SMD-73800	Letter	1¾"	$1.53
SMD-73805	Letter	3½"	1.79
SMD-73810	Letter	5¼"	2.09
SMD-74800	Legal	1¾"	1.82
SMD-74805	Legal	3½"	2.05
SMD-74810	Legal	5¼"	2.42

C Top Tab File Pockets with Colored Gussets—Letter size. 5¼" expansion. Ten file pockets per box.

No.	Color	Each
SMD-73235	Blue	$2.42
SMD-73236	Green	2.42
SMD-73241	Red	2.42
SMD-73243	Yellow	2.42

Beautone

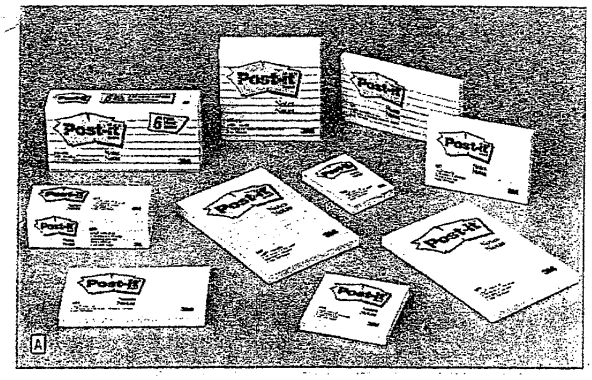
D Heavy-Duty Poly Top Tab File Folders with Triple Media Pocket—Water- and tear-resistant file folders with interior media pocket to hold CDs, diskettes or Zip® disks. Letter size with ⅓ cut tabs. 12 folders per pack.

No.	Color	Pack
BSP-38600	Red	$9.95
BSP-38602	Blue	9.95
BSP-38603	Teal	9.95
BSP-38605	Black	9.95
BSP-38608	Assorted*	9.95

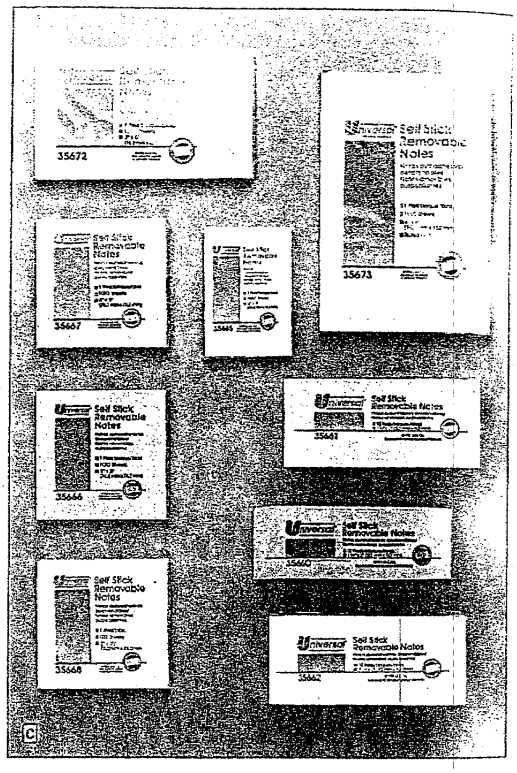
**Three each: red, blue, green and black*

THESE MANUFACTURER LIST PRICES ARE SUBJECT TO CHANGE

P Pads NOTE







Post-it

A Original Canary Yellow® Color Note Pads

- *Self-stick, removable in a variety of sizes*
- *For notes, lists, messages, indexing, tabbing, color-coding and more!*
- *100 sheets per pads, unless indicated*

No.	Approx. Size	Unit	Price
Plain Note Pads			
MMM-653-YW	1½ x 2	12/Pack	$7.16/Pk
MMM-656-YW	2 x 3	Pad	1.02/Pd
MMM-654-YW	3 x 3	Pad	1.40/Pd
MMM-657-YW	3 x 4	Pad	1.58/Pd
MMM-655-YW	3 x 5	Pad	1.84/Pd
MMM-659-YW	4 x 6	Pad	2.73/Pd
Ruled Note Pads			
MMM-630-6PK	3 x 3	6/Pack	8.91/Pk
MMM-635-YW	3 x 5	Pad	1.96/Pd
MMM-660-YW	4 x 6	Pad	2.87/Pd
MMM-675-YL*	4 x 4	Pad	6.24/Pd
MMM-663-YW	5 x 8	2/Pack	4.91/Pk

** 300 sheets per pad*

Recycled Yellow Note Pads

- *100% recycled paper; 30% post-consumer waste*
- *100 sheets per pad*

No.	Approx. Size	Unit	Price
MMM-653-RP-YW	1½ x 2	12/Pack	$7.42/Pk
MMM-656-RP-YW	2 x 3	Pad	1.09/Pd
MMM-654-RP-YW	3 x 3	Pad	1.47/Pd
MMM-655-RP-YW	3 x 5	Pad	1.93/Pd
MMM-660-RP-YW	4 x 6	Pad	2.96/Pd

B Recycled Pastel Color Note Pads

- *100% recycled paper; 30% post-consumer waste*
- *100 sheets per pad*

No.	Color	Unit	Price
Mini Size—Approx. 1½ x 2			
MMM-653-A	Assorted*	12/Pack	$ 7.31/Pk
Small Size—Approx. 2 x 3			
MMM-656-BE	Blue	Pad	1.04/Pd
MMM-656-PK	Pink	Pad	1.04/Pd
Medium Size—Approx. 3 x 3			
MMM-654-BE	Blue	Pad	1.42/Pd
MMM-654-GN	Green	Pad	1.42/Pd
MMM-654-PK	Pink	Pad	1.42/Pd
MMM-654-A	Assorted*	12/Pack	16.96/Pk
Large Size—Approx. 3 x 5			
MMM-655-BE	Blue	Pad	1.87/Pd
MMM-655-GN	Green	Pad	1.87/Pd
MMM-655-PK	Pink	Pad	1.87/Pd
Lined Notes—Approx. 4 x 6			
MMM-660-BE	Blue	Pad	2.89/Pd
MMM-660-PK	Pink	Pad	2.89/Pd

**Assorted pack includes three pads each: blue, green, pink and yellow*

Universal

C Economical Self-Stick Notes

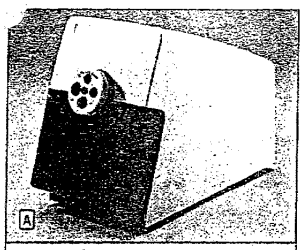
- *Five sizes, three colors*
- *100 sheets per pad*

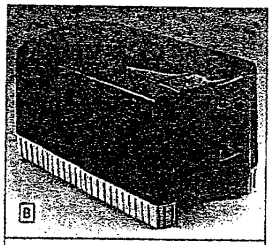
No.	Color	Unit	Price
Micro Size—1½ x 2			
UNV-35660	Blue	12/Pack	$ 5.51/Pk
UNV-35661	Pink	12/Pack	5.51/Pk
UNV-35662	Yellow	12/Pack	5.51/Pk
Small Size—2 x 3			
UNV-35665	Yellow	Pad	.79/Pd
Regular Size—3 x 3			
UNV-35666	Blue	Pad	1.04/Pd
UNV-35667	Pink	Pad	1.04/Pd
UNV-35668	Yellow	Pad	1.04/Pd
UNV-35688	Yellow	18/Pack	15.82/Pk
Large Size—3 x 5			
UNV-35672	Yellow	Pad	1.39/Pd
UNV-35692	Yellow	18/Pack	19.83/Pk
Jumbo Size—4 x 6 ruled pad			
UNV-35673	Yellow	Pad	2.30/Pd

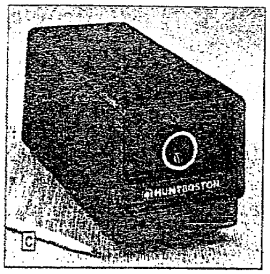
There's more!
Many new items will become available during the life of this catalog. If you don't see what you need, just give us a call.

THESE MANUFACTURER LIST PRICES ARE SUBJECT TO CHANGE

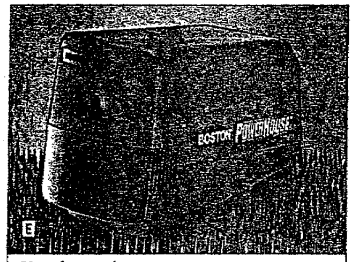
P Pencil SHARPENERS

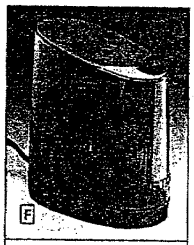

A
Commercial quality.

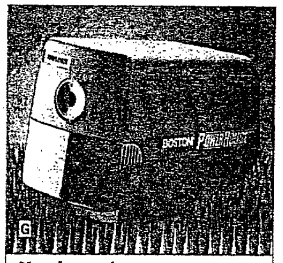

B
Contemporary design.

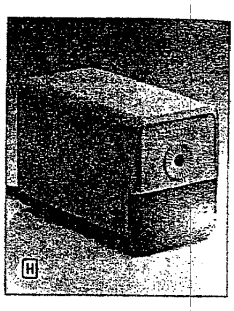

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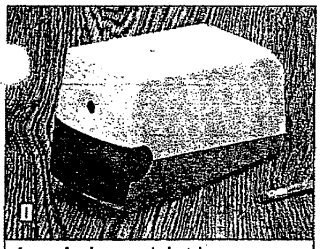

D

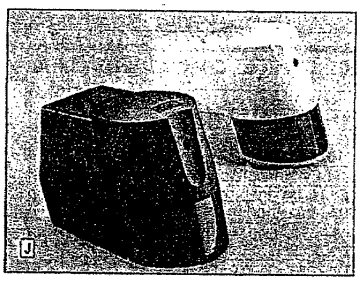

E
Manufacturer's ten-year warranty.


F
Stands up well to any pencil.


G
Manufacturer's ten-year warranty.


H


I
Low-priced personal electric.


J


K
The smallest electric sharpener available.

BOSTON®
ELECTRIC PENCIL SHARPENERS

- *Pencil Saver™ prevents over-sharpening*
- *Thermal overload shuts motor off before overheating; Auto-Reset™ when cool*
- *Manufacturer's two-year limited warranty*
- *100% made in U.S.A.*

A Commercial, Heaviest-Duty—For constant or industrial use. Powerful motor with three-prong plug. Adjustable guide sharpens various diameter pencils. Giant shavings receptacle. Beige. 4w x 8¾d x 5½h. Shpg. wt. 7.3 lbs.

HUN-1606	Each	$186.50
HUN-1827 Extra Cutter	Each	19.25

B Deluxe Heavier-Duty Electric Pencil Sharpener—Ideal for high-volume use. 6-ft. cord. Black with gray base. 4w x 7d x 3¾h Shpg. wt. 3.3 lbs.

HUN-1645 ..... Each $60.25

Heavy-Duty Trimline—More powerful than a personal sharpener, smaller than a commercial sharpener. Large shavings receptacle. 3½w x 8½d x 4h. Shpg. wt. 3.5 lbs.

No.	Color	Each
HUN-1716	Walnut Grain	$53.95
HUN-1700	Putty/Beige	53.95
HUN-1744	Black	53.95

D School Pro—Designed for classroom or heavy office use. X-ACTO® steel cutters and a three-size pencil diameter selector. Blue with gray accents. 4½w x 7d x 6¾eh. Shpg. wt. 3.3 lbs. UL/cUL approved.

HUN-1670 ..... Each $51.95

E PowerHouse™ Electric—Powerhouse strength in vibrant translucent blue! Quiet, heavy-duty commercial grade motor sharpens all standard-size wood, composite and recycled pencils. Manufacturer's ten-year warranty. 3w x 6¼d x 4½h. Shpg. wt. 2.6 lbs.

HUN-1792 ..... Each $39.95

F StandUp™ Electric—Functional modern design. Vertical pencil entry saves room. Hardened steel cutter and large, easy-empty receptacle. Black. 3w x 6¼d x 4½h. Shpg. wt. 2.25 lbs.

HUN-1730 ..... Each $36.95

G PowerHouse™ Electric—Powerful heavy-duty motor. X-ACTO® steel cutters for hard to sharpen composite and recycled pencils. Built-in three pencil caddy. Manufacturer's ten-year warranty. Black. 3w x 6¼d x 4½h. Shpg. wt. 2.6 lbs.

HUN-1799 ..... Each $36.95

H Model 1800—Trim model handles big workloads. Rubber feet. 3w x 5½d x 4h. Shpg. wt. 1.2 lbs.

No.	Color	Each
HUN-1800	Putty	$31.95
HUN-1817	Mineral Gray	31.95
HUN-1818	Charcoal Black	31.95

I Model 1900—Ideal for personal use. Built-in slots hold three pencils. Two-tone gray. 3w x 6½d x 4½h. Shpg. wt. 1.5 lbs.

HUN-1900 ..... Each $29.95

J Home & Office Model 2000—Contemporary design. Hardened steel cutters. 7¾w x 3½d x 4½h. Shpg. wt. 1.8 lbs. UL/cUL listed.

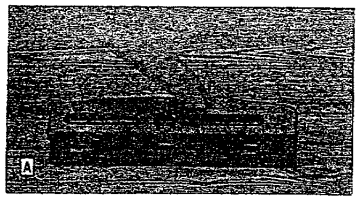
HUN-19210	Black	Each $23.50
HUN-19215	Putty	Each 23.50

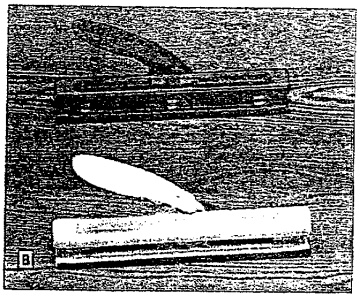
K Mighty Mite Electric—The smallest electric pencil sharpener available, yet every bit as powerful as larger sharpeners. X-ACTO® steel cutters and jam-proof design. Jade. 3½w x 5d x 3½h. Shpg. wt. 1.5 lbs. UL/cUL approved.

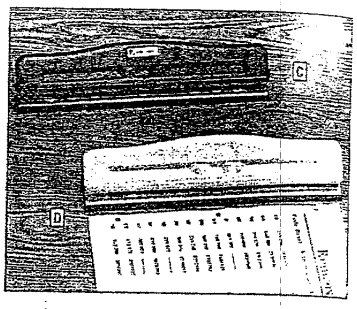
HUN-19500 ..... Each $21.50

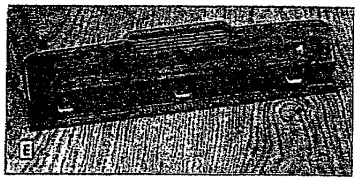
THESE MANUFACTURER LIST PRICES ARE SUBJECT TO CHANGE

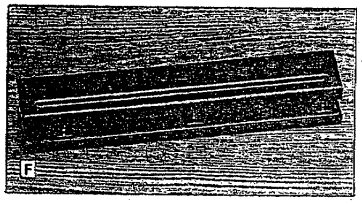
P Punches

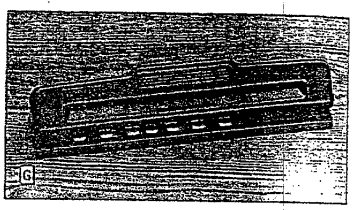


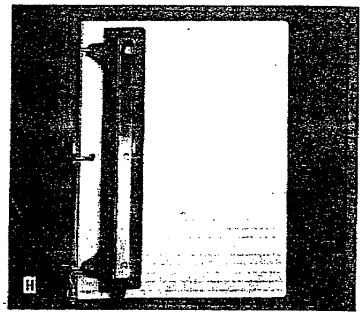


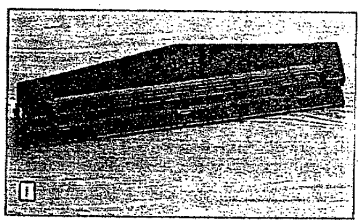


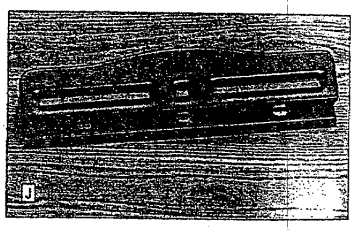












Swingline by ACCO

LEVER ACTION ADJUSTABLE HOLE PUNCHES

- *Sturdy, plastic lever handle takes ⅓ the effort*
- *Adjustable from two to seven holes, all standard positions*

A 20-Sheet Model—Three adjustable 9/32" punch heads, accepts up to seven. Built-in paper guide assures exact paper alignment. Modifies easily for two-hole punching. Nonmarring base serves as chip catcher. Black steel with charcoal handle. Manufacturer's limited lifetime warranty.
ACC-74030 ..... Each $35.49
Extra Punch Head for ACC-74030
ACC-74865 ..... Each $10.79

B 11-Sheet Model—9/32" dia. holes for easy page turning, and lateral pullout tray for no-spill chip disposal. Metal. Manufacturer's limited lifetime warranty.
ACC-74026 Black ..... Each $25.79
ACC-74028 Putty ..... Each 25.79

STANDARD ACTION ADJUSTABLE HOLE PUNCHES

- *Oversize 9/32" holes*
- *Fully adjustable centers*
- *All metal*

C Chromed 11-Sheet Punches—Black with chrome-plated base.
ACC-74023 3 Heads ..... Each $26.59
ACC-74027 7 Heads ..... Each 35.79

D Solid-Color 11-Sheet Punch—Three heads.
ACC-74020 Black ..... Each $21.49
ACC-74021 Putty ..... Each 21.49

E Economy 10-Sheet Punch—Centers adjust at 8½", 4¼" and 2¾". Black.
ACC-74015 ..... Each $14.09
Economy 8-Sheet Punch—Centers adjust at 8½" and 2¾". Black.
ACC-74114 ..... Each $13.00
Extra Punch Head for Adjustable Punches
ACC-74850 ..... Each $5.39

F Light-Duty Three-Hole Punch—All-metal construction, punches up to six sheets. For desktop or handheld use. Removable chip tray. Black.
ACC-74007 ..... Each $9.59

G Seven-Hole Personal Organizer Punch—Punches 9/32" holes, five-sheet capacity. Works with all Day-Timer® Folio and Desk size planners. Also works with Day Runner® Pro Business System™, Entrepreneur™ and Classic™ sizes, and AT-A-GLANCE™ brand Organizer, Folio, and Companion sizes. Built-in paper guide. Nonmarring base serves as chip holder. Black steel. Manufacturer's limited lifetime warranty.
ACC-74011 ..... Each $20.79

Sheet capacities are based on 20-lb. bond. *Note:* As more heads are added to a punch, the sheet punching capacity decreases.

H Portable Three-Hole Notebook Punch—Attaches to any standard three-ring binder. Built-in paper guide and handy 10" ruler on front edge. Makes 9/32" holes in up to five sheets of paper. Black plastic with steel punch pins.
ACC-74004 ..... Each $4.95

MASTER™

HEAVY-DUTY PUNCHES

I Ten-Sheet Punches—Creates 9/32" holes in up to ten sheets. Automatic centering guide and removable chip tray. Black. Manufacturer's five-year warranty.
Three-Hole Punch for 8½ x 11 Binders
MAT-30FB ..... Each $17.25
Adjustable Two- or Three-Hole Punch
MAT-33B ..... Each $19.80

Universal

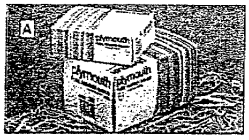
J Adjustable Punch

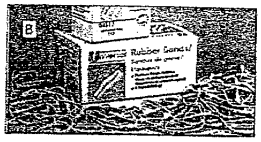
- *Punches eight sheets with 9/32" holes*

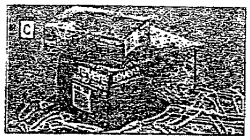
Three punch heads adjust for standard three-hole or two-hole punching. Removable chip tray. Black.
UNV-74223 ..... Each $10.90

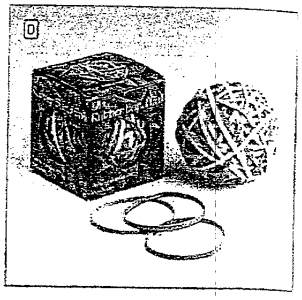
THESE MANUFACTURER LIST PRICES ARE SUBJECT TO CHANGE

Rubber Bands









BOXED RUBBER BANDS—Choice of three brands in ¼ lb. boxes or economical 1 lb. boxes.

		A PLYMOUTH**		B UNIVERSAL		C REVERE	
Size	L x W x Ga.*	¼ lb. Box	1 lb. Box	¼ lb. Box	1 lb. Box	¼ lb. Box	1 lb. Box
8	⅞ x 1/16 x 1/32	....	PLY-15108	UNV-00048	UNV-00018	....	PLY-13108
10	1¼ x 1/16 x 1/32	....	PLY-15110	UNV-00410	UNV-00110	....	PLY-13110
12	1¾ x 1/16 x 1/32	....	PLY-15112	UNV-00412	UNV-00112	....	PLY-13112
14	2 x 1/16 x 1/32	....	PLY-15114	UNV-00414	UNV-00114	....	PLY-13114
16	2½ x 1/16 x 1/32	PLY-15416	PLY-15116	UNV-00416	UNV-00116	PLY-13416	PLY-13116
18	3 x 1/16 x 1/32	PLY-15418	PLY-15118	UNV-00418	UNV-00118	PLY-13418	PLY-13118
19	3½ x 1/16 x 1/32	PLY-15419	PLY-15119	UNV-00419	UNV-00119	PLY-13419	PLY-13119
30	2 x ⅛ x 1/32	....	PLY-15130	UNV-00430	UNV-00130	....	....
31	2½ x ⅛ x 1/32	....	PLY-15131	UNV-00431	UNV-00131	....	PLY-13131
32	3 x ⅛ x 1/32	PLY-15432	PLY-15132	UNV-00432	UNV-00132	PLY-13432	PLY-13132
33	3½ x ⅛ x 1/32	PLY-15433	PLY-15133	UNV-00433	UNV-00133	PLY-13433	PLY-13133
54	Assorted x 1/32	PLY-15454	PLY-15154	UNV-00454	UNV-00154	PLY-13454	PLY-13154
62	2½ x ¼ x 1/32	....	PLY-15162	UNV-00462	UNV-00162	....	PLY-13162
64	3½ x ¼ x 1/32	PLY-15464	PLY-15164	UNV-00464	UNV-00164	PLY-13464	PLY-13164
84	3½ x ½ x 1/32	....	PLY-15184	UNV-00484	UNV-00184	....	PLY-13184
105	5 x ⅝ x 1/16	....	PLY-15196	UNV-04105	UNV-01105	....	PLY-13196
107	7 x ⅝ x 1/16	....	PLY-15198	UNV-04107	UNV-01107	....	PLY-13198
117	7 x ⅛ x 1/16	PLY-15497	PLY-15197	UNV-04117	UNV-01117	PLY-13497	PLY-13197
Price per Box		$1.99	$5.89	$1.25	$4.39	$1.15	$3.99

*Ga. = Gauge (thickness) **Meets or exceeds all federal specifications

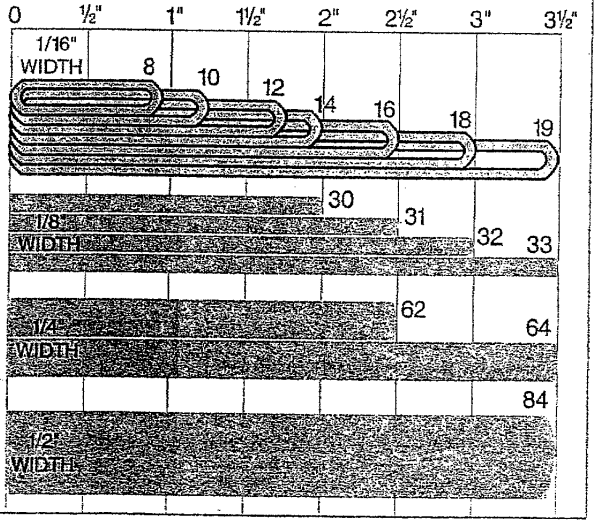






SAMPLE BANDS SHOWN ACTUAL SIZE

Size	Plymouth	Universal	Revere
Approximate count per lb.			
8	7300	5040	2610
10	5200	3740	1810
12	3500	2580	1270
14	3200	2360	1100
16	2500	2140	1000
18	2100	1600	780
19	1750	1420	670
30	1800	1120	...
31	1200	880	550
32	950	740	500
33	850	630	380
62	600	520	345
64	425	350	190
84	210	210	90
105	72	50	31
107	52	40	23
117	250	210	108



COMPARATIVE CHART FOR RUBBER BANDS

	Elasticity (Strength required to stretch band)	Elongation (Stretch required to break band)	Breaking Strength* (Weight required to break band)
A Plymouth	350-450 psi	700%	13 lbs.
B Universal	620-720 psi	625%	12 lbs.
C Revere	750-850 psi	550%	10 lbs.

*The maximum number of pounds a band can hold before it breaks is different for different band sizes. The example used here is for ¼" wide bands.

ACCO.

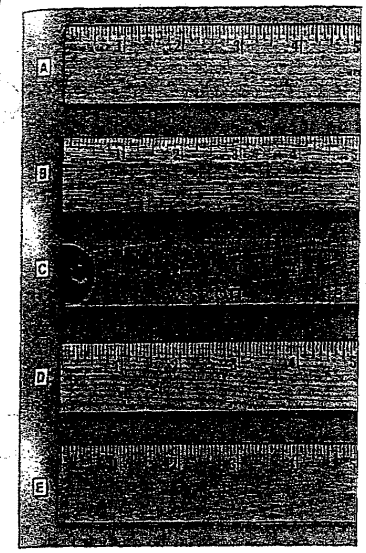
D Rubber Band Ball—Find bands easily, eliminate desk clutter and play! Bounce or squeeze ball to relieve stress. Multicolor; at least 260 assorted color bands.
ACC-72155.....Each $4.27

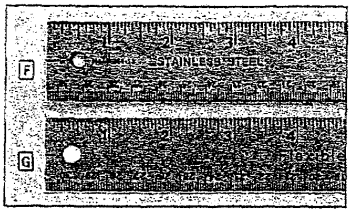
plymouth

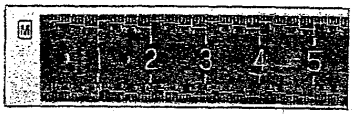
E The 2-In-1 Band—Stretches four ways to secure all sides of books, bundles. Blue. 4 bands per pack. [12 Packs per box.]
PLY-12301.....Pack $2.44

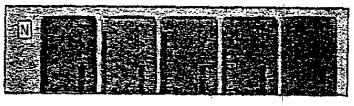
F Super Bands—Holds bundles; anchors trash can liners. Blue. 12 bands per pack. [12 Packs per box.]
PLY-11297.....Pack $1.58

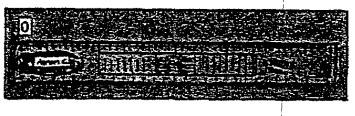
G Bagged Bands—Assorted sizes. 1¾ oz. bag. [12 Packs per box.]
PLY-12381 Assorted colors.....Pack $0.92
PLY-12385 Crepe color.....Pack $0.92

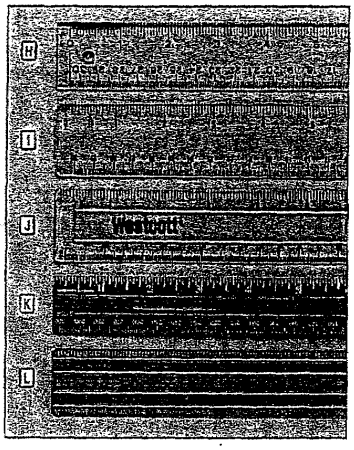


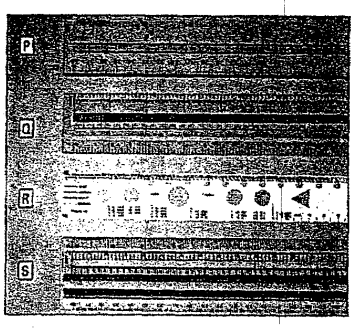












WOOD RULERS

A Westcott Flat Wood Rulers—Extra rigid with double metal edges, 1/16" scale on one side and metric on the other. 1 3/8" wide x 3/32" thick. Made in U.S.A.

No.	Length	Each
ACM-05221	12"	$1.55
ACM-05225	15"	2.25
ACM-05228	18"	2.30

B Westcott Beveled Wood Rulers—Single metal edge, 1/16" scale. 1 5/16" wide x 1/4" thick. Made in U.S.A.

No.	Length	Each
ACM-05011	12"	$1.25
ACM-05015	15"	1.75
ACM-05018	18"	1.85

C Westcott 36" Wood Yardstick—1/8" scale. Metal ends and hang-up hole at each end. Made in U.S.A.
ACM-10425 ..... Each $4.20

D Westcott Budget 12"/Metric Ruler—Single metal edge. 1/16" scale on one side, metric on the other. 1 1/8" wide x 1/8" thick. Made in U.S.A.
ACM-10375 ..... Each $0.99

E Universal 12" Flat Wood Ruler—Double metal edge with 1/16" scale. Made in U.S.A.
UNV-59021 ..... Each $1.40

STAINLESS STEEL RULERS

F Westcott Steel Rulers—Etched 1/16" scale on one side, metric on the other. Hang-up hole. Cork back. Made in U.S.A.

No.	Length	Each
ACM-10414	6"	$2.49
ACM-10415	12"	4.69
ACM-10416	15"	5.39
ACM-10417	18"	5.89

G Universal 12" Steel Ruler—1/16" scale on one side, metric on the other. Hang-up hole. Cork back. Made in U.S.A.
UNV-59023 ..... Each $3.69

CALL US FOR CURRENT PRICING
♦ This symbol denotes items that cannot ship via UPS

PLASTIC RULERS

H Westcott Acrylic Rulers—Two beveled edges with plumb line at ends to aid in drawing or checking right angles. 1/16" and metric scales. Hang-up hole.

No.	Length	Each
ACM-10562	12"	$2.05
ACM-10563	15"	2.39
ACM-10564	18"	2.99

I Universal 12" Clear Acrylic Ruler—1/16" scale on one edge and metric on the other.
UNV-59022 ..... Each $0.89

J Westcott Shatterproof Plastic Rulers—Transparent with metric and inch scales.

No.	Length	Each
ACM-45016	6"	$1.20
ACM-45011	12"	2.20

K Kleen Earth® 12" Recycled Plastic Ruler—Made from 70% post-consumer recycled plastic. Features double bevel with pencil groove and holes for use in three-ring binder. 1/16" scale on one side, metric on the other.
ACM-41015 ..... Each $1.15

L Westcott 12" Finger Grip Ruler—Finger grip magnifying bar for easy, smooth movement. 1/16" and metric scales. Smoke plastic.
ACM-00402 ..... Each $0.99

M Westcott™ 12" School Ruler—Double bevel with 1/4", 1/2", 3/4" and 1" scales on both sides. One side notched for accuracy. Hang-up hole. Assorted colors. Made in U.S.A.
ACM-99601 ..... Each $1.60

N Westcott™ 12" Jeweltone Ruler—1/16" scale one side, metric on the other. Assorted transparent jeweltone colors.
ACM-12975 ..... Each $0.99

O Tagit® 12" Ruler—Unique Name Tag Window clearly identifies owner. Inches and millimeters. Marker edge prevents smearing. Smoke tinted translucent plastic.
ACM-13068 ..... Each $2.50

WESTCOTT DATA RULERS

P Highlighting Data Rulers—Clear plastic with a see-through yellow center panel to highlight one line at a time. Useful for reading across computer sheets. Two beveled edges with 1/16" and metric scales.

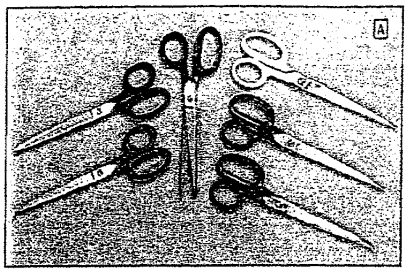
No.	Length	Each
ACM-10580	15"	$2.50
ACM-10581	9"	1.85

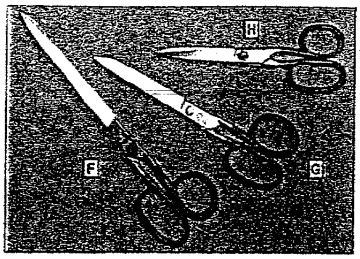
Q 15" Word Processing Ruler—Ruled in 1/8", 1/8", and 1/10". Amber color transparent plastic with clear center panel.
ACM-04077 ..... Each $3.99

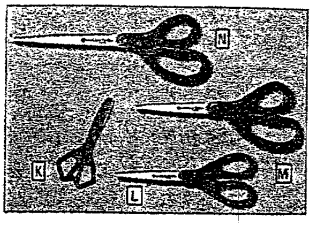
R 18" Acrylic Computer Programmer's Ruler—Contains 1/32", 1/20", 1/16", 1/12", 1/10", 1/8", 5/32", metric and handwriting scales. Line width comparator and paper caliper guide.
ACM-40751 ..... Each $5.40

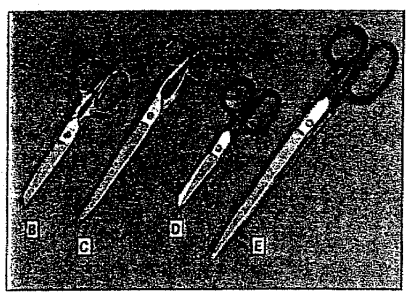
S Data Processing Magnifying Rulers—Center section isolates and magnifies one line at a time. One edge in 1/16" scale, the other metric. Magnified portion ruled one side in 1/8", the other in 10ths. Scales correlate with horizontal and vertical printout columns.

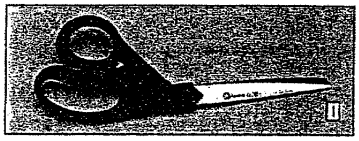
No.	Length	Each
ACM-40711	15"	$5.99
ACM-40719	9"	2.99

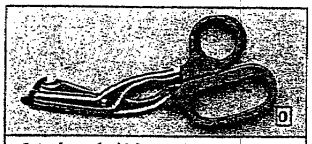




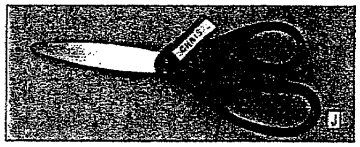


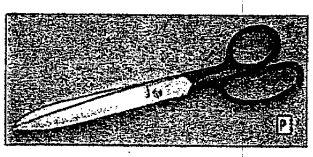






Cuts through thick, tough materials—even metal!





Acme United

HOT FORGED CARBON STEEL

• Exceptionally strong with a lustrous finish

Strong carbon steel is hot drop forged, hardened and tempered, nickel-plated and ground for lasting sharpness.

A Gallería® with Color Handles—Length 8"; cut 4¼". Manufacturer's lifetime guarantee. [6 Each per box.]

No.	Color	Each
ACM-10668	Black	$18.95
ACM-10663	Blue	18.95
ACM-10670	Fuchsia	18.95
ACM-10665	Plum	18.95
ACM-10669	Teal	18.95
ACM-10667	Vanilla	18.95

Nickel-Plated Handles

No.	Length	Cut	Each
B Straight Trimmers—[6 Each per box.]			
ACM-10256	7"	3¼"	$14.95
ACM-10257	8"	3⅞"	16.95
C Editor's Shears—[6 Each per box.]			
ACM-10248	9"	4½"	16.49

Black Enamel Handles

No.	Length	Cut	Each
D Straight Trimmers—[6 Each per box.]			
ACM-10258	6"	2⅜"	$11.49
ACM-10259	7"	3¼"	12.95
ACM-10260	8"	3⅞"	14.59
E Office Shears—[6 Each per box.]			
ACM-10252	9"	4½"	17.95
ACM-10253	10"	5⅜"	19.95
E Banker's Shears—[6 Each per box.]			
ACM-10168	9"	4½"	14.69
ACM-10169	10"	5⅛"	17.49

KLEENCUT®
ECONOMICAL FORGED STEEL

Hand-ground blades are nickel-plated and brightly polished. Black handles.

No.	Length	Cut	Each
G Deluxe Straight Trimmers—Tension adjusts for cutting varying thicknesses			
ACM-11136	6"	2⅜"	$ 9.39
ACM-11137	7"	3¼"	10.29
ACM-11138	8"	3¾"	11.39
ACM-11139	9"	4⅛"	12.79
H Straight Trimmers			
ACM-19016	6"	2¾"	6.15
ACM-19017	7"	3⅝"	6.75
ACM-19018	8"	3¾"	7.20
ACM-19019	9"	3⅞"	9.20
E Left-Handed Bent Trimmers—Stainless steel, black plastic handles			
ACM-10513	8"	3½"	13.95

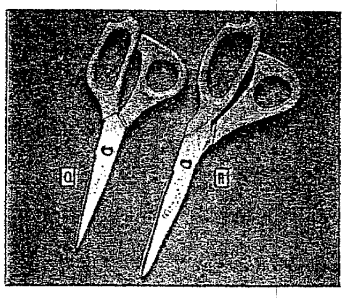
J Tagit™ Stainless Steel Antibacterial Scissors—No more mix-ups! Name Tag Window™ lets you personalize scissors by inserting your name on the handle. Handles treated with Intersept® and Polysept® inhibit the growth of a range of bacteria. Cutlery grade, corrosion-resistant blades. Blue handles. Length 8", cut 3¼". Manufacturer's lifetime warranty.
ACM-13062 ..... Each $9.95

KLEENEARTH® SCISSORS

• Kind to the environment

Stainless steel blades are sonically welded to 70% recycled plastic handles. Manufacturer's ten-year warranty.

No.	Length	Cut	Each
K Safety Scissors—For either hand. Green handles			
ACM-15515	5½"	1⅞"	$ 1.95
L Scissors—Black handles			
ACM-44218	7"	2¼"	7.35
M Straight Scissors—Black handles			
ACM-41418	8"	3½"	8.25
N Straight Trimmers—Black handles			
ACM-13138	9"	3¼"	17.50



Q Stainless Steel Office Snips—Easily cuts rugs, tile, rope, canvas, sheet metal, linoleum, wire. Angled for better leverage. Serrated blades. Length 7"; cut 1¾".
ACM-10098 ..... Each $7.75

Universal

P Office Shears—Straight trimmers cut everything from paper to heavy cardboard. Nickel-plated cast iron blades. Black handles.

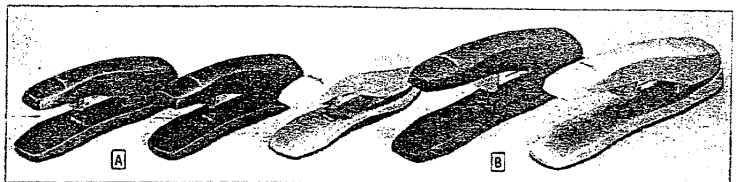
No.	Length	Cut	Each
UNV-92004	6"	2⅜"	$5.40
UNV-92005	7"	2⅞"	5.70
UNV-92006	8"	3¼"	6.00
UNV-92007	9"	3⅜"	7.40

Stainless Steel Scissors—All-purpose. Contoured orange plastic handles.

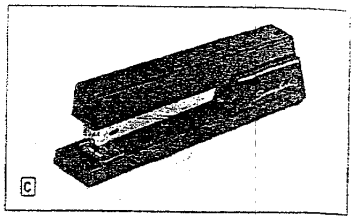
No.	Length	Cut	Each
G Straight Trimmers			
UNV-92003	7½"	2⅝"	$6.50
UNV-92002	8½"	3½"	6.90
G Bent Trimmers			
UNV-92001	7¼"	2⅝"	6.50
UNV-92000	8½"	3¼"	6.90

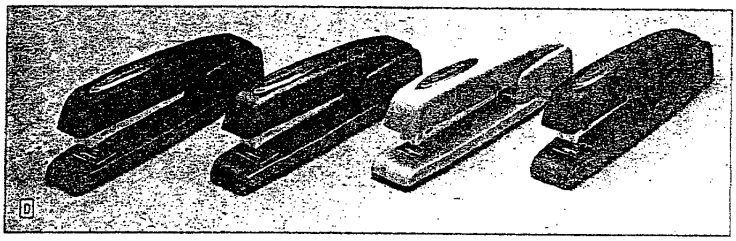
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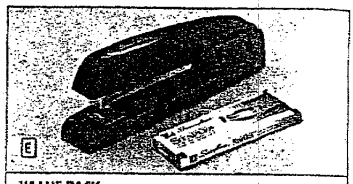
Staplers



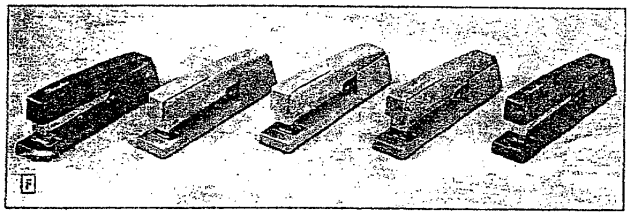
Up to 30% less effort than some other heavy-duty staplers.

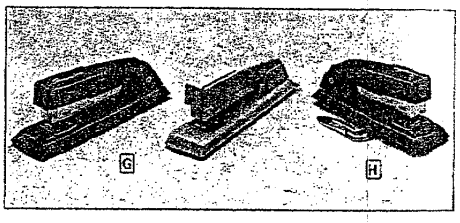






VALUE PACK
Black 747 Classic Plus Stapler and box of 1250 Speedpoint staples!





Swingline.

- *Manufacturer's limited lifetime warranty*

DESK STAPLERS

A The 2-20® Portable Desktop Stapler

- *Staples up to 20 sheets with 30% less effort*

Space-saving, compact half strip stapler provides smooth, easy operation with less force. Die-cast metal construction. Loads Swingline Speedpoint or standard half strip staples.

No.	Color	Each
SWI-37860	Gunmetal Gray	$26.95
SWI-37861	Maroon	26.95
SWI-37862	Silver	26.95

B High-Capacity Desk Staplers

- *Staples up to 60 sheets at once!*
- *Requires less force than comparable staplers*

Loads ⅜" high-capacity staples.

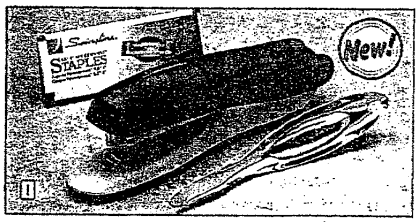
No.	Color	Price
SWI-77701	Black	$37.99/Ea
SWI-77715	Silver	37.99/Ea
High-Capacity Staples—2500 staples per box		
SWI-35550		4.99/Bx

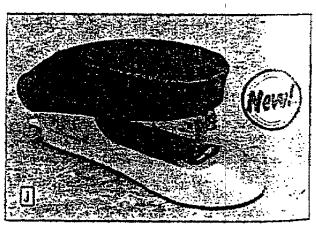
C Deluxe Heavy-Duty Full Strip Stapler

- *Top-quality for stapling, pinning, or tacking*
- *Loads Swingline Speedpoint or any standard staples*

Open channel loading of 210 standard staples. Staple supply indicator. Steel body, nonskid base. Black.

SWI-76701.....Each $33.99





747® FULL STRIP STAPLERS

- *Staple, pin, and tack functions*
- *Loads Swingline Speedpoint or any standard staples*

Open channel loading of 210 standard staples. Staple supply indicator. Steel body, nonskid base.

D 747® Classic Plus—Ergonomic styling. Soft-touch base.

No.	Color	Each
SWI-74741	Black	$28.99
SWI-74742	Gunmetal Gray	28.99
SWI-74745	Silver	28.99
SWI-74748	Maroon	28.99

E 747® Classic Plus Value Pack—Rich black stapler combined with a box of 1250 Speedpoint staples.

SWI-74749.....Each $28.99

F 747® Classic Series—Traditional styling.

No.	Color	Each
SWI-74701	Black	$27.99
SWI-74702	Beige	27.99
SWI-74705	Gray	27.99
SWI-74716	Slate Blue	27.99
SWI-74718	Burgundy	27.99

711® HALF STRIP STAPLERS

Open channel loading of 105 standard staples. Staple supply indicator. Steel body, rubber feet.

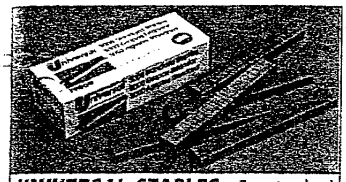
No.	Color	Each
G 711® Stapler		
SWI-71101	Black	$15.99
SWI-71102	Beige	15.99
H 711® Stapler with Built-In Staple Remover		
SWI-71201	Black	16.99

I 818® Full Strip Stapler Value Pack—Sleek, ergonomic design for desktop and handheld use with nonskid base. Includes built-in staple remover and 1250 Speedpoint staples. Translucent top covers open channel loading of 210 standard staples.

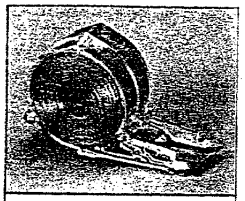
No.	Color	Each
SWI-81808	Blue	$18.99
SWI-81809	Purple	18.99
SWI-81810	Green	18.99

J WORX® Half Strip Stapler—Translucent top covers open channel loading of 105 standard staples. Storage in base of stapler holds up to 210 standard staples. Built-in staple remover. Assorted colors; rust, blue or green.

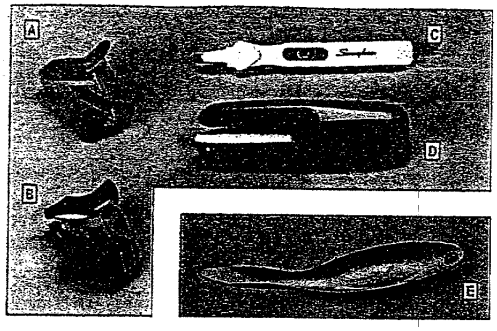
SWI-79170.....Each $9.99



UNIVERSAL STAPLES—For standard staplers. Chisel point. 5000 staples per box, strips of 210.
UNV-79000 .....Box $2.05



SWINGLINE CARTRIDGE STAPLES
Long-lasting roll of 5000 staples.
SWI-50050S .....Roll $8.47



JAW STYLE STAPLE REMOVERS

A Universal—Smooth plastic grips. Brown.
UNV-00700 .....Each $1.10

B Swingline 100—Steel jaws. Wide finger tabs with nonslip surface. Black.
SWI-38101 .....Each $3.49

BLADE STYLE STAPLE REMOVERS

Insert blade under staple and push to remove without tearing paper.

C Swingline Ultimate—Stainless steel tip. Built-in magnet sweeps up staples, slide switch discharges staples. Gray.
SWI-38121 .....Each $3.49

D Eldon®—Stainless steel blade holds removed staple. Ebony.
ELD-15931 .....Each $4.20

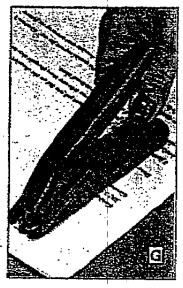
E Swingline Classic—Chrome finish.
SWI-37141 .....Each $3.99

HEAVY-DUTY STAPLE REMOVERS

F Swingline—Handles staple-removing jobs of up to 60 sheets. Also removes heavy carton staples. Steel.
SWI-37201 .....Each $8.99

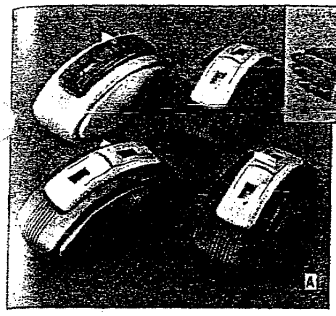
G Max—Easily lifts both standard and heavy-duty staples up to ½" deep; binding up to 100 sheets. Staple shield guards against staple kickback. Black.
MXB-RZ-3F .....Each $13.25





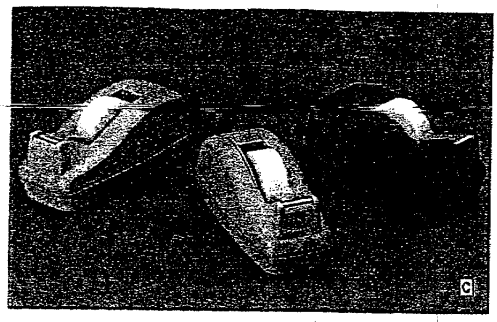
Swingline STAPLES	Fits Machines	Strip Count	Sheet Capacity	Quantity Per Box	No.	Box Price
Standard Staples						
Speedpoint No. 4 (Plastic box) Premium Chisel Point	All staplers holding a full strip of 210 standard staples	210	25	5000	SWI-35450	$ 3.99
Speedpoint No. 3 (Plastic box) Premium Chisel Point	All staplers holding a half strip of 105 standard staples	105	25	5000	SWI-35440	3.99
Economy Chisel Point "Standard" (SF1) (Cardboard box)	All staplers holding a full strip of 210 standard staples	210	20	5000	SWI-35108	2.39
				5000 (2-drawer box)	SWI-35200	2.69
Specialty Staples						
High Capacity Staple ⅛" leg	Swingline 77701, 77715	125	60	2500	SWI-35550	4.99
Saddle Staple (SF15)	Swingline Saddle Staplers, 615	180	30	5000	SWI-35150	4.99
S8 Staples ¼" leg	Swingline 33801, 33811; Bostitch B8	105	20	1000	SWI-35660	1.99
				5000	SWI-35665	3.49
Undulated "Ripple" Design	Swingline 199PL; Ace 702 Clipper; Bates 282P, 110P	210	30	5000	SWI-58017	3.99
SP19 Staples ¼" leg	Swingline SP19 Plier 16501; Bostitch P3	210	25	5000	SWI-37400	6.49
Heavy-Duty Staples						
Heavy-Duty (SF13) ¼" leg	Swingline 113XD, 900XD, 13-16, 390, 414; Boston 73131; Bates 224XHD, 213HD; Rapid HD170; Bostitch 03201; Eberhard Faber EF Rapid 100E, EF Rapid 90	100	25	1000	SWI-35314	4.43
				5000	SWI-35354	12.49
Heavy-Duty (SF13) ⅜" leg	Swingline 13, 113XD, 900XD, 13-16, 390, 415; Boston 73131; Bates 224XHD, 213HD; Rapid HD170; Bostitch 03201, 00540, B310HDS	100	60	1000	SWI-35318	4.99
				5000	SWI-35358	13.99
Heavy-Duty (SF13) ½" leg	Swingline 13, 113XD, 900XD, 13-16, 390, 415; Boston 73131; Bates 224XHD, 213HD; Rapid HD170; Bostitch 00540, B310HDS	100	90	1000	SWI-35312	5.49
				5000	SWI-35352	15.49
Heavy-Duty 9/16" leg	Swingline 13, 113XD, 900XD; Bates 224XHD	100	110	5000	SWI-58659	15.49
Heavy-Duty (SF13) ¾" leg	Swingline 900XD; Bates 224XHD, 390, 415	100	160	1000	SWI-35319	7.49
Heavy-Duty (SF13) 15/16" leg	Swingline 900XD; Bates 224XHD; Bostitch 00540	100	210	1000	SWI-35320	8.99
Heavy-Duty (SF39) ¼" leg	Swingline 39 and other HD Staplers	100	25	5000	SWI-79394	8.99
Heavy-Duty (SF39) ⅜" leg	Swingline 39 and other HD Staplers	100	60	5000	SWI-79398	9.99
Heavy-Duty (SF66) ½" leg	Swingline 39 and other HD Staplers	100	90	5000	SWI-79392	11.49
Electric	Swingline 66	210	30	5000	SWI-35661	10.99
Electric Staple Roll	Swingline 6800	10,000/rl	110	10,000/rl	SWI-35681	20.75/rl
Cartridge Staples						
Cartridge	Swingline 690e, 520e, 5000 Series, 790, Zephyr	5000/rl	25	5000/rl	SWI-50050S	8.47/rl
Cartridge	Swingline Heavy-Duty 270 Stapler	5000/rl	70	5000/rl	SWI-69495	16.99/rl
Staple Gun Staples						
Staple Gun Light-Duty ¼" leg	Swingline 101, 260	100	....	1000	SWI-36114	2.99
Staple Gun Light-Duty 5/16" leg	Swingline 101, 260	100	....	1000	SWI-36115	2.99

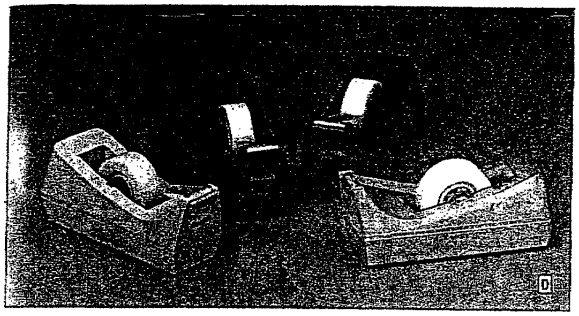
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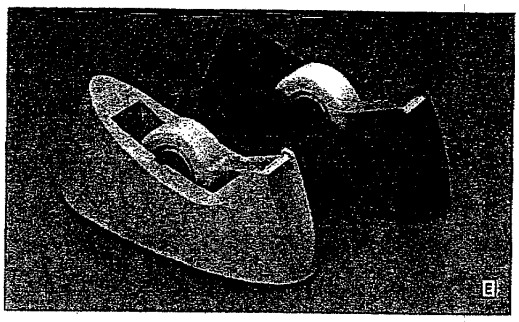


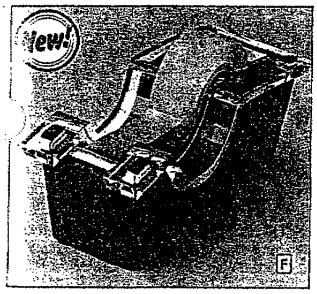


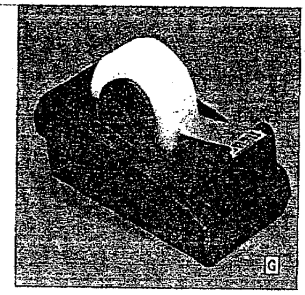
Wearable hand band dispenser undocks from the desk and mountable models for on-the-go needs



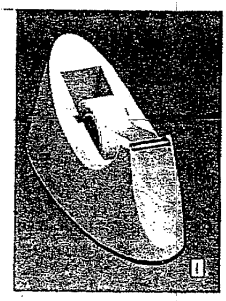












Scotch®

POP-UP TAPE STRIP DISPENSERS

- *Tape pops-up one strip at a time for easy one-hand convenience*

A Combination Desk/Portable Pop-Up Dispenser—A desktop and portable dispenser in one—the wearable hand band dispenser undocks from weighted base for posting office memos or other on-the-go needs. Extra tape strips store in base for fast refills. Contemporary design in four distinctive colors. Holds three Pop-Up Magic™ Tape refill pads. 75 strips (¾" x 2") per pad.

No.	Color	Each
MMM-C92-CH	Champagne	$8.99
MMM-C92-EM	Emerald	8.99
MMM-C92-GP	Graphite	8.99
MMM-C92-LL	Lilac	8.99

Pop-Up Magic™ Tape Strip Refills—Pre-cut ¾" x 2" strips. Invisible when applied. 75 strips per pad.

	Pads/Pack	Pack
M-90M-3PK	3	$ 3.99
MM-90M-12PK	12	14.40

B Mountable/Portable Pop-Up Tape Dispenser—Adheres to any flat surface without damage or residue with 3M Command™ adhesive. A wearable hand band dispenser undocks from the base for on-the-go needs. Contemporary design, champagne color. Includes one Pop-Up Magic™ Tape refill pad. 75 strips (¾" x 2") per pad.
MMM-C93-CH.....Each $3.56

1" CORE TAPE DISPENSERS

- *For tapes up to 1296"*
- *Weighted, nonskid bases for one-hand dispensing*

C Dispenser with Attached Core

MMM-C40-BK	Black	Each $11.78
MMM-C40-GY	Gray	Each 11.78
MMM-C40-PY	Putty	Each 11.73

D Space Saving Dispenser

MMM-C38-BK	Black	Each $5.97
MMM-C38-BY	Burgundy	Each 5.97
MMM-C38-PY	Putty	Each 5.97
MMM-C38-CR	Clear	Each 8.41

E Decor Dispenser

MMM-C15-BK	Black	Each $8.38
MMM-C15-PY	Putty	Each 8.38
MMM-C15CORE	Extra core	Each .15

F Designer Series Tape Dispenser—Acrylic top with black base.
MMM-DS520.....Each $14.98

G Deluxe Dispenser with Attached Core—Black. 50% recycled plastic.
MMM-C4210.....Each $13.89

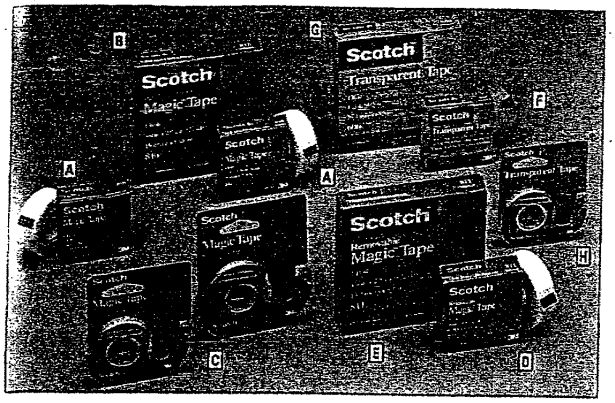
H Refillable Hand Dispenser
MMM-H127 For ¾" tape.....Each $0.87

Universal

I Tape Dispenser—For 1" core, ½" x 1296" tapes. Weighted, nonskid base.

UNV-15001	Black	Each $5.35
UNV-15002	Putty	Each 5.35

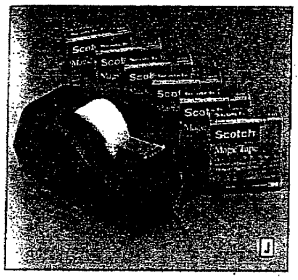
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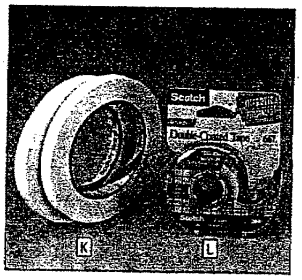




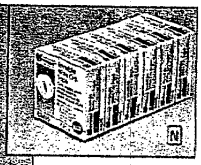


See page 1113 for Scotch® Pop-up Magic™ Tape Strip Dispensers









Scotch®

MAGIC™ TAPE

- *Permanent—Resists splitting, tearing and is easy to handle*
- *Invisible—Disappears when applied*
- *Write On It—Matte finish accepts ballpoint, water-based ink or pencil*

No.	Size	Roll
A With 1" Core		
MMM-810-1K	¾" x 1000"	$2.96
MMM-810-12-12	½" x 1296"	2.58
MMM-810-34-12	¾" x 1296"	3.42
MMM-810-1-12	1" x 1296"	4.27
B With 3" Core—(12 Rolls per box.)		
MMM-810-12-25	½" x 2592"	4.36
MMM-810-34-25	¾" x 2592"	5.96
MMM-810-1-25	1" x 2592"	7.71

C In Refillable Hand Dispenser—(24 Rolls per box.)

No.	Size	Desc.	Roll
MMM-104A	½" x 450"	Carded	$1.42
MMM-119A	½" x 800"	Carded	2.09
MMM-105A	¾" x 300"	Carded	1.42

REMOVABLE MAGIC™ TAPE

Same self-stick adhesive as popular Post-it® notes on matte finish tape. Can be removed and repositioned. (12 Rolls per box.)

No.	Size	Roll
D With 1" Core		
MMM-811-12-12	½" x 1296"	$2.96
MMM-811-34-12	¾" x 1296"	3.87
E With 3" Core		
MMM-811-12-25	½" x 2592"	4.89
MMM-811-34-25	¾" x 2592"	6.73
MMM-811-1-25	1" x 2592"	8.64

TRANSPARENT GLOSSY TAPE

Strong and durable.

No.	Width	Roll
F With 1" Core—1296" length. (12 Rolls per box.)		
MMM-600121296	½"	$ 2.00
MMM-600341296	¾"	2.73
G With 3" Core—2592" length		
MMM-600382592	⅜"	2.73
MMM-600122592	½"	3.73
MMM-600342592	¾"	5.42
MMM-60012592	1"	7.11
MMM-6001122592	1½"	10.71
MMM-60025922	2"	14.27
H Self-Dispensers—(24 Rolls per box.)		
MMM-144A	½" x 450"	$1.13
MMM-174A	½" x 1000"	2.02

I Pop-up Magic™ Tape Strip Refills—For use with Scotch® Pop-up Tape Strip dispenser (sold elsewhere in this catalog). Convenient pre-cut tape strips pop up one at a time, so you can apply tape with just one hand. Invisible when applied. ¾" x 2" strips, 75 per pad.

No.	Pads/Pack	Pack
MMM-90M-3PK	3	$ 3.99
MMM-90M-12PK	12	14.40

J Magic™ Tape Value Pack—Get 6000 inches of America's #1 tape and a deluxe dispenser! Pack contains six rolls of ¾" x 1000" Magic™ tape, and one C40 black tape dispenser.
MMM-810C40BK.....Pack $20.16

DOUBLE-COATED FILM TAPES

Double-Stick Tape in Hand Dispensers—(Not shown.) (12 Rolls per box.)
MMM-136P ½" x 250".....Roll $2.02
MMM-137P ½" x 450".....Roll 3.31

K 666 Double-Coated Tape with Liner—Apply and peel off liner at any time to expose permanent adhesive surface. ½" x 1296", 3" core. One roll per box. (72 Rolls per carton.)
MMM-666121296.....Box $7.33

L 667 Removable Double-Coated Tape—Linerless and easy to use. Sticks firmly, yet easily removes and repositions. Great for cut and paste applications. ¾" x 400" in two-piece hand dispenser. (12 Rolls per box.)
MMM-667.....Roll $4.96

665 Double-Coated Tape—(Not shown.) Sticky on both sides. Permanent adhesive. (12 Rolls per box.)

No.	Size	Core	Roll
MMM-66512900	½" x 900"	1"	$4.84
MMM-665381296	⅜" x 1296"	3"	5.69
MMM-665121296	½" x 1296"	3"	6.89
MMM-665341296	¾" x 1296"	3"	9.13

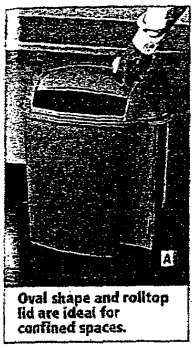
Universal

Invisible Tape—Matte finish tape becomes invisible on contact with paper. Write on it with ballpoint pen. 1" core.

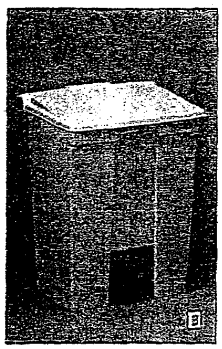
M Single Rolls—(12 Rolls per box.)
UNV-81236 ½" x 1296".....Roll $2.20
UNV-83436 ¾" x 1296".....Roll 2.85

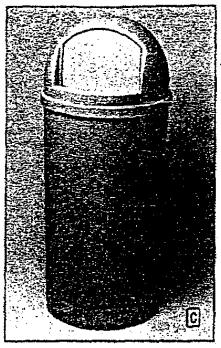
N Multipack—Six ¾" x 1000" rolls per pack.
UNV-83410.....Pack $10.38

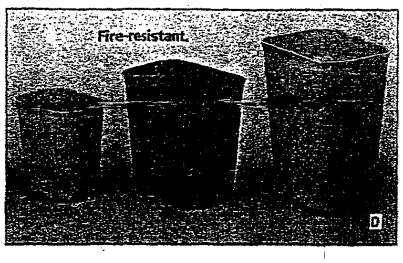
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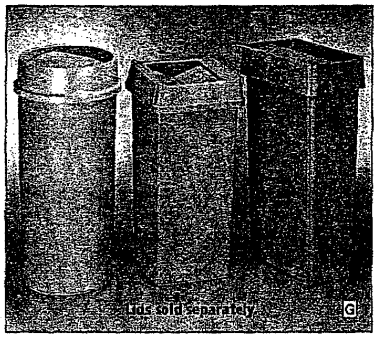
Oval shape and rolltop lid are ideal for confined spaces.

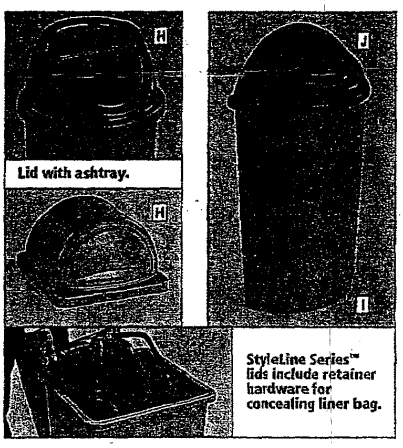












WASTEBASKETS

A Fire-Safe Pedal Rolltop Receptacle—Factory Mutual System (FM) and California State Fire Marshal (CSFM) approved for fire safety. Slim oval shape fits easily in tight spaces. Rolltop lid opens without drawing odors into the air, and eliminates the need for overhead clearance. Wraparound foot pedal provides handsfree access from front and sides. Seamless plastic construction resists leaking. Stainless steel lifting rods for long-lasting performance. 14½-gallon capacity. 22¼w x 14¹¹⁄₁₆d x 27³⁄₁₆h. Beige.
RUB-617700BGE ..... Each $74.84

B Fire-Safe Step-On Receptacles—Factory Mutual System (FM) and California State Fire Marshal (CSFM) approved for fire safety. Heavy-duty pedal for repeated, quiet operation. Lid overlaps, fits tight, holds in odors. Leakproof polyethylene plastic. Rounded corners. 19¾w x 16⅛d. Beige.
18-Gal.—26⅛"h.
RUB-614500BGE ..... Each $98.52
23-Gal., Mobile—With stainless steel wheel assembly. 32⅝"h.
RUB-614600BGE ..... Each $140.42

C Marshal® Container—FM and CSFM approved for fire safety. Smooth, easy to clean surface base with a top in a textured finish to hide surface scratches. Retainer hardware helps secure polyliner bag. 15-gal. capacity. 15⅜ dia. x 36⅛h. Beige.
RUB-816088BGE ..... Each $111.64

D Fire-Resistant Fiberglass Wastebaskets—UL listed to contain fire. Won't burn, melt or add fuel to container contents. Can't chip, dent, rust. Recommended for industrial or hospital use.
3½-Gal.—11⅛w x 8¼d x 12¼h.
RUB-254100BK Black ..... Each $21.04
RUB-254100BGE Beige ..... Each 21.04
7-Gal.—14½w x 10½d x 15¼h.
RUB-254300BK Black ..... Each $31.64
RUB-254300BGE Beige ..... Each 31.64
10-Gal.—15w x 11¼d x 20h.
RUB-254400BGE Beige ..... Each $44.08

E Soft Molded Plastic Receptacles—Optional lids sold separately.
3½-Gal.—11⅜w x 8¼d x 12⅛h.
RUB-295500BK Black ..... Each $5.28
RUB-295500BGE Beige ..... Each 5.28
7-Gal.—14⅜w x 10¼d x 15h.
RUB-295600BK Black ..... Each $5.66
RUB-295600BGE Beige ..... Each 5.66
RUB-295600GY Gray ..... Each 5.66
10¼-Gal.—15¼w x 11d x 19⅞h.
RUB-295700BK Black ..... Each $10.92
RUB-295700BGE Beige ..... Each 10.92
RUB-295700GY Gray ..... Each 10.92

E Optional, Free-Swinging Lids
For 7-Gal. Size
RUB-306600BK Black ..... Each $7.64
RUB-306600BGE Beige ..... Each 7.64
For 10¼-Gal. Size
RUB-306700BK Black ..... Each $8.06
RUB-306700BGE Beige ..... Each 8.06

G Untouchable® Large Plastic Waste Receptacles—22- to 23-gallon capacity.

No.	Style	Color	Each
RUB-354600BGE	Round, 30⅛"h	Beige	$39.96
RUB-354600GY	Round, 30⅛"h	Gray	39.96
RUB-356900BGE	Square, 28"h	Beige	45.30
RUB-356900GY	Square, 28"h	Gray	45.30
RUB-354000BGE	Slim Jim, 30"h	Beige	45.06
RUB-354000GY	Slim Jim, 30"h	Gray	45.06
Optional Free-Swinging Lids—Handsfree use			
RUB-267200BGE	Round	Beige	20.94
RUB-267200GY	Round	Gray	20.94
RUB-268900BGE	Square	Beige	20.02
RUB-268900GY	Square	Gray	20.02
RUB-267300BN	Slim Jim	Brown	26.80
RUB-267300GY	Slim Jim	Gray	26.80

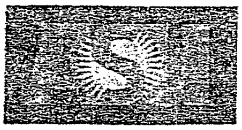
H StyleLine Series™ Lids—Square style fits RUB-356900 series, round style fits RUB-354600 series. Lids include retainer hardware for concealing liner bag.

No.	Style	Color	Each
RUB-362900BGE*	Square	Beige	$98.92
RUB-362900GY*	Square	Gray	98.92
** 15 sq. x 9¼h*			
StyleLine Series™ with Ashtray			
RUB-362300GY*	Round	Gray	98.92
** 16⁹⁄₁₆ dia. x 8⅝h*			

I Untouchable® Half-Round Plastic Receptacle—Space-efficient shape. Durable and crack-resistant construction. Optional lid (RUB-362000BK) sold separately. 21-gallon capacity. 21w x 11d x 28h. Beige.
RUB-352000BGE ..... Each $54.92

J StyleLine Series™ Half-Round Lid—Fits RUB-352000BGE. Retainer hardware conceals liner bag. 21¾w x 12⅜d x 9⅛h. Black.
RUB-362000BK ..... Each $85.72

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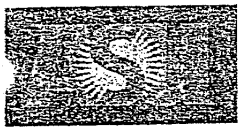
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OFFICE MACHINE RENTAL & REPAIR COPIER MAINTENANCE PRICING FOR 2001/02

MODEL OR MODELS	COPY ALLOWANCE PER MONTH	MONTHLY MAINT. CHARGE	ANNUAL MAINT. CHARGE
FT 2010, 2070, 2260	2,500	$ 31.50	$ 378.00
FT 3020,3030,3060,3213, 3313,3320,3713, Aficio 180	5,000	$ 31.50	$ 378.00
FT 4085, 4420	5,000	$ 31.50	$ 378.00
	10,000	63.00	756.00
FT4022,4027,4410,4415,4418, 4421,4522,4527,4622	5,000	$ 31.50	$ 378.00
4727,4822, Aficio 220,270	10,000	63.00	756.00
	15,000	94.50	1,134.00
FT 4430, 4480, 4490, 5520	10,000	$ 63.00	$ 756.00
	20,000	126.00	1,512.00
FT 5840, Aficio 350	10,000	$ 63.00	$ 756.00
	15,000	94.50	1,134.00
	20,000	126.00	$ 1,512.00
FT 5540,5570,5590,6080, 6085,6620,6645,7650, Aficio 450	20,000	$ 126.00	$ 1,512.00
	30,000	189.00	2,268.00
	40,000	252.00	3,024.00
FT 6655,7060,7660, Aficio 550, 551	30,000	189.00	2,268.00
	40,000	252.00	3,024.00
	50,000	315.00	3,780.00
	60,000	378.00	4,536.00
FT 6665,7670,7770,7870, Aficio 650, 700	40,000	$ 252.00	$ 3,024.00
	50,000	315.00	3,780.00
	60,000	378.00	4,536.00
	80,000	504.00	6,048.00
FT 8680,8780, Aficio 850	70,000	$ 441.00	$ 5,292.00
	80,000	504.00	6,048.00
	90,000	567.00	6,804.00
	100,000	630.00	7,560.00

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(In)frequent Flyers

Search

Author: Beth Bresnahan

Publishing date: 01/30/03

(In)frequent Flyers

Runzheimer report shows that business travel expenses are on the decline

The annual cost per business traveler among North American companies dropped to its lowest level in a decade, and more organizations noted a decrease in overall travel expenditures, according to the 11th biennial edition of the "Survey & Analysis of Business Travel Policies & Costs," published by Runzheimer International, the Rochester, Wisconsin-based management consulting firm.

According to the 117 travel managers who responded, the annual cost per traveler decreased to $6,667 from $10,000 two years ago. Over the last decade, the annual cost per traveler has been reported at $8,000 or higher in all other surveys.

Two-thirds of travel managers also reported that overall travel expenditures either decreased, 36%, or remained the same, 31%, although fully one-third reported travel expenditures increased.

"When organizations fear a decline in their profitability, travel is often the first place to cut," says Phyllis Schumann, senior editor of the biennial survey. "A sluggish economy hits travel very early in the game and usually persists well beyond initial economic recovery.

Unfortunately, travel prices in the marketplace do not respond as quickly. In our present economic doldrums, for example, airlines stop offering advance purchase discounts to business travelers, and hotels raise their rates to ensure revenue and profits equal to what they had when demand was strong.

"The 67 percent of respondents who reported either a decrease or holding pattern in travel costs may be a testimony to successful negotiations with travel vendors and increased use of travel alternatives," the travel cost expert says.

When asked the reasons for a decrease in travel expenditures, over four-fifths, or 82%, stated that the number of domestic business trips has decreased and 54% said the number of domestic travelers has decreased. Also, 54% and 36%, respectively, cited the same decreases for international travel. Thirty-six percent cited a decrease in the duration of business trips.

"It is important to acknowledge that respondents' least significant reason for the reported decline in travel expenses is the result of travel prices decreasing," says Schumann.

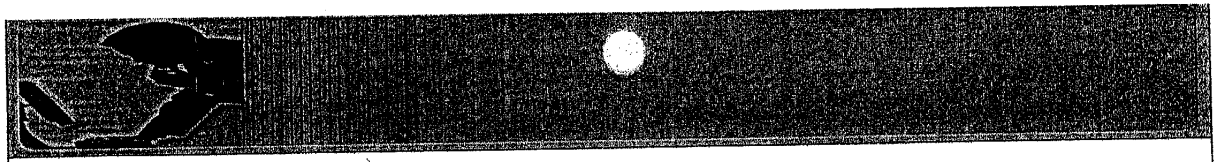
Respondents were asked what actions were being taken to control travel costs. Among the 25 cost control efforts cited, the top three vote-getters were tighter adherence to travel policies, cited by 74%; use of lowest convenient fares, 64%; and encouraged use of vendors with whom special rates have been negotiated, 63%.

Other popular methods included teleconferencing (51%) and video-conferencing (47%). "New to this year's survey and ranking in the upper half of responses are online booking (41%) and Web-conferencing (40%)," Schumann says.

Other actions to control travel costs include encouraging one-day roundtrips to avoid lodging costs, use of fixed per diems for reimbursement of non-airfare travel expenses, rental of smaller cars, and use of alternative airports.

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Start Up and Training



Course Overview
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Course Overview

Click here for the Steps to Becoming a Freight Conductor

The Conductor Training Program has been in existence since September 1996. The five week program consists of 200 hours and a job interview.

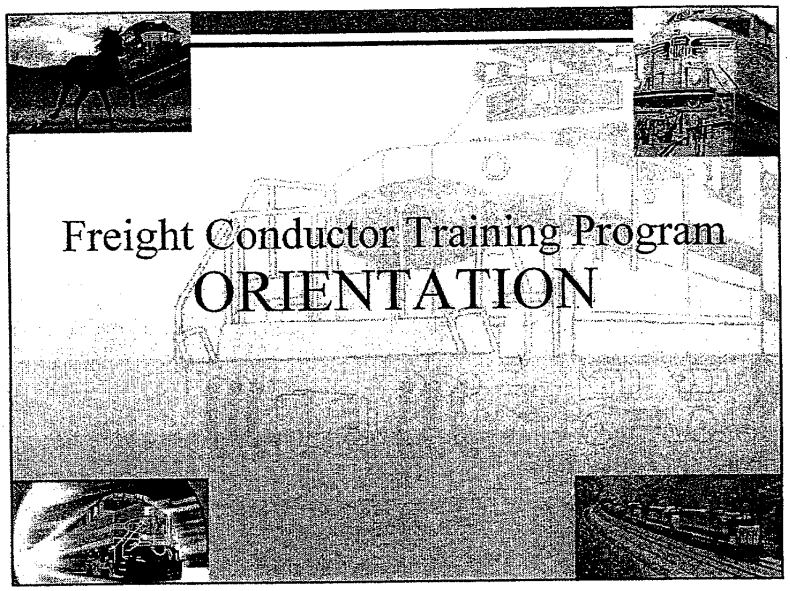
The course includes an introduction to basic railroading, safety, operating rules, signals, equipment and other topics essential for success as a conductor. Students spend a minimum of eight hours per day training, either in class or on rail equipment. All study materials are provided to students to complete the course.

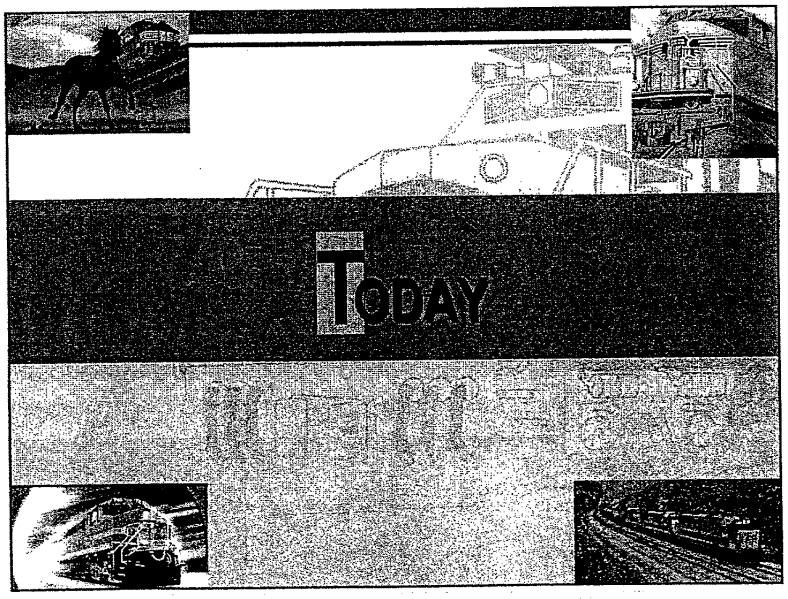
Typically, classes of twelve to twenty students run concurrently-each meeting in separate classrooms.

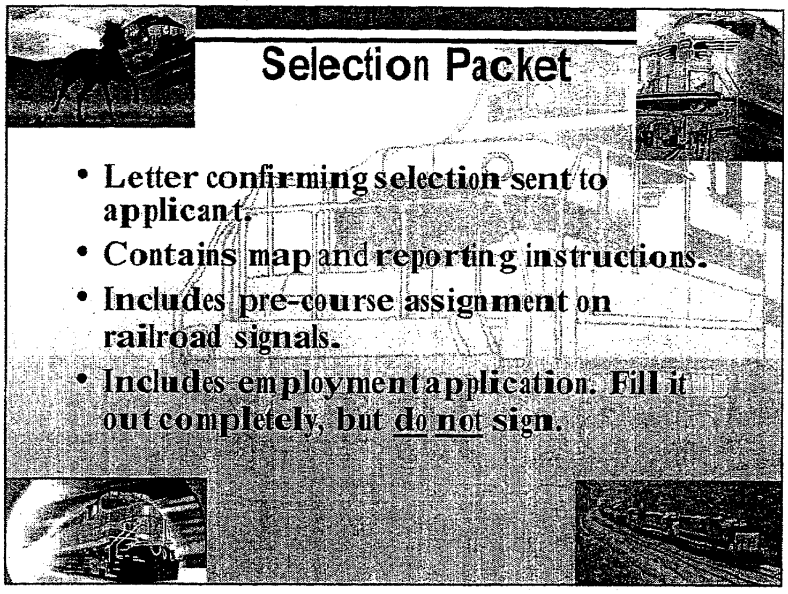
Instructors are experienced, certified conductors from Class I railroads, who provide the training necessary to prepare qualified men and women for entry-level positions. Students receive a certificate upon successful completion of the course.

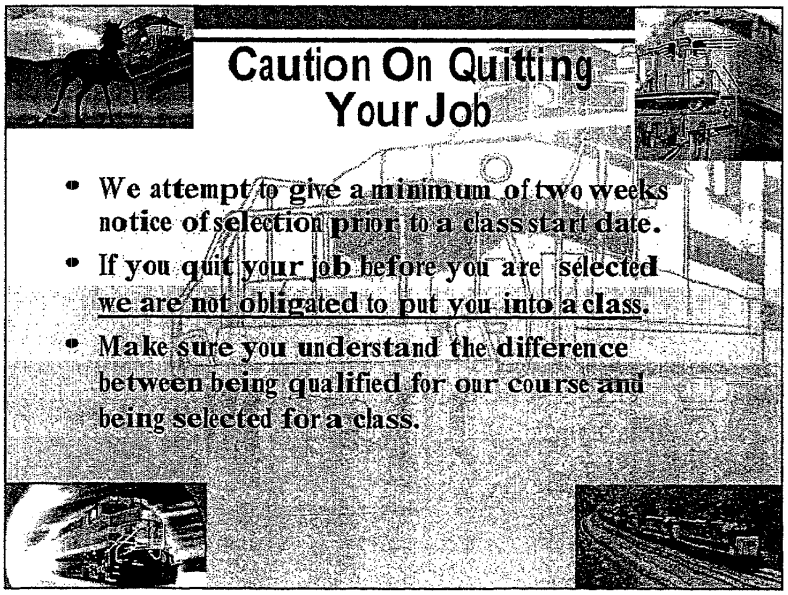
Students are required to pay for their own lodging, meals, and transportation to and from the training facility. We have identified select hotels within a few miles of the training sites, which offer the students discounted rates. See the "Lodging" page for more information.

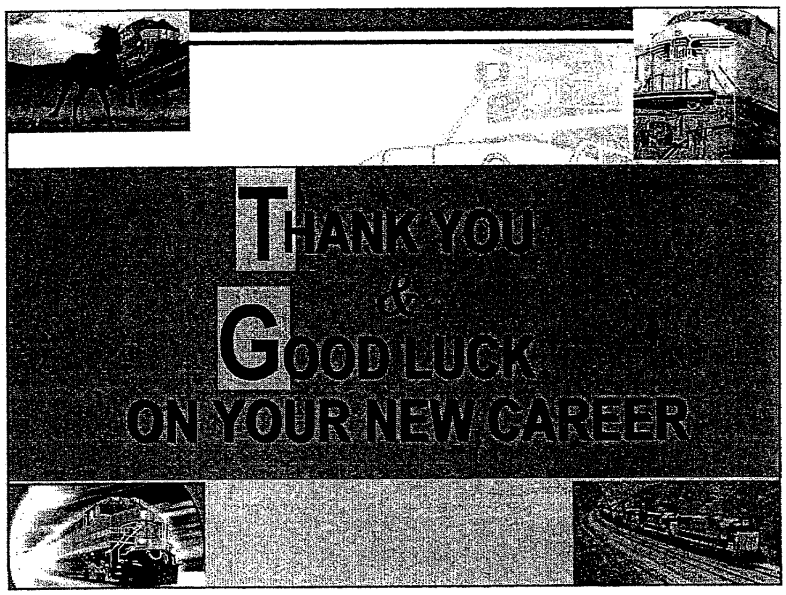
In the third and fourth weeks of class, job interviews and medical evaluations are normally conducted. Background investigations and former employee releases are initiated. Job offers are sent to those who are selected for positions by the end of class. Graduation is conducted on the last day of the fifth week of class. Graduates normally begin employment within the next week.


Freight Conductor Training Program
ORIENTATION


TODAY


Selection Packet
• Letter confirming selection sent to applicant.
• Contains map and reporting instructions.
• Includes pre-course assignment on railroad signals.
• Includes employment application. Fill it out completely, but do not sign.


Caution On Quitting Your Job
• We attempt to give a minimum of two weeks notice of selection prior to a class start date.
• If you quit your job before you are selected we are not obligated to put you into a class.
• Make sure you understand the difference between being qualified for our course and being selected for a class.


THANK YOU
&
GOOD LUCK
ON YOUR NEW CAREER

KEEPING TRACK

Railroad Consulting And Training

Types Of Training We Offer





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Who Would Be Included In The Training

- Locomotive engineers (not previously employed as an engineer).
- Conductors and brakeman. (not previously employed as a conductor)
- Operating supervisors, VP,GM,TM, SLE and dispatchers if employed. Has knowledge of railroad operation.
- Locomotive and Car Repairman.

Re-Certification For Locomotive Engineers

- Day 1.... Operating rules, drugs and alcohol in the workplace. 6hrs.
- Day 1-2..Your Operating rules, Safety rules, FRA Laws. 6hrs.
- Day 2-3..The locomotive: Mechanical, Electrical. 14hrs.
- Day 4-5..The locomotive: Air brake and operation. 16hrs.
- Day 6.... Tests evaluations, Train handling. 8hrs.

Locomotive Engineers Currently Working As An Engineer

- Day 1...The Railroad: what it is and what it does. **Computerized** 8hrs.
- Day 2...The role of operating rules for this railroad. 8hrs.
- Day 3...The role of operating rules, Safety rules, FRA laws. 8hrs.
- Day 4...Safety rules, equipment and committee formation. 8hrs.
- Day 5...The locomotives on your railroad, construction. 8hrs.
- Day 6...Fundamental of Locomotive Air brakes. 8hrs.
- Day 7...Locomotive, diesel engine, governor, lube, fuel oil. 8hrs.
- Day 8...Locomotive, electrical, nomenclature, starting.
- Day 9...Battery, transition, load regulator, main generator controller and trouble shooting. 16hrs.
- Day 10..Final testing, evaluation and train handling. 8hrs.
- Day 11..Operation evaluation, safety and rules compliance. 8hrs.

2964

Every 4 months spend one day, 4hrs, evaluating the person for a one year period to

satisfy the certification process. I don't know him, so I can evaluate him/her in a fair manner.

Engineer To An SLE

- Day 1...Responsibilities & Management Training. The role of the SLE in the management of locomotive engineers. (Optional: The Railroad: What it is, what it does. **Computerized**)
- Day 2...Rules (safety), Operating, proficiency and evaluation tests, mechanical and train handling, final testing.
- Day 3...Ride and evaluate the new SLE. If passed, give new SLE his appointment letter.

Conductor-Brakeman Working As A Conductor

- Day 1...The Railroad: What it is and what it does. **Computerized** 8hrs.
- Day 2...Operating rules for the individual railroad . 8hrs.
- Day 3...Operating and Safety rules . 8hrs.
- Day 4...Safety equipment, forming a safety committee, FRA laws. 8hrs.
- Day 5...Locomotive and car equipment. 8hrs. Final test for the above.
- Day 6...Evaluation on the job. 4hrs.

Every six months one day: 4hrs of evaluation for Rules compliance and safety audit. We see it differently than you do. You know the person, we don't.

Operating Supervisors: VP, GM etc. Ex Railroad Professionals

Instructor to high rail or ride the complete railroad. One day or what it takes.

- Day 1...Operating Rules for the Railroad. 8hrs.
- Day 2...Opreating Rules, Safety rules, the Safety Committee. 8hrs.
- Day 3...Adopting and discussing operating and safety rules. 8hrs.
- Day 4...Special instructions, Employee timetable pro and con 4hrs.
- Day 4-5.Dispatcher, more than one train out at a time, bulletins, track warrant, operational suggestions, The FRA today. 12hrs
- Day 6...Road trip with instructor to put items discussed into effect. As long as it takes.
- Day 7...Locomotives of your railroad, construction, trucks, carbody, couplers draft gear mechanical, diesel engine 8hrs.
- Day 8...fuel, lube oil systems. cooling system, the governor. 8hrs.
- Day 9...Locomotive electric's, traction motors, main generator
- Day 10..Aux.gen., batteries, starting, load regulator, contactors relays, the controller and trouble shooting. 16hrs.
- Day 11..The locomotive and car air brake. review 8hrs.
- Day 12..AAR interchange rules and car construction. 8hrs.

- Day 13..Being a leader-supervising people. 8hrs.
- Day 14..The role of the hearing officer.
- Day 15..Investigations, Discipline and Procedures. 16hrs.
- Day 16..The union and the local chairman. 4hrs.
- Day 16..Locomotive operation and evaluation. 4hrs.
- Day 17..Locomotive operation and evaluation 8hrs.
- Day 18..Surprise testing and evaluations of your employees. Proper equipment. 4 hrs
- Day 19..Drug and Alcohol testing, tests taken. 4hrs.
- Day 20..Testing and evaluation review. 6hrs.

There can be some additions or subtractions as may be desired but this class make up will speak for itself. Officers should be knowledgeable of all the above. Enginemen and Conductors that have a railroad past do not have to be told what a railroad is and what it does, so this is optional.

If The Railroad Has People Employed As:

- A....Locomotive electricians,machinists and helpers
- B....Carman
- C....Mechanical supervisors, CMO, Supt.of Motive Power, General Foreman, Foreman

- Day 1..The locomotives of your railroad. (optional) other locomotives.
- Day 2..Mechanical and electrical, The diesel engine, nomenclature fuel, lube and cooling system, The turbocharger, the Woodward PG Governor, load regulator and daily tests. 16hrs.
- Day 3..Locomotive Electrics, contactors-relays, main generator
- Day 4..Aux.Gen. wiring. Excitation, the controller, traction motors wheel slip system (IDAC) optional GE Electric optional, batteries, controller and basic electricity, Daily tests. 16hrs.
- Day 5..Optional. Head End Power. 8hrs.
- Day 6..The Locomotive Air Brake. **(Not The Computerized Course)** 8 hrs.
- Day 7..Carman and supervisors, Car construction. 8hrs.
- Day 8..AAR rules of interchange (for carman and supervisors) 8hrs.
- Day 9..Safety Rules, forming the Safety Committee, and proper equipment 8hrs.
- Day 10.Safety Audit of the property, final testing and evaluation of each man 8hrs.
- Day 11.Optional on the job evaluation of each man safety audit at least 4 hrs .. 8hrs per man or until he completes his duties.

Mechanical Supervision should attend all classes. **2966**

To make a Certified Locomotive Engineer from a person with no experience it will take at least 90 days of classroom and on the job training. After training, the person will be a Locomotive Engineer on paper only. In practice, a Locomotive Engineer makes decisions, the right ones! But how does he learn how to make these decisions without experience? Experience and evaluations and time will tell. Read the FRA final rule for advice on certifying Locomotive Engineers. The Locomotive Engineer has to have complete knowledge of the following:

1. Operating rules and Timetable Special Instructions.
2. Safety rules.
3. Knowledge of mechanical, electrical and air brake equipment.
4. Physical Characteristics of his railroad.
5. Train Handling one car or one hundred.
6. FRA Rules.
7. Handling hazardous materials.
8. Be able to pass tests and be evaluated.

There are simulators that can be used to evaluate the engineer. I would suggest using a simulator. It is costly but, what does an accident cost you? See my laptop computer poor man's simulator.

A locomotive engineer is not one that only knows the books but also knows how to make fast correct decisions. DECISIONS: he is making them constantly! One wrong decision, well, what can I say. This you learn by doing, time and time again. Experience is the name of the game ..... Give it to them!

Railroad Operating Courses

1. History, the development of the diesel electric locomotive.
2. The locomotive builders and rebuilders.
3. Should you buy new or used locomotives, or should you lease them?
4. Locomotive types and their use. Should you use 4 wheel or 6 wheel trucks?
5. Tractive effort Booster units (TEBUs) or slugs, cab type, dynamic brakes?
6. Remote Control of your locomotives a good idea or bad?
7. The straight electric locomotive: expensive, yes, but ...
8. The steam locomotive in 1998: design, construction, firing, and operation.
9. End of train devices (FREDS) (EOT)

Machinery

1. General nomenclature of the diesel-electric locomotive. This course is made for the locomotives operated by your railroad or any other builder (Alco, Fairbanks-Morse, EMD, GE, Lima, Baldwin, and any others) or models that you specify.
2. The diesel engine and its components : complete cooling, fuel, and lubricating systems.
3. The diesel engine governor (Woodward) and the load regulator
4. Trucks, wheels, axles and suspension bearings.
5. Couplers and draft gears.
6. Basic electricity.
7. Electrical system: relays, contactors, control air, electromagnetic contactors, ganged control contactors, wiring, main generator, auxiliary generators, alternators, SCRs, controller, dynamic brakes.
8. Radio control of slave units
9. Cab signals and train control.
10. Passenger : head end power and blended brake.

Air Brakes

1. History and development of braking systems.
2. Complete computerized air brake course including brake tests and train handling.
3. Locomotive air brakes: number 6, 24RL or 26L, and the independent brake.
4. Freight car air brakes AB, ABD, ABDW, ABDWX.
5. Heavy passenger air brakes UC, 24, 26.
6. Light rail braking.
7. Dynamic Braking, extended range.
8. Blended Braking and graduated release.
9. The air compressor and its operation.
10. Train control: why you need it and how it works
11. The different overspeeds and the P2A.
12. Disk and shoe brakes.
13. Car and truck mounted brake rigging and equipment
14. Alertors and their operation

Train Handling

1. Handling different types of trains, including light engines, local or way freight, heavy freight (coal, grain, sand, stone, double levels, and others) Suburban and road passenger.

   The above course includes on-the-job training with a certified locomotive instructor engineer or other qualified instructor on a railroad of your choice. **It is your responsibility to make arrangements with any railroad that you choose (it can be done).** Meeting the minimum requirements of class 2 railroads requires 30 round trips or 240 hours of train operation over the applicable territory. The minimum requirements for class 3 railroads can be met with 15 round trips or 80 hours of train operation over the applicable territory again with a qualified instructor. Not every locomotive engineer can be considered a qualified instructor, look into this!

2. Computer train and dispatcher simulator on a laptop computer.
3. Remote control train operation.

Operating Rules

1. Complete explanation of the rules applicable to your railroad. Based on either the General Code of Operating Rules of 1994 or other book used by your company. An examination consisting of 100 questions is given at the end of this course with 85% passing grade needed for passing the course.
2. The employees timetable and special instructions.
3. The locomotive engineer and the physical characteristics of your railroad.
4. Fixed signals and their meaning. Restricted speed on your railroad.

Hazardous Materials

Complete course and test that must be passed with a proficiency of 85 percent.

Federal Regulations

Covers all of the title 49-200 series laws that pertain to your operation.

Other Services We Provide

- The operation and maintenance of a steam locomotive.
- Operating and mechanical supervisor training.
- SLE training and qualification.
- Expert witness on railroad related subjects in courts of law.
- Public speaking on many railroad related subjects for schools, seminars, and conventions.
- Electric locomotives and electric railroad operation, both third rail and overhead caternary.
- Photography. I have both still and video cameras. Put your railroad on video, make records of track and physical characteristics of your railroad for training, or show prospective shippers what you have to offer. You should have photos of your motive power and equipment and all of your grade and highway crossings. I make calendars and other photo handouts.
- I can fill in for your ill, vacationing, and retired or resigned engineers. I am qualified on freight and passenger trains. (13) years in Amtrak operations and training departments. I have operated SD70 mac, and Dash 9 and trains over 180 cars.
- I make books of instruction, timetables, special instructions, operating and safety and rule books. Books of instruction include general locomotive instruction, locomotive operation, and locomotive trouble shooting. I have completed railroad operating manuals for many railroad companies.

Home Page Go

KEEPING TRACK
Railroad Consulting And Training

Our Rates





Introduction | Training | Instructor | References | Contact Us | Home

Consulting work is $400.00 per day, plus all expenses. A normal day consists of anything up to 12 hours. For any time in excess of 12 hours per day, the rate is $50.00 per hour. No more than 16 hours in a 24 hour period will be worked. Eight hours of rest are required in every 24 hour period.

When traveling out of town within 100 to 400 mile radius, I usually rent an automobile . If it takes two to twelve hours to reach the work site, my rate is $100.00, plus expenses. If I can arrive at the work site and perform work on the same day, only the daily rate will apply. I usually don't use contracts but, I will supply one if requested.

When returning to my home office from an assignment and the entire day is used for travel, I will charge $100.00, plus expenses.

At least one day on a day for day basis of field work will be guaranteed.

When working in my office, the rate will be $50.00 per hour. The maximum charge for 8 hours will be $400.00 or negotiated cost for the complete job.

When away from home for one week or longer to provide training or other consulting services, the daily rate will be based on a seven day work cycle. If I am not used for the sixth or seventh day, I will be paid $100.00 per day plus expenses. After three weeks at the work site (except foreign travel), I will expect you to pay for my transportation to return to San Antonio and back to the work site after a (negotiated) time for rest at my home.

The form of transportation to the work site will be at your discretion. The travel agent that I deal with procures the most inexpensive air coach fare that is available when I have enough lead time. We should have a minimum of two weeks to arrange for the least expensive transportation.

I use my private automobile in the San Antonio area. The rate is $0.37 per mile plus time involved. Mileage to and from the airport will be charged $0.37 per mile plus parking. Alternatively. taxi fare between my home and the airport is about $24.00 each way.

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The cost of booklets and handouts for classes or speaking engagements will be negotiated. For the air brake course there are 4 booklets that cost $60.00 per man. The basic diesel locomotive book is $20.00 per book. Fundamentals of Electricity sells for $15.00 each. Handouts will depend on what you request. Questionnaires will have to be made for your company and yours only. I will be paid the hourly rate to do this. Books that I buy from suppliers I will charge 20% above their prices for the time, taxes, and postage that is charged to me. The use of video tapes in my collection for training will be rented for $5.00 each time used. The slide projector is $10.00 per day when used. The video camera is $10.00 per day when used, plus $25.00 per hour used. My Nikon still 35mm camera is $10.00 a day plus $1.00 for each slide or photograph taken plus cost of developing and replacement of the film.

For training assignments I will ask that you supply me with a copy of your rule book, timetable, all special instructions and any other instructions that are given to your operating crews or any other employees that I will be training. After receiving these materials, I will ask for one day to prepare each course you want me to provide. For most of my classes, I will need a meeting room with **comfortable** chairs and tables for courses longer than 4 hours duration. I will also need a blackboard or contempo board, computer monitor or monitors. When there are more than 15 men in the class, I will need a multi media projector, the type that can be rented in most larger cities.

Due to my good reputation in this business. I reserve the right to terminate my services on your property for unsafe procedures brought to your attention by me and not acted on immediatly by the people who employ me.

A computerized Air brake course is available for $1500.00 total for two days, my daily rate is included in the price. The books are $60.00 per man for as many people you can fit in a room. No one has this computerized course and I quarantee the student will know how the air brake works after the two days. Performing brake tests and train handling is a part of this course. See it to believe it!

I also have the **Poor Mans** locomotive simulator in a laptop computer. Let your engineers run this to see their reaction time and if they live up to the speed rules. It takes one hour to train the student on how to use the computer then it is $50.00 an hour after this start up time. My daily rate will be charged plus the operation of the simulator. The locomotive simulators in the big cities charge $400.00 **an hour**!

Train Dispatchers: What do they do? I have a Dispatchers Simulator in my computer that shows the student how to run trains, put them in sidings (if they're not too long), and scores the student on time performance.

I have many track plans to show the student. It takes one hour to teach the student how to use the computer and then it is $30.00 an hour plus my daily rate.

Speaking engagements for railroad subjects will carry a rate of $400.00 for a maximum of four hours plus all expenses.

I will endeavor to keep your expenses to a minimum and I will make it worth your while to use my services.

M.C.Wikman

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RAILROAD DISPATCHER TRAINING PROGRAM

TARRANT COUNTY COLLEGE
4801 Marine Creek Parkway - Fort Worth, Texas 76179

[Home] [Dispatcher Training] [Railroad Links] [Assoc. Degree at TCC] [Classes] [Textbooks] [Other Links]

[Application for Admission] [PDF Application for Print]

We congratulate you for your interest in the Dispatcher Training Program sponsored by Tarrant County College.

To be eligible to apply you must be at least 18 years old, have graduated from High School or have a GED equivalent, and have completed 30 semester hours of college credit. If you meet these requirements, you can complete the application package. If you do not have 30 semester hours of college credit, contact your local community or technical college to inquire about taking general technical courses similar to those listed in the **Associate Degree of Applied Science in Railroad Operations Management**. Once you have completed 30 semester hours of college credit, you are eligible to apply for the Dispatcher Training Program.

You will find these sections within the application package:

FAQ about the Railroad Dispatcher Training Program

Eligibility Requirements and Selection Process

Physical Requirements

Application General Information

- Course Description
- Cost
- Scholarships
- Tips for Completing the Dispatcher Application

Application for Admissions

- Applicant Checklist
- Emergency Data Form
- Employment History Form
- Military Experience / Related Training or Experience Form

The Transcript Request Template can be used as a guide to request an official transcript from each college you have attended.

Application Deadline and Tentative Training Dates

Procedure for Reapplying to the Dispatcher Program

When you have completed the Dispatcher Training Program application, send it to:

Railroad Dispatcher Training Program
Railroad Department
Tarrant County College Northwest Campus
4801 Marine Creek Parkway
Fort Worth, Texas 76179

If you have any questions about the Dispatcher Training Program or the application process, please contact us. We are looking forward to seeing you in our next class!

Frequently Asked Questions about the Railroad Dispatcher Training Program

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1. How did this program start?

Tarrant County College (TCC), with cooperation of major railroad companies, has rapidly moved to meet growing employment needs of the railroad industry. In April 1998, Burlington Northern Santa Fe Railway (BNSF) and TCC linked together to bring the training program from Johnson County Community College (JCCC) in Overland Park, Kansas to TCC and closer to their Fort Worth headquarters. The program had been successfully located at JCCC since 1993. Moving the

school to Fort Worth, added a new dimension to the training program. Students now have the full benefit of being located near one of the most sophisticated dispatching facilities in the country. This significantly enhances the training opportunities for future dispatchers.

2. Where is TCC taking the program?

Tarrant County College is taking the next step in meeting the needs of the Railroad Industry. Soon TCC will announce the establishment of the American Institute of Railroad Dispatcher Training (AIDT). AIDT will set the standard in quality Railroad Dispatcher training. The country's railroads will benefit greatly! TCC graduates will be of high quality and available to the railroad companies at a much lower cost than they can do the training themselves. We invite participation and inquiries from all Railroad Companies. The experience and knowledgeable instructors, assets and facilities available, and the backing of the Tarrant County College make this program the premier Railroad Dispatcher Training Program in the nation.

3. What is a Railroad Dispatcher?

The railroad dispatcher supervises the movement of trains and provides protection to employees occupying the track. This is accomplished by using various types of signaling equipment and radios to communicate with trains and employees maintaining the track. The dispatcher makes decisions based on schedules designed to meet customers' needs.

A dispatching office is staffed 24 hours a day throughout the year. The dispatcher works a variety of territories gathering information from many different sources. Based on this information the dispatcher makes decisions about how to move trains to their destinations in the most efficient manner. A dispatcher, who is assigned a certain territory, keeps track of all trains and equipment occupying the track within that territory giving them authority to move from one point to another. The train dispatcher coordinates these movements by making plans for trains to meet or pass in a manner consistent with railroad rules of operation.

The dispatcher is responsible also for protecting employees working on the track. Additional responsibilities include train crew management and equipment utilization for the most efficient operation. Highly skilled dispatching ensures not only the safe movement of trains and on-track vehicles but also their efficient movement, providing top value for shippers.

4. What will I learn in the course?

Dispatcher Training provides entry-level and experienced dispatchers with the skills they need to move traffic safely and effectively. Students practice planning, communicating, and monitoring traffic movements on computer system and communications simulators. Interactive video self-instruction supplements classroom training on the General Code of Operating Rules.

5. What's the annual income of a Railroad Dispatcher?

Initial annual salaries range from $45,000 to $50,000.

6. Are there jobs for railroad dispatchers?

You bet there are jobs! Ask anyone in the railroad industry if they remember a time when there wasn't a need for railroad dispatchers. As traffic increases on today's railroad systems the need for skilled dispatchers will increase. Dispatchers are routinely promoted to positions of addition responsibility leaving gaps that must be filled. Also as with all industries, the railroads are suffering from an ever-aging baby boom generation. There are thousands of these workers in the railroad industry. Many are railroad dispatchers.

7. What are the eligibility requirements to apply of the course?

- Applicants must be 18 years of age or older.
- Applicants must have earned a high school diploma or GED equivalent and 30 semester hours of college level credit.
- Applicants must be willing to relocate.
- Applicants must be willing and able to complete the training program without interruption.
- Applicants must be willing and able to participate in 4 weeks of on-site field observation in several geographical locations. Transportation to and from the training sites will be the student's responsibility.
- Applicants must have computer applications and keyboard experience.

8. What is the selection process?

Complete the TCC Railroad Dispatcher Training Program Application Packet. The Application Packet must be received by the deadline indicated in the Calendar of Activities to be guaranteed consideration for the program. The TCC Railroad Dispatcher Training Program is a special admission program..

Submit all pages of the Application Packet **AND** all supporting documentation - application for admission.

Military experience.

Employment history - a resume must be submitted in addition to a complete application.

Proof of high school graduation or equivalent (only applicants with less than an Associates Degree).

Official college transcripts.

Upon notification, take the **Train Dispatcher Aptitude Test (TDAT)**. The TDAT is a three-hour test administered according to the schedule included in the Calendar of Activities. **NOTE: If you have previously failed the TDAT, you must wait 6 months before re-testing. A pass is required to progress in the selection process.**

Upon notification, complete an interview with professionals in the railroad industry and/or TCC personnel. Interview questions will relate to your knowledge of the duties of a dispatcher, your work, educational history, and your ability to communicate, as well as work with others.

Final Selection:

Final selection of TCC Railroad Dispatcher Training Program participants will be based on the completion of the application, the results of the TDAT, and the interview. Each applicant will be ranked relative to test results and interview scores. Selections will be made by TCC and applicants will receive final notification of acceptance or denial by mail. **STUDENTS MUST BE PRESENT FOR THE FIRST DAY OF CLASS. STUDENTS ARRIVING AFTER CLASS BEGINS THE FIRST DAY WILL BE DENIED ADMITTANCE AND DROPPED FROM THE CLASS.**

9. How long is the training course and when do classes meet?

The Railroad Dispatcher program consists of 14 weeks of training. Four weeks are spent in a field orientation phase at locations across the country. Ten weeks of training are held on the TCC Northwest Campus. Classes currently meet from 8 A.M 4 P.M. Monday Friday. While in the field the students will arrange their schedule to accomplish all required task assigned by the instructor.

10. How many people are in each class?

There are a limited number of openings for each training class. Normally the class is limited to 14 people. This number can vary due to instructor availability and need. Interested applicants should apply early.

11. How much does it cost?

Tuition and fees for the program are between $600.00 (Resident) $2500.00 (Non-Resident). Field experience training cost will be in the range of $2500.00 for meals lodging and transportation. Students must also provide their own room and board while attending the classroom phase of training.

12. Is financial aid available?

Scholarships may be available from sponsoring railroads. Also, all other forms of financial aid programs will apply to this training program. See your financial aid counselor as soon as possible.

13. Will I receive college credit for this course?

This program is offered through the Office of Continuing Education at Tarrant County College Northwest Campus. Upon satisfactory completion of Continuing Education classes for which CEUs are awarded, students will be awarded certificates in recognition of their achievement. This course will be accredited in the Fall 99. College credit will be awarded for completion of the course.

14. If I take the course as a non-credit can I come back later and be given college credit?

Yes. Credit can be awarded in two ways. (1) As a result of testing (2) Credit for experience. Students should direct inquiries concerning credit-by-examination to campus Testing Center and / or the Railroad Department.

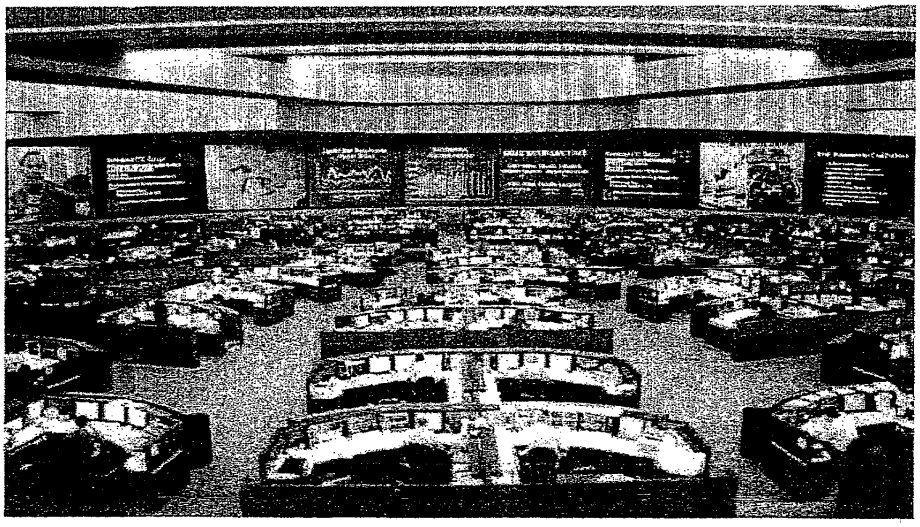
Upon successful completion of any credit-by examination / experience, a grade of credit (CR) will be awarded and will not effect the grade point average. A student must be enrolled at TCC during the semester that credit is posted on the permanent record.

15. Do I have to take the Texas Academic Skills Program (TASP) Test prior to enrollment in the Dispatcher Training Program?

The TASP is not required if enrolling in the dispatcher program as a continuing education course. Continuing education units (CEU) are awarded for continuing education courses. The TASP is required if enrolling for credit dispatcher courses. Certain exceptions apply that will exempt students from taking the test. You should contact your closest college (if living in Texas) to determine if you qualify for the exemption. If living outside Texas, call the TCC registrar office at 817-515-7777 for information.

16. How do I reapply if I am not accepted the first time?

To reapply you simply send us a letter stating your desire to try again. We will forward you an abbreviated application to be completed. You should include any new documentation pertinent to the application process and any changes from previous supplied information. In the meantime you should do everything possible to make yourself a better candidate. This might include taking the railroad courses at TCC and/or seeking employment with some railroad related business. At a minimum one should attempt to learn all you can about the railroad industry. Taking courses or working in management may be what you need.



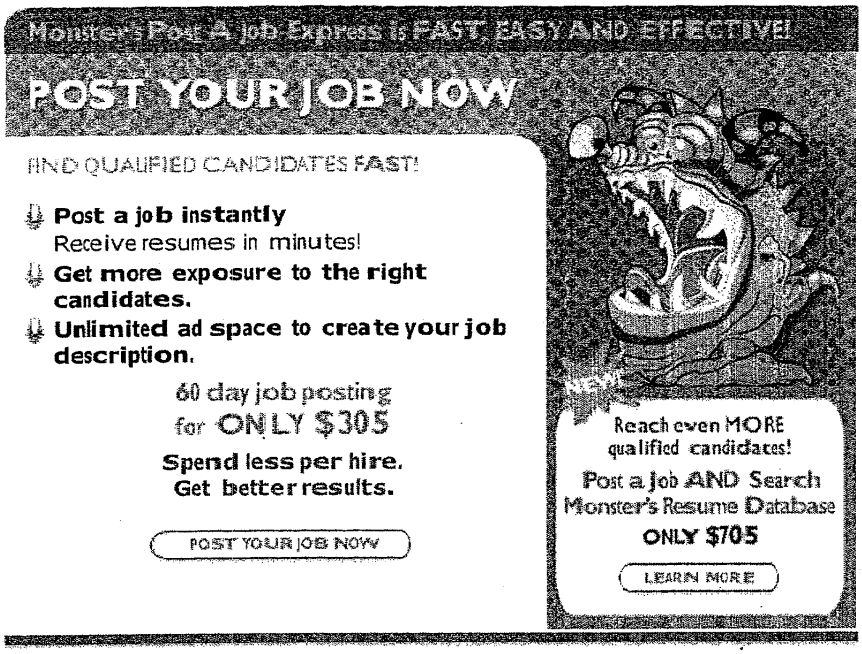
Request a Dispatcher Application

Experienced Railroad Dispatchers

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Last Revision: November 13, 2001
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Comments to: nwwbmstr@tccd.net



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- **Is RAILjobs.com free?**
  YES. RAILjobs.com service is absolutely FREE for all rail companies & job seekers.

- **How do I post my job?**
  It's very simple. Just follow the easy steps listed below:
  1. Go to www.RailJobs.com/employers/postjobs.html.
  2. Fill out the form completely.
  3. Remember to note down your password.
  4. Once you submit job listing, make sure you note down your AD number.
  5. AD number and password is very important for future use.

- **How do I update/delete/renew my job?**
  You can update, delete or renew your job listings at any time before its expiration date.
  Go to www.RailJobs.com/employers/emputility.html.

- **How do I access resumes?**
  There are 3 ways to access resumes:
  1. Select an appropriate category from the drop-down menu box and then click on the 'View ADs' button.
  2. If you want to view **ALL** the resumes, simply press the 'View ADs' button without selecting a category.
  3. Using 'keword' or 'phrase' search option.
  » To access resumes go to www.RailJobs.com/jobseekers/resumeaccess.html.

- **How do I use 'Keyword' or 'Phrase' search?**
  1. Go to www.RailJobs.com/jobseekers/resumeaccess.html.
  2. Search every resume containing **any or all** of your keywords.(All searches are case insensitive)
  » Example:
  If you are looking for a candidates with experience in dispatching for BNSF, enter "BNSF dispatching", then the words in an AD" every AD containing ALL of these keywords will be displayed to you.
  3. You can also search for an entire "phrase".
  » Example:
  Such as: "looking for", "job candidates", etc. Just enter the phrase, then select an "EXACT PHRASE in AD".

- **Do you sell our E-mail address?**
  NO. We will never sell sell your email address to third party. Your e-mail address is for our internal use only email address for sending notifications only. All the job seekers will reply to your posting by using an unique number. Our software then send e-mail notification using this unique job AD number.

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262,856 Visits since Jan 27, 1999.



COUPLING RAIL PROFESSIONALS AND EMPLOYERS

RAILPROS INC.

PHONE: (714) 734 8765
FAX: (714) 734 8755
216 TECHNOLOGY DRIVE
SUITE K, IRVINE, CA 92618
E-MAIL: INFO@RAILPROS.COM

WELCOME TO RAILPROS

–*The* web resource dedicated to bringing together railroad industry professionals and employers.

RailPros specializes in providing temporary personnel services and recruitment services to the rail industry. We provide experienced railroad professionals on part-time, short-term, as well as permanent assignments. We serve all types of clients in the railroad industry including:

- Major Freight Railroads
- Passenger and Commuter Railroads
- Transit Agencies
- Short Lines
- Consulting Firms
- Contractors
- Railroad Industry Suppliers

RailPros' Associates are experienced railroad professionals in many disciplines, many of whom are seeking short-term employment following retirement. By utilizing a combination of our web site and our nationwide industry contacts, RailPros widens the available pool of staff for our clients. As such, we can provide significant flexibility by providing temporary and temp-to-perm staff on a contract basis. RailPros can also facilitate the recruitment and hiring process by providing a broad recruitment scope and by allowing employers to initially "test-drive" potential long-term hires as temporary employees.

In today's competitive rail industry environment, railroad organizations need to be able to quickly devote staff resources to business opportunities, and need to be able to increase or decrease staff quickly as business conditions dictate.

Temporary staffing, with a clear capability to adjust staff size and talent to meet changing needs, can play a major role in the success in many railroad organizations. By using RailPros Associates, our clients get access to qualified people without long-term employment commitments and without the tax and employment liabilities of making separate independent contracts with multiple individuals.

RailPros was founded, and is operated, by a team of railroad industry professionals. Unlike other staffing and recruiting companies, we *know* the railroad business. Therefore, we can better match employer needs to candidate skills.

TEMPORARY PERSONNEL SERVICES

Employers

Companies and organizations in the rail business occasionally require the services of specialized railroad professionals. For example:

- Do you have a critical opening that must be filled NOW, but your complicated hiring process will take several months?
- Does you need a project manager to oversee the design and construction of a new maintenance facility or double-track project?
- Does your consulting engineering firm need an experienced rail civil engineer on your team to win the big project?
- Is your rail organization currently experiencing an overwhelming workload, but you are hesitant to hire additional staff because you don't want to have to fire people in six months when things settle down?

If your organization has needs similar to these examples, then RailPros' temporary personnel services may be your solution. We offer qualified railroad professionals at competitive rates to employers nationwide. You may have RailPros associates work for you on any basis you desire: full-time, part-time, short-term, long-term, or on-call.

For a listing of our available associates, please visit our Available Associates page. If your organization is interested in using a RailPros Associate for an assignment, please visit our Employer Staffing Application page, or feel free to call us at (714) 734 8765.

Individuals

Are you a retired railroader who wants to work part-time or on a short-term basis? Are you working as an independent contractor and are tired of preparing invoices, paying high insurance premiums, and waiting for weeks to get paid? Do you like the variety and experience that comes from working on several

different projects for different clients? If so, then becoming a RailPros Associate may be right for you.

Expand your network and widen your opportunities for stimulating and profitable assignments. Choose only the type of work you want--part time, full time, short term or long term. By becoming a RailPros associate, you will enjoy many benefits. We do the invoicing for you. You receive a regular paycheck twice a month. We cover you for $2,000,000 in comprehensive general liability insurance (including railroad protective liability) and $2,000,000 in professional liability insurance. And because RailPros has low overhead costs, ***you*** get to keep a bigger chunk of the billing rate.

Who can become a RailPros associate? Just about any management level railroad professional can become an associate. Examples include:

- Operations Managers and Specialists
- Engineers (Rail, Civil, Electrical, etc.)
- Planners
- Project Managers
- Construction Managers
- Real Estate Managers
- Inspectors
- Safety Managers
- Marketing Managers
- Sales Managers
- Finance Managers
- Claims Managers

What types of positions are not offered? Union positions, laborers, and any positions that are directly involved with the operations of trains. For example, union clerks, locomotive engineers, conductors, and dispatchers cannot become RailPros Associates.

To become a RailPros Associate, please visit our Associate Application page.

RECRUITING SERVICES

The railroad industry, both private and public sector, continues to expand. This

expansion has created many employment opportunities. RailPros provides an excellent vehicle for both individuals and companies of all types to match skills and needs.

Employers

Employers understand that the market for railroad professionals is currently very competitive. Scarcity of qualified people has driven salaries to record levels in certain parts of the country. RailPros is *the* online resource exclusively dedicated to bringing employers with railroad professionals together.

Have you had difficulty filling critical railroad positions? Are you tired of using large recruiting companies who don't really know the railroad business and your personnel requirements? Wouldn't it be great if you could tap into a resume bank that contained the resumes of hundreds of railroad professionals throughout the country? RailPros database contains the resumes of hundreds of railroad professionals nationwide. We receive several new resumes every week. And, our existing candidates have been referring us even more new candidates.

RailPros offers a cost-effective way to recruit staff in today's hot employment market. When we provide employers with a successful candidate from our current resume bank database, our fee is only 10% of the accepted annual salary.

For a listing of our available recruitment candidates, please visit our Available Recruitment Candidates page. If your organization is interested in using a RailPros Associate for an assignment, please visit our Employer Recruiting Application. page, or feel free to call us at (714) 734 8765.

Individuals

Are you satisfied at your present job? Do you ever wonder if somewhere there existed the perfect job to match your skills and desires? If such a perfect job existed, wouldn't it be great if somebody automatically knew that you were ideal for the job and contacted *you* to tell you about it? Regardless of how happy you may be in your present job, you *need* to have your resume on file with RailPros. Our database contains the resumes of hundreds of qualified railroad professionals throughout the nation. This database provides railroad industry employers with a one-stop shopping source for their hiring needs.

RailPros key mechanism for expanding this database is our generous referral program. RailPros will pay you $1,000 for referring us to a candidate who is hired by one of our clients, or, by referring us to a client who hires one of our candidates. And, there is no limit on how many referrals you can provide us. If you refer 10 candidates that get hired, you make $10,000. You could invest a few minutes by sending some e-mails to your colleagues telling them about RailPros and potentially make some money. Check out our $1,000 Referral Program page.

You may instruct RailPros to post your information on our Available

Recruitment Candidates page. Your name and specific employers' names will not be mentioned. Or, you can instruct us to store your resume in our confidential office files (not accessible by our web site). The choice is entirely up to you.

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PHONE: (714) 734 8765
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SUITE K, IRVINE, CA 92618
E-MAIL: INFO@RAILPROS.COM

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WORLDWIDE HEADQUARTERS
DBM
100 Park Avenue
New York, NY 10017
United States
Phone 212 692-7700
Fax 212 297-0426
Toll-free 800 DBM-2242

CANADA
DBM Canada
77 Bloor Street West, Suite 1802
Toronto, Ontario M5S 1M2
Canada
Phone 416 922-7561
Fax 416 922-6831

EUROPE/AFRICA/MIDDLE EAST
DBM France
49, avenue des Champs-Elysées
75008 Paris
France
Phone 33 1 56 69 34 00
Fax 33 1 56 69 34 34

LATIN AMERICA
DBM do Brasil
Av. Engº Luiz Carlos Berrini, 801
2º, 5º and 6º Andares
04571-901 São Paulo SP
Brazil
Phone 55 11 5503 3500
Fax 55 11 5505 2957

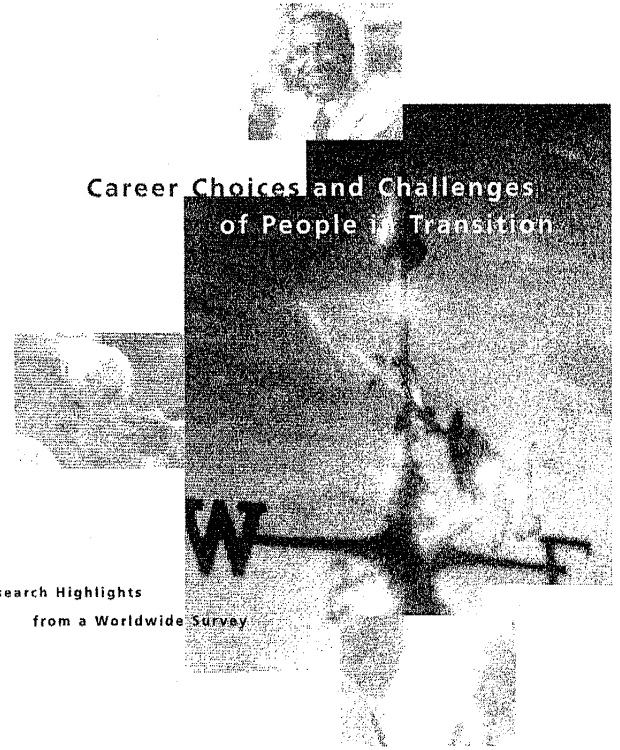
ASIA PACIFIC
DBM Hong Kong
10/F, Gloucester Tower
The Landmark
Central, Hong Kong
Phone 852 2905-3168
Fax 852 2905-3188

GLOBAL NETWORK

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China	Philippines
Colombia	Poland
Denmark	Portugal
Ecuador	Russia
Estonia	Singapore
Finland	South Africa
France	Spain
Germany	Sweden
Greece	Switzerland
Hungary	Thailand
Ireland	Turkey
Israel	United Kingdom
Italy	United States
Japan	Venezuela
Korea	Vietnam
Latvia	

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DBM



Career Choices and Challenges of People in Transition

Research Highlights from a Worldwide Survey

THOMSON
DBM

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ABOUT DBM

DBM (www.dbm.com) is the world's leading provider of strategic human resources solutions that help organizations align their workforces to meet changing business needs. Known for over 35 years for its innovative and effective career transition services, DBM offers in-depth capabilities in employee transition, retention, development, and selection. Founded in 1967, the company has more than 200 locations in over 45 countries.

DBM is part of the Thomson Learning division of The Thomson Corporation (www.thomson.com), a $7.2-billion global provider of integrated information solutions. With operations in 30 countries, Thomson holds lead positions in the legal and regulatory, financial, learning, and scientific and healthcare information sectors.

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Executive Overview

Each year, DBM studies the experiences of individuals utilizing our career transition services worldwide. Designed to offer research-based data for improved decision making, the study enables us to:

- partner more effectively with customer organizations; and,
- continually refine and improve the effectiveness of the services we provide to separated employees.

In 2001, DBM worked with over 7,400 organizations and provided career transition assistance to more than 329,000 individuals. This report focuses on the experiences of 14,338 individuals from 35 countries who participated in our customized outplacement/career transition services.*

While participants in this study were predominantly male, 29% were female. The typical respondent was in his early to mid-40s, had been with his previous employer nine years, and was most likely to be an executive, manager, or professional. Our analysis of participants' transition experiences provides insights into six key areas:

ORGANIZATIONAL CHANGE The vast majority of transitioning individuals were in the job market because of an organizational change; only 2% had been dismissed due to performance.

NETWORKING Networking was the most likely source of a new job or professional role; it also appeared to shorten the time to reemployment.

Networking was the most likely source of a new job or professional role; it also appeared to shorten the time to reemployment....

REEMPLOYMENT The average time to reemployment was 3.2 months, down from 3.3 months in 2000 and 1999. Workers over 50 took longer to find a new professional role (4.1 months) and were more likely than average to secure work that paid less than their previous job.

SELF-EMPLOYMENT The percentage of individuals choosing self-employment swung back to its 1997 level of 16%, after hitting a low of 7% in 1999.

INDUSTRY AND FUNCTIONAL MOVEMENTS Significant numbers of transitioning individuals chose to change industry or job function, many of them attaining the same or better salary than in their previous position.

Significant numbers of transitioning individuals chose to change industry or job function, many of them attaining the same or better salary...

GENDER Women tended to find work more quickly—and with greater likelihood of securing the same or increased salary—than men.

Survey respondents' career transition experiences illuminate the opportunities and challenges that both organizations and individuals face in today's employment market. For example, trend information regarding workers' willingness to move between functions and industries is highly relevant to organizations' strategic thinking on employee hiring, retention, and outplacement. Similarly, career transition outcomes that point to the viability of nontraditional work arrangements—including self-employment—can inform individuals' career management decisions as they assess their short- and long-term personal, professional, and financial goals.

We invite you to read on for further details of our findings, as well as strategic recommendations for successfully navigating today's changing employment landscape. We trust you'll find the information valuable, whether you're reshaping your workforce or charting the course of your own career.

*This report is based on a survey of the career transition experiences of 28,233 DBM clients in 45 countries who participated in customized individual programs of three or more months in duration during 2001. Participants were from all levels in organizations. DBM consultants completed standard surveys with each client at the beginning and end of his or her career transition program. Not every client answered every question.

The findings presented here, which focus on 14,338 respondents in 35 countries who provided the most detailed information, do not include data on those individuals whose career transition program expired before they found reemployment. The research results are specific to DBM clients and do not necessarily reflect the experiences of all individuals in transition.

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TABLE 8 INDUSTRY CATEGORIES PEOPLE ARE COMING FROM AND GOING TO

	Finance		Primary Industries		Consumer Products/ Manufacturing		Technology		Services		Public	
	From (%)	To (%)	From (%)	To (%)	From (%)	To (%)	From (%)	To (%)	From (%)	To (%)	From (%)	To (%)
Argentina	32	25	14	11	24	9	16	21	11	17	0	3
Australia	14	16	28	14	15	6	29	12	5	8	3	4
Belgium	5	10	2	10	35	16	52	45	0	6	0	2
Brazil	13	11	15	16	38	25	12	15	21	30	0	3
Canada	6	8	10	10	13	8	58	42	12	12	1	10
Chile	12	11	23	28	35	17	5	6	11	14	7	20
Colombia	4	3	7	22	74	38	13	8	1	15	1	0
Finland	10	0	37	36	20	3	15	33	6	15	2	0
France	11	11	18	16	27	27	20	15	17	17	1	1
Germany	12	10	20	17	20	12	12	21	7	9	5	2
Greater China	33	32	6	2	44	26	11	8	4	12	0	0
Hungary	53	24	0	12	38	23	6	10	0	12	0	12
Ireland	7	43	2	14	1	17	88	9	0	8	1	9
Italy	6	9	17	21	24	25	26	15	17	14	0	2
Japan	11	6	41	36	8	0	17	0	15	15	0	0
Korea	0	0	50	16	20	5	29	14	0	5	0	0
Malaysia	0	1	0	1	23	7	71	26	6	0	0	0
Mexico	0	16	7	10	52	31	8	11	27	10	4	6
New Zealand	23	12	24	9	14	4	23	12	11	11	3	6
Peru	24	13	21	14	38	20	11	16	0	18	3	9
Philippines	13	10	20	20	7	20	54	20	6	0	0	10
Portugal	4	4	18	18	51	39	17	16	8	15	0	6
Singapore	10	10	5	8	18	15	44	31	7	0	0	1
South Africa	15	9	26	17	42	30	2	11	4	15	0	4
Sweden	16	17	12	22	29	10	27	25	4	10	11	14
Switzerland	22	22	13	18	32	17	11	9	10	17	12	14
Thailand	24	22	28	24	23	17	21	19	4	7	0	7
Turkey	15	13	1	3	47	41	37	34	0	5	0	2
United Kingdom	17	14	16	12	31	17	18	18	11	27	5	9
United States	17	15	14	11	22	17	26	21	19	26	1	8
Venezuela	29	16	10	8	19	21	3	15	1	8	38	31

Sources of Job-Search Success

Networking is the best source for a new job. Overall, 60% of respondents found their new position through networking (including introductions from DBM), up from 50% the previous year. Even among the Japanese, Koreans, and Germans, who were the least likely to use this medium, at least 40% obtained their new job by networking. People who found their job by networking had a slightly shorter job search (3.2 months) than those who didn't (3.3 months).

Print advertisements were cited by 7% of research participants as a source of their new job, down considerably from 14% in 2000; however, job seekers in Belgium and Australia departed from the norm on this point, with 31% and 25%, respectively, securing positions through this medium.

Similarly, although 25% of respondents in Sweden and 14% of respondents in Korea obtained new work via the Internet, they were the exceptions. In fact, worldwide, the Internet was cited by only 5% of respondents, down from 3% in 2000.

TABLE 9 SOURCE OF NEW JOB

Source	All Respondents	Under 50	50 and Over	Men	Women
Network (Includes DBM Introduction)	60%	58%	59%	61%	56%
Search Firm/Agency	10%	11%	6%	9%	11%
Advertisement	7%	7%	7%	6%	9%
Internet	5%	6%	3%	5%	6%
Mailing/Direct Approach	3%	3%	6%	3%	2%
Other/Unknown	15%	15%	19%	16%	16%

Choices and Circumstances Influence Search Results

Time to reemployment was down slightly, to 3.2 months from 3.3 months in 2000. Overall, 79% of research participants secured a new position within six months. Fifty percent of transitioning individuals attained a new post with salary equal to or better than that of their previous position. As discussed below, career choices—as much as or more than career circumstances (including age and gender)—have a definite impact on people's transition results.

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	Par.
.....	901
.....	906
ıift Expenses.....	910
.....	920
.....	927
.....	937
.....	941
penses	945
rom Home	949
Home Expenses.....	961
.....	968
ırer's Expenses	978
ırson	981
.....	982
es	986
es	987
es.....	990

ayer, whether a corporation, an individual, generally may deduct from gross income the ying on a trade or business that are paid or .[1] However, a deduction is not permitted for e. See ¶ 903. Expenses for property used for st be allocated between the activities.

the origin and character of a claim contro siness expense or a nondeductible personal 285).[2] Business expenses incurred by a cash ess but paid in a year after terminating the ıses in the year paid (Rev. Rul. 67-12).[3]

s (e.g., tax credits and larger Section 17 yers who operate businesses in areas desi ise communities, or renewal communit

her an expense is ordinary and necessary the expense. An expense is necessary if it

of the 2002 Standard Federal Tax Reports.
8526.4460 [3] ¶ 8520.1546

appropriate and helpful to the taxpayer's business. An expense is ordinary if it is one that is common and accepted in the particular business activity.[4]

903. Capital Expenditures. An expense that adds to the value or useful life of property is considered a capital expense (Reg. § 1.263(a)-1).[5] Generally, capital expenses must be deducted by means of depreciation, amortization or depletion. If the expense is not subject to depreciation, amortization or depletion, it is added to the cost basis of the property. Capital expenses include those for buildings, improvements or betterments of a long-term nature, machinery, architect's fees, and costs of defending or perfecting title to property (Reg. § 1.263(a)-2).[6] See Checklist at ¶ 57.

Expenses that keep property in an ordinarily efficient operating condition and do not add to its value or appreciably prolong its useful life are generally deductible as repairs (Reg. § 1.162-4).[7] Repairs include repainting, tuck-pointing,[8] mending leaks, plastering, and conditioning gutters on buildings.[9] However, the costs of installing a new roof [10] and bricking up windows to strengthen a wall [11] are capital expenditures.

Taxpayers may elect to currently deduct certain environmental cleanup costs (Code Sec. 198).[12] This deduction only pertains to the cleanup of hazardous substances located on sites within areas that meet specific requirements (Code Sec. 198(c)(2)(A)).[13] The expenses must have been paid or incurred after August 5, 1997 and before January 1, 2004 (Code Sec. 198(h)). The IRS has provided guidance for taxpayers who want to make this election (Rev. Proc. 98-47).[14] Individuals must include the total amount of the expenses on the line for "other expenses" on Schedule C, E, or F (as appropriate) for Form 1040.

In a situation that did not meet the requirements of Code Sec. 198, the IRS ruled that a corporation that discharged hazardous waste as part of its manufacturing process could claim a current business expense deduction for ongoing soil remediation and groundwater treatment costs because the costs did not produce permanent improvements or otherwise provide significant future benefits. Those expenses did not increase the value of the property after they were made in comparison to its value before it was contaminated and thus were not capital expenditures. However, the cost of constructing groundwater treatment facilities had a useful life substantially beyond the tax year and was required to be capitalized. In addition, because the construction of these facilities constituted production within the uniform capitalization rules, direct costs and a portion of indirect costs were required to be capitalized (Rev. Rul. 94-38).[15]

Legal fees, investment banker fees, and other expenses incurred by the target and acquiring corporations in a *friendly* takeover are capital expenses if they result in a long-term benefit. Expenses incurred in resisting a *hostile* takeover have been held to be currently deductible if the merger never took place.[16] Although the realization of future benefits is important to consider in determining whether an expense must be capitalized, the mere presence of some future benefit does not necessarily warrant capitalization. *Severance payments* made by a taxpayer to its employees in connection with a business down-sizing or an acquisition principally relate to previously rendered service and are therefore currently deductible (Rev. Rul. 94-77).[17]

904. Amortization of Business Start-Up Costs. Taxpayers who pay or incur business start-up costs and who subsequently enter the trade or business can elect to amortize these expenses over a period of not less than 60 months, starting with the month in which the business begins (Code Sec. 195(b)).[18] The election must be made no later than the date (including extensions) for filing the return for the tax year in which the business begins or is acquired (Code Sec. 195(c) and (d)). The

Footnote references are to paragraphs of the 2002 Standard Federal Tax Reports.

[4] ¶ 8520.013 [9] ¶ 8620 [14] ¶ 12,465.30
[5] ¶ 13,701 [10] ¶ 13,701 [15] ¶ 8630.1242
[6] ¶ 13,703 [11] ¶ 13,701 [16] ¶ 8526.4234
[7] ¶ 8620 [12] ¶ 12,460 [17] ¶ 8752.676
[8] ¶ 8620 [13] ¶ 12,460 [18] ¶ 12,370

election is made by completing Part VI of Form 4562 (Depreciation and Amortization) and attaching a separate statement that provides such information as total start-up costs, date each cost was incurred, and a description of what each cost was for.[19] A taxpayer who does not make the election must capitalize the expenses (Code Sec. 195(a)).[20]

To qualify for amortization, the expense must be paid or incurred in connection with (1) investigating the creation or acquisition of an active trade or business, (2) creating an active trade or business, or (3) any activity engaged in for profit and for the production of income before the day on which the active trade or business begins, in anticipation of such activity becoming an active trade or business. In addition, the start-up expense must be a cost that would be allowable as a deduction if it were paid or incurred in connection with an existing active business in the same field as that entered into by the taxpayer (Code Sec. 195(c)).[21]

The term "start-up costs" does not include any amount with respect to which a deduction is allowable under Code Sec. 163(a) (interest on indebtedness), Code Sec. 164 (taxes), or Code Sec. 174 (research and experimental expenditures) (Code Sec. 195(c)).[22]

If the trade or business is disposed of completely by the taxpayer before the end of the 60-month (or longer) period, any remaining deferred expenses may be deductible as a loss under Code Sec. 165 (Code Sec. 195(b)(2)).[23]

Corporate organization fees are discussed at ¶ 243. Costs of organizing a partnership are discussed at ¶ 477 and ¶ 481.

905. Expenses, Interest Deductions and Losses—Related Taxpayers. When the payor and payee are related taxpayers (see ¶ 1717), and the payor is on the accrual method of accounting and the payee is on the cash method, no deduction will be allowed for any expense or interest payable to the payee until the payee includes the payment in income (Code Sec. 267(a)(2)).[24]

A similar rule denies a deduction for a loss (except for a loss from a distribution in corporate liquidation) for property sold or exchanged between related taxpayers. However, upon later sale or exchange of the property by the transferee at a gain, the gain is recognized only to the extent it exceeds the previously disallowed loss (Code Sec. 267(a) and Code Sec. 267(d)).[25]

Compensation Paid

906. Compensation for Personal Service. A taxpayer carrying on a trade or business is entitled to deduct a *reasonable* allowance for salaries or other compensation for personal services. The deduction is allowable for the year in which the salary is paid or incurred (Reg. § 1.162-7).[26] However, publicly held corporations are generally not able to deduct compensation paid to certain covered employees to the extent that such compensation exceeds $1 million per tax year (Code Sec. 162(m); Reg. § 1.162-27).[27] The $1 million limit does not apply to certain "performance based compensation" (Code Sec. 162(m)(4)(C)).[28]

A bonus is deductible if paid for services performed and if, when added to other salaries, it does not exceed reasonable compensation (Reg. § 1.162-9).[29]

Compensation paid to a relative is deductible if the relative performs needed services that would otherwise be performed by an unrelated party. The deduction is limited to the amount that would have been paid to a third party.[30]

Court decisions dealing with the question of excessive salaries, arising almost exclusively with closely held companies, show that each case is decided upon its particular facts. The IRS test is that *reasonable* compensation is the amount that would ordinarily be paid for like services by like enterprises in like circumstances.

Footnote references are to paragraphs of the 2002 Standard Federal Tax Reports.

[19] ¶ 12,371.06 [20] ¶ 12,370 [21] ¶ 12,370 [22] ¶ 12,370 [23] ¶ 12,370 [24] ¶ 14,150 [25] ¶ 14,150 [26] ¶ 8635 [27] ¶ 8500, ¶ 9051B [28] ¶ 8500 [29] ¶ 8641 [30] ¶ 8637.752, 8638.01

Additional factors are personal ability, conditions in the locality.[31] The U.S. C used an "independent-investor" test. reasonable if the company's investors *Spring Corporation*, 99-2 USTC ¶ 50,964).

Officer-stockholders of closely hel salary to their corporation that are mac repayments in the event that the IR However, the officer-stockholders may c legally enforceable and was in existence.

Deferred Compensation. For unfu ployer's deduction for compensation is c attributable to it) is included in the 404(a)(5) and (b)(1)).[34] For the time of excluded from the recipient's gross incon have been includible in the recipient's g 404(b)(2)).[35] This rule also applies to cor (Code Sec. 404(d)).[36]

A plan is unfunded if it consists of at some time in the future. If the em obligation, the plan is unfunded if the e earnings and if the reserve remains sol payor, subject to the claims of creditors.[37]

A plan is presumed to defer compen the 15th day of the third calendar month which the related services are rendered. employer establishes that it was admin avoid the deferral of compensation beyo the 2½-month period are not treated as by an accrual-method employer in the Reg. § 1.404(b)-1T, Q&A-2).[38]

For a discussion of rules governing for funded deferred compensation plans, s

907. Golden Parachute Contracts. A whereby it agrees to pay an empl usual compensation in the event that changes is barred from taking a deductio to a "disqualified individual." The disqu of 20% of the excess parachute payment i 4999).[39] The tax is reported on Line 5 individual is an employee or independent for any corporation and is an officer, sh personal service corporation (Code Sec. 28

Parachute Payment Defined. A pa nature of compensation to a disqualified i on a change in the ownership or effective portion of the corporation's assets and contingent payments equals or exceeds Any payment in the nature of compensati any securities law or regulations is also co compensation for personal services to be for personal services actually rendered be

Footnote references are to paragraphs of

[31] ¶ 8637.744, 8637.021 [32] ¶ 8637.227, 8367.021 [33] ¶ 8637.022, 8640.021 [34] ¶ 18,330 [35] ¶ 18,330 [36] ¶ 18,330 [37] ¶ 18,352.027

Information Technology

2992

OTTER TAIL RAILROAD

RMI Transportation System

This operating cost is based on 2,179,940 carloads a year and outsourcing RMI TMS System at $182,800 per month or $2,193,600 annually plus the D/BCS. The D/BCS is the backup system for TMS $13,530 per month or $162,360 annually. The total TMS annual cost is $2,355,960.

Frame Relay:

T-1 Access:	$424
64k Port:	286
32k PVC:	59
16k PVC-backup:	31
RMI Bandwidth Charge	
128k	200
Total	$1,000 per month or $12,000 annually

Summary:

TMS	$2,193,600
D/BCS	162,360
Subtotal	$2,355,960
Frame Relay	12,000
Total	$2,367,960

RMI Standard, Published Pricing for
RailConnect.com Services as Applied to the Forging Ahead Assc.

TMS & RMS Monthly Carloads	Monthly TMS Carlaods	TMS Per Car Fees	TMS Monthly Cost	Monthly RMS Settlements	RMS Per Settlement Fee	RMS Monthly Cost	D/BCS Carloads	D/BCS Per Car	D/BCS Monthly Cost
1st 1,000	1,000	$1.60	$1,600.00	1,000	$1.50	$1,500.00		$0.10	$0.00
Next 4,000	4,000	$1.55	$6,200.00	4,000	$1.35	$5,400.00		$0.10	$0.00
Next 5,000	5,000	$1.50	$7,500.00	5,000	$1.20	$6,000.00		$0.10	$0.00
Next 10,000	10,000	$1.45	$14,500.00	10,000	$1.10	$11,000.00		$0.10	$0.00
Next 20,000	20,000	$1.40	$28,000.00	20,000	$1.00	$20,000.00		$0.10	$0.00
Next 20,000	20,000	$1.35	$27,000.00	20,000	$0.90	$18,000.00		$0.10	$0.00
Next 20,000	20,000	$1.30	$26,000.00	20,000	$0.80	$16,000.00		$0.10	$0.00
Next 20,000	20,000	$1.25	$25,000.00	20,000	$0.70	$14,000.00		$0.10	$0.00
Next 20,000	20,000	$1.20	$24,000.00	20,000	$0.65	$13,000.00		$0.10	$0.00
Next 20,000	20,000	$1.15	$23,000.00	20,000	$0.60	$12,000.00		$0.10	$0.00
Next 20,000	20,000	$1.10	$22,000.00	20,000	$0.55	$11,000.00			
Next 20,000	20,000	$1.05	$21,000.00	20,000	$0.50	$10,000.00			
Next 20,000	1,662	$1.00	$1,662.00	357	$0.45	$160.65			
Total Monthly	**181,662**		**$182,800.00**	**180,357**		**$116,900.00**			**$0.00**

e-BOL Services Monthly BOLs	Monthly BOLs Transmitted	e-bol per 404 fee	e-bol Monthly Cost
1st 500 BOLs		$0.75	$0.00
Next 500 BOLs		$0.70	$0.00
Next 1,000 BOLs		$0.60	$0.00
Next 3,000 BOLs		$0.50	$0.00
Over 5,000 BOLs		$0.40	$0.00
Total Monthly			**$0.00**

Car Hire Pay Monthly Receipts	Monthly CHP Receipt fee	CHP Per Receipt Fee	CHP Monthly Cost
Processing charge per foreign/private car with $200/mo-Minimum			
1st 500 Receipts	500	$1.10	$550.00
Next 500 Receipts	500	$0.72	$360.00
Next 1000 Receipts	1,000	$0.39	$390.00
Over 2000 Receipts	64,271	$0.17	$10,926.07
Reclaim/ TOL (ALL)		$0.33	$0.00
Report Page (ALL)		$0.17	$0.00
			$0.00
Total	**66,271**		**$12,226.07**

Car Hire Rec Monthly Receipts	Monthly CHR Receipts	CHR Per Receipt Fee	CHR Monthly Cost
Processing/sys car($200/mo Min) Intermodal unit($400/mo min)			
1st 500 cars/units	500	$2.20	$1,100.00
Next 500 cars/units	500	$1.32	$660.00
Next 1000 cars/units	1,000	$0.72	$720.00
Over 2000 cars/units	16,087	$0.35	$5,630.45
Inactive cars/units on file		$0.56	$0.00
Charge per claim to Print		$0.39	$0.00
To Add car/unit		$0.55	$0.00
Total	**18,087**		**$8,110.45**

Total Monthly Fees for RailConnect.com	
TMS	$182,800.00
RMS	$116,900.00
D/BCS	$0.00
e-BOL	$0.00
CHP	$12,226.07
CHR	$8,110.45
Total	**$320,036.52**

Wednesday, May 28, 2003

RMI WORK SHEET

1. TMS total carloads:

Coal Carloads	1,566,079 Annually	130,507 Monthly
Overhead Carloads	613,861 Annually	51,155 Monthly
Total	2,179,940 Annually	181,662 Monthly

2. RMS total settlements

Coal Carloads Settlements 1,566,079 – 15,661 Local Traffic 1% of Total	1,550,418 Annually	129,202 Monthly
Overhead Settlements Carloads	613,861 Annually	51,155 Monthly
Total	2,164,179 Annually	180,357 Monthly

3. Car Hire Payable

Overhead Carloads	613,861 Annually	51,155 Monthly
Overhead Empties	181,392 Annually	15,116 Monthly
Total	795,253 Annually	66,271 Monthly

4. Car Hire Recieveables

OTRR owned cars 219,234 – 2,192 Local Traffic 1 %	217,042 Annually	18,087 Monthly

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rmi
railcar management

RailConnect.com

The Internet Portal

To the Short Line and Regional Railroad Industry

A White Paper

September, 2000

2999

Railcar Management, Inc.

Confidential and Proprietary Business Information

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Introduction

One of the railroad industry's greatest challenges today is implementing an e-commerce strategy. Critical to the success of any e-commerce strategy in the railroad industry is the seamless integration of short line and regional railroad operations and information. To help respond to this challenge, Railcar Management, Inc. (RMI) has been repositioning its core products and services, and developing new web-based services that facilitate participation in e-commerce initiatives. Under the umbrella of **RailConnect.com**, RMI now offers an integrated suite of applications to short line and regional railroads that provides them with a high level of sophisticated e-commerce capabilities, and high-speed communications with Class I railroads, at a cost that is affordable for even the smallest railroads.

From its beginnings as a processor of car hire settlements for short line railroads and private railcar investors in 1979, RMI has evolved to become the leading provider of transportation, revenue, and equipment management systems and services to the short line and regional railroad industry in North America. Over 75% of the short line and regional railroads in the U.S., Canada, and Mexico utilize one or more of RMI's services. RMI continues to expand its reach globally with software implementations now in Argentina and the Ivory Coast, and many other active initiatives in Africa, South America, Europe, and Australia.

For the past two years, RMI has focused on repositioning itself as a Business Services Provider (BSP). During this time, RMI has invested heavily in the data center, communications, and software infrastructure necessary to host and support its railroad customers' core applications remotely. RMI is actively converting its largest customers to this platform, and is implementing a strategy to migrate 80% of its client base to the BSP platform by January, 2002. Central to this strategy has been the use of the Internet as the primary interface to these services, and as the development platform for all new applications.

RailConnect.com is the one-stop web portal for access to applications and information for railroads and rail shippers. Through **RailConnect.com**, short line and regional railroads have access to applications for Transportation Management, Revenue Management, Executive Information, Equipment Management, Car Repair Billing and more, and rail shippers have access to railcar tracking and billing information. **RailConnect.com** provides a common portal through which short line and regional railroads can communicate with the rest of the industry. Instead of implementing connectivity with over 500 separate entities, as has been the case historically, the Class I's now have one common interface with their short line and regional railroad partners.

RAILCONNECT.COM – FUNCTIONS AND FEATURES

RailConnect.com consists of a suite of integrated applications that enable short line and regional railroads to manage their business on a day-to-day basis, provide a higher level of service to their customers, and better communicate with other railroads. The applications cover all of the fundamental requirements of short line railroad operations including transportation management, revenue accounting, equipment management, and executive information systems. Additionally, RailConnect.com provides customer service applications for railcar billing and shipment tracking.

The following is a summary of the applications provided under the RailConnect.com umbrella:

Transportation Management Services

IRCS/Connect – Integrated system for managing day-to-day rail operations. Includes modules for Yard and Inventory Control, Waybilling, Train Operations, Switching Settlements, Demurrage, EDI Consists, Waybills, BOL's and Blocking Instructions, Work Orders, Switch Instructions, and many other features.

Revenue Management Services

ISS/Connect – Integrated revenue management system. Includes all required functionality for participation in ISS including Rate Management, Auto-Rating, and generation of all required ISS transactions including Opinions, Concurrences and Fund Transfers. Also includes modules for Freight Billing, Trial Balance, and Cash Application.

Equipment Management Services

Car Hire Payable service provides full participation in the industry car hire settlement process including generation of Appendix H Car Hire Reports, TOL processing, LCS processing, and support for a wide variety of special reclaims.

Car Hire Receivable service provides car owners and lessees with a comprehensive audit of car earnings. Claims for shortages are automatically generated, and RMI can optionally work claims and provide drafting for car hire earnings.

Car Repair Billing service provides billing for repairs performed on foreign cars. Utilizes AAR standard Price Master and also supports contract billing.

Information Management Services

eReports – Provides railroad managers with the ability to generate reports analyzing various aspects of railroad performance including traffic statistics, earnings and expense summaries, operational statistics, and budget analysis. Reports can be accessed from any location via the Internet, or can be requested remotely through a Palm Pilot.

Freight Management Services

eBOL – Internet Bill of Lading service provides rail shippers with a comprehensive bill of lading entry system that will produce an industry standard EDI BILL of Lading (404), and transmit it to any railroad. System is pattern-based for ease of data entry, and provides automatic e-mail acknowledgements to the shipper and to other parties such as the consignee.

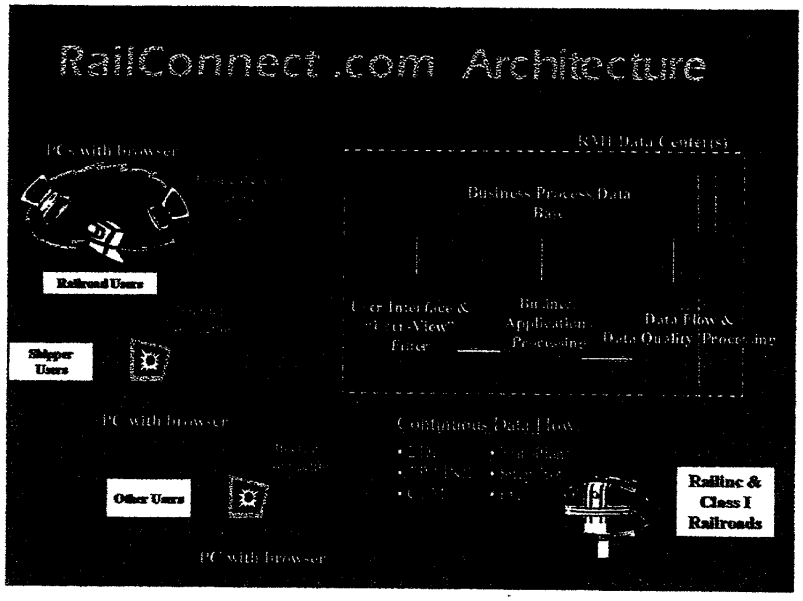
eRailtrace – Provides Internet tracing of shipments while they are on the short line. Current railcar sighting information can be easily accessed with an Internet browser, or from a Palm Pilot.

Freight Monitoring System (FMS) provides origin to destination tracking for both inbound and outbound rail shipments. Pro-active reporting provides shippers with ETA's, transit delays, and commodity information for inventory management.

RAILCONNECT.COM – ARCHITECTURE AND INTERFACES

RailConnect.com is based on a network-centric architecture. All of the actual processing and database management occurs in a central data center operated by RMI. Connectivity is provided to all users, short lines, Class I's, and shippers through multiple access paths.

All of the applications provided through the RailConnect.com portal can be accessed via the Internet. However, high volume users running mission critical applications may connect to RailConnect.com with a frame-relay or other dedicated circuit. Data exchange with other railroads, including Class I's, is enabled via a high-speed dedicated circuit to RAILINC, or via a dedicated circuit to the Class I railroad.



RailConnect.com Architecture – Benefits

Short Line railroads benefit by having access to robust, comprehensive, and integrated solutions for railroad management, without the need to support local data centers, software development, or software maintenance. The RMI data centers that host RailConnect.com applications provide nearly 100% availability (excluding non-scheduled downtime) through redundant hardware and communications.

Class I railroads benefit by having a single connection point for exchange of information with short line and regional carriers. With RailConnect.com, the complexity of communicating with multiple interchange partners, is reduced to a simple, reliable, single point of contact.

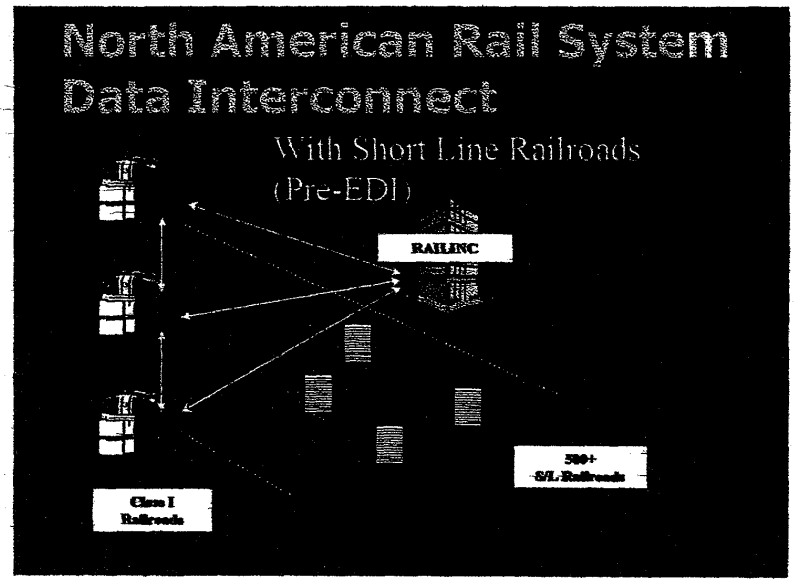
Shippers that originate or terminate freight on short line and regional railroads benefit by having communication with short line and regional railroads that is the equivalent of what they have with Class I railroads. Bills of Lading can easily be generated via the Internet, and pro-active shipment monitoring can now be provided by short line railroads via the Internet, or through a Palm Pilot PDA. With RailConnect.com, not only are short line and regional railroad no longer "black holes", but they are in fact a source of information that is as timely and accurate as what is provided by Class I railroads.

NORTH AMERICAN RAIL SYSTEM DATA INTERCONNECT

The challenge of exchanging information between Class I railroads and their short line and regional interchange partners has evolved over the years. And while the process has improved significantly through the implementation of EDI, there are still problems.

The following slides provide an overview of the evolution of Class I and short line data interchange:

Before Short Lines implemented EDI

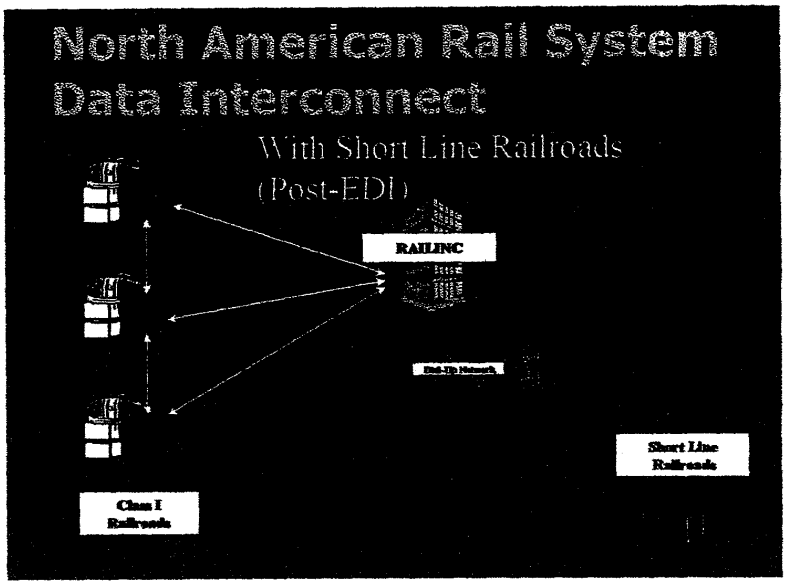


In the mid-1980's, as short line railroads proliferated, the Class I railroads were already benefiting from the efficiencies of EDI interchange among themselves. Unfortunately, few, if any short line railroads had adopted the EDI standards at this time. The exchange of information between Class I railroads and short lines was accomplished through the manual exchange of paper documents at the interchange points.

In fact, at this point in time, very few short line railroads had automated systems of any kind. Those systems that were in place at short lines were not very sophisticated, and did not support the EDI standards that had been adopted by the Class I's. Worse yet, short line railroads had no ability to report car movements to TRAIN II, creating "black holes" in the industry.

North American Rail System Data Interconnect

After Short Lines implemented EDI

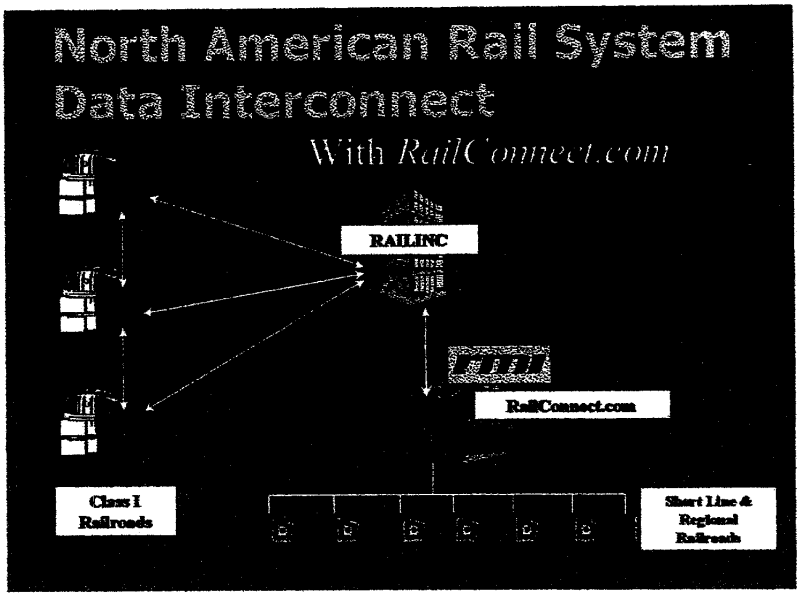


By the late 1980's, many short line railroads began participating in EDI interchange with their Class I connections. This process was facilitated primarily by the introduction by RMI of the "Integrated Railroad Control System" (IRCS). IRCS was a PC-based package that enabled short line railroads to participate in EDI, and at the same time provided the short lines with a tool for managing their railroads. IRCS became the most widely used package in the short line railroad industry for EDI and related capabilities with over 350 implementations.

IRCS has greatly enhanced short line communications capabilities. EDI between short lines and Class I's is now widespread, and the "black hole" problem has improved greatly. But there are still shortcomings with the process. Most short lines are using PC-based dial-up communications to exchange EDI and report to TRAIN II. This process is not always timely or consistent. And because the cost of entry to using this type of system is still cost prohibitive for the very small carriers, many short lines remain totally manual today.

North American Rail System Data Interconnect

Current Technology with RailConnect.com



Many short line and regional railroads have now begun to take advantage of the power, flexibility, and high-speed communications offered by RailConnect.com. With RailConnect.com, all of the actual processing and database management occurs in RMI's data centers. Connectivity is provided to the railroad users through the Internet, or via dedicated frame-relay circuits. End-users simply logon to RailConnect.com and use the applications that pertain to their job.

Data exchange with other railroads, including Class I's, is enabled via a high-speed dedicated circuit to RAILINC, or directly with a Class I railroad. Perhaps more importantly, the end-users never worry about communications. EDI interchanges, TRAIN II reporting, and other exchanges of information such as inventory snapshots, occur continually in the background as data is captured from the field. This results in more timely and accurate reporting from short line railroads.

RailConnect.com also offers short line railroads the ability to exchange information with their shippers. Internet Bill of Lading and Shipment Monitoring are two primary examples of the types of high-tech service offerings that short lines are now offering to their customers through RailConnect.com.

Conclusion, Benefits and the Future

With the capabilities made available through RailConnect.com, short line and regional railroads are entering a new era of competency. Never before have so many railroads had access to the types of systems and data communications provided by RailConnect.com. And because RailConnect.com services are provided on a transactional fee basis, the cost of entry is low for even the smaller short lines.

Class I railroads benefit from having data exchange with short line and regional connections that is more in line with their Class I counterparts. The ability to implement new initiatives such as Interline Service Management, that require the participation of all railroads, is greatly enhanced as short lines adopt the technology offered through RailConnect.com. Rail Shippers benefit as the "black holes" continue to disappear from the railroad industry, and short line and regional railroads offer information that is better integrated with the Class I carriers.

E-commerce initiatives such as e-BOL and e-Railtrace make it possible for short lines to lower their costs while improving service to their customers. This in turn increases the profitability of the railroads, makes rail a more attractive option for shippers, and improves the visibility of the entire rail industry, benefiting short lines, Class I's, and rail shippers alike.

RMI continues to develop and integrate new technologies with the applications found in RailConnect.com today. And RMI continues to develop new applications to add to the suite of products and services available under the RailConnect.com umbrella.

In use today is access to many RailConnect.com applications via Personal Digital Assistants such as Palm Pilots. Car Tracing and Management Reporting are just two of the mobile computing (m-commerce) applications available to users of RailConnect.com. The following are a few of the development efforts that are currently underway:

On-Board Remote Computing.
Train and car movement data captured in the field by train crews.
GPS tracking of locomotives and trains.

Locomotive Maintenance Management.
Pro-active management of locomotive service requirements.

Crew Calling.
Crew calls based on training, seniority, and union rules.

Enhanced Shipment Management.
Pro-active rating and payment advice for rail shipments.
Inventory management.

RMI continues to build on current capabilities, and with the direction and guidance of its users and partners, will continue to develop the types of applications that will enhance the overall service levels of rail transportation in North America.

Appendix

RailConnect.com – Product Descriptions

TRANSPORTATION MANAGEMENT SERVICES

IRCS/Connect - General System Features

IRCS/Connect was designed with operating simplicity in mind. Even inexperienced personnel can quickly learn to use the system efficiently. All car and train movements are edited to insure logical movement across the railroad. A "Point and Shoot" methodology is utilized to select data for processing, protecting against transposed car numbers and other data entry errors. IRCS/Connect generates car movements, train history, and waybilling information, with a minimal amount of actual data entry.

The IRCS/Connect database was designed around the billing information. Each piece of equipment on the railroad, railroad cars, trailers and containers, empty or loaded, is logically attached to its respective waybill. Master files, set up once, are used to supply repetitive information, including waybill generation, during daily processing. These masters are also used to validate data entered, and enable the user to customize the system for a particular railroad.

IRCS/Connect provides sophisticated EDI management for interchange of consists and waybills with other railroads, and for receiving bills of lading from customers. All communications jobs, including EDI and TRAIN II reporting, are setup to run continuously in the background.

IRCS/Connect – Primary Modules

Yard & Inventory Control

Train Operations

Intermodal Operations

Waybill Control

Switching/Miscellaneous Billing

Demurrage Billing

Management Reporting

REVENUE MANAGEMENT SERVICES

ISS/Connect – General System Features

ISS/Connect is a full-function revenue management system that has been certified by the AAR for Interline Settlement System (ISS) processing. This certification allows railroads using ISS/Connect to participate in the Interline Settlement System. ISS/Connect provides complex rate management, EDI management, freight billing, support for industry reference files, revenue protection, and additional functionality.

The goal of ISS in general, and ISS/Connect specifically, is to process waybills through the settlement process with as little manual intervention as possible. A major aspect of this goal is accomplished with the "Auto Rating" capabilities contained in ISS/Connect. With the availability of Industry Reference Files and REN Shipment Conditions, the ISS/Connect system is able to auto-rate greater than 90% of all waybills processed.

ISS/Connect provides sophisticated EDI management for handling ISS transactions such as Opinions and Concurrences, Funds Transfers, and EDI Freight Bills to customers. All communications jobs are setup to run continuously in the background.

ISS/Connect – Primary Modules

Rate Database Management

Auto-Rating of all Traffic Types

Automatic Generation of Opinions, Concurrences, and Challenges

Freight Billing

Interline Trial Balance

Cash Application

Management Reporting

EQUIPMENT MANAGEMENT SERVICES

Car Hire Payable

This service fully automates payables processing. The system calculates time and miles traveled by foreign cars online each month, determines car rates and car type, and produces the industry standard car hire reports. The system also provides prompt and accurate processing of reclaims and car hire transfers, including TOL's. The system is in full compliance with current industry requirements for LCS processing, and also provides compliance with AAR and state tax commission regulations.

The system produces various management reports, and reports car hire to the AAR Data Exchange automatically.

Car Hire Receivable

The Car Hire Receivable service provides car owners and lessees with a comprehensive audit of car earnings. Claims for shortages are automatically generated, and RMI can optionally work claims and provide drafting for car hire earnings. The system separates car earnings by designated owner groups, issues remittance and settlement summaries, flags non-moving cars and missing junctions, and helps keeps track of assets with on-line access to car movement data.

The system provides numerous management reports, and is in full compliance with AAR standards for Car Hire reporting and auditing.

Car Repair Billing – eRepairs

eRepairs provides everything required to manage the car repair billing process, without the hassle of software maintenance or quarterly updates. From any PC with a browser and a connection to an Internet Service Provider, users can begin billing cars immediately.

The entry screens are designed to make data entry quick and error free. Extensive editing is built into the system to ensure proper job codes, condition codes, and why made codes. Billing repair cards, group billable items, and summaries may be prepared using the AAR Pricemaster or contract rates. Even wheels are priced automatically. And since the system is Internet-based, estimates and invoices can easily be transmitted to car owners via e-mail.

The current AAR Pricemaster as well as the Pricemaster for the previous three quarters are always available online. Detailed management reports that provide a summary of repairs by owner, job code, location, and other criteria, are easily viewed through the browser, printed, or exported to Excel at the click of a mouse. eRepairs supports the ability to enter repairs for multiple railroads within a holding company. Reports can then be produced for individual railroads or for multiple roads.

INFORMATION MANAGEMENT SERVICES

eReports provides access to management reports from anywhere; on the road in a hotel, at home, at a customer's office, or anywhere with Internet access through a browser or Palm Pilot. eReports provides easy-to-use Internet access to the critical information in the Revenue Management and Transportation Management databases.

Report results are displayed in a browser where the user may choose to search for specific data items, jump to a specific page in the report, "drill-down" for more detailed information, or print a page or pages on a local printer. And with the click of a mouse, report data is easily exported to an excel spreadsheet, or to one of several other file formats, for further analysis.

eReports provides a menu of pre-defined reports that analyze traffic statistics, marketing and revenue summaries, and operational information. A budgeting feature allows the user to establish budget numbers for carloads and revenue by customer and budget period. The system then produces performance reports that analyze actual numbers versus the budget.

With eReports, reports can be requested for a single railroad, or, for Short Line Holding Companies, eReports will summarize data across multiple properties. System security is designed to permit access to users on a per railroad, as well as a per report basis. There is no software distribution or setup required to use eReports

FREIGHT MANAGEMENT SERVICES

Ebol – Internet Bill of Lading

The Internet Bill of Lading service provides rail and intermodal shippers with the ability to enter and electronically transmit bills of lading to the railroads. The system is Internet-based, and utilizes industry standard EDI transaction sets, (404, 997), so that the shipper can forward a Bill of Lading to any railroad using one interface.

eBOL allows shippers to maintain a database of Repetitive Billing Patterns, and variable fields are displayed in a manner that is designed to facilitate rapid entry. The system supports edit checks against Industry Reference Files. When a bill is entered, it is automatically routed to the appropriate railroad. If an acknowledgement is received from the railroad, the system has the ability to distribute it back to the shipper via an e-mail message. The system will also forward a copy of the bill to the consignee or other third parties via e-mail.

For railroads using IRCS/Connect, a bill of lading received through eBOL will automatically cause an empty car to be loaded and billed.

eRailtrace

With eRailtrace, short lines can offer their customers the type of Internet tracing tool that shippers have become accustomed to with companies like Federal Express and UPS. eRailtrace uses current railcar sighting information that is available from all railroads that submit car movement data to RMI. Because RMI processes car hire data for over 290 short line and regional railroads, and over 350 railroads use RMI software for capturing car movement information, eRailtrace is the most comprehensive source for short line car movement data in the industry.

For short line railroad operators, eRailtrace provides an excellent customer service tool. Rail shippers can use eRailtrace to receive current information about the status of their shipments traveling in the United States, Canada, and Mexico. Car owners can also use eRailtrace to manage their assets.

eRailTrace is available at any time of the day or night from any location. All that is needed is a PC with a browser or a Palm Pilot, and access to the Internet.

FREIGHT MANAGEMENT SERVICES

Freight Monitoring System

The RMI Freight Monitoring System is a comprehensive, pro-active rail shipment tracking system. The system can track railcars contained in permanently assigned fleets, or any rail shipment initiated by a designated shipper or other pre-determined parameters. Both inbound and outbound rail shipments can be monitored utilizing car movement information from the following sources:

1. CLM data collected directly from the Class I Railroads.
2. TRAIN II data collected from RAILINC.
3. Car Movement data collected from users of RMI software.
4. Car Movement data collected from the RMI Car Accounting System.

Daily Reports:

RMI works with the users to establish a set of standard daily reports that are used for pro-active shipment monitoring. These reports include, but are not be limited to the following:

1. Current Car Sightings.
   Loads in route by origin and destination.
   Loads in route by current location and reporting road.

2. Delayed Cars.
   Cars in-transit not moving in "x" days (or hours).
   Cars released but not moving in "x" days.
   Cars Bad Ordered.

3. Shipments out-of-route.
   Comparison of current car movements to the actual route contained in the waybill to monitor out-of-route shipments.

4. Projected ETA's based on historical movement data.
   Used to pro-actively monitor shipments that have fallen behind historical transit times, and to predict when both loads and empties will be available at their destination.

5. Projected ETA's based on schedules.
   Used to pro-actively monitor shipments that have fallen behind pre-determined schedules, and to measure railroad performance.

6. Customer and Commodity Reporting.
   Using information contained in the waybill, reports are generated to monitor shipments by customer and commodity.

Freight Monitoring System

Transit Analysis:

In addition to daily sighting reports, the Freight Monitoring system generates historical transit analysis reports that will analyze the following:

1. **Loaded transit times between O/D pairs, including current period and year-to-date averages.**
2. **Average transit times by railroad.**
3. **Comparison of transit times by route.**

Interactive Access to Information:

Users of the service have access to the information in a variety of manners.

1. **All reports and current shipment sighting information can be accessed via the Internet with a PC and a browser or a Palm Pilot PDA.**

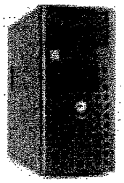
2. **Reports can be sent at pre-determined times via auto-fax or e-mail.**

3. **Reports can be downloaded to a PC for local printing.**

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SYSTEM DETAILS



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As low as **$88/mo.**[1]
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Catalog Number	Description	Product Code	SKU
PowerEdge 600SC:	Intel® Pentium®4 Processor at 2.4GHz, 533 FSB, includes Floppy	624SC5	[221-2376]
Memory:	256MB DDR, 200MHz, for the Price of 128MB (mail-in rebate not included)	256DYM	[461-9892]
Keyboard:	Standard Windows Keyboard, Gray	S	[310-1676]
Monitor:	15 in (13.8 in VIS) Color Monitor, Midnight Gray, E551	15MON	[320-0960]
First Hard Drive:	40GB 7.2K RPM IDE Hard Drive	40GB	[340-2243]
Hard Drive Controller:	IDE RAID Controller, ATA100 / 4 Channel	IDE4CH	[340-5918]
Operating System:	Windows 2000 Server with 5 Client Licenses, 4GB Utility Partition	W2KSVR4	[420-0236]
Mouse:	Microsoft System Mouse, Gray	M	[310-1790]
1st Network Adapter:	On Board Network Adapter	OB	[430-0488]
Modem:	56K Internal Modem	MO56	[313-1338]
Tape Backup Unit:	PV100T, IDE, TR5, 10GB, Internal TBU	TR5TNCI	[340-2617]
CD ROM/DVD ROM:	48X IDE Internal CD ROM Drive	CD48X	[313-2602]
Documentation:	Electronic Documentation, PowerEdge 600SC	EDOCS	[310-0438]
Second Hard Drive:	120GB 7.2K RPM IDE Additional Hard Drive	120GBAD	[340-3978]
Tape Backup Software:	CA Arcserve Server	PSCASER	[420-2838]
Hard Drive Configurations:	C2, 533Mhz FSB, Add-In Raid Card,Raid 0 with a 2 Hard Drive Configuration	IAR02H5	[340-8430]
Hardware Support Services:	3Yr Same Day 4Hr Response Parts + Onsite Labor (M-F 8am-6pm)	W3Y5X10	[950-3050] [950-3052]
Installation:	No Installation	NOINSTL	[900-9997]

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Mail-In Rebate Offer:	$100 Mail-In Rebate #40611! Redeem after system purchase at www.dell.com	REBATE	[462-0167]
Security Software - Shipped separately:	Symantec Antivirus SMB 8.0 (5 User) File Svr/desktop client	SYMANTF	[A0059148]

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Automated Account Line	800-663-3355
Customer Care	877-577-3355

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Written Correspondence
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Business Systems Division
One Dell Way
Round Rock TX 78768

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[1] Monthly payment based on 48-month 60 Days Same-Cash-QuickLoan with 46 payments at 9.99% interest rate. Your interest rate and monthly payment may be same or higher, depending on your creditworthiness. If you do not pay the balance within 60 days of the QuickLoan Commencement Date (which is five days after product ships), interest will accrue during those first 60 days and a documentation fee may apply. OFFER VARIES BY CREDITWORTHINESS OF CUSTOMER AS DETERMINED BY LENDER. Minimum transaction size of $500 required. Maximum aggregate financed amount for the paperless acceptance QuickLoan not to exceed $25,000. If your order exceeds $25K, a Dell Financial Services rep will contact you to process your documentation. Taxes, fees and shipping charges are extra and may vary. Not valid on past orders or financing. QuickLoan arranged by CIT Bank to Small Business customers with approved credit.

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OTTER TAIL RAILROAD

Alstom Dispatching System

PTM Systems which is a PC based system that includes the following:

- Hardware for the servers and workstations.
- Hardware for communications to field.
- Design, implement and test of the application
- Installation and test on sit
- This application would have the standard PTM Reporting Functionality.

Alstom's estimated costs for a 6-7 dispatchers system with hot standby servers is $750,000. The attached system described by Alstom should provide sufficient functionality to handle all of OTRR's needs. It is reasonable to estimate that the base cost of the Alstom's PC based dispatcher's system to be $250,000 with an additional $80,000 for each dispatcher's station. OTRR will have three dispatcher stations that will accommodate three shifts per day, seven days per week. Therefore, the cost for a OTRR's system with three dispatcher stations would be $250,000 for the base plus $240,000 for three stations totaling $490,000. We have provided $490,000 to cover the cost of a dispatching system

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OTTER TAIL RAILROAD

AEI Scanner System

The AEI Scanners are designed to perform in the winter conditions that OTRR will experience. It also includes all the software and hardware required to run the system and will interface with the RMI Transportation System (TMS). The total cost of this system is listed below:

Capital Cost	8 Scanners at Major Interchange Points ($32,568.15 X 8)	$260,545.20
	Site Survey (8 X $800.00)	6,400.00
	Front End Processor ($10,700/8) = $1,337.50	10,700.00
Total cost for 8 Scanners		$277,645.20
Unit Cost ($32,568.15 + $800 + $1,337.50)		$ 34,705.65
Annual Expense	8 Scanners Software Maintenance ($3,000 X 8 X .15)	$ 3,600.00

An Employee-Owned Company

Transportation Technology Group

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JOE KRUZICH

AEI READER SYSTEM - SUMMARY

Page 1

Quotation No. BUDGETARY 401-1384B

Date 11/7/2000

ITEM NO.	QTY.	PART NUMBER	EQUIPMENT DESCRIPTION	UNIT PRICE	EXTEND PRICE
			PRICING SUMMARY		
1	6	SLU	SINGLE TRACK AEI - MAX. 60MPH TURNKEY INSTALLATION & COMMISSIONING	32,568.15	195,408.90
2	6		INSTALLATION & CONSTRUCTION	**CUSTOMER TO SUPPLY**	
2A	1	LOT	MILEAGE & PER DIEM (ESTIMATED)	**CUSTOMER TO SUPPLY**	
3	6	LOT	AEI OPTIMIZATION & REMOTE CHECKOUT	2,500.00	15,000.00
3A	1	LOT	TRAVEL & PER DIEM (ESTIMATED)	7,500.00	7,500.00
4	1	FEP-102	FRONT END PROCESSOR RECEIVES DATA FROM FIELD SITES	10,700.00	10,700.00
			TOTAL		**$228,608.90**
			OPTIONAL SERVICES:		
5	6	LOT	SITE SURVEYS (RECOMMENDED)	800.00	4,800.00
5A	1	LOT	TRAVEL & PER DIEM (ESTIMATED)	3,000.00	3,000.00
			TOTAL (OPTIONS)		**$7,800.00**

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SINGLE TRACK AEI SITE - 60 MPH MAX

BUDGETARY

Quotation No. 401-1384B

Date 11/7/2000

ITEM NO.	QTY.	PART NUMBER	EQUIPMENT DESCRIPTION	UNIT PRICE	EXTEND PRICE
1	1	50-0902	ZERO SPEED TRANSDUCER		
2	1	TDA105	TRANSDUCER INTERFACE BOARD		
3	2	927965900	PARAPANEL ANTENNA W/ CONDUIT ASS.		
4	1	4X6	ALUMINUM HUT W/ DROP DOWN LEGS		
			W/ DROP DOWN LEGS		
			W/ FOLLOWING EQUIPMENT INSTALLED		
5	1	913I/801A	LOOP PRESENCE DETECTOR AMP		
6	1	AR2200	RF UNIT - CONNECTORIZED		
7	1	APU102	AUXILIARY PROCESSOR UNIT		
	1		SOFTWARE LICENSE & 1ST YR S/W MNTCE		
8	1	AR220020	RF-READER CABLE		
9	4	JN2134	4' N-N RF CABLE		
10	1	B543A064	GROUND PLATE W/INSULATING BRACKETS		
11	2	1965-35	COAX SURGE PROTECTORS		
12	1	BPE8WSC	SURGEBUSTER ENCLOSURE		
13	2	TEL50B	DIG. WHEEL SENSOR SURGE CARD		
14	1	TEL185B	ANALOG PH. LINE SURGE CARD		
15	1	NRS24/30	BATTERY CHARGER		
16	1	4-3VB11	24VDC BATTERY SET - 100AH		
17	2	MA25G	MAST ASSEMBLY W/J-BOX		
18	2	1965-30	COAX SURGE PROTECTORS		
19	1	LOT	HARDWARE CONSISTING OF:		
20	6	GR588	GROUND ROD, COPPER COVERED 5/8" x 8'		
21	150	FEET	WIRE, BARE #6 AWG COPPER		
22	1	SB02SC66001	SC MOLD		
23	1	SB03GW116	5/16 TOWER MOLD (25G)		
24	6	SBNT1161G	ONE SHOTS - 3 WIRE		
25	4	SB25	WELD METAL		
26	1	DS5	5 LB COMPOUND, DUXSEAL		
27	1	3M33PLUS	TAPE PLASTIC BLACK ADHESIVE		
28	6	321598	TERMINAL RING 1/4" STUD 14/16		
29	100	LDF4-50A	1/2" RIGID HELIAX		
30	2	L4NF	FEMALE LDF4 CONNECTOR		
31	2	L4NM	MALE LDF4 CONNECTOR		
32	50	2P18	SENSOR LEAD IN CABLE		
33	50	1P16	LOOP LEAD IN CABLE		
34	150	SBS8TINSUL	LOOP DETECTOR CABLING		
35	1	LOT	UNDERGROUND CONSTRUCTION MATERIAL:		
	100	FEET	3" PVC PIPE 10' LENGTHS		
	12	LOT	3" STANDARD SWEEP ELBOWS - 90 DEG.		
	4	LOT	3" STANDARD SWEEP ELBOWS - 45 DEG.		
	12		3" COUPLINGS		
	1	QT	PVC GLUE		
	25	FEET	3/4" CARFLEX FLEXIBLE CONDUIT		
36	1	LOT	DOCUMENTATION & IN HOUSE BUILDUP		
			TOTAL		**$32,568.15**

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Page 3

AEI DATA RECEIVER - BASIC CONFIGURATION

BUDGETARY

Quotation No. **401-1384B**

Date **11/7/2000**

ITEM NO.	QTY.	PART NUMBER	EQUIPMENT DESCRIPTION	UNIT PRICE	EXTEND PRICE
	1	FEP-102	**AEI FRONT END PROCESSOR:**		
1			FRONT-END PROCESSOR UNIT		
	1		WITH MIN. 64MB RAM, 6 GB HD, CD ROM,		
			NT WORKSTATION, 17" MONITOR, ETC.		
2	1	70001362	DIGI ACCELEPORT 8R (PCI)		
3	2		EXTERNAL HIGH SPEED MODEM		
	1	LOT	SAIC CUSTOM SOFTWARE LICENSE		
4		LOT	LEVEL 1 - BASIC RECEIVER SOFTWARE ONLY		
			TOTAL		**$10,700.00**

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JOE KRUZICH

AEI READER SYSTEM

BUDGETARY

Quotation No. 401-1384B

Date 11/7/2000

ITEM NO.	QTY.	PART NUMBER	EQUIPMENT DESCRIPTION	UNIT PRICE	EXTEND PRICE

NOTES:

A. Science Applications International Corporation (SAIC) is pleased to provide the enclosed budgetary estimate for the equipment and services as listed herein. This information is for budgetary purposes only and is not an offer to sell. The information herein is based on a preliminary verbal understanding of the requirements; changes, or additions, including programmatic and data requirements, to this understanding could result in changes. Any resultant firm offer to this budgetary estimate will be based on SAIC's Standard Terms and Conditions.
B. ALL SITES ARE SINGLE TRACK, WITHOUT CLEARANCE RESTRICTIONS OR OPPOSING TRACKS.
C. PRICES IN US DOLLARS
D. THIS QUOTE IS FOR BUDGETARY PURPOSES ONLY.
E. SAIC STANDARD TERMS & CONDITIONS APPLY.
F. CUSTOMER responsible for all taxes, duties and assessments.
G. HARDWARE WILL BE BILLED FOB shipping point ON A SITE-BY-SITE BASIS.
H. COMMISSIONING WILL BE BILLED WHEN COMPLETE
I. NET 30 DAYS.
J. ESTIMATED DELIVERY 90 DAYS ARO FOR EQUIPMENT.
COMMISSIONING TO BE SCHEDULED
K. SITE SURVEY RECOMMENDED TO CONFIRM AEI REQUIREMENTS.
L. OWNER FURNISHED ITEMS:
1. SYSTEM INSTALLATION AND CONSTRUCTION.
2. AC POWER (220 VAC, SINGLE PHASE) WIRED TO ENCLOSURE MAIN BREAKER
3. TELEPHONE COMMUNICATION WIRED TO ENCLOSURE PUNCH BLOCK
4. TELEPHONE COMMUNICATION TO AEI RECEIVER PC
5. FLAGMAN AS REQUIRED.
6. ANY EASEMENTS AND PERMITS REQUIRED.
7. SITE ACCESS, AS REQUIRED, FOR INSTALLATION & COMMISSIONING.
8. FREQUENCY LICENSING.
9. REGULATORY APPROVALS RELATED TO USE OF EQUIPMENT AT INSTALLED LOCATIONS.
10 LOCATION OF UNDERGROUND CABLES AND OBSTRUCTIONS
11. ROAD ACCESS FOR CONSTRUCTION MACHINERY IF REQUIRED
12. ON-TRACK EQUIPMENT FOR LOCATIONS NOT ACCESSIBLE BY ROAD
13. ANY BERMS OR GRAVEL WORK IF REQUIRED
14. OFF-LOAD & EQUIPMENT STORAGE LOCATION
15. ALL EQUIPMENT NOT SPECIFICALLY IDENTIFIED IN SAIC PROPOSAL

OTTER TAIL RAILROAD

Accounting System

The proposed Accounting System is Peachtree MAS 200 that provides a complete package for the needs of OTRR. Peachtree MAS 200 has 16 comprehensive modules, the capacity to process thousands of transactions daily, and multi-user network capabilities. MAS 200 has extensive core features sets in each module, expandable with user-defined fields, automated data import and export, and hundreds of third-party add-ons available from master developers. MAS 200 also has industrial strength reporting; three built-in report writers, including the industry standard Crystal Reports, deliver information in the format you need. This system is more than sufficient to handle all accounting activities for ORTT.

Capital Cost	$23,125.00
Annual Cost for Maintenance	3,468.80

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:: MAS 90 / 200 Price List

Applications	MAS 90	MAS 200
Library Master	$925	$925
The Library Master and 1 User Network Installation CD Modules include: Explorer, Report Master, Crystal Reports, the Menu Launcher and MAS90 Utilities (MAS 90 Only)		
Install Disk 5-Users	$4,100	$7,725
The Library Master and 5 User Network Installation CD Modules include: Custom Office, Customizer, Executive Information System, Explorer, Report Master, Crystal Reports, the Menu Launcher and MAS90 / 200 Utilities		
Additional 5-User License	$2,500	$6,000
Additional 1-User License *(Can only be purchased after initial 5-user pack - MAS 90 Only)*	$550	N/A
Additional 25-User License	N/A	$22,000
Additional 50-User License	N/A	$42,000
Additional 100-User License	N/A	$77,000
Core Accounting		
Accounts Payable	$1,450	$1,450
Accounts Receivable	$1,450	$1,450
Bank Reconciliation	$525	$525
General Ledger	$1,650	$1,650
Payroll	$1,450	$1,450
Global E-Commerce		
e-Business Manager	$3,000	$3,000
.order	$1,000	$1,000
.store	$1,000	$1,000
.inquiry	$1,000	$1,000
e-Business Manager 2 Applet Bundle	$4,500	$4,500
e-Business Manager 3 Applet Bundle	$5,250	$5,250
Distribution		
Bar Code Solution	$2,175	$2,175
Inventory Control	$1,450	$1,450
Purchase Order Processing	$1,450	$1,450
Sales Order Processing	$1,450	$1,450
Manufacturing		
Bill of Materials	$2,175	$2,175
Materials Requirements Planning	$2,175	$2,175
Work Order Processing	$2,175	$2,175

Construction and Project Management		
Job Cost	$1,650	$1,650
Time Card	$1,650	$1,650
Professional Services		
Timekeeper	$1,950	$1,950 ✓
Timekeeper Remote	$1,450	$1,450
Timekeeper External User Seats - 10	$1,250	$1,250
Timekeeper External User Seats - 25	$2,250	$2,250
Timekeeper External User Seats - 50	$5,500	$5,500
Timekeeper External User Seats - 100	$10,000	$10,000
Timekeeper External User Seats - 200	$18,000	$18,000
Timekeeper External User Seats - Unlimited	$35,000	$35,000
Business Intelligence / Integration Tools		
Custom Office	$1,650	$1,650
Visual Integrator	$1,650	$1,650

23,125.00

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:: MAS 90 / 200 Accounting Software

MAS 90

The MAS 90® Family of Products is designed for medium-sized businesses (with 10 to 200 employees) that benefit from its outstanding combination of high performance, breadth of application and ease of use. With 28 modules available, MAS 90® offers full-featured accounting, distribution and industry-specific DOS, Windows, and UNIX applications for virtually every business need.

MAS 90® now offers and "out-of-the-box" e-commerce solution that allows you to conduct business transactions with your customers over the Internet. "internet.access", a new MAS 90® e-commerce module provides dynamic web access to Best's industry-leading MAS 90 accounting distribution and manufacturing software. This new module allows MAS 90 user companies to conduct business with clients over the Internet, and includes the ability to perform account inquiries and order entry functions in a secure Web-based environment. MAS 90 user companies can now give their clients the ability to safely log onto and place orders on their Web site, which will directly update information into MAS 90 in real time.

MAS 200

Client/server computing has become an important industry trend. MAS 200 is a 32-bit version of MAS 90 for Windows that incorporates client/server technology to add new capabilities. When you choose MAS 200, you'll receive key benefits that only client/server architectures can provide, such as more efficient distributed processing, high performance, enhanced data integrity and reliability, remote access support and scalability for large numbers of users.

With Best MAS 200 accounting software, you can easily access your application data via the Internet or a corporate intranet. This can provide a practical, cost-effective way to connect users from various locations to this vital information, without having to invest in additional software. Available at no extra cost, these intranet/Internet capabilities are included with the core MAS 200 client/server products.

By using the application over the intranet/Internet, users can dial into a WAN using a standard modem, and then access the MAS 200 data stored on a central server. Since the connection is made via the intranet/Internet, users don't have to restrict their connection time, since no additional long distance charges are required.

When used over the intranet/Internet, MAS 200 also offers additional security features, such as minimum password lengths, the ability to lock users out after a specified number of failed login attempts, and a suppressed user list during the login process. This provides greater

More Information

MAS 90 / 200 on-line support resources

MAS 90 / 200 Price List

Modules

- Features
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- Payroll
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  - .inquiry
  - .store
- Bar Code Solution
- Inventory Control
- Purchase Order Processing
- Sales Order Processing
- Bill of Materials
- Materials Requirements Planning
- Work Order Processing
- Job Cost
- Time Card
- Timekeeper
- Custom Office
- Visual Integrator
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control and flexibility for your standard security protocol. And since MAS 200 can run under a variety of encryption and firewall configurations, it can enhance security for your network and provide better protection of your mission-critical data.

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:: MAS 90 / 200 System Requirements

MAS90

Recommended System Configuration for Best MAS 90

Single User/Client Workstation

- Windows 95/98 with a Pentium 166MHz or higher processor and 32 MB RAM
- Windows NT Workstation 4.0 with a Pentium 166MHz or higher processor and 64 MB RAM
- Windows 2000 Professional with a Pentium II 300 MHz or higher processor and 64 MB RAM

Server

- Windows NT Server 4.0 with a Pentium 166MHz or higher processor and 64 MB RAM for 2 - 5 users (add 4 - 6 MB/user above 5)
- Windows 2000 Server with a Pentium II 300 MHz or higher processor and 128 MB RAM (add 4 - 6 MB/user)
- Windows NT Workstation 4.0 with a Pentium 166MHz or higher processor and 64 MB RAM for 2 - 5 users (5 users maximum)
- NetWare 3.12, 4.10, 4.11, 5.0 with a Pentium 166MHz or higher processor and 64 MB RAM for 2 - 5 users (add 2 - 3 MB/user above 5)
- Windows 95/98 with a Pentium 166MHz or higher processor and 64 MB RAM for 2 - 5 users (5 users maximum)

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MAS200

Recommended System Configuration for Best MAS 200 Client/Server

Client Workstation:

- Windows 95/98 with a Pentium 166MHz or higher processor and 32 MB RAM
- Windows NT Workstation 4.0 with a Pentium 166MHz or higher processor and 64 MB RAM
- Windows 2000 Professional with a Pentium 166MHz or higher processor and 64 MB RAM

Server:

- Windows NT Server 4.0 with a Pentium 166MHz or higher processor and 64 MB RAM for up to 5 users (add 4 - 6 MB/user for above 5 users)
- Windows 2000 Server with a Pentium II 300 MHz or higher

3035

processor and 128 MB RAM (add 4 - 6 MB/user)

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:: MAS 90 / 200 Modules

Best MAS 90 and MAS 200 business management software offers a broad range of modules designend to meet the needs of virtually any business. Choose to integrate as many modules as are beneficial to your business, and the resulting system can be truly more powerful than the sum of its individual components. Additionally, as your business continues to grow, you can have the confidence of knowing there are additional MAS 90 and MAS 200 modules that can provide you with the best solution to all of your business needs.

Regardless of the platform you choose, there is a MAS 90 or MAS 200 system that can meet your requirements with Windows and Windows NT versions available. Functional on both the traditional local are network (LAN) and single-user environments, as well as wide area network (WAN) environments, the product line allows you to expand your systems to accommodate greater numbers of users, and provides more rapid transaction processing in the Windows NT environment.

Designed to deliver industry-leading "benchmarked" performance for fast, reliable data throughput, MAS 200 is ideal for multi-site businesses and requires no additional remote access software. Optimized for TCP/IP, this dynamic solution is Internet — and intranet — compatible and provides the fast, reliable network connections you need with thin-client architecture.

Core Accounting

Based on the elements that compose the heart of any accounting system — manual or computerized — the core accounting solution consists of the following modules to help provide a seamlessly integrated accounting foundation for your business.

- **Accounts Payable**
- **Accounts Receivable**
- **Bank Reconciliation**
- **General Ledger**
- **Payroll**

Global E-Commerce

Imagine conducting business with customers and suppliers over the Internet. The e-Business Manager module adds the power of business-to-business e-commerce to MAS 90 and MAS 200. e-Business Manager allows your customers to dial in through the Internet and securely place orders directly into the MAS 90 or MAS

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MAS 90 / 200 on-line support resources

MAS 90 / 200 Price List

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200 system, and even check their account status for items such as available credit, payments recieved and last cost at which an item was purchased.

- e-Business Manager

Distribution

Designed to enable seamless integration of accounting, customer service and inventory tracking data into one rock-solid system, the distribution solution consits of the following modules.

- Bar Code Solution
- Inventory Control
- Purchase Order Processing
- Sales Order Processing

Manufacturing

Consisting of the following modules, the manufacturing solution allows you to create multi-level bills and track materials and labor costs throughout the shop floor to completion. Finished goods are posted to inventory or sales order for seamless integration with the distribution system.

- Bill of Materials
- Materials Requirements Planning
- Work Order Processing

Construction and Project Management

Integrating the core accounting solution with the following modules, the bedrock of our project management solution is its ability to track and manage job estimates, costs and profitability.

- Job Cost
- TimeCard

Professional Services

If you bill your customers for time, Timekeeper provides a streamlined method of tracking and posting time via multiple methods, including a Palm OS handheld. The Client Write-Up module is perfect for you if you need to process after-the-fact payroll and vendor checks for your clients. Additionally, MAS 90 and MAS 200 links with Timeslips, the best-selling, most award-winning Time and Billing software available. Full integration with other MAS 90 and MAS 200 modules enable you to share common

information and control costs.

- Timekeeper

Business Intelligence/Integration Tools

Transform your accounting system into a total business solution with the following "best-of-breed" tools. Designed to increase productivity and enhance functionality, these customizable report writers and integration tools work seamlessly with MAS 90 and MAS 200 to create and all-encompassing information management system for your business.

- Custom Office
- Visual Integrator

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:: MAS 90 / 200 General Ledger

The heart of any accounting system, either manual or computerized, is the General Ledger system. In simple terms, it is the central location in which all bookkeeping and accounting transactions are received (posted), summarized (totaled by account) and processed (adjusted and balanced), resulting in informative financial statements. It is the financial statements, supporting schedules and associated reports generated by a General Ledger system that are critical for timely decision making; therefore, it is imperative that a General Ledger system be powerful, flexible and informative to management, yet still be easy to use and operate.

We have designed our system to allow you to continue to use your current Chart of Accounts without any need to adapt it to the computer. It is likely you can maintain the same account title and numbering scheme you have been accustomed to since the day you started your business. The General Ledger module provides for extensive history and budget information. You can retain up to 99 years of transaction history and/or period-summary history and three separate budget categories (current budget, revised budget and user-defined budget).

Virtually unlimited financial reporting capabilities are provided. The General Ledger system simplifies divisional/departmental reporting and consolidated income statement printing within a standard, predefined set of financial statements and report formats. Because many companies require the capability to design their own financial reports above and beyond those automatically generated by the system, we have created a powerful, easy-to-use custom financial reporting capability.

You can use the General Ledger Data Exchange feature to import and/or export the Chart of Accounts, budgets and transaction data directly from or to an external file. This feature even allows you to transfer General Ledger postings from one company location to another, or use a spreadsheet product to work on a budget.

Features

- Complete Audit Trail and Drill-Down - This system provides a complete audit trail of detail activity by printing reports and registers before posting. You can assign a unique batch number to each register, leaving a detailed audit trail.
- Flexible Accounting Periods - Up to 13 accounting periods in a fiscal year are user-defined. You can specify ending dates for each period.
- Flexible Account Numbers - Account numbers can use up to nine alphanumeric characters and you can divide them into as many as three segments for identifying sub-accounts, departments, divisions or locations. You can categorize General Ledger accounts into any number of similar account groups (e.g., assets, liabilities, equity, revenue, expenses, etc.).
- Multi-Company Consolidation - You can consolidate data for any

More Information

MAS 90 / 200 on-line support resources

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number of separate companies with identical or different Charts of Accounts into a single report.

- Non-Financial Accounts - You can maintain non-financial information, such as head count, square footage, unit sales and inventory quantity. You can include non-financial information on custom financial reports.
- Transaction Detail Inquiry/Drill Down- Display detailed transactions for an account at any time, and search for transactions by period, source journal inquiry or comment.
- Account Delete/ Renumber/Merge - This feature allows you to delete, renumber or merge existing account numbers using wildcard characters to mask selected groups of account numbers.
- Account Masterfile Audit - You can use the Account Masterfile Audit Report to audit changes, deletions or additions to the Account Masterfile.
- Multi-Year History Retention - This option enables you to retain up to 99 years of transaction history and/or period summary history. You may also post to an unlimited number of future fiscal years or reopen a past year, and specify the fiscal year to be used for printing General Ledger reports.
- Allocation Entries - You can use allocation entries to automatically post an amount from a single source account to multiple destination accounts. The amount to be posted to each of the destination accounts can be calculated based on a percentage allocation or on a quantity such as head count or square footage.
- Standard Financial Statements - Standard Income Statement and Balance Sheet can be produced automatically in departmental or consolidated form. You may include various combinations of actual, budget, budget variance and prior-year information on the Standard Income Statements for the period-to-date and year-to-date.
- Custom Financial Statements - Virtually unlimited reporting capabilities allow you to meet your exact reporting requirements. Up to 999 custom financial reports may be defined. You may select the type of data to be printed for each column. You can consolidate accounts, round dollar amounts, add or delete text, change titles and descriptions, change print positions, control underlines and print dollar signs and footnotes. You may even produce multi-company consolidation reports or create custom reports for multiple departments.
- General Ledger Graphics - Bar charts of actual, budget and prior-year activities for a single account or range of accounts, provide a visual aid for presenting company financial data. You can also graph all income, expenses or profits by department.
- FRx - Financial Reporting — See FRx spec sheet for more details.

Reports

- Account Masterfile Audit Report
- Budget and History Report
- Budget Report
- Budget Revision Register
- Chart of Accounts
- Custom Financial Reports
- Custom Report Detail Listing
- Custom Report Samples
- Daily Transaction Register
- General Journal
- General Ledger Analysis
- General Ledger Detail by Source Report
- General Ledger Detail Report
- General Ledger Graphics
- General Ledger Worksheet

- Monthly Trend Report
- Recurring Journal
- Standard Financial Statements
- Trial Balance
- Transaction Journal

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:: MAS 90 / 200 Features

MAS90

Here are just a few reasons why so many companies run their businesses on MAS 90:

- Extensive core feature sets in each module, expandable with user-defined fields, automated data import and export, and hundreds of third-party add-ons available from master developers.
- Platform flexibility: MAS 90 is available for Windows NT, NetWare and UNIX networks. A Windows 95 single-user version is also available.
- Client/server version: MAS 90 client/server uses the latest thin-client architecture to deliver high-speed performance across the Internet or via a dial-up connection.
- Industrial strength reporting: Three built-in report writers, including the industry standard Crystal Reports, deliver information in the format you need. You can also access MAS 90 data via ODBC with the reporting tool of your choice.
- Adaptability: With e-commerce solutions and Microsoft SQL Server versions coming in 1999, MAS 90 continues to prove its adaptability to new technologies, helping to assure you of a solution that will keep you competitive as your business and your industry evolve.

MAS200

Here are just a few reasons why so many companies run their businesses on
MAS 200:

- Performance - The client/server engine can provide peak performance even when your company has high transaction - processing demands, or a large number of accounting users.
- Designed for WANs and remote access environments - MAS 200 is ideal for multi-site businesses, because it is optimized fro remote access environments. Today's business process often demands that employees be able to dial into their company system from offsite locations. Connect via the Internet, Dial-in modems via RAS or PPP or via Frame Relay and Router connections to your network.
- Scalability - MAS 200 grows with your business, protecting your software purchase. It can support 50 - 100 concurrent users, with appropriate server hardware, further expanding the scalability of the MAS product family. Scalability and Expandability is based upon the Performance of your Application Server. Upgrade your Server - Upgrade your Performance.
- Enhanced Data Integrity - A critical benefit of the MAS 200 architecture is a reduction in network traffic. Lower traffic can increase reliability and data integrity system wide.
- Optimized for TCP/IP - In communicating between the server and

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same communications protocol used by Internet and intranet applications.

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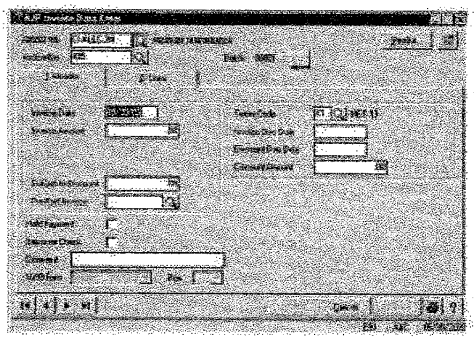
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:: MAS 90 / 200 Accounts Payable



The Best MAS 90 and MAS 200 Accounts Payable module helps manage your expenditures by recording transactions and obligations to vendors and creditors.

Beyond the recording of invoices received and providing informative financial reports (including payables aging and future cash requirements), the Accounts Payable module provides a comprehensive solution for the payment of outstanding invoices through an innovative cash disbursement and check writing capability. You can also use Accounts Payable to take advantage of any discounts offered to your company if invoices are paid by the discount due date. In addition to functioning independently, you can use the Accounts Payable module to expense invoices directly to the Job Cost or Time and Billing modules. Also, information from invoices entered through the Purchase Order Processing module is posted directly to the Accounts Payable masterfile. From Accounts Payable, you can also query all open purchase orders for each vendor.

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Features

- Divisional Accounting - You can assign payables for each division or department a separate accounts payable general ledger account. All reports can provide divisional totals.
- Multiple Bank Accounts - You can process checks for up to 36 bank accounts for each company. You can automatically post accounts payable transactions to the MAS 90 and MAS 200 Bank Reconciliation module.
- Vendors/Memos - You can enter and maintain vendor memos for individual vendors. Full text-editing capabilities include word wrap, cut, paste and delete functions. Selected vendor memos can be flagged to automatically pop up during data entry programs, to ensure that you see critical information.
- "On-the-Fly" Entry - You can easily add new terms codes and vendors "on-the-fly" to provide uninterrupted entry of information in all data entry programs.
- Use Tax and Freight Allocation - Accounts Payable allows you to flag the entire document as Use Tax and specify which General Ledger to expense for freight.
- Vendor Masterfile Audit - You can use the vendor masterfile audit report to audit any changes, deletions or additions to the vendor masterfile.
- Repetitive Invoice Processing - You can automatically process repetitive billing such as rent, loan payments and utility payments.

Recurring invoices are automatically prepared without repetitive data entry.

- Invoice Entry - The system automatically calculates due dates, discount due dates and discount amounts. You may expense invoices to any number of accounts.
- Automatic Payment Selection - Select invoices for automatic payment based upon the due date, discount date or vendor. Individual invoices can be selected for full or partial payment. You can place vendors "on hold" to prevent automatic payment.
- Checks - You can print Accounts Payable checks on standard or custom check stock. Different check stock can be used for each bank account. Print two check stubs on a single page to accommodate laser-printed checks.
- Extended Stub Report - Check printing allows you to print an optional extended stub report. This report can include invoice detail for all checks or for checks where information did not fit on one stub.
- Manual Checks - Record handwritten checks, reversals and voided checks, then print individual checks from the manual check entry program.
- Accounts Payable and Accounts Receivable Clearing - This is helpful for accounts receivable customers who are also accounts payable vendors. You can apply invoices automatically or selectively to the vendor's balance, eliminating the manual matching process of issuing checks and posting payments.
- International Address Capability - Vendor masterfiles include third address line, country code, international postal codes, expanded phone number field to handle international numbers and fields for unlimited contacts.
- History Retention - The invoice history file provides a complete, detailed record of invoices entered into accounts payable, including detailed distribution of expense amounts to various general ledger accounts. The detailed check history report provides a complete record of invoices and payments for each check.
- Check Reversing - When reversing a check, you are asked if the invoice should be recalled. If yes, the entire invoice is put back on file.

Reports

- 1099 Forms
- Accounts Payable Analysis
- Accounts Payable from Accounts Receivable Clearing
- Aged Invoice Report
- Cash Requirements Report
- Check Detailed History Report
- Check History Report
- Check Register
- Daily Transaction Register
- General Ledger Distribution Report
- General Ledger Posting Recap
- Invoice History Report
- Invoice Payment Selection Register
- Invoice Register
- Manual Check Register
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- Open Invoice by Job Report
- Repetitive Invoice Listing
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- Vendor Memos

- Vendor Purchase Analysis

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:: MAS 90 / 200 Accounts Receivable

The Best MAS 90 and MAS 200 Accounts Receivable module provides you with the information you need to run a well-organized cash management program by tracking receivables and planning cash flow. It also provides you with extensive information and reporting features.

This module contains a highly powerful, yet easy-to-use invoicing function which allows you to prepare invoices and billings within the system. The Accounts Receivable module will also automatically prepare customer/client statements on demand.

In addition to being a comprehensive stand-alone module, the Accounts Receivable module integrates with the General Ledger, Sales Order Processing, Inventory Management, Job Cost, Bank Reconciliation, e-Business Manager and Custom Office modules.

Features

- Divisional Accounting - You can assign receivables for each division a separate accounts receivable general ledger account. All reports can provide divisional subtotals.
- Multiple Bank Accounts - You can process deposits for up to 36 bank accounts per company and post cash transactions automatically to the Bank Reconciliation module.
- Balance-Forward or Open-Item Customers - You can process all accounts receivable on a balance forward or open-item basis, and assign the open-item or balance-forward method to individual customers.
- International Address Capability - Customer masterfiles include three address lines, country code, international postal codes and an expanded phone number field to handle international numbers.
- "On-the-Fly" Entry - You can add new customers, terms, codes, salesperson codes, sales codes and sales tax codes "on-the-fly" to provide uninterrupted entry of information in all data entry programs.
- Customer Delete/Renumber/Merge - This program allows you to delete, renumber or merge existing customer numbers, using wildcard characters to mask the selected groups of customer numbers.
- Customer Masterfile Audit - An audit trail of changes made to the Accounts Receivable customer masterfile is provided. You can use the customer masterfile audit report to audit any changes, deletions or additions to the customer masterfile.
- Repetitive Invoice Processing - You can automatically process repetitive billing such as membership fees, maintenance contracts and rent.
- Invoice Entry - You can enter invoices for customers or for cash sales. The system automatically calculates due dates, discount due dates, discount amounts, and commission amounts. You can use sales codes to obtain price and cost-of-goods-sold information. You can enter any number of sales codes, miscellaneous charges, and comment lines for each invoice.
- Invoice History Printing - This program prints history invoices for a

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range of customer numbers, invoice numbers, and invoice dates. You can choose to reprint Accounts Receivable, Job Cost and Sales Order invoices separately or all at once using the same form code. You can select to print only unpaid invoices for open item customers. You can also reprint individual invoices from the drill-down screen in invoice history.

- Cash Receipts Processing - You can apply cash receipts automatically against the oldest invoices or against specific invoices. You can post miscellaneous cash receipts directly against General Ledger accounts, and process any prepayments against invoices not yet recorded.
- Advanced Sales Tax - Support of Canadian GST/PST, tax schedules for multiple jurisdictions, and tax on tax calculations are all part of this feature.
- Statement Printing - You can print statements for a billing cycle (e.g., monthly or quarterly) on standard or custom forms for all customers or for a specific group of customers. In addition, you can print statements based upon a minimum balance. Statements can be faxed directly from within MAS 90 or MAS 200, either individually or in batches.
- Cash Expectation Report - You can forecast future cash receipts using three user-defined aging categories, and forecast requirements based upon the average-days-to-pay information for individual customers.

Reports

- Accounts Receivable Analysis
- Aged Invoice Report
- Customer Invoices
- Cash Expectation Report
- Cash Receipts Journal
- Customer Edit Register
- Customer Listing
- Customer Mailing Labels
- Customer Masterfile Audit Report
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- Customer Sales Analysis
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- Finance Charge Journal
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- Gross Profit Journal
- Invoice History Printing
- Invoice History Report
- Monthly Cash Receipts Report
- Monthly Sales Report
- Repetitive Invoice Listing
- Sales Analysis by Salesperson
- Sales Journal
- Sales Tax Report
- Salesperson Commission Report
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:: MAS 90 / 200 Bank Reconciliation

Every month you can count on receiving your cancelled checks and/or statement from your company's bank, and you are required to sort your checks, account for your deposits, and reconcile your checking account balance to the bank's balance. But often there is a discrepancy.

The Best MAS 90 and MAS 200 Bank Reconciliation module simplifies the monthly reconciliation process, detects unrecorded transactions between books and bank, locates the errors or differences, records the corrections and reconciles your books to the bank statement.

Bank Reconciliation helps forecast cash flow, as well. Estimated future cash flow can be projected when this module is integrated with the Accounts Receivable, Accounts Payable, Payroll, Time and Billing, Purchase Order Processing and Point of Sale modules.

Features

- Multiple Bank Accounts - Up to 36 separate bank accounts can be established for a single company. Transactions can be automatically posted from the General Ledger, Accounts Receivable, Accounts Payable and Payroll modules.
- Check and Deposit Entry - Transactions not posted automatically through the other integrated modules can be entered manually. Checks, deposits and adjustments for non-integrated bank accounts can also be entered manually.
- Reconcile Bank - Displayed monthly activity enables you to reconcile bank accounts quickly and easily. Transactions can be confirmed as cleared, using a single keystroke.
- Bank Reconciliation Register - All transactions, cleared and outstanding, are listed on this detailed report for each bank account. The Reconciliation Summary shows the adjusted bank balance, computer-calculated book balance and any out-of-balance amount.
- Bank Activity Detail - Bank transaction detail can be retained indefinitely or cleared each month after each account is reconciled.
- Cash Flow Analysis - The Estimated Cash Flow Analysis report combines information from the Accounts Receivable, Accounts Payable and Purchase Order Processing modules to provide an overall cash flow projection for four consecutive periods.

Reports

- Bank Reconciliation Register
- Bank Transaction Recap Report
- Estimated Cash Flow Analysis

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:: MAS 90 / 200 Purchase Order Processing

Every time you order goods from your vendors, a contract to buy and a contract to sell is created; the Best MAS 90 and MAS 200 Purchase Order Processing module helps you keep accurate records of these very important transactions. With every order, you need to specify (and keep track of) shipping method, date required and the name of the person with whom the order was placed. In addition, you need to confirm quantities ordered and price per item. This module streamlines and organizes the entire purchasing process.

When you on-hand quantity falls below a specified minimum level, purchase orders can be automatically generated, to ensure that you never run out of key items. You can process partial receipts, update your inventory records when goods are received and monitor cost variances between goods received and goods invoiced.

When this module is integrated with the MAS 90 or MAS 200 Accounts Payable, Inventory Management and Sales Order modules, you will have a comprehensive, fully integrated purchasing system. Receipt of goods will automatically adjust inventory quantities and produce a Back Order Fill Report. Furthermore, invoices received will automatically update Accounts Payable records. With the implementation of the Purchase Order Processing module, you will be able to make more informed purchasing decisions, and all of your purchasing and receiving information will be readily available as needed.

Features

- Automatic Reordering - Purchase orders can be automatically generated for inventory items whose on-hand quantity falls below a specified reorder level.
- Drop Ship Orders/ Blanket Orders - Purchase orders can be created for items shipped directly from the vendor to the customer. When Purchase Order Processing is integrated with the Sales Order module, the customer number and address information can be automatically retrieved.
- Repeating Orders Material Requisition - Requests for goods for internal use can be processed with purchase orders, and material requisition orders can be printed.
- Landed Cost Calculation - Landed cost information is entered in receipt of goods with an unlimited number of user-definable costs for each GL clearing account. You can select any allocation method for each type of cost including freight allocation. You can calculate landed costs using the same method you currently employ or based on the new volume field in the item masterfile.
- Auto Generation of Purchase Orders from Sales Orders - Purchase orders can be automatically generated for a selected range of sales orders. You can control how the ordered items appear on the purchase order — either individually or summarized.
- Receipt Labels - Receipt labels with bar codes can be printed for inventory items as part of the Daily Receipt Registers Update, once Purchase Order Processing has been integrated with the Inventory Management module.

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- Powerful Reports - There are a variety of reporting options available in the PO module which allow you to analyze variance information, cash requirements, month-end reconciliation and more.
- Alias Item Numbers - Inventory alias item numbers can be accessed during Purchase Order Entry. When you select an alias item number, the corresponding part number from your inventory list is automatically selected.
- Use Tax - Purchase Order allows you to flag individual lines as Use Tax, track the tax to pay on items purchased, then specify to expense the tax to inventory items.
- Non-stock Items - Items can be entered on purchase orders which are not stocked in your inventory. Charges can also be entered for miscellaneous non-inventory items, such as service fees.
- Vendor Price Levels - Price schedules for specific vendors, product lines or inventory items can be set up based on the standard cost or a specified discount method.
- Expected Delivery Report - All deliveries expected within a range of dates are listed on this report.
- Back Order Fill Report - All Sales Order Processing back orders which can be filled as a result of goods received are listed on this report.
- Drill Down - When viewing an inventory item, you can drill down to lot/serial information from the receipt history inquiry.
- Cost Override - A "cost override" flag may be set in inventory for each product line and item, thus enabling changes of costs of certain items during receipt of goods to be controlled. This feature can be password protected for added security.
- User-Defined Fields (UDFs) for Line Items - UDFs can flow from inventory items to sales order and purchase order lines and can be printed on reports and forms. They can also be stored in history files.
- Memo Pop-Up - Selected vendor memos can be set to automatically pop critical information into the operator's view during Purchase Order entry.

Reports

- Automatic Reorder Register
- Open Purchase Order Report
- Purchase Orders
- Open P.O. by Item Report
- Receipt of Goods Register
- Open P.O. by Job Report
- Receipt of Invoice Register
- Expected Delivery Report
- Daily Purchases Journal
- Expected Delivery Recap Report
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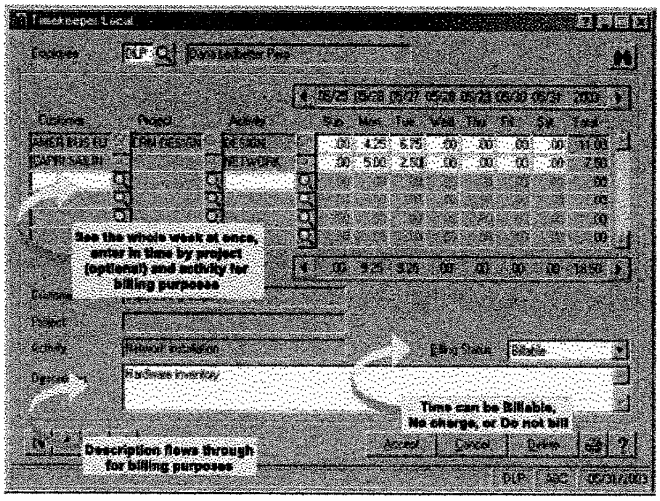
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:: MAS 90 / 200 Timekeeper



If your company bills clients for services based on employee time spent on projects and activities, you know how important it is for employees to maintain up-to-date and detailed time records. Timely, accurate time reports ensure that your client invoices are correct and complete, that they are processed cost effectively and efficiently, and that they are sent out as quick as possible.

Timekeeper give your employees the tools they need to maintain an accurate and comprehensive accounting of their time, wherever they are - whether they are sitting at their desk or out in the field with their Palm OS® handheld. With this simple, effective way to track their time, employees can work more efficiently and improve productivity.

Because Timekeeper is fully integrated with your MAS 90 or MAS 200 system, you can process all time entry information into a number of the modules, including Accounts Receivable, Job Cost, Payroll, Sales Order, and Time and Billing. You can even push time into Accounts Receivable, Sales Order, or Time and Billing for billing purposes and push that same time into payroll. In addition, Timekeeper allows for Timeslips integration into any of the MAS 90 and MAS 200 modules.

Timekeeper enables you to track employee time for accurate invoicing, thus enhancing service to your clients, and increasing overall efficiency. It improves company profitability and maintains your competitive edge in today's marketplace.

Features

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- Simple, Convenient Time Entry - The system allows employees to enter their time via Timekeeper Local, a stand-alone application. Timekeeper Local "pops up" for quick entry of client time, payroll time, and project time.
- Security - For purposes of security, users are only allowed to enter or view their own time, unless they are designated as a supervisor.
- Efficient Information Processing into MAS 90 and MAS 200 - All time information can be processed into MAS 90 and MAS 200 Accounts Receivable, Job Cost, Payroll, Sales Order, and Time and Billing modules. Enjoy the flexibility of selecting the following set-up options to meet your company's needs:
    - Bill time directly in Accounts Receivable or Sales Order invoices (merge to existing invoices or create separate).
    - Bill time directly into Job Cost.
    - Bill time directly in Time and Billing.
    - Send time entries directly into Payroll for payroll generation.
    - Bill time directly into Accounts Receivable, Sales Order, Job Cost or Time and Billing and push the time into Payroll.

  These setup options are flexible and can be changed each time you pull time entries into Work in Process, so you can push one group of time into Accounts Receivable, select another group and push that into Sales Order.

- Approval System - Timekeeper gives you the option of having time approved prior to processing into other MAS 90 and MAS 200 modules. You can even set up a secondary approval if desired.
- Reporting - You can select reports included with the system or design your own with Crystal Reports or any ODBC-compliant application. Some examples of included reports are Work in Process Listing and Activity Summary Reports by Employee, Customer, Project and Activity.

Timekeeper Remote Features:

- Additional Time Entry With Timekeeper Remote, users have the ability to enter time remotely. They can:
    - Enter time with their Palm OS handheld. Time is synced into MAS 90 and MAS 200 Timekeeper using the Palm's HotSync function and the standard Palm docking cradle.
    - Import time from Timeslips (if your company is already using Timeslips software).

Timekeeper Functions

- Fast, simple time entry via a pop-up time entry screen.
- Smooth and efficient time entry updated to Best MAS 90 and MAS 200 modules - Accounts Receivable, Job Cost, Payroll, Sales Order, and/or Time and Billing.
- Gives you the ability to bill time and product on the same invoice.

Timekeeper Remote Functions

- Fast, simple time entry with a Palm OS handheld
- Seamless Timeslips integration.
- Smooth and efficient time entry updated to MAS 90 and MAS 200 modules - Accounts Receivable, Job Cost, Payroll, Sales Order, and/or Time and Billing.
- Gives you the ability to bill time and product on the same invoice.





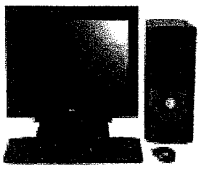
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Memory:	256MB DDR Non-ECC SDRAM (2 DIMMs)	256N2	[311-2152]
Keyboard:	Dell™ PS/2 Entry Quiet Key Keyboard, No Hot Keys	PS2	[310-1515]
Monitors:	Dell 19 inch M992 color monitor (18.0 viewable)	M992	[320-0528]
Embedded Video Board:	Embedded Intel® Extreme® Graphics	INT	[320-0551]
Boot Hard Drives:	20GB ATA/100 Hard Drive (7200 RPM)	20	[340-7275]
Floppy Drive Option:	1.44MB 3.5 Inch Floppy Drive	3	[340-7587]
Operating System:	Windows® XP Professional Version with CD using NTFS	WXPPEC	[420-1582]
Mouse:	Dell™ PS/2 2 button mouse	L	[310-1301]
Network Adapters (NICS):	Embedded Intel® PRO/100 M NIC with ASF and Remote Wake-up	INT	[430-0406]
Modem:	DellDell™ V.92 PCI Data/Fax Controllerless Modem	V92	[313-1149]
1st Removable Media:	48X Max, CDRW	CDRW48	[313-1468]
Embedded Audio Solution:	Embedded Sound Blaster Compatible AC97 Audio	INT	[313-8170]
Speakers:	harmon/kardon® 206 Speakers	HK206	[313-0970]
Documentation:	Resource CD contains Diagnostics and Driver for Dell OptiPlex Systems	RESORCD	[313-7168]
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Readyware:	Readyware Installation Fee	RW	[365-1234]
Factory Installed Software:	MCAFEE Virusscan 6.01	MCAFEE	[410-0136]

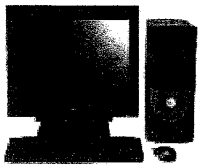
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Security Software - Shipped Separately:	Symantec Antivirus CorpEd 8.0 (1 user license)	SANTIV	[A0059152]

How to Contact Dell

E-Mail	Phone	Fax
Mid-Size Business (400-2,000 total employees)	888-583-3355	512-728-0568
Small Business (<400 total employees)	800-917-3355	800-853-3355

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Dell Computer Corporation
One Dell Way
Round Rock, Texas 78682



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[2] For a complete copy of our Guarantees or Limited Warranties, please write Dell, USA, L.P., One Dell Way, Round Rock, TX 78682.

[3] At-home service provided via third-party contract with customer. Technician will be dispatched if necessary following phone-based troubleshooting, often the next business day. Availability varies. Other conditions apply.

[4] Please note that this Microsoft software product may use technological measures for copy protection. In such event, you will not be able to use the product if you do not comply with the product activation or reactivation procedures, which may be completed by Internet or telephone (toll charges may apply).

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CDW The Right Technology. Right Away.™

800 826 4239

AESP IEEE 1284 A to B Printer 10' cable

CDW

Image not Available

Product Information

- IEEE 1284 A to B Printer 10 foot cable

Usually Ships:	Same Day
CDW Part No.:	138278
Mfg. Part No.:	C-113-10B
Unspsc No.:	
Price:	**$9.88**

ADD TO CART

Manufacturer

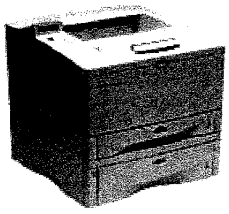
AESP, INC

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CDW The Right Technology. Right Away.™

800 826 4239



HP LaserJet 5000N

Product Information

- Network ready, 11" x 17", 16 ppm, HP FastRes 1200

Usually Ships:	Same Day
CDW Part No.:	107695
Mfg. Part No.:	C4111A#ABA
Unspsc No.:	43172510
Price:	**$1,669.87**

ADD TO CART

Manufacturer

hp invent

OVERVIEW

The new standard for network-ready, monochrome 11 x 17 office printing

The HP LaserJet 5000 N printer incorporates HP's most innovative new technology, establishing new standards for paper-handling, speed, print quality, and network print management. This printer is ideal for general office, finance, CAD, desktop publishing, marketing....any workgroup that requires fast, high-quality monochrome printouts. And with the ability to print from 3 x 5 inch to full-bleed 11 x 17 images, it's an affordable alternative to 'multiple-printer' departments or outsourcing. The HP LaserJet 5000 N printer also includes 8MB of memory, 850-sheet capacity, two open DIMM memory slots, one open EIO expansion slot and an HP JetDirect 600N EIO internal print server.

SPECIFICATIONS

Battery	
Type	None
Bay Provided	
Type	None
Cabinet	
Chassis Type	Proprietary cabinet
Copier	
Type	None
Dimensions	
Depth	25 In
Height	18.7 In
Weight	70.5 Lbs
Width	19.1 In

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Environmental Parameters

Humidity Range Operating	20 - 80%
Max Operating Temperature	90.5 °F
Min Operating Temperature	50 °F
Sound Emission	58 DBA

Header

Compatibility	Mac, Unix, PC
Country Kits	United States
Localization	English
Manufacturer	Hewlett-Packard
Model	5000n
Packaged Quantity	1
Product Line	HP LaserJet

Interface Provided

Type	None

Interface Required

Connector Qty	1
Connector Type	8 pin mini-DIN, BNC, 36 pin Centronics, 9 pin D-Sub (DB-9), RJ-45
Gender	Male
Interface	RS-232, IEEE 1284 (EPP/ECP), Local Talk, Ethernet 10Base-T, Ethernet 10Base-2
Total Qty	1
Type	Network, Parallel, Serial

Memory

Flash Type	None
RAM Form Factor	DIMM 100-pin
RAM Installed Size	12 MB
RAM Max Supported Size	164 MB
RAM Soldered Size	4 MB
RAM Technology	SDRAM
RAM Type	DRAM

Miscellaneous

Color	White
Compliant Standards	Plug and Play
Features	LCD display
Mounting Kit	N/A
Rack Mounting Kit	N/A

Modem

Comm. Type	None

Networking

Compliant Standards	IEEE 802.3-LAN
Connectivity	Cable

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Technology	
Data Link Protocol	LocalTalk, Ethernet
Form Factor	Plug-in card
Network Transport Protocol	AppleTalk, DLC/LLC, TCP/IP, IPX/SPX
Type	Print server

Power Supply

Device Compliant Standards	EPA Energy Star
Device Form Factor	Integrated
Device Frequency Required	50/60 Hz
Device Power Consumption Operational	365 Watt
Device Power Consumption Stand by Sleep	40 Watt
Device Type	Power supply
Device Voltage Required	AC 110/120/127 V

Printer

Cartridge Printhead Duty Cycle	10000 pages
Cartridge Printhead Included Qty	1
Compliant Standards	ECP IEEE 1284-compliant port
Connectivity Technology	Cable
Duplex Printout	Optional
Envelope Sizes	US No 10 (4.1 in x 9.5 in), Monarch (3.87 in x 7.5 in), International C5 (6.38 in x 9 in), International B5 (6.93 in x 9.83 in), International DL (4.33 in x 8.66 in)
Form Factor	Stationary
Language Simulation	HP PCL 5E, Adobe PostScript 2, HP PCL 6
Max H-Document Size	12.3 in
Max H-Resolution BW	1200 Dpi
Max Media Size (Standard)	Ledger B Size (11 in x 17 in), A3 (11.7 in x 16.5 in)
Max V-Document Size	18.5 in
Max V-Resolution BW	1200 Dpi
Media Path Type	Curved
Media Sizes	A3 (11.7 in x 16.5 in), Ledger B Size (11 in x 17 in), B5 (6.93 in x 9.83 in), Executive (7.25 in x 10.5 in), B4 (9.83 in x 13.9 in), Letter A Size (8.5 in x 11 in), A4 (8.25 in x 11.7 in), A5 (5.83 in x 8.25 in), Legal (8.5 in x 14 in)
Media Type	Cards, Labels, Envelopes, Vellum paper, Transparencies, Plain paper
Monthly Duty Cycle (Users Qty)	50000 - 99999 (medium workgroup)
Output Type	Monochrome
PostScript Support	Standard
Printer Speed	16 Ppm
Technology	Laser

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Total Media Capacity	850 Sheets
Type	Workgroup printer

Printer Fonts

Font Included Type	TrueType
Fonts Included Qty	110

Printer Media

Media Feeder Capacity	100 Sheets, 500 Sheets, 250 Sheets
Media Feeder Max Format	12.3 in x 18.3 in, 11.7 in x 17 in
Media Feeder Qty	1
Media Load Type	Autoload

Printer Output

Max Speed	16 Ppm
Output Quality	B/W

Processor

Clock Speed	100 MHz
Form Factor	Integrated
Installed Qty	1
Instruction Set	RISC

Scanner

Type	None

Service

Support Details Full Contract Period	1 year
Support Details Service Included	Parts and labor
Support Details Type	Limited warranty
Support Type	1 year warranty

Slot Provided

Form Factor	DIMM 100-pin
Free Qty	2, 1
Total Qty	2, 3
Type	Memory, EIO

Slot Required

Type	None

Software

Type	Drivers & Utilities, HP FontSmart, HP JetAdmin Utility administrative

Storage Hard Drive

Type	None

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System Requirements

Min Operating System	Novell NetWare 3.12, Microsoft Windows 95/98,

SunOS 4.1.3, Novell NetWare 5.1, Novell NetWare 5.0, Apple MacOS 7.1 or later, SunSoft Solaris 2.3, Novell NetWare 4.x, SunSoft Solaris 2.6, SCO Unix 5.0x, SunSoft Solaris 2.4, IBM OS/2 Warp 4.0, SCO Unix 4.2.0, HP-UX 9.x, SunOS 4.1.4, Microsoft Windows NT 3.51, HP-UX 11.x, Red Hat Linux 5.2, SunSoft Solaris 7, HP-UX 10.x, Microsoft Windows 2000 / NT4.0, Novell NetWare 3.11, SunSoft Solaris 2.5 or later, SuSE Linux 6.2, IBM OS/2 Warp 3.0, IBM AIX 3.2.5 or later

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OTTER TAIL RAILROAD

Human Resources

The proposed software is Optimum Solutions that provides a complete package for the needs of OTRR. This system will provide all the functionality needed for OTRR size railroad.

Capital Costs	Purchase price	$11,500.00
	Hardware	6,674.73
	Total Costs	$18,174.73
Annual Costs	licenses Fees	$ 2,500.00

REDACTED

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Human Resources

Human Resources Module



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HR Reports
Upcoming Enhancements
HR Screen Shots

On-line Demo: View an Interactive Flash® demo of our products

NEW - Web Enabled GUI Version for our iSeries (AS/400) Product Line

Product Overview

The Optimum Solutions iSeries (AS/400) Human Resources (HR) system is designed to help companies in any industry, or any size, bring the difficult an often cumbersome task of HR record keeping and government reporting unde complete control. Extensive employee information is available at your fingerti which aids in protecting your company's most valuable asset -- your people!

A single key stroke from the "work with employee" screen in HR allows you tc immediately access key employee information such as salary history, perform appraisals, attendance history, training skills, job history, insurance/benefits, wellness and much more. You will also find several miscellaneous fields (alph numeric) that are user definable to tailor the system to your needs.

Responding to government requirements will be made easier with both online access and numerous reporting options for EEO, COBRA, OSHA, workers compensation, and ISO 9600.

Extensive levels of security can be implemented at the menu, program, comp and/or division/department levels. You can even secure the employee pay fie not appear for certain HR users.

The HR system can be implemented as a stand-alone application or integrate our Payroll, Time & Attendance and/or Applicant Tracking (AT) modules. The integration provides real-time updating of data between HR and Payroll to en that your HR and Payroll departments, as well as supervisors, are working wi most up-to-date employee data. The HR system is available in both iSeries (AS/400) GUI (PC graphical user interface) and traditional iSeries (AS/400) character based ("green screen") versions.

U.S. and Canadian versions of the Human Resources module are avail

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View this enhancement document, with descriptive screen captures here.

Human Resources System - 6.2 Enhancement

(additional enhancements)

This document lists program changes made since the release of Human Reso Version 1.61. Changes are grouped to reflect the different areas within Hum Resources.

Version 6.2 is the current release of Human Resources. This release number increases as Opticom fixes and enhancements are created. If you update yo system with all available Opticoms, then you should be at this release level. main Human Resources menu will display the release level of your system at time you received your program library on tape or CD. Opticoms do not upd display on the main menu (the system maintains a separate log of Opticoms received).

Personnel Information

- Employee screen will now display the termination date and reason on t bottom of the screen in red, if an employee is terminated. Termination and reason still must be changed through the Job Screen.
- Dashes are now added automatically to Social Security Number.
- Dependents screen now has graduation date added.
- Events screen has "F23=Fold/Unfold" added to allow display of commer related to the event.
- Events program hook added for linking to systems external to OSI Hum Resources when adding to or updating the employee events file.
- Employee events changed to allow multiple events on the same day.

Job Screen

- When creating a new employee record, the job screen will be called immediately after the employee data screen.
- Job performance review rating field changed from 3 to 4 characters.
- Changed the job screen so that if no changes are made and the ENTER pressed; the entry of a reason code is not required. The advantage now that if you are viewing a terminated employee and you wantto get to t termination screen, then you no longer have to key a reason code.
- Job screen will now display the job code description immediately under job code.
- Job history screen has "F23=Fold/Unfold" added to allow display of employment status and annual salary on a second line.
- Two additional cost fields added to the OSHA/Worker's Compensation s other cost #1 and other cost #2.
- Training courses by Job Code able to be added to the employee. F7 allo certifications to be added. F8 will allow you to access the training needs Once you have accessed this window you will need to press F7 to acces

code needs. You will position on the list the desired job code. Key a "1" beside the items you wish to select and press enter. The selected items be added to the employees training needs screen. (Must first be set up code tables "Training Needs by Job Code").
- F7 sort option on the Work with Employee Payroll Information has had several options added to give more of a selection.
- "E(x)tra Pgms" will be displayed in the employee maintenance program options if the customer has custom extra programs in the BAW (big additional-programs window).

Reports

- "Employees by Hire Date Report" had option added that allows printing employee's hired within a particular month. This option is good for prod a list of employment hire anniversaries.
- New Hire Report Simplified.
- "Employee Salary History Report" added options to sort by Dept (Y/N) a allow page breaks by Dept (Y/N).
- "Employees by Supervisor Report" added option to allow page breaks b supervisor number.
- Added option to include/exclude terminated employees on several repo Absence by Reason code)
- "EEO-4 detail and summary reports" were added. Government employe the EEO-4 report.

Code Tables

- Training Courses by Job Code has been added. You will now create the code, sequence code and training course. Then when you go to the emp training needs the new window will be accessed by pressing F7. You wil position on the list the desired job code. Key a "1" beside the items you to select and press enter. The selected items will be added to the empl training needs screen.
- Perfect attendance policy plan and tracking added to employee attenda option.

Utilities

- Two utilities have been added to HR, Mass Pay Increase Update Menu a Transfer of Employees. This works the same as the PR Mass Pay Increa
- Mass pay increase function added to utilities menu. The mass pay funct will create job history records for the selected group of employees that receive the mass pay increase.
- Added an employee transfer utility that will allow the copying of employ demographics and other selected information from one company to anc
- Added FTE report to Menu Security.
- Added "Mid" pay grade to Pay Grade Report.

HR 6.2 Additional Enhancements *(Updated 06/20/2002)*

- Transfer an employee to another company option added

- Mass pay increase option added
- OSHA 300, 301 added
- New Hire process based on state specifications rewritten
- Sort options to Absence by Reason Codes added
- Sort options to Benefits by Employee added
- Sort options to Employees by Hire Month added
- Sort options to EEO Detail by company added
- Sort options to EEO Summary by company added
- Include/exclude employee to Employee Benefits by Benefits Codes adde
- Include/exclude employee to Employee Attendance Detail added
- Include/exclude employee to New Hire Detail by Company added
- Include/exclude employee to New Hire Summary by Company added
- Include/exclude employee to Emloyees by Hire Date added
- Include/exclude employee to Attendance Reports by Division added
- Include/exclude employee to Veterans Report by EEO code added
- Include/exclude employee to Employees by Hire Month added
- Job Pay Groups added
- Purge program for Employee Change History file added
- Ability to display environment name on main menu added

In Progress

- Two new Avery label formats to the Custom Label programs being adde

(return to top of page)

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Human Resources List of Human Resources Reports



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Employee/Personnel Reports

1. Employee Listing
2. Employee Events Report
3. Employee by Hire Date
4. Employee Birthday List
5. Employee Mailing Labels

Organizational Reports

1. Employees by Supervisor
2. Supervisors by Division and Department
3. Telephone Directory
4. Seniority Listing
5. Employee Age Listing

Property and Vehicle Reports

1. Employee Property Report
2. Property by Property Code
3. Property by Return Date
4. Property Not Returned
5. Employees with Company Vehicle Report
6. Vehicles by Expected Return Date
7. Driver License Expiration
8. Assigned Parking Report
9. Company Vehicle Listing
10. Company Vehicle Maintenance History
11. Vehicle Maintenance Due Report
12. Vehicles Not Returned
13. Vehicle License Expiration

Compensation/Job History Reports

1. Salary Reviews Due
2. Performance Reviews Due
3. Salary History
4. Salary Analysis Report
5. Employee Skills Report
6. Ranked Salary Report
7. Job/Pay Grade Analysis
8. Pay Increase Analysis
9. Terminated Employees

EEO and Citizenship Reports

1. I-9 Verification Report
2. EEO-1 Detail Report
3. EEO-1 Summary Report
4. EEO-4 Detail Report

Benefits, Insurance, and COBR Reports

1. Benefits by Employee
2. Benefits by Benefit Code
3. Employee Dependent Listing
4. COBRA Notification Letters
5. COBRA Billing Statements
6. COBRA Recipient Report

Skill, Training, and Education Reports

1. Skills Inventory Report
2. Employee Skills Report
3. Training History by Employee Report
4. Employee Certification Report
5. Employee Training Needs Report
6. Employee Formal Education Report

Wellness and Emergency Conta Reports

1. Emergency Contact Listing
2. Physical Exams Due Report
3. Drug Tests Due Report
4. Employee Random Selection Report

OSHA and Worker's Compensa Reports

1. Accidents by Employee
2. Accidents by Date
3. OSHA 101 Accident Report
4. OSHA 200 Report

Attendance Reports

1. Attendance Detail Report
2. Absence by Reason Code
3. Ranked Absenteeism Report

Download Report Examples

- View the Adobe PDF document.

5. EEO-4 Summary Report
6. EEO New Hire Detail
7. EEO New Hire Summary
8. EEO Termination Detail
9. EEO Termination Summary
10. Veteran Report

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Features

- Name and address information
- Ethnic identity
- Age
- Hire/rehire/termination dates
- Citizenship
- Visa
- Union affiliation
- Notepad
- Social Insurance number (Canadian version)

Ease of Tracking

- Attendance detail and history
- Employee education and employment background
- Emergency contacts
- Dependents
- Job detail and history
- Insurance coverage
- COBRA
- OSHA
- Workers compensation claims and cas
- Property
- Skills
- Completed and scheduled training
- Vehicle inventory and maintenance
- Wellness
- Drug testing

Employee Reports

- Listing
- By hire date
- Birthday list
- Mailing labels
- New Hire

Attendance Reports

- Detailed attendance
- Absences by reason code
- Ranked absenteeism

Benefit, Insurance and COBRA Reports

- By employee or benefit code
- Employee dependents
- COBRA Notification letter
- COBRA billing statement
- COBRA recipient

Compensation/Job History Rep

- Salary review due
- Performance reviews due
- Salary history
- Salary analysis
- Ranked salary
- Job/pay grade analysis
- Terminated employees

EEO and Citizenship Reporting

- I-9 verification
- EEO-1 and 4
- New hire

Organizational Reports

- Employees by supervisor
- Telephone directory
- Seniority listing

- Termination summary and detail
- Veterans reporting

OSHA and Workers Compensation Reports

- Accidents by employee
- Accidents by date
- OSHA 101
- OSHA 200
- Form 7 (Canadian version)
- Form 9 (Canadian version)

- Employee age list

Miscellaneous

- Random selection for drug testing prc
- Runs stand alone or interfaced to Pay
- Interfacing to outside payroll service providers available.

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OTTER TAIL RAILROAD

COMPUTER EQUIPMENT CONFIGRUATION
PER UNIT INCLUDING SOFTWARE, HARDWARE
AMD NETWORK SUPPORT SYSTEMS

SYSTEM	DECSRIPTION	QTY	UNIT COST	TOTAL COST
Personal Computer Sys. Headquarter Use	Dell OptiPlex GX60 Mini-Tower Intel Proc. 2.00GHz Windows XP Professional	1	1,470.00	1,470.00
	AESP IEEE 1284 Print Cable	1	9.88	9.88
	HP 8M Ethertwist Cable	1	3.98	3.98
	HP LaserJet 1000 Printer	1	249.00	249.00
Total Personal Computer System Unit Cost				1,732.86
Personal Computer Sys. Field Use	Dell OptiPlex GX60 Mini-Tower Intel Proc. 2.00GHz Windows XP Professional	1	1,470.00	1,470.00
	AESP IEEE 1284 Print Cable	1	9.88	9.88
	HP 8M Ethertwist Cable	1	3.98	3.98
	HP LaserJet 1000 Prt.	1	249.00	249.00
Total Personal Computer System Unit Cost				1,732.86
Portable Computer System	Inspiron 2650 Notebook Pentium 4 Processor 2.0GHZ Windows XP Professional	1	1,844.00	1,844.00
	AESP 1EEE 1284 Printer Cable	1	9.88	9.88
	HP 8M Ethertwist Cable	1	3.98	3.98
	HP DeskJet 350C Portable Prt.	1	199.00	199.00
Total Portable Computer System				2,056.86

Accounting Computer Sys.	Dell OptiPlex GX60 Mini-Tower Intel Proc. 2.00GHz Windows XP Professional	1	1,470.00	1,470.00
	AESP 1EEE 1284 Print Cable	1	9.88	9.88
	HP 8M Ethertwist Cable	1	3.98	3.98
	HP LaserJet 5000N	1	1,669.87	1,669.87
	Peachtree MAS 90 10-Users	1	23,125.00	23,125.00

Note: The Accounting system will share the same Server used by the Human Resources system.

Total Accounting Computer System $26,278.73

Human Resources				
	Dell OptiPlex GX60 Mini-Tower Intel Proc. 2.0GHz Windows XP Professional	1	1,470.00	1,470.00
	AESP 1EEE 1284 Print Cable	1	9.88	9.88
	HP 8M Ethertwist Cable	1	3.98	3.98
	HP LaserJet 5000N	1	1,669.87	1,669.87
	Dell PowerEdge 2600 Server	1	3,521.00	3,521.00

Total Human Resources System 6,674.73

Network Computer System With Backup – Cluster Configuration	Dell PowerEdge 6400 700 MHZ/1M Cachce, P111X Redundant Power Supplies	1	52,815.97	52,815.97
	Dell Power Vault 21 XS 12-Drive Enclosure Base System			
	Dell Power Vault 705N	1	7,462.08	7,462.08
	Network Attached Storage Base (220-1399)	1	2,980.41	2,980.41
	Microsoft Exchange Server 25 – Users	1	6,486.97	6,486.97
	Microsoft SQL Server 5-Users	1	1,389.89	1,389.89
	Microsoft Visual SourceSafe	1	379.13	379.13
	Microsoft SharePoint Portal Server	1	2,937.35	2,937.35
	Microsoft Internet Security & Acceleration Server 2000	1	1,449.99	1,499.99

Microsoft Windows 2000 Server	1	669.52	2,678.08
Veritas Backup Exec V8.6 Agent – SharePoint Portal	1	499.57	499.57
Veritas Backup Exec Advance Open File Option	1	558.45	558.45
Veritas Backup Exec 9 Agent For Microsoft Exchange	1	619.88	619.88
HP StorageWorks DLT1 1280 Superloader	1	4,988.74	4,988.74
HP DLT Tape Data Cartridge	10	51.77	517.70
Cisco Catalyst 2950 24-Port Switch	2	799.00	1,598.00
AESP 1EEE 1284 Printer Cable	1	9.88	9.88
HP 8M Ethertwist Cable	1	3.98	3.98
HP LaserJet 5000N	1	1,669.87	1,669.87
HP DeskJet 1220C	1	489.35	489.35
Total Network Computer System with Backup			89,585.29

DELL

QUOTATION

E Com

QUOTE #: 48964459
Customer #: 12509253
Quote Date: 10/24/00
Customer Name: FORGING AHEAD ASSOC

Date: 10/24/00 1:45:44 PM

TOTAL QUOTE AMOUNT:	$52,815.97	ESTIMATED MONTHLY PAYMENT:	$1,378.79
Product Subtotal:	$49,616.00	Amount Leased:	$49,956.00
Tax:	$2,859.97	Business Lease (months):	48
Shipping & Handling:	$340.00		
Shipping Method:	2nd Day	Total Number of System Groups:	1

GROUP: 1	QUANTITY: 2	SYSTEM PRICE: $24,783.00	GROUP TOTAL: $49,566.00

Base Unit:	Dell PowerEdge 6400, 700MHz/1M Cache,PIIIX, Redundant Power Supplies (220-0659)
Processor:	Dell PowerEdge 64X0,700MHz,1MBQuad Processors,Factory Install (311-0832)
Memory:	2GB RAM,4 X 512MB Registered DIMMs,for Dell PowerEdge 6400/6450,Factory Install (311-4113)
Keyboard:	Deluxe Windows Keyboard, for Dell PowerEdge Servers, Factory Install (310-0310)
Monitor:	15" (13.8" Viewable) M570 Monitor,for Dell PowerEdge, Factory Install (320-0077)
Hard Drive:	4X36G,Ultra3,SCSI,10K RPM,HardDrive,PowerEdge 6450 (340-6723)
Hard Drive Controller:	PERC2-Dual Channel RAID Card, W/128MB Cache,1-Internal & 1 External Channel & DOCS,For PE Servers,Factory Install (340-9008)
Floppy Disk Drive:	1.44MB,3.5",Floppy Drive, for Dell PowerEdge Servers, Factory Install (340-0608)
Operating System:	Microsoft NTS 4.0 on CD, 10 Client Access Licenses, OEM Packaging, US Version, Factory Install (430-2185)
Mouse:	Logitec System Mouse w/Driver Disks,Factory Install (310-0016)
NIC:	Network Card,Dual Port,for Dell PowerEdge Servers,FactoryInstall (430-0225)
TBU:	35/70GB DLT 7000 Tape Backup (Using Onboard Controller) forDell PowerEdge 6300, Factory Install (340-1374)
CD-ROM or DVD-ROM Drive:	17/40X SCSI CD ROM #1,Black, for Dell PowerEdge 4300/6300, Factory Install (313-7008)
Speakers:	8-Bay Split 2 X 4 Hard Drive Cage,1" Only,for Dell PowerEdge 4400/6400,Factory Install (340-5773)
Documentation Diskette:	Electronic Documentation on CD (310-0438)
Option 1:	Config #21, RAID 5/No Hard Drives in Cage, DLT7K Using On-board Controller, for Dell PowerEdge 6300,Factory Install (340-1379)
Option 2:	Tower Option, Rubber Feet for Dell PowerEdge 4300/4400/6300,Factory Install (310-0181)
Service:	Type 2 Contract - Same Day 4-Hour 7x24 Parts & Labor On-Site Response Initial Year (902-3450)
Service:	Type 2 Contract - Same Day 4-Hour 7x24 Parts & Labor On-Site Response 2YR Extended (902-3732)
Installation:	On-Site InstallationDeclined (900-9997)
Misc:	READYWARE INSTALLATION FEE (365-1234)
Misc:	Fan,6X000/4X000,Spare,Factory Install (310-5054)
Misc:	Power Supply,6X00/4X00,Spare, Factory Install (310-5055)
Misc:	Uninterruptable Power Supply, 1400,Stand Alone, Factory Install (310-0284)
Misc:	Network Card,Dual Port,for Dell PowerEdge Servers,FactoryInstall (430-0225)

Misc:	DellPlus,Info,Print Label, Large,Factory Install (360-3527)
Misc:	DellPlus,Information,Print, Label,Medium,Factory Install (360-4454)
Misc:	DellPlus Routing SKU,Factory Install (365-0257)
Misc:	DellPlus,Integration Service, OR-System Label,Servers (365-4301)

SOFTWARE & ACCESSORIES

Product	Quantity	Unit Price	Total
Cluster Kit,Interconnect Cableand Documentation,SE100, Customer Install (310-0380)	1	$50.00	$50.00

Number of S & A Items: 1 | S&A Total Amount: $50.00

TOTAL QUOTE AMOUNT:	**$52,815.97**	**ESTIMATED MONTHLY PAYMENT:**	**$1,378.79**
Product Subtotal:	$49,616.00	Amount Leased:	$49,956.00
Tax:	$2,859.97	Business Lease (months):	48
Shipping & Handling:	$340.00		
Shipping Method:	2nd Day	Total Number of System Groups:	1

SALES REP:	NAT CARNI	PHONE:	800-234-9999
Email Address:	Nat_Carni@Dell.com	Phone Ext:	48646

Business Lease arranged by Dell Financial Services L.P., an independent entity, to qualified customers.
Lease payments based on 48 month FMV purchase option lease, and do not include taxes (which may vary from taxes on
purchase amount) and fees, or shipping charges. No security deposit required. A $55 documentation
fee will be added to your lease. Subject to credit approval and availability. Lease terms subject to
change without notice. For your convenience, your sales representative, quote number and customer number have been
included to provide you with faster service when you are ready to place your order. You may also
place your order online at www.dell.com/quote

This quote is subject to the terms of the agreement signed by you and Dell, or absent such agreement,
is subject to the applicable Dell terms and conditions agreement.

Prices and tax rates are valid in the U.S. only and are subject to change.

All product and pricing information is based on latest information available. Subject to change without
notice or obligation.

LCD panels in Dell products contain mercury, please dispose properly.

Please contact Dell Financial Services' Asset Recovery Services group for EPA compliant disposal
options at US_DFS_AssetRecovery@dell.com. Minimum quantities may apply.

DELL

QUOTATION

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QUOTE #: 48964433
Customer #: 12509253
Quote Date: 10/24/00
Customer Name: FORGING AHEAD ASSOC

Date: 10/24/00 1:45:43 PM

TOTAL QUOTE AMOUNT:	$7,462.08	ESTIMATED MONTHLY PAYMENT:	$194.80
Product Subtotal:	$6,898.00	Amount Leased:	$7,058.00
Tax:	$404.08	Business Lease (months):	48
Shipping & Handling:	$160.00		
Shipping Method:	2nd Day	Total Number of System Groups:	1

GROUP: 1	QUANTITY: 1	SYSTEM PRICE: $6,898.00	GROUP TOTAL: $6,898.00

Base Unit:	Dell PowerVault 21XS 12-Drive Enclosure Base System (220-4099)
Hard Drive:	4X36,10K,1.0",Ultra3, PowerVault 20XS (340-6763)
Operating System:	No Operating System for Dell PowerVault Servers (420-3019)
Cable:	Cable,PERC,4 Meter, for Dell PowerVault 200S/201S/ 210S/211SI,Factory Install (310-0313)
Cable:	Cable,PERC,4 Meter, for Dell PowerVault 200S/201S/ 210S/211SI,Factory Install (310-0313)
Documentation Diskette:	Soft Copy Documentation,CD,forDell PowerVault 201S/211S, Factory Install (460-0962)
Option 1:	Hard Drive Configuration, Increasing Order, Dell PowerEdge SDS100 and PowerVault 20XS,Factory Instal (340-0907)
Option 2:	Dell PV200S/210S,Complete RackRail Kit,Inner Rails,Factory Install,Outer Rails Customer Install (310-1330)
Installation:	On-Site InstallationDeclined (900-9997)
Misc:	Two Ultra2 Cluster Enclosure Services Exp. Modules (2ESEMs)for Dell PV 2xxS Ultra2 OptionFactory Install (340-6024)
Misc:	Second Redundant Power Suply,ffor Dell PowerVault 200S/201S,Factory Install (310-6125)
Misc:	Type 2 Contract - Same Day 4-Hour 7x24 Parts & Labor On-Site Response Initial Year (902-4310)
Misc:	Type 2 Contract - Same Day 4-Hour 7x24 Parts & Labor On-Site Response 2YR Extended (902-3232)

TOTAL QUOTE AMOUNT:	$7,462.08	ESTIMATED MONTHLY PAYMENT:	$194.80
Product Subtotal:	$6,898.00	Amount Leased:	$7,058.00
Tax:	$404.08	Business Lease (months):	48
Shipping & Handling:	$160.00		
Shipping Method:	2nd Day	Total Number of System Groups:	1

SALES REP:	NAT CARNI	PHONE:	800-234-9999
Email Address:	Nat_Carni@Dell.com	Phone Ext:	48646

Business Lease arranged by Dell Financial Services L.P., an independent entity, to qualified customers.
Lease payments based on 48 month FMV purchase option lease, and do not include taxes (which may vary from taxes on
purchase amount) and fees, or shipping charges. No security deposit required. A $55 documentation
fee will be added to your lease. Subject to credit approval and availability. Lease terms subject to
change without notice. For your convenience, your sales representative, quote number and customer number have been
included to provide you with faster service when you are ready to place your order. You may also
place your order online at www.dell.com/quote

This quote is subject to the terms of the agreement signed by you and Dell, or absent such agreement,
is subject to the applicable Dell terms and conditions agreement.

Prices and tax rates are valid in the U.S. only and are subject to change.

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options at US_DFS_AssetRecovery@dell.com. Minimum quantities may apply.

DELL

E Com

Date: 10/24/00 9:14:52 AM

QUOTATION

QUOTE #: 48938064
Customer #: 12509253
Quote Date: 10/24/00
Customer Name: FORGING AHEAD ASSOC

TOTAL QUOTE AMOUNT:	$2,980.41		
Product Subtotal:	$2,699.00		
Tax:	$161.41		
Shipping & Handling:	$120.00		
Shipping Method:	3rd Day	Total Number of System Groups:	1

GROUP: 1	QUANTITY: 1	SYSTEM PRICE: $2,699.00	GROUP TOTAL: $2,699.00
Base Unit:	Dell PowerVault 705N,Network Attached Storage,Base (220-1399)		
Service:	Type 3 Contract - Next Business Day Parts Delivery Initial Year (900-8990)		
Service:	Type 3 Contract - Next Business Day Parts Delivery 2YR Extended (900-8992)		

TOTAL QUOTE AMOUNT:	$2,980.41		
Product Subtotal:	$2,699.00		
Tax:	$161.41		
Shipping & Handling:	$120.00		
Shipping Method:	3rd Day	Total Number of System Groups:	1

SALES REP:	NAT CARNI	PHONE:	800-234-9999
Email Address:	Nat_Carni@Dell.com	Phone Ext:	48646

For your convenience, your sales representative, quote number and customer number have been
included to provide you with faster service when you are ready to place your order. You may also
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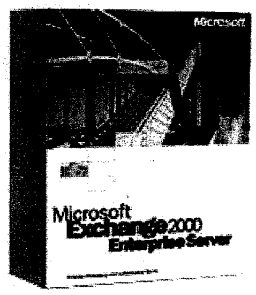
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options at US_DFS_AssetRecovery@dell.com. Minimum quantities may apply.

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Microsoft Exchange 2000 Enterprise Server with 25-user CAL

Product Information

For Windows 2000; with 25-user Client Access License

Usually Ships:	1-2 Weeks
CDW Part No.:	228905
Mfg. Part No.:	395-01621
Unspsc No.:	43162707
Price:	**$6,486.97** ($223.80/month)

ADD TO CART

Manufacturer

Microsoft

OVERVIEW

Connecting people with knowledge

Microsoft® Exchange 2000 is the reliable, easy-to-manage platform for messaging and collaboration that brings users and knowledge together. Exchange 2000 is a reliable, scalable, manageable infrastructure that enables 24x7 messaging and collaboration with low total cost of ownership.

Features/Benefits

- Powerful database: Scale from 10 to 10 million users with Exchange 2000's unlimited message database.
- Flexible deployment topology: Deployable in a "front end/back end" topology that maximizes reliability, performance, and scagliola for the largest enterprises and ISP's. Build a flexible email topology by partitioning Exchange services across multiple machines for higher reliability.
- Create a single, unified enterprise directory with Microsoft Windows 2000 Active Directory service, and keep messaging and collaboration safe with Windows 2000 security.
- Ensure e-mail reaches its destination with new high-speed routing that improves performance and reliability, even when mail links are down.
- Simplify Exchange administration with the management interface of the Microsoft Management Console in Microsoft Windows 2000 Server.
- Store and manage e-mail, documents, and Web content in the Web Storage System, making it easier for employees to find and access information and collaborate more effectively.
- Build powerful Web-enabled applications such as document libraries, information routing and tracking, and work flow services.
- Create documents with Microsoft Office 2000 that can be stored and accessed directly in Exchange 2000 Server.
- Access and share information using the Internet, cellular phones, handheld computers, and pagers.
- Send and receive text-based messages in real time with Instant Messaging, and schedule online conferences using Microsoft Exchange

3088

2000 Conferencing Server or Microsoft NetMeeting.

- Deliver the familiar look of Microsoft Outlook to both home and remote users accessing e-mail, scheduling, contacts, and collaborative information.

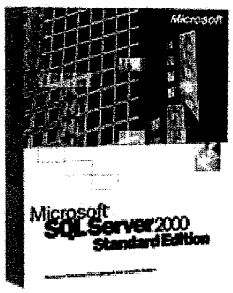
SPECIFICATIONS

Header	
Compatibility	PC
Country Kits	N/a
Localization	English
Manufacturer	Microsoft
Model	2000 Enterprise Edition
Packaged Quantity	1
Product Line	MS Exchange Server
Miscellaneous	
Package Type	Retail
OS Required	
Type	Microsoft Windows 2000 Server
Service	
Support Details Type	Technical support
Support Type	Product info support
Software	
Architecture	Client - server (2-tier)
Category	Productivity application
Distribution Media	CD-ROM
Game Console Compatibility	None
License Pricing	Standard
License Qty	1 server, 25 clients
License Type	Complete package
Subcategory	Productivity - groupware
System Requirements	
Min Hard Drive Space	4 GB
Min Operating System	Microsoft Windows 2000 Server
Min Processor Speed	300 MHz
Min Processor Type	Pentium II
Min RAM Size	128 MB
Peripheral Interface Devices	CD-ROM

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Microsoft SQL Server 2000 Standard with 5 CAL

Product Information

For Windows NT and 2000; 5 Client Access License

Usually Ships:	Same Day
CDW Part No.:	233823
Mfg. Part No.:	228-00683
Unspsc No.:	43161501
Price:	**$1,389.89**

ADD TO CART

Manufacturer

Microsoft

OVERVIEW

The next generation database for the Business Internet.

Microsoft® SQL Server™ 2000 is one of the fastest ways to deliver the next generation of scalable Web applications with Windows DNA. It dramatically reduces the time required to bring e-commerce, data warehousing, and line-of-business applications to market, while offering the scalability needed for the most demanding environments.

- XML Stored Procedure support - allows database developers to utilize XML immediately.
- XML Update Grams - allows developers to insert, update and delete data in SQL Server 2000 with XML.
- Large Memory and SMP support - provides support for up to 32 CPU's and 64GB of RAM on Windows 2000 Data Center Edition for handling high transactional loads common in Web applications.
- Integrated Data Mining - use data from large data sets to find hidden patterns and trends.
- Distributed Partitioned Views - provides unlimited scalability by allowing work load to be distributed across and processed by multiple servers in unison.
- Indexed (Materialized) Views - improves performance and scalability by storing and updating calculated results on disk.
- Integrated Analysis Services - the foundation for Online Analytical Processing (OLAP) and data mining is included and fully integrated with SQL Server. Competing database vendors require customers to purchase this capability as an expensive add on.
- Dynamic Self-Management and Tuning - saves tie and effort by automating complex tuning tasks. Provides higher database availability by allowing administrators to perform database management tasks while the database remains online.

SPECIFICATIONS 3090

Header	
Compatibility	PC
Country Kits	N/a
Localization	English
Manufacturer	Microsoft
Model	Server 2000 Standard Edition
Packaged Quantity	1
Product Line	MS SQL
Miscellaneous	
Package Type	Retail
Service	
Support Details Type	Technical support
Support Type	Product info support
Software	
Architecture	Client - server (2-tier)
Category	Productivity application
Distribution Media	CD-ROM
License Pricing	Standard
License Qty	5 clients
License Type	Complete package
Subcategory	Productivity - database / reporting
System Requirements	
Min Hard Drive Space	95 MB
Min Operating System	Microsoft Windows 2000 Datacenter Server, Microsoft Windows 2000 Server, Microsoft Windows 2000 Advanced Server, Microsoft Windows NT Server 4.0 SP5 or later, Microsoft Windows NT Server 4.0 Enterprise SP5 or later
Min Processor Speed	166 MHz
Min Processor Type	Intel Pentium
Min RAM Size	64 MB
Peripheral Interface Devices	Mouse or compatible device, CD-ROM

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Actual Photo Not Shown - License Only

Manufacturer

Microsoft

Microsoft Visual SourceSafe V6.0 Level C

Product Information

Open Software License Level C

Usually Ships:	4-6 Days
CDW Part No.:	146049
Mfg. Part No.:	324-00336
Unspsc No.:	43162403
Price:	**$379.13**

ADD TO CART

OVERVIEW

The Microsoft Visual SourceSafe V6.0 version control system is the latest edition of Microsoft's award-winning version control system for managing software and Web site development. Fully integrated with the Visual Basic, Visual C++, Visual J++, Visual InterDev, and Visual FoxPro development environments, as well as with Microsoft Office applications, it provides easy-to-use, project-oriented version control. Visual SourceSafe works with any type of file produced by any development language, authoring tool, or application. Users can work at both the file and project level while promoting file reuse. The project-oriented features of Visual SourceSafe make managing the day-to-day tasks associated with team-based application and Web site development more efficient.

Benefits

Secure and Scalable: Stores files in a secure repository maintained by an easy to use security system. Files stay protected, yet easily accessible to authorized users. Supports a single user or hundreds of users across multiple projects.

- Project-oriented for Web and PC: Allows file sharing and change tracking across projects, freeing users from having to track which files are changed, by whom, when and where. The result is increased team productivity for Web and PC file management.
- Advanced yet Easy: Seamlessly integrates with a wide range of products to provide version control for any type of document. Easy enough to use for the non-technical team members. Advanced capabilities for large teams, complex projects and web sites.

SPECIFICATIONS

3092

Header

Compatibility	PC
Country Kits	United States
Localization	English

Manufacturer	Microsoft
Model	SourceSafe
Packaged Quantity	1
Product Line	MS Visual

OS Required

Type	Microsoft Windows NT 4.0 SP3 or later, Microsoft Windows 95/98

Service

Support Details Type	Technical support
Support Type	Product info support

Software

Category	Programming tool
Game Console Compatibility	None
License Pricing	Volume
License Qty	1 user
License Type	License only
Subcategory	Programming - team tools
Version	6.0
Volume Pricing Level	Level C

System Requirements

Min Operating System	Microsoft Windows NT 4.0 SP3, Microsoft Windows 95
Min Processor Speed	66 MHz
Min Processor Type	Intel 486 or higher

System Requirements Details

Min Hard Drive Space	59 MB
Min Operating System	Microsoft Windows 95, Microsoft Windows NT 4.0 SP3
Min RAM Size	16 MB, 24 MB

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Product Information

License only - 1 server - VOL - Select

Usually Ships:	1-2 Weeks
CDW Part:	459791
Mfg. Part:	H04-00054
UNSPSC:	43162801
Price:	**$2,937.35** ($104.86/month)

ADD TO CART

Manufacturer

Microsoft

OVERVIEW

Previously code-named "Tahoe", SharePoint Portal Server is a flexible portal solution that lets you easily find, share, and publish information. The new server provides knowledge management - seamlessly integrating with the Microsoft Office and Microsoft Windows productivity desktop environment. This integration helps you work robust document management, search, subscriptions, and in-line discussions into your document management and collaboration processes. In addition, with an architecture built on extensible Web Part technology, SharePoint Portal Server offers your enterprise the most effective way to both build and extend intranet portals.

SPECIFICATIONS

Header	
Compatibility	PC
Country Kits	N/a
Localization	English
Manufacturer	Microsoft
Model	Portal Server 2001
Packaged Quantity	1
Product Line	MS SharePoint
Service	
Support Type	Product info support
Support Details Type	Technical support
Software	
Architecture	Client - server (2-tier)
Category	Internet / communication application
License Pricing	Volume
License Qty	1 server
License Type	License
Licensing Program	Microsoft Select

3094

Subcategory	Internet - news publishing tools, Internet - search tool / engine, Productivity - groupware

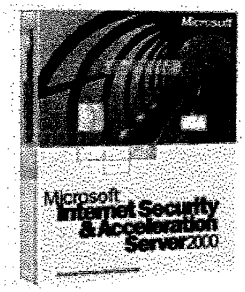
System Requirements

Min Hard Drive Space	550 MB
Min Operating System	Microsoft Windows 2000 Advanced Server, Microsoft Windows 2000 Server, Microsoft Windows 2000 SP1
Min Processor Type	Pentium III
Min RAM Size	256 MB
Peripheral Interface Devices	CD-ROM, Mouse or compatible device, Network adapter, VGA monitor

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Product Information

For Windows 2000

Usually Ships:	Same Day
CDW Part:	242449
Mfg. Part:	E84-00001
UNSPSC:	43162609
Price:	**$1,449.99**

ADD TO CART

Manufacturer

Microsoft

OVERVIEW

Secure, fast, manageable Internet connectivity.

Microsoft Internet Security and Acceleration Server 2000 provides powerful security and network acceleration. It is an extensible enterprise firewall and Web cache server featuring the best integration with the Microsoft Windows 2000 operating system for policy-based security, acceleration, and management of internetworking.

Unified Management of Network Security and Acceleration Services

Microsoft ISA Server delivers secure, fast, manageable Internet connectivity. By combining enterprise firewall and high-performance Web cache functions, ISA Server provides a common management infrastructure that reduces network complexity and costs. Whether opting to deploy as an integrated system or as a separate firewall and cache, organizations get the power and flexibility they want. Flexible management tools offer multi-level policy for users, applications, destinations, schedules, and content types. ISA Server is tightly integrated with Windows 2000 security, directory, virtual private networking (VPN), and bandwidth control with Quality of Service (QoS), simplifying management tasks.

Smart Security

ISA Server includes an extensible, multi-layer enterprise firewall featuring dynamic packet filtering, SecureNAT for transparency, "smart" data-aware application filters, system hardening, and built-in intrusion detection. Use ISA Server to:

3096

- Protect your network from unauthorized access
- Defend your Web servers from external attacks
- Inspect incoming and outgoing network traffic to ensure security
- Receive alerts of suspicious activity

The ISA Server high-performance cache accelerates Web access while saving network bandwidth, and with Windows 2000 Advanced Server, scales for

efficient, dynamic load balancing. ISA Server studies data usage patterns and actively caches popular content.

Use ISA Server caching capabilities to:

- Cache frequently used content within your corporate network
- Save bandwidth by reducing network traffic
- Provide faster Web access for users by serving objects locally rather than over the congested Internet
- Serve popular Web content on your cache to free up Web server bandwidth for other content requests
- Distribute Web content worldwide efficiently and cost-effectively

SPECIFICATIONS

Header	
Compatibility	PC
Country Kits	N/a
Localization	English
Manufacturer	Microsoft
Model	2000
Packaged Quantity	1
Product Line	MS Internet Security and Acceleration Server
Miscellaneous	
Package Type	Retail
OS Required	
Type	Microsoft Windows 2000 Server, Microsoft Windows 2000 Advanced Server
Service	
Support Type	Product info support
Support Details Type	Technical support
Software	
Architecture	Client - server (2-tier)
Category	Internet / communication application
Distribution Media	CD-ROM
License Pricing	Standard
License Qty	1 processor, 1 server, Unlimited users
License Type	Complete package
Subcategory	Internet - firewalls
Version	2000
System Requirements	
Min Operating System	Microsoft Windows 2000 Advanced Server, Microsoft Windows 2000 Server
Min Processor Speed	133 MHz
Min Processor Type	Intel Pentium
Min RAM Size	64 MB

3097

Peripheral Interface Devices	CD-ROM, Mouse or compatible device

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Must be a Microsoft Select Customer to Purchase

Manufacturer

Microsoft

Product Information

Select Level C

Usually Ships:	4-6 Days
CDW Part:	227961
Mfg. Part:	C11-00563
UNSPSC:	43161602
Price:	**$669.52**

ADD TO CART

OVERVIEW

Your Microsoft Select 5.0 price level is determined by the total two-year forecast of license acquisitions within a category of products. Select makes it easier to track your software license acquisitions through monthly license confirmations and annual acquisition summaries.

Microsoft® Windows® 2000 Server is the easy way to Internet-enable your business. As businesses come to rely more and more on the Internet, they have the opportunity to grow, extend their networks to partners and customers, and consider new ways to bring their products and services to market. To take advantage of these opportunities, businesses need an infrastructure that can readily respond to market forces, delivers high reliability, efficient management, ease of use, and supports the latest advances in networking hardware. And to readily pursue these opportunities, businesses want to build on their existing investments in skills and systems.

Windows 2000 Server is designed to meet these needs for businesses of all sizes, from small, centralized organizations to the largest distributed enterprise. Building on the strengths of Windows NT Server 4.0, Windows 2000 Server sets a new standard for how well an operating system can be integrated with standards-based directory, Web, application, network, file and print services, powerful end-to-end management and reliability, to provide the best foundation for integrating your business with the Internet.

SPECIFICATIONS

Header	
Compatibility	PC
Country Kits	N/a
Localization	English
Manufacturer	Microsoft
Model	Server
Packaged Quantity	1

3099

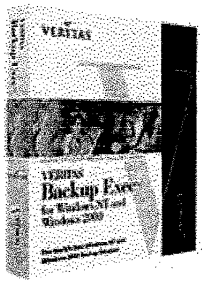
Product Line	MS Windows 2000
OS Provided	
Media	N/A
Type	Microsoft Windows 2000 Server
Service	
Support Type	Product info support
Support Details Type	Technical support
Software	
License Pricing	Volume
License Qty	1 server
License Type	License
Licensing Program	Microsoft Select
Volume Pricing Level	Level A
System Requirements	
Min Hard Drive Space	1 GB
Min Processor Speed	133 MHz
Min Processor Type	Intel Pentium
Min RAM Size	128 MB
Peripheral Interface Devices	Mouse or compatible device, VGA monitor

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3100

800 836 4239

CDW The Right Technology. Right Away.™



Product Information

For Windows 2000

Usually Ships:	1-2 Weeks
CDW Part:	321916
Mfg. Part:	E01807A
UNSPSC:	43162501
Price:	**$499.57**

ADD TO CART

Manufacturer

VERITAS

OVERVIEW

Complete Online Portal Server Data Protection

VERITAS Backup Exec™ Agent for Microsoft SharePoint Portal Server administrators to incorporate online, non-disruptive application and database protection for the invaluable corporate collaboration material and documentation retained in the SharePoint Portal Server repositories.

Product Highlights:

Protects the local or remote SharePoint Portal Server dashboard, workspaces, indexes, and documents within the portal

Online "hot" portal protection for non-disruptive backups

Redirect SharePoint Portal database restores to alternate SPS servers for duplication and convenient disaster recovery situations

Directly view SharePoint Portal Server protected resources from Backup Exec's graphical user interface

SPECIFICATIONS

Header	
Compatibility	PC
Country Kits	N/a
Localization	English
Manufacturer	VERITAS
Model	Agent for Microsoft SharePoint Portal Server
Packaged Quantity	1
Product Line	VERITAS Backup Exec
Miscellaneous	
Package Type	Retail

3101

Service

Support Details Type	Technical support
Support Type	Product info support

Software

Architecture	Client - server (2-tier)
Category	Utilities
Distribution Media	CD-ROM
License Pricing	Standard
License Qty	1 server
License Type	Complete package
Subcategory	Utilities - backup / compression
Version	8.6

System Requirements

Min Operating System	Microsoft Windows 2000 / NT4.0
Peripheral Interface Devices	CD-ROM

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CDW * The Right Technology. Right Away.™

800 836 4239

CDW

Image not Available

Product Information

(ver. 9.0) - complete package - 1 server - STD - CD

Usually Ships:	4-6 Days
CDW Part:	454273
Mfg. Part:	E094068
UNSPSC:	43162511
Price:	**$558.45**

ADD TO CART

Manufacturer

VERITAS

OVERVIEW

VERITAS Backup Exec 9.0 for Windows Servers is the next-generation backup and restore solution providing comprehensive, cost-effective protection for Microsoft Windows server environments. A new graphical user interface consolidates product operations within a browser-like view and offers an alternate true web-based administration console for Windows Server 2003 and Windows-powered NAS. High-performance agents and options deliver flexibility to help protect data quickly and reliably.

Ensure that files on local or remote servers are protected even while in use. The VERITAS Backup Exec Advanced Open File Option handles open files at the volume level and is seamlessly integrated into Backup Exec. Advanced technology also integrates the ability to detect and leverage alternate frozen image technologies such as Microsoft Volume Snapshot Service (VSS) on Windows Servers 2003 or VERITAS Volume Manager FlashSnap for increased application availability.

SPECIFICATIONS

Header	
Compatibility	PC
Manufacturer	VERITAS
Model	Advanced Open File Option
Packaged Quantity	1
Product Line	VERITAS Backup Exec
Interface Required	
Connector Qty	1
Miscellaneous	
Package Type	Retail
Service	
Support Type	Product info support
Support Details Type	Technical support

3103

Software

Category	Utilities
Distribution Media	CD-ROM
License Pricing	Standard
License Qty	1 server
License Type	Complete package
Subcategory	Network - remote backup, Network - storage management, Utilities - backup / compression
Version	9.0

System Requirements

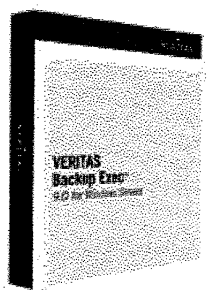
Peripheral Interface Devices	CD-ROM

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3104

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800 836 4239



Product Information

For Windows

Usually Ships:	Same Day
CDW Part:	454275
Mfg. Part:	E094078
UNSPSC:	43162511
Price:	**$619.88**

ADD TO CART

Manufacturer

VERITAS

OVERVIEW

The Backup Exec Agent for Microsoft Exchange Server is the fastest and most flexible avenue for protecting Exchange Server 5.5 and 2000 data while the application is online. Providing full backup and restore of all Exchange Server components including embedded objects, attributes, and all Outlook components, the Agent for Microsoft Exchange Server offers administrators the flexibility to perform individual mailbox backup with selective restores of an individual message or public folder.

SPECIFICATIONS

Header	
Compatibility	PC
Manufacturer	VERITAS
Model	Agent for MS Exchange Server
Packaged Quantity	1
Product Line	VERITAS Backup Exec
Miscellaneous	
Package Type	Retail
Service	
Support Type	Product info support
Support Details Type	Technical support
Software	
Category	Utilities
Distribution Media	CD-ROM
License Pricing	Standard
License Qty	1 server
License Type	Complete package
Subcategory	Network - remote backup, Network - storage management, Utilities - backup / compression

3105

Version	9.0

System Requirements

Peripheral Interface Devices	CD-ROM

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CDW * The Right Technology. Right Away.™

800 836 4239

Product Information



640GB Native/uncompressed (1.28TB compressed*) [Interface] Ultra2 SCSI LVD rack-mountable (2U) external 16-slot, 1-drive DLT1 tape autoloader

Usually Ships:	Same Day
CDW Part:	383664
Mfg. Part:	268664-B21
UNSPSC:	
Price:	**$4,988.74** ($172.11/month)

ADD TO CART

Manufacturer

hp invent

OVERVIEW

High-capacity storage and enterprise data protection features at a reasonable price

The hp StorageWorks DLT1 1280 SuperLoader provides customers with the ultimate solution for automated entry-level data protection. Built around the DLT1 tape drive, the 1280 SuperLoader provides you with a native data protection storage capacity of 640GB* in only 2U of rackmount space. The SuperLoader also incorporates many Enterprise level features in a solution that can be easily integrated into a data protection solution for small to mid-size servers and applications.

DLT1 1280 SuperLoader benefits include:
• Efficient physical packaging
- High-density, low-profile, rackmounted solution fits easily in Compaq ProLiant™ 9000 Series racks
- Highest-density DLT1 autoloader solution available – consumes less space than competitive products
• Ease of maintenance and management
- Removable DCA and data cartridge magazines minimize system downtime for maintenance and lower overall total cost of ownership
- Modular design provides ultimate level of Investment Protection for future upgrades in storage capacity and tape technology
- IP network-based administration screen allows for "anywhere, anytime" management through web-based controls
• Central control for distributed locations and applications
- Rich remote management features lessen customer's dependence on "localized" IT staff
- Diagnostics and firmware upgrade tasks easily completed through either LAN or web-based management configuration
• Value added through Enterprise automation features
- Removable data cartridge magazines and Import/Export Mail Slot provides multiple modes for data cartridge insertion
- Integrated remote management and security features
- Integrated management software and bar code reader for efficient data cartridge management
- Supported by Data Protection tools including the Data Protection Software Suite

Capacity

Capacity - Drive : 80 GB
Capacity - Total: 640 GB

3107

Capacity Additional Information : *Up to 1.28TB when 2nd 8-cartridge magazine is added
Compression : (Compressed)

Data Storage Types

Data Storage Device Type : SAS (Server Attached Storage) device
Tape Device Type : Tape autoloader/changer

Data Transfer Rate

Data Transfer Rate: 6 MB
Data Transfer Rate (Compression): (Compressed)

Form Factor

Form Factor (Drive) : 19-inch Rack-mount
Form Factor Additional Info: 2U

Interface

Interface: Ultra2 SCSI
Interface Additional Info: LVD- Low Voltage Differential

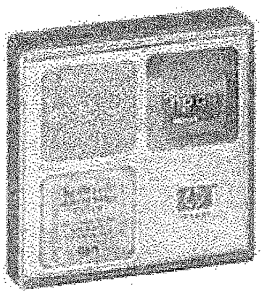
Warranty Information

Warranty Terms: Three year limited

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CDW "The Right Technology. Right Away."

800 836 4239



Product Information

20GB, 35GB, 40GB Uncompressed/40GB, 70GB, 80GB Compressed DLTtape IV (TK88) tape cartridge, single

Usually Ships:	Same Day
CDW Part:	077698
Mfg. Part:	C5141F
UNSPSC:	43181603
Price:	**$51.77**

ADD TO CART

Manufacturer

hp invent

OVERVIEW

HP's DLTtape cartridges enable you to store and restore data with confidence. With a 30-year archival life, you won't need to worry about maintenance or retensioning.

SPECIFICATIONS

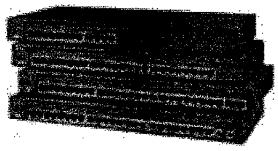
Header	
Compatibility	PC
Country Kits	N/a
Localization	N/a
Manufacturer	Hewlett-Packard
Service	
Support Type	Product info support
Storage Removable	
Compressed Capacity	80 GB
Media Form Factor	Proprietary
Media Format	PC
Media Included Qty	1
Media Type	DLT
Native Capacity	40 GB
Recording Standard	DLT4000
Type	DLT

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CDW The Right Technology. Right Away.™

800 836 4239



Product Information

24-port 10/100BASE-TX Fast Ethernet managed rackmountable switch with data security protection

Usually Ships:	Same Day
CDW Part:	298050
Mfg. Part:	WS-C2950-24
UNSPSC:	43172901
Price:	**$799.00**

ADD TO CART

Manufacturer

Authorized Reseller

OVERVIEW

The Cisco Catalyst 2950 is a wire-speed Fast Ethernet switch that delivers premium performance and functionality for local-area networks (LANs)

This standalone, 10/100BASE-TX autosensing switch provides enhanced quality of service (QoS) and multicast management features managed with the easy-to-use, Web-based Cisco Cluster Management Suite (CMS) and integrated Cisco IOS® Software.

With a switching fabric of 8.8Gigabits per second (Gbps) and a maximum forwarding bandwidth of 4.4Gbps, the Catalyst 2950 switch delivers wire-speed performance on all ports in connecting end-stations and users to the company LAN.

Catalyst 2950 switch supports performance boosting features such as Fast EtherChannel® and Gigabit EtherChannel technology, offering up to 4Gbps of high-performance bandwidth between Catalyst switches, routers, and servers.

The Catalyst 2950 delivers sophisticated LAN-edge QoS, unmatched in its category of products in the industry. The Catalyst 2950 switch supports two modes of reclassification. One mode based on the IEEE 802.1p standard honors the class-of-service (CoS) value at the ingress point and assigns the packet to the appropriate queue. In the second mode, packets can be reclassified based on a default CoS value assigned to the ingress port by the network administrator. In the case of frames that arrive without a CoS value (such as untagged frames), The Catalyst 2950 supports classification based on a default CoS value per port assigned by the network administrator.

Once the frames have been classified or reclassified using one of the above modes, they are assigned to the appropriate queue at the egress.The Catalyst 2950 switch supports four egress queues, which allow the network administrator to be more discriminating and granular in assigning priorities for the various applications on the LAN traffic. Strict Priority Scheduling configuration ensures time-sensitive applications such as voice, always follow an expedited path through the switch fabric. Weighted Round Robin (WRR) scheduling, another significant enhancement, ensures that lower-priority traffic receives attention without comprising the priority settings administered by a network manager.

These features allow network administrators to prioritize mission-critical,

time-sensitive traffic, such as ERP (Oracle, SAP, and so on), voice (IP telephony traffic), and CAD/CAM over less time-sensitive applications such as FTP or e-mail (SMTP).

The Internet Group Management Protocol (IGMP) Snooping feature allows the switch to "listen in" on the IGMP conversation between hosts and routers. When a switch hears an IGMP join request from a host for a given multicast group, the switch adds the host's port number to the Group Destination Address (GDA) list for that group. And, when the switch hears an IGMP leave request, it removes the host's port from the Content Addressable Memory (CAM) table entry.

By supporting IGMP Snooping in hardware and configuration of IGMP Snooping via the Cisco Cluster Management Suite,The Catalyst 2950 switch delivers outstanding performance and ease of use in administering and managing multicast applications on the LAN.

The Cisco Cluster Management Suite (CMS) is Web-based software that is embedded in Catalyst 2950 switch. Through Cisco Switch Clustering technology, users access CMS with any standard Web browser to manage up to 16 interconnected Catalyst switch at once regardless of their geographic proximity using a single-IP address. CMS provides an integrated management interface for all Cisco IOS functionality, firmware management, and offers administrators a powerful graphical user interface (GUI) tool to easily monitor and manage their LANs.

The Catalyst 2950 can be configured either as command or member switch in a Cisco switch cluster. The command switch serves as the single-IP address management point and disburses all manag

SPECIFICATIONS

Bay Provided	
Type	None
Bay Required	
Type	None
Cabinet	
Chassis Built-in Devices	None
Chassis Form Factor	Rack-mountable
Chassis Installed Devices Modules Qty	0
Chassis Supported Devices Modules Qty	2
Chassis Type	Network device cabinet
Environmental Parameters	
Humidity Range Operating	10 - 90%
Max Operating Temperature	104 °F
Min Operating Temperature	32 °F
Header	
Compatibility	PC
Manufacturer	Cisco Systems
Model	2950

3111

Packaged Quantity	1
Product Line	Cisco Catalyst

Interface Provided

Connector Qty	24
Connector Type	RJ-45
Free	24
Gender	Female
Interface	Ethernet 10Base-T/100Base-TX
Qty	24
Type	Network node
Connector Qty	1
Connector Type	RJ-45
Free	1
Gender	Female
Interface	RS-232
Qty	1
Type	Management

Networking

Cabling Type	Ethernet 100Base-TX, Ethernet 10Base-T
Communication Mode	Full-duplex
Compliant Standards	IEEE 802.1D-LAN, IEEE 802.3-LAN, IEEE 802.3U-LAN
Connectivity Technology	Cable
Data Link Protocol	Ethernet, Fast Ethernet
Data Transfer Rate	100 Mbps
Features	Full duplex capability, Manageable, Network monitoring, Switching
Form Factor	External
Network Ports Qty	24
Remote Management Protocol	SNMP
Status Indicators	Collision status, Link activity, Port status, Power
Switching Protocol	Ethernet
Type	Switch

Power Supply

Device Form Factor	Integrated
Device Frequency Required	50/60 Hz
Device Type	Power supply
Device Voltage Required	AC 110/220 V
Device Voltage Required Margin	± 10%

Printer Media

Media Feeder Capacity	1 Sheets

Service

Support Type	Lifetime warranty
Support Details Full Contract Period	Life-time

3112

Packaged Quantity	1
Product Line	Cisco Catalyst

Interface Provided

Connector Qty	24
Connector Type	RJ-45
Free	24
Gender	Female
Interface	Ethernet 10Base-T/100Base-TX
Qty	24
Type	Network node
Connector Qty	1
Connector Type	RJ-45
Free	1
Gender	Female
Interface	RS-232
Qty	1
Type	Management

Networking

Cabling Type	Ethernet 100Base-TX, Ethernet 10Base-T
Communication Mode	Full-duplex
Compliant Standards	IEEE 802.1D-LAN, IEEE 802.3-LAN, IEEE 802.3U-LAN
Connectivity Technology	Cable
Data Link Protocol	Ethernet, Fast Ethernet
Data Transfer Rate	100 Mbps
Features	Full duplex capability, Manageable, Network monitoring, Switching
Form Factor	External
Network Ports Qty	24
Remote Management Protocol	SNMP
Status Indicators	Collision status, Link activity, Port status, Power
Switching Protocol	Ethernet
Type	Switch

Power Supply

Device Form Factor	Integrated
Device Frequency Required	50/60 Hz
Device Type	Power supply
Device Voltage Required	AC 110/220 V
Device Voltage Required Margin	± 10%

Printer Media

Media Feeder Capacity	1 Sheets

Service

Support Type	Lifetime warranty
Support Details Full Contract Period	Life-time

3113

CDW The Right Technology. Right Away.™

800 826 4239

AESP IEEE 1284 A to B Printer 10' cable

CDW

Image not Available

Product Information

- IEEE 1284 A to B Printer 10 foot cable

Usually Ships:	Same Day
CDW Part No.:	138278
Mfg. Part No.:	C-113-10B
Unspsc No.:	
Price:	**$9.88**

ADD TO CART

Manufacturer

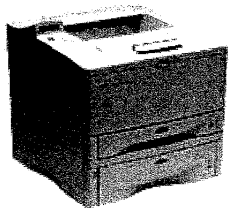
AESP, INC

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3114

CDW The Right Technology. Right Away.™

800 826 4239



HP LaserJet 5000N

Product Information

- Network ready, 11" x 17", 16 ppm, HP FastRes 1200

Usually Ships:	Same Day
CDW Part No.:	107695
Mfg. Part No.:	C4111A#ABA
Unspsc No.:	43172510
Price:	**$1,669.87**

ADD TO CART

Manufacturer

hp invent

OVERVIEW

The new standard for network-ready, monochrome 11 x 17 office printing

The HP LaserJet 5000 N printer incorporates HP's most innovative new technology, establishing new standards for paper-handling, speed, print quality, and network print management. This printer is ideal for general office, finance, CAD, desktop publishing, marketing....any workgroup that requires fast, high-quality monochrome printouts. And with the ability to print from 3 x 5 inch to full-bleed 11 x 17 images, it's an affordable alternative to 'multiple-printer' departments or outsourcing. The HP LaserJet 5000 N printer also includes 8MB of memory, 850-sheet capacity, two open DIMM memory slots, one open EIO expansion slot and an HP JetDirect 600N EIO internal print server.

SPECIFICATIONS

Battery	
Type	None
Bay Provided	
Type	None
Cabinet	
Chassis Type	Proprietary cabinet
Copier	
Type	None
Dimensions	
Depth	25 In
Height	18.7 In
Weight	70.5 Lbs
Width	19.1 In

3115

Environmental Parameters

Humidity Range Operating	20 - 80%
Max Operating Temperature	90.5 °F
Min Operating Temperature	50 °F
Sound Emission	58 DBA

Header

Compatibility	Mac, Unix, PC
Country Kits	United States
Localization	English
Manufacturer	Hewlett-Packard
Model	5000n
Packaged Quantity	1
Product Line	HP LaserJet

Interface Provided

Type	None

Interface Required

Connector Qty	1
Connector Type	8 pin mini-DIN, BNC, 36 pin Centronics, 9 pin D-Sub (DB-9), RJ-45
Gender	Male
Interface	RS-232, IEEE 1284 (EPP/ECP), Local Talk, Ethernet 10Base-T, Ethernet 10Base-2
Total Qty	1
Type	Network, Parallel, Serial

Memory

Flash Type	None
RAM Form Factor	DIMM 100-pin
RAM Installed Size	12 MB
RAM Max Supported Size	164 MB
RAM Soldered Size	4 MB
RAM Technology	SDRAM
RAM Type	DRAM

Miscellaneous

Color	White
Compliant Standards	Plug and Play
Features	LCD display
Mounting Kit	N/A
Rack Mounting Kit	N/A

Modem

Comm. Type	None

Networking

Compliant Standards	IEEE 802.3-LAN
Connectivity	Cable

3116

Technology	
Data Link Protocol	LocalTalk, Ethernet
Form Factor	Plug-in card
Network Transport Protocol	AppleTalk, DLC/LLC, TCP/IP, IPX/SPX
Type	Print server

Power Supply

Device Compliant Standards	EPA Energy Star
Device Form Factor	Integrated
Device Frequency Required	50/60 Hz
Device Power Consumption Operational	365 Watt
Device Power Consumption Stand by Sleep	40 Watt
Device Type	Power supply
Device Voltage Required	AC 110/120/127 V

Printer

Cartridge Printhead Duty Cycle	10000 pages
Cartridge Printhead Included Qty	1
Compliant Standards	ECP IEEE 1284-compliant port
Connectivity Technology	Cable
Duplex Printout	Optional
Envelope Sizes	US No 10 (4.1 in x 9.5 in), Monarch (3.87 in x 7.5 in), International C5 (6.38 in x 9 in), International B5 (6.93 in x 9.83 in), International DL (4.33 in x 8.66 in)
Form Factor	Stationary
Language Simulation	HP PCL 5E, Adobe PostScript 2, HP PCL 6
Max H-Document Size	12.3 in
Max H-Resolution BW	1200 Dpi
Max Media Size (Standard)	Ledger B Size (11 in x 17 in), A3 (11.7 in x 16.5 in)
Max V-Document Size	18.5 in
Max V-Resolution BW	1200 Dpi
Media Path Type	Curved
Media Sizes	A3 (11.7 in x 16.5 in), Ledger B Size (11 in x 17 in), B5 (6.93 in x 9.83 in), Executive (7.25 in x 10.5 in), B4 (9.83 in x 13.9 in), Letter A Size (8.5 in x 11 in), A4 (8.25 in x 11.7 in), A5 (5.83 in x 8.25 in), Legal (8.5 in x 14 in)
Media Type	Cards, Labels, Envelopes, Vellum paper, Transparencies, Plain paper
Monthly Duty Cycle (Users Qty)	50000 - 99999 (medium workgroup)
Output Type	Monochrome
PostScript Support	Standard
Printer Speed	16 Ppm
Technology	Laser

3117

Total Media Capacity	850 Sheets
Type	Workgroup printer

Printer Fonts

Font Included Type	TrueType
Fonts Included Qty	110

Printer Media

Media Feeder Capacity	100 Sheets, 500 Sheets, 250 Sheets
Media Feeder Max Format	12.3 in x 18.3 in, 11.7 in x 17 in
Media Feeder Qty	1
Media Load Type	Autoload

Printer Output

Max Speed	16 Ppm
Output Quality	B/W

Processor

Clock Speed	100 MHz
Form Factor	Integrated
Installed Qty	1
Instruction Set	RISC

Scanner

Type	None

Service

Support Details Full Contract Period	1 year
Support Details Service Included	Parts and labor
Support Details Type	Limited warranty
Support Type	1 year warranty

Slot Provided

Form Factor	DIMM 100-pin
Free Qty	2, 1
Total Qty	2, 3
Type	Memory, EIO

Slot Required

Type	None

Software

Type	Drivers & Utilities, HP FontSmart, HP JetAdmin Utility administrative

Storage Hard Drive

Type	None

3118

System Requirements

Min Operating System	Novell NetWare 3.12, Microsoft Windows 95/98,

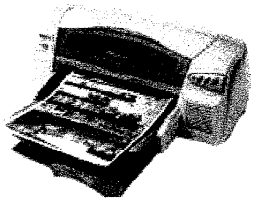
SunOS 4.1.3, Novell NetWare 5.1, Novell NetWare 5.0, Apple MacOS 7.1 or later, SunSoft Solaris 2.3, Novell NetWare 4.x, SunSoft Solaris 2.6, SCO Unix 5.0x, SunSoft Solaris 2.4, IBM OS/2 Warp 4.0, SCO Unix 4.2.0, HP-UX 9.x, SunOS 4.1.4, Microsoft Windows NT 3.51, HP-UX 11.x, Red Hat Linux 5.2, SunSoft Solaris 7, HP-UX 10.x, Microsoft Windows 2000 / NT4.0, Novell NetWare 3.11, SunSoft Solaris 2.5 or later, SuSE Linux 6.2, IBM OS/2 Warp 3.0, IBM AIX 3.2.5 or later

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CDW The Right Technology. Right Away.™

800 826 4239

HP DeskJet 1220C/PS printer



Product Information

- 13" x 19", up to 9.5 ppm color, up to 11 ppm black

Usually Ships:	Same Day
CDW Part No.:	221198
Mfg. Part No.:	C8100A#ABA
Unspsc No.:	43172509
Price:	**$489.35**

ADD TO CART

Manufacturer

hp invent

OVERVIEW

Professional results at breakthrough speed!

The HP DeskJet 1220C/PS Professional Series printer delivers HP's best photo-quality printing-fast with the addition of Adobe PostScript 3. Rely on it to handle all types of jobs, in all kinds of sizes. Nothing has the impact of crisp, clear printing. When you print using the HP DeskJet 1220C/PS Professional Series printer, you'll see results true to your original photo with HP's enhanced Color Layering Technology. What's more, you'll get professional printing without sacrificing speed. The HP DeskJet 1220C/PS Professional Series printer prints at sizes up to 13 x 19 inches, making it perfect for full bleed 11 x 17-inch printing.

SPECIFICATIONS

Battery	
Type	None
Bay Provided	
Type	None
Cabinet	
Chassis Form Factor	Desktop
Chassis Type	Proprietary cabinet
Copier	
Type	None
Dimensions	
Depth	15 In
Height	9.2 In
Weight	22 Lbs
Width	23.3 In

3120

Environmental Parameters

Humidity Range Operating	10 - 80%
Max Operating Temperature	95 °F
Min Operating Temperature	41 °F
Sound Emission	47 DBA

Header

Compatibility	Mac, PC
Country Kits	United States
Localization	English
Manufacturer	Hewlett-Packard
Model	1220c/ps
Packaged Quantity	1
Product Line	HP DeskJet

Interface Provided

Type	None

Interface Required

Connector Qty	1
Connector Type	36 pin Centronics, 4 pin USB Type B
Gender	Male, Female
Interface	USB, IEEE 1284 (EPP/ECP)
Total Qty	1
Type	Serial, Parallel

Memory

Flash Type	None
RAM Form Factor	Integrated
RAM Installed Size	8 MB
RAM Max Supported Size	8 MB
RAM Soldered Size	8 MB
RAM Type	DRAM
RAM Upgrade Rule	N/A
RAM Upgrade Type	N/A

Miscellaneous

Color	Gray
Compliant Standards	Plug and Play
Mounting Kit	N/A
Rack Mounting Kit	N/A

Modem

Comm. Type	None

Networking

Type	None

OS Required 3121

Type	Microsoft Windows NT 4.0, Microsoft DOS, Microsoft Windows 3.x/95/98, Apple MacOS 7.6.1 or later

Power Supply

Device Form Factor	Integrated
Device Frequency Required	50/60 Hz
Device Power Consumption Operational	47.7 Watt
Device Power Consumption Stand by Sleep	1 Watt
Device Type	Power supply
Device Voltage Required	AC 110/220 V
Device Voltage Required Margin	± 10%

Printer

Card Label Sizes	Hagaki Card (3.93 in x 5.83 in), A6 Card (4.13 in x 5.83 in), US 3 x 5 Card (3 in x 5 in), US 4 x 6 Card (4 in x 6 in), US 5 x 8 Card (5 in x 8 in)
Cartridge Printhead Included Qty	2
Compliant Standards	ECP IEEE 1284-compliant port
Connectivity Technology	Cable
Duplex Printout	N/A
Envelope Sizes	International C5 (6.38 in x 9 in), International DL (4.33 in x 8.66 in), Monarch (3.87 in x 7.5 in), US A2 (4.4 in x 5.75 in), International C6 (4.5 in x 6.38 in), US No 10 (4.1 in x 9.5 in)
Form Factor	Desktop
Language Simulation	HP PCL 3, Adobe PostScript 3
Max H-Document Size	8.5 in (Legal)
Max H-Resolution BW	600 Dpi
Max H-Resolution Color	2400 Dpi
Max Media Size (Standard)	A3 plus (13 in x 16.65 in)
Max Printer Speed (Color)	9.5 Ppm
Max V-Document Size	14 in (Legal)
Max V-Resolution BW	600 Dpi
Max V-Resolution Color	1200 Dpi
Media Sizes	Executive (7.25 in x 10.5 in), Legal (8.5 in x 14 in), Letter A Size (8.5 in x 11 in), 13 in x 19 in
Media Type	Envelopes, Greeting cards, Photo paper, Labels, Iron-on transfers, Transparencies, Plain paper
Monthly Duty Cycle (Users Qty)	1000 - 9999 (individual)
Output Type	Color
PostScript Support	N/A
Printer Speed	11 Ppm
Technology	Ink-jet
Total Media Capacity	150 Sheets

3122

Type	Personal printer
Printer Fonts	
Font Included Type	Bitmapped
Fonts Included Qty	8
Printer Media	
Media Feeder Capacity	150 Sheets
Media Feeder Max Format	A3 plus (13 in x 16.65 in)
Media Feeder Qty	1
Media Load Type	Autoload
Printer Output	
Max Speed	11 Ppm, 9.5 Ppm
Output Quality	Color, B/W
Scanner	
Type	None
Service	
Support Details Full Contract Period	1 year
Support Details Location	Bring-in
Support Details Service Included	Parts and labor
Support Details Type	Limited warranty
Support Type	1 year warranty
Slot Provided	
Type	None
Slot Required	
Type	None
Software	
Type	Drivers & Utilities
Storage Hard Drive	
Type	None
System Requirements	
Min Operating System	Microsoft DOS, Apple MacOS 7.6.1, Microsoft Windows 95, Microsoft Windows NT 4.0, Microsoft Windows 3.1

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OTTER TAIL RAILROAD

COMPUTER EQUIPMENT CONFIGRUATION
PER UNIT INCLUDING SOFTWARE, HARDWARE
AMD NETWORK SUPPORT SYSTEMS

SYSTEM	DECSRIPTION	QTY	UNIT COST	TOTAL COST
Personal Computer Sys. Headquarter Use	Dell OptiPlex GX60 Mini-Tower Intel Proc. 2.00GHz Windows XP Professional	1	1,470.00	1,470.00
	AESP IEEE 1284 Print Cable	1	9.88	9.88
	HP 8M Ethertwist Cable	1	3.98	3.98
	HP LaserJet 1000 Printer	1	249.00	249.00
Total Personal Computer System Unit Cost				1,732.86
Personal Computer Sys. Field Use	Dell OptiPlex GX60 Mini-Tower Intel Proc. 2.00GHz Windows XP Professional	1	1,470.00	1,470.00
	AESP IEEE 1284 Print Cable	1	9.88	9.88
	HP 8M Ethertwist Cable	1	3.98	3.98
	HP LaserJet 1000 Prt.	1	249.00	249.00
Total Personal Computer System Unit Cost				1,732.86
Portable Computer System	Inspiron 2650 Notebook Pentium 4 Processor 2.0GHZ Windows XP Professional	1	1,844.00	1,844.00
	AESP 1EEE 1284 Printer Cable	1	9.88	9.88
	HP 8M Ethertwist Cable	1	3.98	3.98
	HP DeskJet 350C Portable Prt.	1	199.00	199.00
Total Portable Computer System				2,056.86

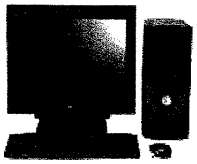
Accounting Computer Sys.	Dell OptiPlex GX60 Mini-Tower Intel Proc. 2.00GHz Windows XP Professional	1	1,470.00	1,470.00
	AESP 1EEE 1284 Print Cable	1	9.88	9.88
	HP 8M Ethertwist Cable	1	3.98	3.98
	HP LaserJet 5000N	1	1,669.87	1,669.87
	Peachtree MAS 90 10-Users	1	23,125.00	23,125.00

Note: The Accounting system will share the same Server used by the Human Resources system.

Total Accounting Computer System				$26,278.73
Human Resources				
	Dell OptiPlex GX60 Mini-Tower Intel Proc. 2.0GHz Windows XP Professional	1	1,470.00	1,470.00
	AESP 1EEE 1284 Print Cable	1	9.88	9.88
	HP 8M Ethertwist Cable	1	3.98	3.98
	HP LaserJet 5000N	1	1,669.87	1,669.87
	Dell PowerEdge 2600 Server	1	3,521.00	3,521.00
Total Human Resources System				6,674.73
Network Computer System With Backup – Cluster Configuration	Dell PowerEdge 6400 700 MHZ/1M Cachce, P111X Redundant Power Supplies Dell Power Vault 21 XS 12-Drive Enclosure Base System	1	52,815.97	52,815.97
	Dell Power Vault 705N Network Attached Storage	1	7,462.08	7,462.08
	Base (220-1399)	1	2,980.41	2,980.41
	Microsoft Exchange Server 25 – Users	1	6,486.97	6,486.97
	Microsoft SQL Server 5-Users	1	1,389.89	1,389.89
	Microsoft Visual SourceSafe	1	379.13	379.13
	Microsoft SharePoint Portal Server	1	2,937.35	2,937.35
	Microsoft Internet Security & Acceleration Server 2000	1	1,449.99	1,499.99

Microsoft Windows 2000 Server	1	669.52	2,678.08
Veritas Backup Exec V8.6 Agent – SharePoint Portal	1	499.57	499.57
Veritas Backup Exec Advance Open File Option	1	558.45	558.45
Veritas Backup Exec 9 Agent For Microsoft Exchange	1	619.88	619.88
HP StorageWorks DLT1 1280 Superloader	1	4,988.74	4,988.74
HP DLT Tape Data Cartridge	10	51.77	517.70
Cisco Catalyst 2950 24-Port Switch	2	799.00	1,598.00
AESP 1EEE 1284 Printer Cable	1	9.88	9.88
HP 8M Ethertwist Cable	1	3.98	3.98
HP LaserJet 5000N	1	1,669.87	1,669.87
HP DeskJet 1220C	1	489.35	489.35
Total Network Computer System with Backup			89,585.29

SELECT SYSTEM COMPONENTS



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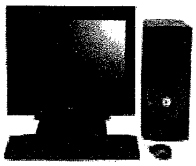
Category	Description	Product Code	SKU
OptiPlex GX60 Small Minitower:	Intel® Celeron® Processor, 2.00GHz, 128K Cache	20CX6TH	[281-1480]
Memory:	256MB DDR Non-ECC SDRAM (2 DIMMs)	256N2	[311-2152]
Keyboard:	Dell™ PS/2 Entry Quiet Key Keyboard, No Hot Keys	PS2	[310-1515]
Monitors:	Dell 19 inch M992 color monitor (18.0 viewable)	M992	[320-0528]
Embedded Video Board:	Embedded Intel® Extreme® Graphics	INT	[320-0551]
Boot Hard Drives:	20GB ATA/100 Hard Drive (7200 RPM)	20	[340-7275]
Floppy Drive Option:	1.44MB 3.5 Inch Floppy Drive	3	[340-7587]
Operating System:	Windows® XP Professional Version with CD using NTFS	WXPPEC	[420-1582]
Mouse:	Dell™ PS/2 2 button mouse	L	[310-1301]
Network Adapters (NICS):	Embedded Intel® PRO/100 M NIC with ASF and Remote Wake-up	INT	[430-0406]
Modem:	DellDell™ V.92 PCI Data/Fax Controllerless Modem	V92	[313-1149]
1st Removable Media:	48X Max, CDRW	CDRW48	[313-1468]
Embedded Audio Solution:	Embedded Sound Blaster Compatible AC97 Audio	INT	[313-8170]
Speakers:	harmon/kardon® 206 Speakers	HK206	[313-0970]
Documentation:	Resource CD contains Diagnostics and Driver for Dell OptiPlex Systems	RESORCD	[313-7168]
Productivity Software:	Microsoft Office XP Small Business and ADOBE ACROBAT 5.0	SBXPADB	[365-1234] [412-1203] [461-7110]
Energy Star:	Energy Star Label	ES	[310-6413]
Hardware Support Services:	Promo! 3Yr Same Day 4Hr Response Parts + Onsite Labor (M-F 8am-6pm)	OPTI99	[950-0090] [950-0092]
Installation Support Services:	No Installation	NOINSTL	[900-9987]
Readyware:	Readyware Installation Fee	RW	[365-1234]
Factory Installed Software:	MCAFEE Virusscan 6.01	MCAFEE	[410-0136]

Security Software - Shipped Separately:	Symantec Antivirus CorpEd 8.0 (1 user license)	SANTIV	[A0059152]

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AESP IEEE 1284 A to B Printer 10' cable

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Product Information

- IEEE 1284 A to B Printer 10 foot cable

Usually Ships:	Same Day
CDW Part No.:	138278
Mfg. Part No.:	C-113-10B
Unspsc No.:	
Price:	**$9.88**

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Manufacturer

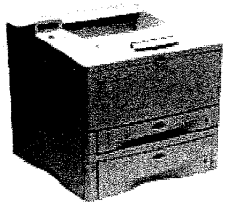
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HP LaserJet 5000N



Product Information

- Network ready, 11" x 17", 16 ppm, HP FastRes 1200

Usually Ships:	Same Day
CDW Part No.:	107695
Mfg. Part No.:	C4111A#ABA
Unspsc No.:	43172510
Price:	**$1,669.87**

ADD TO CART

Manufacturer

hp invent

OVERVIEW

The new standard for network-ready, monochrome 11 x 17 office printing

The HP LaserJet 5000 N printer incorporates HP's most innovative new technology, establishing new standards for paper-handling, speed, print quality, and network print management. This printer is ideal for general office, finance, CAD, desktop publishing, marketing....any workgroup that requires fast, high-quality monochrome printouts. And with the ability to print from 3 x 5 inch to full-bleed 11 x 17 images, it's an affordable alternative to 'multiple-printer' departments or outsourcing. The HP LaserJet 5000 N printer also includes 8MB of memory, 850-sheet capacity, two open DIMM memory slots, one open EIO expansion slot and an HP JetDirect 600N EIO internal print server.

SPECIFICATIONS

Battery	
Type	None
Bay Provided	
Type	None
Cabinet	
Chassis Type	Proprietary cabinet
Copier	
Type	None
Dimensions	
Depth	25 In
Height	18.7 In
Weight	70.5 Lbs
Width	19.1 In

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Environmental Parameters

Humidity Range Operating	20 - 80%
Max Operating Temperature	90.5 °F
Min Operating Temperature	50 °F
Sound Emission	58 DBA

Header

Compatibility	Mac, Unix, PC
Country Kits	United States
Localization	English
Manufacturer	Hewlett-Packard
Model	5000n
Packaged Quantity	1
Product Line	HP LaserJet

Interface Provided

Type	None

Interface Required

Connector Qty	1
Connector Type	8 pin mini-DIN, BNC, 36 pin Centronics, 9 pin D-Sub (DB-9), RJ-45
Gender	Male
Interface	RS-232, IEEE 1284 (EPP/ECP), Local Talk, Ethernet 10Base-T, Ethernet 10Base-2
Total Qty	1
Type	Network, Parallel, Serial

Memory

Flash Type	None
RAM Form Factor	DIMM 100-pin
RAM Installed Size	12 MB
RAM Max Supported Size	164 MB
RAM Soldered Size	4 MB
RAM Technology	SDRAM
RAM Type	DRAM

Miscellaneous

Color	White
Compliant Standards	Plug and Play
Features	LCD display
Mounting Kit	N/A
Rack Mounting Kit	N/A

Modem

Comm. Type	None

Networking

Compliant Standards	IEEE 802.3-LAN
Connectivity	Cable

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Technology	
Data Link Protocol	LocalTalk, Ethernet
Form Factor	Plug-in card
Network Transport Protocol	AppleTalk, DLC/LLC, TCP/IP, IPX/SPX
Type	Print server

Power Supply

Device Compliant Standards	EPA Energy Star
Device Form Factor	Integrated
Device Frequency Required	50/60 Hz
Device Power Consumption Operational	365 Watt
Device Power Consumption Stand by Sleep	40 Watt
Device Type	Power supply
Device Voltage Required	AC 110/120/127 V

Printer

Cartridge Printhead Duty Cycle	10000 pages
Cartridge Printhead Included Qty	1
Compliant Standards	ECP IEEE 1284-compliant port
Connectivity Technology	Cable
Duplex Printout	Optional
Envelope Sizes	US No 10 (4.1 in x 9.5 in), Monarch (3.87 in x 7.5 in), International C5 (6.38 in x 9 in), International B5 (6.93 in x 9.83 in), International DL (4.33 in x 8.66 in)
Form Factor	Stationary
Language Simulation	HP PCL 5E, Adobe PostScript 2, HP PCL 6
Max H-Document Size	12.3 in
Max H-Resolution BW	1200 Dpi
Max Media Size (Standard)	Ledger B Size (11 in x 17 in), A3 (11.7 in x 16.5 in)
Max V-Document Size	18.5 in
Max V-Resolution BW	1200 Dpi
Media Path Type	Curved
Media Sizes	A3 (11.7 in x 16.5 in), Ledger B Size (11 in x 17 in), B5 (6.93 in x 9.83 in), Executive (7.25 in x 10.5 in), B4 (9.83 in x 13.9 in), Letter A Size (8.5 in x 11 in), A4 (8.25 in x 11.7 in), A5 (5.83 in x 8.25 in), Legal (8.5 in x 14 in)
Media Type	Cards, Labels, Envelopes, Vellum paper, Transparencies, Plain paper
Monthly Duty Cycle (Users Qty)	50000 - 99999 (medium workgroup)
Output Type	Monochrome
PostScript Support	Standard
Printer Speed	16 Ppm
Technology	Laser

3133

Total Media Capacity	850 Sheets
Type	Workgroup printer

Printer Fonts

Font Included Type	TrueType
Fonts Included Qty	110

Printer Media

Media Feeder Capacity	100 Sheets, 500 Sheets, 250 Sheets
Media Feeder Max Format	12.3 in x 18.3 in, 11.7 in x 17 in
Media Feeder Qty	1
Media Load Type	Autoload

Printer Output

Max Speed	16 Ppm
Output Quality	B/W

Processor

Clock Speed	100 MHz
Form Factor	Integrated
Installed Qty	1
Instruction Set	RISC

Scanner

Type	None

Service

Support Details Full Contract Period	1 year
Support Details Service Included	Parts and labor
Support Details Type	Limited warranty
Support Type	1 year warranty

Slot Provided

Form Factor	DIMM 100-pin
Free Qty	2, 1
Total Qty	2, 3
Type	Memory, EIO

Slot Required

Type	None

Software

Type	Drivers & Utilities, HP FontSmart, HP JetAdmin Utility administrative

Storage Hard Drive

Type	None

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System Requirements

Min Operating System	Novell NetWare 3.12, Microsoft Windows 95/98,

SunOS 4.1.3, Novell NetWare 5.1, Novell NetWare 5.0, Apple MacOS 7.1 or later, SunSoft Solaris 2.3, Novell NetWare 4.x, SunSoft Solaris 2.6, SCO Unix 5.0x, SunSoft Solaris 2.4, IBM OS/2 Warp 4.0, SCO Unix 4.2.0, HP-UX 9.x, SunOS 4.1.4, Microsoft Windows NT 3.51, HP-UX 11.x, Red Hat Linux 5.2, SunSoft Solaris 7, HP-UX 10.x, Microsoft Windows 2000 / NT4.0, Novell NetWare 3.11, SunSoft Solaris 2.5 or later, SuSE Linux 6.2, IBM OS/2 Warp 3.0, IBM AIX 3.2.5 or later

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Category	Description	Product Code	SKU
Base:	PowerEdge 2600, Intel Xeon 2.0GHz/512K Cache	26200	[221-0238]
Additional Processors:	Single Processor Only	1P	[311-1193]
Memory:	256MB DDR SDRAM (2X128MB)	256M2D	[311-1779]
Keyboard:	Standard Windows Keyboard, Gray	S	[310-1676]
Monitors:	No Monitor Option	N	[320-0058]
1st Hard Drive:	36GB 10K RPM Ultra 320 SCSI Hard Drive	3610320	[340-6863]
Floppy:	3.5 in, 1.44MB, Floppy Drive	FD	[340-3640]
Operating System:	Windows 2000 Server with 5 Client Licenses,4GB Utility Partition	W2KSVR4	[420-0236]
Mouse:	Logitec Mouse,Gray	L	[310-3776]
Modems:	56K PC MODEM	MO56	[313-0369]
Tape Backup:	PowerVault 100T,DDS4 Tape Backup,20/40GB Capacity,No Controller Internal	DD4TNI	[340-7156]
CD-ROM:	24X IDE CD-ROM	CD24X	[313-1281]
BackPlanes:	1X6 Hot-Pluggable Backplane,PE2600	1X6BKPL	[311-1839]
Cables:	Internal/External SCSI Cable	SCSICBL	[310-0839]
Documentation:	Electronic Documentation,P2600	EDOCS	[310-0438]
Factory Configurations:	Drives attached to embedded SCSI controller, No RAID	MSN	[340-6468]
Chassis Style:	Tower Chassis Orientation,P2600	TOWER	[310-1720]
Hardware Support Services:	3Yr Parts + Onsite Labor (Next Business Day)	W3YOS	[900-1120] [900-1122]
Installation Support Services:	No Installation	NOINSTL	[900-9997]
Power Supplies:	Non-Redundant Power Supply,PE2600	NREDPWR	[310-1727]
Networking:	Belkin 6 pack of 7' Patch Cables	BEL6PC	[544440]
Special Offer-Dollars Off:	Special Offer- $200 Off	DT200	[461-2382]

Dell PowerConnect Network Switches:	Dell 2124 24-port unmanaged switch w/1 GB port and 1-YR NBD Parts	P2141NP	[220-8995] [950-4140]

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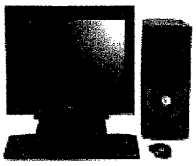
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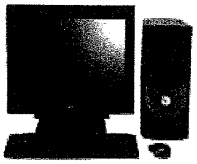
Category	Description	Product Code	SKU
OptiPlex GX60 Small Minitower:	Intel® Celeron® Processor, 2.00GHz, 128K Cache	20CX6TH	[281-1480]
Memory:	256MB DDR Non-ECC SDRAM (2 DIMMs)	256N2	[311-2152]
Keyboard:	Dell™ PS/2 Entry Quiet Key Keyboard, No Hot Keys	PS2	[310-1515]
Monitors:	Dell 19 inch M992 color monitor (18.0 viewable)	M992	[320-0528]
Embedded Video Board:	Embedded Intel® Extreme® Graphics	INT	[320-0551]
Boot Hard Drives:	20GB ATA/100 Hard Drive (7200 RPM)	20	[340-7275]
Floppy Drive Option:	1.44MB 3.5 Inch Floppy Drive	3	[340-7587]
Operating System:	Windows® XP Professional Version with CD using NTFS	WXPPEC	[420-1582]
Mouse:	Dell™ PS/2 2 button mouse	L	[310-1301]
Network Adapters (NICS):	Embedded Intel® PRO/100 M NIC with ASF and Remote Wake-up	INT	[430-0406]
Modem:	DellDell™ V.92 PCI Data/Fax Controllerless Modem	V92	[313-1149]
1st Removable Media:	48X Max, CDRW	CDRW48	[313-1468]
Embedded Audio Solution:	Embedded Sound Blaster Compatible AC97 Audio	INT	[313-8170]
Speakers:	harmon/kardon® 206 Speakers	HK206	[313-0970]
Documentation:	Resource CD contains Diagnostics and Driver for Dell OptiPlex Systems	RESORCD	[313-7168]
Productivity Software:	Microsoft Office XP Small Business and ADOBE ACROBAT 5.0	SBXPADB	[365-1234] [412-1203] [461-7110]
Energy Star:	Energy Star Label	ES	[310-6413]
Hardware Support Services:	Promo! 3Yr Same Day 4Hr Response Parts + Onsite Labor (M-F 8am-6pm)	OPTI99	[950-0090] [950-0092]
Installation Support Services:	No Installation	NOINSTL	[900-9987]
Readyware:	Readyware Installation Fee	RW	[365-1234]
Factory Installed Software:	MCAFEE Virusscan 6.01	MCAFEE	[410-0136]

Security Software - Shipped Separately:	Symantec Antivirus CorpEd 8.0 (1 user license)	SANTIV	[A0059152]

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AESP IEEE 1284 A to B Printer 10' cable

CDW

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Product Information

- IEEE 1284 A to B Printer 10 foot cable

Usually Ships:	Same Day
CDW Part No.:	138278
Mfg. Part No.:	C-113-10B
Unspsc No.:	
Price:	**$9.88**

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Manufacturer

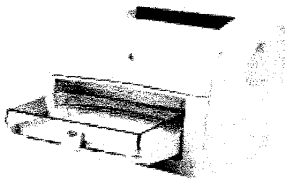
AESP, INC

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800 826 4239

hp LaserJet 1000 printer



Product Information

- 10 ppm, 600 x 600 dpi

Usually Ships:	Same Day
CDW Part No.:	322165
Mfg. Part No.:	Q1342A#ABA
Unspsc No.:	43172510
Price:	**$249.00**

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Manufacturer

hp invent

OVERVIEW

High quality laser printing at an affordable price!

Designed for personal printing in entrepreneurial businesses,home businesses,and telecommuters who are challenged by a multitude of pri ting needs,the HP LaserJet 1000 printer is a simple,low-cost,reliable laser printer for fundamental printing, delivering professional-looking business documents every time.The hp LaserJet 1000 printer offers simple, personal hp LaserJet monochrome printing in a straightforward, easy to use package. It is a solid 10 pages per minute laser printer, designed for years of professional laser printing for personal or small business use. The hp LaserJet 1000 print is easy to set up and use right out of the box.

SPECIFICATIONS

Battery	
Type	None
Bay Provided	
Type	None
Cabinet	
Chassis Type	Proprietary cabinet
Cable	
Connectivity Details Form Factor	External
Connectivity Details Included Qty	1
Connectivity Details Length	6.6 Ft
Connectivity Details Type	USB Cable
Consumables Included	3143
	Black

Color	
Duty Cycle	2500 pages
Included Qty	1
Type	Toner cartridge

Copier

Type	None

Dimensions

Depth	19.1 In
Height	10 In
Weight	16.1 Lbs
Width	16.3 In

Environmental Parameters

Humidity Range Operating	20 - 80%
Max Operating Temperature	89.6 °F
Min Operating Temperature	50 °F
Sound Emission	52 DB

Header

Compatibility	PC
Country Kits	United States
Localization	English
Manufacturer	Hewlett-Packard
Model	1000
Packaged Quantity	1
Product Line	HP LaserJet

Interface Provided

Type	None

Interface Required

Connector Qty	1
Connector Type	4 pin USB Type A
Gender	Male
Interface	USB
Total Qty	1
Type	Serial

Memory

Flash Form Factor	Integrated
Flash Installed Size	32 KB
Flash Type	ROM
RAM Installed Size	1 MB
RAM Type	DRAM

Miscellaneous

Color	White
Compliant Standards	Plug and Play

3144

Power on to Device Ready	15 Sec

Modem

Comm. Type	None

Networking

Type	None

Power Supply

Device Compliant Standards	EPA Energy Star
Device Form Factor	Integrated
Device Power Consumption Operational	213 Watt
Device Power Consumption Stand by Sleep	7 Watt
Device Type	Power supply
Device Voltage Required	AC 110 V

Printer

Cartridge Printhead Duty Cycle	2500 pages
Cartridge Printhead Included Qty	1
Compliant Standards	FCC Class B certified, CISPR-22 Class B
Connectivity Technology	Cable
Language Simulation	HP PCL 5E
Max H-Document Size	8.5 in (Legal)
Max H-Resolution BW	600 Dpi
Max Media Size (Standard)	Legal (8.5 in x 14 in), A4 (8.25 in x 11.7 in)
Max V-Document Size	14 in (Legal)
Max V-Resolution BW	600 Dpi
Media Path Type	Curved
Media Sizes	A4 (8.25 in x 11.7 in), Legal (8.5 in x 14 in), A5 (5.83 in x 8.25 in), Letter A Size (8.5 in x 11 in)
Media Type	Envelopes, Labels, Cards, Postal card paper, Transparencies, Plain paper
Monthly Duty Cycle	7000 pages
Monthly Duty Cycle (Users Qty)	1000 - 9999 (individual)
Output Type	Monochrome
Printer Speed	10 Ppm
Technology	Laser
Total Media Capacity	250 Sheets
Type	Personal printer

Printer Media

Media Feeder Capacity	250 Sheets
Media Feeder Max Format	Legal (8.5 in x 14 in)

3145

Media Feeder Qty	1
Media Load Type	Autoload

Printer Output

Max Speed	10 Ppm
Media Size	Legal (8.5 in x 14 in)
Output Quality	B/W

Processor

Clock Speed	48 MHz
Form Factor	Integrated
Installed Qty	1

Scanner

Type	None

Service

Support Details Full Contract Period	1 year
Support Details Location	Bring-in
Support Details Service Included	Parts and labor
Support Details Type	Limited warranty
Support Type	1 year warranty

Slot Provided

Type	None

Slot Required

Type	None

Software

Type	Drivers & Utilities

Storage Hard Drive

Type	None

System Requirements

Min Hard Drive Space	15 MB
Min Operating System	Microsoft Windows 98/ME/2000, Microsoft Windows XP
Min Processor Speed	90 MHz
Min Processor Type	Intel Pentium
Min RAM Size	32 MB
Peripheral Interface Devices	USB port

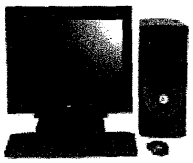
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Catalog Number: 04 04

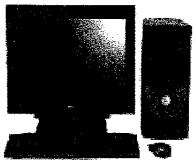
Category	Description	Product Code	SKU
OptiPlex GX60 Small Minitower:	Intel® Celeron® Processor, 2.00GHz, 128K Cache	20CX6TH	[281-1480]
Memory:	256MB DDR Non-ECC SDRAM (2 DIMMs)	256N2	[311-2152]
Keyboard:	Dell™ PS/2 Entry Quiet Key Keyboard, No Hot Keys	PS2	[310-1515]
Monitors:	Dell 19 inch M992 color monitor (18.0 viewable)	M992	[320-0528]
Embedded Video Board:	Embedded Intel® Extreme® Graphics	INT	[320-0551]
Boot Hard Drives:	20GB ATA/100 Hard Drive (7200 RPM)	20	[340-7275]
Floppy Drive Option:	1.44MB 3.5 Inch Floppy Drive	3	[340-7587]
Operating System:	Windows® XP Professional Version with CD using NTFS	WXPPEC	[420-1582]
Mouse:	Dell™ PS/2 2 button mouse	L	[310-1301]
Network Adapters (NICS):	Embedded Intel® PRO/100 M NIC with ASF and Remote Wake-up	INT	[430-0406]
Modem:	DellDell™ V.92 PCI Data/Fax Controllerless Modem	V92	[313-1149]
1st Removable Media:	48X Max, CDRW	CDRW48	[313-1468]
Embedded Audio Solution:	Embedded Sound Blaster Compatible AC97 Audio	INT	[313-8170]
Speakers:	harmon/kardon® 206 Speakers	HK206	[313-0970]
Documentation:	Resource CD contains Diagnostics and Driver for Dell OptiPlex Systems	RESORCD	[313-7168]
Productivity Software:	Microsoft Office XP Small Business and ADOBE ACROBAT 5.0	SBXPADB	[365-1234] [412-1203] [461-7110]
Energy Star:	Energy Star Label	ES	[310-6413]
Hardware Support Services:	Promo! 3Yr Same Day 4Hr Response Parts + Onsite Labor (M-F 8am-6pm)	OPTI99	[950-0090] [950-0092]
Installation Support Services:	No Installation	NOINSTL	[900-9987]
Readyware:	Readyware Installation Fee	RW	[365-1234]
Factory Installed Software:	MCAFEE Virusscan 6.01	MCAFEE	[410-0136]

Security Software - Shipped Separately:	Symantec Antivirus CorpEd 8.0 (1 user license)	SANTIV	[A0059152]

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AESP IEEE 1284 A to B Printer 10' cable

CDW

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Product Information

- IEEE 1284 A to B Printer 10 foot cable

Usually Ships:	Same Day
CDW Part No.:	138278
Mfg. Part No.:	C-113-10B
Unspsc No.:	
Price:	**$9.88**

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Manufacturer

AESP, INC

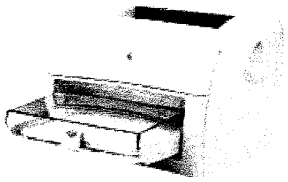
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800 826 4239

hp LaserJet 1000 printer



Product Information

- 10 ppm, 600 x 600 dpi

Usually Ships:	Same Day
CDW Part No.:	322165
Mfg. Part No.:	Q1342A#ABA
Unspsc No.:	43172510
Price:	**$249.00**

ADD TO CART

Manufacturer

hp invent

OVERVIEW

High quality laser printing at an affordable price!

Designed for personal printing in entrepreneurial businesses,home businesses,and telecommuters who are challenged by a multitude of pri ting needs,the HP LaserJet 1000 printer is a simple,low-cost,reliable laser printer for fundamental printing, delivering professional-looking business documents every time.The hp LaserJet 1000 printer offers simple, personal hp LaserJet monochrome printing in a straightforward, easy to use package. It is a solid 10 pages per minute laser printer, designed for years of professional laser printing for personal or small business use. The hp LaserJet 1000 print is easy to set up and use right out of the box.

SPECIFICATIONS

Battery

Type	None

Bay Provided

Type	None

Cabinet

Chassis Type	Proprietary cabinet

Cable

Connectivity Details Form Factor	External
Connectivity Details Included Qty	1
Connectivity Details Length	6.6 Ft
Connectivity Details Type	USB Cable

Consumables Included

Black

3151

Color	
Duty Cycle	2500 pages
Included Qty	1
Type	Toner cartridge

Copier

Type	None

Dimensions

Depth	19.1 In
Height	10 In
Weight	16.1 Lbs
Width	16.3 In

Environmental Parameters

Humidity Range Operating	20 - 80%
Max Operating Temperature	89.6 °F
Min Operating Temperature	50 °F
Sound Emission	52 DB

Header

Compatibility	PC
Country Kits	United States
Localization	English
Manufacturer	Hewlett-Packard
Model	1000
Packaged Quantity	1
Product Line	HP LaserJet

Interface Provided

Type	None

Interface Required

Connector Qty	1
Connector Type	4 pin USB Type A
Gender	Male
Interface	USB
Total Qty	1
Type	Serial

Memory

Flash Form Factor	Integrated
Flash Installed Size	32 KB
Flash Type	ROM
RAM Installed Size	1 MB
RAM Type	DRAM

Miscellaneous

Color	White
Compliant Standards	Plug and Play

3152

Power on to Device Ready	15 Sec

Modem

Comm. Type	None

Networking

Type	None

Power Supply

Device Compliant Standards	EPA Energy Star
Device Form Factor	Integrated
Device Power Consumption Operational	213 Watt
Device Power Consumption Stand by Sleep	7 Watt
Device Type	Power supply
Device Voltage Required	AC 110 V

Printer

Cartridge Printhead Duty Cycle	2500 pages
Cartridge Printhead Included Qty	1
Compliant Standards	FCC Class B certified, CISPR-22 Class B
Connectivity Technology	Cable
Language Simulation	HP PCL 5E
Max H-Document Size	8.5 in (Legal)
Max H-Resolution BW	600 Dpi
Max Media Size (Standard)	Legal (8.5 in x 14 in), A4 (8.25 in x 11.7 in)
Max V-Document Size	14 in (Legal)
Max V-Resolution BW	600 Dpi
Media Path Type	Curved
Media Sizes	A4 (8.25 in x 11.7 in), Legal (8.5 in x 14 in), A5 (5.83 in x 8.25 in), Letter A Size (8.5 in x 11 in)
Media Type	Envelopes, Labels, Cards, Postal card paper, Transparencies, Plain paper
Monthly Duty Cycle	7000 pages
Monthly Duty Cycle (Users Qty)	1000 - 9999 (individual)
Output Type	Monochrome
Printer Speed	10 Ppm
Technology	Laser
Total Media Capacity	250 Sheets
Type	Personal printer

Printer Media

Media Feeder Capacity	250 Sheets
Media Feeder Max Format	Legal (8.5 in x 14 in)

3153

Media Feeder Qty	1
Media Load Type	Autoload

Printer Output

Max Speed	10 Ppm
Media Size	Legal (8.5 in x 14 in)
Output Quality	B/W

Processor

Clock Speed	48 MHz
Form Factor	Integrated
Installed Qty	1

Scanner

Type	None

Service

Support Details Full Contract Period	1 year
Support Details Location	Bring-in
Support Details Service Included	Parts and labor
Support Details Type	Limited warranty
Support Type	1 year warranty

Slot Provided

Type	None

Slot Required

Type	None

Software

Type	Drivers & Utilities

Storage Hard Drive

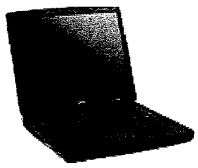
Type	None

System Requirements

Min Hard Drive Space	15 MB
Min Operating System	Microsoft Windows 98/ME/2000, Microsoft Windows XP
Min Processor Speed	90 MHz
Min Processor Type	Intel Pentium
Min RAM Size	32 MB
Peripheral Interface Devices	USB port

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Category	Description	Product Code	SKU
Inspiron 2650:	Mobile Pentium® 4 processor,2.0 GHz-M 14.1 XGA	M200GHM	[221-0611]
Memory:	256MB 200MHZ for the price of 128MB! (mail in rebate not available)	256M2DZ	[461-6337]
Video Card:	16MB DDR 4X AGP NVIDIA GeForce2 Go™Vid	NVID16	[320-0129]
Hard Drive:	20GB Ultra ATA Hard Drive	20GB	[340-3876]
Floppy Drive:	Floppy Drive	FD	[340-3049]
Operating System:	Microsoft® Windows® XP Professional	WPXP	[313-0929] [412-0315] [420-1972]
Network Adapter:	Integrated Network Card	INTNIC	[430-0257]
Modem:	Internal 56k Modem	56MPC	[313-0503]
Fixed CD/DVD Drives:	24X Max Variable CD-ROM Drive	24XCD	[313-0494]
Bundled Software:	Microsoft® Office XP Professional with EducateU Training	IXPEPRO	[412-1606] [A0015607]
Security Software:	Dell SecurityCenter by McAfee, 90-day introductory offer	MCAFE90	[412-0328]
Digital Music:	Dell Jukebox powered by MUSICMATCH	MMBASE	[412-0298]
Primary Battery:	Lithium-Ion Battery	LIION8	[312-0017]
Carrying Cases:	Nylon Carrying Case	NCC154	[310-3079]
Limited Warranty, Services and Support Options:	3 Year Limited Warranty plus 3 Year Mail-In Service and CompleteCare	T3YRC	[950-3580] [950-3582]
Internet Access Service at no additional charge:	6 Months AOL,Featuring the Netbusiness Service for Small Business	AOLSMB	[412-0280] [412-0287]
Mail-In Rebate Offer:	Mail in Rebate (can not be combined with Free Memory Upgrade Offer)	REBATE	[461-5534]

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Product Information

- IEEE 1284 A to B Printer 10 foot cable

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Mfg. Part No.:	C-113-10B
Unspsc No.:	
Price:	**$9.88**

ADD TO CART

Manufacturer

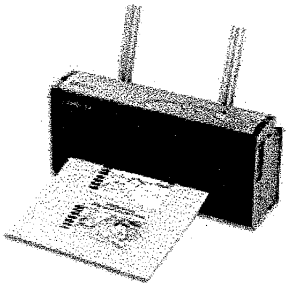
AESP, INC

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3158

CDW * The Right Technology. Right Away.™

800 838 4239



Battery sold separately

Product Information

- Portable, up to 2 ppm color, up to 5 ppm black

Usually Ships:	Same Day
CDW Part:	210312
Mfg. Part:	C2697A#ABA
UNSPSC:	43172509
Price:	**$199.00**

ADD TO CART

Manufacturer

hp invent

OVERVIEW

Hassle free printing on the road!

The HP DeskJet 350C mobile printer gives you the flexibility and reliability to print no matter where your work takes you. The rugged, durable design and high-volume ink cartridges provide no compromise printing that withstands the demands of travel. The HP DeskJet 350C mobile printer allows you to print professional-quality documents wherever you are. After meeting with a client, quickly tailor and print your presentations, spreadsheets, contracts, and proposals on a wide variety of media. No need to wait until you get back to the office to have final documents. Just print at your convenience.

SPECIFICATIONS

Battery	
Capacity	1600 MAh
Form Factor	Proprietary
Installed Qty	0
Recharge Time	1.7 Hour(s)
Technology	Nickel metal hydride
Type	Printer battery
Bay Provided	
Type	None
Cabinet	
Chassis Type	Proprietary cabinet
Copier	
Type	None
Dimensions	
Depth	2.6 In

3159

Height	5.9 In
Weight	4.4 Lbs
Width	12.2 In

Environmental Parameters

Humidity Range Operating	20 - 80%
Max Operating Temperature	104 °F
Min Operating Temperature	41 °F

Header

Compatibility	Mac, PC
Country Kits	United States
Localization	English
Manufacturer	Hewlett-Packard
Model	350c
Packaged Quantity	1
Product Line	HP DeskJet

Interface Provided

Type	None

Interface Required

Connector Qty	1
Connector Type	36 pin Centronics
Gender	Male
Interface	IEEE 1284 (EPP/ECP)
Total Qty	1
Type	Parallel

Memory

Flash Type	None
RAM Form Factor	Integrated
RAM Installed Size	512 KB
RAM Max Supported Size	512 KB
RAM Type	DRAM
RAM Upgrade Rule	N/A

Miscellaneous

Color	Black
Compliant Standards	Plug and Play
Rack Mounting Kit	Not available

Modem

Comm. Type	None

Networking

Type	None

OS Required

3160

Type	Microsoft Windows 3.x/95/98, Microsoft DOS 3.3 or later, Microsoft Windows 2000, Microsoft Windows NT 4.0, Apple MacOS 8.1 or later

Power Supply

Device Compliant Standards	EPA Energy Star
Device Form Factor	External
Device Frequency Required	50/60 Hz
Device Power Consumption Operational	14.3 Watt
Device Power Consumption Stand by Sleep	2.5 Watt
Device Type	Power adapter + battery charger
Device Voltage Required	AC 100/240 V
Device Voltage Required Margin	± 10%

Printer

Compliant Standards	ECP IEEE 1284-compliant port, IrDA-compliant infrared port
Connectivity Technology	Cable
Duplex Printout	Not available
Form Factor	Portable
Language Simulation	HP PCL 3
Max H-Document Size	8.5 in (Legal)
Max H-Resolution BW	600 Dpi
Max H-Resolution Color	600 Dpi
Max Media Size (Standard)	Legal (8.5 in x 14 in)
Max Printer Speed (Color)	2 Ppm
Max V-Document Size	14 in (Legal)
Max V-Resolution BW	600 Dpi
Max V-Resolution Color	300 Dpi
Media Sizes	A4 (8.25 in x 11.7 in), Executive (7.25 in x 10.5 in), Legal (8.5 in x 14 in), Letter A Size (8.5 in x 11 in)
Media Type	Labels, Plain paper, Transparencies
Monthly Duty Cycle (Users Qty)	1000 and less (low output)
Output Type	Color
PostScript Support	Not available
Printer Speed	5 Ppm
Technology	Thermal inkjet
Total Media Capacity	30 Sheets
Type	Personal printer

Printer Fonts

Font Included Type	Scalable
Fonts Included Qty	8

3161

Printer Media

Media Feeder Capacity	30 Sheets
Media Feeder Max Format	Legal (8.5 in x 14 in)
Media Feeder Qty	1
Media Load Type	Autoload

Printer Output

Max Speed	2 Ppm
Output Quality	Color
Max Speed	5 Ppm
Output Quality	B/W

Scanner

Type	None

Service

Support Type	1 year warranty
Support Details Full Contract Period	1 year
Support Details Location	Bring-in
Support Details Service Included	Parts and labor
Support Details Type	Limited warranty

Slot Provided

Type	None

Slot Required

Type	None

Software

Type	Drivers & Utilities

Storage Hard Drive

Type	None

System Requirements

Min Operating System	Apple MacOS 8.1 or later, Microsoft DOS 3.3 or later, Microsoft Windows 2000, Microsoft Windows 3.x/95/98, Microsoft Windows NT 4.0

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OTTER TAIL RAILROAD

PRINTERS

		Unit Price
Desktop laser printer	1 per desktop	$ 249.00
Laser printer for laptop	1 per laptop	199.00
Color laser printers	One at headquarters printing maps, brochures charts, etc.	3,829.00
Line printers	2 at headquarters and one at each of the yard and/or crew point.	1,669.87

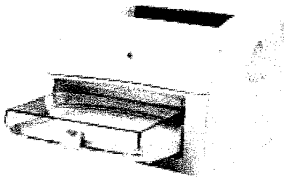
ROUTERS

Dell Router	Headquarters	1,329.86
Cisco Router	Field Offices	788.63

CDW The Right Technology. Right Away.™

800 826 4239

hp LaserJet 1000 printer



Product Information

- 10 ppm, 600 x 600 dpi

Usually Ships:	Same Day
CDW Part No.:	322165
Mfg. Part No.:	Q1342A#ABA
Unspsc No.:	43172510
Price:	**$249.00**

ADD TO CART

Manufacturer

hp invent

OVERVIEW

High quality laser printing at an affordable price!

Designed for personal printing in entrepreneurial businesses,home businesses,and telecommuters who are challenged by a multitude of pri ting needs,the HP LaserJet 1000 printer is a simple,low-cost,reliable laser printer for fundamental printing, delivering professional-looking business documents every time.The hp LaserJet 1000 printer offers simple, personal hp LaserJet monochrome printing in a straightforward, easy to use package. It is a solid 10 pages per minute laser printer, designed for years of professional laser printing for personal or small business use. The hp LaserJet 1000 print is easy to set up and use right out of the box.

SPECIFICATIONS

Battery	
Type	None
Bay Provided	
Type	None
Cabinet	
Chassis Type	Proprietary cabinet
Cable	
Connectivity Details Form Factor	External
Connectivity Details Included Qty	1
Connectivity Details Length	6.6 Ft
Connectivity Details Type	USB Cable
Consumables Included	Black

3164

Color	
Duty Cycle	2500 pages
Included Qty	1
Type	Toner cartridge

Copier

Type	None

Dimensions

Depth	19.1 In
Height	10 In
Weight	16.1 Lbs
Width	16.3 In

Environmental Parameters

Humidity Range Operating	20 - 80%
Max Operating Temperature	89.6 °F
Min Operating Temperature	50 °F
Sound Emission	52 DB

Header

Compatibility	PC
Country Kits	United States
Localization	English
Manufacturer	Hewlett-Packard
Model	1000
Packaged Quantity	1
Product Line	HP LaserJet

Interface Provided

Type	None

Interface Required

Connector Qty	1
Connector Type	4 pin USB Type A
Gender	Male
Interface	USB
Total Qty	1
Type	Serial

Memory

Flash Form Factor	Integrated
Flash Installed Size	32 KB
Flash Type	ROM
RAM Installed Size	1 MB
RAM Type	DRAM

Miscellaneous

Color	White
Compliant Standards	Plug and Play

3165

Power on to Device Ready	15 Sec

Modem

Comm. Type	None

Networking

Type	None

Power Supply

Device Compliant Standards	EPA Energy Star
Device Form Factor	Integrated
Device Power Consumption Operational	213 Watt
Device Power Consumption Stand by Sleep	7 Watt
Device Type	Power supply
Device Voltage Required	AC 110 V

Printer

Cartridge Printhead Duty Cycle	2500 pages
Cartridge Printhead Included Qty	1
Compliant Standards	FCC Class B certified, CISPR-22 Class B
Connectivity Technology	Cable
Language Simulation	HP PCL 5E
Max H-Document Size	8.5 in (Legal)
Max H-Resolution BW	600 Dpi
Max Media Size (Standard)	Legal (8.5 in x 14 in), A4 (8.25 in x 11.7 in)
Max V-Document Size	14 in (Legal)
Max V-Resolution BW	600 Dpi
Media Path Type	Curved
Media Sizes	A4 (8.25 in x 11.7 in), Legal (8.5 in x 14 in), A5 (5.83 in x 8.25 in), Letter A Size (8.5 in x 11 in)
Media Type	Envelopes, Labels, Cards, Postal card paper, Transparencies, Plain paper
Monthly Duty Cycle	7000 pages
Monthly Duty Cycle (Users Qty)	1000 - 9999 (individual)
Output Type	Monochrome
Printer Speed	10 Ppm
Technology	Laser
Total Media Capacity	250 Sheets
Type	Personal printer

Printer Media

Media Feeder Capacity	250 Sheets
Media Feeder Max Format	Legal (8.5 in x 14 in)

3166

Media Feeder Qty	1
Media Load Type	Autoload

Printer Output

Max Speed	10 Ppm
Media Size	Legal (8.5 in x 14 in)
Output Quality	B/W

Processor

Clock Speed	48 MHz
Form Factor	Integrated
Installed Qty	1

Scanner

Type	None

Service

Support Details Full Contract Period	1 year
Support Details Location	Bring-in
Support Details Service Included	Parts and labor
Support Details Type	Limited warranty
Support Type	1 year warranty

Slot Provided

Type	None

Slot Required

Type	None

Software

Type	Drivers & Utilities

Storage Hard Drive

Type	None

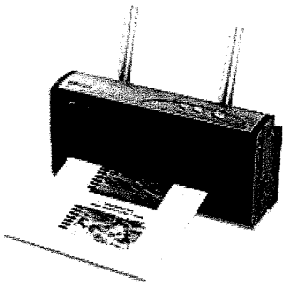
System Requirements

Min Hard Drive Space	15 MB
Min Operating System	Microsoft Windows 98/ME/2000, Microsoft Windows XP
Min Processor Speed	90 MHz
Min Processor Type	Intel Pentium
Min RAM Size	32 MB
Peripheral Interface Devices	USB port

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CDW The Right Technology. Right Away.™

800 826 4239



Battery sold separately

HP DeskJet 350C printer

Product Information

- Portable, up to 2 ppm color, up to 5 ppm black

Usually Ships:	Same Day
CDW Part No.:	210312
Mfg. Part No.:	C2697A#ABA
Unspsc No.:	43172509
Price:	**$199.00**

ADD TO CART

Manufacturer

hp invent

OVERVIEW

Hassle free printing on the road!

The HP DeskJet 350C mobile printer gives you the flexibility and reliability to print no matter where your work takes you. The rugged, durable design and high-volume ink cartridges provide no compromise printing that withstands the demands of travel. The HP DeskJet 350C mobile printer allows you to print professional-quality documents wherever you are. After meeting with a client, quickly tailor and print your presentations, spreadsheets, contracts, and proposals on a wide variety of media. No need to wait until you get back to the office to have final documents. Just print at your convenience.

SPECIFICATIONS

Battery	
Capacity	1600 MAh
Form Factor	Proprietary
Installed Qty	0
Recharge Time	1.7 Hour(s)
Technology	Nickel metal hydride
Type	Printer battery
Bay Provided	
Type	None
Cabinet	
Chassis Type	Proprietary cabinet
Copier	
Type	None
Dimensions	
Depth	2.6 In

3168

Height	5.9 In
Weight	4.4 Lbs
Width	12.2 In

Environmental Parameters

Humidity Range Operating	20 - 80%
Max Operating Temperature	104 °F
Min Operating Temperature	41 °F

Header

Compatibility	PC, Mac
Country Kits	United States
Localization	English
Manufacturer	Hewlett-Packard
Model	350c
Packaged Quantity	1
Product Line	HP DeskJet

Interface Provided

Type	None

Interface Required

Connector Qty	1
Connector Type	36 pin Centronics
Gender	Male
Interface	IEEE 1284 (EPP/ECP)
Total Qty	1
Type	Parallel

Memory

Flash Type	None
RAM Form Factor	Integrated
RAM Installed Size	512 KB
RAM Max Supported Size	512 KB
RAM Type	DRAM
RAM Upgrade Rule	N/A

Miscellaneous

Color	Black
Compliant Standards	Plug and Play
Rack Mounting Kit	Not available

Modem

Comm. Type	None

Networking

Type	None

OS Required

3169

Type	Microsoft DOS 3.3 or later, Microsoft Windows 2000, Microsoft Windows NT 4.0, Microsoft Windows 3.x/95/98, Apple MacOS 8.1 or later

Power Supply

Device Compliant Standards	EPA Energy Star
Device Form Factor	External
Device Frequency Required	50/60 Hz
Device Power Consumption Operational	14.3 Watt
Device Power Consumption Stand by Sleep	2.5 Watt
Device Type	Power adapter + battery charger
Device Voltage Required	AC 100/240 V
Device Voltage Required Margin	± 10%

Printer

Compliant Standards	ECP IEEE 1284-compliant port, IrDA-compliant infrared port
Connectivity Technology	Cable
Duplex Printout	Not available
Form Factor	Portable
Language Simulation	HP PCL 3
Max H-Document Size	8.5 in (Legal)
Max H-Resolution BW	600 Dpi
Max H-Resolution Color	600 Dpi
Max Media Size (Standard)	Legal (8.5 in x 14 in)
Max Printer Speed (Color)	2 Ppm
Max V-Document Size	14 in (Legal)
Max V-Resolution BW	600 Dpi
Max V-Resolution Color	300 Dpi
Media Sizes	A4 (8.25 in x 11.7 in), Legal (8.5 in x 14 in), Letter A Size (8.5 in x 11 in), Executive (7.25 in x 10.5 in)
Media Type	Transparencies, Plain paper, Labels
Monthly Duty Cycle (Users Qty)	1000 and less (low output)
Output Type	Color
PostScript Support	Not available
Printer Speed	5 Ppm
Technology	Thermal inkjet
Total Media Capacity	30 Sheets
Type	Personal printer

Printer Fonts

Font Included Type	Scalable
Fonts Included Qty	8

3170

Printer Media

Media Feeder Capacity	30 Sheets
Media Feeder Max Format	Legal (8.5 in x 14 in)
Media Feeder Qty	1
Media Load Type	Autoload

Printer Output

Max Speed	5 Ppm, 2 Ppm
Output Quality	Color, B/W

Scanner

Type	None

Service

Support Details Full Contract Period	1 year
Support Details Location	Bring-in
Support Details Service Included	Parts and labor
Support Details Type	Limited warranty
Support Type	1 year warranty

Slot Provided

Type	None

Slot Required

Type	None

Software

Type	Drivers & Utilities

Storage Hard Drive

Type	None

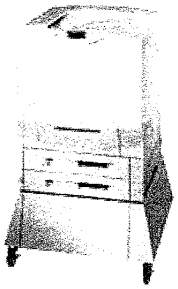
System Requirements

Min Operating System	Microsoft DOS 3.3 or later, Microsoft Windows 2000, Microsoft Windows NT 4.0, Apple MacOS 8.1 or later, Microsoft Windows 3.x/95/98

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800 826 4239

The Right Technology. Right Away.™



HP Color LaserJet 8550

Product Information

- 11" x 17", 6 ppm color, 24 ppm black, 600 x 600 dpi

Usually Ships:	4-6 Days
CDW Part No.:	210870
Mfg. Part No.:	C7096A#ABA
Unspsc No.:	43172510
Price:	**$3,829.00** ($132.10/month)

ADD TO CART

Manufacturer

OVERVIEW

Now everyone in your office can produce great-looking color documents

With an HP Color LaserJet 8550 Series printer, anyone can produce professional-looking materials easily and inexpensively. Whether you're printing brochures, spread-sheets, newsletters or postcards. HP Color LaserJet 8550 printers deliver the quality it takes to create a professional image-for you and your business. HP Color LaserJet 8550 printers let you print on a wide variety of sizes and media-paper, transparencies, labels and envelopes. They can even print on both sides of the page. The new 200-MHz processor means you'll spend less time waiting for your output. And with a duty cycle of 60,000 pages per month, you can use them all you want. Like all the members of HP's color printer family, HP Color LaserJet 8550 Series printers provide a complete network printing solution that can grow with your business. They're easy to install, manage and maintain. And they feature award-winning service and support you can't get anywhere else.

SPECIFICATIONS

Battery	
Type	None
Bay Provided	
Type	None
Cabinet	
Chassis Type	Proprietary cabinet
Copier	
Type	None
Dimensions	
Depth	28 In
Height	42 In
Weight	222.7 Lbs

3172

Width	26 In

Environmental Parameters

Humidity Range Operating	15 - 80%
Max Altitude Operating	9840 Ft
Max Operating Temperature	80.6 °F
Min Operating Temperature	59 °F
Sound Emission	55 DBA

Header

Compatibility	Mac, PC
Country Kits	United States
Localization	English
Manufacturer	Hewlett-Packard
Model	8550
Packaged Quantity	1
Product Line	HP Color LaserJet

Interface Provided

Type	None

Interface Required

Connector Qty	1
Connector Type	36 pin Centronics
Gender	Male
Interface	IEEE 1284 (EPP/ECP)
Total Qty	1
Type	Parallel

Memory

Flash Type	None
RAM Form Factor	DIMM 100-pin
RAM Installed Size	32 MB
RAM Max Supported Size	512 MB
RAM Technology	SDRAM
RAM Type	DRAM
RAM Upgrade Rule	2 modules at a time

Miscellaneous

Color	White
Compliant Standards	Plug and Play
Rack Mounting Kit	Not available

Modem

Comm. Type	None

Networking

Type	None

3173

OS Required

Type	Microsoft Windows 2000, IBM OS/2, Microsoft Windows NT 4.0, Apple MacOS 7.1 or later, Microsoft Windows 95/98

Power Supply

Device Compliant Standards	EPA Energy Star
Device Form Factor	Integrated
Device Frequency Required	50/60 Hz
Device Power Consumption Operational	750 Watt
Device Power Consumption Stand by Sleep	220 Watt
Device Type	Power supply
Device Voltage Required	AC 115 V
Device Voltage Required Margin	± 10%

Printer

Cartridge Printhead Duty Cycle	17000 pages
Cartridge Printhead Included Qty	4
Compliant Standards	UL listed, ECP IEEE 1284-compliant port, CUL listed, IEC 825-1/EN 60825-1 class 1, IEC 950/EN 60950, FCC Class B certified, NON-NYCE certified, CISPR-22 Class B
Connectivity Technology	Cable
Duplex Printout	Optional
Envelope Sizes	Com-10 (4.13 in x 9.5 in), International DL (4.33 in x 8.66 in), International C5 (6.38 in x 9 in), Monarch (3.87 in x 7.5 in)
Form Factor	Stationary
Language Simulation	Adobe PostScript 3, HP PCL 5C
Max H-Document Size	12.05 in
Max H-Resolution BW	600 Dpi
Max H-Resolution Color	600 Dpi
Max Media Size (Standard)	Ledger B Size (11 in x 17 in), A3 (11.7 in x 16.5 in)
Max Printer Speed (Color)	6 Ppm
Max V-Document Size	18.5 in
Max V-Resolution BW	600 Dpi
Max V-Resolution Color	600 Dpi
Media Path Type	Straight, Curved
Media Sizes	Letter A Size (8.5 in x 11 in), A4 (8.25 in x 11.7 in), Legal (8.5 in x 14 in), B4 (9.83 in x 13.9 in), Executive (7.25 in x 10.5 in), A3 (11.7 in x 16.5 in), B5 (6.93 in x 9.83 in)
Media Type	Plain paper, Transparencies, Glossy paper, Labels, Envelopes

3174

Monthly Duty Cycle (Users Qty)	50000 - 99999 (medium workgroup)
Output Type	Color
PostScript Support	Included
Printer Speed	24 Ppm
Technology	Laser
Total Media Capacity	600 Sheets
Type	Workgroup printer

Printer Fonts

Font Included Type	PostScript, Scalable
Fonts Included Qty	136, 45

Printer Media

Media Feeder Capacity	500 Sheets, 100 Sheets
Media Feeder Max Format	A3 (11.7 in x 16.5 in)
Media Feeder Qty	1
Media Load Type	Autoload

Printer Output

Max Speed	6 Ppm, 24 Ppm
Output Quality	B/W, Color

Processor

Clock Speed	200 MHz
Form Factor	Integrated
Installed Qty	1
Instruction Set	RISC
Manufacturer	QED
Type	RM5271

Scanner

Type	None

Service

Support Details Full Contract Period	1 year
Support Details Location	On-site
Support Details Service Included	Parts and labor
Support Details Type	Limited warranty
Support Type	1 year warranty

Slot Provided

Form Factor	Proprietary, DIMM 100-pin
Free Qty	6, 2
Total Qty	8, 2
Type	Memory, EIO

Slot Required

Type	None

3175

Software

Type	HP JetAdmin Utility administrative, Drivers & Utilities

Storage Hard Drive

Type	None

System Requirements

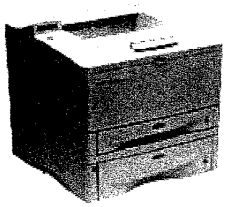
Min Operating System	Microsoft Windows 95/98, Microsoft Windows 2000, IBM OS/2, Microsoft Windows NT 4.0, Apple MacOS 7.1 or later

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CDW The Right Technology. Right Away.™

800 826 4239

HP LaserJet 5000N



Product Information

- Network ready, 11" x 17", 16 ppm, HP FastRes 1200

Usually Ships:	Same Day
CDW Part No.:	107695
Mfg. Part No.:	C4111A#ABA
Unspsc No.:	43172510
Price:	**$1,669.87**

ADD TO CART

Manufacturer

hp invent

OVERVIEW

The new standard for network-ready, monochrome 11 x 17 office printing

The HP LaserJet 5000 N printer incorporates HP's most innovative new technology, establishing new standards for paper-handling, speed, print quality, and network print management. This printer is ideal for general office, finance, CAD, desktop publishing, marketing....any workgroup that requires fast, high-quality monochrome printouts. And with the ability to print from 3 x 5 inch to full-bleed 11 x 17 images, it's an affordable alternative to 'multiple-printer' departments or outsourcing. The HP LaserJet 5000 N printer also includes 8MB of memory, 850-sheet capacity, two open DIMM memory slots, one open EIO expansion slot and an HP JetDirect 600N EIO internal print server.

SPECIFICATIONS

Battery	
Type	None
Bay Provided	
Type	None
Cabinet	
Chassis Type	Proprietary cabinet
Copier	
Type	None
Dimensions	
Depth	25 In
Height	18.7 In
Weight	70.5 Lbs
Width	19.1 In

3177

Environmental Parameters

Humidity Range Operating	20 - 80%
Max Operating Temperature	90.5 °F
Min Operating Temperature	50 °F
Sound Emission	58 DBA

Header

Compatibility	Mac, Unix, PC
Country Kits	United States
Localization	English
Manufacturer	Hewlett-Packard
Model	5000n
Packaged Quantity	1
Product Line	HP LaserJet

Interface Provided

Type	None

Interface Required

Connector Qty	1
Connector Type	RJ-45, BNC, 8 pin mini-DIN, 9 pin D-Sub (DB-9), 36 pin Centronics
Gender	Male
Interface	Ethernet 10Base-T, Local Talk, Ethernet 10Base-2, RS-232, IEEE 1284 (EPP/ECP)
Total Qty	1
Type	Network, Serial, Parallel

Memory

Flash Type	None
RAM Form Factor	DIMM 100-pin
RAM Installed Size	12 MB
RAM Max Supported Size	164 MB
RAM Soldered Size	4 MB
RAM Technology	SDRAM
RAM Type	DRAM

Miscellaneous

Color	White
Compliant Standards	Plug and Play
Features	LCD display
Mounting Kit	N/A
Rack Mounting Kit	N/A

Modem

Comm. Type	None

Networking

Compliant Standards	IEEE 802.3-LAN
Connectivity	Cable

3178

Technology	
Data Link Protocol	LocalTalk, Ethernet
Form Factor	Plug-in card
Network Transport Protocol	DLC/LLC, AppleTalk, IPX/SPX, TCP/IP
Type	Print server

Power Supply

Device Compliant Standards	EPA Energy Star
Device Form Factor	Integrated
Device Frequency Required	50/60 Hz
Device Power Consumption Operational	365 Watt
Device Power Consumption Stand by Sleep	40 Watt
Device Type	Power supply
Device Voltage Required	AC 110/120/127 V

Printer

Cartridge Printhead Duty Cycle	10000 pages
Cartridge Printhead Included Qty	1
Compliant Standards	ECP IEEE 1284-compliant port
Connectivity Technology	Cable
Duplex Printout	Optional
Envelope Sizes	US No 10 (4.1 in x 9.5 in), International DL (4.33 in x 8.66 in), International B5 (6.93 in x 9.83 in), International C5 (6.38 in x 9 in), Monarch (3.87 in x 7.5 in)
Form Factor	Stationary
Language Simulation	Adobe PostScript 2, HP PCL 6, HP PCL 5E
Max H-Document Size	12.3 in
Max H-Resolution BW	1200 Dpi
Max Media Size (Standard)	Ledger B Size (11 in x 17 in), A3 (11.7 in x 16.5 in)
Max V-Document Size	18.5 in
Max V-Resolution BW	1200 Dpi
Media Path Type	Curved
Media Sizes	A4 (8.25 in x 11.7 in), Letter A Size (8.5 in x 11 in), Legal (8.5 in x 14 in), B4 (9.83 in x 13.9 in), A5 (5.83 in x 8.25 in), Executive (7.25 in x 10.5 in), A3 (11.7 in x 16.5 in), B5 (6.93 in x 9.83 in), Ledger B Size (11 in x 17 in)
Media Type	Plain paper, Cards, Transparencies, Vellum paper, Labels, Envelopes
Monthly Duty Cycle (Users Qty)	50000 - 99999 (medium workgroup)
Output Type	Monochrome
PostScript Support	Standard
Printer Speed	16 Ppm
Technology	Laser

3179

Total Media Capacity	850 Sheets
Type	Workgroup printer

Printer Fonts

Font Included Type	TrueType
Fonts Included Qty	110

Printer Media

Media Feeder Capacity	250 Sheets, 500 Sheets, 100 Sheets
Media Feeder Max Format	11.7 in x 17 in, 12.3 in x 18.3 in
Media Feeder Qty	1
Media Load Type	Autoload

Printer Output

Max Speed	16 Ppm
Output Quality	B/W

Processor

Clock Speed	100 MHz
Form Factor	Integrated
Installed Qty	1
Instruction Set	RISC

Scanner

Type	None

Service

Support Details Full Contract Period	1 year
Support Details Service Included	Parts and labor
Support Details Type	Limited warranty
Support Type	1 year warranty

Slot Provided

Form Factor	DIMM 100-pin
Free Qty	1, 2
Total Qty	2, 3
Type	Memory, EIO

Slot Required

Type	None

Software

Type	HP FontSmart, HP JetAdmin Utility administrative, Drivers & Utilities

Storage Hard Drive

Type	None

3180

System Requirements

Min Operating System	SunSoft Solaris 2.5 or later, Novell NetWare 3.11,

Microsoft Windows 95/98, Microsoft Windows NT 3.51, Microsoft Windows 2000 / NT4.0, IBM OS/2 Warp 4.0, SunSoft Solaris 2.3, SCO Unix 5.0x, Novell NetWare 5.1, Novell NetWare 5.0, SCO Unix 4.2.0, SunOS 4.1.3, Novell NetWare 3.12, SuSE Linux 6.2, SunSoft Solaris 7, IBM AIX 3.2.5 or later, HP-UX 10.x, HP-UX 11.x, Red Hat Linux 5.2, SunSoft Solaris 2.6, IBM OS/2 Warp 3.0, Novell NetWare 4.x, SunSoft Solaris 2.4, Apple MacOS 7.1 or later, SunOS 4.1.4, HP-UX 9.x

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800 826 4239

Perle P2600 Modular Central Site Router



Product Information

- Central Site Router for Branch Networks

Usually Ships:	1-2 Weeks
CDW Part No.:	372004
Mfg. Part No.:	04022714
Unspsc No.:	43172702
Price:	**$1,329.86**

ADD TO CART

Manufacturer

PERLE

OVERVIEW

The Perle P2600 is one of the industry's most cost-effective and flexible central site routers. With simultaneous connections for up to 128 DLCIs (Frame Relay Data-link Connection Identifiers) or 14 remote offices connected using modular WAN interfaces, the P2600 handles the pressure and traffic of a large network with ease.

The P2600 base chassis is supplied with optional dual power supplies, which provide fault tolerance and redundancy, automatically switching should a fault occur in one unit. The P2600 supports up to 7 ISDN BRI modules or 14 leased line WAN modules (or a mixture of BRI, Frame Relay and leased line modules). Standard features include IP & IPX routing, protocol spoofing, Stac LZS data compression, NetSAFE firewall, SNMP, Telnet, Connection Management, 10BaseT, 10Base2 and AUI LAN interfaces.

Features:
Multiple leased line, Frame Relay or ISDN interfaces provide up to 14 physical connections
Extensive support for industry standard protocols ensures compatibility with other vendors' products
Support for Stac LZS data compression increases data throughput by up to 600%, reducing on-line costs
Comprehensive resource management reduces cost and provides fault tolerance
Integrated dual power supply configurations provide fault tolerance and redundancy
Hot-swappable mixed WAN interfaces give total flexibility when connecting remote users

SPECIFICATIONS

Bay Provided		
Type	None	
Cabinet		
Chassis Built-in Devices	None	**3182**

Chassis Form Factor	Rack-mountable
Chassis Type	Network device cabinet

Dimensions

Depth	11.6 In
Height	4.4 In
Weight	13 Lbs
Width	17.5 In

Environmental Parameters

Humidity Range Operating	20 - 80%
Max Operating Temperature	122 °F
Min Operating Temperature	35.6 °F

Header

Compatibility	PC
Manufacturer	Perle Systems
Model	P2600
Packaged Quantity	1
Product Line	Perle

Interface Provided

Connector Qty	1
Connector Type	9 pin D-Sub (DB-9)
Free	1
Gender	Female
Interface	RS-232
Qty	1
Type	Management

Interface Required

Type	None

Miscellaneous

Color	Black
Rack Mounting Kit	Included

Modem

Comm. Type	None

Networking

Compliant Standards	IEEE 802.3-LAN, IEEE 802.3U-LAN, IEEE 802.1D-LAN
Connectivity Technology	Cable
Data Link Protocol	ISDN, Frame Relay, Ethernet
Features	STAC-LZS compression, ARP support, Firewall protection, Modular design, CHAP authentication, DHCP support, PAP authentication
Form Factor	Rack-mountable
Network Transport Protocol	IP/IPX, TCP/IP, UDP/IP

3183

Remote Management Protocol	Telnet, SNMP 2
Routing Protocol	RIP-2, RIP
Switching Protocol	Ethernet, PPP, Frame Relay
Type	Router

Power Supply

Device Form Factor	Internal
Device Frequency Required	50/60 Hz
Device Installed Qty	1
Device Max Supported Qty	2
Device Power Consumption Operational	20 Watt
Device Type	Power supply
Device Voltage Required	AC 110/220 V
Device Voltage Required Margin	± 10%

Service

Support Details Full Contract Period	Life-time
Support Details Location	Bring-in
Support Details Service Included	Parts and labor
Support Details Type	Limited warranty
Support Type	Lifetime warranty

Slot Provided

Type	Expansion slot

Slot Required

Type	None

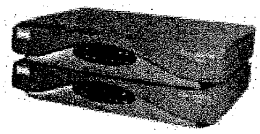
Software

Type	Drivers & Utilities

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800 838 4239



Product Information

4-port 10BASE-T Cable Access Router

Usually Ships:	1-2 Weeks
CDW Part:	318297
Mfg. Part:	UBR925-SINGLE-1PK
UNSPSC:	43172702
Price:	**$788.63**

ADD TO CART

Manufacturer

Authorized Reseller

OVERVIEW

Cisco uBR925 router also provides an onboard IPSec hardware accelerator, which provides high-performance encryption that is substantially faster than software-based encryption.

Cisco uBR925 cable access routers give small office, home office (SOHO) and branch office subscribers high-speed Internet or intranet access.The Cisco uBR905 and Cisco uBR925 cable access routers act as cable modems to connect computers and other customer premises devices at a subscriber site to the service provider cable, hybrid fiber-coaxial (HFC), and IP backbone network.

The Cisco uBR925 cable access router supports both data and Voice over IP (VoIP) traffic via a shared two-way cable system and IP backbone network.

The cable access router model supports four Ethernet hub ports to connect to PCs and other customer premises equipment (CPE) devices. The Cisco uBR925 cable access router also supports connecting one PC or CPE device through a Universal Serial Bus (USB) port.

SPECIFICATIONS

Bay Provided

Type	None	3185

Cabinet

Chassis Type	Network device cabinet

Dimensions

Depth	9.8 In
Height	2.3 In
Weight	3.1 Lbs
Width	13 In

Environmental Parameters

Humidity Range Operating	5 - 95%
Max Operating Temperature	104 °F
Min Operating Temperature	32 °F

Header

Compatibility	PC
Manufacturer	Cisco Systems
Model	925
Packaged Quantity	1
Product Line	Cisco uBR

Interface Provided

Connector Qty	4
Connector Type	RJ-45
Free	4
Gender	Female
Interface	Ethernet 10Base-T
Qty	4
Type	Network
Connector Qty	1
Connector Type	F connector
Free	1
Gender	Female
Interface	Input
Qty	1
Type	TV antenna
Connector Qty	2
Connector Type	RJ-11
Free	2
Gender	Female
Interface	FXS
Qty	2
Type	Phone line
Connector Qty	1
Connector Type	4 pin USB Type B
Free	1
Gender	Male
Interface	USB
Qty	1
Type	Serial
Connector Qty	1

3186

Connector Type	RJ-45
Free	1
Gender	Female
Interface	RS-232
Qty	1
Type	Management

Interface Required

Type	None

Line Properties

Line Coding Format	16 QAM, 256 QAM, 64 QAM, QPSK

Miscellaneous

Encryption Algorithm	DES

Modem

Comm. Compliant Standards	DOCSIS 1.0
Comm. Max Transfer Rate	44 Mbps
Comm. Type	Cable modem

Networking

Connectivity Technology	Cable
Data Link Protocol	Ethernet
Data Transfer Rate	10 Mbps
Features	DHCP support, Firewall protection, IP-routing, Manageable, NAT support, PAT support
Form Factor	External
Network Transport Protocol	TCP/IP
Remote Management Protocol	HTTP, SNMP 1, SNMP 2, SNMP 3, Telnet
Routing Protocol	RIP-2
Status Indicators	Port status, Power
Type	Router

Power Supply

Device Form Factor	External
Device Frequency Required	50/60 Hz
Device Power Consumption Operational	15 Watt
Device Type	Power adapter
Device Voltage Required	AC 100/240 V

Slot Provided

Type	None

3187

Slot Required

Type	None

System Requirements

Min Operating System	Cisco IOS 12.2(2)XA

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OTTER TAIL RAILROAD

Telecommunication Voice System

OTRR will need a telecommunication voice system to handle external and internal telephone activity. NexPath Telephony Server –NTS Server Rack Mounted Systems - is capable of handling 51 outside lines and up to 85 extensions. This adequate to handle all 0TRR's telecommunication voice needs. The cost for this system with telephones and voice mail features is listed below.

My experience on the KCSR revealed that the ongoing cost for local service, long distance and 800 service runs about $50.00 per line per month. The Internet access estimate is based on my experience at KCSR where we paid approximately $500 per month for various locations on the system. Based on the above equipment configuration and assumptions, I have calculated the following capital and annual expenses.

Capital Budget:

One Time Cost	NTS Server Rack Mounted System- Including Voice Mail	$ 6,995.00
	17 Cards @ $900/card	15,300.00
	Total One Time Cost	$22,295.00
Unit Capital Cost	Telephones- GE-2-9487	119.98
	Telephone Installation $50.00 Per Phone	50.00

Operating Cost:		
Unit cost	Long Distance & 800 $50.00 per line X 12 months	$ 600.00
	Internet Access Business Rate $500/month/location ($500 X 12 = $6,000)	$6,000.00

Joe Kruzich

From: Joyce Newlan [joyce@nexpath.com]
Sent: Wednesday, January 22, 2003 5:19 PM
To: Joe Kruzich
Subject: RE: Evaluating a small business venture.

51 outside lines 85 extensions.

Joyce

-----Original Message-----
From: Joe Kruzich [mailto:jakruzich@earthlink.net]
Sent: Wednesday, January 22, 2003 2:08 PM
To: 'Joyce Newlan'
Subject: RE: Evaluating a small business venture.

Joyce, what is the (51X85) represent for the large NTS/RS?

-----Original Message-----
From: Joyce Newlan [mailto:joyce@nexpath.com]
Sent: Wednesday, January 22, 2003 2:38 PM
To: Joe Kruzich
Subject: RE: Evaluating a small business venture.

Hi,

We have 2 different rack systems. The NTS/R is the smaller of the two and is $4,750 for the chassis and $900 for each 3 lines x 5 extension card (cards purchased with a chassis are $900, cards purchased later are $995) you can start out as small as 1 card and then add cards as needed to its max of 9 cards (27x45). The NTS/RX is out biggest system, the chassis is $6,995 and $900 for each card, it has a max size of 17 cards (51x85). The software with all the features is included with all system purchases.

Thanks,
Joyce Newlan
NexPath Corporation
800-929-8916 x563
www.nexpath.com

-----Original Message-----
From: Joe Kruzich [mailto:jakruzich@earthlink.net]
Sent: Wednesday, January 22, 2003 7:39 AM
To: 'Joyce Newlan'
Subject: RE: Evaluating a small business venture.

Joyce, what is the purchase price of the NTS Server Rack Mounted System? Does the price include all the software?

Thanks,

Joe Kruzich

-----Original Message-----
From: Joyce Newlan [mailto:joyce@nexpath.com]

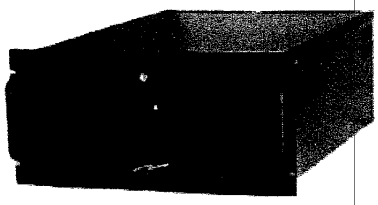
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NTS Server Rack Mounted Systems

The NexPath Telephony Server is available in two standard 19" rack mounted versions: the NTS/R and the NTS/RX. The NTS/R will accept up to 9 CBTI cards, or 27 outside lines and 45 inside lines. The NTS/RX has a capacity of up to 17 cards, or 51 outside lines x 85 inside (station) lines. The NTS/RX is shown here with a NexPath burgundy front panel. The NTS/R is supplied in a smaller black chassis.



Rack mounted systems are sold as a base system and CBTI cards are added to make the inside or outside line count what is required.

The same CBTI cards are used in all NexPath systems, so it is possible to move up from a smaller chassis to a larger one by purchasing the chassis and moving the previously purchased line (CBTI) cards.

The software for the NTS/R and NTS/RX systems is the same as for the mini-tower systems and has the same feature set and network applications.

NTS/R mid size rack systems are housed in a 19" wide x 7" high x 14" deep black chassis, and have a single 250W AT power supply. The NTS/R chassis can be rack mounted, or table top mounted. System weight is approximately 45 pounds.

The largest NTS/RX systems are housed in a standard industrial 19" wide x 8.75" high x 26" deep steel chassis with burgundy front panel, and have dual 300W hot swap power supplies. A full 17 card system (136 ports) will operate comfortably off of one 300 watt supply, so the dual supplies provide complete redundancy. System weight is approximately 75 pounds.

As with all NexPath systems, the ringing voltage and battery supply are contained on each CBTI card, so no external supply is required.

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NexPath NTS Server Voice Mail Features

Introduction:

The NexPath Telephone System integrates voice mail with the switching functions (PBX-like functions) into one compact package. Instead of a multi-box, complex solution with only two or four "ports" of voice mail that you would get on traditional telephone systems (using station ports), you get a fully integrated 30 ports of voice mail on the NexPath system. The NexPath voice mail system is not an add-on, placed "in front of" or "behind" the switching system. The NexPath voice mail is an integral part of the telephony server designed in from the beginning.

In voice mail terminology, a "port" is one connection to the voice mail system. The number of "ports" on a voice mail system is the number of simultaneous connections to voice mail possible at any one given time. This includes both callers leaving voice mail, as well as a user retrieving his or her personal voice mail. With the NexPath Server, you never have to worry about running out of ports.

Voice mail on the NexPath system is accessible from an inside line, an outside line, from the network API, and from the web browser interface. You can listen to your voice mail using the multimedia capabilities of your computer, or in the traditional manner from the telephone handset.

Voice Mail Features:

- More than 50 hours storage on mini-tower systems (NTS and NTS/X)
- More than 50 hours storage on rack mounted systems (NTS/RX)
- Up to 30 ports of simultaneous access (All systems)
- Numeric paging upon receipt of voice mail
- E-mail notification upon receipt of voice mail, with option to attach message or delete message on server
- Announce Time and Date and Caller ID of message (configurable)
- View Caller ID and Caller Name of message (NexDial and TelOper)
- Configurable message length limit mailbox by mailbox (Administrative setup)
- Configurable total storage size limit mailbox by mailbox (Administrative setup)
- Configurable permission to allow E-mail notification at each voice mail box
- Stand-alone voice mail boxes (not necessary to be tied to an extension)
- Number of voice mail boxes limited only by extension numbering (3 digits) and disk space

Voice Mail Keypad and CTI Options:

- Play Message
- Pause Playing
- Resume Playing
- Next Message
- Previous Message
- Skip Forward 5 seconds
- Skip Backward 5 seconds
- Erase Message
- Record New Greeting (Normal and Alternate)
- Select normal or alternate greeting
- Play normal or alternate greeting
- Dial person who left message
- Change Numeric Pager number
- Announce Numeric Pager number
- Erase Numeric Pager number
- Announce time and date of message (configurable option from NexDial or TelOper)
- Announce caller ID of message (configurable option from NexDial or TelOper)
- Copy (forward) message to another mailbox
- Record prepend to message to copy
- Record short name for forwarded messages and for dial by name auto-attendants
- Save message to local disk (NexDial or TelOper)
- Exit voice mail
- Forwarding to configurable groups of voice mail boxes
- Send message from voice mail with forward/back/record over transcription capability

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OTTER TAIL RAILROAD

Cellular Phones and Pagers

Cellular Phones:

Total	Type	Quantity	Unit Cost
	Phone (5120)		$119.00
	Phone Holder		32.95
	Battery		56.21
	Battery Charger		19.95
	Total Unit Cost		$228.11

Total Cost = (Assignment X $228.11)

Telecommunications Employees, President, Vice President, Assistant Vice President, Directors, (or the highest level of manager/superintendent if there's no one with a director title), all customer service and the safety-type personnel.

Annual Costs:

500 minutes per month (with a one year agreement) $55.00/month/phone

Pagers:

For risk management employees – Free pagers if signup for service below.

Annual Pager Costs:

Pager service is $6.95/month for the first 12 months, $5.95/month for the second 12 months, $4.95/month for the third 12 months and $3.95/month thereafter.

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IMPORTANT: Phones are sold without contract or activation. Prices are subject to change. The Cellwest.com 30 day money back guarantee does not apply to phones. A phone may ONLY be returned for credit, or exchange. Returned phones must be sent back in original packaging in perfect condition, with less than 10 minutes of airtime use. Failure to meet all of the above conditions will result in a refused claim. One year warranty on phones is provided by the phone's manufacturer. Orders for cellular phones must be made in person by calling our toll free order line. We ship cellular phones to billing addresses only.

Phone orders must be shipped via UPS or FED EX with an adult signature required upon delivery. Phone orders outside of North America can only be paid for in advance by wire transfer. Shipping fees for phone orders will be quoted by a sales rep. Our regular shipping rates do not apply.

Cellwest does not offer airtime plans with our phones. We only sell the hardware and we cannot offer discounted rates on our phones. Our 'free shipping offer' does not apply to a phone purchase. Only cellular accessory orders over $50 are eligible for free UPS ground shipping.

Analog Phones

- Nokia 918
- Nokia 282
- Nokia 252

TDMA Digital Phones

- Nokia 8860
- Nokia 6160, 6120
- Nokia 5120
- Nokia 5125, 5165
- Nokia 8260
- Nokia 6162, 6161
- Nokia 7160

CDMA Digital Phones

- Nokia 5180i, 5185iVB
- Nokia 3285

GSM Digital Phones

- Nokia 8890
- Nokia 8290
- Nokia 5190
- Nokia 3390, 3360

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Nokia 8890 World Phone (GSM Digital)



Stay connected from anywhere in the world with the Nokia 8890! This remarkable phone runs on both the 900mHz and 1900mHz GSM digital network. That means it's capable of operating in up to 120 countries in 5 different continents! It weighs a little over 3 ounces including the internal battery. The battery lasts more than 3 hrs of talk time and 6 days of standby time. In addition, the Nokia

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8890's looks are sure to attract attention with its brushed aluminum finish, blue backlight, and illuminated metallic keys.

The Nokia 8890 is complemented with many standard features such as caller ID, clock, vibrating alert, and voicemail capability. Special features include wireless connectivity through infrared, predictive text input, voice dialing, appointments, animated menu icons, and email and fax capability.

Package includes one lithium battery, plug-in wall charger and phone along with a one year warranty through Nokia.

Click on these highlighted underlined links below to check out our full range of in stock Nokia accessories to complement your new phone. Long life lithium batteries page, twin charger/conditioners page, leather cases page, hands free kits

Now only **$439.00**

Nokia 3285 (CDMA Digital)



Operating on both the 800mHz and 1900mhz CDMA & analog frequencies, you're sure to be covered whereever you go. Features on this newest phone include, up to 3.5 hours minutes talk time, depending on battery selection, Up to 5.5 days standby time, depending on battery selection, vibrating alert, one-touch access to voicemail and text messages, speed-dialing, on-screen help, clock with alarm, internet browsing, two way messaging, local language support (English, French, Spanish, Portuguese, Simplified Chinese & Hebrew)
Phone book will store up to 200 names, numbers, and e-mail addresses 4 entertaining games, Calendar with 50 appointments, reminders, or notes and the list goes on...

Package includes one lithium battery, plug-in wall charger and phone along with a one year warranty through Nokia.

Click on these highlighted underlined links below to check out our full range of in stock Nokia accessories to complement your new phone. Long life lithium batteries page, twin charger/conditioners page, leather cases page, hands free kits

Now only **$198.00**

Nokia 8290 (GSM Digital)



The Nokia 8290 combines style with functionality. Just insert your SIM card into this phone that runs on the 1900mHz GSM digital network. It is extremely light weighing in at about 3 ounces with the external battery. The battery lasts up to a maximum of 3 hrs. of talk time and 6 days of standby time. It is available in several colors so be sure to speak to one of our sales representatives and inquire about the colors we have in stock.

The Nokia 8290 is complemented with many standard features such as caller ID, clock, vibrating alert, and voicemail capability. Sp

include wireless connectivity through infrared, predictive text input, voice dialing, appointments, animated menu icons, and email and fax capability.

Package includes one lithium battery, plug-in wall charger and phone along with a one year warranty through Nokia.

Click on these highlighted underlined links below to check out our full range of in stock Nokia accessories to complement your new phone. Long life lithium batteries page, twin charger/conditioners page, leather cases page, hands free kits

Now only **$199.00**

Nokia 3390 GSM & 3360 TDMA

The Nokia 3390 GSM combines style with functionality. Just insert your SIM card into this phone that runs on the 1900mHz GSM digital network. The Nokia 3360 is a tri band TDMA phone operating at 800mHz/ 1900mHz TDMA as well as 800mHz analog.



Both the 3390 & 3360 are light weighing in at about 4.5 ounces with the internal battery. The battery lasts up to a maximum of 3 hrs. of talk time and 10 days of standby time in high band digital mode. It is available in several colors so be sure to speak to one of our sales representatives and inquire about the colors we have in stock.

The Nokia 3390 & 3360 are complemented with many standard features such as caller ID, clock, vibrating alert, and voicemail capability. Special features include programable ringer tones, predictive text input, games, calculator, appointments, animated menu icons, web browsing, and email and fax capability.

Package includes one Ni MH battery, plug-in wall charger and phone along with a one year warranty through Nokia.

Click on these highlighted underlined links below to check out our full range of in stock Nokia accessories to complement your new phone. Long life lithium batteries page, twin charger/conditioners page, leather cases page, hands free kits

GSM 1900mHz 3390 **$135.00**
'Locked' for use with AT&T only 3360 **$175.00**
'Unlocked' for use with any TDMA provider only 3360 **$185.00**

5180i and 5185iVB (CDMA Digital), Nokia 5190 (GSM Digital)

Small and light weight, these phones feature dual mode, dual band 800MHz / 1900MHz CDMA digital and analog operation. Features include clock, alarm, games, 100 number alpha numeric phone book, 35 different ringer tones, optional vibrating batteries, several call timers, great standby and talk time, 1 button turbo dialing, caller ID, built-in pager, short message service, receives email, and the list goes on. The package includes the phone, a lithium ion battery, travel



wall charger and a 1 year warranty through Nokia. Please note this is a no contract / activation price. Cellwest.com does not offer airtime packages. Available in a variety of colors, with lots of different face plates to choose from to personalize your phone.

The Nokia 5190 is the alternative 5100 series phone for the 1900MHz GSM digital network. It has the same basic features as the Nokia 5180, but with a 250 number alpha numeric phone book. Just insert your SIM card and you're ready to talk!

Please note: The 5180 model is compatible with any CDMA service provider. Ask a sales rep for more info before placing your order.

Click on these highlighted underlined links below to check out our full range of in stock Nokia accessories to complement your new phone. Long life lithium batteries page, twin charger/conditioners page, leather cases page, hands free kits or faceplates page.

Nokia 5180i CDMA Digital **$195.00**
Nokia 5185iVB CDMA Digital **$165.00**
Nokia 5190 GSM Digital **$116.00**

Nokia 8860 (TDMA Digital)



This tiny 4 ounce chrome plated phone features multiple ringer tones, built-in hands free headset jack, 199 names and numbers in memory, long battery life, silent vibra-ring, large graphic LCD display, sliding key pad cover, electronic day timer, 4 games, calculator, alarm, caller ID, and many more.

The base version includes one slim NiMH chrome finished battery, wall charger and phone. The deluxe package includes two slim chrome colored NiMH batteries, desktop twin charger, hands free headset and phone. The deluxe package is an exceptional value, as the additional accessories purchased separately retail at $173! Supplies are limited, so order yours today.

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Please note the AT+T model listed can only be used on the AT+T digital network. The non AT+T version can be used on ANY TDMA digital network.

AT+T deluxe package only **$499.00**
AT+T base package only **$449.00**
(Call for availability!)

Nokia 8260 (TDMA Digital)

This tiny 3.4 ounce phone is Nokia's version of a small phone. For those of you that can't use the Motorola V8160 with your TDMA



3200

service provider, this is the phone you'll need. Runs on both the 800mHz and 1900mHz digital system as well as analog, so you'll be covered all across the country.

Features include 3 NAM's, caller ID, 40 different ringer tones, downloadable ringer tones available on the web may be added, silent vibration alert, built-in headset jack, 250 name phone book, text messaging, last ten numbers called / received stored, clock and alarm, lightweight lithium battery and much more!

Package includes one lithium battery, plug in wall charger and phone along with a one year warranty through Nokia. Current colors available are Blue, Grey (shown), and Red. Ask your sales representative for color availability when ordering yours.

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Nokia 8260 AT&T version **$235.00**
Unlocked Nokia 8260 version **$295.00**

Nokia 7160 (TDMA Digital)



Small and lightweight, these phones feature dual mode, dual band 800MHz / 1900MHz TDMA digital and analog operation. Features include 3 NAM's, caller ID, 40 different ringer tones, 5 downloadable ringer tones available on the web may be added, built-in microbrowser (Nokia WAP 1.1), 1,000 names and numbers in memory, text messaging (SMS), last thirty numbers called / received stored, calculator, calendar, currency converter, meeting planner and to-do list, voice recognition and much more!

Package includes one lithium battery, plug in wall charger and phone along with a one year warranty through Nokia. Supplies are limited, so order yours today.

Click on these highlighted underlined links below to check out our full range of in stock Nokia accessories to complement your new phone. Long life lithium batteries page, twin charger/conditioners page, leather cases page, hands free kits

Now only **$238.00**

Nokia 6160, 6120 (TDMA Digital)



Small and light weight, these phones feature dual mode, dual band 800MHz / 1900MHz digital TDMA and analog operation. Features include clock, alarm, games, 100 number alpha numeric phone book, 35 different ringer tones, optional vibrating batteries, several call timers, great standby and talk time, 1 button turbo dialing, caller ID, built-in pager, short message service, receives e-mail, and the list

goes on. Please note this is a no contract / activation price.
Cellwest.com does not offer airtime packages. Available in a variety of colors, with lots of different face plates to personalize your phone.

Please note: The Nokia 6160 can only be used with AT&T air time service. The 6120 model is compatible with any TDMA service provider. Ask a sales rep for more info before placing your order.

Click on these highlighted underlined links below to check out our full range of in stock Nokia accessories to complement your new phone. Long life lithium batteries page, twin charger/conditioners page, leather cases page, hands free kits or faceplates page.

Nokia 6120 800MHz **$199.00**
(AT&T) Nokia 6160 800MHz / 1900MHz **$163.00**

Nokia 6162, 6161 (TDMA Digital)



Small and light weight, this phone features dual mode, dual band 800MHz / 1900MHz digital TDMA and analog operation. Features include clock, alarm, games, 100 number alpha numeric phone book, 35 different ringer tones, optional vibrating batteries, several call timers, great stand by and talk time, 1 button turbo dialing, caller ID, built in pager, short message service, receives e-mail, and the list goes on. Please note this is a no contract / activation price. Cellwest.com does not offer airtime packages. Available in a variety of colors, with lots of different face plates to choose from to personalize your phone.

Please note: The Nokia 6162 can only be used with AT&T air time service in the USA. Canadians must purchase the Nokia 6161 for use on the AT&T network in Canada.

Click on these highlighted underlined links below to check out our full range of in stock Nokia accessories to complement your new phone. Long life lithium batteries page, twin charger/conditioners page, leather cases page, hands free kits or faceplates page.

(AT&T USA) Nokia 6162 800MHz / 1900MHz **$163.00**
(AT&T Canada) Nokia 6161 800MHz / 1900MHz **$225.00**

Nokia 5125, 5165 (TDMA Digital)

Small and light weight, these phones feature dual mode, dual band 800MHz / 1900MHz digital TDMA or analog operation. Features include clock, alarm, games, 100 number alpha numeric phone book, 35 different ringer tones, optional vibrating batteries, several call timers, great stand by and talk time, 1 button turbo dialing, caller ID, built in pager, short message service, receives e-mail, and the list goes on. The package includes the phone, a lithium ion battery a travel wall charger and 1yr warranty through Nokia. Please note this is a no contract / activation price. Cellwest.com does not offer airtime packages. Available in a variety of colors, with lots of different face plates to choose from to personalize your phone.



Click on these highlighted underlined links below to check out our full range of in stock Nokia accessories to complement your new phone. Long life lithium batteries page, twin charger/conditioners page, leather cases page, hands free kits or faceplates page.

Nokia 5125 dual band 800MHz **$135.00**
Nokia 5165 tri band 800MHz / 1900MHz **$155.00**

Nokia 5120 (TDMA Digital)



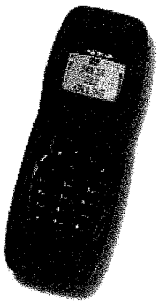
Small and light weight, these phones feature dual mode, dual band 800MHz / 1900MHz digital TDMA or analog operation. Features include clock, alarm, games, 100 number alpha numeric phone book, 35 different ringer tones, optional vibrating batteries, several call timers, great stand by and talk time, 1 button turbo dialing, caller ID, built in pager, short message service, receives e-mail, and the list goes on.
The package includes the phone, a lithium ion battery a travel wall charger and 1yr warranty through Nokia. Please note this is a no contract / activation price. Cellwest.com does not offer airtime packages. Available in a variety of colors, with lots of different face plates to choose from to personalize your phone.

The 5120 model is compatible with any TDMA service provider. Ask a sales rep for more info before placing your order.

Click on these highlighted underlined links below to check out our full range of in stock Nokia accessories to complement your new phone. Long life lithium batteries page, twin charger/conditioners page, leather cases page, hands free kits or faceplates page.

Nokia 5120 800MHz **$119.00**

Nokia 282 (Analog)



Nokia's smallest and lightest analog phone (shown open) weighs in at about 4 ounces and comes packed with features. Flips open and closed just like the Motorla StarTAC. Features include alpha numeric memory, programmable ringer tones, dual NAM, silent vibration, built-in headset jack, and many more. Package Includes: 1 year warranty, one lithium battery and plug in wall charger. Colors availabe are Pewter, Black, Red or Blue. Ask your sales rep for availabilty. (Black color shown)

Click on these highlighted underlined links below to check out our full range of in stock Nokia accessories to complement your new phone. Long life Ni MH batteries, twin charger/conditioners, leather cases, hands free kits and many other items are available for this model.

Order now only **$125.00**

Nokia 252 (Analog)

Small and light weight, and priced right. Features include alpha numeric memory, programmable ringer tones, dual NAM ,etc. Package Includes: 1 year warranty, one NiMH battery and plug in wall charger. Colors available: black, wood grain, silver, blue and red.



Click on these highlighted underlined links below to check out our full range of in stock Nokia accessories to complement your new phone. Long life Ni MH batteries, twin charger/conditioners, leather cases, hands free kits and many other items are in stock for this model.

Order now only **$119.00**

Nokia 918 (Analog)



Small and light weight, and priced right. Features include alpha numeric memory, programmable ringer tones, dual NAM ,etc. Package Includes: 1 year warranty, one NiMH battery and plug in wall charger.

Click on these highlighted underlined links below to check out our full range of in stock Nokia accessories to complement your new phone. Long life Ni MH batteries, twin charger/conditioners, leather cases, hands free kits and many other items are in stock for this model.

Order now only **$92.00**

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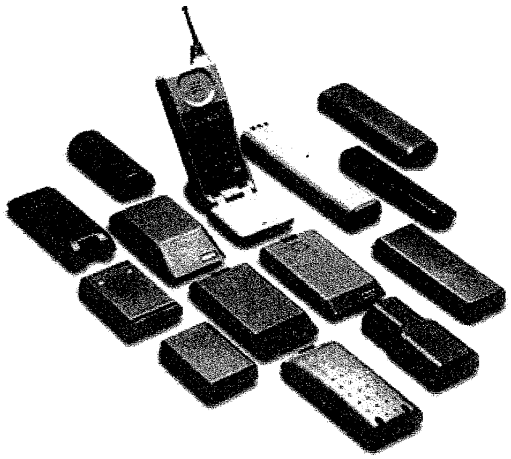
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Working closely with our manufactures in the USA and Asia, Cellwest batteries and accessories will meet or exceed the same quality specifications as their higher priced 'brand name' equivalent. Our premium battery cells are produced by the three biggest names in the industry; Toshiba, Sony and Panasonic. **All of our batteries are exact specifications of the originals and will not void OEM warranties**.

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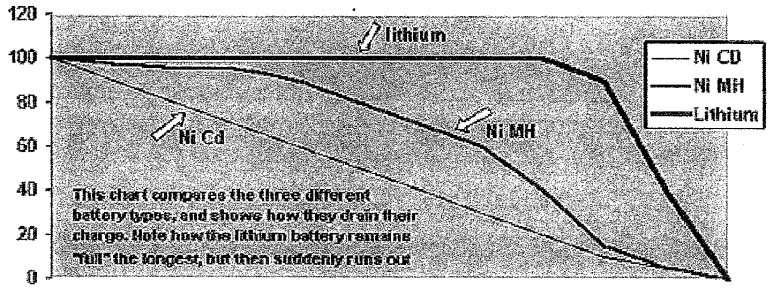
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These batteries offer unsurpassed power storage combined with very light weight. Compared to Ni MH batteries, a lithium battery of equal capacity and size will weigh up to 50% less and offer up to 50% more talk time and stand by time. Lithium batteries aren't just more convenient, they offer good value as well. Lithium batteries are the only true ' no memory ' batteries. These batteries will never need to be discharged.

A lithium battery is recommended when using a plug in car charger more than two or three times daily, as frequent charging of Ni MH or NI Cd batteries will significantly reduce battery life and capacity, due to memory effect.

Our line of lithium batteries was developed for use with the original charger supplied with your phone. No special charger is required for most models. Fully compatible, these batteries look and feel just like their higher priced brand name equivalents, at a fraction of the cost. All our lithium batteries are compatible with any Digital, PCS, GSM or Analog phones. **Will not void manufacturer warranty! No special charger required for most models!**



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Audiovox						
Audiovox PCX 1000	**BLAUPCX1-900SL** Slim	900mA	50 grams	10 mm	$69.95	**$52.46**
Audiovox PCX 1000	**BLAUPCX1-1400XT**	1400mA	65 grams	16 mm	$74.95	**$56.21**
Audiovox CDM 120	**BLAU120-600**	600mA	60 grams	12 mm	$65.95	**$49.46**
Audiovox CDM 120	**BLAU120-900**	900mA	80 grams	13 mm	$69.95	**$52.46**
Audiovox						

CDM 130, 135, PCX 1100	**BLAU130-900**	900mA			$65.95	**$49.46**
Audiovox 3300	**BLAU3300-900**	900mA			$65.95	**$49.46**
Audiovox 3500	**BLAU3500-900**	900mA	50 grams	10 mm	$65.95	**$49.46**
Audiovox CDM 4000	**BLAU4000-900** (Black)	900mA	50 grams	11 mm	$69.95	**$52.46**
Audiovox CDM 8000	**BLAU8000-900**	900mA			$65.95	**$49.46**
Audiovox CDM 4500, CDM 9000	**BLAU9000-900** (Silver)	900mA			$69.95	**$52.46**
Audiovox CDM 9100	**BLAU9100-900 (Call for availability!)**	900mA			$69.95	**$52.46**
Denso						
Denso Touchpoint, 120	**BLDTP120-900**	900mA			$68.95	**$51.71**
Denso Touchpoint, 120	**BLDTP120-1350**	1350mA			$74.95	**$56.21**
Denso Touchpoint 1100	**BLDTP1100-900**	900mA			$68.95	**$51.71**
Denso Touchpoint 2200, 2100	**BLDTP2200-1100**	1100mA			$74.95	**$56.21**
All Lithium Batteries on Sale - Take 25% off any regular price						
Ericsson						
Ericsson T28	**BLERT28-900**	900mA	45 grams	9 mm	$79.95	**$59.96**
Ericsson T28	**BLERT28-1100**	1100mA	55 grams	10 mm	$85.95	**$64.46**
Ericsson 200, 300 Series, LX77, LX100	**BLER200-600SL Slim** (Includes special lithium wall charger)	600mA	70 grams	12 mm	$97.95	**$73.46**
Ericsson 200, 300 Series, LX77, LX100	**BLER200-1350**	1350mA	110 grams	31 mm	$91.95	**$68.96**
Ericsson 700 Series, T18, LX588	**BLER700-1100** (Includes special lithium wall charger)	1100mA	65 grams	10 mm	$108.95	**$81.71**
Ericsson	**BLER2218-1350 (Call for**	1350mA	65	10 mm	$91.95	**$68.96**

2218Z	**availability!)**		grams			
			Hyundai			
Hyundai 110	**BLHY110-1350**	1350mA			$91.95	**$68.96**
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			Kyocera			
Kyocera Q Phone	**BLQPHONE-900**	900mA	55 grams	13 mm	$68.95	**$51.71**
Kyocera 860, 1960, 2760	**BLQC860-600**	600mA	30 grams	8 mm	$65.95	**$49.46**
Kyocera 860, 1960, 2760	**BLQC860-900AUX** (Auxiliary Battery)	900mA			$69.95	**$52.46**
Kyocera 800, 1900	**BLQC1900-1350**	1350mA	95 grams	19 mm	$74.95	**$56.21**
Kyocera Q 2035	**BLQC2035-600**	600mA			$65.95	**$49.46**
Kyocera 2700, 1920, 820	**BLQC2700-900SL** Slim	900mA	100 grams		$69.95	**$52.46**
Kyocera 2700, 1920, 820	**BLQC2700-1350**	1350mA	110 grams	19 mm	$74.95	**$56.21**
Kyocera 3035	**BLQC3035-600 (Call for availability!)**	600mA			$65.95	**$49.46**
Kyocera 6035	**BLQC6035-900 (Call for availability!)**	900mA			$74.95	**$56.21**
			Lucky Goldstar			
Lucky Goldstar 110, V111	**BLLGC110-600 (Call for availability!)**	600mA			$68.95	**$51.71**
Lucky Goldstar LG 300W, BAM 300D	**BLLGC300-900**	900mA	110 grams	11 mm	$68.95	**$51.71**
Lucky Goldstar LG 300W, BAM 300D	**BLLGC300-1350**	1350mA	110 grams	20 mm	$74.95	**$56.21**
Lucky Goldstar LG 330W, LG 2300, BAM 330D	**BLLGC330-900**	900mA	55 grams	12 mm	$68.95	**$51.71**
Lucky Goldstar LG 330W, LG 2300, BAM 330D	**BLLGC330-1400**	1400mA	55 grams	12 mm	$74.95	**$56.21**

			Mitsubishi			
Mitsubishi 310	**BLMIT310-900**	900mA	45 grams	11 mm	$79.95	**$59.96**
All Lithium Batteries on Sale - Take 25% off any regular price						
			Motorola			
Motorola 3160, 3180	**BLMO3160-900**	900mA	95 grams	12 mm	$68.95	**$51.71**
Motorola 3160, 3180	**BLMO3160-1350XT**	1350mA	110 grams	19 mm	$74.95	**$56.21**
Motorola L7089	**BLMOVAD-600** Slim Main	600mA	30 grams	7 mm	$68.95	**$51.71**
Motorola L7089	**BLMOVAD-900XT** XT Main	900mA	50 grams	12 mm	$74.95	**$56.21**
Motorola Timeport P8090, P8097, P8160, P8167, P8767	**BLMOTIME-600SV** (Silver Slim Battery)	600mA	30 grams	7 mm	$65.95	**$49.46**
Motorola Timeport P8090, P8097, P8160, P8167, P8767	**BLMOTIME-900SV** (Silver Extended Battery)	900mA	50 grams	13 mm	$68.95	**$51.71**
	Motorola V Series					
Motorola V8160, V8162	**BLMOV8160-600** Slim Main	600mA	30 grams	7 mm	$68.95	**$51.71**
Motorola V3620, V3682	**BLMOVAD-600** Slim Main	600mA	30 grams	7 mm	$68.95	**$51.71**
Motorola V3620, V3682	**BLMOVAD-900XT** Main	900mA	50 grams	12 mm	$74.95	**$56.21**
Genuine Motorola V3620, V8160, V8162	**SNN 5517A** Slim Main	600mA	30 grams	7 mm	$79.95	**$59.96**
Genuine Motorola V3620, V8160, V8162	**SNN 5339A** Slim Main	600mA	30 grams	7 mm	$79.95	**$59.96**
Genuine Motorola V3620, V8160, V8162	**SNN 5451B** XT Main	850mA	50 grams	12 mm	$85.95	**$64.46**

Genuine Motorola V3620	**SNN 5342A** Auxillary	850mA	65 grams	16 mm	$98.95	**$74.21**
	Motorola Star TAC Series					
Motorola Star Tac Series (Main Slim Battery)	**BLMOSTAR-600BK** Black **BLMOSTAR-600DG** Dark Grey **BLMOSTAR-600SG** Steel Grey **BLMOSTAR-600SB** Slate Blue	600mA	30 grams	7 mm	$65.95	**$49.46**
Motorola Star Tac Series (Main XT Battery)	**BLMOSTAR-950XTBK** Black **BLMOSTAR-950XTDG** Dark Grey **BLMOSTAR-950XTSG** Steel Grey	950mA	50 grams	13 mm	$68.95	**$51.71**
Motorola Star Tac Series (Main XT Battery)	**BLMOSTAR-1350XTBK** Black **BLMOSTAR-1350XTDG** Dark Grey	1350mA	60 grams	13 mm	$91.95	**$68.96**
Motorola Star Tac Series (Auxiliary XT Battery)	**BLMOSTAR-950AUXBK** Black **BLMOSTAR-950AUXDG** Dark Grey **BLMOSTAR-950AUXSG** Steel Grey **BLMOSTAR-950AUXSB** Slate Blue	950mA	60 grams	13 mm	$74.95	**$56.21**
Motorola Star Tac Series (Auxiliary XT Battery)	**BLMOSTAR-1350AUXBK** Black **BLMOSTAR-1350AUXDG** Dark Grey	1350mA	75 grams	15 mm	$91.95	**$68.96**
	(Call for					

Motorola Star Tac Series (Auxiliary XT Battery)	**(Call for availability!)** **BLMOSTAR-2700AUXBK** Black **BLMOSTAR-2700AUXDG** Dark Grey **BLMOSTAR-2700AUXSG** Steel Grey	2700mA	100 grams	19 mm	$114.95	**$86.21**
Genuine Motorola Star Tac Series (Main Slim Battery)	**SNN 5051** All colors stocked	600mA	32 grams	7 mm	$77.95	**$58.46**
Genuine Motorola Star Tac Series (Main XT Battery)	**SNN 5215** All colors stocked	850mA	60 grams	13 mm	$91.95	**$68.96**
Genuine Motorola Star Tac Series (Auxiliary XT Battery)	**SNN 4820** All colors stocked	850mA	60 grams	13 mm	$97.95	**$73.46**
All Lithium Batteries on Sale - Take 25% off any regular price						
	Motorola 'Flip Phone' Series					
Motorola Elite, SC 725, SC 925, M75, M77, M70 Flare, Spirit, Select 2000, 3000, 6000, Flip Series	**(Call for availability!)** **BLMOFLIP-850BK** Black **BLMOFLIP-850DG** Dark Grey **BLMOFLIP-850SG** Steel Grey	850mA	110 grams	13 mm	$74.95	**$56.21**
Motorola Elite, SC 725, SC 925, M75, M77, M70 Flare, Spirit, Select 2000, 3000, 6000, Flip Series	**BLMOFLIP-1350BK** Black Hump Back **BLMOFLIP-1350DG** Dark Grey Hump Back **BLMOFLIP-1350SG**	1350mA	120 grams	20 mm	$79.95	**$59.96**

	Steel Grey Hump Back					
Motorola Flip Flip, Profile, TAC lite, 555, 550, 650, 850, 910, Ultra lite, Tac II, Lite XL	**(Call for availability!)** **BLMOFLIP-850BK** Black **BLMOFLIP-850DG** Dark Grey **BLMOFLIP-850SG** Steel Grey	850mA	110 grams	13 mm	$74.95	**$56.21**
Motorola Flip Flip, Profile, TAC lite, 555, 550, 650, 850, 910, Ultra lite, Tac II, Lite XL	**BLMOFLIP-1350BK** Black Hump Back **BLMOFLIP-1350DG** Dark Grey Hump Back **BLMOFLIP-1350SG** Steel Grey Hump Back	1350mA	120 grams	20 mm	$79.95	**$59.96**
NEC						
NEC 2600	**BLNEC2600-900 (Call for availability!)**	900mA			$68.95	**$51.71**
Neopoint						
Neopoint 1000, 1600	**BLNEO1000-600**	600mA	65 grams	10 mm	$79.95	**$59.96**
All Lithium Batteries on Sale - Take 25% off any regular price						
Nextel						
Nextel i50SX	**BLMOI50-900 (Call for availability!)**	900mA			$69.95	**$52.46**
Nextel i280, i370, i390 i600	**BLMOI600-900SL** Slim	900mA	110 grams	10 mm	$69.95	**$52.46**
Nextel i1000, i2000	**BLMOI1000-600SL** Slim	600mA	50 grams	5 mm	$56.95	**$42.71**
Nextel i1000, i2000	**BLMOI1000-900**	900mA	55 grams	10 mm	$51.95	**$38.96**
All Lithium Batteries on Sale - Take 25% off any regular price						
Nokia						
Nokia 252	**BLNK252-900 (Call for availability!)**	900mA			$69.95	**$52.46**
Nokia 282	**BLNK282-600**	600mA		Internal	$65.95	**$49.46**

Nokia 282	**BLNK282-900 (Call for availability!)**	900mA		Internal	$74.95	**$56.21**
Nokia 2100 Series	**BLNK2100-1350** (No special charger required)	1350mA	100 grams	20 mm	$85.95	**$64.46**
Nokia 3390	**BLNK3300-900 (Call for availability!)**	900mA			$74.95	**$56.21**
Nokia 5100, 6100, 7100 Series	**BLNK6100-3800**	3800mA	110 grams	18 mm	$89.95	**$67.46**
Nokia 5100, 6100, 7100 Series	**BLNK6100-3200**	3200mA	100 grams	18 mm	$85.95	**$64.46**
Nokia 5100, 6100, 7100 Series	**BLNK6100-1400**	1400mA	65 grams	14 mm	$74.95	**$56.21**
Nokia 5100, 6100, 7100 Series	**BLNK6100-900**	900mA	48 grams	11 mm	$65.95	**$49.46**
Nokia 8260	**BLNK8200-900**	900mA	35 grams	9 mm	$69.95	**$52.46**
Nokia 8860	**BLNK8860-600** Black	600mA			$65.95	**$49.46**
Nokia 8860	**BLNK8860-1400** Call for availability	1400mA	40 grams	11 mm	$74.95	**$56.21**
Genuine Nokia 5100, 6100, 7100 Series	**Nokia BLS-4**	1500mA	65 grams	16 mm	$99.95	**$74.96**
Genuine Nokia 5100, 6100, 7100 Series	**Nokia BLS-2**	900mA	60 grams	14 mm	$85.95	**$64.46**
All Lithium Batteries on Sale - Take 25% off any regular price						
	Nokia 5100, 6100, 7100 Vibrating					
Nokia 5100, 6100, 7100 Series	**BLNK6100-3800V** Vibrating	3800mA	110 grams	18 mm	$99.95	**$74.96**
Nokia 5100, 6100, 7100 Series	**BLNK6100-3200V** Vibrating	3200mA	100 grams	18 mm	$94.95	**$71.21**
Nokia 5100, 6100, 7100 Series	**BLNK6100-1400V** Vibrating	1400mA	65 grams	18 mm	$85.95	**$64.46**
Nokia 5100, 6100, 7100 Series	**BLNK6100-1200SLV** Extra Slim Vibrating	1200mA	55 grams	8 mm	$85.95	**$64.46**
Nokia 5100, 6100, 7100 Series	**BLNK6100-900V** Vibrating	900mA	48 grams	11 mm	$74.95	**$56.21**

Nokia 5100, 6100, 7100 Series	**BLNK6100-600V** Vibrating Slim	600mA	44 grams	11 mm	$68.95	**$51.71**
Nokia 5100, 6100, 7100 Series	**BLNK6100-1200HF** Hands Free Vibrating	1200mA			$134.95	**$101.21**
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	Nokia 5100, 6100, 7100 Colored Vibrating					
Nokia 5100, 6100, 7100 Series	**BLNK6100TRC-900V** Transparent Clear Vibrating	900mA	60 grams	10 mm	$74.95	**$56.21**
Nokia 5100, 6100, 7100 Series	**BLNK6100TRR-900V** Transparent Red Vibrating	900mA	60 grams	10 mm	$74.95	**$56.21**
Nokia 5100, 6100, 7100 Series	**BLNK6100TRG-900V** Transparent Green Vibrating	900mA	60 grams	10 mm	$74.95	**$56.21**
Nokia 5100, 6100, 7100 Series	**BLNK6100TRY-900V** Transparent Yellow Vibrating	900mA	60 grams	10 mm	$74.95	**$56.21**
Nokia 5100, 6100, 7100 Series	**BLNK6100TRB-900V** Transparent Blue Vibrating	900mA	60 grams	10 mm	$74.95	**$56.21**
Nokia 5100, 6100, 7100 Series	**BLNK6100TRP-900V** Transparent Purple Vibrating	900mA	60 grams	10 mm	$74.95	**$56.21**
Nokia 5100, 6100, 7100 Series	**BLNK6100TRSM-900V** Transparent Smoke Vibrating	900mA	60 grams	10 mm	$74.95	**$56.21**
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	Nokia 5100, 6100, 7100 Flashing Colored Vibrating					
Nokia 5100, 6100, 7100 Series	**BLNK6100TRSM-900FL** Transparent Smoke Flashing & Vibrating	900mA	60 grams	10 mm	$79.95	**$59.96**
Nokia 5100, 6100, 7100 Series	**BLNK6100TRR-900FL** Transparent Red Flashing & Vibrating	900mA	60 grams	10 mm	$79.95	**$59.96**
Nokia 5100, 6100,	**BLNK6100TRP-900FL** Transparent Purple	900mA	60	10 mm	$79.95	**$59.96**

7100 Series	Flashing & Vibrating		grams			
Nokia 5100, 6100, 7100 Series	**BLNK6100TROR-900FL** Transparent Orange Flashing & Vibrating	900mA	60 grams	10 mm	$79.95	**$59.96**
Nokia 5100, 6100, 7100 Series	**BLNK6100TRCL-900STAR** Transparent Clear Flashing Star LED	900mA	60 grams	10 mm	$79.95	**$59.96**
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Panasonic						
Panasonic TX210, Promax	**BLPAN210-600 (Call for availability!)**	600mA			$65.95	**$49.46**
Panasonic TX220, Duramax	**BLPAN220-1350 (Call for availability!)**	1350mA			$74.95	**$56.21**
Qualcomm						
Qualcomm Q Phone	**BLQPHONE-900**	900mA	55 grams	13 mm	$68.95	**$51.71**
Qualcomm 860, 1960, 2760	**BLQC860-600**	600mA	30 grams	8 mm	$65.95	**$49.46**
Qualcomm 860, 1960, 2760	**BLQC860-900AUX** (Auxiliary Battery)	900mA			$69.95	**$52.46**
Qualcomm 800, 1900	**BLQC1900-1350**	1350mA	95 grams	19 mm	$74.95	**$56.21**
Qualcomm Q 2035	**BLQC2035-600**	600mA			$65.95	**$49.46**
Qualcomm Q 2035	**BLQC2035-900XT**	900mA			$74.95	**$56.21**
Qualcomm 2700, 1920, 820	**BLQC2700-900SL** Slim	900mA	100 grams		$69.95	**$52.46**
Qualcomm 2700, 1920, 820	**BLQC2700-1350**	1350mA	110 grams	19 mm	$74.95	**$56.21**
Qualcomm 3035	**BLQC3035-600 (Call for availability!)**	600mA			$65.95	**$49.46**
Qualcomm 6035	**BLQC6035-900 (Call for availability!)**	900mA			$74.95	**$56.21**
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Samsung						
Samsung M100,	**BLSA100-800 (Call for**	800mA			$68.95	**$51.71**

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Samsung SCH 210	**BLSA210-1350**	1350mA	110 grams	18 mm	$74.95	**$56.21**
Samsung 411, 2500, 2540	**BLSA411-900**	900mA	55 grams	11 mm	$68.95	**$51.71**
Samsung 850, 811, 8500	**BLSA850-900**	900mA	55 grams	12 mm	$68.95	**$51.71**
Samsung 850, 811, 8500	**BLSA850-1400XT**	1400mA			$74.95	**$56.21**
Samsung SCH 2000	**BLSA2000-600 (Call for availability!)**	600mA			$65.95	**$49.46**
Samsung SCH 2000	**BLSA2000-900**	900mA	55 grams	12 mm	$68.95	**$51.71**
Samsung 3500	**BLSA3500-900SL**	900mA	55 grams	12 mm	$74.95	**$56.21**
Samsung 3500	**BLSA3500-1400XT**	1400mA	65 grams	12 mm	$79.95	**$59.96**
Samsung 6100	**BLSA6100-1400XT**	1400mA			$79.95	**$59.96**
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Sanyo 201, **BAM** 201	**BLSY201-900**	900mA			$68.95	**$51.71**
Sanyo SCP3000	**BLSY3000-900 (Call for availability!)**	900mA			$68.95	**$51.71**
Sanyo SCP4000	**BLSY4000-600 (Call for availability!)**	600mA			$65.95	**$49.46**
Sanyo SCP4000	**BLSY4000-900 (Call for availability!)**	900mA			$68.95	**$51.71**
Siemens						
Siemens G1050	**BLSIE1050-900**	900mA			$68.95	**$51.71**
Sony						
Sony CMD 500, 600	**BLQC1900-1350**	1350mA	95 grams		$74.95	**$56.21**
Sony 3300, 3200, 3100, 1400, 1301, 1207, 1201, 1101	**BLSO3200-1350**	1350mA	105 grams	21 mm	$74.95	**$56.21**
Sony 3300, 3200, 3100, 1400, 1301,	**BLSO3200-900**	900mA	105 grams	13 mm	$68.95	**$51.71**

1207, 1201, 1101						
Sony CMRX 100	**BLSOCMRX-900**	900mA	95 grams	Internal	$68.95	**$51.71**

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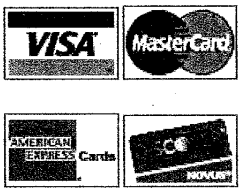
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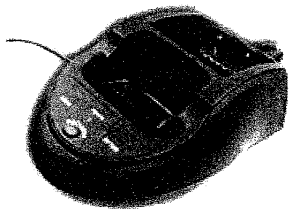
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CHDAU3000	**Audiovox** CDM 3000
CHDAU3500	**Audiovox** CDM 3300, 3500
CHDAU4000	**Audiovox** CDM 4000, 4500, 9000
	Ericsson
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CHDQC1900	**Kyocera** QCP 800, 1900
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	Lucky Goldstar
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	Mitsubishi
CHDMIT310	**Mitsubishi** 310
	Motorola
CHDMOSTAR	**Motorola Star TAC** Series, All models digital and analog
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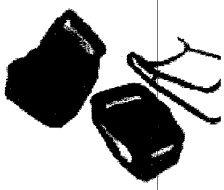
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CHLMOSTAR	**Motorola** V3620, V3682, V3688, V8160, V8162	$23.95
CHLMOSTAR	**Motorola Talkabout** T8090, T8097, T8160, T8167, **Timeport** P8090, P8097, P8160, P8167, P8767	$23.95
CHLMOSTAR	**Motorola** L 7089	$23.95
CHLMOG520	**Motorola** G520, D520, M3090, M3097	$23.95
CHLMOi85	**Motorola** V60c	$23.95
CHLMO2297	**Motorola** V2260, V2267, V2282, V2290, V2297, V2397, T2260, T2267, T2282, T2290, T2297	$23.95
CHLMO3160	**Motorola** 3160, 3180	$23.95

CHLMOFLIP	**Motorola** Flip 350, 550, 555, 650, 850, 888, 910	$18.95
CHLMOFLIP	**Motorola** TAC Lite, Tele TAC, DPC, Contour, Courier, 650, Piper II	$18.95
CHLMOM70	**Motorola** M75, M70, M77, SC 725, SC 925, Elite, Flare, Select	$23.95
CHLMOMOD	**Motorola** Modulas 2, M3682	$23.95
CHLMOPOP	**Motorola** Populous, 130	$23.95
CHLMOUCII	**Motorola** Ultra Classic, Ultra Classic II, 8000	$23.95
SYN 4241	**Original Motorola Star TAC** Series All models, V3620, V3682, V3688, V8160, V8162, **Talkabout** and **Timeport** Series	$39.95
	NEC	
CHLNECP100	**NEC** P100, 110, 120, **AT&T** 3610	$21.95
CHLNECP700	**NEC** P700, 800, PCS 2000	$21.95
CHLNECP700	**NEC** MAX 960, P2100	$21.95
CHLNEC2600	**NEC** 2600	$21.95
	Neopoint	
CHLNEO1000	**Neopoint** 1000, 1600	$23.95
	Nextel	
CHLMOI50	**Nextel** i50SX **(Call for availability!)**	$22.95
CHLMOI85	**Nextel** i85S **(Call for availability!)**	$22.95
CHLMOI500	**Nextel** i500, i550, i700	$22.95
CHLMOI600	**Nextel** i280, i370, i390, i600	$22.95
CHLMOI1000	**Nextel** i1000, i2000	$22.95
	Nokia	
CHLNK918	**Nokia** 636, 638, 918	$18.95
CHLNK2100	**Nokia** 100, 101, 121, 191, 201, 232, 239, 1000	$18.95
CHLNK2100	**Nokia** 2100 Series, All models, **AT&T 6650**	$18.95
CHLNK6100	**Nokia** 252, 282, 3300 Series	$19.95
CHLNK6100	**Nokia** 5100, 6100, 7100 Series, All models	$19.95
CHLNK6100	**Nokia** 8260, 8290, 8810, 8860, 8890	$19.95
LCH-9	**Original Nokia** 5100, 6100, 7100, 8200, 8800 Series, All models, 252, 282	$29.95
LCH-2	**Original Nokia** 2100 Series, 100, 101, 121, 191, 201, 232, 239, 1000	$29.95
	***Oki** (Call for available models)*	
CHLOKI1335	**Oki** 1335, 1325, 1410, 1415, 1430, 1435, 1475	$22.95
	Panasonic	
CHLPAN220	**Panasonic** TX220, Duramax, TX210, Promax **(Call for availability!)**	$24.95

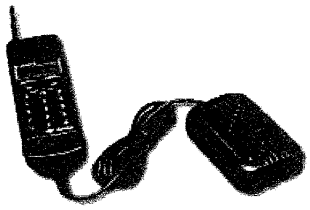
***Philips** (Call for available models)*		
CHLPHISIS	**Philips** Aeon, Isis, Spark	$24.95
Qualcomm		
CHLQPHONE	**Qualcomm** Q Phone	$23.95
CHLQC820	**Qualcomm** QCP 820, 1920, 2700	$23.95
CHLQC860	**Qualcomm** QCP 860, 1960, 2760 "Thin Phone"	$23.95
CHLQC1900	**Qualcomm** QCP 800, 1900	$23.95
CHLQC2035	**Qualcomm** 2035	$23.95
CHLQC3035	**Qualcomm** 3035 **(Call for availability!)**	$23.95
CHLQC6035	**Qualcomm** 6035 **(Call for availability!)**	$23.95
Samsung		
CHLSA210	**Samsung** SCH 210, 1500, 1510, 1530, 1550	$24.95
CHLSA1000	**Samsung** SCH 1000, 1900 Series	$24.95
CHLSA2000	**Samsung** SCH 2000	$24.95
CHLSA3500	**Samsung** SCH 411, 811, 850, 2500, 2540, 3500, 4500, 6100, 8500, M100, Uproar	$24.95
Sanyo		
CHLAU4000	**Sanyo** 201, **BAM** 201	$24.95
CHLSY3000	**Sanyo** SCP 3000, 4000, 4500	$24.95
Sony		
CHLSO333	**Sony** CM 333, CH 444, 777, 888	$22.95
CHLQC820	**Sony** Zuma, Z100, Z200, 1100, 1200, 1300, 2200, 3200 Series	$23.95
CHLQC1900	**Sony** CM 500, 600	$23.95
Uniden		
CHLUNMC200	**Uniden** Minicell 200	$23.95
CHLUN1000	**Uniden** PCD 1000, 2000	$23.95
CHLUN5600	**Uniden** CP4600, 5600, 6600	$23.95

Transparent Series:

ITEM#	Models and Colors Available	PRICE
	Ericsson 600 & 700 Series All models digital and analog, LX 588, LX 677, LX 700, T18, 1228, 280LX	$23.95
CHLER700TRBL	**Transparent Blue**	
CHLER700TRG	**Transparent Green**	
CHLER700TROR	**Transparent Orange**	
CHLER700TRPR	**Transparent Purple**	

CHLER700TRRD	Transparent Red	
	Motorola **Motorola Star TAC** Series; **Talkabout** T8090, T8097, T8160, T8167; **Timeport** P8090, P8097, P8160, P8167, P8767; **V Series** V3620, V3682, V3688, V8160, V8162; L 7089	**$23.95**
CHLMOSTARTRBL	Transparent Blue	
CHLMOSTARTRG	Transparent Green	
CHLMOSTARTROR	Transparent Orange	
CHLMOSTARTRPR	Transparent Purple	
CHLMOSTARTRRD	Transparent Red	
	Nokia 3100, 5100, 6100, 7100 Series; 8260, 8290, 8810, 8860, 8890, 252, 282	**$19.95**
CHLNK6100TRBL	Transparent Blue	
CHLNK6100TRCL	Transparent Clear	
CHLNK6100TRG	Transparent Green	
CHLNK6100TROR	Transparent Orange	
CHLNK6100TRPR	Transparent Purple	
CHLNK6100TRRD	Transparent Red	
	Samsung SCH 2000	**$24.95**
CHLSA2000TRBL	Transparent Blue	
CHLSA2000TRG	Transparent Green	
CHLSA2000TROR	Transparent Orange	
CHLSA2000TRPR	Transparent Purple	
CHLSA2000TRRD	Transparent Red	

Plug In Travel Wall Charger



The plug in wall charger is perfect for the traveler who doesn't want to bring along an entire desk top charging unit. Small and portable, it can charge a slim battery in about 1 hour. This is the perfect companion for traveling cell phone users. Charges lithium, NiMH and NiCd batteries. As an added feature, this unit can also power the phone while you talk!

Transparent designs in Blue, Green, Orange, Purple, Red and Clear are now available for Ericsson 600, 700 Series, Motorola StarTAC Series, Nokia 5100, 6100, 7100, 8200, 8800 Series and Samsung

2000!!! (See below the following table)

Try it before you buy it...all Cellwest.com cellular accessories feature a 30 day money back guarantee, *FREE UPS ground shipping and a one year warranty.

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ITEM#	Makes and Models Available
	Audiovox
CHWAU405	**Audiovox** MVX 401, 405, 406
CHWAU440	**Audiovox** MVX 440, 470, 480, TDM 2500
CHWAU700	**Audiovox** PR150, MVX 425, 430, 450, 460, 525, 535, 550, 560, 700, 750
CHWAU1000	**Audiovox** PCX 1000
CHWAU1100	**Audiovox** PCX 1100, CDM 130
CHWAU3000	**Audiovox** CDM 3000
CHWAU3500	**Audiovox** CDM 3500, 3300, 8000
CHWAU4000	**Audiovox** CDM 4000, 4500, 9000
CHWAU9100	**Audiovox** CDM 9100 **(Call for availability!)**
	Denso
CHWSATOUCH2	**Denso** Touchpoint 2200
	Ericsson
CHWER200	**Ericsson** 200 & 300 Series, All models digital and analog, **AT&T** LX 77, LX 100
CHWER600	**Ericsson** 600 & 700 Series, All models digital and analog, LX588, LX 677, LX 700, T18, 1228, 280LX
CHWERT28	**Ericsson** T28, 2218Z
	Hyundai
CHWHY100	**Hyundai** 100
	Kyocera
CHWQPHONE	**Kyocera** Q Phone
CHWQC820	**Kyocera** QCP 820, 1920, 2700
CHWQC860	**Kyocera** QCP 860, 1960, 2760 "Thin Phone"
CHWQC1900	**Kyocera** QCP 800, 1900
CHWQC2035	**Kyocera** 2035
CHWQC3035	**Kyocera** 3035 **(Call for availability!)**

CHWQC6035	Kyocera 6035 **(Call for availability!)**
Lucky Goldstar	
CHWLG300	**Lucky Goldstar** LG-300W
CHWLG330W	**Lucky Goldstar** LG-330W, LG-2300W
CHWLG3000	**Lucky Goldstar** LG-3000W **(Call for availability!)**
Mitsubishi	
CHWMITG100	**Mitsubishi** G100
CHWMIT129	**Mitsubishi** 129, 250, AH 350, GF 75
CHWMIT310	**Mitsubishi** 310
CHWAU440	**Mitsubishi** T200, T250
Motorola	
CHWMOSTAR	**Motorola Star TAC** Series, All models digital and analog
CHWMOSTAR	**Motorola** V3620, V3682, V3688, V8160, V8162
CHWMOSTAR	**Motorola Talkabout** T8090, T8097, T8160, T8167, **Timeport** P8090, P8097, P8160, P8167, P8767
CHWMOSTAR	**Motorola** L 7089
CHWMO2297	**Motorola** V2260, V2267, V2282, V2290, V2297, V2397, T2260, T2267, T2282, T2290, T2297
CHWMO3160	**Motorola** 3160, 3180
CHWMOFLIP	**Motorola** Flip 350, 550, 555, 650, 850, 888, 910
CHWMOFLIP	**Motorola** TAC Lite, Tele TAC, DPC, Contour, Courier, 650, Piper II
CHWMOM70	**Motorola** M75, M70, M77, SC 725, SC 925, Elite, Flare, Select
SPN4604	**Original Motorola Star TAC** Series All models, V3620, V3682, V3688, V8160, V8162, **Talkabout** and **Timeport** Series **$34.95**
NEC	
CHWNECP100	**NEC** P100, 110, 120, **AT&T** 3610
CHWNECP700	**NEC** P700, P800, PCS 2000
CHWNEC960	**NEC** MAX 960, P2100
CHWNEC2600	**NEC** 2600
Nextel	
CHWMOI50	**Nextel** i50SX **(Call for availability!)**
CHWMOI85	**Nextel** i85S **(Call for availability!)**
CHWMOI500	**Nextel** i500, i550, i700
CHWMOI600	**Nextel** i280, i370, i390, i600
CHWMOI1000	**Nextel** i1000, i2000
Nokia	
CHWNK918	**Nokia** 636, 638, 918

CHWNK2100	**Nokia** 100, 101, 121, 191, 201, 232, 239, 1000
CHWNK2100	**Nokia** 2100 Series All models, **AT&T** 3850, 6650
CHWNK6100	**Nokia** 252, 282, 3300 Series
CHWNK6100	**Nokia** 5100, 6100, 7100 Series, All models
CHWNK6100	**Nokia** 8260, 8290, 8810, 8860, 8890
ACH-4U	**Original Nokia** 2100 Series, 100, 101, 121, 191, 201, 232, 239, 1000 **$34.95**
ACH-6U	**Original Nokia** 636, 638, 918 **$34.95**
ACP-8U	**Original Nokia** 7100, 8200, 8800 Series All models **$34.95**
ACP-9U	**Original Nokia** 5100, 6100 Series All models, 252, 282 **$34.95**
Panasonic	
CHWPAN220	**Panasonic** TX220, Duramax, TX210, Promax
Philips	
CHWPHISIS	**Philips** Aeon, Isis, Spark
Qualcomm	
CHWQPHONE	**Qualcomm** Q Phone
CHWQC820	**Qualcomm** QCP 820, 1920, 2700
CHWQC860	**Qualcomm** QCP 860, 1960, 2760 "Thin Phone"
CHWQC1900	**Qualcomm** QCP 800, 1900
CHWQC2035	**Qualcomm** 2035
CHWQC3035	**Qualcomm** 3035 **(Call for availability!)**
CHWQC6035	**Qualcomm** 6035 **(Call for availability!)**
Samsung	
CHWSA210	**Samsung** SCH 210, 1500, 1510, 1530, 1550
CHWSA1000	**Samsung** SCH 1000, 1900 Series
CHWSA2000	**Samsung** SCH 2000
CHWSA3500	**Samsung** SCH 411, 811, 850, 2500, 2540, 3500, 4500, 6100, 8500, M100, Uproar
Sanyo	
CHWAU4000	**Sanyo** 201, **BAM** 201
CHWSY3000	**Sanyo** SCP 3000, 4000, 4500
Siemens	
CHWSIS12	**Siemens** S12
Sony	
CHWSO333	**Sony** CM 333, CH 444, 777, 888
CHWQC820	**Sony** Zuma, Z100, Z200, 1100, 1200, 1300, 2200, 3200 Series
CHWQC1900	**Sony** CM 500, 600

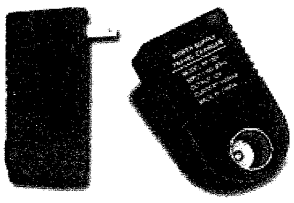
Uniden	
CHWUN1000	Uniden PCD 1000/2000

Transparent Series:

ITEM#	Models and Colors Available
	Ericsson 600 & 700 Series All models digital and analog, LX 588, LX 677, LX 700, T18, 1228, 280LX
CHWER700TRBL	Transparent Blue
CHWER700TRG	Transparent Green
CHWER700TROR	Transparent Orange
CHWER700TRPR	Transparent Purple
CHWER700TRRD	Transparent Red
	Motorola **Motorola Star TAC** Series; **Talkabout** T8090, T8097, T8160, T8167; **Timeport** P8090, P8097, P8160, P8167, P8767; **V Series** V3620, V3682, V3688, V8160, V8162; L 7089
CHWMOSTARTRBL	Transparent Blue
CHWMOSTARTRG	Transparent Green
CHWMOSTARTROR	Transparent Orange
CHWMOSTARTRPR	Transparent Purple
CHWMOSTARTRRD	Transparent Red
	Nokia 5100, 6100, 7100 Series; 8260, 8290, 8810, 8860, 8890, 252, 282
CHWNK6100TRBL	Transparent Blue
CHWNK6100TRG	Transparent Green
CHWNK6100TROR	Transparent Orange
CHWNK6100TRPR	Transparent Purple
CHWNK6100TRRD	Transparent Red

Travel A/C Power Supply

This small, portable unit allows you to use a plug in car charger with 120 volt AC current from your home. Just plug the adapter into the wall, then plug the car charger cord into the adapter's socket, and the other end into the phone. This travel A/C power supply offers the flexibility to use your handheld cellular telephone wherever you might be. You can talk while you charge your battery whether at home, in the office or traveling. Output is a full 1000mA





which is more than enough current to power a rapid plug in charger.

Available in two styles. Choose either the compact or our extension cord version for that extra 20" reach.

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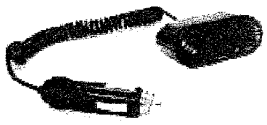
- **Great for people who use their phone indoors a lot.**
- **Works as a power supply when used with a battery eliminator**
- **Works as a charging unit when used with a plug-in charger**

Order now only **$18.95**

Compact version **CWACPS**
24" extension cord version **CWACPSW**

Click here to fill out our online order form

Dual Socket Cigarette Lighter



Is your cigarette lighter in a hard to reach spot? Could you use two lighter sockets for your phone and radar detector at the same time? How about an extension cord for that hands free kit...now you can mount the cradle anywhere.

We offer two units for you to choose from. Our first unit stretches to more than 24" and also features a built in battery meter for your car. The 3 LED lights let you know the condition of your cars battery whenever you plug in the cord.
Our second unit is a compact dual lighter socket that features the two sockets at a 90 degree angle for those tight spots.



Very convenient, and a must for today's cars whenever extra outlets are needed.

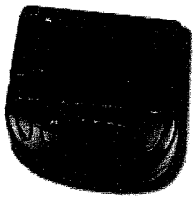
Try it before you buy it...all Cellwest.com cellular accessories feature a 30 day money back guarantee, *FREE UPS ground shipping and a one year warranty.

Order now only **$9.95**

ITEM# **CIGEXT**
ITEM# **CHLDUSOC**

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1 Hr. Conditioning Universal Charger (Lithium, NiMH, NiCd)



The Universal Charger charges one battery at a time - while not attached to the phone - in 45 minutes to 1 hour. It includes two adapters, one for use in your home and the other for use in your car. Large, easy to read LED display indicates the battery capacity while charging. Two speed charging, allows you to pre-select fast* or slow charging. Conditioning / discharging (NiMH and NiCd batteries only**) is easy, just put the battery on the charger and then press the discharge button. Batteries are automatically drained, then charged full. There is also an error function to indicate faulty batteries and detect short circuits. **Please note that slow charging is required for any new battery receiving its first charge. Once slow charged, you can switch to fast charging to save time. **Do not condition or discharge lithium batteries, doing so will damage the internal circuitry.*

Models available:

ITEM#	Makes and Models Available
CHDUNAU405	**Audiovox** 401, 405, 406, 501, 505, 506, 507
CHDUNNK636	**Nokia** 636, 638

The universal charger is compatible with many different models of cell phones through the use of **interchangeable power tops which slide on to the charger base**. Therefore, if you purchase a different cell phone in the future, you can just buy a new power top, or you can share the charger between dissimilar models, saving the expense of a new charger.

Try it before you buy it...all Cellwest.com cellular accessories feature a 30 day money back guarantee, *FREE UPS ground shipping and a one year warranty.

Order now only **$24.95**

Additional power tops slide on to the same base unit **$4.99**

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Single NiMH and NiCd Charger Conditioner (not for lithium)



This unit will recharge NiCD and NiMH batteries in 45 minutes to 1 hour. Package includes two

adapters, one for home and one for the car.
Features include a large easy to read LED display that indicates the battery's state of charge, selectable fast or slow, two speed charging and a discharge function for conditioning batteries. Put the battery on the charger and then press the discharge button. Batteries are automatically drained, then charged full. There is also an error function to indicate faulty batteries and detect short circuits. **Try it before you buy it...all Cellwest.com cellular accessories feature a 30 day money back guarantee, *FREE UPS ground shipping and a one year warranty.**

ITEM#	Makes and Models Available
CHDSMOFLIP	**Motorola** Flip 350, 550, 555, 650, 850, 888, 910
CHDSMOFLIP	**Motorola** TAC Lite, Tele TAC, DPC, Contour, Courier, 650, Piper II
CHDSMOFLIP	**Motorola** M75, M70, M77, SC 725, SC 925, Elite, Flare, Select

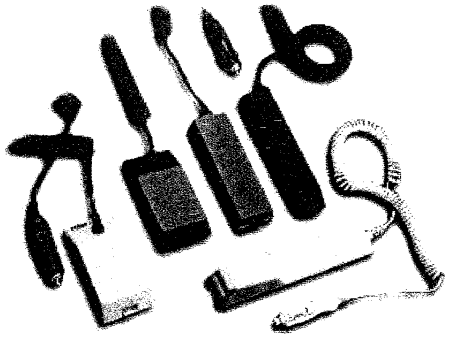
On sale now while supplies last **$18.95**

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Battery Eliminators

We stock a large inventory of slide on battery eliminators for all makes and models. Call us toll free at 1 888 462 2599 to speak with a sales rep about availability for your phone. A slide on battery eliminator replaces the battery on your phone, and plugs into the cigarette lighter, allowing you to save on the usage of your batteries. The cable is coated with polyurethane which will not stretch and will retain its coiled shape.

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Regular Post FREE

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Phone Holders and Mounts

Universal Phone Holder



The Gripmatic phone holder features adjustable foam rubber pads that won't scratch your phone while securely holding it in place. One touch button quick release lets go of the phone, and ratchet style grips keep the phone in place. Works with any type of phone. The phone holder will require mounting. Choose from one of our pedestals or mounting brackets sold below or use it with your existing mounting hardware. **Mounts to any standard mounting bracket or plate we stock.** We also stock original Nokia, Motorola and Ericsson phone holders.Call for pricing.

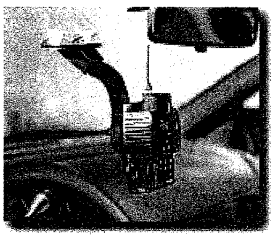
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Order now only **$14.95**

ITEM# **HUNIVERSAL**

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Suction Window Mount with Gripmatic Holder



Universal portable cellular phone mount. Self adjusting flex neck assures complete support. Specially designed clear suction cups with suction release tabs provide a secure mount to any glass surface. Comes with Gripmatic cradle that secures onto mounting head arm. Easy to install, no tools required, holds any portable phone.

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Related Sites

Order now only **$29.95**
(Call for availability)

ITEM# **HWINDOW**

Click here to fill out our online order form

Powered Phone Holder



Combination phone mount, universal Gripmatic holder and car lighter socket. A new way to hold and power all portable cellular and digital phones.

Tilt swivel mount with thumb screws plugs into your vehicle's lighter socket. Attached universal Gripmatic holder has padded sides to securely hold every brand of cellular phone. Additional lighter socket is attached to the phone holder, allowing user to operate a plug-in car charger or other accessory at the same time. No holes or drilling required. Transfers easily from car to car.

Try it before you buy it...all Cellwest.com cellular accessories feature a 30 day money back guarantee, *FREE UPS ground shipping and a one year warranty.

Order now only **$32.95**

ITEM# **HPOWER**
(Call for availability)

Click here to fill out our online order form

Air Conditioner Vent Mount



Mounts easily to the air conditioner vent in your car. Use with the Gripmatic or phone holder of your choice. No tools or drilling required for installation. Fits all vehicles.

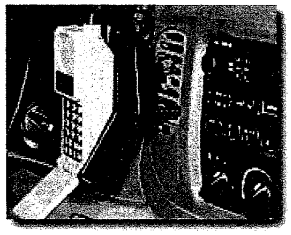
Try it before you buy it...all Cellwest.com cellular accessories feature a 30 day money back guarantee, *FREE UPS ground shipping and a one year warranty.

Order now only **$13.95**

ITEM# **MVENT**

Click here to fill out our online order form

Motorola flip phone in-vehicle holder



Holds most Motorola Flip Phones (shown with air conditioner mount sold separately)

Motorola flip phone holder only **$14.95**

ITEM# **HFLIP**

Click here to fill out our online order form

OEM Style StarTAC In-Vehicle Holder

This OEM (Original Equipment Manufactured) Cradle Style Holder can be mounted using 3M adhesive (included) and / or hardware (also included) for more stability. With it's smart design, your phone is securely held in this molded cradle allowing you easy flip access to make or end calls.

Compatible Models: all Motorola StarTAC series phones, Timeport: P8090, P8097, P8160, P8167, P8767, Talkabout: T8090, T8097, T8160, T8167

Order now only **$14.95**

ITEM # **HSTAR**

Click here to fill out our online order form

Magnetic Holder



This magnetic holder is easy to install. Just peel off the backing to the magnet (just like you would a sticker) and attach it to a clean surface in your car. No special tools required. It also includes a sticky metal strip for use with your lithium battery (as shown in the far left).

Try it before you buy it...all Cellwest.com cellular accessories feature a 30 day money back guarantee, *FREE UPS ground shipping and a one year warranty.

Order now only **$9.95**

ITEM# **HMAGNET**

Click here to fill out our online order form

Flexible Phone Mounts



For use with any of our hands free kits, phone holders, etc.

This is the ideal way to raise the height of your cell phone cradle to within easy reach. Installation is quick and easy, and in most cases no drilling is required. An extra mounting bracket is supplied with the 15" model, the flexible arm can be mounted to the floor underneath a car seat, using the existing bolts that mount the seat to the floor of the car. Simply remove the front bolt from the front seat rail, position the flex mount floor bracket in place and replace the floor bolt through the bracket piece. Instructions are included. The flexible mount is strong and will position your mobile phone holder wherever you need it. Available in the following lengths: 15", 12", 9", 7", 4". Note that only the 15" length includes the extra seat rail bracket. The shorter lengths will require regular mounting. Phone holder sold separately. Can be used with almost every type of original and aftermarket phone holder.

Try it before you buy it...all Cellwest.com cellular accessories feature a 30 day money back guarantee, *FREE UPS ground shipping and a one year warranty.

Order now only **$34.95**
(Call for availability)

ITEM# **MFLEX15** (15 INCHES)

ITEM# **MFLEX12** (12 INCHES)

ITEM# **MFLEX9** (9 INCHES)

ITEM# **MFLEX7** (7 INCHES)

ITEM# **MFLEX4** (4 INCHES)

Click here to fill out our online order form

Clam Shell Mount



For use with any of our hands free cradles, phone holders etc. Use these brackets for direct mounting to your dash, or onto any one of our in car flex mounts / pedestals.

Try it before you buy it...all Cellwest.com cellular accessories *feature a 30 day money back guarantee, *FREE UPS ground shipping and a

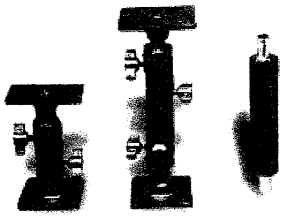
one year warranty.

Order now only **$6.95**

ITEM# **MCLAMSHELL**

Click here to fill out our online order form

Mobile Phone Mounts



We have a wide selection of mounts for use with our hands free kits. Pick any mount you want... they all work with any hands free kits or phone holder.

Try it before you buy it...all Cellwest.com cellular accessories feature a 30 day money back guarantee, *FREE UPS ground shipping and a one year warranty.

A) 4" Aircraft aluminum Pedestal Mount tilts, swivels, and adjusts to any position.

Order now only **$15.95**

ITEM# **MPED4**

Click here to fill out our online order form

B) 6" Pedestal Mount tilts, swivels, and adjusts to any position.

Order now only **$16.95**

ITEM# **MPED6**

Click here to fill out our online order form

C) 3" Extension works with our **MPED4** and **MPED6** mounts.

Order now only **$9.95**

ITEM# **MPED3EXT**

Click here to fill out our online order form

Z Mount Bracket



For use with any of our hands free cradles, cellular phone holders etc. Use these brackets for direct mounting to your dash, or onto any one of our in car flex mounts / pedestals.

Try it before you buy it...all Cellwest.com cellular accessories feature a 30 day money back guarantee, *FREE UPS ground shipping and a one year warranty.

Order now only **$6.95**

ITEM# **MZBRACKET**

Click here to fill out our online order form

Shipping Options

If you're in North America we'll ship your order at the speed you need.

Trackable
UPS Overnight - $14.95
UPS 2-3 day - $12.95
UPS Ground FREE on orders over $50. Add $4.95 for orders under $50
Please Note: Additional charges will apply to packages that exceed 3 lbs in Physical or Dimensional weight.

Non Trackable
Regular Post FREE

International Shipping (Non Trackable)
Global airmail shipping on most international orders is only $10.00 depending on the weight and size of your order. Prices are subject to change so ask your sales representative for more information.

Corporate Offices
Gumball Imports Ltd. / Cellwest.com

USA	Canada
PMB 864	154-1917
1733 H Street, #338	West 4th Avenue
Blaine, WA	Vancouver, BC
98238-5107	V6J 1M7

Hours of Operation

6:00 am to 6:00 pm, Monday to Friday, PST
9:00 am to 4:00 pm, Saturday, PST

In North America call toll free 1-888-462-2599
International orders call (001) 604-647-0308
International fax (001) 604-647-0309
email info@cell-west.com.

Visa, Mastercard, Amex and Discover accepted. Email, fax c call in your order today! We confirm all email orders and veri with credit card authorization centers prior to shipping. All in stock orders are shipped within 24 hours guaranteed! Come shop online with Cellwest.com and see the difference our experience makes. We have many satisfied customers all o the world including: USA, Canada, England, Russia, Switzer New Zealand, Guam, Japan, Sri Lanka , Spain, Brazil and Mexico. Some of our satisfied customers include the U.S Mil the U.S. Navy, NASA, Digital Equipment Corporation, Europ American Bank, Hewlett Packard, United Arab Emirates, Microsoft, The State of California Water Works, EMI Record Apple Computer, Nextel, Corning, Royal Bank, Canada Customs, Ericsson, Rotodata, IBM, plus Government Agenc School Boards, Municipalities, Nuclear Power Plants, Mike, Jennifer, Bob, Cindy, and thousands of people just like you!

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NiCd cell phone batteries, cellular battery chargers, hands free kits, cellular vibrators, antenna kits, flashing antennas, phone holders and mounts, leath
cases, face plates and parts for phones, online ordering or call now, toll free 1 888 462-2599.

Customer Services
links to other sites, about Cellwest.com, testimonials, guarantee and warranty information, how to return something, frequently asked questions, instruc
sheets, online ordering.

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Cellwest.com
The Online Wireless Superstore

Importing and exporting consumer electronics since 1994.

Join our Affiliate Program

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UMA
An Internet Business Opportunity



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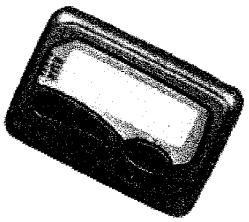
New Arrivals
- 2 Way Pagers!

Free Pagers
- AVA Radio
- LS 350
- LS 750
- BPR 850
- X-Pager
- Nixxo Platinum
- Nixxo Titanium

Wireless
Long Distance
Calling Cards
Web Hosting/Design
Internet Service
UMA Marketplace
As Seen On TV
Aloe Vera Store
Weight Control
Water & Air Filters
ANEW Women Care
Monthly Specials

OWN this store!

AVA Radio Pager | ORDER NOW



.*Actual Size

Model AVA Radio Pager

Color Gold, Silver, Clear, Metallic Blue, Metallic Metallic Pink, Blue, Yellow, Black

Feature

- Build in FM Radio 88 to 108 MHZ auto - scan
- Bungee cord safety chain
- 4 alert modes: 8 music alerts, 7 tone alerts, Vibration alert and silent
- 3 music alerts time setting: 8, 16, and 32 seconds
- 18 set of messages, 20 digits per message
- Up to 12 set c
- Mont, week, c time display
- Automatic on setting
- 3 alarm settin
- Large 12 digit read LCD dis
- LCD back ligh night viewing
- Duplicate me indictor
- Low battery ir warning tone
- Out of range i
- Durable belt p holder



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- 2 Way Pagers!

Free Pagers
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- LS 350
- LS 750
- BPR 850
- X-Pager
- Nixxo Platinum
- Nixxo Titanium

Wireless
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As Seen On TV
Aloe Vera Store
Weight Control
Water & Air Filters
ANEW Women Care
Monthly Specials

OWN this store!

FreePager Service

Discounted Service*

The longer a customer stays with UMAstore.com, the lower the customer's rate becomes.

1st year airtime start at $6.95 x 12 months (local) + free voice mail

2nd year airtime drop to $5.95 x 12 months (local) + free voice mail

3rd year airtime drop to $4.95 x 12 months (local) + free voice mail

4th year airtime drop to $3.95 x 12 months (local)

5th year airtime drop to $2.95 x 12 months (local)

6th year and there after: airtime drop to $1.99 x 12 months (local)

(*Rate plans and prices are subject to change without any notice.)

800 Number Service*

The following is our pricing for 800 number service. (With the purchase of Pager)

50 Pages - $5.50/Month

100 Pages - $5.75/Month

200 Pages - $6.50/Month

300 Pages - $7.75/Month

500 Pages - $9.00/Month

(*Rate plans and prices are subject to change without any notice.)

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Sprint PCS Clear Wireless Workplace
PCS Vision

Business Pricing Programs
Nationwide Network
Smart Devices
Management Tools
Advanced Voice Services



Call or Click Now

To speak to a sales representative, call:
General business:
1-888-703-9514
Federal Gov't:
1-866-PCS-4GOV

Set up an appointment
Contact my company



Wireless Safety

Sprint PCS Clear Wireless Workplace®

Business Pricing Programs: Service Plans

Topics related to Business Pricing Programs:



Sprint PCS Service Plans for Business
The PCS Shared Minutes Option
The PCS Nationwide Volume Program

A variety of PCS Service Plans for Business are available.Please call 1-888-703-9514 for more information about a PCS Service Plan that's right for your business.

Sprint provides clear and simple pricing plans to meet the needs of your business. These plans are designed to facilitate clear, cost-effective communications for your mobile work force. Sprint offers a variety of PCS Service Plans with voice and PCS Vision℠ to meet your needs.

PCS Total Wireless Access for Business Plans

Get the plan that delivers all the voice and data services your employees need

$85 a month **1250** Anytime Minutes

Other available plans:

PRICE PER MONTH	$100	$125	$150
ANYTIME MINUTES	1750	2000	2500

PCS Free and Clear Plans with Vision

Increase employee productivity with the right service plan

PRICE PER MONTH FOR FIRST 3 MONTHS	PRICE PER MONTH AFTER 3 MONTHS	ANYTIME MINUTES	LONG DISTANCE ON THE ENHANCED SPRINT NATIONWIDE PCS NETWORK	PCS VISION℠ FOR PCS PHONES	NIGHT & WEEKEND MINUTES
$30	**$40**	**300**	INCLUDED	UNLIMITED	UNLIMITED
$40	**$50**	**400**	INCLUDED	UNLIMITED	UNLIMITED
$45	**$55**	**500**	INCLUDED	UNLIMITED	UNLIMITED
$60	**$70**	**800**	INCLUDED	UNLIMITED	UNLIMITED
$85	**$85**	**2000**	INCLUDED	UNLIMITED	UNLIMITED FOR $10/MO.
$100	**$100**	**2500**	INCLUDED	UNLIMITED	UNLIMITED FOR $10/MO.

Add the following for use on the enhanced Sprint Nationwide PCS Network :

3247

- PCS Business Connection SM Personal Edition for $5/month
- Unlimited PCS to PCS Calling SM for $5/month (Included on $85 and $100 plans)
- PCS Voice Command SM for $5/month

A one-year PCS Advantage Agreement for Business is required

PCS Vision for Laptops and PDAs

PCS Vision Plans for Laptops and PDAs include megabytes for usage and are designed to provide access to company resources while away from the office.

MRC	**$39.99**	**$59.99**	**$79.99**	**$119.99**
Included Data	20 MB	40 MB	70 MB	120 MB

- Additional kilobytes are $.002 each on the 20MB, 40MB and 70MB plans and $.001 each on the 120MB plan.
- Voice calls made on PCS Connection Cards with voice capability will incur a charge of $.20 per minute.
- All PCS Vision plans require a **one-year** PCS Advantage Agreement.
- **PCS Service Plans referenced above may not be available in all markets.**

Data Usage Data usage will be rounded to the next whole kilobyte. Rounding will occur at the end of each session or clock hour, and at that time, we will deduct accumulated data usage from your plan or assess overage charges. **Estimates of data usage, such as the size of downloadable files will vary from what you actually use. See a PCS Representative for more details.**

Contact a PCS Representative for availability of promotional offers.

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Software Maintenance

Historically, railroads and other companies experience software maintenance on most products they purchase. This maintenance consist of up grading the product to take advantage of new features or to upgrade the product to protect from external or internal abuse such as virus protection. There may be enhancement required by governing agencies to keep up with industry reporting, etc.

My experience on the KCSR was that these maintenance expenses run about 15% annually of the cost of the original product. Other railroads have experienced the same general trend. However, it may vary from year to year, it normally averages out to about 15%.

OTTER TAIL RAILROAD

RAILINC COSTS:

Railinc EDI Costs:

Month Charge	$ 100.00
EDI RailConnect Service 50 characters per car record- advance consist @ $.10 per thousand characters. Cars/month X 50 196,778 X 50 = 9,838,900/1000 = 9,839 9,839 X .10 = $983.90/month	983.90
Train II car location transaction 1000/month X $.06	60.00
Connect time to Railinc 60 Minutes/day X 30 X $.65= $1,170	1,170.00
Total Monthly Costs	$2,313.90

OTTER TAIL RAILROAD

Security Software

Watchguard Firebox 1000 is a comprehensive, easily managed firewall and VPN security appliance for mid-size businesses requiring a secure, private network. This software should provide adequate protection of OTRR network from anywhere and any time.

Capital Cost	$2,999.00
Annual Maintenance Cost	$ 449.50

CDW The Right Technology. Right Away.™

800 826 4239

Watchguard Firebox 1000



Product Information

- Internet security appliance for small to medium enterprise with 3 10/100BASE-TX ports

Usually Ships:	Same Day
CDW Part No.:	300979
Mfg. Part No.:	WG31000
Unspsc No.:	43172715
Price:	**$2,999.00** ($107.06/month)

ADD TO CART

Manufacturer

WatchGuard

OVERVIEW

The Firebox 1000 is a comprehensive, easily managed firewall and VPN security appliance for mid-size businesses or branch offices requiring a secure, private network. Powerful security proxies and stateful packet filtering block dangerous attachments and content from entering your network. Secure centralized firewall and VPN management software allows you to manage your network security from anywhere, at any time. ICSA (International Computer Security Association) Firewall and IPSec VPN certification ensures interoperability with all IPSec compliant devices. The Firebox 1000 includes a year of LiveSecurity™ Service and anti-virus protection.

Recommended For:
Mid-size businesses or branch offices needing faster hardware VPN encryption for larger networks.
Multi-site VPN deployments with traveling employees and telecommuters
Networks requiring comprehensive secure central management and reporting tools.

Firebox 1000 Features:
Firewall packet filtering throughput(MBPS): 200Mbps
VPN (3DES) throughput (MBPS): 60Mbps
Branch office VPN tunnels: 1,300
Mobile user VPN tunnels: 1,300
Industry-Leading Security Features - Powerful security proxies and dynamic stateful packet filtering intercept Internet traffic, inspect and re-assemble the packet stream to remove dangerous commands and attachments, then block or modify the content before allowing it into your network.
Comprehensive Management Software - The Firebox 1000 management software lets you manage your network in complete security using 3DES encryption. You can centrally configure all Fireboxes any time from inside or outside of your network.
URL Filtering - URL filtering is a powerful tool to control Web usage. WebBlocker™ ensures that your employee Web usage is in compliance with your acceptable use policies.
Virus Protection - Protect computers from virus threats with the McAfee® VirusScan® ASaP annual subscription, (5 node license). Additional licenses are available.
Secure Centralized Logging - Secure centralized logging with failover capabilities gives you additional security and a single view of all devices in your network.
VPN Support - The Firebox 1000 supports branch office and mobile user VPN

3252

tunnels. VPN Manager turns the complex task of setting up multi-site VPNs into a 3-step process. Secure VPN tunnel setup, management and IPSec tunnel routing simplify VPN administration. The Firebox 1000 can support up to 1000 concurrent high-speed IPSec VPN tunnels.
Extranet Support - The Firebox 1000 supports Extranets by letting you create security policies on individual VPN tunnels with your business partners.
NAT (Network Address Translation) - NAT hides your internal IP addresses and allows internal servers with unregistered IP addresses to function as Internet-accessible servers, increasing your network security. The Firebox 1000 supports static, dynamic and real one-to-one NAT.
LiveSecurity Service - A one-year subscription to our LiveSecurity Service provides on-going up-to-date threat solutions, specialized Internet security expertise, software update protection, and industry-leading technical support.

ICSA Certified Interoperability - ICSA Firewall and IPSec VPN certification ensures interoperability with all IPSec compliant devices.
Includes: 5 nodes McAfee Anti-Virus, 4 node VPN Manager, and 50 Mobile User IPSec Clients

50 Mobile User IPSEC Clients now bundled-Free with Firebox 1000

SPECIFICATIONS

Antenna	
Antenna	N/A
Battery	
Type	None
Bay Provided	
Type	None
Cabinet	
Chassis Built-in Devices	LED panel
Chassis Type	Network device cabinet
Dimensions	
Depth	10.5 In
Height	2.8 In
Width	15.5 In
Header	
Compatibility	Unix
Manufacturer	WatchGuard
Model	1000
Packaged Quantity	1
Product Line	WatchGuard Firebox
Interface Provided	
Connector Qty	3, 1
Connector Type	9 pin D-Sub (DB-9), RJ-45
Free	1, 3
Gender	Male, Female
Interface	Console, Ethernet 10Base-T/100Base-TX
Qty	1, 3
Type	Management, Network

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Interface Required

Type	None

Memory

Flash Type	None
RAM Installed Size	64 MB
RAM Technology	SDRAM
RAM Type	DRAM

Miscellaneous

Authentication Method	SecurID, RADIUS, X.509 certificates
Color	White, Red, Black
Encryption Algorithm	RC4, MD5, SHA, DES, Triple DES
Package Type	Retail
Rack Mounting Kit	Included
Supported Connection User Qty	1000

Modem

Comm. Type	None

Networking

Compliant Standards	IEEE 802.3-LAN, IEEE 802.3U-LAN
Connectivity Technology	Cable
Data Link Protocol	Ethernet, Fast Ethernet
Data Transfer Rate	100 Mbps
Features	168-bit encryption, NAT support, Triple DES, 768-bit certificates, DES, VPN, 128-bit encryption, 40-bit encryption, Firewall protection, 56-bit encryption, Manageable
Form Factor	External
Installed Qty	1
Network Ports Qty	3
Network Transport Protocol	PPTP, TCP/IP, IPSec
Remote Management Protocol	HTTP
Status Indicators	Port status, Link activity, Power
Type	Firewall

OS Provided

Type	Linux 2.0

Power Supply

Device Form Factor	Integrated
Device Frequency Required	50/60 Hz
Device Type	Power supply
Device Voltage Required	AC 110/220 V
Device Voltage Required Margin	± 10%

3254

Processor

Clock Speed	300 MHz
Installed Qty	1
Instruction Set	X86-to-RISC
Manufacturer	AMD
Max Supported Qty	1
Type	K6-2E

Service

Support Details Full Contract Period	1 year
Support Details Location	Bring-in, N/A
Support Details Service Included	Parts and labor, Subscription, Web knowledge base access
Support Details Type	Technical support, Limited warranty, New releases update
Support Type	1 year warranty

Slot Required

Type	None

Software

Type	Drivers & Utilities

Storage CD/DVD

Type	None

Storage Floppy Drive

Type	None

Storage Hard Drive

Formatted Capacity	8 MB
Installed Qty	1
Type	Solid state

Storage Removable

Type	None

System Requirements

Min Operating System	Microsoft Windows NT 4.0, Microsoft Windows 98, Microsoft Windows 95, Microsoft Windows 2000

Video Input

Digital Video Format	None

BACK TO TOP

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III - D - 4

Maintenance of Way

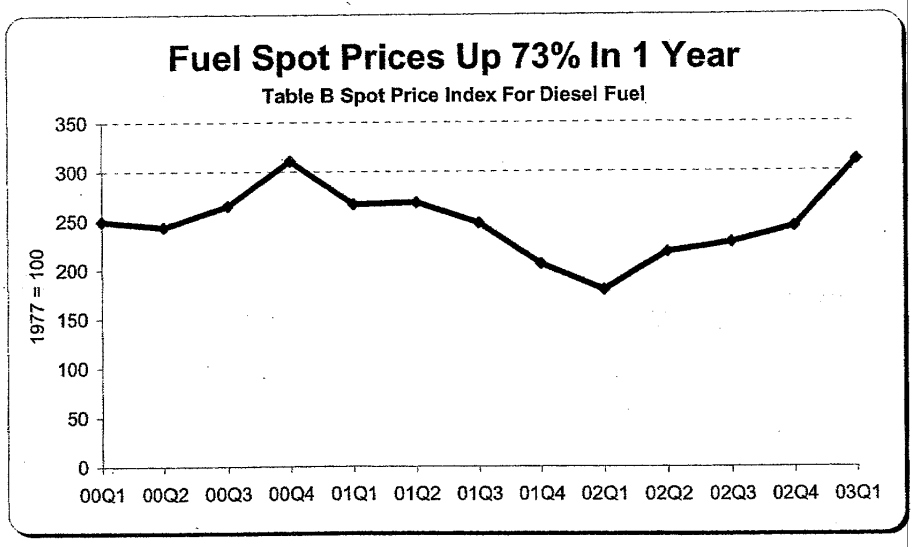
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REDACTED

March 2003

ASSOCIATION
OF AMERICAN
RAILROADS

AAR RAILROAD COST INDEXES



Including Series RCR,
The All-Inclusive Index,
and The Rail Cost Adjustment Factor

Table A

ANNUAL INDEXES OF CHARGEOUT PRICES AND WAGE RATES (1977=100)

WEST

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Wage rates	232.1	251.3	250.9	251.0	264.8	273.6	274.2	281.6	282.3	304.6	314.1	316.7
Wage supplements	366.0	377.7	369.1	366.4	373.8	366.2	395.3	367.6	372.4	391.2	441.0	490.0
Fuel	190.4	184.4	185.6	175.0	175.8	205.8	200.1	161.0	164.7	261.9	255.5	220.1
Materials and supplies	183.0	208.9	217.1	223.9	224.1	225.0	231.5	232.3	230.8	228.3	234.0	228.1
Equipment rents	215.6	218.9	222.8	225.7	235.4	239.4	236.6	240.0	239.9	240.3	243.4	242.8
Purchased services	246.9	266.8	267.0	268.2	278.8	283.4	289.9	289.9	290.9	309.1	325.0	334.4
Depreciation	226.4	229.3	240.4	248.3	286.4	300.9	321.8	363.9	369.8	386.9	408.8	427.5
Interest	327.5	291.3	260.6	270.7	291.0	330.4	353.7	420.6	414.7	422.0	396.1	367.6
Taxes (other than income and payroll)	170.6	170.7	176.6	221.7	239.6	244.0	218.3	240.9	202.7	230.0	251.7	265.8
All other operating expenses	179.5	180.4	183.1	185.5	192.0	196.5	196.6	191.6	193.3	204.3	206.6	202.1
Wage rates and supplements	261.5	279.3	277.2	276.7	290.2	295.6	302.1	302.0	303.6	325.8	343.7	355.9
All materials (incl. fuel)	179.0	189.1	193.8	192.2	191.9	208.7	208.4	185.8	187.4	255.3	252.4	225.5
Matl. prices & wage rates combined (excl. fuel)	221.0	242.1	244.1	246.0	256.3	263.5	265.2	271.2	271.4	288.8	297.5	298.6
Matl. prices & wage rates combined (incl. fuel)	216.5	232.3	234.1	233.5	241.5	253.7	253.8	248.5	249.6	295.2	299.6	289.3
Materials prices, wage rates and supplements combined (excl. fuel)	246.9	266.8	267.0	268.2	278.8	283.4	289.9	289.9	290.9	309.1	325.0	334.4
Materials prices, wage rates and supplements combined (incl. fuel) - QMPW	241.0	256.6	257.1	256.1	264.9	274.4	278.7	270.1	271.7	315.4	326.1	323.7
Taxes, purchased serv. and other expenses	202.4	210.5	212.6	219.3	226.7	231.1	230.1	230.4	227.1	240.4	249.4	251.9
Equip. rents, deprec. and interest	243.0	239.3	240.0	246.2	269.0	282.3	290.8	317.7	319.1	327.1	332.2	333.9
Equip. rents, taxes, deprec., purch. serv., interest & other expenses	224.8	227.2	228.7	235.3	250.7	259.7	263.9	278.1	277.2	287.8	295.0	297.1
Total excl. fuel	238.3	250.2	251.0	254.7	268.1	275.0	280.6	288.1	288.2	302.6	314.0	319.6
Total excl. interest	232.5	244.3	246.4	248.3	260.2	268.6	272.3	272.0	272.7	301.5	312.0	312.8
Total excl. interest and depreciation	231.2	243.8	245.0	246.3	255.3	262.9	264.9	260.2	260.4	289.8	299.1	298.3
Railroad Cost Recovery Index	235.9	246.1	246.9	249.1	261.4	270.8	275.1	277.2	277.7	306.4	315.5	315.2

Note: The final annual wage rates and wage supplements are derived from the Annual Wage Statistics and the Annual Report Form R-1, consequently the final annual values may not equal the average of the four quarterly figures. The preliminary annual indexes, which appear in the December publication each year (indicated by a "p"), are averages of the four quarters.

Public - Redacted

BEFORE THE
SURFACE TRANSPORTATION BOARD

FMC CORPORATION and FMC WYOMING CORPORATION, Complainants,	)	
v.	)	Docket No. 42022
UNION PACIFIC RAILROAD COMPANY, Defendant.	)	

UNION PACIFIC'S REPLY EVIDENCE

VOLUME 5 OF 18: STAND ALONE NETWORK

JAMES V. DOLAN
LOUISE A. RINN
Union Pacific Railroad Company
1416 Dodge Street
Omaha, Nebraska 68179
(402) 271- 4227

ARVID E. ROACH II
S. WILLIAM LIVINGSTON, JR.
J. MICHAEL HEMMER
Covington & Burling
1201 Pennsylvania Avenue, N.W.
P. O. Box 7566
Washington, D.C. 20044-7566
(202) 662- 5380

Attorneys for Union Pacific Railroad Company

March 31, 1999

VERIFIED STATEMENT

OF

GEORGE WILLIAM MCDONALD AND HERBERT G. WEBB

March 29, 1999

Table B-4
ORR Track Mileage

Subdivision/Branch*	Single	Double	Triple	Quad	Total Miles
Chicago	2.40				2.40
Rockwell	4.20				4.20
Geneva	10.51	123.25	1.50		261.51
Boone (1)		74.2	1.5		152.90
Cedar Rapids Ind		8.60			17.20
Boone (2)		277.31	3.00		563.62
Council Bluffs		134.77	112.40		606.74
Sidney		208.87	2.88	12.60	476.78
Laramie		249.52	59.58		677.78
Salt Lake		29.93			59.86
Pocatello	183.11	31.06			245.23
Nampa	209.19	34.85			278.89
LaGrande (1)	71.97	9.85			91.67
LaGrande (2)	130.44	74.80			280.04
Portland	155.63	27.27			210.17
Seattle	3.51				3.51
St. Johns Spur	7.82				7.82
River Ind	4.05				4.05
Marysville	65.14	221.04			507.22
North Platte		271.64			543.28
Orin	39.48	63.62			166.72
Cumberland Ind	10.21				10.21
Elkol Ind.	2.58				2.58
Dry Valley	25.8				25.80
Portland Branch	.52				0.52
South Rivergate	.50				0.50
Add'l Branch Lines	76.79				76.79
Add'l Industrial Leads	71.60				71.60
Total Route Miles	1,075.45	1840.58	180.86	12.60	
Total Track Miles	1,075.45	3,681.16	542.58	50.40	5,349.59

* Subdivisions in **bold** are those in dispute

Table D-5

Maintenance of Way Costs ($000)			
	UP	**FMC**	**STB**
1. Maintenance Personnel	$55,609	$13,416	$41,707
2. Maint. Roads & Firebreaks	1,660	0	624
3. Road Crossing Material	458	0	0
4. Ultrasonic Rail Testing	4,908	2,854	4,908
5. Rail Grinding	32,249	22,515	32,249
6. Misc. Outside Contracts	5,000	7,500	5,000
7. Buildings & Facilities	0	500	0
8. Contract Labor	0	10,040	0
9. Track Geometry Testing	1,415	10,029	1,415
10. Vegetation Control	1,225	1,245	1,250*
11. Derailment	4,000	4,000	4,000
12. Snow Removal	1,000	1,000	1,000
13. Rail Defect Change-out	10,420	0	10,159**
14. Spot Cross Tie	6,289	0	6,289
15. Spot Switch Tie	243	0	243
16. Spot Surfacing	5,315	0	5,315
17. Ditching	6,434	0	6,434
18. Sign & Fence Maint.	1,341	0	1,338*
Totals	**$137,566**	**$73,099**	**$121,931**

% 5350 = 934.58

% 5350 = 264.49

% 5350 = 747.66

% 5350 = 186.92

* Restatement based on route miles accepted in **Appendix B**.

** Reflects cost of rail accepted in **Appendix C**.

1. Maintenance Personnel

UP included $55.6 million for personnel that would perform both operating and program maintenance. However, as discussed above, costs for program maintenance are included in the investment costs for the ORR. Thus, UP's $55.6 million estimate is overstated. The only evidence on the record as to what portion of the maintenance staff's time would be devoted to performing

REDACTED

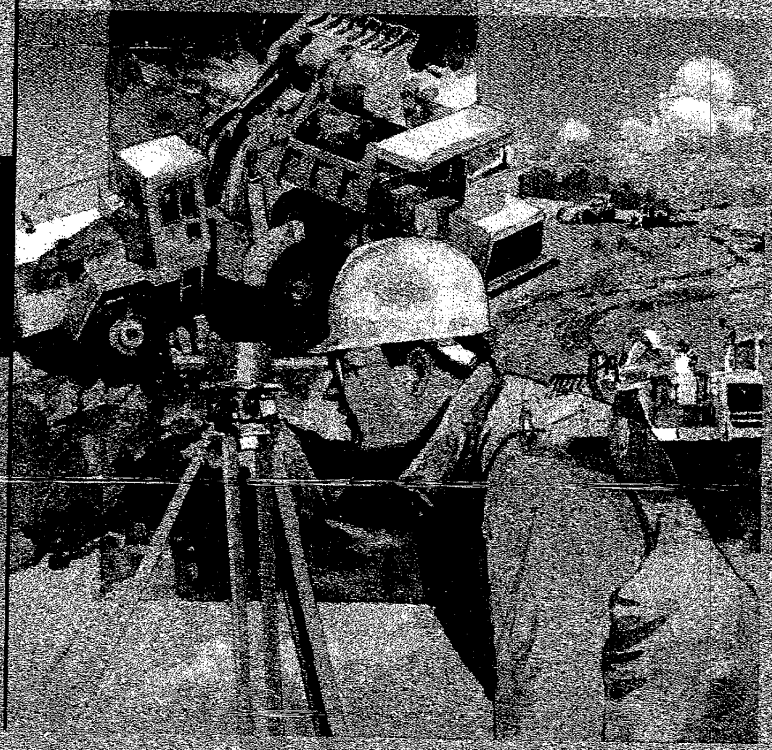
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2003



3302

02220 | Site Demolition

			CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2003 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P	
550	1000	Footings, concrete, 1' thick, 2' wide	B-5	300	.187	L.F.		5.10	3.15	8.25	11.30	550
	1080	1'-6" thick, 2' wide	"	250	.224	"		6.10	3.79	9.89	13.55	
	1120	3' wide	"	200	.280	"		7.60	4.73	12.33	16.95	
	1140	2' thick, 3' wide	"	175	.320	"		8.70	5.40	14.10	19.40	
	1200	Average reinforcing, add								10%	10%	
	1220	Heavy reinforcing, add				▼				20%	20%	
	2000	Walls, block, 4" thick	1 Clab	180	.044	S.F.		1.10		1.10	1.71	
	2040	6" thick	"	170	.047	"		1.16		1.16	1.81	
	2080	8" thick	"	150	.053	"		1.31		1.31	2.05	
	2100	12" thick	"	150	.053	"		1.31		1.31	2.05	
	2200	For horizontal reinforcing, add								10%	10%	
	2220	For vertical reinforcing, add								20%	20%	
	2400	Concrete, plain concrete, 6" thick	B-9	160	.250			6.25	1.05	7.30	10.95	
	2420	8" thick	"	140	.286			7.15	1.20	8.35	12.50	
	2440	10" thick	"	120	.333			8.35	1.40	9.75	14.60	
	2500	12" thick	"	100	.400			10	1.68	11.68	17.50	
	2600	For average reinforcing, add								10%	10%	
	2620	For heavy reinforcing, add								20%	20%	
	4000	For congested sites or small quantities, add up to				▼				200%	200%	
	4200	Add for disposal, on site	B-11A	232	.069	C.Y.		1.97	3.80	5.77	7.20	
	4250	To five miles	B-30	220	.109	"		3.05	7.40	10.45	12.80	
575	0010	**HYDRODEMOLITION**, concrete pavement, 4000 PSI, 2" depth	B-5	500	.112	S.F.		3.05	1.89	4.94	6.80	575
	0120	4" depth	"	450	.124	"		3.39	2.10	5.49	7.55	
	0130	6" depth	"	400	.140	"		3.81	2.37	6.18	8.50	
	0410	6000 PSI, 2" depth	"	410	.137	"		3.72	2.31	6.03	8.30	
	0420	4" depth	"	350	.160	"		4.35	2.70	7.05	9.70	
	0430	6" depth	"	300	.187	"		5.10	3.15	8.25	11.30	
	0510	8000 PSI, 2" depth	"	330	.170	"		4.62	2.87	7.49	10.30	
	0520	4" depth	"	280	.200	"		5.45	3.38	8.83	12.10	
	0530	6" depth	▼	240	.233	▼		6.35	3.94	10.29	14.15	
875	0010	**SITE DEMOLITION** No hauling, abandon catch basin or manhole	B-6	7	3.429	Ea.		92	31.50	123.50	177	875
	0020	Remove existing catch basin or manhole, masonry	"	4	6	"		161	54.50	215.50	310	
	0030	Catch basin or manhole frames and covers, stored	"	13	1.846	"		49.50	16.85	66.35	95	
	0040	Remove and reset	▼	7	3.429	"		92	31.50	123.50	177	
	0100	Roadside delineators, remove only	B-80	175	.183	"		4.91	2.85	7.76	10.70	
	0110	Remove and reset	"	100	.320	▼		8.60	4.99	13.59	18.70	
	0600	Fencing, barbed wire, 3 strand	2 Clab	430	.037	L.F.		.92		.92	1.43	
	0650	5 strand	"	280	.057	"		1.41		1.41	2.20	
	0700	Chain link, posts & fabric, remove only, 8' to 10' high	B-6	445	.054	"		1.45	.49	1.94	2.77	
	0750	Remove and reset	"	70	.343	"		9.20	3.13	12.33	17.65	
	0775	Fencing, wood, all types, 4' to 6' high	2 Clab	432	.037	"		.91		.91	1.43	
	0790	Remove and store	B-80	235	.136	"		3.65	2.12	5.77	8	
	0800	Guiderail, corrugated steel, remove only	B-80A	100	.240	"		5.90	1.38	7.28	10.75	
	0850	Remove and reset	"	40	.600	▼		14.80	3.45	18.25	27	
	0860	Guide posts, remove only	B-80B	120	.267	Ea.		7	1.70	8.70	12.70	
	0870	Remove and reset	B-55	50	.480	"		11.85	15.10	26.95	35	
	0900	Hydrants, fire, remove only	B-21A	5	8	"		244	98.50	342.50	480	
	0950	Remove and reset	"	2	20	▼		610	247	857	1,200	
	1000	Masonry walls, block or tile, solid, remove	B-5	1,800	.031	C.F.		.85	.53	1.38	1.89	
	1100	Cavity wall	"	2,200	.025	"		.69	.43	1.12	1.54	
	1200	Brick, solid	"	900	.062	"		1.69	1.05	2.74	3.78	
	1300	With block back-up	"	1,130	.050	"		1.35	.84	2.19	3	
	1400	Stone, with mortar	"	900	.062	"		1.69	1.05	2.74	3.78	
	1500	Dry set	▼	1,500	.037	▼		1.02	.63	1.65	2.26	

3303

		02220 | Site Demolition	CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2003 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P	
875	1600	Median barrier, precast concrete, remove and store	B-3	430	.112	L.F.		2.97	3.90	6.87	8.85	875
	1610	Remove and reset	"	390	.123	"		3.28	4.30	7.58	9.80	
	1710	Pavement removal, bituminous roads, 3" thick	B-38	690	.058	S.Y.		1.62	1.27	2.89	3.89	
	1750	4" to 6" thick		420	.095			2.66	2.09	4.75	6.40	
	1800	Bituminous driveways		640	.063			1.75	1.37	3.12	4.20	
	1900	Concrete to 6" thick, hydraulic hammer, mesh reinforced		255	.157			4.38	3.45	7.83	10.55	
	2000	Rod reinforced		200	.200	▼		5.60	4.40	10	13.45	
	2100	Concrete, 7" to 24" thick, plain		33	1.212	C.Y.		34	26.50	60.50	81.50	
	2200	Reinforced	▼	24	1.667	"		46.50	36.50	83	112	
	2300	With hand held air equipment, bituminous, to 6" thick	B-39	1,900	.025	S.F.		.66	.09	.75	1.12	
	2320	Concrete to 6" thick, no reinforcing		1,600	.030			.78	.11	.89	1.33	
	2340	Mesh reinforced		1,400	.034			.89	.12	1.01	1.52	
	2360	Rod reinforced	▼	765	.063	▼		1.64	.22	1.86	2.78	
	2400	Curbs, concrete, plain	B-6	360	.067	L.F.		1.79	.61	2.40	3.43	
	2500	Reinforced		275	.087			2.34	.80	3.14	4.49	
	2600	Granite		360	.067			1.79	.61	2.40	3.43	
	2700	Bituminous		528	.045			1.22	.41	1.63	2.34	
	2900	Pipe removal, sewer/water, no excavation, 12" diameter		175	.137			3.68	1.25	4.93	7.05	
	2930	15" diameter		150	.160			4.29	1.46	5.75	8.20	
	2960	24" diameter		120	.200			5.35	1.82	7.17	10.25	
	3000	36" diameter		90	.267			7.15	2.43	9.58	13.70	
	3200	Steel, welded connections, 4" diameter		160	.150			4.02	1.37	5.39	7.70	
	3300	10" diameter	▼	80	.300			8.05	2.74	10.79	15.40	
	3500	Railroad track removal, ties and track	B-13	330	.170	▼		4.54	1.98	6.52	9.20	
	3600	Ballast	B-14	500	.096	C.Y.		2.50	.44	2.94	4.36	
	3700	Remove and re-install, ties & track using new bolts & spikes		50	.960	L.F.		25	4.38	29.38	44	
	3800	Turnouts using new bolts and spikes	▼	1	48	Ea.		1,250	219	1,469	2,200	
	3850	Runways, remove rubber skid marks, 4-6 passes	B-59A	35	.686	M.S.F.	26	17.15	11	54.15	67	
	3860	6-10 passes	"	35	.686	"	39	17.15	11	67.15	81.50	
	4000	Sidewalk removal, bituminous, 2-1/2" thick	B-6	325	.074	S.Y.		1.98	.67	2.65	3.80	
	4050	Brick, set in mortar		185	.130			3.48	1.18	4.66	6.65	
	4100	Concrete, plain, 4"		160	.150			4.02	1.37	5.39	7.70	
	4200	Mesh reinforced	▼	150	.160	▼		4.29	1.46	5.75	8.20	
	5000	Slab on grade removal, plain	B-5	45	1.244	C.Y.		34	21	55	75.50	
	5100	Mesh reinforced		33	1.697			46	28.50	74.50	103	
	5200	Rod reinforced	▼	25	2.240			61	38	99	136	
	5500	For congested sites or small quantities, add up to								200%	200%	
	5550	For disposal on site, add	B-11A	232	.069			1.97	3.80	5.77	7.20	
	5600	To 5 miles, add	B-34D	76	.105	▼		2.70	5.95	8.65	10.60	
		02225 | Selective Demolition										
310	0010	CEILING DEMOLITION										310
	0200	Drywall, furred and nailed	2 Clab	800	.020	S.F.		.49		.49	.77	
	0220	On metal frame		760	.021			.52		.52	.81	
	0240	On suspension system, including system		720	.022			.55		.55	.86	
	1000	Plaster, lime and horse hair, on wood lath, incl. lath		700	.023			.56		.56	.88	
	1020	On metal lath		570	.028			.69		.69	1.08	
	1100	Gypsum, on gypsum lath		720	.022			.55		.55	.86	
	1120	On metal lath		500	.032			.79		.79	1.23	
	1500	Tile, wood fiber, 12" x 12", glued		900	.018			.44		.44	.68	
	1540	Stapled		1,500	.011			.26		.26	.41	
	1580	On suspension system, incl. system		760	.021			.52		.52	.81	
	2000	Wood, tongue and groove, 1" x 4"		1,000	.016			.39		.39	.62	
	2040	1" x 8"		1,100	.015			.36		.36	.56	
	2400	Plywood or wood fiberboard, 4' x 8' sheets	▼	1,200	.013	▼		.33		.33	.51	

		05580 | Formed Metal Fabrications	CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2003 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P
200	0470	Maximum				Set	795			795	875
	0500	For square columns, add to column prices above				L.F.	50%				

		05655 | Railroad Trackwork		CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2003 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P
700	0010	RAILROAD SIDINGS	R05650 -100									
	0020	Car bumpers, standard		B-14	2	24	Ea.	2,150	625	109	2,884	3,450
	0100	Heavy duty	R05650 -200		2	24		4,050	625	109	4,784	5,575
	0200	Derails hand throw (sliding)			10	4.800		750	125	22	897	1,050
	0300	Hand throw with standard timbers, open stand & target			8	6		810	156	27.50	993.50	1,175
	0400	Resurface and realign existing track			200	.240	L.F.		6.25	1.09	7.34	10.90
	0600	For crushed stone ballast, add			500	.096	"	9.75	2.50	.44	12.69	15.10
	0800	Siding, yard spur, level grade										
	0808	Wood ties and ballast, 80 lb. rail		B-14	57	.842	L.F.	54	22	3.84	79.84	97.50
	0809	80 lb. relay rail			57	.842		40.50	22	3.84	66.34	82.50
	0812	90 lb. rail			57	.842		43.50	22	3.84	69.34	86
	0813	90 lb. relay rail			57	.842		42.50	22	3.84	68.34	85
	0820	100 lb. rail			57	.842		61.50	22	3.84	87.34	106
	0822	100 lb. relay rail			57	.842		43.50	22	3.84	69.34	85.50
	0830	110 lb. rail			57	.842		47	22	3.84	72.84	89.50
	0832	110 lb. relay rail			57	.842		46	22	3.84	71.84	88.50
	1002	Steel ties in concrete, incl. fasteners & plates										
	1003	80 lb. rails		B-14	22	2.182	L.F.	102	57	9.95	168.95	211
	1005	80 lb. relay rail			22	2.182		80.50	57	9.95	147.45	188
	1012	90 lb. rail			22	2.182		94.50	57	9.95	161.45	203
	1015	90 lb. relay rail			22	2.182		79.50	57	9.95	146.45	186
	1020	100 lb. rail			22	2.182		102	57	9.95	168.95	211
	1025	100 lb. relay rail			22	2.182		79.50	57	9.95	146.45	186
	1030	110 lb. rail			22	2.182		105	57	9.95	171.95	215
	1035	110 lb. relay rail			22	2.182		88	57	9.95	154.95	196
	1200	Switch timber, for a #8 switch, pressure treated			3.70	12.973	M.B.F.	645	340	59	1,044	1,300
	1300	Complete set of timbers, 3.7 M.B.F. for #8 switch			1	48	Total	2,775	1,250	219	4,244	5,250
	1400	Ties, concrete, 8'-6" long, 30" O.C.			80	.600	Ea.	76.50	15.65	2.74	94.89	112
	1600	Wood, pressure treated, 6" x 8" x 8'-6", C.L. lots			90	.533		29.50	13.90	2.43	45.83	56.50
	1700	L.C.L. lots			90	.533		31	13.90	2.43	47.33	58
	1900	Heavy duty, 7" x 9" x 8'-6", C.L. lots			70	.686		32.50	17.85	3.13	53.48	66.50
	2000	L.C.L. lots			70	.686		30	17.85	3.13	50.98	64
	2200	Turnouts, #8, incl. 100 lb. rails, plates, bars, frog, switch pt.										
	2300	Timbers and ballast 6" below bottom of tie		B-14	.50	96	Ea.	19,600	2,500	440	22,540	25,900
	2400	Wheel stops, fixed			18	2.667	Pr.	485	69.50	12.15	566.65	655
	2450	Hinged			14	3.429	"	525	89.50	15.65	630.15	735
750	0010	RAILROAD TRACK	R05650 -100									
	0020	Track bolts					Ea.	1.70			1.70	1.87
	0100	Joint bars					Pr.	27			27	30
	0200	Spikes					Ea.	.40			.40	.44
	0300	Tie plates					"	1.61			1.61	1.77
	1000	Rail, 100 lb. prime grade					L.F.	13.50			13.50	14.85
	1500	Relay rail					"	4.51			4.51	4.96

Historical Cost Indexes

The table below lists both the Means Historical Cost Index based on Jan. 1, 1993 = 100 as well as the computed value of an index based on Jan. 1, 2003 costs. Since the Jan. 1, 2003 figure is estimated, space is left to write in the actual index figures as they become available through either the quarterly "Means Construction Cost Indexes" or as printed in the "Engineering News-Record." To compute the actual index based on Jan. 1, 2003 = 100, divide the Historical Cost Index for a particular year by the actual Jan. 1, 2003 Construction Cost Index. Space has been left to advance the index figures as the year progresses.

Year	Historical Cost Index Jan. 1, 1993 = 100		Current Index Based on Jan. 1, 2003 = 100		Year	Historical Cost Index Jan. 1, 1993 = 100	Current Index Based on Jan. 1, 2003 = 100		Year	Historical Cost Index Jan. 1, 1993 = 100	Current Index Based on Jan. 1, 2003 = 100	
	Est.	Actual	Est.	Actual		Actual	Est.	Actual		Actual	Est.	Actual
Oct 2003					July 1988	89.9	69.0		July 1970	28.7	22.0	
July 2003					1987	87.7	67.3		1969	26.9	20.7	
April 2003					1986	84.2	64.7		1968	24.9	19.1	
Jan 2003	130.2		100.0	100.0	1985	82.6	63.5		1967	23.5	18.0	
July 2002		128.7	98.8		1984	82.0	62.9		1966	22.7	17.4	
2001		125.1	96.1		1983	80.2	61.6		1965	21.7	16.7	
2000		120.9	92.9		1982	76.1	58.5		1964	21.2	16.3	
1999		117.6	90.3		1981	70.0	53.8		1963	20.7	15.9	
1998		115.1	88.4		1980	62.9	48.3		1962	20.2	15.5	
1997		112.8	86.6		1979	57.8	44.4		1961	19.8	15.2	
1996		110.2	84.6		1978	53.5	41.1		1960	19.7	15.1	
1995		107.6	82.6		1977	49.5	38.0		1959	19.3	14.8	
1994		104.4	80.2		1976	46.9	36.0		1958	18.8	14.4	
1993		101.7	78.1		1975	44.8	34.4		1957	18.4	14.1	
1992		99.4	76.4		1974	41.4	31.8		1956	17.6	13.5	
1991		96.8	74.4		1973	37.7	29.0		1955	16.6	12.7	
1990		94.3	72.4		1972	34.8	26.7		1954	16.0	12.3	
1989		92.1	70.8		1971	32.1	24.7		1953	15.8	12.1	

Adjustments to Costs

The Historical Cost Index can be used to convert National Average building costs at a particular time to the approximate building costs for some other time.

Example:

Estimate and compare construction costs for different years in the same city.

To estimate the National Average construction cost of a building in 1970, knowing that it cost $900,000 in 2003:

INDEX in 1970 = 28.7

INDEX in 2003 = 130.2

Time Adjustment using the Historical Cost Indexes:

$$\frac{\text{Index for Year A}}{\text{Index for Year B}} \times \text{Cost in Year B} = \text{Cost in Year A}$$

$$\frac{\text{INDEX 1970}}{\text{INDEX 2003}} \times \text{Cost 2003} = \text{Cost 1970}$$

$$\frac{28.7}{130.2} \times \$900{,}000 = .220 \times \$900{,}000 = \$198{,}000$$

The construction cost of the building in 1970 is $198,000.

Note: The City Cost Indexes for Canada can be used to convert U.S. National averages to local costs in Canadian dollars.

1/1/03 = 130.2

1/1/02 = (128.7 + 125.1) / 2 = 126.9

Index 2003 to 2002

126.9 / 130.2 = 0.97465

REDACTED

III - D - 5

Leased Facilities

III - D - 6

Loss and Damage

REDACTED

CODE	REVENUE FREIGHT ORIGINATING ON RESPONDENTS LINE TERMINATING ON LINE NO. OF CARS COL B	TERMINATING ON LINE TONS COL C	DELIVERED TO CONNECTIONS NO. OF CARS COL D	DELIVERED TO CONNECTIONS TONS COL E	REVENUE FREIGHT RECD FROM CONNECTING CARRIERS TERMINATING ON LINE NO. OF CARS COL F	TERMINATING ON LINE TONS COL G	DELIVERED TO CONNECTIONS NO. OF CARS COL H	DELIVERED TO CONNECTIONS TONS COL I	TOTAL REVENUE FREIGHT CARRIED NO. OF CARS COL J	TOTAL REVENUE FREIGHT CARRIED TONS COL K	GROSS FREIGHT REVENUE DOLLARS COL L
01	387,266	37,051,392	70,476	6,508,709	40,839	3,982,668	2,571	240,824	501,152	47,883,593	1004,201,675
011	357,539	35,230,586	66,440	6,352,255	40,222	3,929,319	2,510	235,764	466,811	46,747,924	957,082,370
0112	5,183	118,224	1,507	46,168	25	371	1	44	6,716	164,807	5,304,175
01129	5,183	118,224	1,507	46,168	25	371	1	44	6,716	164,807	5,304,175
01131	11,253	1,041,729	3,492	317,396	3,601	348,203	34	3,181	18,380	1,710,509	32,783,667
01132	124,686	13,136,366	11,775	1,203,204	24,271	2,514,365	561	54,967	161,293	16,908,902	344,334,971
01133	2,512	200,303	139	11,429	775	64,402	148	12,674	3,574	288,808	4,957,782
01134	519	19,145	264	16,143	3	282			786	35,570	947,986
01135	115	11,216	21	2,022	1	99			137	13,357	235,783
01136	15,682	1,645,218	3,502	366,464	47	4,735			19,231	2,016,417	35,713,017
01137	136,349	14,204,049	28,557	2,870,389	4,135	407,549	1,415	140,733	170,456	17,622,720	364,203,569
01139	827	64,667	266	25,316	66	5,165			1,159	95,148	1,843,267
0114	56,445	5,624,878	12,289	1,298,847	6,345	521,785	333	22,523	75,412	7,468,033	149,184,822
01144	50,106	5,167,713	11,143	1,214,637	3,489	329,999			64,738	6,712,349	128,909,589
0115	2,238	92,827	3,510	134,674	76	6,607	18	1,642	5,842	235,750	8,973,712
0119	1,830	71,944	1,118	60,203	877	55,756			3,825	187,903	8,579,619
01193	1	12							1	12	1,143
0	1,213	55,091	968	55,016	876	55,742			3,057	165,849	7,954,315
01197	74	1,643							74	1,643	78,481
012	10,419	230,368	1,264	41,501	93	5,637			11,776	277,506	13,403,313
0121	5,216	111,881	4	123					5,220	112,004	5,407,998
0122	3,643	84,506	904	33,097					4,547	117,603	5,732,937
01221	1,611	40,683	787	27,625					2,398	68,308	3,389,706
01224	757	16,127							757	16,127	736,217
01226	50	1,059							50	1,059	51,421
0123	41	822							41	822	42,408
01232	1	8							1	8	608
0129	1,519	33,159	356	8,281	93	5,637			1,968	47,077	2,219,970
01295	16	318	14	278	2	42			32	638	29,080
013	18,330	563,675	2,686	210,836	435	39,955	61	5,060	21,512	819,526	32,649,797
0131	3,094	66,611	253	11,782	16	976			3,363	79,369	4,131,183
01318	1,905	41,249	236	10,645	16	976			2,157	52,870	2,850,387
0133	6,031	130,191	2	44					6,033	130,235	6,308,866
01334	1,641	35,461							1,641	35,461	1,757,844
01335	1,360	28,982	1	22					1,361	29,004	1,381,446
0134	2,613	222,110	2,426	198,781	410	38,782	61	5,060	5,510	464,733	14,968,470
01341	1,833	164,950	2,204	185,745	391	37,157	54	4,492	4,482	392,344	11,849,797
1342	219	13,891	140	7,294	7	685	1	97	367	21,967	899,142
139	6,592	144,763	5	229	9	197			6,606	145,189	7,241,278
1392											
1394	79	1,607			2	132			81	1,739	86,126
1398	2,124	46,497							2,124	46,497	2,317,023

	REVENUE FREIGHT ORIGINATING ON RESPONDENTS LINE				REVENUE FREIGHT RECD FROM CONNECTING CARRIERS				TOTAL REVENUE FREIGHT CARRIED		GROSS FREIGHT
	TERMINATING ON LINE		DELIVERED TO CONNECTIONS		TERMINATING ON LINE		DELIVERED TO CONNECTIONS				
CODE	NO. OF CARS COL B	NO. OF TONS COL C	NO. OF CARS COL D	NO. OF TONS COL E	NO. OF CARS COL F	NO. OF TONS COL G	NO. OF CARS COL H	NO. OF TONS COL I	NO. OF CARS COL J	NO. OF TONS COL K	REVENUE DOLLARS COL L
014	204	3,496	3	30	4	212			211	3,738	183,315
0141											
01411											
01413											
01414											
0142	201	3,473	1	22					204	3,495	169,038
0143	1	23	2	8	4	212			7	243	14,287
01431	1	23	2	8	4	212			7	243	14,287
015	5	97							5	97	5,296
0151	3	59							3	59	4,026
0152	2	38							2	38	1,270
019	669	23,170	83	4,087	85	7,545			837	34,802	879,574
0191	215	9,466	51	1,477	85	7,545			351	18,488	698,598
0192											
08	355	9,392	136	3,189	8	590	15	1,185	514	14,356	507,104
084	25	1,757	5	193	8	590	15	1,185	53	3,725	110,328
0841	19	1,254	2	127	1	91			22	1,472	40,146
086	330	7,635	131	2,996					461	10,631	396,776
09	671	13,236	6	347	10	277			687	13,860	655,005
091	671	13,236	6	347	10	277			687	13,860	655,005
0912	667	13,187	5	325	2	108			674	13,620	643,015
09131	2	41			5	107			7	150	7,321
098											
0	140,607	13,823,424	639	60,501	2,727	259,984	18,987	1,860,491	162,960	16,004,400	120,927,223
01	134,151	13,193,086	108	9,749	193	18,225	18,984	1,860,255	153,436	15,081,315	103,159,196
0112	376	36,764	12	1,128	108	10,139			496	48,031	760,998
02	1	75	188	17,911	1	99			190	18,085	541,524
03	1,984	190,738	328	31,643	1	75			4,313	422,456	9,822,441
031	228	21,977	94	8,877					322	30,854	699,084
032	17	1,586	234	22,766	1	75			252	24,427	318,942
04											
05	2,198	211,999	12	1,118	500	48,898	1	95	2,711	264,120	5,122,981
06	229	22,197			5	482			234	22,679	575,133
07											
08			3	70					3	70	1,258
09	44	3,329			2,027	192,205	2	141	2,073	195,675	1,602,688

	REVENUE FREIGHT ORIGINATING ON RESPONDENTS LINE				REVENUE FREIGHT RECD FROM CONNECTING CARRIERS				TOTAL REVENUE FREIGHT CARRIED		
	TERMINATING ON LINE		DELIVERED TO CONNECTIONS		TERMINATING ON LINE		DELIVERED TO CONNECTIONS				GROSS FREIGHT
CODE	NO. OF CARS COL B	NO. OF TONS COL C	NO. OF CARS COL D	NO. OF TONS COL E	NO. OF CARS COL F	NO. OF TONS COL G	NO. OF CARS COL H	NO. OF TONS COL I	NO. OF CARS COL J	NO. OF TONS COL K	REVENUE DOLLARS COL L
11	1,528,731	173,831,739	490,002	56,861,517	77,499	8,724,951	9,524	916,218	2,105,758	240,334,425	2143,653,251
111	30	2,538	1	91	698	70,051			729	72,680	545,727
11111	6	229							6	229	5,172
11112	22	2,112			698	70,051			720	72,163	534,999
112	1,523,703	173,829,201	490,001	56,861,426	76,801	8,654,900	9,524	916,218	2,105,029	240,261,745	2143,107,524
1121	1,480,022	169,031,944	490,000	56,861,141	76,801	8,654,900	9,524	916,218	2,056,347	235,464,403	2128,999,834
13	767	60,994	556	45,254	46	3,967			1,369	110,215	2,088,826
131	13	570	388	32,009					401	32,579	227,970
132	754	60,424	168	13,245	46	3,967			968	77,636	1,860,856
14	136,920	13,185,217	20,716	1,948,353	19,433	1,906,869	962	96,605	178,031	17,137,044	168,712,251
141	123	10,823	151	14,159	49	4,630	1	97	324	29,709	811,260
142	96,727	9,431,928	2,390	222,387	12,734	1,274,489	40	3,274	111,891	10,932,078	57,169,976
14211	7	477							7	477	8,198
14212											
147	96,351	9,398,050	2,390	222,387	12,734	1,274,489	40	3,274	111,515	10,898,208	56,686,301
14	21,070	2,064,869	10,667	1,048,713	3,209	317,439	55	5,412	35,001	3,436,433	53,392,403
14411	4,636	439,444	4	207	9	729	2	96	4,651	440,476	1,747,071
14412	727	68,138	216	20,918	364	36,165			1,307	125,221	1,333,440
14413	15,707	1,557,287	10,447	1,027,588	2,836	280,545	53	5,316	29,043	2,870,736	50,311,892
145	1,659	159,582	336	30,721	1,446	135,041			3,441	325,344	10,014,841
14511	1,593	155,013	85	8,475	1,393	133,517			3,071	297,005	8,898,256
14512	6	205			3	226			9	431	15,540
14514					1	23			1	23	726
147	7,249	610,480	4,242	395,473	1,046	101,171	802	81,766	13,339	1,188,890	24,987,519
.4711	661	59,171	161	15,787	40	2,662			862	77,620	2,276,019
.4713	597	11,896	344	7,008	146	13,822			1,087	32,726	1,127,210
.4714	5	107			10	957			15	1,064	22,870
.4715	858	84,805	10	1,000	130	12,818			998	98,623	886,897
4716	4,601	442,253	3,719	370,892	719	70,813	802	81,766	9,841	965,724	20,028,803
49	10,092	907,535	2,930	216,900	949	74,099	64	6,056	14,035	1,224,590	22,294,252
4911	6,695	652,377	316	31,846	1	97			7,012	684,320	8,443,318
4913	10	204			88	8,410			98	8,614	121,054
4914	1,431	137,348	819	73,371					2,253	200,719	3,703,465
5	81	3,010	417	17,723	452	28,534	1	61	953	49,329	2,014,649
51											
52	32	435	52	2,604	275	14,117			359	17,156	379,592
53	49	2,537	76	7,765	173	14,295	1	61	299	24,658	971,031
54											
55			121	4,124	1	2			122	4,126	189,255
56	2	38	7	397	3	120			12	555	16,803
59			161	2,833					161	2,833	457,966

	REVENUE FREIGHT ORIGINATING ON RESPONDENTS LINE				REVENUE FREIGHT RECD FROM CONNECTING CARRIERS				TOTAL REVENUE FREIGHT CARRIED		GROSS FREIGHT
	TERMINATING ON LINE		DELIVERED TO CONNECTIONS		TERMINATING ON LINE		DELIVERED TO CONNECTIONS				
CODE	NO. OF CARS COL B	NO. OF TONS COL C	NO. OF CARS COL D	NO. OF TONS COL E	NO. OF CARS COL F	NO. OF TONS COL G	NO. OF CARS COL H	NO. OF TONS COL I	NO. OF CARS COL J	NO. OF TONS COL K	REVENUE DOLLARS COL L
20	274,716	17,991,333	104,244	7,684,558	34,215	2,757,648	4,660	403,659	417,835	28,837,198	757,475,131
201	25,664	1,511,011	4,456	389,664	2,034	138,350	115	10,894	32,269	2,049,919	54,194,563
2011	6	120							6	120	5,286
2012	2,529	130,629	145	8,539	82	3,895	1	67	2,757	143,130	8,074,232
2013	4,133	359,245	629	54,132	162	13,869	5	443	4,929	427,689	11,140,681
2014	17,421	937,655	3,638	324,610	1,320	95,325	105	10,123	22,486	1,367,713	29,899,759
20141	8,866	179,102	66	1,409	276	5,453			9,208	185,964	4,808,136
2015	208	8,876	3	176	2	105			213	9,157	413,159
2016	1,358	74,155	41	2,207	467	25,148	4	261	1,870	101,971	4,854,778
2017	7	131			1	8			8	139	6,774
202	4,805	182,812	1,650	106,824	830	32,387	39	2,545	7,324	324,568	15,045,811
2021	162	3,531	75	5,415	24	507			261	9,453	501,443
2023	1,070	28,179	843	49,774	593	22,066	37	2,397	2,543	102,416	4,741,887
2024	8	128							8	128	5,935
2025	3,519	149,961	728	51,571	213	9,814	2	148	4,462	211,494	9,751,213
2026	46	1,013	4	64					50	1,077	45,335
20	24,062	819,304	16,006	829,734	1,604	82,118	164	10,845	41,836	1,742,001	86,918,700
20	571	12,415	674	14,820	59	1,243			1,304	28,478	1,311,643
2032	131	3,552	119	3,624	2	36			252	7,212	290,984
2033	8,801	269,489	5,614	296,633	615	16,393	152	10,293	15,184	612,808	24,938,555
2034	1,416	29,751	2,145	72,569	51	3,124			3,612	105,454	4,638,693
2035	1,691	37,683	378	7,590	273	17,365	1	12	2,343	62,650	3,483,748
2036	205	8,459	315	20,831	26	1,765			546	31,055	1,782,304
2037	4,189	237,363	5,129	303,490	208	8,714	9	405	9,535	549,972	35,767,544
2038	4,927	109,394	52	1,706	135	3,389	2	135	5,116	114,624	5,430,117
2039	2,129	111,188	1,580	108,471	235	10,089			3,944	229,748	10,275,109
204	80,247	6,508,330	29,931	2,747,461	11,867	1,049,379	558	50,830	122,603	10,356,000	210,376,140
2041	25,074	2,105,714	10,133	930,504	2,449	211,488	67	6,277	37,723	3,253,983	70,384,696
20411	10,751	953,356	7,471	695,544	343	30,712	38	3,631	18,603	1,683,243	29,716,739
20412	2,982	210,380	135	11,119	65	4,658			3,182	226,157	5,525,018
20421	12,534	1,195,766	601	35,436	2,104	179,436	95	8,772	15,334	1,419,410	25,006,191
20423	187	4,313	16	349	19	181			222	4,843	249,246
2043	7,324	112,092	422	8,322	161	2,680			7,907	123,094	7,851,151
2044	1,838	153,054	947	63,624	551	52,640	49	3,775	3,385	273,093	4,757,646
2045	825	17,184	100	3,573	11	461	3	69	940	21,287	801,267
2046	29,163	2,832,324	17,586	1,702,806	6,066	582,000	343	31,873	53,158	5,149,003	97,092,744
0461	22,779	2,276,706	14,777	1,475,995	2,764	286,363	115	11,668	40,435	4,050,732	73,277,963
0462	2,504	223,069	1,127	100,787	1,237	112,044	211	18,710	5,079	454,610	10,402,621
0463	192	12,709	186	4,539	2	165			380	17,513	710,136
0471	3,078	87,405	126	2,847	435	17,275	1	64	3,640	107,591	4,084,721
0472	23	478			71	3,218			94	3,696	143,479
05	2,576	42,329	96	1,945	237	4,009			2,909	48,283	2,745,119
06	13,937	1,738,542	11,358	1,095,185	2,047	197,037	142	13,766	33,484	3,044,530	87,422,425
061	10,139	957,958	1,707	155,979	1,047	100,247	40	3,758	13,133	1,217,942	28,932,822
0611	54	3,605	111	12,309	37	2,538	3	395	215	18,737	446,217
0615	2,082	155,605	1,231	111,174	539	50,781	33	3,083	3,885	340,644	5,691,353
0617	3,101	295,467	310	29,135	168	15,677	4	390	3,783	360,669	8,002,564

3363

	REVENUE FREIGHT ORIGINATING ON RESPONDENTS LINE				REVENUE FREIGHT RECD FROM CONNECTING CARRIERS				TOTAL REVENUE FREIGHT CARRIED		GROSS FREIGHT
	TERMINATING ON LINE		DELIVERED TO CONNECTIONS		TERMINATING ON LINE		DELIVERED TO CONNECTIONS				
CODE	NO. OF CARS COL B	NO. OF TONS COL C	NO. OF CARS COL D	NO. OF TONS COL E	NO. OF CARS COL F	NO. OF TONS COL G	NO. OF CARS COL H	NO. OF TONS COL I	NO. OF CARS COL J	NO. OF TONS COL K	REVENUE DOLLARS COL L
2062	9,598	780,584	9,651	919,206	1,000	95,790	102	10,008	20,351	1,826,588	58,489,604
20625	944	87,082	589	54,489	159	14,413	7	665	1,699	156,649	3,639,027
20626											
207	5,683	116,095	215	5,116	93	1,783			5,991	122,994	6,615,117
208	50,040	2,923,692	26,405	1,510,635	4,680	293,374	1,387	95,411	82,512	4,823,312	158,134,636
20811	24,159	1,502,480	10,449	824,831	2,350	143,997	1,167	76,396	38,125	2,547,706	71,865,662
20813	398	34,055	1	178	10	848			410	35,081	1,064,167
2083	4,822	451,148	470	40,166	496	40,783	162	11,880	5,950	545,977	18,309,163
2084	11,895	454,015	13,867	557,958	179	4,238			25,941	1,016,211	43,330,589
20851	1,705	52,618	1,066	52,816	593	13,719	1	9	3,365	119,182	4,033,998
20859	4,771	381,491	340	29,341	987	88,675	57	5,126	6,155	504,633	16,960,895
2086	1,816	38,577	64	1,449	48	771			1,948	40,797	1,855,168
2087	454	9,488	147	3,892	17	343			618	13,723	714,793
209	61,702	4,149,018	14,127	997,994	10,823	959,211	2,255	219,368	88,907	6,325,591	145,820,701
20911	766	69,071	462	40,660	98	7,628			1,326	117,359	2,593,952
20914	536	44,903	80	7,244	102	8,794	29	2,796	727	63,737	1,350,007
[illegible]	9,591	384,478	795	72,707	538	48,369	45	4,133	11,069	1,009,687	17,201,103
20943	22,654	2,211,691	5,133	483,471	3,469	360,304	1,083	111,321	32,339	3,166,787	60,582,105
2091	4,431	159,412	829	59,600	5,193	498,267	973	92,588	11,426	1,019,887	22,206,994
2094	3	177	25	1,974	38	3,091	80	6,286	146	11,528	337,739
2095	1,020	20,160	235	4,783	273	5,936	2	39	1,530	30,918	1,484,479
2096	365	11,094	59	5,231	2	41			426	16,366	647,302
2097											
2098	149	5,564	42	766	3	79			194	6,409	303,003
21	5	83			1	8			6	91	3,842
211	5	83			1	8			6	91	3,842
212											
213											
214											
22	2,410	39,033	407	6,889	644	11,324	1	17	3,462	57,263	2,652,312
221	310	2,557	29	453	30	315			369	3,325	141,491
222	130	2,553	15	278	16	280	1	17	162	3,125	138,377
223	4	44	1	14	1	11			6	69	5,786
224	21	166	2	21	11	233			34	420	27,487
225	2	29			2	9			4	38	4,055
227	1,280	32,436	142	2,331	458	8,054			1,880	32,815	1,263,328
228	105	2,022	22	429	25	536			153	2,987	121,810
229	558	9,231	196	3,363	100	1,886			954	14,481	750,998
2296	168	3,242							168	3,242	107,430
23	7	151							7	151	8,548
232	24	433	4	73					28	506	28,708

	REVENUE FREIGHT ORIGINATING ON RESPONDENTS LINE				REVENUE FREIGHT RECD FROM CONNECTING CARRIERS				TOTAL REVENUE FREIGHT CARRIED		GROSS FREIGHT
	TERMINATING ON LINE		DELIVERED TO CONNECTIONS		TERMINATING ON LINE		DELIVERED TO CONNECTIONS				
CODE	NO. OF CARS COL B	NO. OF TONS COL C	NO. OF CARS COL D	NO. OF TONS COL E	NO. OF CARS COL F	NO. OF TONS COL G	NO. OF CARS COL H	NO. OF TONS COL I	NO. OF CARS COL J	NO. OF TONS COL K	REVENUE DOLLARS COL L
23	14,274	201,721	5,027	71,114	1,928	27,369	10	27	21,239	300,231	19,815,490
231	894	9,751	223	2,704	201	2,920	10	27	1,328	15,402	1,157,176
233	229	2,409	53	714	38	409			320	3,532	263,983
235	217	3,129	127	1,941					344	5,070	276,112
237	3	21							3	21	2,003
238	34	370	11	114	18	263			63	747	47,452
239	12,897	186,041	4,613	65,641	1,671	23,777			19,181	275,459	18,069,764
24	80,749	5,909,103	36,329	2,680,906	51,793	4,256,267	11,901	1,059,162	180,772	13,905,438	393,430,922
241	17,957	1,450,571	4,468	382,626	7,877	623,302	87	6,317	30,389	2,462,816	36,216,611
24114	1,060	90,593	5	417	813	51,680			1,878	142,690	783,543
24115	8,770	753,586	3,717	318,666	5,728	489,517	2	180	18,217	1,561,949	20,816,295
24116	259	17,845	108	8,229	40	2,970	2	134	409	29,178	1,376,167
242	40,324	3,002,722	21,026	1,523,455	21,511	1,850,245	6,088	546,070	88,949	6,922,492	232,104,485
2421	38,971	2,931,193	20,673	1,514,719	21,489	1,848,474	6,087	546,048	87,220	6,840,434	230,027,277
24212	1	98			1	95	1	101	3	294	8,845
[illegible]	1,353	71,529	353	8,736	22	1,771	1	22	1,729	82,058	2,077,208
[illegible]	9,111	453,770	5,609	362,987	7,425	511,007	873	62,847	23,018	1,390,611	45,076,657
2431	3,144	61,190	508	10,407	647	11,275	3	253	4,302	83,125	4,143,573
2432	5,164	340,218	4,637	318,774	6,101	447,094	755	51,789	16,657	1,149,875	36,300,851
244	472	5,128	44	656	26	451			542	6,235	493,411
249	12,885	996,912	5,182	411,182	14,954	1,271,262	4,853	443,928	37,874	3,123,284	79,539,758
2491	662	49,484	301	22,804	344	25,326	29	2,296	1,336	99,910	3,680,799
25	12,933	152,612	5,764	45,594	2,206	25,367	1	14	20,904	223,587	20,221,342
251	8,536	105,078	949	11,902	681	6,548	1	14	10,167	124,542	10,257,143
253	35	562	20	248	12	131			67	941	62,818
254	1,305	12,109	3,665	20,355	447	7,997			5,417	40,461	4,751,453
259	3,038	32,821	1,087	12,644	1,066	10,691			5,191	56,156	5,026,535
26	58,783	2,512,975	29,531	2,063,418	58,033	3,749,208	5,695	417,182	152,042	8,842,783	254,302,468
261	5,087	419,794	5,843	464,592	10,967	921,796	1,585	131,867	23,482	1,938,049	39,815,555
26111	4,529	377,448	5,313	418,817	10,254	854,905	1,555	130,065	21,660	1,781,235	36,895,583
262	26,020	1,101,126	14,038	1,066,918	17,622	1,083,042	1,816	139,467	59,516	3,390,553	107,214,136
26211	5,458	220,600	1,836	139,797	4,540	290,372	1,443	111,623	13,277	762,392	20,485,665
26212	1,824	129,859	1,594	124,322	2,277	163,144	9	604	5,704	417,929	13,708,369
26213	9,643	535,963	9,497	765,297	7,095	509,388	313	23,043	26,548	1,833,711	55,806,759
26214	585	35,463	333	20,856	545	36,069	66	4,071	1,529	96,459	4,480,682
26217	2,508	54,059	102	2,737	282	6,421	4	86	2,896	73,303	3,253,334
26218	370	7,483	2	49	504	16,202			876	23,734	1,579,602
263	13,523	895,064	7,036	489,641	25,557	1,680,414	2,245	144,005	49,361	3,209,124	87,267,719
267	6,881	114,943	2,119	35,360	1,751	29,914	1	15	10,752	180,232	11,551,819
26	183	3,220	84	1,886	48	972	1	15	316	6,093	387,980
26471	894	15,490	29	540	378	5,466			1,301	21,496	2,402,483
265	5,455	58,823	276	2,894	706	7,033			7,437	78,750	6,454,092
266	817	13,225	219	4,013	430	27,009	28	1,828	1,494	46,075	1,999,147
26613	38	2,410	19	990	320	20,928	4	360	401	24,688	882,373

3365

	REVENUE FREIGHT ORIGINATING ON RESPONDENTS LINE				REVENUE FREIGHT RECD FROM CONNECTING CARRIERS				TOTAL REVENUE FREIGHT CARRIED		GROSS FREIGHT
	TERMINATING ON LINE		DELIVERED TO CONNECTIONS		TERMINATING ON LINE		DELIVERED TO CONNECTIONS				
CODE	NO. OF CARS COL B	NO. OF TONS COL C	NO. OF CARS COL D	NO. OF TONS COL E	NO. OF CARS COL F	NO. OF TONS COL G	NO. OF CARS COL H	NO. OF TONS COL I	NO. OF CARS COL J	NO. OF TONS COL K	REVENUE DOLLARS COL L
27	7,179	133,077	242	4,036	242	4,409			7,663	141,522	9,007,143
271	21	479	6	328					27	807	37,303
272	1,279	24,597	14	290	93	1,798			1,386	26,685	1,608,859
273	210	3,110	26	387	79	1,368			315	4,885	270,904
274	5,113	94,021	189	2,921	66	1,194			5,368	98,136	6,621,579
276											
277	162	2,733	1	8					163	2,741	132,136
278	146	2,977	6	102	4	49			156	3,128	107,177
279	248	5,140							248	5,140	229,185
28	152,664	12,056,278	119,773	11,033,131	89,559	8,213,110	4,678	439,083	366,674	31,741,602	727,488,663
281	73,412	6,797,858	54,274	5,094,011	47,623	4,510,624	2,608	248,854	177,917	16,651,347	374,206,472
2812	28,702	2,822,949	19,638	1,925,367	16,215	1,622,196	1,050	100,513	65,605	6,471,025	154,299,003
28123	8,903	888,881	9,816	969,524	1,173	118,157	44	2,359	19,936	1,978,921	63,407,013
2813	2,919	227,686	1,432	118,039	3,282	317,094	133	11,617	7,766	674,436	13,165,194
2814	2,297	206,534	567	51,216	509	44,264	9	744	3,382	302,758	7,097,676
2815	895	42,956	614	44,401	702	51,087	3	152	2,214	138,566	5,407,476
2818	18,869	1,682,523	23,215	2,151,157	16,315	1,505,470	623	60,194	59,022	5,399,344	114,151,020
28184	9,805	892,469	7,216	665,636	1,397	126,470	43	3,777	18,461	1,688,352	37,798,777
2819	18,776	1,743,938	7,074	655,106	9,253	852,726	574	56,213	35,677	3,307,983	70,371,406
28193	6,671	656,922	384	35,737	2,242	219,511			9,297	912,170	17,602,629
282	29,171	2,617,691	52,198	4,891,847	23,394	2,115,187	1,466	135,381	106,429	9,760,106	214,259,279
28212	784	56,521	1,604	135,530	1,110	89,892	1	90	3,499	282,033	7,826,114
28213	524	10,589			156	3,272			680	13,861	571,599
283	744	10,448	60	1,207	21	427			825	12,082	850,066
284	15,199	299,318	371	14,686	1,341	44,164			16,911	358,168	20,006,912
2841	11,811	238,979	134	3,415	1,096	29,399			13,063	271,793	16,081,369
285	1,714	35,573	255	18,988	236	11,059			2,205	65,620	2,616,848
286	313	19,968	181	14,846	80	6,216	1	94	575	41,124	1,372,224
287	17,367	1,652,941	5,622	539,869	13,146	1,287,509	450	42,542	36,585	3,522,861	74,146,520
2871	16,876	1,626,123	5,413	523,117	12,721	1,251,987	430	42,127	35,440	3,443,354	71,418,746
289	14,544	622,481	6,812	457,677	3,718	237,924	153	12,212	25,227	1,330,294	40,038,342
2892	1	5	9	219	1	10			11	234	10,860
28991	1,767	150,053	689	63,255	374	37,596	1	99	2,831	251,001	4,588,148
29	90,761	7,374,442	32,237	2,617,583	38,191	2,875,635	1,400	98,497	162,589	12,966,157	286,749,889
291	70,641	5,618,801	33,247	1,833,314	36,572	2,753,480	1,336	93,295	131,796	10,298,891	219,749,953
29111	3,828	333,672	303	26,323	107	8,376	4	326	4,242	368,697	4,941,110
29112	1	88							1	88	955
29113	1,519	136,270	335	26,706	2,662	237,909			4,516	400,885	5,283,932
29114	3,802	296,588	1,928	168,260	3,603	272,695	69	5,469	9,402	743,012	14,601,277
29[illegible]	4	242			11	231			15	473	23,322

	REVENUE FREIGHT ORIGINATING ON RESPONDENTS LINE				REVENUE FREIGHT RECD FROM CONNECTING CARRIERS				TOTAL REVENUE FREIGHT CARRIED		GROSS FREIGHT
	TERMINATING ON LINE		DELIVERED TO CONNECTIONS		TERMINATING ON LINE		DELIVERED TO CONNECTIONS				
CODE	NO. OF CARS COL B	NO. OF TONS COL C	NO. OF CARS COL D	NO. OF TONS COL E	NO. OF CARS COL F	NO. OF TONS COL G	NO. OF CARS COL H	NO. OF TONS COL I	NO. OF CARS COL J	NO. OF TONS COL K	REVENUE DOLLARS COL L
29116	18,320	1,589,536	4,904	401,968	4,489	398,867	61	5,085	27,774	2,395,456	60,467,800
29117	9,851	860,805	3,875	314,848	2,046	156,192	87	6,711	15,859	1,338,556	33,569,809
29119	4,925	405,457	4,603	377,396	3,095	257,716	53	4,431	12,677	1,045,000	22,143,680
2912	28,390	1,996,143	7,299	517,813	20,559	1,421,494	1,062	71,274	57,310	4,006,724	98,714,068
295	2,416	170,444	665	47,512	1,010	71,545	17	1,239	4,108	290,740	7,975,984
2951	12	471			1	21			13	492	14,679
2952	2,404	169,973	665	47,512	1,009	71,524	17	1,239	4,095	290,248	7,961,305
299	17,704	1,585,197	8,125	736,757	609	50,610	47	3,962	26,685	2,376,526	19,023,952
29911	95	2,091	31	403	1	22			117	2,516	106,802
29913	14,957	1,413,278	5,831	532,066	339	29,873	38	3,257	21,165	1,978,474	28,908,983
29914	1,497	97,275	1,171	85,252	188	16,239	2	174	2,858	199,000	5,378,174
30	31,893	386,524	7,532	107,766	4,530	57,505	16	158	43,971	551,953	40,797,453
301	5,311	83,815	2,000	34,490	1,583	25,778			8,894	144,083	8,196,382
302	242	3,729	547	8,155	2	7			791	11,891	660,088
303											
[illegible]	61	1,085	7	93	9	116			77	1,294	61,453
306	944	13,090	535	5,968	39	842	1	6	1,519	19,906	1,059,023
307	25,335	284,805	4,443	59,060	2,897	30,762	15	152	32,690	374,779	30,820,507
31	729	10,512	264	4,232	52	501	1	11	1,046	15,256	912,529
311	18	293	1	22					19	315	20,698
312											
313	2	6					1	11	3	17	1,971
314	475	8,126	200	3,654	36	357			711	12,137	618,565
315											
316	230	2,038	63	556	11	117			304	2,711	265,252
319	4	49			5	27			9	76	6,043
32	76,668	7,144,395	27,881	2,586,080	27,591	2,420,422	1,319	119,838	133,459	12,270,735	238,847,376
321	366	8,286	58	1,557	315	6,271			739	16,114	630,974
322	2,568	89,671	594	26,517	1,877	79,650	39	3,286	5,078	199,124	6,835,311
3221	783	18,912	49	703	313	6,494			1,145	26,129	1,308,418
324	33,660	3,524,539	7,779	807,037	7,458	745,493	71	5,202	48,968	5,081,271	61,197,145
32411	33,560	3,517,111	7,761	805,478	7,142	719,807			48,463	5,042,396	60,351,323
325	677	33,680	797	54,155	1,064	68,729	27	2,420	2,565	158,984	3,559,949
3251	431	28,954	706	51,518	765	59,178	14	1,186	1,916	140,876	2,842,082
32511	383	27,676	661	50,363	762	59,119	13	1,110	1,819	138,268	2,710,820
3253	101	1,831	79	2,309	179	3,581			337	7,721	337,013
3255	144	2,850	11	299	115	5,721	13	1,234	283	10,104	372,474
3259	1	5	2	29	6	249			9	283	8,380
327					4	85			4	83	2,494
328	179	2,939	106	1,311	7	106			292	4,356	279,049

	REVENUE FREIGHT ORIGINATING ON RESPONDENTS LINE				REVENUE FREIGHT RECD FROM CONNECTING CARRIERS				TOTAL REVENUE FREIGHT CARRIED		GROSS FREIGHT
	TERMINATING ON LINE		DELIVERED TO CONNECTIONS		TERMINATING ON LINE		DELIVERED TO CONNECTIONS				
CODE	NO. OF CARS COL B	NO. OF TONS COL C	NO. OF CARS COL D	NO. OF TONS COL E	NO. OF CARS COL F	NO. OF TONS COL G	NO. OF CARS COL H	NO. OF TONS COL I	NO. OF CARS COL J	NO. OF TONS COL K	REVENUE DOLLARS COL L
327	13,678	1,254,303	5,928	479,593	2,168	202,739	143	12,504	21,917	1,949,139	44,587,686
3271	1,664	123,160	277	22,365	67	5,580	76	6,511	2,084	157,616	4,832,578
3274	5,075	501,239	1,124	111,265	560	53,474			6,759	665,978	11,072,251
3275	6,939	629,904	4,527	345,963	1,541	143,685	67	5,993	13,074	1,125,545	28,682,857
328	33	890	8	535	17	822	1	13	59	2,260	80,676
329	25,507	2,230,087	12,611	1,215,375	14,685	1,316,612	1,038	95,413	53,841	4,857,487	121,676,586
3291	143	3,415	20	1,215	7	239			170	4,869	212,623
3295	24,283	2,211,685	12,494	1,212,497	13,990	1,283,985	1,032	95,019	51,799	4,803,186	119,764,904
33	87,236	6,627,919	20,097	1,618,687	33,990	2,874,708	1,989	171,474	143,312	11,292,788	249,776,169
331	77,200	6,034,335	16,583	1,364,182	28,212	2,400,272	1,884	162,404	123,879	9,961,193	206,754,268
33111	241	22,357	5	436	23	2,266	1	100	270	25,159	573,948
33112											
33119	222	15,907	20	1,334	29	2,697			271	19,938	455,711
3312	76,020	5,963,699	16,249	1,354,295	27,845	2,171,607	1,844	158,727	121,958	9,848,328	203,561,491
33121	21,477	2,267,069	190	16,655	5,107	518,513	765	71,044	27,739	2,873,281	30,506,050
3	359	21,658	138	4,111	220	17,304	22	2,044	739	45,117	1,336,443
3315	348	9,798	170	3,918	80	4,900	17	1,533	615	20,149	782,607
332	2,413	88,354	61	1,676	230	10,185	3	197	2,707	100,412	5,051,502
33211	2,153	81,680	4	268	162	7,683	2	117	2,321	89,748	4,610,652
333	5,265	431,167	2,782	223,144	4,191	355,579	16	1,076	12,254	1,011,166	30,641,085
3331	826	70,680	1,022	94,207	287	26,110	6	435	2,141	191,432	3,862,757
3332	856	70,932	427	22,033	21	1,325			1,304	94,290	3,085,475
3333	1,613	125,574	506	37,575	362	27,515	4	301	2,485	190,965	6,647,218
3334	1,904	161,290	826	69,506	3,521	300,629	6	340	6,257	531,765	16,938,755
335	1,230	26,659	266	18,427	1,202	97,808	15	1,202	2,713	144,096	4,948,946
3351	282	5,868	166	14,902					448	20,770	594,550
3352	222	5,586	31	1,957	1,169	96,321	3	165	1,425	104,029	3,547,404
3357	672	13,973	65	1,322	25	1,390	12	1,037	774	17,722	729,681
336	109	1,816	17	310	29	1,369			155	3,495	152,247
3361	108	1,739	16	236	22	1,225			146	3,200	139,565
3362					7	144			7	144	7,594
339	1,019	45,588	388	10,748	126	9,495	71	6,595	1,604	72,426	2,228,121
3391	288	8,219	258	3,671	52	3,711	3	290	601	15,891	580,421
3392	1	20							1	20	1,231
34	10,274	176,067	1,895	51,547	1,290	27,344	95	4,525	13,554	269,481	16,774,926
341	79	3,212	44	2,339					123	5,551	148,960
342	3,422	38,035	487	8,261	166	1,945			4,075	48,241	4,236,018
343	399	5,372	276	9,295	83	1,608	7	398	765	16,673	1,103,407
3433	274	3,523	90	5,841	67	1,326	4	294	435	11,984	812,526
34	1,823	43,476	451	28,568	250	9,509	42	3,692	2,566	85,245	5,134,355
3441	84	2,819	96	5,929	14	1,125			194	9,873	454,043
34411	38	1,881	85	5,732	14	1,125			137	8,738	417,436

	REVENUE FREIGHT ORIGINATING ON RESPONDENTS LINE				REVENUE FREIGHT RECD FROM CONNECTING CARRIERS				TOTAL REVENUE FREIGHT CARRIED		GROSS FREIGHT
	TERMINATING ON LINE		DELIVERED TO CONNECTIONS		TERMINATING ON LINE		DELIVERED TO CONNECTIONS				
CODE	NO. OF CARS COL B	NO. OF TONS COL C	NO. OF CARS COL D	NO. OF TONS COL E	NO. OF CARS COL F	NO. OF TONS COL G	NO. OF CARS COL H	NO. OF TONS COL I	NO. OF CARS COL J	NO. OF TONS COL K	REVENUE DOLLARS COL L
345	790	15,595	172	3,483	15	256			977	19,334	825,181
346	535	7,656	36	528	33	924			625	9,108	596,820
348	661	12,043	54	1,405	207	4,606			922	18,054	863,525
349	2,545	50,678	373	7,668	536	8,496	46	435	3,500	67,277	3,966,660
3491	767	17,109	91	1,706	400	4,400			1,258	23,215	1,555,451
3494	445	9,733	26	938	35	1,369			506	12,040	466,404
35	8,540	162,753	2,749	83,700	901	32,296	50	5,174	12,240	283,923	18,072,589
351	799	13,544	232	8,283	47	5,047	17	3,263	1,095	30,137	1,788,130
352	481	8,945	412	11,290	120	3,414	1	34	1,014	23,683	1,633,080
3524	167	2,837	19	327	5	76			191	3,240	207,445
353	1,859	62,476	1,171	48,839	309	13,249	15	825	3,354	124,589	7,819,076
3531	1,210	51,180	1,149	47,706	257	11,451	15	825	2,631	111,162	6,981,765
3532					1	56			1	56	1,913
3533	10	160			15	1,116			25	1,278	15,785
3537	462	8,798	19	280	20	371			501	9,449	596,180
	299	4,512	36	498	51	1,084			386	6,094	447,881
355	204	3,556	153	3,302	56	3,748			413	10,606	523,446
356	486	6,948	34	530	38	595			558	8,073	529,336
357	671	10,146	191	2,849	106	1,802			968	14,797	815,277
358	1,969	20,637	269	3,010	74	836			2,312	24,483	2,149,113
359	1,772	31,989	251	5,899	100	2,521	17	1,052	2,140	41,461	2,347,250
36	26,789	299,372	5,580	90,829	2,751	49,882	192	7,640	35,312	447,723	38,994,228
361	291	11,320	392	4,780	983	27,469	44	5,686	1,710	49,255	3,265,738
362	232	14,770	422	32,148	81	6,106	6	1,027	741	54,051	3,571,245
363	16,146	160,457	939	10,525	1,330	10,479	142	927	18,757	182,388	19,484,409
3631	1,145	12,095	36	581	16	154	2	12	1,199	12,842	1,467,093
3632	7,489	65,691	576	5,885	328	3,109	1	11	8,394	74,696	9,313,137
3633	54	584	54	524	270	1,819	128	827	506	3,754	551,106
364	1,081	14,273	1,400	17,993	53	960			2,534	33,226	2,207,883
365	6,966	66,328	2,271	23,243	194	2,921			9,431	92,492	8,520,437
366	41	361	5	96	7	82			53	539	48,427
367	1,019	18,913	97	1,412	23	372			1,139	20,697	1,111,259
369	813	12,950	54	632	80	1,493			947	15,075	784,830
37	102,243	1,719,182	22,582	401,224	89,363	1,729,746	5,630	76,359	219,818	3,926,511	396,424,872
371	88,532	1,524,437	15,507	338,402	79,946	1,650,494	4,258	68,653	188,253	3,581,986	361,756,250
3711	42,174	1,004,469	12,317	274,014	59,056	1,279,891	1,163	24,153	120,610	2,582,527	289,466,782
37111	46,376	970,269	10,520	240,544	47,035	1,026,106	959	19,288	104,990	2,256,207	260,261,031
37112	1,505	27,161	1,461	29,523	11,518	241,251	197	4,580	14,681	302,615	27,128,108
[illegible]	1	69					1	108	2	177	4,066
[illegible]	1	2							1	2	1,090
3713	1	14							1	14	1,419

	REVENUE FREIGHT ORIGINATING ON RESPONDENTS LINE				REVENUE FREIGHT RECD FROM CONNECTING CARRIERS				TOTAL REVENUE FREIGHT CARRIED		GROSS FREIGHT
	TERMINATING ON LINE		DELIVERED TO CONNECTIONS		TERMINATING ON LINE		DELIVERED TO CONNECTIONS				
CODE	NO. OF CARS COL B	NO. OF TONS COL C	NO. OF CARS COL D	NO. OF TONS COL E	NO. OF CARS COL F	NO. OF TONS COL G	NO. OF CARS COL H	NO. OF TONS COL I	NO. OF CARS COL J	NO. OF TONS COL K	REVENUE DOLLARS COL L
3714	40,354	519,912	3,282	64,034	20,883	370,197	3,105	44,500	67,624	998,663	74,241,501
37147	1,411	9,923	24	424	234	6,242	79	1,131	1,748	17,720	1,586,269
3715	2	20	8	354	7	406			17	780	45,458
372	1,329	26,715	151	2,140	635	3,556	17	63	2,132	32,474	12,681,650
373	79	648	86	604	1	1			166	1,253	147,143
374	9,996	140,314	5,852	47,891	8,758	75,089	1,345	7,643	25,951	270,937	16,976,726
37422	9,079	77,489	5,540	23,292	8,186	35,446	1,329	6,785	24,134	143,012	13,907,236
375	1,147	10,217	484	6,794					1,631	17,011	1,378,233
376			1	7					1	7	743
379	1,160	16,851	501	5,386	23	606			1,684	22,843	1,484,127
38	1,332	14,294	177	2,190	102	981			1,611	17,465	1,421,093
381			4	50					4	50	3,057
382					3	185			3	185	3,498
383	8	94	4	52	3	37			15	183	13,553
384	1,125	11,779	127	1,687	92	697			1,344	14,163	1,210,240
3	33	316	19	166					52	482	39,756
386	114	1,465	18	180	4	62			136	1,707	99,324
387	52	640	5	55					57	695	51,665
39	7,929	103,061	3,265	38,143	1,129	13,643	73	615	12,396	155,462	11,205,110
391	114	2,105	42	518	49	991			205	3,614	180,830
393	71	1,203	188	2,264	1	19			260	3,486	199,607
394	3,705	42,266	2,236	24,897	812	9,226	70	552	6,823	76,941	6,176,005
3949	1,444	21,392	524	7,327	374	5,596			2,342	34,315	2,077,308
395	248	4,117	1	19	11	225			260	4,361	252,255
396	563	8,595	28	561	63	721	1	9	655	9,886	584,020
399	3,228	44,775	770	9,884	193	2,461	2	54	4,193	57,174	3,812,393
40	101,458	4,166,179	18,087	1,382,609	10,746	808,044	1,449	98,069	131,740	6,454,891	114,669,297
401	4,495	463,516	3,197	433,543	2,202	222,287	72	7,337	10,166	1,126,683	14,299,449
402	96,963	3,702,663	14,690	949,066	8,544	585,757	1,377	90,732	121,574	5,328,208	100,369,848
4021	20,280	1,521,822	7,404	526,039	4,480	327,601	30	1,923	32,194	2,377,385	44,469,966
40211	17,512	1,460,919	5,425	454,782	3,733	308,117	28	1,803	26,698	2,225,621	38,129,431
4022	184	4,307	172	4,975	21	533	3	61	382	9,876	430,051
4024	6,534	364,906	5,906	342,182	2,186	121,621	1,300	84,996	15,926	913,705	24,680,717
4026	478	8,537	428	10,223	189	3,160			1,095	22,020	1,000,005
41	10,503	320,167	4,211	122,848	4,836	121,935	95	2,479	19,645	567,429	35,544,530
411	10,194	316,415	3,766	107,465	4,535	111,984	95	2,479	18,810	538,343	35,200,610
41111	272	5,773	165	3,170	5	149			442	9,092	501,160
41	2,143	31,963	11	301	171	2,431	11	154	2,338	34,849	3,297,385
41116	881	11,957	69	1,753	20	448	1	89	971	14,247	831,393
412	109	3,752	445	15,383	281	9,951			835	29,086	343,920

	REVENUE FREIGHT ORIGINATING ON RESPONDENTS LINE				REVENUE FREIGHT RECD FROM CONNECTING CARRIERS				TOTAL REVENUE FREIGHT CARRIED		GROSS FREIGHT
	TERMINATING ON LINE		DELIVERED TO CONNECTIONS		TERMINATING ON LINE		DELIVERED TO CONNECTIONS				
CODE	NO. OF CARS COL B	NO. OF TONS COL C	NO. OF CARS COL D	NO. OF TONS COL E	NO. OF CARS COL F	NO. OF TONS COL G	NO. OF CARS COL H	NO. OF TONS COL I	NO. OF CARS COL J	NO. OF TONS COL K	REVENUE DOLLARS COL L
42	239,234	717,783	6,288	20,435	143,307	375,789	392	11,923	389,221	1,125,930	151,787,225
421	3,241	52,061							3,241	52,061	4,983,935
422	231,349	581,548	6,006	15,578	141,472	350,667	379	11,448	379,206	959,241	141,241,282
423	4,644	84,174	282	4,857	1,835	25,122	13	475	6,774	114,628	5,562,008
44	194,318	3,023,926	19,438	324,277	15,365	259,730	5	161	229,126	3,608,094	240,867,690
441	194,318	3,023,926	19,438	324,277	15,365	259,730	5	161	229,126	3,608,094	240,867,690
45	195	2,841	57	1,006	159	2,189			411	6,036	373,329
451	195	2,841	57	1,006	159	2,189			411	6,036	373,329
46	1,631,170	23,209,247	518,605	6,751,962	298,390	4,644,976	64	1,610	2,448,229	34,607,795	1966,590,851
461	1,627,863	23,162,611	518,217	6,747,807	298,133	4,642,363	63	1,598	2,444,296	34,554,379	1962,252,170
462	3,307	46,636	388	4,155	257	2,613	1	12	3,933	53,416	4,338,681
48	1,808	107,213	1,656	132,502	1,475	99,228	608	25,779	5,547	364,722	10,503,163
	43	3,711	4	311	256	20,793			303	24,815	607,072
481	235	18,371	464	27,062	761	63,740	244	5,449	1,704	114,622	3,000,601
482					2	190			2	190	4,457
483	1	85	25	2,247	5	426	3	283	34	3,041	87,306
484	174	16,162			1	97			175	16,259	338,152
486	394	17,796	41	3,608	60	5,073	7	677	502	27,154	838,977
487	431	40,560	974	92,411	15	1,349	163	14,853	1,583	149,173	4,848,921
469	5,422,195	332,640,496	1,576,866	105,482,859	1,053,803	50,347,104	72,384	6,058,830	8,125,248	494,529,289	9457,472,836
47										0	
471										0	
479		332,640,496		105,482,859		50,347,104		6,058,830		494,529,289	9457,472,836

REVENUE FREIGHT ORIGINATING ON RESPONDENTS LINE		REVENUE FREIGHT RECD FROM CONNECTING CARRIERS		TOTAL REVENUE	
TERMINATING ON LINE	DELIVERED TO CONNECTIONS	TERMINATING ON LINE	DELIVERED TO CONNECTIONS	FREIGHT CARRIED	GROSS FREIGHT

CALENDAR YEAR 2002

THE BLANK BELOW SHOULD BE COMPLETED IF FREIGHT SERVICE OPERATIONS WERE NOT CONDUCTED DURING THE ENTIRE PERIOD FOR WHICH THE FORM PROVIDES:

REPORT COVERS THE PERIOD FROM

** CERTIFICATION **

I, THE UNDERSIGNED _____
(TITLE OF OFFICER IN CHARGE OF THE ACCOUNTS)
OF THE BURLINGTON NORTHERN AND SANTA FE RAILWAY CO . STATE THAT THIS REPORT WAS PERPARED BY ME OR UNDER MY SUPERVISION; THAT I HAVE CAREFULLY EXAMINED IT; AND ON THE BASIS OF MY KNOWLEDGE, BELIEF AND VERIFICATION (WHERE NECESSARY), I DECLARE IT TO BE A FULL, TRUE AND CORRECT STATEMENT OF THE FREIGHT COMMODITY STATISTICS NAMED, AND THAT THE VARIOUS ITEMS HERE REPORTED WERE DETERMINED IN ACCORDANCE WITH EFFECTIVE RULES PROMULGATED BY THE INTERSTATE COMMERCE COMMISSION.

_____

DATE_____ (ADDRESS) 2500 LOU MENK DRIVE TELEPHONE 817 352-4020
FORT WORTH, TEXAS 7613 (AREA CODE) (NUMBER)

III - D - 7

Insurance

REDACTED

III - D - 8

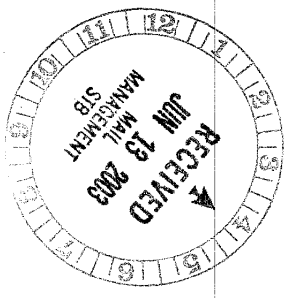
Ad Valorem Taxes

REDACTED

PUBLIC VERSION
HIGHLY CONFIDENTIAL AND CONFIDENTIAL MATERIAL REDACTED

BEFORE THE
SURFACE TRANSPORTATION BOARD

OTTER TAIL POWER COMPANY **Complainant,** **v.** **THE BURLINGTON NORTHERN AND SANTA FE RAILWAY COMPANY,** **Defendant.**	**Docket No. 42071**



COMPLAINANT'S OPENING EVIDENCE

VOLUME III - WORKPAPERS

2 of 2

George Koeck, Esq.
General Counsel
Otter Tail Corporation
4334 18th Avenue, SW, Suite 200
Fargo, ND 58103
(701) 451-3567

Nicholas J. DiMichael, Esq.
Jeffrey O. Moreno, Esq.
Michael H. Higgins, Esq.
THOMPSON HINE LLP
1920 N Street, N.W., Suite 800
Washington, DC 20036
(202) 331-8800

Attorneys for Complainant

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Public Record

June 13, 2003

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ROAD PROPERTY INVESTMENT

Field Trip

L.E. Peabody & Associates, Inc.

Memorandum

April 19, 2002

To: Thomas D. Crowley

From: Philip H. Burris and Daniel L. Fapp

Re: Field Trip For Otter Tail Power Company - Big Stone Rate Proceeding Before the STB

On Sunday, April 7 through Friday, April 12,2002, we, along with Dick McDonald, traveled along the BNSF track from Gillette, Wyoming to Big Stone City, South Dakota via Billings, Montana, Fargo, North Dakota and Benson Minnesota. The purpose of this trip was to gather engineering information at selected observation points and land information along several alternative routes for use in preparing evidence in this proceeding. The preparation for the trip and trip itself are discussed below.

A. Preparation For The Trip

In preparation for the trip, we did the following:

1. Identified and obtained detailed county maps for each county the BNSF's rail line passes through between Converse, Wyoming and Big Stone along the route of the stand-alone railroad;
2. Identified and printed the detailed maps of the rail route and surrounding roads from the Delorme Street Atlas (v. 7.0) computer software;
3. Highlighted the BNSF rail line on the county maps and the Delorme maps;
4. Identified the public and private road crossings along the route as shown on the county and Delorme maps and listed in the Federal Railroad Administration's railroad crossing database;
5. Identified the public roads shown on the county and Delorme maps that follow along the BNSF's right of way;
6. Identified the highway routes shown on the county and Delorme maps to take to follow the BNSF's right of way as close as possible and gain access at observation points;
7. Reviewed publicly available BNSF track charts and BNSF timetables and track charts provided in discovery covering the route;
8. Divided the route to cover into distinct segments to better organize and track observations (Attachment No. 1 to this memorandum is a list of the segments);
9. Developed a form to record data at each observation point (see Attachment No. 2); and
10. Developed a form to record land information along the route (see Attachment No. 3).

B. Field Trip

between Converse Junction and Donkey Creek, Wyoming (Segment No. 1). Despite limited access to the BNSF rail line due to roads on our maps not matching existing roads, we were able to obtain four (4) observations along this line segment (see Attachment No. 4 for the locations of the observation points made on the field trip). Given the time to travel to Gillette and the length of the next segment, we completed our observations for the day and remained in Gillette for the night.

On Monday, April 8, we continued our observations by traveling along BNSF's right of way from Donkey Creek to Dutch, Wyoming (Segment No. 2), Dutch to Jones Junction, Montana (Segment No. 7) and Jones Junction to Billings, Montana (a portion of Segment No. 8), obtaining nine (9) observations along these segments. We also traveled north from Dutch along the right of way on BNSF's Dutch Subdivision to the Spring Creek Mine, Segment No. , 3 where we made one (1) observation.

On Tuesday, April 9, we completed our observations along Segment No. 8 running between Billings and Miles City, Montana.

On Wednesday, April 10, we traveled along Segment No. 4 from Miles City, Montana to Bismarck, North Dakota. On Thursday, April 11 we completed our observations of Segment No. 4 by traveling from Bismark to Jamestown, North Dakota. Also on this day, we completed our observations of Segment No. 7 from Jamestown to Fargo, North Dakota, and our observation of Segment No. 8 from Fargo to Benson, Minnesota. Overall, we made 19 engineering observations along Segment Nos. 4, 7 and 8.

On Friday, April 12, we traveled along Segment No. 9 between Benson and Big Stone, South Dakota and briefly met with Otter Tail Power Company personnel at the Big Stone Station.

Attachment No. 5 to this memorandum is a summary of the engineering data gathered at each of the observation points. Attachment No. 6 is a summary of notes made regarding specific bridges and the existence, or non-existence, of walkways on the bridges. Finally, during our trip we observed many BNSF trains, including loaded and empty coal trains, grain trains, manifest trains and BNSF work trains. Attachment No. 7 summarizes the information we gathered on the trains we observed.

Otter Tail Filed Trip Line Segments

Segment Number	Segment End Points
1	Converse, Wyoming to Donkey Creek, Wyoming
2	Donkey Creek, Wyoming to Dutch, Wyoming
3	Dutch, Wyoming to Spring Creek, Montana
4	Miles City, Montana to Jamestown, North Dakota
5	Dutch, Wyoming to Jones Junction, Montana
6	Jones Junction, Montana to Miles City, Montana
7	Jamestown, North Dakota to Fargo, North Dakota
8	Fargo, North Dakota to Benson, Minnesota
9	Benson, Minnesota to Big Stone, South Dakota

Attachment No. 2

OTTER TAIL FIELD TRIP FORM

1. Date _____
2. Stop No. _____
3. Location _____
4. No. of tracks
   a. Main track _____
   b. Siding _____
   c. Centerline spacing (feet)
      (1) Main tracks _____
      (2) Main track to siding _____
5. Tangent or curve _____

6. Rail - main track
   a. CWR or jointed _____
   b. Weight _____
   c. Comments _____

7. Rail - siding
   a. CWR or jointed _____
   b. Weight _____
   c. Comments _____

8. Cross ties - main track
   a. Type _____
   b. Size (H X W X L) _____
   c. Spacing (inches) _____
   d. Comments _____

9. Cross ties - siding
   a. Type _____
   b. Size (H X W X L) _____
   c. Spacing (inches) _____
   d. Comments _____

10. Tie plates
    a. Size - main track _____
    b. Size - siding _____
    c. No. of spikes/plate - main _____
    d. No. of spikes/plate - siding _____

11. Rail Anchors
    a. Type _____

12. Ballast
    a. Type _____
    b. Depth _____

13. Turnouts
    a. Size - main track _____
    b. Size - siding _____

14. Grading data
    a. Cut / fill / level _____
    b. Roadbed width (feet) _____
    c. Side ditch depth _____
    d. Side ditch width _____

15. Fencing
    a. None/one/both sides _____
    b. Type _____

16. Bridges
    a. Number _____
    b. Type _____
    c. No. of piers _____
    d. No. of spans _____

17. Culverts
    a. Type _____
    b. Size (diameter) _____

18. Tunnels
    a. Type _____

19. Signal System
    a. Description _____

20. Additional Comments _____

Attachment No. 3

OTTER TAIL FIELD TRIP -- PHOTOGRAPH LOG

Date (1)	Stop No. (2)	Location (3)	Film Roll No. (4)	Picture No. (5)	Facing Direction (6)	Description (7)

Engineering Specification Observations By Line Segment

Segment Number (1)	Segment End Points (2)	Mile Post Observations (3)
1	Converse, Wyoming to Donkey Creek, Wyoming	62.34, 42.95, 29.99, 0.4
2	Donkey Creek, Wyoming to Dutch, Wyoming	606.2, 637.0, 648.1, 689.1
3	Dutch, Wyoming to Spring Creek, Montana	11.33
4	Miles City, Montana to Jamestown, North Dakota	70.04, 39.77, 3.66, 185.29, 149.65, 112.94, 85.60 32.69, 3.49, 176.1, 143.6, 109.5
5	Dutch, Wyoming to Jones Junction, Montana	708.09, 731.49, 771.98, 796.96, 816.53
6	Jones Junction, Montana to Miles City, Montana	206.54, 177.89, 144.0, 101.05
7	Jamestown, North Dakota to Fargo, North Dakota	89.08, 55.04, 20.16
8	Fargo, North Dakota to Benson, Minnesota	32.99, 209.21, 171.75, 141.1
9	Benson, Minnesota to Big Stone, South Dakota	18.8

OTTER TAIL POWER - BIG STONE FIELD TRIP DATA SUMMARY

1.	Date	04/07/2002	04/07/2002	04/07/2002	04/07/2002	04/08/2002	04/08/2002	04/08/2002
2.	Location	MP 62.34(E. Nacco Jct.)	MP 42.95	MP 29.99	MP 0.4 (Donkey Creek Jct.)	MP 606.2	MP 637.0	MP648.1
3.	Segment No.	1	1	1	1	2	2	2
4.	No. of tracks							
	a. Main track	2	2	2	2	1	1	1
	b. Siding	1	1 3/			1		2 (Derail)
	c. Centerline spacing (feet)							
	(1) Main tracks	22'	15'2"	15'7"		15'		
	(2) Main track to siding	25'	24' 4/					
5.	Tangent or curve	Tangent	Tangent	Tangent	Curve	Curve	Tangent	Tangent
6.	Rail - main track							
	a. CWR or jointed	CWR	CWR	CWR	CWR	CWR	CWR	CWR
	b. Weight	136 lb	136 lb	136 lb	132 lb	132 lb	132 lb	132 lb
7.	Rail - siding							
	a. CWR or jointed	CWR	CWR			CWR		CWR/Jointed
	b. Weight	136 lb	136 lb			132 lb		115 and 90 lb
8.	Cross ties - main track							
	a. Type	Concrete	Concrete	Concrete	Concrete	Concrete	Timber	Timber
	b. Size (H X W X L)	7" x 9" x 8'	7" x 9" x 8'	7" x 9" x 8'	7" x 9" x 8'	7" x 9" x 8'	7" x 9" x 8.5'	7" x 9" x 8.5'
	c. Spacing (inches)	24"	24"	24"	24"	24"	19.5"	19.5"
9.	Cross ties - siding							
	a. Type	Concrete	Timber		Timber 1/	Timber		Timber
	b. Size (H X W X L)	7" x 9" x 8'	7" x 9" x 8½'		7" x 9" x 8½'	7" x 9" x 8.5'		7" x 9" x 8.5'
	c. Spacing (inches)	24"	21½"		19½"	19.5"		19.5"
10.	Tie plates							
	a. Size - main track	incl. with ties	incl. with ties	incl. with ties	incl. with ties	incl. with ties	8" x 14"	8" x 14"
	b. Size - siding	incl. with ties	7 3/4" x 13"		7 3/4" x 14" 1/	7 3/4" x 13"		8" x 11"
	c. No. of spikes/plate - main	incl. with ties	incl. with ties	incl. with ties	incl. with ties	incl. with ties	4	3 & 4
	d. No. of spikes/plate - siding	incl. with ties	4		4 1/	4		2
11.	Rail Anchors							
	a. Type	N/A	Channeloc 5/	N/A	Channeloc 2/	Channeloc/ Spring Clips	Channeloc	Channeloc
	b. Application	N/A	Box anchor every other tie	N/A	Box anchor every other tie	Box anchor every other tie	Box anchor every other tie	Box anchor every other tie
12.	Ballast Type	Quartzite	Quartzite	Quartzite	Quartzite	Quartzite	Quartzite	Quartzite
13.	Turnouts							
	a. Size - main track	#20 (cross-over)			#20 (cross-over)			#11 (to derailer)
	b. Size - siding							
14.	Grading data							
	a. Cut / fill / level	Fill	Level / Cut	Level	Level	Fill	Fill	Level
	b. Roadbed width (feet)		49' (2 tracks)				18'	
	c. Side ditch depth		3'					
	d. Side ditch width		2'					
15.	Fencing							
	a. None/one/both sides	Both	Both	Both	Both	Both	Both	Both
	b. Type	Barbed wire	Barbed wire	Barbed wire	Barbed wire	Barbed wire	Barbed wire	Barbed wire
16.	Bridges							
	a. Number	62.39						
	b. Type	DPG						
	c. No. of piers	5						
	d. No. of spans	6						
17.	Culverts							
	a. Type							
	b. Size (diameter)							
18.	Signal System	CTC	CTC	CTC	CTC	CTC	CTC	CTC
19.	Additional Comments	crossover has swing nose frog, wood ties and a switch heater		dragging equipment detector	crossover has a switch heater	Pre-formed concrete crossing		

OTTER TAIL POWER - BIG STONE FIELD TRIP DATA SUMMARY

1. Date	04/08/2002	04/08/2002	04/09/2002	04/09/2002	04/09/2002	04/09/2002	04/09/2002
2. Location	MP 689.1	MP 11.33	MP 70.04	MP 39.77	MP 3.66	MP 185.29	MP 149.65
3. Segment No.	2	3	4	4	4	4	4
4. No. of tracks							
a. Main track	1	1	1	1	1	1	1
b. Siding	1			1			
c. Centerline spacing (feet)							
(1) Main tracks							
(2) Main track to siding	15' 8"			15'4"			
5. Tangent or curve	Tangent	Curve	Curve	Tangent	Tangent/Curve	Curve	Curve
6. Rail - main track							
a. CWR or jointed	CWR	CWR	CWR	CWR	CWR	CWR	CWR
b. Weight	132 lb	132 lb	136 lb	132 lb	136 lb	136 lb	136 lb
7. Rail - siding							
a. CWR or jointed	CWR						
b. Weight	132 lb						
8. Cross ties - main track							
a. Type	Timber	Timber	Timber	Timber	Timber	Timber	Concrete
b. Size (H X W X L)	7" x 9" x 8.5'	7" x 9" x 8.5'	7" x 9" x 8.5'	7" x 9" x 8.5'	7" x 9" x 8.5'	7" x 9" x 8.5'	7" x 9" x 8.'
c. Spacing (inches)	19.5"	19.5"	19.5"	19.5"	18.5"	19.5"	24"
9. Cross ties - siding							
a. Type	Timber			Timber			
b. Size (H X W X L)	7" x 9" x 8.5'			6"x8"x8.5'			
c. Spacing (inches)	19.5"			19.5"			
10. Tie plates							
a. Size - main track	8" x 14"	7.75" x 14"	8" x 14"	8" x 14"	8" x 14"	8" x 14"	Included with tie
b. Size - siding	8" x 14"			8" x 12"			
c. No. of spikes/plate - main	3 & 4	4	4	3	4	4	
d. No. of spikes/plate - siding	2			2			
11. Rail Anchors							
a. Type	Channeloc	Channeloc	Channeloc	Fair	Channeloc	Channeloc	Included with tie
b. Application	Box anchor every other tie	Box anchor every tie	Box anchor every other tie	Box anchor every other tie	Box anchor every other tie	Box anchor every other tie	
12. Ballast Type	Quartzite	Quartzite	Quartzite	Quartzite	Quartzite	Quartzite	Quartzite
13. Turnouts							
a. Size - main track	#2 - 2 X over						
b. Size - siding							
14. Grading data							
a. Cut / fill / level	Level/Slight Fill	Fill	Level	Level	Fill	Fill	Fill
b. Roadbed width (feet)	38'	26'	26'	37'	22'	28'	28'
c. Side ditch depth							
d. Side ditch width							
15. Fencing							
a. None/one/both sides	One	Both	None	Both	One	None	None
b. Type	Barbed wire	Barbed wire		Barbed wire	Barbed wire		
16. Bridges							
a. Number							149.5
b. Type							Deck Plate Gerter
c. No. of piers							
d. No. of spans							
17. Culverts							
a. Type							
b. Size (diameter)							
18. Signal System	CTC		CTC	CTC	CTC	CTC	CTC
19. Additional Comments	Pre-formed concrete crossing	Timber crossing. Access road on both sides of roadway. Cut just south of crossing	Timber plank crossing with flashers and gates	Roads on both sides of track. Timber plank crossing	Concrete slab crossing	Timber plank crossing with flashers and gates	Concrete slab with flashers.

OTTER TAIL POWER - BIG STONE FIELD TRIP DATA SUMMARY

1. Date	04/09/2002	04/09/2002	04/09/2002	04/09/2002	04/10/2002	04/10/2002	04/10/2002
2. Location	MP 112.94	MP 85.60	MP 32.69	MP 3.49	MP 176.10	MP 143.6	MP 109.50
3. Segment No.	4	4	4	4	4	4	4
4. No. of tracks							
a. Main track	1	1	1	1	1	1	2
b. Siding							1
c. Centerline spacing (feet)							
(1) Main tracks							14' 8"
(2) Main track to siding							14' 6"
5. Tangent or curve	Tangent	Tangent	Tangent	Tangent	Tangent	Tangent	Tangent
6. Rail - main track							
a. CWR or jointed	CWR	CWR	CWR	CWR	CWR	CWR	CWR
b. Weight	132 lb	132 lb	132 lb	132 lb	136 lb	136 lb	136 lb & 132 lb
7. Rail - siding							
a. CWR or jointed							
b. Weight							
8. Cross ties - main track							
a. Type	Timber	Timber	Timber	Timber	Timber	Timber	Timber
b. Size (H X W X L)	7" x 9" x 8.5'	7" x 9" x 8.5'	7" x 9" x 8.5'	7" x 9" x 8.5'	7" x 9" x 8.5'	7" x 9" x 8.5'	7" x 9" x 8.5'
c. Spacing (inches)	19.5"	19.5"	19.5"	19.5"	19.5"	19.5"	19.5"
9. Cross ties - siding							
a. Type							Timber
b. Size (H X W X L)							6" x 8" 'x 8.5'
c. Spacing (inches)							21"
10. Tie plates							
a. Size - main track	8" x 14"	8" x 14"	8" x 14"	8" x 14"	8" x 14"	8" x 14"	8" x 14" (1) 8" x 10" (2)
b. Size - siding							8" x 10"
c. No. of spikes/plate - main	3	3	3	3	4	3	3
d. No. of spikes/plate - siding							3
11. Rail Anchors							
a. Type	Channeloc, Fair & Unit	Channeloc	Channeloc	Channeloc	Unit	Channeloc	Channeloc
b. Application	Box anchor every other tie	Box anchor every other tie	Box anchor every other tie	Box anchor every other tie	Box anchor every tie	Box anchor every other tie	Box anchor every other tie
12. Ballast Type	Quartzite	Quartzite	Quartzite	Quartzite	Quartzite	Quartzite	Quartzite
13. Turnouts							
a. Size - main track							
b. Size - siding							
14. Grading data							
a. Cut / fill / level	Level	Fill	Fill	Fill	Fill	Fill	Fill
b. Roadbed width (feet)	28'	37' including road	26'	42'	26'	36'	53'
c. Side ditch depth							
d. Side ditch width							
15. Fencing							
a. None/one/both sides	One	One	Both	One	Both	None	None
b. Type	Barbed Wire	Barbed Wire	Barbed Wire	Barbed Wire	Barbed Wire		
16. Bridges							
a. Number							
b. Type							
c. No. of piers							
d. No. of spans							
17. Culverts							
a. Type							
b. Size (diameter)							
18. Signal System	CTC	CTC	CTC	CTC	CTC	CTC	CTC
19. Additional Comments	Timber crossing with flashers and gates	Concrete slab crossing	Concrete slab crossing	Concerete slab crossing with flashers and gates	Concrete slab with flashers.	Timber crossing with crossbucks. Old road bed next to track.	Timber crossing with crossbucks on all three tracks

OTTER TAIL POWER - BIG STONE FIELD TRIP DATA SUMMARY

1. Date	04/08/2002	04/08/2002	04/08/2002	04/08/2002	04/08/2002	04/09/2002
2. Location	MP 708.09	MP 731.49	MP 771.98	MP 796.96	MP 816.53	MP 206.54
3. Segment No.	5	5	5	5	5	6
4. No. of tracks						
a. Main track	1	1	1	1	1	1
b. Siding	2 (1 derail)	1				
c. Centerline spacing (feet)						
(1) Main tracks						
(2) Main track to siding	15' (30' to derail)	14' 2"				
5. Tangent or curve	Tangent	Curve	Tangent	Tangent	Curve	Tangent
6. Rail - main track						
a. CWR or jointed	CWR	CWR	CWR	CWR	CWR	CWR
b. Weight	136 lb	136 lb	132 lb	115 lb	132 lb	136 lb
7. Rail - siding						
a. CWR or jointed	Jointed	CWR				
b. Weight	100 lb	132 lb				
8. Cross ties - main track						
a. Type	Timber	Timber	Timber	Timber	Timber	Timber
b. Size (H X W X L)	7" x 9" x 8.5'	7" x 9" x 8.5'	7" x 9" x 8.5'	7" x 9" x 8.5'	7" x 9" x 8.5'	7" x 9" x 8.5'
c. Spacing (inches)	19.5"	19.5"	19.5"	19.5"	19.5"	19.5"
9. Cross ties - siding						
a. Type	Timber	Timber				
b. Size (H X W X L)	7" x 9" x 8'	7" x 9" x 8.5'				
c. Spacing (inches)	24"	19.5"				
10. Tie plates						
a. Size - main track	7.75" x 14"	7.75" x 14"	7.75" x 14"	7.75" x 13"	7.75" x 14"	8" x 14"
b. Size - siding	7" x 9"	7.75" x 14"				
c. No. of spikes/plate - main	3	4	2	3 & 4	4	4
d. No. of spikes/plate - siding	2	2				
11. Rail Anchors						
a. Type	Channeloc	Channeloc	Channeloc	Channeloc & Unit	Channeloc	Unit
b. Application	Box anchor every tie (corssing & turnout)	Box anchor every other tie	Box anchor every tie (between corssing & curve	Box anchor every tie	Box anchor every other tie	Box anchor every other tie
12. Ballast Type	Quartzite	Quartzite	Quartzite	Quartzite	Quartzite	Quartzite
13. Turnouts						
a. Size - main track						
b. Size - siding						
14. Grading data						
a. Cut / fill / level	Fill	Fill	Level	Fill	Fill	Level/Fill
b. Roadbed width (feet)	39'	38' (2 tracks)	18'	24'	24'	24'
c. Side ditch depth						
d. Side ditch width						
15. Fencing						
a. None/one/both sides	Both	Both	One (big ditch)	Both	Both	None
b. Type	Barbed wire	Barbed wire	Barbed wire	Barbed wire	Barbed wire	
16. Bridges						
a. Number						
b. Type						
c. No. of piers						
d. No. of spans						
17. Culverts						
a. Type						
b. Size (diameter)						
18. Signal System	CTC			CTC		CTC
19. Additional Comments		Pre-fabricated concrete crossing	Pre-fabricated concrete crossing		Timber crossing	Timber plank crossing with flashers

OTTER TAIL POWER - BIG STONE FIELD TRIP DATA SUMMARY

1. Date	04/09/2002	04/09/2002	04/09/2002	04/11/2002	04/11/2002	04/11/2002	04/11/2002
2. Location	MP 177.89	MP 144.0	MP 101.05	MP 89.08	MP 55.04	MP 20.16	MP 32.99
3. Segment No.	6	6	6	7	7	7	8
4. No. of tracks							
a. Main track	1	1	1	1	1	2	1
b. Siding				1			
c. Centerline spacing (feet)							
(1) Main tracks						13' 8"	
(2) Main track to siding				20' 2"			
5. Tangent or curve	Tangent	Tangent	Tangent		Tangent	Tangent	Tangent
6. Rail - main track							
a. CWR or jointed	CWR	CWR	CWR	CWR	CWR	CWR	CWR
b. Weight	132 lb	136 lb	136 lb	132 lb	136 lb	136 &132 lb	136 lb
7. Rail - siding							
a. CWR or jointed				Jointed			
b. Weight				132 lb			
8. Cross ties - main track							
a. Type	Timber	Timber	Timber	Timber	Timber	Timber	Timber
b. Size (H X W X L)	7" x 9" x 8.5'	7" x 9" x 8.5'	7" x 9" x 8.5'	7" x 9" x 8.5'	7" x 9" x 8.5'	7" x 9" x 8.5'	7" x 9" x 8.5'
c. Spacing (inches)	19.5"	19.5"	19.5"	19.5"	19.5"	19.5"	19.5"
9. Cross ties - siding							
a. Type				Timber			
b. Size (H X W X L)				6" x 8" x 8.5'			
c. Spacing (inches)				21"			
10. Tie plates							
a. Size - main track	8" x 14"	8" x 14"	8" x 14"	8" x 14"	8" x 14"	8" x 14"	8" x 14"
b. Size - siding				8" x 10"			
c. No. of spikes/plate - main	4	4	3	3 to 4	4	4 (south) 3 (north)	4
d. No. of spikes/plate - siding				3		--	
11. Rail Anchors							
a. Type	Fair	Unit	Channeloc	Fair	Unit	Unit (S) Channeloc (N)	Unit
b. Application	Box anchor every other tie	Box anchor every other tie	Box anchor every other tie	Box every tie on main. Box every fourth tie on siding	Box anchor every other tie	Box anchor every other tie	Box anchor every other tie
12. Ballast Type	Quartzite	Quartzite	Quartzite	Quartzite	Quartzite	Quartzite	Quartzite
13. Turnouts							
a. Size - main track							
b. Size - siding							
14. Grading data							
a. Cut / fill / level	Level	Level	Level	Fill	Fill	Level	Fill
b. Roadbed width (feet)	22'	36'	26'	50'	28'	46'	24'
c. Side ditch depth							1'
d. Side ditch width							2'
15. Fencing							
a. None/one/both sides	None	One	One	None	None	None	None
b. Type		Barbed wire	Barbed wire				
16. Bridges							
a. Number							
b. Type							
c. No. of piers							
d. No. of spans							
17. Culverts							
a. Type							Concrete box
b. Size (diameter)							
18. Signal System	CTC	CTC	CTC	CTC	CTC	CTC	
19. Additional Comments	Timber plank crossing with flashers, dragging equipment detector	Timber plank crossing with cross bucks	Concrete slab crossing with cross bucks	36" angle bars with 6 holes on jointed rail. #11 hand thrown turnout	Concrete slab with flashers. 4' embankment on right of way	Universal # 20 crossover at interlocking. Roads on bothsides of right of way	Concrete slab crossing with crossbucks. V ditch on side of track

OTTER TAIL POWER - BIG STONE FIELD TRIP DATA SUMMARY

1.	Date	04/11/2002	04/11/2002	04/11/2002	04/12/2002
2.	Location	MP 209.21	MP171.75	MP 141.1	MP 18.8
3.	Segment No.	8	8	8	9
4.	No. of tracks				
	a. Main track	1	1	1	1
	b. Siding				
	c. Centerline spacing (feet)				
	(1) Main tracks				
	(2) Main track to siding				
5.	Tangent or curve	Tangent	Tangent	Tangent	Tangent
6.	Rail - main track				
	a. CWR or jointed	CWR	Jointed	CWR	CWR
	b. Weight	115 lb	115 lb	115 lb	115 lb
7.	Rail - siding				
	a. CWR or jointed				
	b. Weight				
8.	Cross ties - main track				
	a. Type	Timber	Timber	Timber	Timber
	b. Size (H X W X L)	7" x 9" x 8.5'	7" x 9" x 8.5'	7" x 9" x 8.5'	7" x 9" x 8.5'
	c. Spacing (inches)	19.5"	19.5"	19.5"	19.5"
9.	Cross ties - siding				
	a. Type				
	b. Size (H X W X L)				
	c. Spacing (inches)				
10.	Tie plates				
	a. Size - main track	8" x 12"	8" x 12"	8" x 14"	8.75" x 13'
	b. Size - siding				
	c. No. of spikes/plate - main	3	3	3	2
	d. No. of spikes/plate - siding				
11.	Rail Anchors				
	a. Type	Unit	Fair	Unit	Unit
	b. Application	Box anchor every other tie	12 anchors per 39' stick of rail	Box anchor every other tie	Box anchor every thrid tie
12.	Ballast Type	Quartzite	Quartzite	Quartzite	Dolomite
13.	Turnouts				
	a. Size - main track				
	b. Size - siding				
14.	Grading data				
	a. Cut / fill / level	Fill	Fill	Fill	Fill
	b. Roadbed width (feet)	40' with road	26'	22'	23'
	c. Side ditch depth			1'	2'
	d. Side ditch width			2'	5'
15.	Fencing				
	a. None/one/both sides	None	None	One	One
	b. Type			Barbed Wire	Barbed Wire
16.	Bridges				
	a. Number				
	b. Type				
	c. No. of piers				
	d. No. of spans				
17.	Culverts				
	a. Type				
	b. Size (diameter)				
18.	Signal System				
19.	Additional Comments	Road along one-side of right of way	36" anchor bars with 6 bolt holes. 4' emankment on right of way	DED North of crossing	Timber plank crossing with crossbucks

REDACTED

OTTER TAIL FIELD TRIP
OBSERVATIONS OF TRAIN OPERATIONS

Date	Mile Post	Direction	Description
4/8	584.4	WB	Empty AEPX coal train near Donkey Creek, 130 cars, head units 9608, 8879, rear DP unit 9986
4/8	690.78	EB	Two helper units traveling lite, 9230, 9259
4/8	Sheridan yard		WEPX empty cars, train split at crossing
4/8	Decker spur	SB	AEPX train 109 loaded cars, unit nos. 9577, 8549, 9794
4/8	Decker spur	NB	CEFX train, approximately 109 cars (view blocked by AEPX train) unit nos. 9617, 9485, 9524
4/8	Decker spur	SB	DEEX train, could not obtain car count of unit numbers, view blocked by AEPX and CEFX trains
4/8	769.9	EB	BN train 90 empty coal cars, units 9235, 9202, 9056
4/8	769.9	EB	COLX train, empty cars, 8915, 9855, 9538
4/8	772.9	EB	Manifest train, units 9081, ATSF 142
4/8	796.9	WB	Manifest train, units ATSF 6753, BN 7046, 7060
4/9	189.5		37 DEEX empties on siding
4/9	181.0		27 DEEX empties on siding
4/9	144.0	WB	Manifest train, units 5340, 971
4/9	Forsyth yard		DEEX loaded train, units 9408, 9598, 9642
4/10	70.0	EB	Work train carrying welded rail, units 7308, 7130
4/10	72.0	EB	BN loaded coal train, units 9229, 9258, 9769
4/10	48.0	WB	Manifest train, two locos
4/10	29.64	WB	BN empty coal train 115 cars, units 9049, 9030, 9051
4/10	215.0	WB	DEEX empty train, units 9247 and electromotive unit
4/10	182.0	WB	Electromotive unit traveling lite
4/11	152.0	WB	BN empty coal train, 115 cars, units 9057, 9092
4/11	143.7	WB	DAPX empty train, 115 cars, units 9810, 9884
4/11	92.4	EB	BN loaded coal train, 117 cars, units 9661, 9951, 9867

Date	Mile Post	Direction	Description
4/11	89.1	WB	20 covered hoppers, units 2345, 2923
4/11	55.0	EB	Loaded BN coal train, 117 cars, units 9661, 9951
4/11	200.0		DETX train, 113 cars, units 9843, 9863
4/12			No train sitings

III - F-1

Comparable Land Sales



04.25.03

L. E. Peabody & Associates, Inc.
Philip H. Burris
1501 Duke Street, Suite 200
Alexandria, Virginia 22314-3449

Land sales from:

Montana, North Dakota, South Dakota, Minnesota & Wyoming

4519 Harvest Lane Billings, Montana 59106 * 406.655.7860 * Fax 406.655.7862
mabrook@mabrookappraisers.com toll free 1.888.816.1165

COUNTY: Campbell

SALE #	TYPE	SALE $	DATE	ACRES	$ / ACRE
CA-GR-01	Grazing	60,477	Aug-00	73.35	825
CA-GR-02	Grazing	173,250	Apr-99	1,200	144
CA-GR-03	Grazing	150,000	Oct-00	751	200
CA-GR-04	Grazing	195,040	Oct-99	857	228
CA-GR-05	Grazing	493,000	Jun-99	39,942	12
CA-GR-06	Grazing	100,800	Jan-99	681.79	148
CA-GR-07	Grazing	200,000	Nov-98	639.2	313
CA-GR-08	Grazing	105,000	Mar-99	751	140
CA-GR-09	Grazing	1,895,304	Feb-99	21,773	87

SALE # CA-GR-01

County:	Campbell
Address/Location:	8 Mile Subdivision – Gillette, WY 82716
Property Type:	Grazing
Legal:	Parcel D – 8 Mile Subdivision
Date of Sale:	08/09/2000
Acres:	73.35
Sale Price:	$60,477.00
Comments:	

SALE # CA-GR-02

County:	Campbell
Address/Location:	Highway 387, 1 mile east of Clarkelen Road
Property Type:	Grazing
Legal:	Campbell County, Wyoming, T43N, R73W, 6th PM Section 11: E2 south and east of Highway 387; Section 13: NENE, W2NE, W2; Section 14: E2; Section 23: N2NE, SENE; Section 24: NW
Date of Sale:	04/19/1999
Acres:	1,200
Sale Price:	$173,250.00
Comments:	Rolling grass hills.

SALE # CA-GR-03

County:	Campbell
Address/Location:	6 miles N and 5 miles E of Recluse, Wyoming on Bay Horse Road 1.5 miles north of Elk Creek Road, Campbell County, Wyoming
Property Type:	Grazing
Legal:	Campbell County, Wyoming, T 56N, R 73W, 6th PM Section 13: Lots 1 and 2, Tract 63A-H, part of Tract 65 (450 acres); Section 14: Part of N2 (301 acres)
Date of Sale:	10/15/2000
Acres:	751
Sale Price:	$150,000.00
Comments:	Rolling grass land. Fencing, well and electricity to the property. 3.5 miles of new 4-wire fence built in 1999.

SALE # CA-GR-04

County:	Campbell		
Address/Location:	65 miles north of Gillette, Wyoming 14 miles east of Highway 59 on Trail Creek Road near intersection with Rocky Point Road		
Property Type:	Grazing		
Legal:	Campbell County, Wyoming, T57N, R68W, 6th PM Tract 78A, 78B, T57N, R69W, Section 12:E2 Lot 2; 13: E2 Lots 1 & 3; Tract 78C, 78D, 78E, 87A, 87B, 87C, 87D (Tract 87A-D = NWNW, S2S2NW, N2N2SW 160.35 acres); T57N, R68W, Portions in Campbell County of Tract 60 (Section 7: NESW) & 62 (Section 18: center of N2, center of N2S2, Section 7: center of S2S2); T57N, R68 & 69W, Tract 61		
Date of Sale:	10/26/1999		
Acres:	857		
Sale Price:	$195.040.00		
Comments:	Dry Cropland Dry Pasture	238 acres 619 acres	$496.60/acre $124.15/acre

SALE # CA-GR-05

County:	Campbell
Address/Location:	11 miles north of Recluse, Wyoming on Bitter Creek Road
Property Type:	Grazing
Legal:	Campbell County, Wyoming, T57N, R74W, 6th PM Sections 21: S2S2; 22: S2SW, SWSE, Lots 1, 4 & 5; 23: N2NW, NEN2SE; Lots 1 & 3; 27: W2W2, NENW, Lots 1-5; 28: all; 29: NE, S2NW, S2; 30: S2NE, SENW, E2SW, SE; 31: N2NE; 32: N2NW, NE; 33: N2; 34: S2N2, NWNW, Lots 3-6; Tracts 48, 49, 50.
Date of Sale:	06/10/1999
Acres:	3,942
Sale Price:	$575,000.00 w/improvements $493,000 w/out improvements
Comments:	Steep timbered Hills. 2 wells and Bittercreek. Mobile home late 1980's in good condition, old dwelling, large machine shed, block calving barn, block horse barn with tack room, very good corrals. RCN.

Dry Cropland	220 acres	$295.32/acre
Dry Pasture	3,722 acres	$115.00/acre

SALE # CA-GR-06

County:	Campbell
Address/Location:	13 miles southwest of Wright, Wyoming at the intersection of Highway 387 and Clarkelen Road
Property Type:	Grazing
Legal:	Campbell County, Wyoming, T43N, R73W, 6th PM Section 31: all; T42N, R73W Section 6; Lot 4
Date of Sale:	01/21/1999
Acres:	681.79 deeded acres plus a private lease
Sale Price:	$100,800.00
Comments:	Rolling hills.

SALE # CA-GR-07

County:	Campbell
Address/Location:	16 miles SE on Highway 450 from the junction with Highway 59
Property Type:	Grazing
Legal:	Campbell County, Wyoming, T43N, R70W, 6th PM Section 36
Date of Sale:	11/05/1998
Acres:	639.2
Sale Price:	$200,000.00
Comments:	Steep hill and small area of divide. School section sold to single bidder based on a state appraisal. Property adjoins a new coal mine and has 80 acres designated as commercial land that is likely to be mined

Dry Pasture	559.20 acres	$121.61/acre
Commercial	80 acres	$1,650./acre

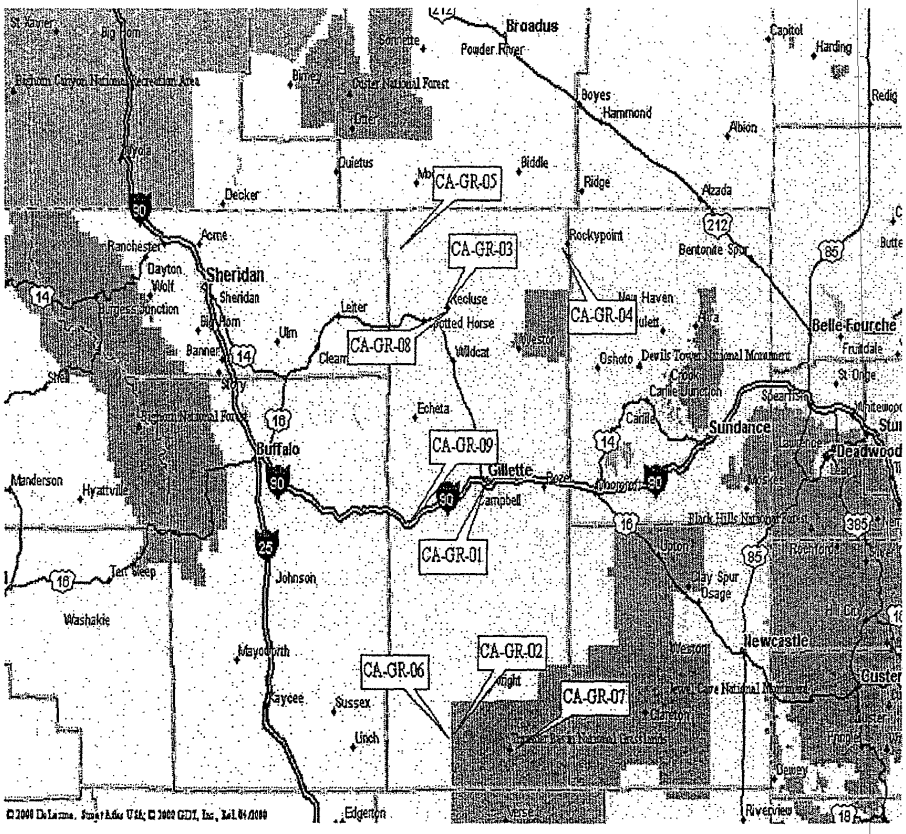
SALE # CA-GR-08

County:	Campbell
Address/Location:	Bay Horse Road 1.5 miles north of Elk Creek Road, Campbell County, Wyoming
Property Type:	Grazing
Legal:	Campbell County, Wyoming, T 56N, R 73W, 6th PM Section 13: Lots 1 and 2, Tract 63A-H, part of Tract 65 (450 acres); Section 14: part of N2 (301 acres)
Date of Sale:	1999
Acres:	751
Sale Price:	$105,000.00
Comments:	Rolling grass land. 1 well approximately 160 ft., 4 reservoirs, 1 pond (spring fed from an adjoining property) which feeds Elk Creek, a small live creek.

SALE # CA-GR-09

County:	Campbell
Address/Location:	Approx. 20 miles west of Gillette, Wyoming
Property Type:	Grazing
Legal:	Campbell County, Wyoming, T49N, R75W, 6th PM Sections 1, 2, 11-15, 22-28, 33-36; T49N, R74W, 6th PM Sections 6, 7, 16-21, 29-32; T48N, R75W, 6th PM Sections 1-4, 10-12, T48N, R74W, 6th PM Sections 6, 7
Date of Sale:	February 1999
Acres:	21,773
Sale Price:	$2,090,304.00 w/improvements
Land Value:	$1,895,340.00 w/out improvements
Comments:	Rolling grass land to rough areas. 11 electric wells, 2 artesian wells, intermittent flow on Deadhorse Creek and Wild Horse Creek. Old home with additions in average condition, manufactured home in average condition, barns, hay sheds, horse training barn, and arena built in 1989.

Dry Pasture	21,773 Acres	$87.05/acre


Broadus
Powder River
Capitol
Harding
Boyes
Hammond
Albion
Redig
Custer National Forest
Duietus
Biddle
Ridge
Alzada
Decker
CA-GR-05
CA-GR-03
CA-GR-04
Rockypoint
Bentonite Spur
Acme
Ranchester
Dayton
Wolf
Sheridan
Jct Sheridan
Big Horn
Leiter
Keeluse
Kitted Horse
Wildcat
Ulm
Banner
Clear
CA-GR-08
Oshoto
Devils Tower National Monument
Belle Fourche
Fruitdale
St Onge
Carlile Junction
Carlile
Sundance
Deadwood
Echeta
Buffalo
CA-GR-09
Gillette
Pozer
Campbell
Manderson
Hyattville
CA-GR-01
Ten Sleep
Johnson
Washakie
Mayoworth
CA-GR-06
CA-GR-02
Wright
CA-GR-07
Kaycee
Sussex
Linch
Edgerton
Newcastle
Custer
Riverview
Dewey

COUNTY: Campbell

SALE #	TYPE	SALE $	DATE	ACRES	$ / ACRE
CA-RR-01	Res Ranchette	7,500	Oct-00	6.76	1,109
CA-RR-02	Res Ranchette	23,000	Jan-00	2.6	8,846
CA-RR-03	Res Ranchette	15,000	May-00	40	375
CA-RR-04	Res Ranchette	34,476	May-00	40.46	852
CA-RR-05	Res Ranchette	22,500	Jul-00	4	5,625
CA-RR-06	Res Ranchette	29,900	Apr-00	5.45	5,486
CA-RR-07	Res Ranchette	13,500	Mar-00	5	2,700
CA-RR-08	Res Ranchette	15,000	Oct-00	3.61	4,155
CA-RR-09	Res Ranchette	32,500	Feb-00	10.22	3,180
CA-RR-10	Res Ranchette	12,500	Jul-00	21	595
CA-RR-11	Res Ranchette	38,600	Jun-00	23.64	1,633
CA-RR-12	Res Ranchette	27,336	Aug-00	32.16	850

SALE # CA-RR-01

County:	Campbell
Address/Location:	123 Prairie Road – Moorcroft, WY 82721
Property Type:	Residential Ranchette
Legal:	Lot 16, Block 2, Key City Subdivision
Date of Sale:	10/06/2000
Acres:	6.76
Sale Price:	$7,500.00
Comments:	Vacant land for mobile home.

SALE # CA-RR-02

County:	Campbell
Address/Location:	22 Smokey Ave – Rozet, WY 82727
Property Type:	Residential Ranchette
Legal:	Lot 2A of Ward Creek
Date of Sale:	01/28/2000
Acres:	2.6
Sale Price:	$23,000.00
Comments:	Natural Gas (MGTC), Electric & Phone on the lot.

SALE # CA-RR-03

County:	Campbell
Address/Location:	0 Ruby Subdivision – Gillette, WY 82716
Property Type:	Residential Ranchette
Legal:	Township 49N, Range 74W, 6th PM, Sect4, NW ¼, SW ¼
Date of Sale:	05/03/2000
Acres:	40.0
Sale Price:	$15,000.00
Comments:	Mobile homes welcome (no more that 8), livestock allowed, easement for roads, phone, electricity, and water lines are to extend 30 ft in from the outside boundary line of parcel. Buyer must build road, drill well, put in septic system & bring in utilities 11 miles west.

SALE # CA-RR-04

County:	Campbell
Address/Location:	0 Vacant Land -- Gillette, WY 82716
Property Type:	Residential Ranchette
Legal:	SE1/4 NE1/4 Sec 6 T49N R73W
Date of Sale:	05/10/2000
Acres:	40.46
Sale Price:	$34,476.00
Comments:	

SALE # CA-RR-05

County:	Campbell
Address/Location:	4151 Lazy D Ave – Gillette, WY 82716
Property Type:	Residential Ranchette
Legal:	4 Acre lot in Rafter D along Donkey Creek
Date of Sale:	07/27/2000
Acres:	4.0
Sale Price:	$22,500.00
Comments:	Dues are $40 per month, tap fee is one time at $500. Modular homes on foundations are OK.

SALE # CA-RR-06

County:	Campbell
Address/Location:	3 Flint Court - Rozet, WY 82727
Property Type:	Residential Ranchette
Legal:	Cedar Hills Lot 27
Date of Sale:	04/14/2000
Acres:	5.45
Sale Price:	$29,900.00
Comments:	Mobile homes accepted, mobile home hookups exist. Has not been used since 1992. $35/month HOA dues covers water & roads.

SALE # CA-RR-07

County:	Campbell
Address/Location:	42 Hereford Drive – Gillette, WY 82716
Property Type:	Residential Ranchette
Legal:	Lot 6, Block 1 Country Living Acres
Date of Sale:	03/20/2000
Acres:	5.0
Sale Price:	$13,500.00
Comments:	No Zoning. Two horses will be allowed on this property, covenants do apply. Only 10 miles from town on Highway 50.

SALE # CA-RR-08

County:	Campbell
Address/Location:	34 Dinwoody – Gillette, WY 82716
Property Type:	Residential Ranchette
Legal:	Lot 1, Block 2, High Country Estates
Date of Sale:	10/20/2000
Acres:	3.61
Sale Price:	$15,000.00
Comments:	

SALE # CA-RR-09

County:	Campbell
Address/Location:	0 Lot 12 Rafter D Subdivision – Gillette, WY 82716
Property Type:	Residential Ranchette
Legal:	Lot 12 Rafter D Subdivision
Date of Sale:	02/14/2000
Acres:	10.22
Sale Price:	$32,500.00
Comments:	

SALE # CA-RR-10

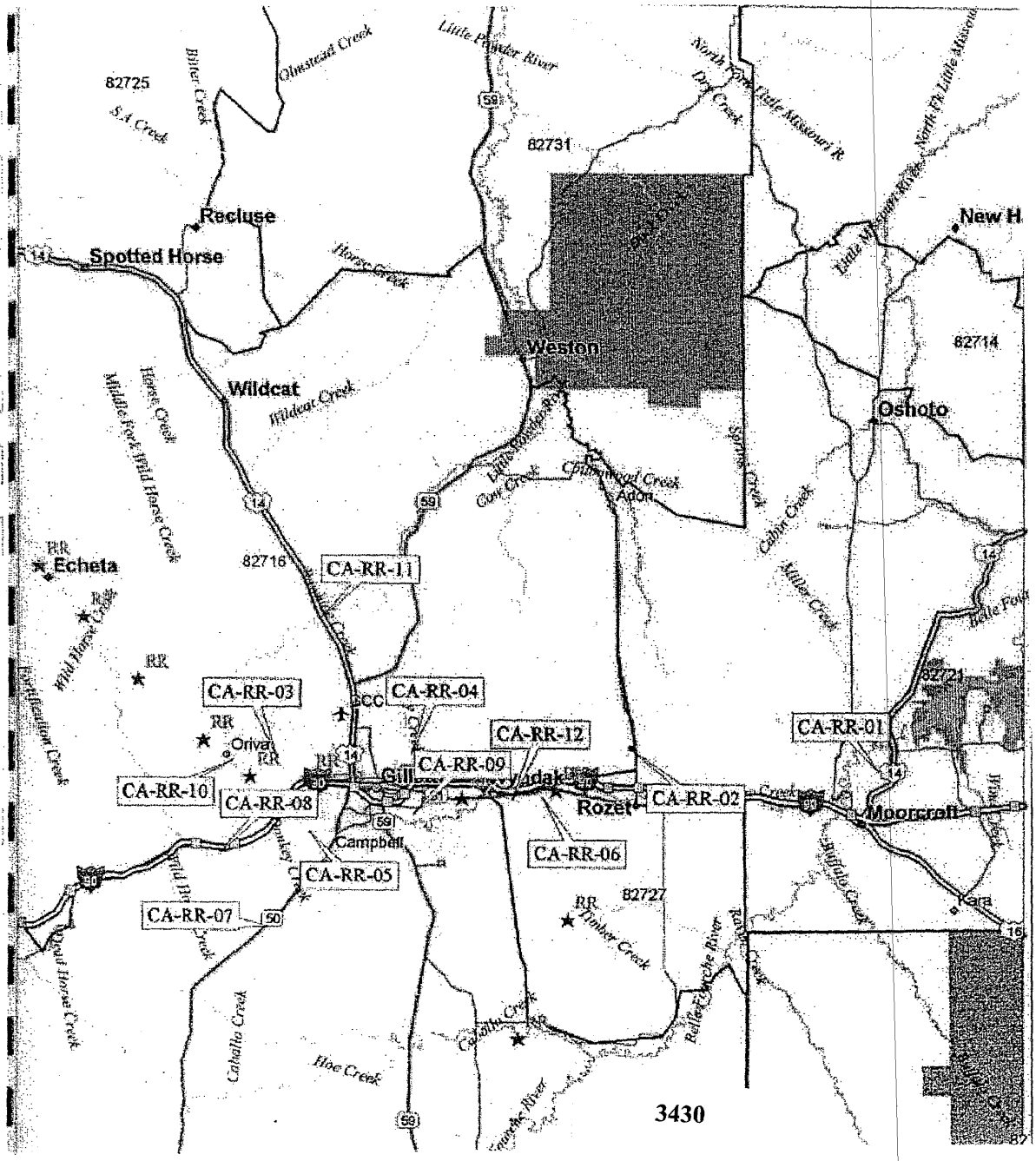
County:	Campbell
Address/Location:	63 Bomber Mountain Road – Gillette, WY 82716
Property Type:	Residential Ranchette
Legal:	Lot 6, Block 14 of the Oriva Hills
Date of Sale:	07/28/2000
Acres:	21.0
Sale Price:	$12,500.00
Comments:	

SALE # CA-RR-11

County:	Campbell
Address/Location:	87 Pinview Ranchetts – Gillette, WY 82716
Property Type:	Residential Ranchette
Legal:	E1/2, Tract 45, Sec 26, T52N, R73W 6th P.M.
Date of Sale:	06/02/2000
Acres:	23.64
Sale Price:	$38,600.00
Comments:	Electric and water to the lot line. Completely fenced.

SALE # CA-RR-12

County:	Campbell
Address/Location:	Parcel E, 8 Mile Subdivision – Gillette, WY 82716
Property Type:	Residential Ranchette
Legal:	Parcel E, 8 Mile Subdivision
Date of Sale:	08/31/2000
Acres:	32.16
Sale Price:	$27,336.00
Comments:	


82725
Bitter Creek
Olmstead Creek
Little Powder River
82731
Dry Creek
North Fork Little Missouri R
Recluse
Spotted Horse
Horse Creek
Weston
Wildcat
Wildcat Creek
Middle Fork Wild Horse Creek
Little Missouri River
North Fk Little Missouri
New H
82714
Oshoto
Spring Creek
Cabin Creek
Miller Creek
Echeta
82716
CA-RR-11
CA-RR-03
CA-RR-04
CA-RR-12
CA-RR-09
CA-RR-01
CA-RR-10
CA-RR-08
CA-RR-02
Gillette
Rozet
Moorcroft
Campbell
CA-RR-06
CA-RR-05
CA-RR-07
82727
Timber Creek
Cabalto Creek
Hoe Creek
Keyhole River
Buffalo Creek
Kara
82721
Wild Horse Creek
Fortification Creek
Oriva
Antelope Creek
Belle Fou
Whitetail Creek
Redfield Creek
Caballo Creek
Keyhole Reservoir
Little Missouri River
Cement Creek
Aiton
Cow Creek
14
59
50
16

COUNTY: Campbell

SALE #	TYPE	SALE $	DATE	SQ FT	$ / SQ FT
CA-CM-01	Commercial	75,600	Apr-99	52,875	1.43
CA-CM-02	Commercial	60,000	Sep/Oct-99	88,454	0.68
CA-ID-01	Industrial	151,850	Sep-99	253,084	0.60
CA-ID-02	Industrial	48,793	Nov-99	48,793	1.00
CA-ID-03	Industrial	39,897	Dec-99	39,897	1.00
CA-ID-04	Industrial	28,000	Apr-98	99,511	0.28
CA-ID-05	Industrial	14,680	Oct-99	41,944	0.35

SALE # CA-CM-01

County:	Campbell
Address/Location:	1300 E Highway 14-16 (405 Church Ave) – Gillette, WY
Property Type:	Commercial
Legal:	Part of Lot 3 of the Rolling Hills Addition to the City of Gillette, Campbell County, Wyoming
Date of Sale:	April 1999
Land Size:	1.21 acres - 52,875 sq. ft.
Sale Price:	$150,000.00
Zoning:	C-1, General Business District
Land Value:	$75,600.00 - $1.43/sq. ft.
Comments:	Steel frame, painted steel sided office and shop building with 12 ft. sidewalls. 6 ft. area along front is badly dented. Office is 2,220 sq. ft. (62%) and shop is 1,380 sq. ft. (38%).

SALE # CA-CM-02

County:	Campbell
Address/Location:	408 Frontage Street – Gillette, WY
Property Type:	Commercial
Legal:	Lots 1, 13, & 14, Block 3, Addition to the City of Gillette, Campbell County, Wyoming
Date of Sale:	10/25/1999 & 09/08/1999
Land Size:	88,454 sq. ft.
Sale Price:	$160,000.00
Zoning:	C-1, General Commercial District
Land Value:	$60,000 - $0.68/sq. ft.
Comments:	Each lot was purchased separately. Shop 40' x 80' pole frame steel siding.

SALE # CA-ID-01

County:	Campbell
Address/Location:	300 Garner Lake Road – Gillette, WY
Property Type:	Industrial
Legal:	Campbell County, Wyoming; T50N,R72W; Section 24; Part of the SE1/4 of the SE1/4 Section 25; Part of the NE1/4 of the NE1/4
Date of Sale:	09/29/1999
Land Size:	5.81 acres – 253,084 sq. ft.
Sale Price:	$375,000.00
Zoning:	I-1, Light Industrial
Land Value:	$151,850 - $0.60/sq. ft.
Comments:	Large shop with office area.

SALE # CA-ID-02

County:	Campbell
Address/Location:	1501 Echeta Road – Gillette, WY
Property Type:	Industrial
Legal:	Lot 1 of the Resubdivision of the west one-half of Block 3 Westside Addition to the City of Gillette, Campbell County, Wyoming
Date of Sale:	11/15/1999
Land Size:	1.12 acres – 48,792.5 sq. ft.
Sale Price:	$530,000.00
Zoning:	I-1, Light Industrial District
Land Value:	$48,792.50 - $1.00/sq. ft.
Comments:	Sale included buildings, equipment and the going concern.

SALE # CA-ID-03

County:	Campbell
Address/Location:	1807 Echeta Road – Gillette, WY
Property Type:	Industrial
Legal:	Tract 5B, Block 1 Westside Addition to the City of Gillette, Campbell County, Wyoming
Date of Sale:	12/20/1999
Land Size:	.92 acres – 39,897 sq. ft.
Sale Price:	$160,000.00
Zoning:	I-2, Industrial
Land Value:	$39,897.00 - $1.00/sq. ft.
Comments:	Steel frame shop with office.

SALE # CA-ID-04

County:	Campbell
Address/Location:	3503 Echeta Road – Gillette, WY
Property Type:	Industrial
Legal:	A tract of land in NWSW Section 20, T50N, R72W, 6th PM, Campbell County, Wyoming
Date of Sale:	04/22/1998
Land Size:	2.30 acres – 99,511 sq. ft.
Sale Price:	$78,000.00
Zoning:	I-2, Heavy Industrial
Land Value:	$28,000.00 - $0.28/sq. ft.
Comments:	Wood frame building.

SALE # CA-ID-05

County:	Campbell
Address/Location:	505 Industrial Avenue – Gillette, WY
Property Type:	Industrial
Legal:	Lot 8, Block 3, Interstate Industrial Subdivision, Campbell County, Wyoming
Date of Sale:	10/18/1999
Land Size:	0.96 acres – 41,944 sq. ft.
Sale Price:	$166,000.00
Zoning:	I-1, Heavy Industrial
Land Value:	$14,680.00 - $0.35/sq. ft.
Comments:	Class "S" frame building with 14' sidewalls, siding, gable style metal roof, concrete floors, some office, FWA heat in office and gas unit heater in shop, paving, electrical in conduit, 2-12 x 14 overhead doors. Building is divided into 2 areas with 4 restrooms. Improvements are average quality in average to below average condition.

COUNTY CONVERSE

SALE #	PROPERTY TYPE	SALE PRICE	SALE DATE	ACRES	$/ACRE
CO-GR-01	Grazing	$575,000	Sept, 00	480	1,198
CO-GR-02	Grazing	73,000	Mar, 01	64.16	1,138
CO-GR-03	Grazing	85,000	Mar, 01	160	531
CO-GR-04	Grazing	208,757	Feb, 02	214	976
CO-GF-05	Grazing	400,000	Aug, 01	240	1,667
CO-GR-06	Grazing	600,000	Mar, 01	400	1,500
CO-GR-07	Grazing	300,000	Dec, 00	440	682
CO-GR-08	Grazing	97,200	May, 99	161	604
CO-GR-09	Grazing	25,000	Oct, 99	320	78
CO-GF-10	Grazing	30,000	May, 00	40	750
CO-GR-11	Grazing	110,000	Nov, 00	160	688
CO-GR-12	Grazing	600,000	Aug, 00	364	1,648

County: Converse

Address/Location: 3150 Easterbrook Rd, Douglas

Property Type: Grazing

Legal: T28N, R72W, 6th PM Sec 25, NE1/4, NE1/4; Sec 30, W1/2, SE1/4, S1/2, SW1/4; Sec 31 NW1/4, NW1/4.

Date of Sale: 09-00

Acres: 480.0

Sale Price: $575,000.00

Comments:

SALE # CO-GR-02

County: Converse

Address/Location: Hwy 94, Douglas

Property Type: Grazing

Legal:

Date of Sale: 03-01

Acres: 64.16

Sale Price: $73,000.00

Comments: 15 gpm artesian flowing well, fenced. Hwy 94 & Esterbrook Road. Seller will furnish an approach from Esterbrook Rd.

SALE # CO-GR-03

County: Converse

Address/Location: 86 Burns Rd. Douglas

Property Type: Grazing

Legal: S1/2 NE1/4; N1/2 SE1/4, Section 13 T32N, R71W

Date of Sale: 03-01

Acres: 160

Sale Price: $85,000.00

Comments: Well on property.

SALE # CO-GR-04

County: Converse

Address/Location: Irvine Rd., Douglas

Property Type: Grazing

Legal:

Date of Sale: 02-02

Acres: 214

Sale Price: $208,757.00

Comments:

SALE # CO-GR-05

County: Converse

Address/Location: Esterbrook Rd., Esterbrook

Property Type: Grazing

Legal: T28N, R71W 6th PM

Date of Sale: 08-01

Acres: 240

Sale Price: $400,000.00

Comments: Approximately one mile of Horseshoe Creek on land & joins National Forest Land.

SALE # CO-GR-06

County: Converse

Address/Location: 102 Irvine Bridge Rd., Douglas

Property Type: Grazing

Legal: Not Available.

Date of Sale: 03-01

Acres: 400

Sale Price: $ 600,000.00

Comments:160 acres cultivated and irrigated; 240 acres pasture. Includes well, septic system. Fenced & cross-fenced.

SALE # CO-GR-07

County: Converse

Address/Location: 152 Normandy Rd., Douglas

Property Type: Grazing

Legal: T2, R67, Sec3, SE1/4, NE1/4, SE1/4, SW1/4, Sec 10, N1/2, NW1/4, SW1/4, NW1/4

Date of Sale: 12-00

Acres: 440.0

Sale Price: $300,000.00

Comments:

County: Converse

Address/Location: 200 State Hwy 96, Douglas

Property Type: Grazing

Legal: T32N, R72W, Sec4 NW1/4

Date of Sale: 05-99

Acres: 161

Sale Price: $97,200.00

Comments:

County: Converse

Address/Location: 679 Flat Top Road, Douglas

Property Type: Grazing

Legal: 320 acres in Sec 17, T33, R68

Date of Sale: 10-99

Acres: 320

Sale Price: $25,000.00

Comments:

County: Converse

Address/Location: 28 Burns Road, Douglas

Property Type: Grazing

Legal: SE1/4, SE1/4 Sec12, T32N, R71W

Date of Sale: 05-00

Acres: 40.0

Sale Price: $30,000.00

Comments:

County: Converse

Address/Location: Esterbrook Rd., Douglas

Property Type: Grazing

Legal: NW1/4 Sec 5, T27N, R71W

Date of Sale: 11-00

Acres: 160.0

Sale Price: $110,000.00

Comments:

County: Converse

Address/Location: 583 Inez Rd., Douglas

Property Type: Grazing

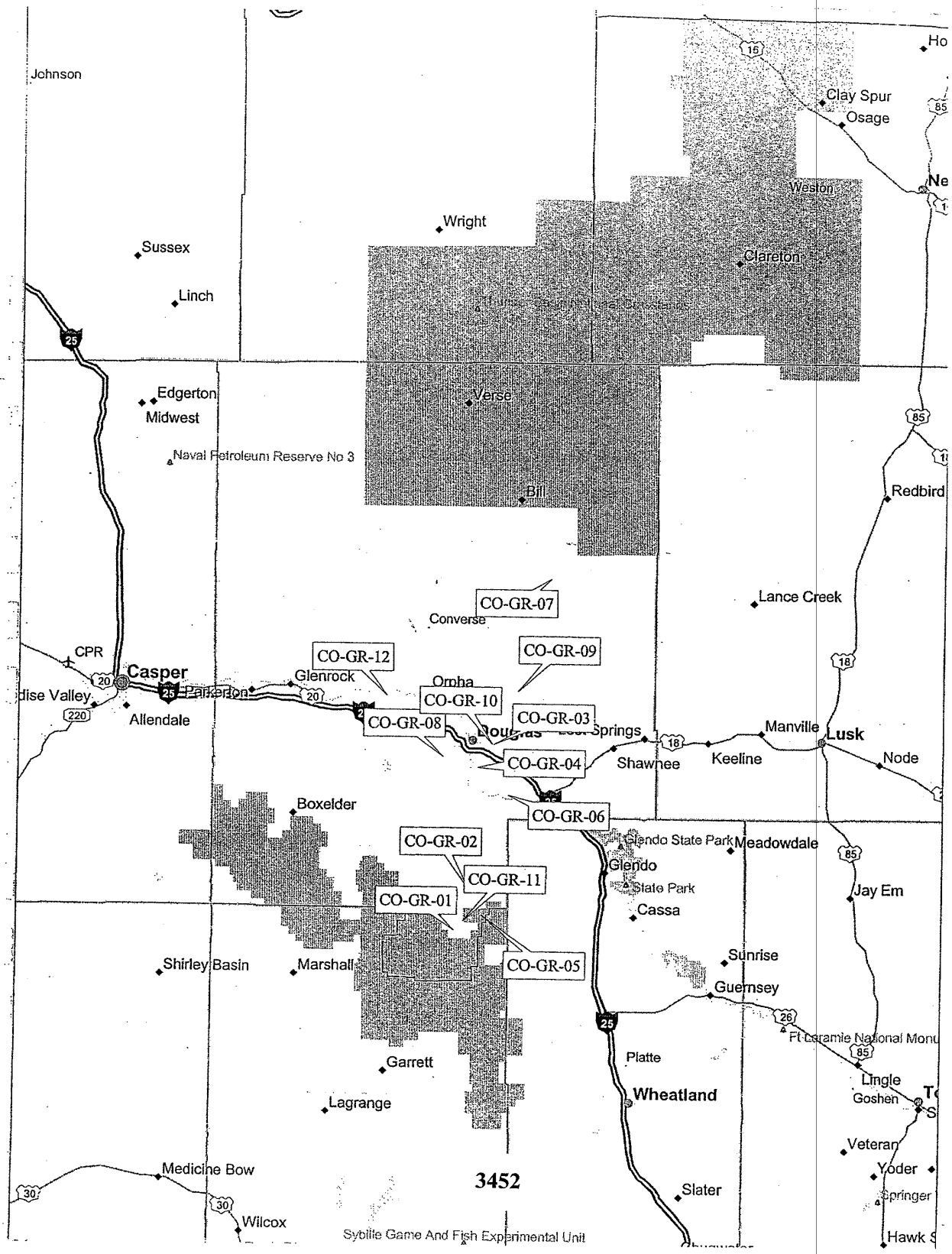
Legal: Sec.12, T33, R73

Date of Sale: 08-00

Acres: 364.0

Sale Price: $600,000.00

Comments:


Johnson
Sussex
Linch
Wright
Clay Spur
Osage
Weston
Clareton
Edgerton
Midwest
Verse
Naval Petroleum Reserve No 3
Bill
Redbird
Lance Creek
Converse
CO-GR-07
CO-GR-12
CO-GR-09
CO-GR-10
CO-GR-08
CO-GR-03
CO-GR-04
CO-GR-06
CO-GR-02
CO-GR-11
CO-GR-01
CO-GR-05
CPR
Casper
Glenrock
Orpha
Parkerton
Allendale
Springs
Shawnee
Keeline
Manville
Lusk
Node
Boxelder
Glendo State Park
Meadowdale
Glendo
State Park
Cassa
Jay Em
Shirley Basin
Marshall
Sunrise
Guernsey
Ft Laramie National Monu
Platte
Garrett
Lagrange
Wheatland
Lingle
Goshen
Veteran
Yoder
Springer
Medicine Bow
Wilcox
Slater
3452
Sybille Game And Fish Experimental Unit
Hawk

COUNTY CONVERSE

SALE #	PROPERTY TYPE	SALE PRICE	SALE DATE	ACRES	$/ACRE
CO-RES-01	Residential Land	$3,500	Oct, 01	18,690 sq ft	8,140
CO-RES-02	Residential Land	10,000	Nov, 01	7,600 sq ft	57,316
CO-RES-03	Residential Land	100,000	May, 01	48,000 sq ft	90,750
CO-RES-04	Residential Land	7,500	Apr, 00	7,600 sq ft	42,987
CO-RES-05	Residential Land	25,000	Oct, 00	.54 acre	46,296

SALE # CO-RES-01

County: Converse

Address/Location: 205 Richards Street, Douglas

Property Type: Residential

Legal: The E 124.6'x 150', Lot 1 Tract 1, BH&H Tract, a subdivision of Converse Co.

Date of Sale: 10-00

Acres: 18,690 sq ft

Sale Price: $ 3,500.00

Comments:

County: Converse

Address/Location: Angus Loop, Douglas

Property Type: Residential

Legal: Dilts, Block 6 Lot 4

Date of Sale: 11-01

Acres: 7600 sq ft

Sale Price: $10,000.00

Comments:

County: Converse

Address/Location: 1801 Madora Street, Douglas

Property Type: Residential

Legal: Lots 1,2,3,4,5, Block 6 Clearfield Sub.

Date of Sale: 05-01

Acres: 48,000 sq ft

Sale Price: $100,000.00

Comments: Each lot is 80 x 120; seller would only sell all lots together.

SALE # CO-RES-04

County: Converse

Address/Location: Angus Loop, Douglas

Property Type: Residential

Legal: Dilts, Lot 18, Block 7

Date of Sale: 04/00

Acres: 7,600 SQ FT

Sale Price: $7,500

Comments:

SALE # CO-RES-05

County: Converse

Address/Location: 88 Fairway Dr., Douglas

Property Type: Residential

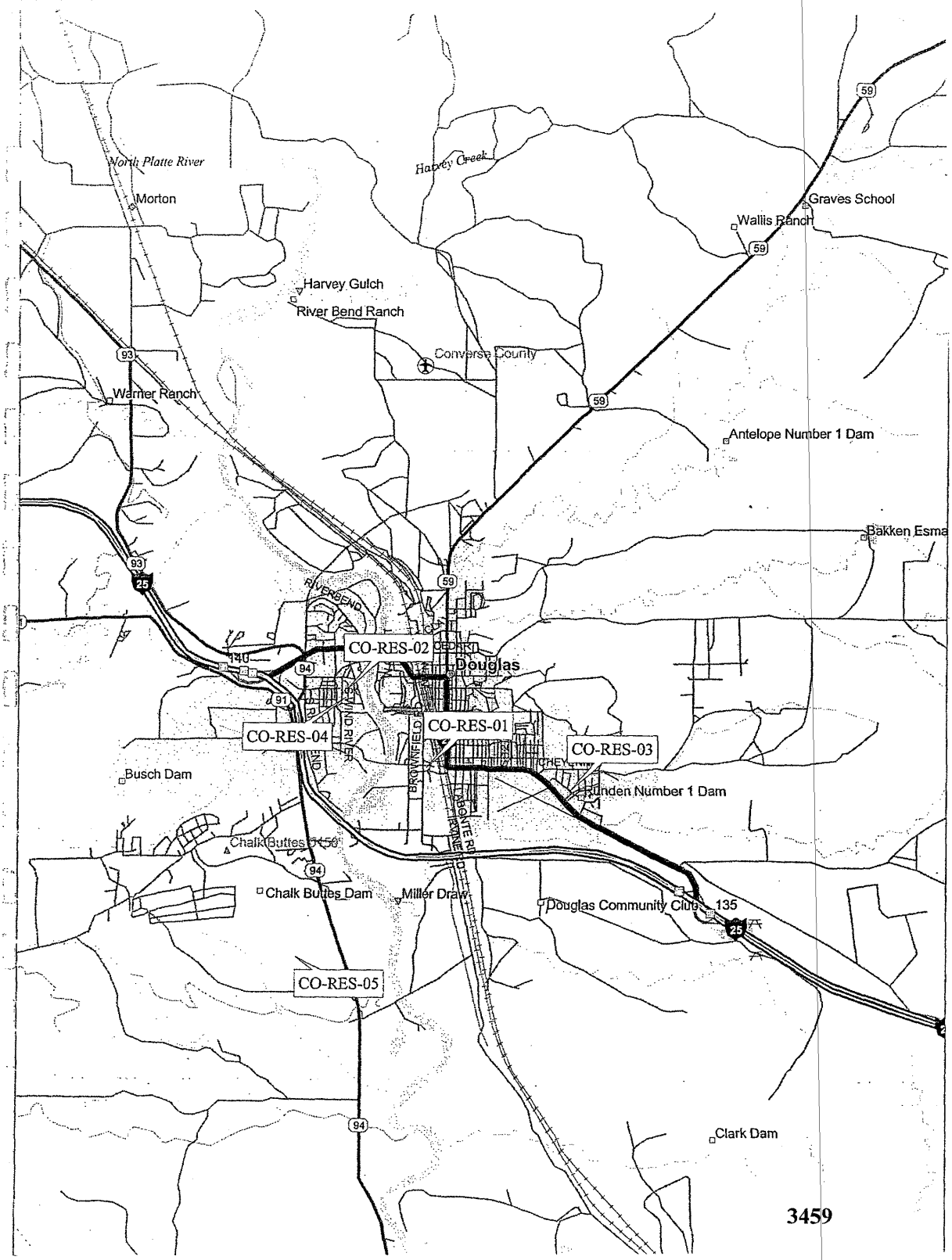
Legal: Lot 16 of Fairway Estates

Date of Sale: 10/00

Acres: .54 acre

Sale Price: $25,000

Comments:


North Platte River
Morton
Harvey Creek
Graves School
Wallis Ranch
59
Harvey Gulch
River Bend Ranch
Converse County
93
Warner Ranch
Antelope Number 1 Dam
Bakken Esma
25
RIVERBEND
CO-RES-02
Douglas
140
94
91
CO-RES-04
CO-RES-01
CO-RES-03
BROWNFIELD
Busch Dam
Linden Number 1 Dam
Chalk Buttes 6450
Chalk Buttes Dam
Miller Draw
Douglas Community Club
135
CO-RES-05
Clark Dam

COUNTY CONVERSE

SALE #	PROPERTY TYPE	SALE PRICE	SALE DATE	ACRES	$/ACRE
CO-RR-01	Residential Ranchette	$24,000	Sept, 00	40.0	600
CO-RR-02	Residential Ranchette	28,000	Nov, 00	40.0	700
CO-RR-03	Residential Ranchette	53,000	May, 00	40.0	1,325
CO-RR-04	Residential Ranchette	53,500	Apr, 00	35.81	1,494
CO-RR-05	Residential Ranchette	50,000	Oct, 00	40.0	46,296
CO-RR-06	Residential Ranchette	40,000	Feb, 01	45.0	889
CO-RR-07	Residential Ranchette	48,050	Oct, 00	36.32	1,502
CO-RR-08	Residential Ranchette	10,000	Dec, 00	5.0	2,000
CO-RR-09	Residential Ranchette	35,000	Dec, 01	33.37	1,049
CO-RR-10	Residential Ranchette	35,000	Sept, 01	40.0	875
CO-RR-11	Residential Ranchette	32,000	Aug, 01	38.64	828
CO-RR-12	Residential Ranchette	28,400	Oct, 01	35.8	794

SALE # CO-RR-01

County: Converse

Address/Location: 12 Long Trail, Douglas

Property Type: Residential Ranchette

Legal: Not Available

Date of Sale: 09-00

Acres: 40.0

Sale Price: $24,000.00

Comments:

County: Converse

Address/Location: 109 LongTrail

Property Type: Residential Ranchette

Legal: Not Available

Date of Sale: 11-00

Acres: 40.0

Sale Price: $28,000.00

Comments:

County: Converse

Address/Location: 33 Burns Rd., Douglas

Property Type: Residential Ranchette

Legal: T32 R71 Sec 12

Date of Sale: 05-00

Acres: 40.0

Sale Price: $53,000.00

Comments:

County: Converse

Address/Location: Willow Ranch Rd., Douglas

Property Type: Residential Ranchette

Legal: Not Available

Date of Sale: 08-00

Acres: 35.81

Sale Price: $53,500.00

Comments: Off Esterbrook Road, approximately 14 miles from Douglas

SALE # CO-RR-05

County: Converse

Address/Location: 41 Bedtick Rd., Douglas

Property Type: Residential Ranchette

Legal: SW1/4 SW1/2 Sec 29, T32, R71

Date of Sale: 10-00

Acres: 40.0

Sale Price: $50,000.00

Comments:

County: Converse

Address/Location: Orin Junction, Douglas

Property Type: Residential Ranchette

Legal: Part of N1/2 of SE1/4 Sec13, T31, R70

Date of Sale: 02-01

Acres: 45.0

Sale Price: $40,000.00

Comments:

County: Converse

Address/Location: Hwy 94

Property Type: Residential Ranchette

Legal: Not Available

Date of Sale: 10-00

Acres: 36.32

Sale Price: $48,050.00

Comments:

County: Converse

Address/Location: Irvine Rd., Douglas

Property Type: Residential Ranchette

Legal: A tract of land lying in Tract 42C, Sec 2, T31, R71W

Date of Sale: 12-00

Acres: 5.0

Sale Price: $ 10,000.00

Comments: Flat site

SALE# CO-RR-09

County: Converse

Address/Location: 36 Windhill Rd

Property Type: Residential Ranchette

Legal: Lot 4 (SW1/4 SW1/4) Section 7, T32N R70 W

Date of Sale: 12-01

Acres: 33.37

Sale Price: $35,000.00

Comments:

County: Converse

Address/Location: 4180 Cold Springs Rd., Douglas

Property Type: Residential Ranchette

Legal: NENW1/4Sec 26, T29N, R76W

Date of Sale: 09-01

Acres: 40.0

Sale Price: $35,000.00

Comments: 40 acre parcel with stream running through it, lots of trees

County: Converse

Address/Location: 24 Pioneer Trail, Douglas

Property Type: Residential Ranchette

Legal: Tract H1 Single Acres

Date of Sale: 08-01

Acres: 38.64

Sale Price: $32,000.00

Comments: Unimproved lot behind a Sand & Gravel Co. off Hwy 59.

County: Converse

Address/Location: 207 Eastbrook Rd., Douglas

Property Type: Residential Ranchette

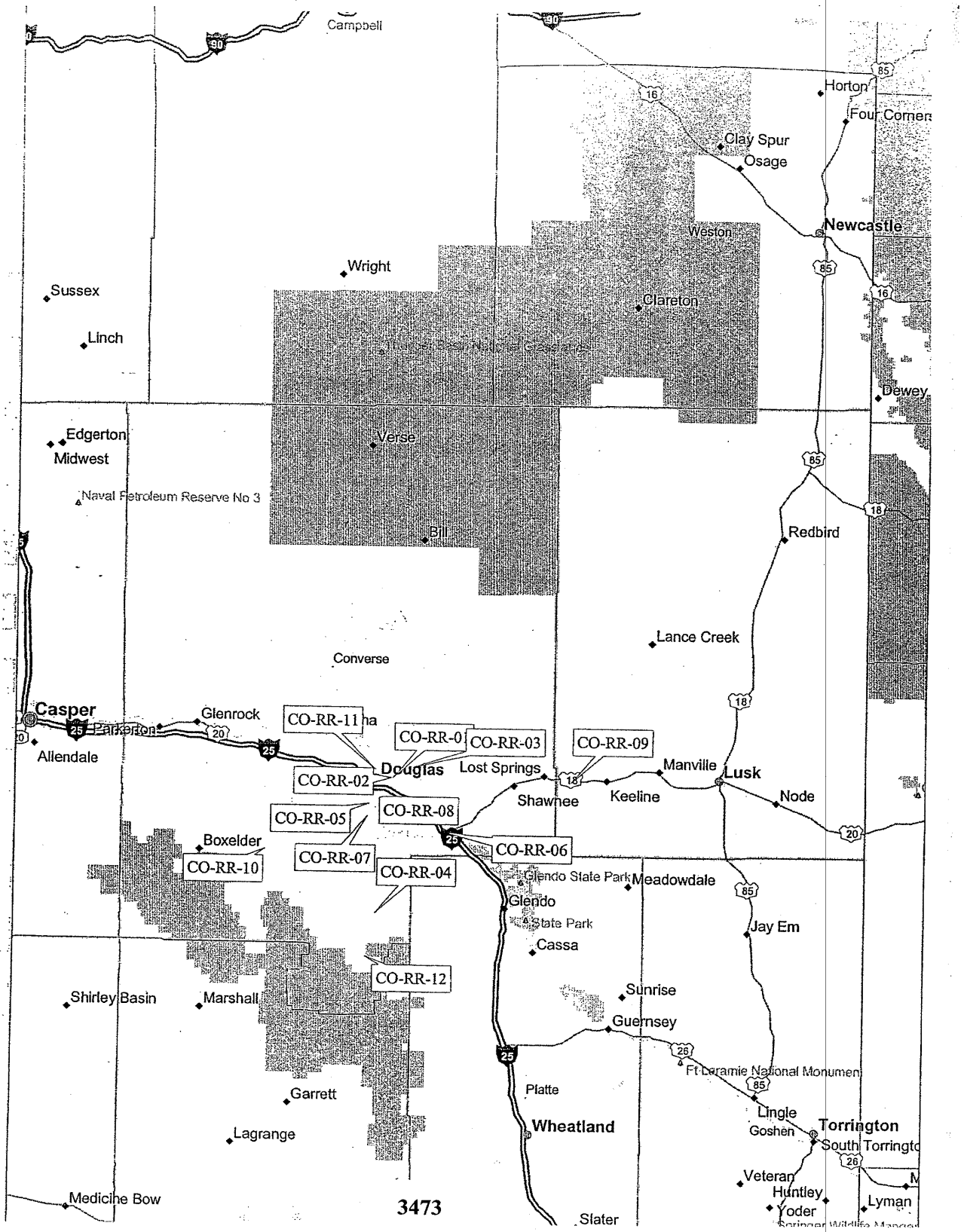
Legal: W1/2 SW1/4 & the SW1/4 of Section 20, T32N, R71W, 8th PM Converse County

Date of Sale: 10-01

Acres: 35.79

Sale Price: $28,400.00

Comments:


Campbell
Horton
Four Corner
Clay Spur
Osage
Newcastle
Weston
Wright
Sussex
Clareton
Linch
Dewey
Edgerton
Midwest
Verse
Naval Petroleum Reserve No 3
Bill
Redbird
Lance Creek
Converse
Casper
Glenrock
Parkerton
Allendale
CO-RR-11
CO-RR-0
CO-RR-03
CO-RR-09
Douglas
Lost Springs
Manville
Lusk
CO-RR-02
Shawnee
Keeline
Node
CO-RR-05
CO-RR-08
Boxelder
CO-RR-10
CO-RR-07
CO-RR-06
CO-RR-04
Glendo State Park
Meadowdale
Glendo
State Park
Jay Em
Cassa
CO-RR-12
Sunrise
Shirley Basin
Marshall
Guernsey
Ft Laramie National Monumen
Garrett
Platte
Lingle
Torrington
Goshen
Wheatland
Lagrange
South Torringtc
Veteran
Huntley
Lyman
Yoder
Medicine Bow
Slater

COUNTY CONVERSE

SALE #	PROPERTY TYPE	SALE PRICE	SALE DATE	ACRES	$/ACRE
CO-ID-01	Commercial/Industrial	$8,500	Oct, 00	2.36	3,602

County: Converse

Address/Location: Mill Creek Hollow., Douglas

Property Type: Commercial/Industrial

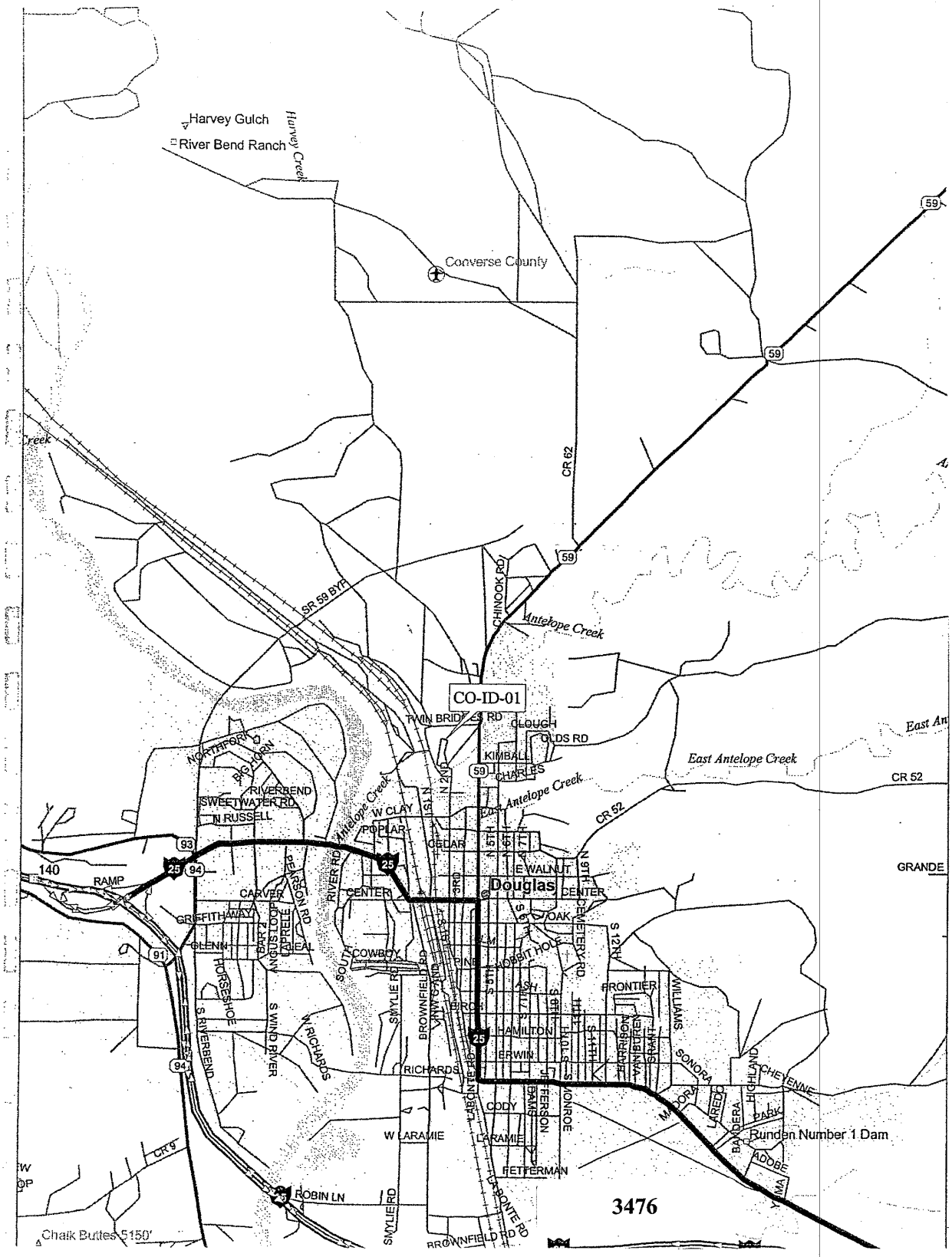
Legal: Lot 6 of Mill Creek Hollow Subdivision

Date of Sale: 10-00

Acres: 2.361 acres

Sale Price: $8,500.00

Comments:


Harvey Gulch
River Bend Ranch
Harvey Creek
Converse County
59
CR 62
SR 59 BYP
Antelope Creek
CHINOOK RD
CO-ID-01
TWIN BRIDGES RD
CLOUGH
OLDS RD
KIMBALL
CHARLES
East Antelope Creek
CR 52
NORTHPORT
PIG HORN
RIVERBEND
SWEETWATER RD
N RUSSELL
W CLAY
POPLAR
CEDAR
E WALNUT
CENTER
Douglas
OAK
CEMETERY RD
93
25
94
140
RAMP
CARVER
PEARSON RD
RIVER RD
GRIFFITH WAY
GLENN
91
HORSESHOE
S RIVERBEND
S WIND RIVER
W RICHARDS
SOUTH
COWBOY
SMYLIE RD
BROWNFIELD
RICHARDS
HAMILTON
ERWIN
CODY
W LARAMIE
LARAMIE
FETTERMAN
ROBIN LN
BRONTE RD
BROWNFIELD RD
FRONTIER
WILLIAMS
SONORA
LAREDO
CHEYENNE
HIGHLAND
MADORA
PARK
BANDERA
ADOBE
YUMA
Runden Number 1 Dam
Chalk Buttes 5150'
GRANDE
3476

COUNTY: Sheridan

SALE #	TYPE	SALE $	DATE	ACRES	$ / ACRE
SH-RR-01	Res Ranchette	16,625	Apr-00	0.25	66,500
SH-RR-02	Res Ranchette	14,880	Feb-99	49.1	303
SH-RR-03	Res Ranchette	22,500	Jan-00	0.43	52,326
SH-RR-04	Res Ranchette	29,381	Oct-00	0.42	69,955
SH-RR-05	Res Ranchette	65,000	Jul-99	6.94	9,366
SH-RR-06	Res Ranchette	20,000	May-00	1.38	14,493
SH-RR-07	Res Ranchette	79,596	Jan-99	35	2,274
SH-RR-08	Res Ranchette	61,000	Aug-00	9.84	6,199
SH-RR-09	Res Ranchette	30,000	Nov-00	4.12	7,282
SH-RR-10	Res Ranchette	30,000	Nov-00	4.39	6,834
SH-RR-11	Res Ranchette	26,000	Jun-00	2.05	12,683
SH-RR-12	Res Ranchette	25,800	Nov-99	2.62	9,847

SALE # SH-RR-01

County:	Sheridan
Address/Location:	West 4th Avenue – Ranchester, WY 82839
Property Type:	Residential Ranchette
Legal:	Lot 9, Block 4, Tongue River Estates Replat
Date of Sale:	04/06/2000
Acres:	0.25
Sale Price:	$16,625.00
Comments:	Great location on pond & park, great view. Property faces west towards mountains, public water & sewer in street.

SALE # SH-RR-02

County:	Sheridan
Address/Location:	Acme – Sheridan, WY 82801
Property Type:	Residential Ranchette
Legal:	TN57N, RNG84W, Section 20, PT E1/2 SW 1/4
Date of Sale:	02/02/1999
Acres:	49.1
Sale Price:	$14,880.00
Comments:	Undeveloped acreage – no water, sewer or electricity on the property.

SALE # SH-RR-03

County:	Sheridan
Address/Location:	East Lane – Dayton, WY 82836
Property Type:	Residential Ranchette
Legal:	Lot 2 East Lane Enterprises
Date of Sale:	01/11/2000
Acres:	0.43
Sale Price:	$22,500.00
Comments:	Utilities to the Lot line.

SALE # SH-RR-04

County:	Sheridan
Address/Location:	Bridge Street – Dayton, WY 82836
Property Type:	Residential Ranchette
Legal:	unknown
Date of Sale:	10/11/2000
Acres:	0.42
Sale Price:	$29,381.00
Comments:	Vacant lot with trees. Lift station could be necessary for septic. 14' easement on South side of property.

SALE # SH-RR-05

County:	Sheridan
Address/Location:	East Lane – Dayton, WY 82836
Property Type:	Residential Ranchette
Legal:	T57N, R86W, Section 32, SE NE Part containing 6.94 acres more or less
Date of Sale:	07/14/1999
Acres:	6.94
Sale Price:	$65,000.00
Comments:	Vacant land.

SALE # SH-RR-06

County:	Sheridan
Address/Location:	Mattox Street – Parkman, WY 82839
Property Type:	Residential Ranchette
Legal:	Lots 3 & 4, Block 1 & Lots 7,8,9,10,11,12 Block 2, Mattox Addition
Date of Sale:	05/19/2000
Acres:	1.38
Sale Price:	$20,000.00
Comments:	Vacant land. Mobile homes allowed. Great view.

SALE # SH-RR-07

County:	Sheridan
Address/Location:	Highway 87, Montana State Line – Parkman, WY 82839
Property Type:	Residential Ranchette
Legal:	Section 15, Part of Lot 1 and Part of Lot 5, 35 acres to be determined by survey, T58N, R87W, 6th PM, Sheridan County, Wyoming
Date of Sale:	01/21/1999
Acres:	35.00
Sale Price:	$79,596.00
Comments:	Vacant land. Mountains and fenced.

SALE # SH-RR-08

County:	Sheridan
Address/Location:	Faye Court – Sheridan, WY 82801
Property Type:	Residential Ranchette
Legal:	unknown – FETH Subdivision
Date of Sale:	08/31/2000
Acres:	9.84
Sale Price:	$61,000.00
Comments:	Vacant land.

SALE # SH-RR-09

County:	Sheridan
Address/Location:	Wild Hollow Road – Sheridan, WY 82801
Property Type:	Residential Ranchette
Legal:	unknown – WHOL Subdivision
Date of Sale:	11/10/2000
Acres:	4.12
Sale Price:	$30,000.00
Comments:	Vacant land.

SALE # SH-RR-10

County:	Sheridan
Address/Location:	Wild Hollow Road – Sheridan, WY 82801
Property Type:	Residential Ranchette
Legal:	unknown – WHOL Subdivision
Date of Sale:	11/10/2000
Acres:	4.39
Sale Price:	$30,000.00
Comments:	Vacant land.

SALE # SH-RR-11

County:	Sheridan
Address/Location:	Valley Vista Lane – Sheridan, WY 82801
Property Type:	Residential Ranchette
Legal:	unknown – WDWL Subdivision
Date of Sale:	06/07/2000
Acres:	2.05
Sale Price:	$26,000.00
Comments:	Vacant land. Surrounded by rolling hills.

SALE # SH-RR-12

County:	Sheridan
Address/Location:	Meadow Lane – Sheridan, WY 82801
Property Type:	Residential Ranchette
Legal:	unknown – CCNR Subdivision
Date of Sale:	11/29/1999
Acres:	2.62
Sale Price:	$25,800.00
Comments:	Vacant land.

COUNTY: Sheridan

SALE #	TYPE	LAND $	DATE	SQ FT	$ / SQ FT
SH-CM-01	Commercial	19,000	Oct-99	6,674	2.85
SH-CM-02	Commercial	9,721	Sep-99	20,560	0.47
SH-CM-03	Commercial	15,000	Sep-99	20,560	0.73
SH-CM-04	Commercial	276,537	Nov-00	64,571	4.28
SH-CM-05	Commercial	165,000	Apr-99	15,285	10.79
SH-CM-06	Commercial	350,000	Oct-98	154,000	2.27
SH-CM-07	Commercial	175,000	Feb-98	33,000	5.30
SH-CM-08	Commercial	222,156	May-99	111,078	2.00
SH-CM-09	Commercial	100,000	May-99	99,000	1.01
SH-CM-10	Commercial	83,000	Dec-98	23,743	3.50
SH-CM-11	Commercial	74,000	Sep-99	89,298	0.83
SH-CM-12	Commercial	40,000	May-99	20,000	2.00
SH-CM-13	Commercial	95,700	Sep-99	95,700	1.00
SH-CM-14	Commercial	20,000	Sep-99	25,000	0.80

SALE # SH-CM-01

County:	Sheridan
Address/Location:	Main Street – Dayton, WY 82836
Property Type:	Commercial
Legal:	Block 15, Lot 3, Dayton Original Town
Date of Sale:	10/06/1999
Land Size:	6,674 sq. ft.
Sale Price:	$19,000.00
Zoning:	Commercial 1
Land Value:	$19,000.00 - $2.91/sq. ft.
Comments:	Nice lot next to Mercantile. Large trees in front of lot. Storage shed encroaches approximately 3 feet on adjoining lot – no value.

SALE # SH-CM-02

County:	Sheridan
Address/Location:	Sheridan, WY 82801
Property Type:	Commercial
Legal:	Lot 4, Block 2, Glacier Subdivision
Date of Sale:	September 1999
Land Size:	20,560 sq. ft.
Sale Price:	$20,000.00
Zoning:	unknown
Land Value:	$9,721.00 - $0.47/sq. ft.

Comments:

SALE # SH-CM-03

County:	Sheridan
Address/Location:	Sheridan, WY 82801
Property Type:	Commercial
Legal:	Lot 3, Block 2, Glacier Subdivision
Date of Sale:	September 1999
Land Size:	20,560 sq. ft.
Sale Price:	$15,000.00
Zoning:	unknown
Land Value:	$15,000.00 - $0.73/sq. ft.
Comments:	

SALE # SH-CM-04

County:	Sheridan
Address/Location:	Behind Perkins – Sheridan, WY 82801
Property Type:	Commercial
Legal:	Lot 1,2,3 Pilch, Re-Subdivision of Lot 9 Sugar Land South Subdivision
Date of Sale:	November 2000
Land Size:	64,571 sq. ft.
Sale Price:	$276,537.00
Zoning:	unknown
Land Value:	$276,537.00 - $4.28/sq. ft.
Comments:	

SALE # SH-CM-05

County:	Sheridan
Address/Location:	Corner of Brundage & Broadway – Sheridan, WY 82801
Property Type:	Commercial
Legal:	unknown
Date of Sale:	April 1999
Land Size:	15,285 sq. ft.
Sale Price:	$165,000.00
Zoning:	unknown
Land Value:	$165,000.00 - $10.79/sq. ft.

Comments:

SALE # SH-CM-06

County:	Sheridan
Address/Location:	5th & I-90 – Sheridan, WY 82801
Property Type:	Commercial
Legal:	unknown
Date of Sale:	October 1998
Land Size:	154,000 sq. ft.
Sale Price:	$350,000.00
Zoning:	unknown
Land Value:	$350,000.00 - $2.27/sq. ft.
Comments:	

SALE # SH-CM-07

County:	Sheridan
Address/Location:	North Main – Sheridan, WY 82801
Property Type:	Commercial
Legal:	unknown
Date of Sale:	February 1998
Land Size:	33,000 sq. ft.
Sale Price:	$175,000.00
Zoning:	unknown
Land Value:	$175,000.00 - $5.30/sq. ft.
Comments:	

SALE # SH-CM-08

County:	Sheridan
Address/Location:	Brundage Lane, Sheridan, WY 82801
Property Type:	Commercial
Legal:	unknown
Date of Sale:	May 1999
Land Size:	111,078 sq. ft.
Sale Price:	$222,156.00
Zoning:	unknown
Land Value:	$222,156.00 - $2.00/sq. ft.

Comments:

SALE # SH-CM-09

County:	Sheridan
Address/Location:	Lot next to Weismann's on North Main – Sheridan, WY 82801
Property Type:	Commercial
Legal:	unknown
Date of Sale:	May 1999
Land Size:	99,000 sq. ft.
Sale Price:	$100,000.00
Zoning:	unknown
Land Value:	$100,000.00 - $1.01/sq. ft.
Comments:	

SALE # SH-CM-10

County:	Sheridan
Address/Location:	North edge of town – Sheridan, WY 82801
Property Type:	Commercial
Legal:	Tract B, Block 2, Lot 2, West Glacier Subdivision
Date of Sale:	December 1998
Land Size:	23,743 sq. ft.
Sale Price:	$83,000.00
Zoning:	unknown
Land Value:	$83,000.00 - $3.50/sq. ft.
Comments:	

SALE # SH-CM-11

County:	Sheridan
Address/Location:	Terra Avenue – Sheridan, WY 82801
Property Type:	Commercial
Legal:	unknown
Date of Sale:	September 1999
Land Size:	89,298 sq. ft.
Sale Price:	$74,000.00
Zoning:	unknown
Land Value:	$74,000.00 - $0.83/sq. ft.
Comments:	

SALE # SH-CM-12

County:	Sheridan
Address/Location:	Lot 8, Riverside – Sheridan, WY 82801
Property Type:	Commercial
Legal:	Lot 8, Riverside
Date of Sale:	May 1999
Land Size:	20,000 sq. ft.
Sale Price:	$40,000.00
Zoning:	unknown
Land Value:	$40,000.00 - $2.00/sq. ft.
Comments:	

SALE # SH-CM-13

County:	Sheridan
Address/Location:	East of 5th @ Industrial Park – Sheridan, WY 82801
Property Type:	Commercial
Legal:	unknown
Date of Sale:	September 1999
Land Size:	95,700 sq. ft.
Sale Price:	$95,700.00
Zoning:	unknown
Land Value:	$95,700.00 - $1.00/sq. ft.
Comments:	

SALE # SH-CM-14

County:	Sheridan
Address/Location:	Lot on Railroad, 5th Street – Sheridan, WY 82801
Property Type:	Commercial
Legal:	Lot 6, Block 2, Glacier Park Subdivision
Date of Sale:	September 1999
Land Size:	25,000 sq. ft.
Sale Price:	$20,000.00
Zoning:	unknown
Land Value:	$20,000.00 - $0.80/sq. ft.
Comments:	

COUNTY: Sheridan

SALE #	TYPE	SALE $	DATE	ACRES	$ / ACRE
SH-GR-01	Grazing	288,000	Sep-00	1,040	277
SH-GR-02	Grazing	200,000	Jul-00	1,814	110
SH-GR-03	Grazing	276,000	Dec-97	2,105	131
SH-GR-04	Grazing	295,000	Dec-99	334	883
SH-GR-05	Grazing	136,250	Aug-99	35	3,893
SH-GR-06	Grazing	76,000	Nov-00	11	6,614
SH-GR-07	Grazing	1,600,000	Mar-00	3,444	465
SH-GR-08	Grazing	180,000	Oct-00	80	2,250

SALE # SH-GR-01

County:	Sheridan
Address/Location:	State Highway 341 – Arvada, WY 82831
Property Type:	Grazing
Legal:	Part of Sections 3, 4, 9 & 10, T54N, R77W, 6th PM in Sheridan County, Wyoming
Date of Sale:	09/01/2000
Acres:	1,040.00
Sale Price:	$288,000.00
Comments:	Pasture/range land with 1 ½ miles of the Powder River. Cottonwoods on bottom. Good Access – all on pavement. Well watered.

SALE # SH-GR-02

County:	Sheridan
Address/Location:	Fortification Ranch – Arvada, WY 82831
Property Type:	Grazing
Legal:	unknown
Date of Sale:	07/28/2000
Acres:	1,813.70
Sale Price:	$425,000.00 w/improvements $200,000 w/out improvements
Comments:	Unique acreage just out of Arvada, WY. Access to BLM. Improvements include corrals, log home and a remodeled guest house. Shop has concrete floor in ½ and dirt in the other ½. Large metal pole barn. Log house estimated @ $125,000 Guest house estimated @ $ 50,000 Shop & Barn estimated @ $ 50,000

SALE # SH-GR-03

County:	Sheridan
Address/Location:	Cooksley Ranch – near Clearmont, WY
Property Type:	Grazing
Legal:	T53N, R79W 6th PM, Johnson County, Wyoming; Section 19: Lots 13, 14, 15, 16, 17, 18, 19, 20, 22, 23, 24, 25, 26, NE4, N2SE4, SE4SE4; Section 20: Lots 2, 3, W2SW4; Section 29: W2W2; Section 30: lots 13, 14, 15, 16, 17, 18, E2; Resurvey Tracts 57A, 57B, 57C, 57D, 57E, 57F, 57G, 57H, 58A, 58B, 58C, 58D, 58E, 58F T53N, R79W 6th PM, Sheridan County, Wyoming; Section 18: Lots 29, 30, 31
Date of Sale:	12/03/1997
Acres:	2105.00
Sale Price:	$276,000.00
Comments:	Property is all range land with no live streams, no irrigation. Approximately 120 acres of BLM lease.

SALE # SH-GR-04

County:	Sheridan
Address/Location:	US Highway 14 – Sheridan, WY 82801
Property Type:	Grazing
Legal:	Part of Section 19 & 30, T54N, R82W, Part of Sec 14 & 24, T54N, R83W
Date of Sale:	12/17/1999
Acres:	334.00
Sale Price:	$295,000.00
Comments:	Pasture land contiguous to over 6000 acres of state land. Stock water ponds and spring. Good views of Big Horn Mtns. and several good building sites. Only about 10 miles from Sheridan.

SALE # SH-GR-05

County:	Sheridan
Address/Location:	1370 Decker Highway – Sheridan, WY 82801
Property Type:	Grazing
Legal:	T58N, R83W, NW4NW4 Section 29, NW4NW4 Section 30, T58N, R83W 6th PM, Sheridan County, Wyoming
Date of Sale:	08/18/1999
Acres:	35.00
Sale Price:	$136,250.00
Comments:	Great river views, privacy and a easy drive to Sheridan. Flat and rolling river bottom with lots and lots of trees. Tongue River on 3 sides, fully fenced. New well, new road and power to probable home site.

SALE # SH-GR-06

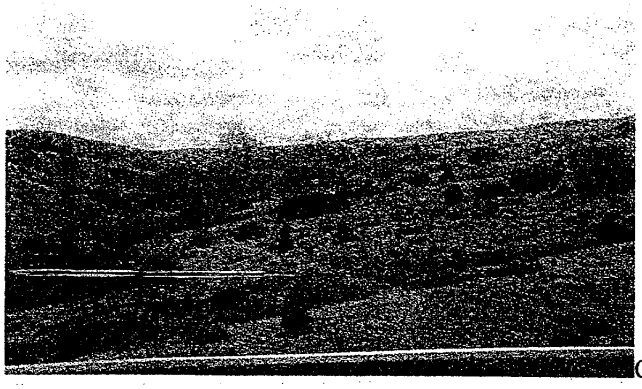
County:	Sheridan
Address/Location:	Decker Road – Sheridan, WY 82801
Property Type:	Grazing
Legal:	Block 12, Suburban Gardens aka Meadow Creek
Date of Sale:	11/03/2000
Acres:	11.49
Sale Price:	$76,000.00
Comments:	Nice, level building site. Property is fenced and has driveway. Within minutes from town. Includes 2.5 miles walking/riding path.

SALE # SH-GR-07

County:	Sheridan
Address/Location:	1692 US Highway 87 – Ranchester, WY 82839
Property Type:	Grazing
Legal:	unknown
Date of Sale:	03/29/2000
Acres:	3,444.00
Sale Price:	$1,600,000.00
Comments:	Ranch close to town. Tongue River bisects the ranch. Also bisected by US 87 and I-90. There is an underpass that connects the N & S units under I-90. Lots of hay ground and secluded homesite.

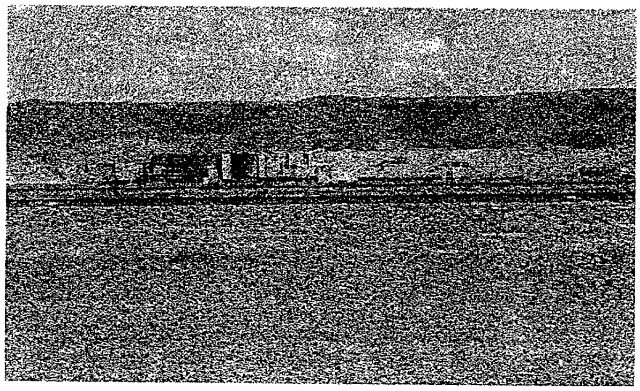
SALE # SH-GR-08

County:	Sheridan
Address/Location:	County Road 65 – Parkman, WY 82836
Property Type:	Grazing
Legal:	T58N, R86W, 6th PM, Section 31, Part SE/NE, Section 32 SW/NW
Date of Sale:	10/25/2000
Acres:	80
Sale Price:	$180,000.00
Comments:	Rolling hills. Two reservoirs. Water Rights on one reservoir. Property fenced.



Custer











COUNTY CUSTER

SALE #	PROPERTY TYPE	SALE $	DATE	ACRE	$ / ACRE
CU-AG-01	Agricultural	25,000	May-99	25	1,000

SALE # CU-AG-01

County:	Custer
Address/Location:	Yellowstone Valley, Miles City, Montana
Property Type:	Agricultural
Legal:	T9N, R48E, MPM in Custer County Montana
Date of Sale:	05/20/99
Acres:	25
Sale Price:	$25,000.00
Comments:	Mobile home zoned. Trailer hookups, includes well and septic

COUNTY CUSTER

SALE #	PROPERTY TYPE	SALE $	DATE	SQ FT	$ / SQ FT
CU-RES-01	Residential	7,500	Sep-00	6,500	1.15
SK-RES-02	Residential	15,500	May-00	18,750	0.83
SK-RES-03	Residential	9,500	Dec-00	167,706	0.06
SK-RES-04	Residential	15,000	Feb-99	153,026	0.10

SALE # CU-RR-01

County:	Custer
Address/Location:	Green Acres Subdivision, Miles City, Montana
Property Type:	Residential Ranchette
Legal:	Lot 7 and 8 in Block 2 of Green Acres, a subdivision located in the SW1/4 of section 24, T8N, R47E, MPM, in Custer County, Montana
Date of Sale:	06/00
Acres:	9.62
Sale Price:	$43,500.00
Comments:	Irrigated valley land

COUNTY CUSTER

SALE #	PROPERTY TYPE	SALE $	DATE	ACRE	$ / ACRE
CU-RR-01	Res Ranchette	43,500	Jun-00	9.62	4,522

SALE # CU-RES-01

County:	Custer
Address/Location:	Miles City, Montana
Property Type:	Residential
Legal:	Lot 6A in Block 55 of Gordon's Addition to the City of Miles City, Custer County, Montana
Date of Sale:	09/14/00
Acres:	6500 sq ft
Sale Price:	$7,500.00
Comments:	Mobile home zoned. Flood zone.

SALE # CU-RES-02

County:	Custer
Address/Location:	Miles City, Montana
Property Type:	Residential
Legal:	Lots 15-20 in Block 5 of Woodland Park Addition to the city of Miles City
Date of Sale:	05/03/00
Acres:	25'x125' (6 lots)
Sale Price:	$15,500.00
Comments:	Mobile home zoned. Flood zone

SALE # CU-RES-03

County:	Custer
Address/Location:	Green Acres Subdivision, Miles City, Montana
Property Type:	Residential
Legal:	Lot 2 in Block 1 of Green Acres, a subdivision located in the SW1/4 of section 24, T8N, R47E, MPM, in Custer County, Montana
Date of Sale:	12/00
Acres:	3.85
Sale Price:	$9,500.00
Comments:	

COUNTY STARK

SALE #	PROPERTY TYPE	SALE $	DATE	ACRES	$/ACRE
SK-AG-01	Agricultural	47,000	May-00	160	294
SK-AG-02	Agricultural	22,000	May-00	40	550
SK-AG-03	Agricultural	34,000	Oct-00	80	425
SK-AG-04	Agricultural	17,000	Nov-00	160	106
SK-AG-05	Agricultural	17,500	Aug-99	9.9	1,768
SK-AG-06	Agricultural	90,000	Jul-00	394.79	228

SALE # CU-CM-01

County:	Custer
Address/Location:	Tractor Avenue, Miles City, Montana
Property Type:	Commercial
Legal:	Lots 4-8 in Block 2 of Horizon Park Subdivision, a subdivision located in the SW1/4SW1/4 of section 2, T7N, R47E, MPM in Custer County
Date of Sale:	02/24/99
Acres:	3.513
Sale Price:	$15,000.00
Comments:	

COUNTY PRAIRIE

SALE #	PROPERTY TYPE	SALE $	DATE	ACRES	$/ACRE
PR-AG-01	Agricultural	152,985	Jun-00	168.95	906
PR-AG-02	Agricultural	45,500	Jun-00	91.17	499
PR-AG-03	Agricultural	17,094	May-00	97.68	175
PR-AG-04	Agricultural	91,770	May-99	108.77	844
PR-AG-05	Agricultural	60,000	May-99	53.33	1,125
PR-AG-06	Agricultural	50,000	May-99	108.6	460

SALE # PR-AG-01

County:	Prairie
Address/Location:	1-½ miles east of Terry, Montana
Property Type:	Agricultural
Legal:	Two tracts of land in Buffalo Rapids Farm, unit #265: tracts 2 and 4 of certificate of survey #35. Tract of land in Buffalo Rapids Farm unit #268, certificate of survey #25
Date of Sale:	06/00
Acres:	168.95
Sale Price:	$152,985.00
Comments:	Irrigated cropland

SALE # PR-AG-02

County:	Prairie
Address/Location:	1.7 miles east of Terry, Montana
Property Type:	Agricultural
Legal:	Two tracts of land in Buffalo Rapids Farm, unit #265: tract 3AP of certificate of survey #36 and tract 5 of certificate of survey #35
Date of Sale:	06/00
Acres:	91.17
Sale Price:	$45,500.00
Comments:	Irrigated cropland

SALE # PR-AG-03

County:	Prairie
Address/Location:	1 mile east of Terry, Montana
Property Type:	Agricultural
Legal:	Tract of land in Buffalo Rapids Farm, unit #265: tract 1 of certificate of survey #35
Date of Sale:	05/00
Acres:	97.68
Sale Price:	$17,094.00
Comments:	Rangeland

SALE # PR-AG-04

County:	Prairie
Address/Location:	.5 miles south of Terry, Montana
Property Type:	Agricultural
Legal:	Part of farm unit #257, south of interstate 94 less exception described in book 26, page 851
Date of Sale:	05/99
Acres:	108.77
Sale Price:	$91,770.00
Comments:	Irrigated cropland

SALE # PR-AG-05

County:	Prairie
Address/Location:	.5 miles southeast of Terry, Montana
Property Type:	Agricultural
Legal:	Buffalo Rapids Farm units 259 and 260
Date of Sale:	05/99
Acres:	53.33
Sale Price:	$60,000.00
Comments:	Irrigated cropland

SALE # PR-AG-06

County:	Prairie
Address/Location:	Adjacent to Terry, Montana
Property Type:	Agricultural
Legal:	Buffalo Rapids Farm unit 256 and farm unit #257, north of interstate 94 less exceptions.
Date of Sale:	05/99
Acres:	108.60
Sale Price:	$50,000.00
Comments:	Irrigated cropland

COUNTY PRAIRIE

SALE #	PROPERTY TYPE	SALE $	DATE	SQ FT	$ / SQ FT
PR-CM-01	Commercial	53,000	Apr-01	42,000	1.26
PR-CM-02	Commercial	15,000	Feb-01	21,000	0.71
PR-CM-03	Commercial	2,600	Sep-00	5,600	0.46
PR-CM-04	Commercial	11,000	Nov-98	4,200	2.62

SALE # PR-CM-01

County:	Prairie
Address/Location:	Terry, Montana
Property Type:	Commercial
Legal:	Lots 11-20, Block 35, Terry original town site
Date of Sale:	04/23/01
Acres:	42,000 square feet
Sale Price:	$53,000.00
Comments:	Commercial property improved for use as a café that is located 5 blocks east of the subject. The property fronts Spring Street which is a main route through Terry and to the downtown area, but this sale is not located in the main business district. The ten lot site is larger that the subject and building construction is not similar as subject is wood frame has 900 square feet and significantly different use that the subject. This sale included the land, building improvements and equipment/fixtures/furniture.

SALE # PR-CM-02

County:	Prairie
Address/Location:	Terry, Montana
Property Type:	Commercial
Legal:	Lots 16-20, block 37, Terry original town site
Date of Sale:	02/12/01
Acres:	21,000 square feet
Sale Price:	$15,000.00
Comments:	Fronts East Spring Street. Original property use had been as a service station, but the business has been closed for a number of years so the building is used for storage.

SALE # PR-CM-03

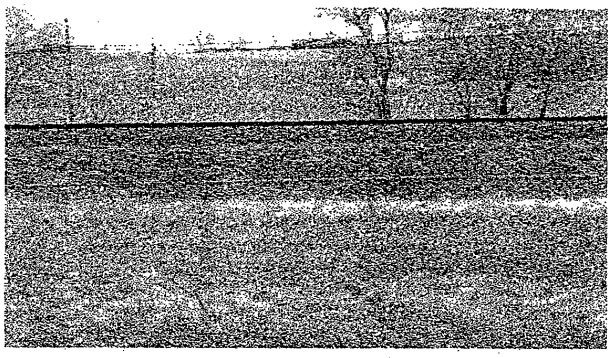
County:	Prairie
Address/Location:	Terry, Montana
Property Type:	Commercial
Legal:	North 10' of lot 14, all of lot 15, block 10, Reilly's addition to Terry
Date of Sale:	09/19/00
Acres:	5600 square feet
Sale Price:	$2,600.00
Comments:	Property fronts South Logan Avenue. The bank, post office, grocery store, hardware store, city office and courthouse are all within a 2 to 3 block radius.

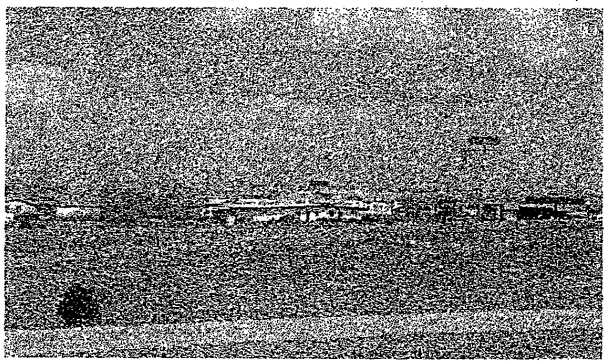
SALE # PR-CM-04

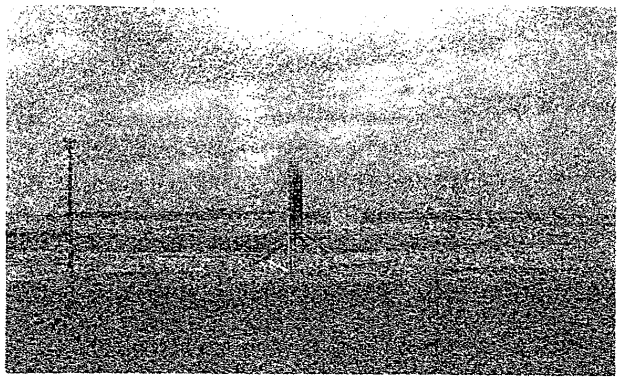
County:	Prairie
Address/Location:	203 South Logan Ave, Terry Montana
Property Type:	Commercial
Legal:	Lot 19, block 29, Terry original town site
Date of Sale:	11/30/98
Acres:	4200 square feet
Sale Price:	$11,000.00
Comments:	Property is within 4 main blocks that comprise Terry's primary commercial area. The 30'x140' lot is improved with a one story concrete block structure. Contributory value is 8500



Dawson









COUNTY DAWSON

SALE #	PROPERTY TYPE	SALE $	DATE	ACRES	$/ACRE
DA-AG-01	Agricultural	145,000	Dec-00	960	151
DA-AG-02	Agricultural	204,000	Aug-00	765.41	267
DA-AG-03	Agricultural	153,624	Feb-00	1,536.24	100
DA-AG-04	Agricultural	59,000	Feb-00	113.81	518
DA-AG-05	Agricultural	850,000	Dec-99	2,980	285
DA-AG-06	Agricultural	175,000	Sep-99	1,276.52	139
DA-AG-07	Agricultural	215,000	Nov-00	1,915	112
DA-AG-08	Agricultural	80,000	Sep-02	96.98	825
DA-AG-09	Agricultural	100,000	Aug-02	227.4	440
DA-AG-10	Agricultural	32,000	Aug-02	97	330
DA-AG-11	Agricultural	45,000	Jul-99	320	141
DA-AG-12	Agricultural	130,000	Jun-98	158.93	818
DA-AG-13	Agricultural	99,500	May-98	679.49	146
DA-AG-14	Agricultural	42,600	Apr-98	320	133

SALE # DA-AG-01

County:	Dawson
Address/Location:	8 miles east of Bloomfield, Bloomfield, Montana
Property Type:	Agricultural
Legal:	S1/2 of Section 6, E1/2 of Section 7, W1/2 of Section 8
Date of Sale:	12/01/00
Acres:	960
Sale Price:	$145,000.00
Comments:	21% crop, all cropland in section 6. County road bisects section 6 and another county road is adjacent to south boundary of sections 7 and 8. Fences on section 6 are poor, but fair in section 7 and 8. Livestock water, adequate based on well with electric pump. This purchase blocks in other lands owned by buyer.

SALE # DA-AG-02

County:	Dawson
Address/Location:	7 miles north of Bloomfield, Bloomfield, Montana
Property Type:	Agricultural
Legal:	All of section 12, less a tract in T20N, R53E, and lots 1 and 2 in east ½, northwest ¼ of section 7, T20N, R54E
Date of Sale:	08/20/00
Acres:	765.41
Sale Price:	$204,000.00
Comments:	Buyer gave no value to mineral rights. Fences on quarter section fair-minus but section is not fenced, however, buyer valued all grassland at $100/acre. Creek bottom on section can be hayed. Two stock wells at old farmstead and one in quarter section provide adequate livestock water. Buyer would not verify exact purchase price, only values for cropland and hay land. Land use is 654.3 acres of cropland, 111 acres of permanent pasture, and .11 of farmstead , roads, etc.

County:	Dawson
Address/Location:	3 miles west of Glendive, Glendive, Montana
Property Type:	Agricultural
Legal:	Section 19: S2NW4, S2: section 20: SW4SE4, W2, section 28: W2W2, E2SW4 lying west of BRIP canal, Section 29 all of T16N, R55E
Date of Sale:	02/11/00
Acres:	1536.24
Sale Price:	$153,624.00
Comments:	Buyer had leased for 9 years. Fences and livestock water supply good due to prior improvements made during the lease term. Buyer may have invested $20-25 per acre in fences, wells, and pipelines. Oil and gas rights were given no separate value. 1,536 acres of total cropland and permanent pasture.

SALE # DA-AG-04

County:	Dawson
Address/Location:	16 miles southwest of Glendive, Glendive, Montana
Property Type:	Agricultural
Legal:	Section 33: Farm unit 361, Buffalo Rapids Project, T14N, R54E
Date of Sale:	02/01/00
Acres:	113.81
Sale Price:	$59,000.00
Comments:	Upper or north end of cropland has steeper slope and may not be irrigated. Unit is not machine leveled. Fences old but adequate. 83.5 acres of irrigate cropland, 30 acres of permanent pasture, and .31 farmstead, roads, etc.

SALE # DA-AG-05

County:	Dawson
Address/Location:	4 miles northwest of Richey, Richey, Montana
Property Type:	Agricultural
Legal:	unavailable
Date of Sale:	12/02/99
Acres:	2,980
Sale Price:	$850,000.00
Comments:	2,272.5 acres of cropland, 204 acres of permanent pasture, 60.5 acres of farmstead, road, etc.

SALE # DA-AG-06

County:	Dawson
Address/Location:	6 and 11 miles west of Lindsay, Montana
Property Type:	Agricultural
Legal:	Olson: T17N, R50E, Section 4, S2, Section 9, All. Hanson: T17N, R51E, Section 19, W2
Date of Sale:	Olson: 09/29/99, Hanson: 09/15/99
Acres:	1276.52
Sale Price:	$175,000.00
Comments:	Two separate sales analyzed as one. Olson sold 960 acres grass for 128,000. Hanson sold 317 acres for 47,000. Buyer got half of seller's mineral rights on sections 4 and 9.

SALE # DA-AG-07

County:	Dawson
Address/Location:	16 miles northeast of Glendive, Montana
Property Type:	Agricultural
Legal:	T17N,R56E, of section 12, S2SE4, T17N, R57E section 17, all of section 18, all of section 20, W2NW4, SE4NW4, N2SW4, SE4SW4, W2SE4 of section 26, SE4, S2SW4, W2NE4
Date of Sale:	11/03/00
Acres:	1915
Sale Price:	$215,000.00
Comments:	One 200' stock well with bottomless tank and one 200' artesian well. Livestock water available along Box Elder Creek most of summer plus several good springs. Fences fair. Two noncontiguous tracts that lay 2 miles apart, but entire unit lays adjacent to lands already owned by buyer. Portions of unit had been hayed in prior years. 1915 acres of permanent pasture.

SALE # DA-AG-08

County:	Dawson
Address/Location:	21, road 250, Buffalo Rapids Project, Glendive, Montana
Property Type:	Agricultural
Legal:	Tract "A" in farm unit #73 of the Buffalo Rapids Project containing 96.98 acres, of Section 1 T14N R54E MPM (parcel number RJE2717)
Date of Sale:	09/26/02
Acres:	96.98
Sale Price:	$80,000.00
Comments:	Electric power, septic tank, and water well all available for a trailer or home hookup. There are 78.61 acres of irrigated land; 10.00 acres of farmable dry land, and 8.37 acres of grassland and building site.

SALE # DA-AG-09

County:	Dawson
Address/Location:	Farm unit #94, nine miles southwest of Glendive, part 2, Glendive, Montana
Property Type:	Agricultural
Legal:	Farm unit #94, +1 acre, in NE CNR NE4SE4, contains 227.4 acres.
Date of Sale:	08/09/02
Acres:	227.4
Sale Price:	$100,000.00
Comments:	9 miles southwest of Glendive, Montana, about 1 mile south of I-94 and 2miles north of the Yellowstone River. Irrigated land, sugar beet, dry cropland, and 5 acres of farmstead. Farmstead buildings are in fair to poor condition, although not inhabitable now. Well and septic system have not been used for over 15 years and would need to be restructured.

SALE # DA-AG-10

County:	Dawson
Address/Location:	Farm unit #94, nine miles southwest of Glendive, part 1, Glendive, Montana (approximately 97 dry land acres)
Property Type:	Agricultural
Legal:	Farm unit #94, +1 acre, in NE corner NE4SE4, contains 227.4 acres, S1, T14N, R54E
Date of Sale:	08/09/02
Acres:	97
Sale Price:	$32,000.00
Comments:	9 miles southwest of Glendive, Montana, about 1 mile south of I-94 and 2miles north of the Yellowstone River. Property is irrigated land, sugar beet, dry cropland, and 5 acres of farmstead. Farmstead buildings are in fair to poor condition, although not inhabitable now. Well and septic system has not been used for over 15 years and would need to be restructured.

SALE # DA-AG-11

County:	Dawson
Address/Location:	Southwest of Lindsay, Montana
Property Type:	Agricultural
Legal:	South ½ of section 6-15-52
Date of Sale:	07/08/99
Acres:	320
Sale Price:	$45,000.00
Comments:	87 acres of cropland under PFC program (until 2002) annual payment of about $1000. Crop can also be grown. 233 acres of pasture, limited water, no wells. Property is leased to Jonas Ranch (cash lease) - year to year; expires 12/31/98. There is no cross fence on the ½ section, Jonas ranch owns the N1/2. there is no designated road to the property; has an old farm road that crosses the N1/2 on the east end that crosses the S1/2 and continues on into Section T. Property has a deep ravine that runs from north to south about in the middle. Ravine has lots of trees and brush, some water part of the year.

SALE # DA-AG-12

County:	Dawson
Address/Location:	Old Highway 10, Glendive, Montana
Property Type:	Agricultural
Legal:	Part of farm unit 3114 in section 4-15-55 and 33-16-55 approximately 158.51 acres. Also tract 13 containing .42 acres
Date of Sale:	06/10/98
Acres:	158.93
Sale Price:	$130,000.00
Comments:	Property includes an old house, being sold in as-is condition, plus a cattle shed and corral. Property has approximately ½ mile of river front (North Channel), 80 acres under irrigation. Good building sites close to town.

SALE # DA-AG-13

County:	Dawson
Address/Location:	North of Bloomfield, Montana
Property Type:	Agricultural
Legal:	SE4, SW4, SENW4 less 4.90 acres highway, containing 355.10 acres of section 14-20-53 EM, PM
Date of Sale:	05/29/98
Acres:	269.39 dry land, 55.10 grassland, and 355 acres farmland
Sale Price:	$99,500.00
Comments:	269.39 acres of dry land cropland and 55.10 acres of grassland and 355 acres of farmland north of Bloomfield, Montana along oiled farm to market road. Good farmland in glacial till area, leased till 10/01/98.

SALE # DA-AG-14

County:	Dawson
Address/Location:	6 miles west of Bloomfield, Montana
Property Type:	Agricultural
Legal:	1 und. ½ int. in north ½ contains 160 acres of section 14-19-52. Geo code is 16-2949-14-1-01-01-0001-01
Date of Sale:	04/15/98
Acres:	320
Sale Price:	$42,600.00
Comments:	320 acres located 6 miles west of Bloomfield, MT. 132 acres of continuously farmed cropland, 188 acres of grass. No mineral rights available.

COUNTY DAWSON

SALE #	PROPERTY TYPE	SALE $	DATE	SQ FT	$ / SQ FT
DA-RES-01	Residential	8,250	Apr-02	7,200	1.15
DA-RES-02	Residential	12,500	Mar-98	8,665	1.44
DA-RES-03	Residential	25,000	Oct-98	78,960	0.32
DA-RES-04	Residential	9,000	Sep-02	18,000	0.50

SALE # DA-RES-01

County:	Dawson
Address/Location:	300 Grant Street, Glendive, Montana
Property Type:	Residential
Legal:	Lots 12, 13, and 14, of Block 107 Riverview Park
Date of Sale:	04/08/02
Acres:	7200 sq ft
Sale Price:	$8,250.00
Comments:	Three lots at 40'x60' sq ft. Located in South Glendive

SALE # DA-RES-02

County:	Dawson
Address/Location:	1509 east Ames Wye, Glendive, Montana
Property Type:	Residential vacant lot
Legal:	Lot 9, Block 15, Prospect Heights
Date of Sale:	03/05/98
Acres:	8,665 sq ft
Sale Price:	$12,500.00
Comments:	Deep lot 50' by 173.3'. Church owns a basketball hoop installed on the lot, which they will remove.

SALE # DA-RES-03

County:	Dawson
Address/Location:	Glendive Riverview Park, Glendive, Montana
Property Type:	Residential
Legal:	Lots 5 and 12, Block 231, Lots 1-10, rear 101', lot 11,12, Block, 40' of 11,12,13, Block 232
Date of Sale:	10/02/98
Acres:	78,960 sq ft
Sale Price:	$25,000.00
Comments:	This property sold as 14 lots. There are 2 septic systems that go with the property. This property sold as-is.

SALE # DA-RES-04

County:	Dawson
Address/Location:	Forest Park, along Highway 200, Glendive, Montana
Property Type:	Residential
Legal:	Lots 4, 5, and 6 of Block 3, Forest Park Subdivision
Date of Sale:	09/12/02
Acres:	18,000 square feet
Sale Price:	$9,000.00
Comments:	Total of 3 lots along highway 200, Glendive sewer

COUNTY DAWSON

SALE #	PROPERTY TYPE	SALE $	DATE	ACRES	$ / ACRE
DA-RR-01	Res Ranchette	10,000	Oct-00	3	3,333.00
DA-RR-02	Res Ranchette	12,000	Jun-00	25	480
DA-RR-03	Res Ranchette	6,000	Oct-02	15.00	400
DA-RR-04	Res Ranchette	2,300	Feb-02	7.18	320
DA-RR-05	Res Ranchette	32,000	Mar-98	25.59	1,246
DA-RR-06	Res Ranchette	12,500	Apr-98	21.00	595

SALE # DA-RR-01

County:	Dawson
Address/Location:	3.3 miles from Glendive, Montana
Property Type:	Residential Ranchette
Legal:	Tract in NE4 of section 15, T-15N, R-55E south of Glendive. Marsh Road
Date of Sale:	10/03/00
Acres:	3
Sale Price:	$10,000.00
Comments:	Bare land with a 30'x34' sq ft steel sided barn. Property is located on paved highway with access to power, telephone and natural gas lines. Located on school bus route, county maintained access roads. Property is located 3.3 miles from Glendive with a beautiful view of the Yellowstone Valley and the Badlands.

SALE # DA-RR-02

County:	Dawson
Address/Location:	140, road 260, Glendive, Montana
Property Type:	Residential Ranchette
Legal:	TR NE4NW4, NW4NE4, of section 21-14-54 certificate of survey 538
Date of Sale:	06/27/00
Acres:	25
Sale Price:	$12,000.00
Comments:	25 acres with spring fed pond, completely fenced.

SALE # DA-RR-03

County:	Dawson
Address/Location:	6 miles north of Glendive, Montana
Property Type:	Residential Ranchette
Legal:	SE4NW4 certificate of survey #370, contains 15 acres
Date of Sale:	10/10/02
Acres:	15
Sale Price:	$6,000.00
Comments:	6 miles north of Glendive on a paved road. Good building site, electricity available.

SALE # DA-RR-04

County:	Dawson
Address/Location:	Located at the edge of Glendive, Montana
Property Type:	Residential Ranchette
Legal:	Tract in E2SE4 in section 25, T16N R55E MPM certificate of survey #357
Date of Sale:	02/01/02
Acres:	7.18
Sale Price:	$2,300.00
Comments:	Former Raisl Property. Several good building sites, located at the edge of Glendive, beautiful rugged setting among the Badlands

SALE # DA-RR-05

County:	Dawson
Address/Location:	Highland Park Road, Glendive, Montana
Property Type:	Residential Ranchette
Legal:	Tract in SW4SE4 certificate of survey #714, contains 8.34 acres. Tract in SW4SE4 of certificate of survey #715, contains 8.34 acres. Certificate of survey #810 in SE4 contains 8.91 acres of section 22-16-55
Date of Sale:	03/18/98
Acres:	25.59
Sale Price:	$32,000.00
Comments:	2 parcels with 8.34 acres and 1 parcel with 8.91 acres. Irrigation pipe will stay with one parcel. Great building site. Owner will sell corner parcels first. Easements in place from Highland Park Road. Owner will provide easement for parcel #810.

SALE # DA-RR-06

County:	Dawson
Address/Location:	Road 244, Pleasant View, Montana
Property Type:	Residential Ranchette
Legal:	tract W2NW4, contains 21.00 acres of 526-T15-R54 certificate of survey #506
Date of Sale:	04/20/98
Acres:	21
Sale Price:	$12,500.00
Comments:	Total of 21 acres of gently rolling grassland, view of Yellowstone valley. The property is approximately 7 miles out of town with year-round access and several beautiful building sites. Great building site close to town. Electric service is only ½ mile from property. Perfect location for a pole barn and horses.

COUNTY DAWSON

SALE #	PROPERTY TYPE	SALE $	DATE	SQ FT	$ / SQ FT
DA-CM-01	Commercial	300,000	Jun-00	582,397	0.52
DA-CM-02	Commercial	25,000	Jul-99	34,000	0.74

SALE # DA-CM-01

County:	Dawson
Address/Location:	Northwest Glendive, Montana
Property Type:	Commercial
Legal:	T16N, R55E of section 24, tracts in certificate of surveys 602 and 603, a tract in the SW4SE4, plus vacated portions of California Street
Date of Sale:	06/15/00
Acres:	13.37
Sale Price:	$300,000.00
Comments:	Property lays adjacent to and at the northwest corner of interstate interchange located at the north end of Glendive. Distance from the subject is about 2 miles. The 13.37 acres are improved for use as a 50 space RV trailer court. Buildings include a store/office with 2,824 total sq ft built 1973, 2 cabins each with 256 sq ft built 1997, and a 20'x40' pool built 1997. Of the 50 spaces, 14 have sewer/water/electricity and 36 have only electricity/water.

SALE # DA-CM-02

County:	Dawson
Address/Location:	2001 N. Merrill Ave, Glendive, Montana
Property Type:	Commercial lot
Legal:	Certificate of survey #702
Date of Sale:	07/28/99
Acres:	34,000 sq ft
Sale Price:	$25,000.00
Comments:	Located next to the new MDU building. Commercial land, corner lot

COUNTY WIBAUX

SALE #	PROPERTY TYPE	SALE $	DATE	ACRE	$ / ACRE
WI-AG-01	Agricultural	136,525	Sep-00	965.2	141
WI-AG-02	Agricultural	2,450,000	Jun-00	25,422.37	96
WI-AG-03	Agricultural	41,100	May-99	300	137
WI-AG-04	Agricultural	76,000	Jun-99	320	238

SALE # WI-AG-01

County:	Wibaux
Address/Location:	7 miles southwest of Wibaux, Montana
Property Type:	Agricultural
Legal:	T14N, R59E, of section 19. W2SW4SE4 of section 20
Date of Sale:	09/25/00
Acres:	965.2
Sale Price:	$136,525.00
Comments:	Fences fair minus to fair and livestock water from a year round spring is excellent. No utility easements on unit. Primarily for hay land due to small, irregular shaped fields.

SALE # WI-AG-02

County:	Wibaux/Fallon
Address/Location:	27 miles southwest of Wibaux, Montana
Property Type:	Agricultural
Legal:	unavailable
Date of Sale:	06/22/00
Acres:	25,422.37
Sale Price:	$2,450,000.00
Comments:	Water tanks, windmills, corral gates, working tub, and hydraulic chute and will rig truck included with purchase. Land use primarily hay land crop and pasture.

SALE # WI-AG-03

County:	Wibaux
Address/Location:	3 miles south of Wibaux, Montana
Property Type:	Agricultural
Legal:	Section 26: NW4, S2NE4, NW4NE4, W2NE4NE4 of T14N, R59E
Date of Sale:	05/05/99
Acres:	300
Sale Price:	$41,100.00
Comments:	Fences fair. Livestock water supplied by well with gas motor and pump jack. Hay land has steeper slope and some erosion problems when used as cropland so hay land is highest and best use. Access from county road.

SALE # WI-AG-04

County:	Wibaux
Address/Location:	2 miles northeast of Wibaux, Montana
Property Type:	Agricultural
Legal:	T14N, R60E of section 5: SW4 T15N, R60E of section 33: SE4
Date of Sale:	06/23/99
Acres:	320
Sale Price:	$76,000.00
Comments:	The purchase did not include the 3-grain bins on section 33. Both tracts fenced with fences in fair condition. Grass buffers in section 5 are hayed and grass in section 33 is grazed.

COUNTY GOLDEN VALLEY

SALE #	PROPERTY TYPE	SALE $	DATE	ACRE	$ / ACRE
GV-AG-01	Agricultural	224,501	Jan-99	3,741.69	60
GV-AG-02	Agricultural	110,000	Mar-99	1,139.88	96
GV-AG-03	Agricultural	20,000	Mar-99	157	127
GV-AG-04	Agricultural	67,200	Mar-99	317.84	211
GV-AG-05	Agricultural	82,200	Mar-99	320	257
GV-AG-06	Agricultural	39,250	Mar-99	134.24	292
GV-AG-07	Agricultural	20,250	Apr-99	92	221
GV-AG-08	Agricultural	37,000	Apr-99	158.98	233
GV-AG-09	Agricultural	44,480	Apr-99	160	278
GV-AG-10	Agricultural	31,000	May-99	160	194
GV-AG-11	Agricultural	38,500	Aug-99	135.78	284
GV-AG-12	Agricultural	46,400	Sep-99	160	291
GV-AG-13	Agricultural	101,500	Mar-99	631.28	161

SALE # GV-AG-01

County:	Golden Valley
Address/Location:	Beach, North Dakota
Property Type:	Agricultural
Legal:	143-105 section 5, 6, 7 and NE1/4, lots 1, 2 E1/2NW1/4, NE1/4SE1/4 of section 18; 144-105 sections 29, 31 and SE1/4, W1/2NW1/4, SE1/4NW1/4, SW1/4NE1/4 of section 32
Date of Sale:	01/06/99
Acres:	3,741.69
Sale Price:	$224,501.00
Comments:	buyer is Barbour, J and A

SALE # GV-AG-02

County:	Golden Valley
Address/Location:	Beach, North Dakota
Property Type:	Agricultural
Legal:	All of section 31-142-103, all less tract 25-142-104
Date of Sale:	03/10/99
Acres:	1,139.88
Sale Price:	110,000
Comments:	buyer is Vanhorn, M. Etux

SALE # GV-AG-03

County:	Golden Valley
Address/Location:	Beach, North Dakota
Property Type:	Agricultural
Legal:	E2NW4; lots 1, 2; of section 30-141-104
Date of Sale:	03/22/99
Acres:	156.88
Sale Price:	$20,000.00
Comments:	Buyer is Quale, D. Etux

SALE # GV-AG-04

County:	Golden Valley
Address/Location:	Beach, North Dakota
Property Type:	Agricultural
Legal:	E2SW4; lots 3, 4 of 30-141-104, NE4 of section 25-141-105
Date of Sale:	03/22/99
Acres:	317.84
Sale Price:	$67,200.00
Comments:	Buyer is Davidson, R

SALE # GV-AG-05

County:	Golden Valley
Address/Location:	Beach, North Dakota
Property Type:	Agricultural
Legal:	S2NE4; N2SE4 of section 24-141-105, SE4 of 25-141-105
Date of Sale:	03/22/99
Acres:	320.00
Sale Price:	$82,200.00
Comments:	Buyer is Schafer

SALE # GV-AG-06

County:	Golden Valley
Address/Location:	Beach, North Dakota
Property Type:	Agricultural
Legal:	SW4 of 16-141-105
Date of Sale:	03/22/99
Acres:	134.24
Sale Price:	$39,250.00
Comments:	Buyer is Chrudimsky, H.

SALE # GV-AG-07

County:	Golden Valley
Address/Location:	Beach, North Dakota
Property Type:	Agricultural
Legal:	W1/2NW1/4 and parcel in 24-140-104
Date of Sale:	04/05/99
Acres:	91.80
Sale Price:	$20,250.00
Comments:	Buyer is Muggli, J

SALE # GV-AG-08

County:	Golden Valley
Address/Location:	Beach, North Dakota
Property Type:	Agricultural
Legal:	SW4 of section 20-140-105
Date of Sale:	04/19/99
Acres:	158.98
Sale Price:	$37,000.00
Comments:	Buyer is Weinreis, Etal

SALE # GV-AG-09

County:	Golden Valley
Address/Location:	Beach, North Dakota
Property Type:	Agricultural
Legal:	SW4 of section 15-138-105
Date of Sale:	04/29/99
Acres:	160.00
Sale Price:	$44,480.00
Comments:	Buyer is Fischer, John Etux

SALE # GV-AG-10

County:	Golden Valley
Address/Location:	Beach, North Dakota
Property Type:	Agricultural
Legal:	NW4 of section 22-137-105
Date of Sale:	05/03/99
Acres:	160.00
Sale Price:	$31,000.00
Comments:	Buyer is Maus, Gary Etux

SALE # GV-AG-11

County:	Golden Valley
Address/Location:	Beach, North Dakota
Property Type:	Agricultural
Legal:	NE1/4 of section 28-140-105
Date of Sale:	08/03/99
Acres:	135.78
Sale Price:	$38,500.00
Comments:	Buyer is Szudera, L and R

SALE # GV-AG-12

County:	Golden Valley
Address/Location:	Beach, North Dakota
Property Type:	Agricultural
Legal:	SE1/4 of section 4-141-104
Date of Sale:	09/07/99
Acres:	159.51
Sale Price:	$46,400.00
Comments:	Buyer is Tescher, J and L

SALE # GV-AG-13

County:	Golden Valley
Address/Location:	Beach, North Dakota
Property Type:	Agricultural
Legal:	All of section 19-141-104
Date of Sale:	03/22/99
Acres:	631.28
Sale Price:	$101,500.00
Comments:	Buyer is Davidson, D.

COUNTY GOLDEN VALLEY

SALE #	PROPERTY TYPE	SALE $	DATE	SQ FT	$ / SQ FT
GV-CM-01	Commercial	10,500	Oct-00	27,720	0.38
GV-CM-02	Commercial	6,000	Oct-99	223,027	0.03

SALE # GV-CM-01

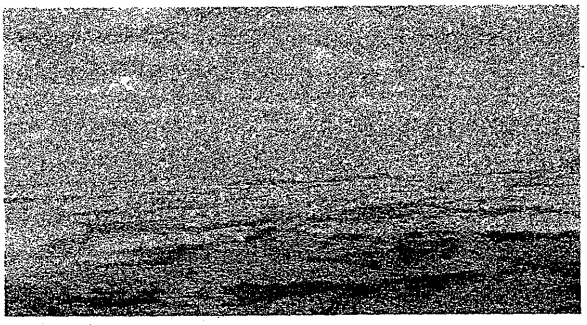
County:	Golden Valley
Address/Location:	98 Main St. East, Beach, North Dakota
Property Type:	Commercial
Legal:	parcel 20-27-5332000
Date of Sale:	10/00
Acres:	27,720 sq ft
Sale Price:	$10,500.00
Comments:	BNSF sold leased land to Prairie Lumber

SALE # GV-CM-02

County:	Golden Valley
Address/Location:	Beach, North Dakota
Property Type:	Commercial
Legal:	Tract in NE1/4 of section 25-140-106
Date of Sale:	10/08/99
Acres:	5.12
Sale Price:	$6,000.00
Comments:	Buyer is M and T Begger



Billings





COUNTY BILLINGS

SALE #	PROPERTY TYPE	SALE $	DATE	ACRE	$ / ACRE
BI-AG-01	Agricultural	55,000	Jan-03	240.00	229
BI-AG-02	Agricultural	102,983	Aug-00	47	2,191
BI-AG-03	Agricultural	56,000	Feb-00	160	350
BI-AG-04	Agricultural	91,000	Feb-00	320	284
BI-AG-05	Agricultural	37,000	Feb-00	160.0	231
BI-AG-06	Agricultural	193,980	Jan-00	636	305
BI-AG-07	Agricultural	146,400	Jun-00	480	305
BI-AG-08	Agricultural	400,000	Dec-99	1,203.68	332
BI-AG-09	Agricultural	61,440	Jan-00	240	256

SALE # BI-AG-01

County:	Billings
Address/Location:	North of Medora, North Dakota
Property Type:	Agricultural
Legal:	Section 22, NE1/4,E1/2NW1/4, and T143N R98W
Date of Sale:	01/22/03
Acres:	240
Sale Price:	$55,000.00
Comments:	

SALE # BI-AG-02

County:	Billings
Address/Location:	South edge of Medora, North Dakota
Property Type:	Agricultural
Legal:	T140N R102W of section 28, part of S1/2SE1/4, lies west and north of Little Missouri River, document 115408
Date of Sale:	08/03/00
Acres:	46.62
Sale Price:	$102,983.00
Comments:	Sold to Rocky Mountain Elk Foundation for preservation purposes. Volume 0067 pg. 435

SALE # BI-AG-03

County:	Billings
Address/Location:	Medora, North Dakota
Property Type:	Agricultural
Legal:	NW1/4 of section 21-142-99
Date of Sale:	02/11/00
Acres:	160
Sale Price:	$56,000.00
Comments:	Rolling rough terrain. Volume 0192, pg 287

SALE # BI-AG-04

County:	Billings
Address/Location:	North Medora, North Dakota
Property Type:	Agricultural
Legal:	W1/2 of section 19-142-98 of PM of Billings County
Date of Sale:	02/19/00
Acres:	320
Sale Price:	$91,000.00
Comments:	Rolling rough terrain. Volume 0067, pg 147

SALE # BI-AG-05

County:	Billings
Address/Location:	North Medora, North Dakota
Property Type:	Agricultural
Legal:	NW1/4 of section 20-142-98 of PM of Billings County
Date of Sale:	02/19/00
Acres:	160
Sale Price:	$37,000.00
Comments:	Rolling rough terrain. Volume 0067, pg 143

SALE # BI-AG-06

County:	Billings
Address/Location:	North Medora, North Dakota
Property Type:	Agricultural
Legal:	Lots 1-4 S1/2 of N1/2 of S1/2 of section 1 T142N R100W, less a tract of land in NW1/4 of section 1
Date of Sale:	01/19/00
Acres:	636
Sale Price:	$193,980.00
Comments:	Rolling rough terrain. Volume 0067, pg 125

SALE # BI-AG-07

County:	Billings
Address/Location:	North Medora, North Dakota
Property Type:	Agricultural
Legal:	SE1/2 N1/2 of section 19, T141 R99
Date of Sale:	06/30/00
Acres:	480
Sale Price:	$146,400.00
Comments:	Rolling rough terrain. Volume 0067, pg 345

SALE # Bl-AG-08

County:	Billings
Address/Location:	Corner of Billings County, far North Medora, North Dakota
Property Type:	Agricultural
Legal:	T144N R99W E1/2 of section 30, all of section 31, SW1/4,S1/2,NW1/4 of section 32
Date of Sale:	12/30/99
Acres:	1203.68
Sale Price:	$400,000.00
Comments:	Rolling rough terrain. Volume 0191, pg 623

SALE # BI-AG-09

County:	Billings
Address/Location:	North Medora, North Dakota
Property Type:	Agricultural
Legal:	T142N R98W of 5th PM, SE1/4, of section 18, E1/2,NE1/4 of section 19
Date of Sale:	01/31/00
Acres:	240
Sale Price:	$61,440.00
Comments:	Rolling terrain. Volume 0067, pg 145

COUNTY BILLINGS

SALE #	PROPERTY TYPE	SALE $	DATE	ACRE	$ / ACRE
BI-RR-01	Res Ranchette	15,587	Aug-00	15.69	993
BI-RR-02	Res Ranchette	46,000	Feb-00	15	3,067

SALE # BI-RR-01

County:	Billings
Address/Location:	South of Medora, North Dakota
Property Type:	Residential Ranchette
Legal:	NW1/4 of the NW1/4 of section 28, T139N,R102W of the 5th PM of Billings County
Date of Sale:	08/14/00
Acres:	15.687
Sale Price:	$15,587.00
Comments:	Reference: volume 0067, page 405L

SALE # BI-RR-02

County:	Billings
Address/Location:	South of Medora, North Dakota
Property Type:	Residential Ranchette
Legal:	Lots 4 and 5 of section 6,T139N, R102W Billings County
Date of Sale:	02/15/00
Acres:	15
Sale Price:	46,000
Comments:	Property on West River Road

COUNTY STARK

SALE #	PROPERTY TYPE	SALE $	DATE	ACRES	$/ACRE
SK-AG-01	Agricultural	47,000	May-00	160	294
SK-AG-02	Agricultural	22,000	May-00	40	550
SK-AG-03	Agricultural	34,000	Oct-00	80	425
SK-AG-04	Agricultural	17,000	Nov-00	160	106
SK-AG-05	Agricultural	17,500	Aug-99	9.9	1,768
SK-AG-06	Agricultural	90,000	Jul-00	394.79	228

SALE # SK-AG-01

County:	Stark
Address/Location:	New England, North Dakota
Property Type:	Agricultural
Legal:	SW1/4 of section 24-133-98
Date of Sale:	05/11/00
Acres:	160
Sale Price:	$47,000.00
Comments:	Established stand of crop located 1.5 miles from Cedar Dam Game Management area. Great hunting. 9 miles south of Dickinson to mile marker 33, 4 miles west an ½ mile south. 135 acres of cropland, rolling terrain.

SALE # SK-AG-02

County:	Stark
Address/Location:	Highway 22 south, Dickinson, North Dakota
Property Type:	Agricultural
Legal:	NE1/4 NE1/4 of section 21, T137 R96
Date of Sale:	05/10/00
Acres:	40
Sale Price:	$22,000.00
Comments:	Highway 22 frontage, creek runs through, 14.4 acres of hayland. Rolling terrain, no improvements.

SALE # SK-AG-03

County:	Stark
Address/Location:	Southeast of Dickinson, North Dakota
Property Type:	Agricultural
Legal:	80 acres in SE1/4 of section 25-139-96
Date of Sale:	10/02/00
Acres:	80
Sale Price:	$34,000.00
Comments:	2 miles east, 2 miles south and 1 mile east of Mini Mart on south side of road. Hilly terrain, no improvements.

SALE # SK-AG-04

County:	Stark
Address/Location:	Southeast of Dickinson, North Dakota
Property Type:	Agricultural
Legal:	120 acres in northeast ¼, 40 acres in southeast ¼ of section 25-139-96
Date of Sale:	11/17/00
Acres:	160
Sale Price:	$17,000.00
Comments:	2 miles east, 2 miles south and 1 mile east of Mini Mart on south side of road. Terrain; hilly, no improvements

SALE # SK-AG-05

County:	Stark
Address/Location:	New Hradec, North Dakota
Property Type:	Agricultural
Legal:	9.9 acres in SW1/4 of section 13-141-97
Date of Sale:	08/13/99
Acres:	9.9
Sale Price:	$17,500.00
Comments:	13.7 miles from Dix thru New Hradec, turn north to gravel pile, then .7 miles west. 8 rows of trees. Very scenic piece of property. Rolling terrain, water, and fencing.

SALE # SK-AG-06

County:	Stark
Address/Location:	Richardton, North Dakota
Property Type:	Agricultural
Legal:	E1/2 of section 29 and E1/2SW1/4 of section 28, 140-92, Stark County
Date of Sale:	07/10/00
Acres:	394.79
Sale Price:	$90,000.00
Comments:	All pasture, some trees, rolling terrain. One mile north of Richardton by southwest water tank.

COUNTY STARK

SALE #	PROPERTY TYPE	SALE $	DATE	SQ FT	$ / SQ FT
SK-RES-01	Residential	7,250	May-00	39,000	0.19
SK-RES-02	Residential	8,000	Nov-99	16,800	0.48
SK-RES-03	Residential	4,100	May-99	40,500	0.10
SK-RES-04	Residential	1,900	Jan-00	36,000	0.05

SALE # SK-RES-01

County:	Stark
Address/Location:	Weber's Subdivision, North Dakota
Property Type:	Residential
Legal:	Lot 2, Block 2 of Weber's Subdivision
Date of Sale:	05/03/00
Acres:	39,000 sq ft
Sale Price:	$7,250.00
Comments:	Sewer and water lines are on road. No improvements. First street west of Parkway Ford, north to 9th street east.

SALE # SK-RES-02

County:	Stark
Address/Location:	11th St. East, Dickinson, North Dakota
Property Type:	Residential
Legal:	Lots 11 and 12, Block 12 of North Hills Acres, 2nd Re-plat
Date of Sale:	11/05/99
Acres:	16,800 sq ft
Sale Price:	$8,000.00
Comments:	Each lot is 70x120, $75 tax per lot. These are two very nicely developed lots with great possibilities for building. They are right across the street from Our Savior's Lutheran Church. No improvements.

SALE # SK-RES-03

County:	Stark
Address/Location:	64th RS Avenue, Dickinson, North Dakota
Property Type:	Residential
Legal:	Lots 14, Block 1, Kralicek 3rd Subdivision, N1/2SW1/4S15, T140N R96W
Date of Sale:	05/14/99
Acres:	40,500 sq ft
Sale Price:	$4,100.00
Comments:	Zoned for mobile home on basement or permanent foundation. Flat terrain. Improvements include a paved road, private septic and electricity available.

SALE # SK-RES-04

County:	Stark
Address/Location:	8th Street East, Dickinson, North Dakota
Property Type:	Residential lot
Legal:	Lot 5, Block 2, Weber's Subdivision
Date of Sale:	01/03/00
Acres:	36,000 sq ft
Sale Price:	$1,900.00
Comments:	Flat terrain, no improvements.

COUNTY STARK

SALE #	PROPERTY TYPE	SALE $	DATE	ACRES	$/ACRE
SK-RR-01	Res Ranchette	8,500	Apr-00	5.62	1,512
SK-RR-02	Res Ranchette	29,900	Jan-00	4.59	6,514
SK-RR-03	Res Ranchette	32,000	Oct-00	35	914
SK-RR-04	Res Ranchette	35,000	Nov-00	2.77	12,635

SALE # SK-RR-01

County:	Stark
Address/Location:	Dickinson, North Dakota
Property Type:	Residential Ranchette
Legal:	A tract of land in NW1/4 NW1/4 of section 22-139-96
Date of Sale:	04/19/00
Acres:	Lot 532'x460'
Sale Price:	$8,500.00
Comments:	Property has southwest water and well. Ash and Lilac tree along north and west sides. Property fenced on 3 sides. Property has 2 sheds and a chain link fence. Rolling terrain, electricity available, well.

SALE # SK-RR-02

County:	Stark
Address/Location:	9321 71 RS Street south west, Dickinson, North Dakota
Property Type:	Residential Ranchette
Legal:	Lt 6 of Western Ranchos.
Date of Sale:	01/04/00
Acres:	303'x660' Lot
Sale Price:	$29,900.00
Comments:	Very nice, clean 30'x48' steel building. Many trees, overlooks the Patterson Lake, also has a 150' well. The terrain is flat, electricity available.

SALE # SK-RR-03

County:	Stark
Address/Location:	11630 38th R St. Southwest, Dickinson, North Dakota
Property Type:	Residential Ranchette
Legal:	NE1/4 of section 15, T139N R97W
Date of Sale:	10/02/00
Acres:	35
Sale Price:	$32,000.00
Comments:	Nice tract of land with lots of trees. North of right-of-way. Heart River runs through the southwest corner. Set up for mobile home. Good water, well and septic in. Located 4 miles west of Dickinson on Highway 10 to 116R Ave. Southwest, 1 miles south to 38R Street southwest, on the west side.

SALE # SK-RR-04

County:	Stark
Address/Location:	Summit Drive, Dickinson, North Dakota
Property Type:	Residential Ranchette
Legal:	Vacant lot, Area C, Surrey Heights Addition
Date of Sale:	10/01/00
Acres:	2.77
Sale Price:	$35,000.00
Comments:	Sewer and water in not on property, but is accessible close by. Located on Summit Drive, off 4th Avenue East. Vacant lot at end of Dead-End Street. .

COUNTY MORTON

SALE #	PROPERTY TYPE	SALE $	DATE	ACRE	$ / ACRE
MO-AG-01	Agricultural	180,000	Jun-99	98.33	1,831
MO-AG-02	Agricultural	250,000	May-99	1,588	157
MO-AG-03	Agricultural	80,000	Mar-99	80	1000
MO-AG-04	Agricultural	115,200	Mar-99	640	180
MO-AG-05	Agricultural	181,855	Apr-99	983	185
MO-AG-06	Agricultural	55,000	Oct-00	69	797
MO-AG-07	Agricultural	65,000	Oct-00	74	878
MO-AG-08	Agricultural	25,000	Aug-00	10.52	2,376
MO-AG-09	Agricultural	26,000	Nov-00	23	1,130
MO-AG-10	Agricultural	60,000	Oct-99	160	375
MO-AG-11	Agricultural	35,000	Feb-00	160	219
MO-AG-12	Agricultural	50,000	Aug-00	267.28	187
MO-AG-13	Agricultural	27,000	Sep-00	80.00	338

SALE # MO-AG-01

County:	Morton
Address/Location:	37th St., Mandan, North Dakota
Property Type:	Agricultural
Legal:	Northwest ¼, Northwest ¼, 10-139-81, southeast ¼, northwest ¼, 10-139-81, northeast ¼, northwest ¼, southwest ¼, northeast, west 1/4
Date of Sale:	06/22/99
Acres:	98.33
Sale Price:	$180,000.00
Comments:	Section 10-139-81, rural water on north side of property, approximately 2.5 miles north of I94 on 1806, turn right on 37th St. east, approximately ¼ mile.

SALE # MO-AG-02

County: Morton

Address/Location: Solen, North Dakota

Property Type: Agricultural

Legal: 135-81 Morton County

Date of Sale: 05/03/99

Acres: 1588

Sale Price: 250,000

Comments: Three miles southeast at junction Inn on county road 134

SALE # MO-AG-03

County:	Morton
Address/Location:	Highway 6 south, Mandan, North Dakota
Property Type:	Agricultural
Legal:	Part of section 33-137-81
Date of Sale:	03/05/99
Acres:	80.00
Sale Price:	$80,000.00
Comments:	11 miles south of Mandan.

SALE # MO-AG-04

County:	Morton
Address/Location:	Rural Morton County, Mandan, North Dakota
Property Type:	Agricultural
Legal:	Section 18-134-80
Date of Sale:	03/12/99
Acres:	640
Sale Price:	115,200
Comments:	South of Mandan

SALE # MO-AG-05

County: Morton

Address/Location: Morton and Oliver county, Mandan, North Dakota

Property Type: Agricultural

Legal: Section 1-140-83 and Section 32-140-82

Date of Sale: 04/30/99

Acres: 983

Sale Price: 181,855

Comments: 423 acres in Morton county, 560 acres in Oliver county, topography rolling

SALE # MO-AG-06

County:	Morton
Address/Location:	Mustang Dr. south, Mandan, North Dakota
Property Type:	Agricultural
Legal:	Four Square Ranch estates, lot 5, block 1
Date of Sale:	10/17/00
Acres:	69
Sale Price:	$55,000.00
Comments:	Three miles west of Mandan.

SALE # MO-AG-07

County:	Morton
Address/Location:	Mustang Dr. south, Mandan, North Dakota
Property Type:	Agricultural
Legal:	Four Square Ranch estates, lot 4, block 1
Date of Sale:	10/17/00
Acres:	74
Sale Price:	$65,000.00
Comments:	Three miles west of Mandan.

SALE # MO-AG-08

County:	Morton
Address/Location:	Old Red Trail, Mandan, North Dakota
Property Type:	Agricultural
Legal:	Tract 4, Section 8, TWP 139-R81, Part of AUD Lot 3 of S 1/2
Date of Sale:	08/04/00
Acres:	10.52
Sale Price:	$25,000.00
Comments:	

SALE # MO-AG-09

County:	Morton
Address/Location:	Mustang Drive South, Mandan, North Dakota
Property Type:	Agricultural
Legal:	Four Square Ranch Estates, Lot 1, Block 2
Date of Sale:	11/14/00
Acres:	23.00
Sale Price:	$26,000.00
Comments:	West of Mandan on old 10 to county road 82-S, ½ mile west ½ mile on south side of road.

SALE # MO-AG-10

County:	Morton
Address/Location:	4051 52nd Street, New Salem, North Dakota
Property Type:	Agricultural
Legal:	Southwest ¼ Section 16-137-84
Date of Sale:	10/07/99
Acres:	160
Sale Price:	$60,000.00
Comments:	

SALE # M0-AG-11

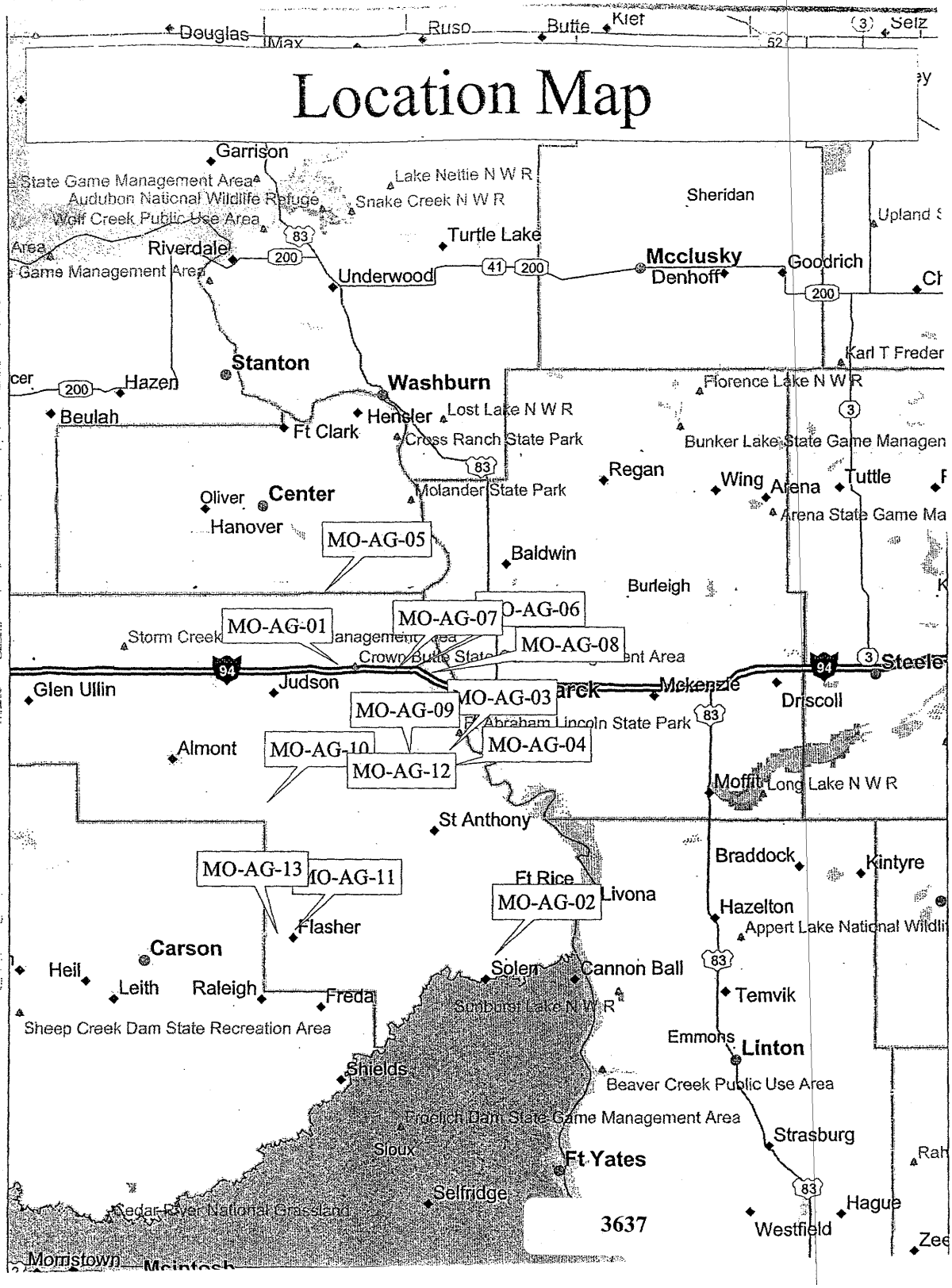
County:	Morton
Address/Location:	Flasher, North Dakota
Property Type:	Agricultural
Legal:	Southeast ¼ section 8-133-83
Date of Sale:	02/28/00
Acres:	160
Sale Price:	$35,000.00
Comments:	160 acres of prime hunting, 67.9 acres of cropland.

SALE # M0-AG-12

County:	Morton
Address/Location:	Mandan, North Dakota
Property Type:	Agricultural
Legal:	Section 36-139-82
Date of Sale:	08/28/00
Acres:	267.28
Sale Price:	$50,000.00
Comments:	Rural water available

SALE # M0-AG-13

County:	Morton
Address/Location:	Flasher, North Dakota
Property Type:	Agricultural
Legal:	West ½ of southeast ¼ of Section 4-134-84
Date of Sale:	09/25/00
Acres:	80
Sale Price:	$27,000.00
Comments:	These 80 acres have electricity and water well, ¼ mile west of town.


Location Map
Douglas
Max
Ruso
Butte
Kief
Selz
Garrison
State Game Management Area
Audubon National Wildlife Refuge
Wolf Creek Public Use Area
Lake Nettie N W R
Snake Creek N W R
Sheridan
Upland
Riverdale
Turtle Lake
Mcclusky
Denhoff
Goodrich
Underwood
Game Management Area
Stanton
Washburn
Hazen
Beulah
Hensler
Ft Clark
Lost Lake N W R
Cross Ranch State Park
Florence Lake N W R
Karl T Freder
Bunker Lake State Game Managen
Regan
Wing
Arena
Tuttle
Arena State Game Ma
Oliver
Center
Hanover
Molander State Park
MO-AG-05
Baldwin
Burleigh
MO-AG-01
MO-AG-07
MO-AG-06
MO-AG-08
Storm Creek
Crown Butte State
Glen Ullin
Judson
MO-AG-03
Mckenzie
Driscoll
Steele
MO-AG-09
Abraham Lincoln State Park
Almont
MO-AG-10
MO-AG-12
MO-AG-04
Moffit
Long Lake N W R
St Anthony
Braddock
Kintyre
MO-AG-13
MO-AG-11
Ft Rice
Livona
MO-AG-02
Hazelton
Appert Lake National Wildli
Flasher
Carson
Heil
Leith
Raleigh
Freda
Solen
Cannon Ball
Temvik
Sunburst Lake N W R
Sheep Creek Dam State Recreation Area
Emmons
Linton
Shields
Beaver Creek Public Use Area
Fraelich Dam State Game Management Area
Strasburg
Sioux
Ft Yates
Selfridge
Hague
Cedar River National Grassland
Westfield
3637
Mornstown
Mcintosh

COUNTY MORTON

SALE #	PROPERTY TYPE	SALE $	DATE	SQ FT	$ / SQ FT
MO-RES-01	Residential	7,500	Apr-99	12,242	0.61
MO-RES-02	Residential	7,500	Apr-99	12,393	0.58
MO-RES-03	Residential	8,500	Apr-99	14,532	0.58
MO-RES-04	Residential	12,000	Aug-99	11,475	1.05
MO-RES-05	Residential	58,600	Jun-99	32,234	1.82
MO-RES-06	Residential	90,000	May-99	174,240	0.52
MO-RES-07	Residential	23,100	Aug-00	108,900	0.21
MO-RES-08	Residential	24,000	Aug-00	128,066	0.19
MO-RES-09	Residential	7,000	Jun-00	7,200	0.97
MO-RES-10	Residential	10,000	May-00	9,583	1.04
MO-RES-11	Residential	38,000	Feb-00	23,690	1.6

SALE # MO-RES-01

County:	Morton
Address/Location:	4001 36th Avenue west, Mandan, North Dakota
Property Type:	Residential lot
Legal:	Developers west 1st addition, lot 12, block 5
Date of Sale:	04/29/99
Acres:	12,242 sq ft
Sale Price:	$7,500.00
Comments:	

SALE # MO-RES-02

County:	Morton
Address/Location:	4000 37th Avenue, Mandan, North Dakota
Property Type:	Residential lot
Legal:	Developers west, 1st addition, lot 13, block 5
Date of Sale:	04/27/99
Acres:	12,393 square feet
Sale Price:	$7,500.00
Comments:	

SALE # MO-RES-03

County:	Morton
Address/Location:	1905 2nd St. northeast, Mandan, North Dakota
Property Type:	Residential
Legal:	Re-plat Eastwood Terrace Addition, lot 4, block 3
Date of Sale:	04/29/99
Acres:	14,532 sq ft
Sale Price:	$8,500.00
Comments:	Irregular lot, 14,532 square feet

SALE # MO-RES-04

County:	Morton
Address/Location:	2008 8th Avenue southeast, Mandan, North Dakota
Property Type:	Residential lot
Legal:	Plainview Heights, 1st addition, lot 10 less 5 feet, block 1
Date of Sale:	08/02/99
Acres:	11,475 sq ft (75x153 lot)
Sale Price:	$12,000.00
Comments:	

SALE # MO-RES-05

County:	Morton
Address/Location:	47 Captain Marsh Drive, Mandan, North Dakota
Property Type:	Residential
Legal:	Anderson 2nd Addition, lot 47
Date of Sale:	06/28/99
Acres:	.74
Sale Price:	$58,600.00
Comments:	River lot

SALE # MO-RES-06

County:	Morton
Address/Location:	Mandan Avenue and I94, Mandan, North Dakota
Property Type:	Residential
Legal:	Unavailable
Date of Sale:	05/21/99
Acres:	4.00
Sale Price:	$90,000.00
Comments:	Property has fill.

SALE # MO-RES-07

County:	Morton
Address/Location:	Prairie Rose Circle, Mandan, North Dakota
Property Type:	Residential
Legal:	Riverview Commons, lot 4, block 1
Date of Sale:	08/01/00
Acres:	2.50
Sale Price:	$23,100.00
Comments:	View of Missouri River and Huff Hills, 5 miles south on 1806.

SALE # MO-RES-08

County:	Morton
Address/Location:	Prairie Rose Circle, Mandan, North Dakota
Property Type:	Residential
Legal:	Riverview Commons, lot 5, block 1
Date of Sale:	08/01/00
Acres:	2.94
Sale Price:	$24,000.00
Comments:	View of Missouri River and Huff Hills, 5 miles south on highway 1806.

SALE # MO-RES-09

County:	Morton
Address/Location:	4009 35th Avenue Northwest, Mandan, North Dakota
Property Type:	Residential
Legal:	Developers West 1st, Lot 10, Block 4
Date of Sale:	06/22/00
Acres:	Lot size 72'x100'
Sale Price:	$7,000.00
Comments:	

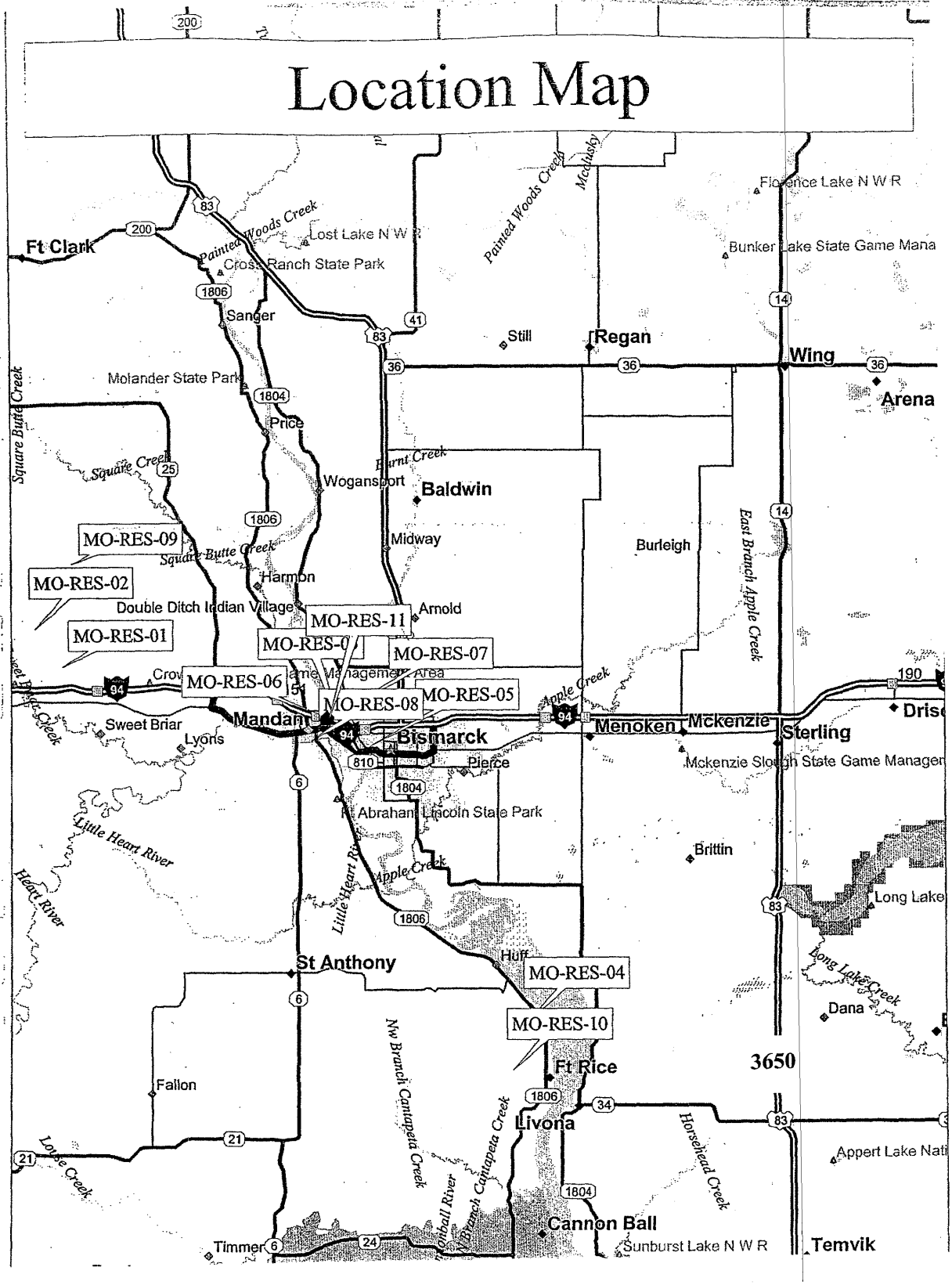
SALE # MO-RES-10

County:	Morton
Address/Location:	2612 9th Avenue Southeast, Mandan, North Dakota
Property Type:	Residential
Legal:	Plainview Heights 5th, Lot 2, Block 3
Date of Sale:	05/25/00
Acres:	.22
Sale Price:	$10,000.00
Comments:	Close to Lincoln Elementary School.

SALE # MO-RES-11

County:	Morton
Address/Location:	1704 River Drive, northeast, Mandan, North Dakota
Property Type:	Residential
Legal:	River Bend 1st Addition, Lot 3, Block 1
Date of Sale:	02/23/00
Acres:	Lot 103'x230'
Sale Price:	$38,000.00
Comments:	River frontage property.

Location Map



COUNTY MORTON

SALE #	PROPERTY TYPE	SALE $	DATE	ACRE	$ / ACRE
MO-RR-01	Res Ranchette	15,900	Aug-99	5.34	2,978
MO-RR-02	Res Ranchette	16,200	Jun-99	5.34	3,034
MO-RR-03	Res Ranchette	30,800	May-99	10	3080
MO-RR-04	Res Ranchette	37,500	Apr-99	0.65	57692
MO-RR-05	Res Ranchette	30,000	Sep-00	24	1,250
MO-RR-06	Res Ranchette	14,000	Jun-00	7.11	1,969
MO-RR-07	Res Ranchette	15,000	Jan-00	10.44	1,437
MO-RR-08	Res Ranchette	17,800	Sep-00	8.44	2,109
MO-RR-09	Res Ranchette	25,500	Feb-00	20	1,275
MO-AG-10	Res Ranchette	33,500	Sep-00	4.24	7,901
MO-RR-11	Res Ranchette	7,900	Mar-00	1.58	5,000
MO-RR-12	Res Ranchette	7,900	Mar-00	1.58	5,000
MO-RR-13	Res Ranchette	7,900	Mar-00	1.58	5,000
MO-RR-14	Res Ranchette	7,900	Mar-00	1.58	5,000

SALE # MO-RR-01

County:	Morton
Address/Location:	Rural Mandan, North Dakota
Property Type:	Residential Ranchette
Legal:	Part of the west ½ of the East ½ of the Southeast 1/4 of Section 8-139-82, Lot 2
Date of Sale:	08/08/99
Acres:	5.34
Sale Price:	$15,900.00
Comments:	7 miles west of Mandan, east of Montes Ranch.

SALE # MO-RR-02

County:	Morton
Address/Location:	Rural Mandan, North Dakota
Property Type:	Residential Ranchette
Legal:	Part of the west ½ of the east ½ of the southeast ¼ of section 8-139-82, Lot 1
Date of Sale:	06/18/99
Acres:	5.34
Sale Price:	$16,200.00
Comments:	7 miles west of Mandan, east of Montes ranch.

SALE # MO-RR-03

County:	Morton
Address/Location:	Highway 1806, Mandan, North Dakota
Property Type:	Residential Ranchette
Legal:	High Country Estates part of north ½, section 1-T140-R82W
Date of Sale:	05/27/99
Acres:	10.00
Sale Price:	$30,800.00
Comments:	Rural H20, 10.2 miles north of I-94 on 1806, west side of the road.

SALE # MO-RR-04

County:	Morton
Address/Location:	HC07 Mandan, North Dakota
Property Type:	Residential Ranchette
Legal:	Schlossers 3rd Addition Lot 7
Date of Sale:	04/30/99
Acres:	.65
Sale Price:	$37,500.00
Comments:	

SALE # MO-RR-05

County:	Morton
Address/Location:	Mustang Dr. south, Mandan, North Dakota
Property Type:	Residential Ranchette
Legal:	Four Square Ranch estates, lot 1, block 1
Date of Sale:	09/11/00
Acres:	24
Sale Price:	$30,000.00
Comments:	Three miles west of Mandan.

SALE # MO-RR-06

County:	Morton
Address/Location:	County Road 140, Mandan, North Dakota
Property Type:	Residential Ranchette
Legal:	Windsor Estates, 1st filing, Lot 6, Block 3
Date of Sale:	06/28/00
Acres:	7.11
Sale Price:	$14,000.00
Comments:	

SALE # MO-RR-07

County:	Morton
Address/Location:	Highway 1806 north, Mandan, North Dakota
Property Type:	Residential Ranchette
Legal:	High Country Estates, 1st Addition, Lot 7, Block 1, Part of the north ½ of section 1-T140 R82W
Date of Sale:	01/14/00
Acres:	10.44
Sale Price:	$15,000.00
Comments:	Road, power, phone, and rural water, 10.2 miles north of I-94 on 1806, west side of road.

SALE # MO-RR-08

County:	Morton
Address/Location:	County Road 140, Mandan, North Dakota
Property Type:	Residential Ranchette
Legal:	Windsor Estates, 1st Addition, Lot 3, Block 3
Date of Sale:	09/27/00
Acres:	8.44
Sale Price:	$17,800.00
Comments:	Road, power, phone, and rural water, north on 1806 to county highway 140, west approximately 2.4 miles to the sign, north side of road.

SALE # MO-RR-09

County:	Morton
Address/Location:	Highway 1806 north, Mandan, North Dakota
Property Type:	Residential Ranchette
Legal:	High Country Estates, 3rd Addition, lot 3, block 1, part of north ½ of section 1-T140 R82W
Date of Sale:	02/01/00
Acres:	20
Sale Price:	$25,500.00
Comments:	Road, power, phone, rural water, 10.2 miles north of I-94 on 1806, west side of road.

SALE # MO-RR-10

County:	Morton
Address/Location:	Prairie Rose Circle, Mandan, North Dakota
Property Type:	Residential Ranchette
Legal:	River View Commons, Lot 7, Block 1
Date of Sale:	09/01/00
Acres:	4.24
Sale Price:	$33,500.00
Comments:	

SALE # MO-RR-11

County:	Morton
Address/Location:	Kovash Subdivision, Mandan, North Dakota
Property Type:	Residential Ranchette
Legal:	Kovash Subdivision, Lot 5, Block 1
Date of Sale:	03/27/00
Acres:	1.58
Sale Price:	$7,900.00
Comments:	Rural water and MDU gas through subdivision, on mail and school bus routes.

SALE # MO-RR-12

County:	Morton
Address/Location:	Kovash Subdivision, Mandan, North Dakota
Property Type:	Residential Ranchette
Legal:	Kovash Subdivision, Lot 2, Block 1
Date of Sale:	03/27/00
Acres:	1.58
Sale Price:	$7,900.00
Comments:	Rural water and MDU gas through subdivision, on mail and school bus routes.

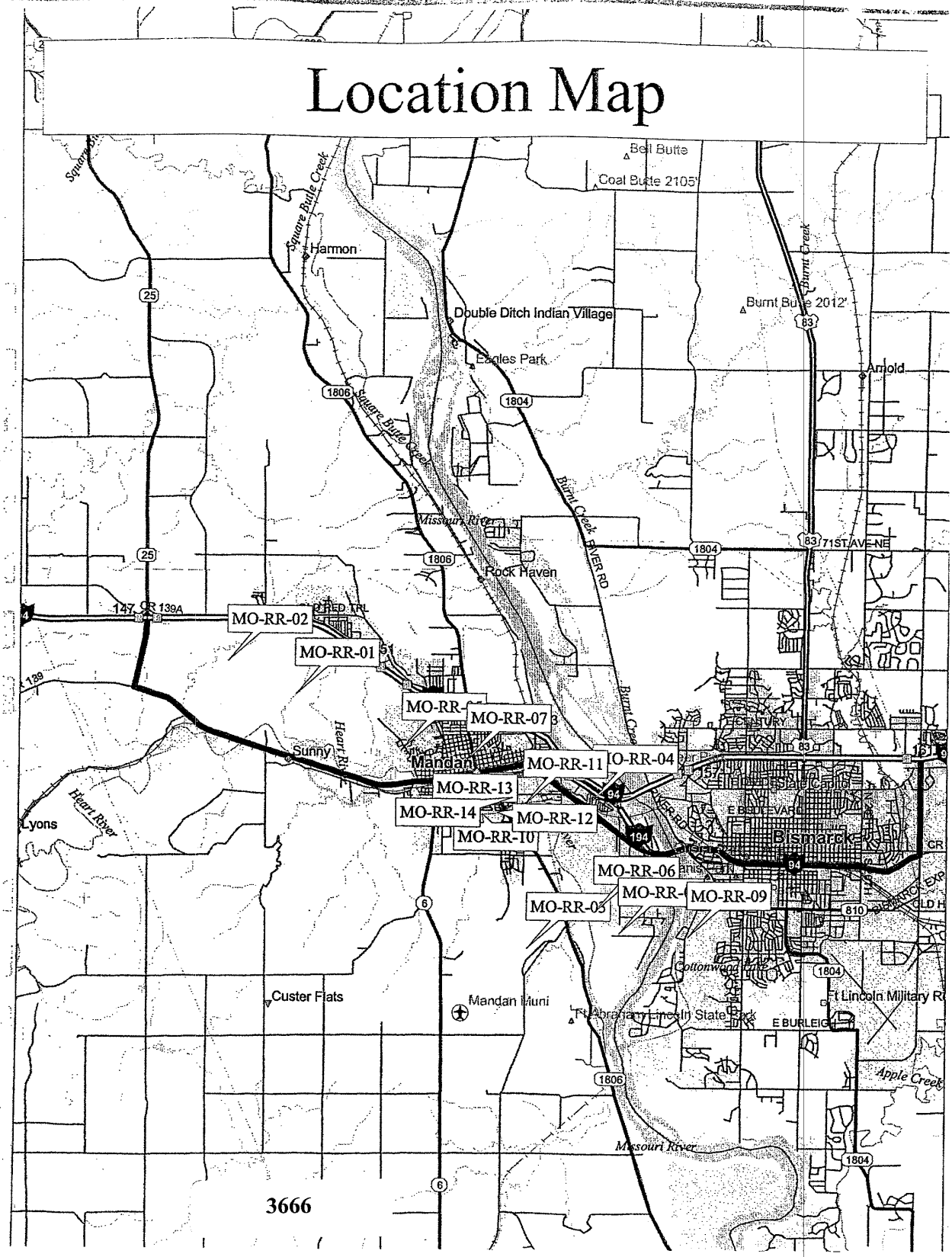
SALE # MO-RR-13

County:	Morton
Address/Location:	Kovash Subdivision, Mandan, North Dakota
Property Type:	Residential Ranchette
Legal:	Kovash Subdivision, Lot 3, Block 1
Date of Sale:	03/27/00
Acres:	1.58
Sale Price:	$7,900.00
Comments:	Rural water and MDU gas through subdivision, on mail and school bus routes.

SALE # MO-RR-14

County:	Morton
Address/Location:	Kovash Subdivision, Mandan, North Dakota
Property Type:	Residential Ranchette
Legal:	Kovash Subdivision, Lot 4, Block 1
Date of Sale:	03/27/00
Acres:	1.58
Sale Price:	$7,900.00
Comments:	Rural water and MDU gas through subdivision, on mail and school bus routes.

Location Map



COUNTY MORTON

SALE #	PROPERTY TYPE	SALE $	DATE	SQ FT	$ / SQ FT
MO-CM-01	Commercial	142,500	Jun-99	70,567	2.02
MO-CM-02	Commercial	142,500	Jun-99	69,260	2.06
MO-CM-03	Commercial	109,324	Jun-99	54,886	1.99
MO-CM-04	Commercial	115,500	Nov-00	45,000	2.57

SALE # MO-CM-01

County:	Morton
Address/Location:	130 3rd Avenue Southeast, Mandan, North Dakota
Property Type:	Commercial
Legal:	Dan's Super Market Addition Lot 1, Block2
Date of Sale:	06/24/99
Acres:	1.62
Sale Price:	142,500
Comments:	Next to the new Dan's Supermarket in Mandan

SALE # MO-CM-02

County:	Morton
Address/Location:	131 3rd Avenue Southeast, Mandan, North Dakota
Property Type:	Commercial
Legal:	Dan's Supermarket Addition Lot 1, Block 1
Date of Sale:	06/24/99
Acres:	1.59
Sale Price:	$142,500.00
Comments:	Next to the new Dan's Supermarket in Mandan

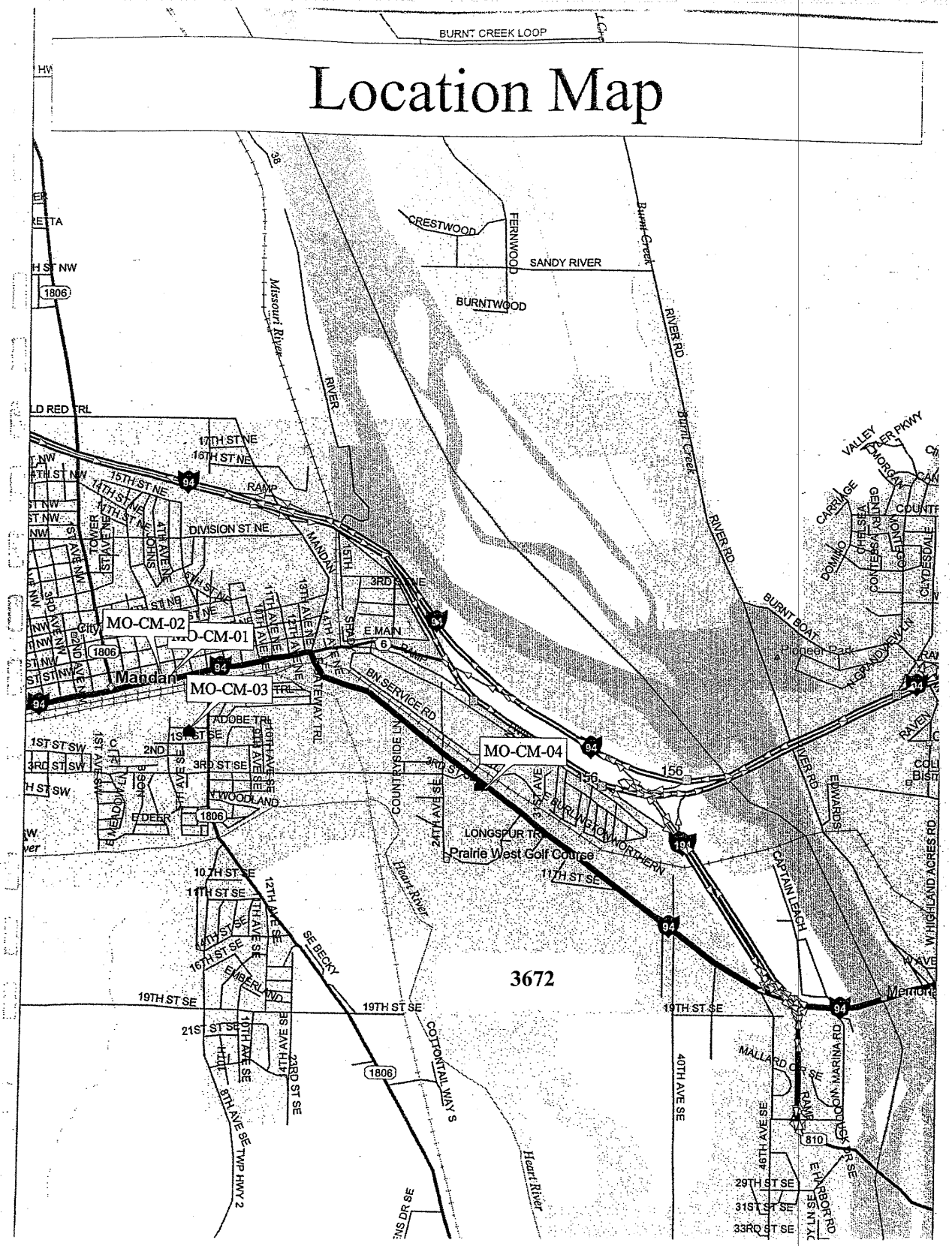
SALE # MO-CM-03

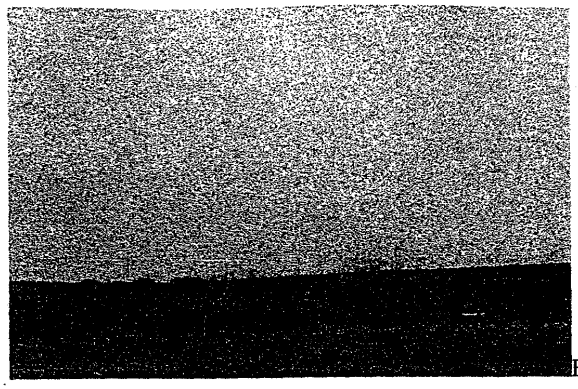
County:	Morton
Address/Location:	501 Burlington St. southeast, Mandan, North Dakota
Property Type:	Commercial
Legal:	Dan's Supermarket addition, lot 2, block 2
Date of Sale:	06/24/99
Acres:	1.26
Sale Price:	$109,324.00
Comments:	Next to Dan's Supermarket in Mandan.

SALE # MO-CM-04

County:	Morton
Address/Location:	2801 Memorial Highway, Mandan, North Dakota
Property Type:	Commercial
Legal:	Ramble wood 4th, Lot 1, Block 1
Date of Sale:	11/03/00
Acres:	Lot 125'x360'
Sale Price:	$115,500.00
Comments:	24'x24' Building with propane heat and electric, no water or sewer, most of the lot is paved.

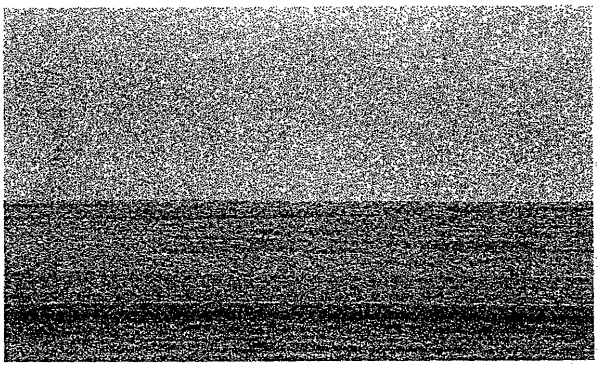
Location Map

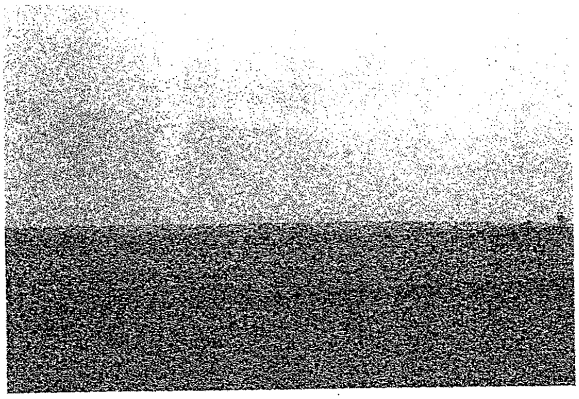


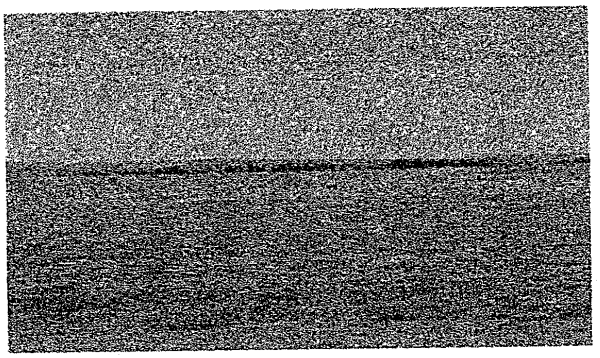


Burleigh











COUNTY BURLEIGH

SALE #	PROPERTY TYPE	SALE $	DATE	ACRES	$ / ACRE
BU-AG-01	Agricultural	140,000	Jan-99	640	219
BU-AG-02	Agricultural	52,000	Jun-99	80	650
BU-AG-03	Agricultural	176,338	May-99	95	1856
BU-AG-04	Agricultural	56,000	Nov-99	160	350
BU-AG-05	Agricultural	65,000	Apr-99	80	813
BU-AG-06	Agricultural	29,350	Mar-99	40	734
BU-AG-07	Agricultural	35,000	Feb-99	40	313
BU-AG-08	Agricultural	35,000	Feb-99	40	313
BU-AG-09	Agricultural	35,000	Sep-99	40	313
BU-AG-10	Agricultural	110,000	Jul-00	320	344
BU-AG-11	Agricultural	500,000	Dec-00	132.96	3761
BU-AG-12	Agricultural	50,000	Oct-00	160	313
BU-AG-13	Agricultural	56,000	Oct-00	160	350
BU-AG-14	Agricultural	73,000	Sep-00	271	269

SALE # BU-AG-01

County:	Burleigh
Address/Location:	McKenzie, North Dakota
Property Type:	Agricultural
Legal:	South 25, T140N, R78W Francis Township
Date of Sale:	01/06/99
Acres:	640
Sale Price:	$140,000.00
Comments:	McKenzie exit (176) North 5 miles, Frontage on 30th Avenue Northeast.

SALE # BU-AG-02

County:	Burleigh
Address/Location:	Baldwin, North Dakota
Property Type:	Agricultural
Legal:	South ½, Northeast ¼ Section 33-141-80
Date of Sale:	06/01/99
Acres:	80
Sale Price:	$52,000.00
Comments:	11 miles Northwest of Bismarck, North on 83 to 175th Avenue, West 1 mile, South ¼ mile.

SALE # BU-AG-03

County:	Burleigh
Address/Location:	Bismarck, North Dakota
Property Type:	Agricultural
Legal:	Northwest ¼ of Section 12-T137-R80
Date of Sale:	05/18/99
Acres:	95
Sale Price:	$176,338.00
Comments:	North on 83 to flashing lights, then East to 71st 1/8 of a mile on south side.

SALE # BU-AG-04

County:	Burleigh
Address/Location:	Bismarck, North Dakota
Property Type:	Agricultural
Legal:	Northwest ¼ of Section 8, TWP 139 R 77
Date of Sale:	11/29/99
Acres:	160
Sale Price:	$56,000.00
Comments:	One mile West, 2.5 North of McKenzie Exit.

SALE # BU-AG-05

County:	Burleigh
Address/Location:	Rural Bismarck, North Dakota
Property Type:	Agricultural
Legal:	West ½ of Southeast ¼, Section 22-138-80
Date of Sale:	04/23/99
Acres:	80
Sale Price:	$65,000.00
Comments:	Located ½ mile south of United Tribe Education Center.

SALE # BU-AG-06

County:	Burleigh
Address/Location:	Baldwin, North Dakota
Property Type:	Agricultural
Legal:	West ½, west ½, northwest ¼, Section 24-141-80
Date of Sale:	03/12/99
Acres:	40.00
Sale Price:	$29,350.00
Comments:	40 acres adjacent to black top

SALE # BU-AG-07

County:	Burleigh
Address/Location:	Bismarck, North Dakota
Property Type:	Agricultural
Legal:	South ½, south ½, northeast ¼ section 34-141-80
Date of Sale:	12/08/99
Acres:	40.00
Sale Price:	$34,000.00
Comments:	10 miles north of Bismarck, west side of highway 83.

SALE # BU-AG-08

County:	Burleigh
Address/Location:	119th street and highway 10, Bismarck, North Dakota
Property Type:	Agricultural
Legal:	Part of west ½ of the southwest ¼ section 1 TWP138NR79W
Date of Sale:	02/12/99
Acres:	40.00
Sale Price:	$35,000.00
Comments:	

SALE # BU-AG-09

County:	Burleigh
Address/Location:	Northwest, Bismarck, North Dakota
Property Type:	Agricultural
Legal:	North ½, north ½, southeast ¼ of section 13-140-81
Date of Sale:	09/13/99
Acres:	40.00
Sale Price:	$35,000.00
Comments:	9 miles northwest of Bismarck, ND.

SALE # BU-AG-10

County:	Burleigh
Address/Location:	McKenzie, Bismarck, North Dakota
Property Type:	Agricultural
Legal:	South ½ 22T139R77 and southwest ¼ 14T139R77
Date of Sale:	07/21/00
Acres:	320
Sale Price:	$110,000.00
Comments:	

SALE# BU-AG-11

County:	Burleigh
Address/Location:	Rural, Bismarck, North Dakota
Property Type:	Agricultural
Legal:	Northeast ¼ S22-138-80
Date of Sale:	12/29/00
Acres:	132.96
Sale Price:	$500,000.00
Comments:	Land only. Adjacent to city limits

SALE # BU-AG-12

County:	Burleigh
Address/Location:	Rural Bismarck, North Dakota
Property Type:	Agricultural
Legal:	Southwest ¼ section 4-142-80
Date of Sale:	10/30/00
Acres:	160
Sale Price:	$50,000.00
Comments:	1 mile south 1 ½ mile west of Wilton, rolling hills.

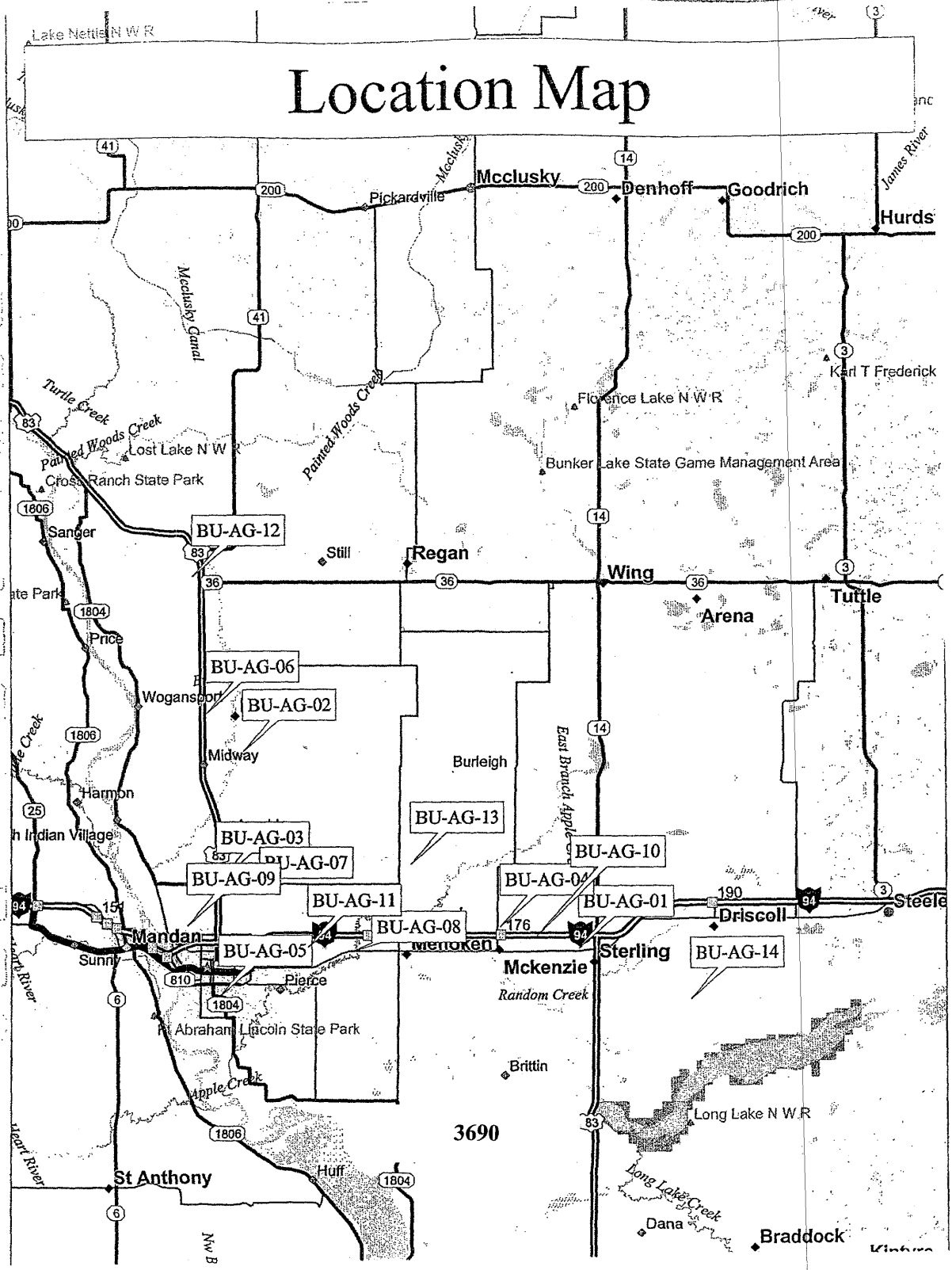
SALE # BU-AG-13

County:	Burleigh
Address/Location:	Rural Menoken, North Dakota
Property Type:	Agricultural
Legal:	Southwest ¼ section 34-140-78 Frances town
Date of Sale:	10/12/00
Acres:	160
Sale Price:	$56,000.00
Comments:	134.2 acres cropland, east on I94 to Menoken exchange, 4 miles north on 158 street northeast, 1 mile east on 84 Avenue north side of road.

SALE # BU-AG-14

County:	Burleigh
Address/Location:	4040 22nd Avenue Southeast, Driscoll, North Dakota
Property Type:	Agricultural
Legal:	Unavailable
Date of Sale:	09/15/00
Acres:	271
Sale Price:	$73,000.00
Comments:	Southeast corner of I94, exit 195, 33 miles east of Bismarck. 261 in crop at $22.00 per acre, 10 more years. 33 miles east of Bismarck.

Location Map



COUNTY BURLEIGH

SALE #	PROPERTY TYPE	SALE $	DATE	SQ FT	$ / SQ FT
BU-RES-01	Residential	12,000	Aug-99	8,640	1.39
BU-RES-02	Residential	12,000	Sep-99	8,640	1.39
BU-RES-03	Residential	12,500	Sep-99	12,700	0.94
BU-RES-04	Residential	16,500	Aug-99	8,400	1.96
BU-RES-05	Residential	18,000	Dec-99	58,150	0.31
BU-RES-06	Residential	10,000	May-99	22,000	0.45
BU-RES-07	Residential	11,050	Sep-99	122,404	0.09
BU-RES-08	Residential	12,900	Mar-99	87,991	0.15
BU-RES-09	Residential	13,000	Oct-99	82,328	0.16
BU-RES-10	Residential	13,900	Jul-99	85,378	0.16
BU-RES-11	Residential	13,950	Apr-99	85,378	0.16
BU-RES-12	Residential	14,000	May-99	90,605	0.15
BU-RES-13	Residential	14,000	Sep-99	92,783	0.15
BU-RES-14	Residential	14,000	Jul-99	85,378	0.16
BU-RES-15	Residential	14,000	May-99	89,298	0.16
BU-RES-16	Residential	14,000	Aug-99	87,556	0.16
BU-RES-17	Residential	14,050	Apr-99	85,378	0.16
BU-RES-18	Residential	14,050	Apr-99	91,912	0.15
BU-RES-19	Residential	14,500	May-99	86,249	0.17
BU-RES-20	Residential	14,500	Nov-99	90,169	0.16
BU-RES-21	Residential	22,000	May-99	217,800	0.10
BU-RES-22	Residential	13,500	Aug-00	82,764	0.16
BU-RES-23	Residential	15,000	Aug-00	11,000	1.36

SALE # BU-RES-01

County:	Burleigh
Address/Location:	2315 La Corte LP, Bismarck, North Dakota
Property Type:	Residential
Legal:	Lot 3, Block 1, The Pointe
Date of Sale:	08/27/99
Acres:	Lot 72'x120'
Sale Price:	$12,000.00
Comments:	Sewer, water, paved street, MDU gas, and electric available.

SALE # BU-RES-02

County:	Burleigh
Address/Location:	2309 La Corte LP, Bismarck, North Dakota
Property Type:	Residential
Legal:	Lot 4, Block 1, The Pointe
Date of Sale:	09/30/99
Acres:	Lot 72'x120'
Sale Price:	$12,000.00
Comments:	Sewer, water, paved street, MDU gas, and electric available.

SALE # BU-RES-03

County:	Burleigh
Address/Location:	2321 La Corte LP, Bismarck, North Dakota
Property Type:	Residential
Legal:	Lot 2, Block 1, The Pointe
Date of Sale:	09/30/99
Acres:	Lot 100'x127'
Sale Price:	$12,500.00
Comments:	Sewer, water, paved street, MDU gas, and electric available.

SALE # BU-RES-04

County:	Burleigh
Address/Location:	2307 Grant Drive, Bismarck, North Dakota
Property Type:	Residential vacant lot
Legal:	Steins Addition, Lot 3
Date of Sale:	08/02/99
Acres:	Lot 70'x120'
Sale Price:	$16,500.00
Comments:	Home site, partial fence, landscaped.

SALE # BU-RES-05

County:	Burleigh
Address/Location:	2300 Pointe LP., Bismarck, North Dakota
Property Type:	Residential
Legal:	The Pointe, Lot 1, Block 1
Date of Sale:	12/17/99
Acres:	58,150 sq ft
Sale Price:	$18,000.00
Comments:	

SALE # BU-RES-06

County:	Burleigh
Address/Location:	3720 Princeton Avenue, Bismarck, North Dakota
Property Type:	Residential
Legal:	Imperial Valley, Block 1, Lot 12
Date of Sale:	05/03/99
Acres:	.50 (Lot 110x200)
Sale Price:	$10,000.00
Comments:	

SALE # BU-RES-07

County:	Burleigh
Address/Location:	Hightop Acres 1st, Bismarck, North Dakota
Property Type:	Residential
Legal:	Hightop Acres, 1st, Lot 1, Block 1
Date of Sale:	09/10/99
Acres:	2.81
Sale Price:	$11,050.00
Comments:	Rural water, line in ditch, south side of lot, north side of road, flat treed lot, 71st Avenue Northeast and Hightop Lane, just east of 26th Street.

SALE # BU-RES-08

County:	Burleigh
Address/Location:	Sunnyview 7th Addition, Bismarck, North Dakota
Property Type:	Residential
Legal:	Sunnyview Acres 7th Addition, Lot 3, Block 2
Date of Sale:	03/26/99
Acres:	2.02
Sale Price:	$12,900.00
Comments:	Between 71st Avenue Northeast and 84th Avenue Northeast, just off of 26th Street 71st Avenue Northeast and Hightop Lane, just east of 26th Street.

SALE # BU-RES-09

County:	Burleigh
Address/Location:	Sunny Meadows Addition, Bismarck, North Dakota
Property Type:	Residential
Legal:	Sunny Meadows, Lot 8, Block 1
Date of Sale:	10/19/99
Acres:	1.89
Sale Price:	$13,000.00
Comments:	

SALE # BU-RES-10

County:	Burleigh
Address/Location:	Cedar Lane, Bismarck, North Dakota
Property Type:	Residential
Legal:	Prairie Pines, Lot 2, Block 2, 1st Subdivision
Date of Sale:	07/08/99
Acres:	1.96
Sale Price:	$13,900.00
Comments:	Burleigh water available, shelter built on east lot, all lots staked, gravel roads, restricted covenants apply, north next to shamrock acres.

SALE # BU-RES-11

County:	Burleigh
Address/Location:	Sunnyview 8th Addition, Bismarck, North Dakota
Property Type:	Residential
Legal:	Sunnyview 8th Addition, Lot 5, Block 1
Date of Sale:	04/30/99
Acres:	1.96 (lot 85,367 sq ft)
Sale Price:	13,950
Comments:	North on 83 to 71st Avenue, east to 26th street and north, watch for signs, nice lots with treed and shelter belts and seeded. Rural waterline to be run thru development.

SALE # BU-RES-12

County:	Burleigh
Address/Location:	Sunnyview 7th Addition, Bismarck, North Dakota
Property Type:	Residential
Legal:	Sunnyview 7th Addition, Lot 3, Block 1
Date of Sale:	05/26/99
Acres:	2.08
Sale Price:	$14,000.00
Comments:	Treed flat lot, faces south

SALE # BU-RES-13

County:	Burleigh
Address/Location:	Sunnyview 8th Addition, Bismarck, North Dakota
Property Type:	Residential
Legal:	Sunnyview 8th Addition, Lot 1, Block 2
Date of Sale:	09/15/99
Acres:	2.13
Sale Price:	$14,000.00
Comments:	North on 83 to 71st Avenue, east to 26th street and north, watch for signs, nice lot with treed and shelterbelts and seeded. Rural waterline to be run thru development.

SALE # BU-RES-14

County:	Burleigh
Address/Location:	Sunnyview 8th Addition, Bismarck, North Dakota
Property Type:	Residential
Legal:	Sunnyview 8th Addition, Lot 3, Block 1
Date of Sale:	07/01/99
Acres:	1.96
Sale Price:	$14,000.00
Comments:	North on 83 to 71st Avenue, east to 26th street and north, watch for signs, nice lot with treed and shelterbelts and seeded. Rural waterline to be run thru development.

SALE # BU-RES-15

County:	Burleigh
Address/Location:	Sunnyview 8th Addition, Bismarck, North Dakota
Property Type:	Residential
Legal:	Sunnyview 8th Addition, Lot 6, Block 1
Date of Sale:	05/12/99
Acres:	2.05
Sale Price:	$14,000.00
Comments:	North on 83 to 71st Avenue, east to 26th street and north, watch for signs, nice lot with treed and shelterbelts and seeded. Rural waterline to be run thru development.

SALE# BU-RES-16

County:	Burleigh
Address/Location:	Sunnyview 7th Addition, Bismarck, North Dakota
Property Type:	Residential
Legal:	Sunnyview 7th Addition, Lot 1, Block 2
Date of Sale:	08/30/99
Acres:	2.01
Sale Price:	$14,000.00
Comments:	East of 26th street on 82nd Avenue Northeast, nice, flat, treed, seeded lot.

SALE # BU-RES-17

County:	Burleigh
Address/Location:	Sunnyview 8th Addition, Bismarck, North Dakota
Property Type:	Residential
Legal:	Sunnyview 8th Addition, Lot 2, Block 1
Date of Sale:	04/01/99
Acres:	1.96
Sale Price:	$14,050.00
Comments:	North on 83 to 71st Avenue, east to 26th street and north, watch for signs, nice lots with treed and shelterbelts and seeded.

SALE # BU-RES-18

County:	Burleigh
Address/Location:	Sunnyview 8th Addition, Bismarck, North Dakota
Property Type:	Residential
Legal:	Sunnyview 8th Addition, Lot 4, Block 1
Date of Sale:	04/15/99
Acres:	2.11
Sale Price:	$14,050.00
Comments:	North on 83 to 71st Avenue, east to 26th street and north, watch for signs, nice lots with treed and shelterbelts and seeded.

SALE # BU-RES-19

County:	Burleigh
Address/Location:	Sunnyview 8th Addition, Bismarck, North Dakota
Property Type:	Residential
Legal:	Sunnyview 8th Addition, Lot 7, Block 1
Date of Sale:	05/14/99
Acres:	1.98
Sale Price:	$14,500.00
Comments:	North on 83 to 71st Avenue, east to 26th street and north, watch for signs, nice lots, with treed and shelterbelts and seeded. Rural waterline to be run thru development.

SALE # BU-RES-20

County:	Burleigh
Address/Location:	Sunnyview 8th Addition, Bismarck, North Dakota
Property Type:	Residential
Legal:	Sunnyview 8th Addition, Lot 3, Block 2
Date of Sale:	11/03/99
Acres:	2.07
Sale Price:	$14,500.00
Comments:	North on 83 to 71st Avenue, east to 26th street and north, watch for signs, nice lots, with treed and shelterbelts and seeded. Rural waterline to be run thru development.

SALE # BU-RES-21

County:	Burleigh
Address/Location:	4 K's Estates, Bismarck, North Dakota
Property Type:	Residential vacant lot
Legal:	North ½ Lot 8 in Southwest ¼ Section 26, TWP 140N, Range 80W
Date of Sale:	05/11/99
Acres:	5.00
Sale Price:	$22,000.00
Comments:	2 approaches to the property, one is from the east, one is from the north.

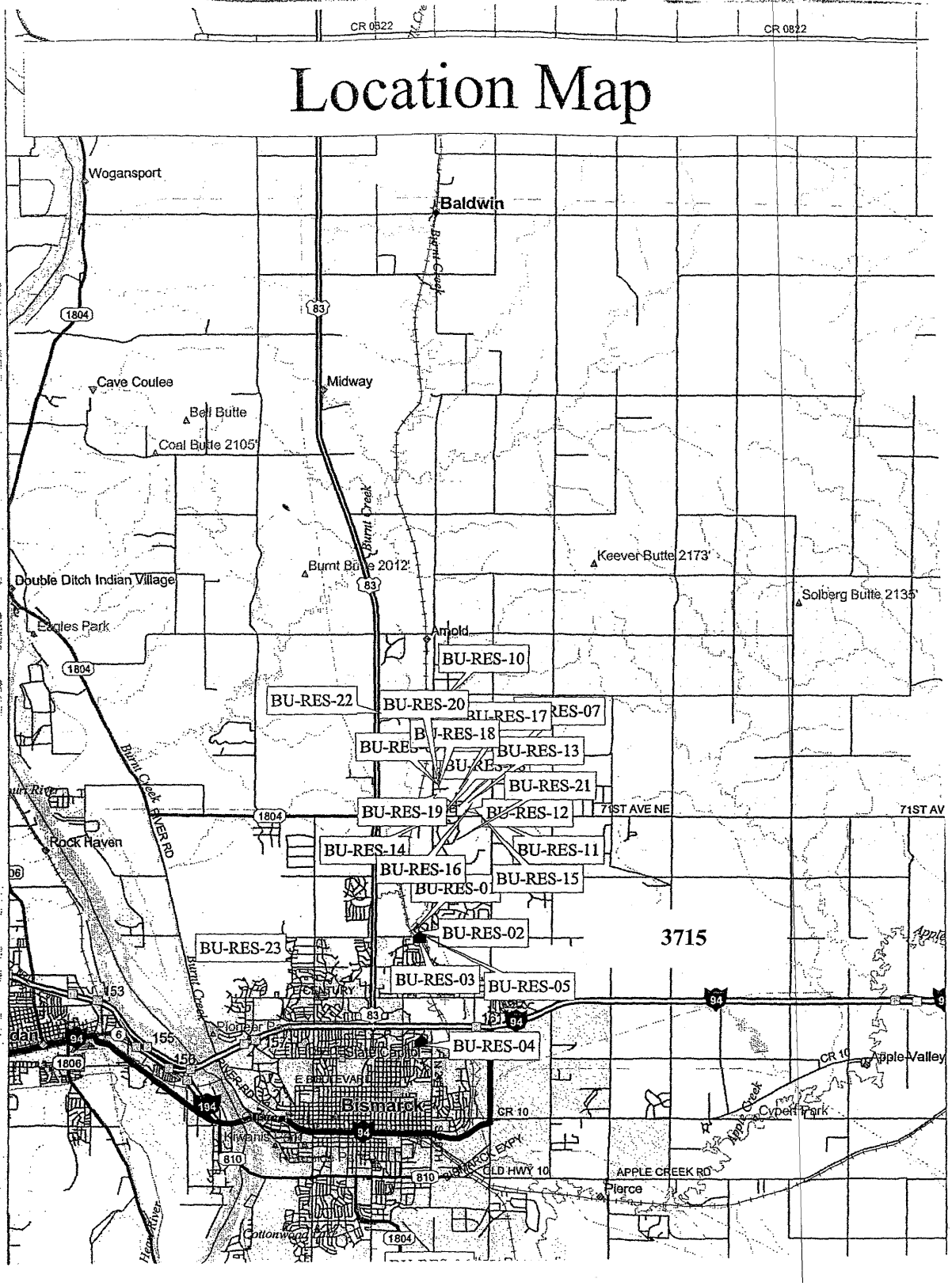
SALE # BU-RES-22

County:	Burleigh
Address/Location:	Plainview Drive, Bismarck, North Dakota
Property Type:	Residential
Legal:	Brentwood Estates, Lot 1 and 2, Block 1
Date of Sale:	08/08/00
Acres:	1.90
Sale Price:	$13,500.00
Comments:	Trees, waterline on property, Highway 83 north to Brentwood Estates, corner lot

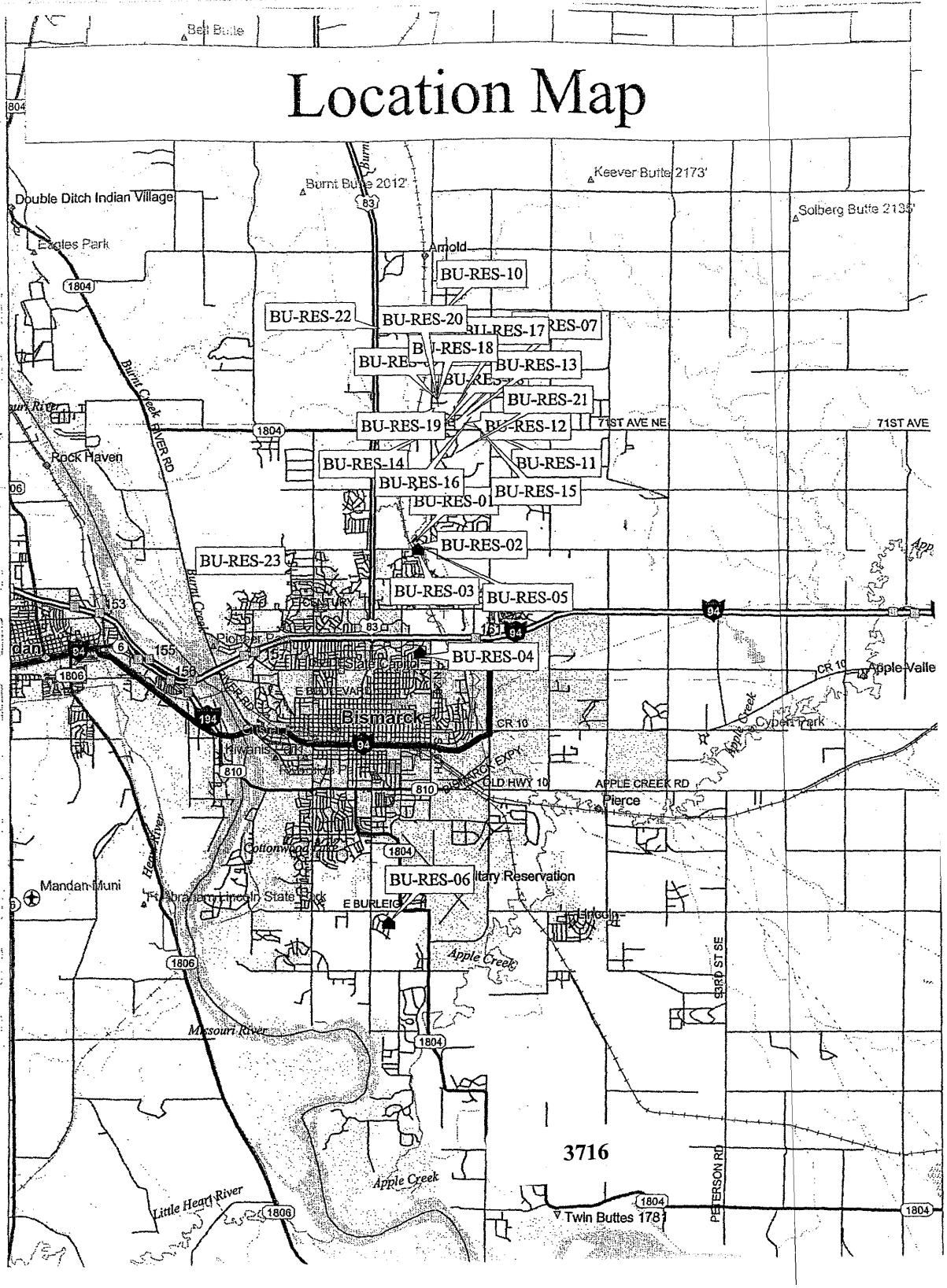
SALE # BU-RES-23

County:	Burleigh
Address/Location:	High Meadows, Bismarck, North Dakota
Property Type:	Residential
Legal:	High Meadows, 5th Addition, Lot 1, Block 7
Date of Sale:	08/22/00
Acres:	Lot 100'x110'
Sale Price:	$15,000.00
Comments:	Northeast corner of Overlook drive and Buckskin Avenue.

Location Map



Location Map



COUNTY BURLEIGH

SALE #	PROPERTY TYPE	SALE $	DATE	ACRE	$ / ACRE
BU-RR-01	Res Ranchette	17,500	Jun-99	0.92	19,022
BU-RR-02	Res Ranchette	7,000	May-99	2.50	2,800
BU-RR-03	Res Ranchette	7,500	Jan-99	1.57	4777
BU-RR-04	Res Ranchette	8,650	Aug-99	2.01	4303
BU-RR-05	Res Ranchette	9,000	Aug-99	0.75	12,000
BU-RR-06	Res Ranchette	9,285	Oct-99	5.43	1,710
BU-RR-07	Res Ranchette	9,700	Dec-99	5.43	1,786
BU-RR-08	Res Ranchette	10,000	May-99	2.0	5,000
BU-RR-09	Res Ranchette	10,500	Mar-99	3.3	3,182
BU-AG-10	Res Ranchette	13,750	May-99	2.37	5,802
BU-RR-11	Res Ranchette	13,900	Nov-99	3.21	4,330
BU-RR-12	Res Ranchette	14,150	Jun-99	2.03	6,970
BU-RR-13	Res Ranchette	14,500	Feb-99	5.0	2,900
BU-RR-14	Res Ranchette	14,500	Jan-99	2.0	7,250
BU-RR-15	Res Ranchette	14,500	May-99	1.96	7,398
BU-RR-16	Res Ranchette	14,500	Nov-99	2.02	7,178
BU-RR-17	Res Ranchette	15,000	Aug-99	3.24	4,630
BU-RR-18	Res Ranchette	15,500	Aug-99	2.92	5,479
BU-RR-19	Res Ranchette	16,000	Jun-99	2.96	5,405
BU-RR-20	Res Ranchette	16,000	Oct-99	4.62	3,463
BU-RR-21	Res Ranchette	16,500	Apr-99	2.60	6,346

BU-RR-22	Res Ranchette	17,000	Mar-99	5.56	3,058
BU-RR-23	Res Ranchette	17,500	Dec-99	2.73	6,410
BU-RR-24	Res Ranchette	17,800	Sep-99	4.9	3,633
BU-RR-25	Res Ranchette	17,900	Jan-99	1.89	9,471
BU-RR-26	Res Ranchette	18,750	Apr-99	2.35	7,979
BU-RR-27	Res Ranchette	18,750	Mar-99	1.97	9,518
BU-RR-28	Res Ranchette	18,750	Sep-99	8.24	2,276
BU-RR-29	Res Ranchette	18,900	Jun-99	1.49	12,685
BU-RR-30	Res Ranchette	19,000	Mar-99	8.77	2,166
BU-RR-31	Res Ranchette	19,250	Jul-99	8.8	2,188
BU-RR-32	Res Ranchette	19,333	Aug-99	19.33	1,000
BU-RR-33	Res Ranchette	19,500	Apr-99	8.67	2,249
BU-RR-34	Res Ranchette	21,000	Mar-99	3.75	5,600
BU-RR-35	Res Ranchette	21,000	Nov-99	2.0	10,500
BU-RR-36	Res Ranchette	25,000	Aug-99	2.03	12,315
BU-RR-37	Res Ranchette	36,240	Jul-99	22.65	1,600
BU-RR-38	Res Ranchette	37,733	Apr-99	1.0	37,733
BU-RR-39	Res Ranchette	42,900	Jan-99	3.08	13,929
BU-RR-40	Res Ranchette	100,000	Aug-99	2.36	42,373
BU-RR-41	Res Ranchette	14,800	Sep-00	2.04	7,255

SALE # BU-RR-01

County:	Burleigh
Address/Location:	7405 Sunshine Lane, Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	Ponderosa Riverside Village, Lots 13,14, Block 4
Date of Sale:	06/11/99
Acres:	.92 (200x200 lot)
Sale Price:	$17,500.00
Comments:	Gravel street, large trees, lots cleared, association fee $25, Provides river access, rural water on lot line

SALE # BU-RR-02

County:	Burleigh
Address/Location:	Grand Prairie I, Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	Lot 12, Block 5
Date of Sale:	05/27/99
Acres:	2.50
Sale Price:	$7,000.00
Comments:	

SALE # BU-RR-03

County:	Burleigh
Address/Location:	City View Heights, Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	City View Heights, Lot 6, Block 4
Date of Sale:	01/29/99
Acres:	1.57
Sale Price:	$7,500.00
Comments:	Well established tree rows, Burleigh water.

SALE # BU-RR-04

County:	Burleigh
Address/Location:	Brookfield Estates, Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	Brookfield Estates, Lot 2, Block 3
Date of Sale:	08/16/99
Acres:	2.01
Sale Price:	$8,650.00
Comments:	Close to town, water membership can be purchased for $350.

SALE # BU-RR-05

County:	Burleigh
Address/Location:	Grand Prairie Estates, Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	Grand Prairie 4th Subdivision, Lot 2, Block 4
Date of Sale:	08/17/99
Acres:	5 lots at 6500 sq ft each
Sale Price:	$9,000.00
Comments:	Northeast of Geodesic home on North 26th Street, Rural water $2900 to lot line

SALE # BU-RR-06

County:	Burleigh
Address/Location:	Faiman's Sunrise Addition, Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	South ½, S28-T128N-R178W, Lot 5, Block 4
Date of Sale:	10/13/99
Acres:	5.43
Sale Price:	$9,285.00
Comments:	Street and electric in, rural water available. Drive east on old highway 10 to 93rd Street, Southeast 3.5 miles south to Sunrise Boulevard, lots plotted to center of road, rolling terrain.

SALE # BU-RR-07

County:	Burleigh
Address/Location:	Faiman's Sunrise Addition, Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	South ½, S28-T128N-R178W, Lot 6, Block 6
Date of Sale:	12/02/99
Acres:	5.43
Sale Price:	$9,700.00
Comments:	Street and electric available, rural water available. Drive east on old highway 10 to 93rd Street, Southeast 3.5 miles south to Sunrise Boulevard, lots plotted to center of road, rolling terrain.

SALE # BU-RR-08

County:	Burleigh
Address/Location:	Grand Prairie, Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	Grand Prairie 2nd Addition, Lot 21, Block 12, Morris Road
Date of Sale:	05/03/99
Acres:	2.00
Sale Price:	$10,000.00
Comments:	

SALE # BU-RR-09

County:	Burleigh
Address/Location:	625 Greenfield Lane, Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	Green Acres, Lot 5, Block 5
Date of Sale:	03/17/99
Acres:	3.30
Sale Price:	$10,500.00
Comments:	Building lot

SALE # BU-RR-10

County:	Burleigh
Address/Location:	Haycreek Drive, Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	Grand Prairie Estates, Lot 2, Block 10
Date of Sale:	05/19/99
Acres:	2.37
Sale Price:	$13,750.00

Comments:

SALE # BU-RR-11

County:	Burleigh
Address/Location:	33rd Street Southeast, Bismarck, North Dakota
Property Type:	Residential
Legal:	Morgan Country Estates, Lot 6, Block 1
Date of Sale:	10/12/99
Acres:	3.21
Sale Price:	$13,900.00
Comments:	2 miles south of U of Mary on 1804 to Kimball, bottom sign (desert road) turn right then turn right again on 89th Avenue southeast, go 2 miles west.

SALE # BU-RR-12

County:	Burleigh
Address/Location:	Briardale II, Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	Briardale II, Lot 4, Block 4
Date of Sale:	06/30/99
Acres:	2.03
Sale Price:	$14,150.00
Comments:	Nice wooded area, south of Bismarck, along Sibley drive, rural water membership included.

SALE # BU-RR-13

County:	Burleigh
Address/Location:	Rural, Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	East ½, Northwest ¼, Northwest ¼, Northwest ¼, of Section 7, TWP 139, R79W, of 5th PM of Burleigh County.
Date of Sale:	02/26/99
Acres:	5.00
Sale Price:	$14,500.00
Comments:	Go north on highway 83 to highway 1804, blinking light, east 2 ½ miles (C21 Landmark sign), paved street, barn and utilities, buildings permitted.

SALE # BU-RR-14

County:	Burleigh
Address/Location:	Alamo Road, Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	Western Hills, Lot 8, Block 5.
Date of Sale:	01/15/99
Acres:	2.00
Sale Price:	$14,500.00
Comments:	

SALE # BU-RR-15

County:	Burleigh
Address/Location:	Vista South, Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	Vista South, Lot 5, Block 6, part of section 35-T, 138N, Range 80W
Date of Sale:	05/14/99
Acres:	1.96
Sale Price:	$14,500.00
Comments:	Property is located, ½ mile east of University of Mary.

SALE # BU-RR-16

County:	Burleigh
Address/Location:	Hightop Acres 2nd, Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	Southwest ¼, Section 2, TWP 139, R80, Lot 3, Block 4
Date of Sale:	11/05/99
Acres:	2.02
Sale Price:	$14,500.00
Comments:	3 miles northeast of Bismarck, along paved road.

SALE # BU-RR-17

County:	Burleigh
Address/Location:	Sibley Drive and Dogwood, Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	Meledee Acres, Lot 3, Block 1
Date of Sale:	08/09/99
Acres:	3.24
Sale Price:	$15,000.00
Comments:	Utilities close by, lots of trees, end of cul-de-sac

SALE # BU-RR-18

County:	Burleigh
Address/Location:	Centerville Lane West, Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	Grand Prairie 4th, Lot 3, Block 2
Date of Sale:	08/20/99
Acres:	2.92
Sale Price:	$15,500.00
Comments:	Lot on Cul-de-sac

SALE # BU-RR-19

County:	Burleigh
Address/Location:	Olive/Chokecherry Lane, Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	Re-plat Northwood Estates, AUD plat A, Lot 7 and part of Lot 8, Block 4
Date of Sale:	06/07/99
Acres:	2.96
Sale Price:	$16,000.00
Comments:	Trees, rural water stubbed to lot

SALE # BU-RR-20

County:	Burleigh
Address/Location:	8887 Welle LP, Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	Welle's Subdivision, Lot 8, Block 2
Date of Sale:	10/06/99
Acres:	4.62
Sale Price:	16,000
Comments:	

SALE # BU-RR-21

County:	Burleigh
Address/Location:	Alamo Road, Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	Western Hills, Lot 10, Block 5
Date of Sale:	04/09/99
Acres:	2.60
Sale Price:	$16,500.00
Comments:	

SALE # BU-RR-22

County:	Burleigh
Address/Location:	8821 Welle LP, Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	Welle's Subdivision, Lot 6, Block 2
Date of Sale:	03/31/99
Acres:	5.56
Sale Price:	$17,000.00
Comments:	No improvements

SALE # BU-RR-23

County:	Burleigh
Address/Location:	Burnt Creek Estates, Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	West ½ of Section 11, TWP 139N R81, Lot 3, Block 3
Date of Sale:	12/15/99
Acres:	2.73
Sale Price:	$17,500.00
Comments:	Paved streets, rural water to lots, river bottom, couple block to the boat dock.

SALE # BU-RR-24

County:	Burleigh
Address/Location:	1900 84th Avenue Northwest, Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	Welle 2nd Subdivision, Lot 1, Block 1
Date of Sale:	09/03/99
Acres:	4.90
Sale Price:	$17,800.00
Comments:	Small trees

SALE # BU-RR-25

County:	Burleigh
Address/Location:	Burnt Creek Estates, Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	West ½ of Section 11, TWP 139N, R81, Lot 15, Block 2
Date of Sale:	01/15/99
Acres:	1.89
Sale Price:	$17,900.00
Comments:	Paved streets, rural water to lots, river bottom, couple blocks to boat dock

SALE # BU-RR-26

County:	Burleigh
Address/Location:	Eastridge 1st Addition, Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	Eastridge 1st Addition, Lot 2, Block 2
Date of Sale:	04/09/99
Acres:	2.35
Sale Price:	18,750
Comments:	MDU gas, Capitol electric, rural water.

SALE # BU-RR-27

County:	Burleigh
Address/Location:	Eastridge 1st Addition, Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	Eastridge 1st Addition, Lot 7, Block 1
Date of Sale:	03/01/99
Acres:	1.97
Sale Price:	$18,750.00
Comments:	MDU gas, Capitol electric, rural water.

SALE # BU-RR-28

County:	Burleigh
Address/Location:	Paris Place 2nd Subdivision, Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	Paris Place 2nd, Lot 2, Block 1
Date of Sale:	09/30/99
Acres:	8.24
Sale Price:	$18,750.00
Comments:	Large lot, includes rural water membership

SALE # BU-RR-29

County:	Burleigh
Address/Location:	Burnt Creek Estates, Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	West ½ of Section 11 TWP 139N R81, Lot 7, Block 2
Date of Sale:	06/07/99
Acres:	1.49
Sale Price:	$18,900.00
Comments:	Paved streets, rural water to lots, river bottom, couple blocks to boat dock.

SALE # BU-RR-30

County:	Burleigh
Address/Location:	Paris Place 1st Subdivision, Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	Paris Place 1st subdivision, Lot 1, Block 2
Date of Sale:	03/24/99
Acres:	8.77
Sale Price:	$19,000.00
Comments:	8 miles northwest of Bismarck, 5 miles north on 83-3 miles west on 110th Avenue.

SALE # BU-RR-31

County:	Burleigh
Address/Location:	Paris Place 2nd Subdivision, Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	Paris Place 2nd subdivision, Lot 1, Block 1
Date of Sale:	07/06/99
Acres:	8.80
Sale Price:	$19,250.00
Comments:	Large lot, includes water membership.

SALE # BU-RR-32

County: Burleigh

Address/Location: Apple Creek Road, Bismarck, North Dakota

Property Type: Residential Ranchette

Legal: 19.33 acre parcel in west ½ of Section 6-138-78W

Date of Sale: 08/03/99

Acres: 19.33

Sale Price: 19,333

Comments: Fencing, 7 miles east of Farmers Livestock Exchange, property surveyed and defined as an auditors plat

SALE # BU-RR-33

County:	Burleigh
Address/Location:	8888 Welle LP, Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	Welle's Subdivision, Lot 15, Block 1
Date of Sale:	04/29/99
Acres:	8.67
Sale Price:	$19,500.00
Comments:	Lot borders road, has well and electrical power.

SALE # BU-RR-34

County:	Burleigh
Address/Location:	Alamo Road, Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	Western Hills, Lot 9, Block 5
Date of Sale:	03/31/99
Acres:	3.75
Sale Price:	$21,000.00
Comments:	

SALE # BU-RR-35

County: Burleigh

Address/Location: Secluded Acres 2nd, Bismarck, North Dakota

Property Type: Residential Ranchette

Legal: Secluded Acres, Lot 3, Block 3

Date of Sale: 11/30/99

Acres: 2.00

Sale Price: 21,000

Comments: Private setting, located south on Washington Street, go west on 48th Avenue, ½ mile, north side of road. Wooded, rural water and MDU gas.

SALE # BU-RR-36

County:	Burleigh
Address/Location:	Spruce Hill, Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	Spruce Hill Subdivision, Lot 2, Block 2
Date of Sale:	08/12/99
Acres:	2.03 (88,250 sq ft)
Sale Price:	25,000
Comments:	Capitol electric, rural water. North on 1804 approximately ¼ mile past river road access, across from deserted vegetable farm.

SALE # BU-RR-37

County:	Burleigh
Address/Location:	Rural Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	East 22.65 acres in lot B in northwest ¼ 1-139-80
Date of Sale:	07/01/99
Acres:	22.65
Sale Price:	36,240
Comments:	East of highway 71, boarders east side of crescent ridge subdivision

SALE # BU-RR-38

County:	Burleigh
Address/Location:	Island Park Estates, Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	Island Park, Lot 4, Block 10
Date of Sale:	04/08/99
Acres:	1.00
Sale Price:	$37,733.00
Comments:	

SALE # BU-RR-39

County:	Burleigh
Address/Location:	Farwest Drive, Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	Fox Island Subdivision, Lot 9, Block 1
Date of Sale:	01/05/99
Acres:	3.08
Sale Price:	$42,900.00
Comments:	Lot has 200' channel front, channel access river, wooded lot, overlooks state land, drive west on Far west drive to Gallatin inter. Back up 400'.

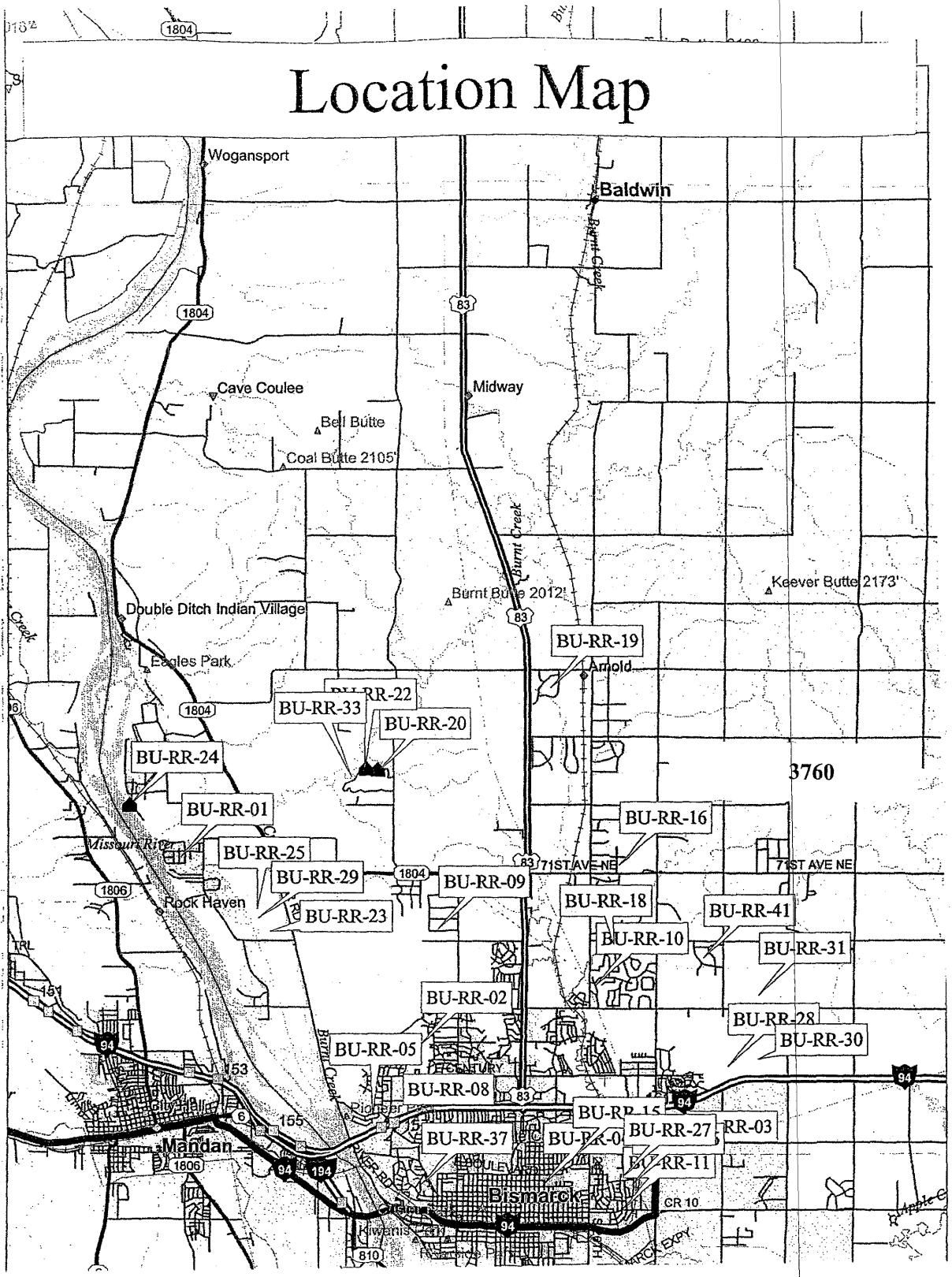
SALE # BU-RR-40

County:	Burleigh
Address/Location:	Gallatin Drive, Bismarck, North Dakota
Property Type:	Residential Ranchette
Legal:	Fox Island Subdivision, Lot 26, Block 1
Date of Sale:	08/12/99
Acres:	2.36
Sale Price:	$100,000.00
Comments:	299.47 feet of river frontage.

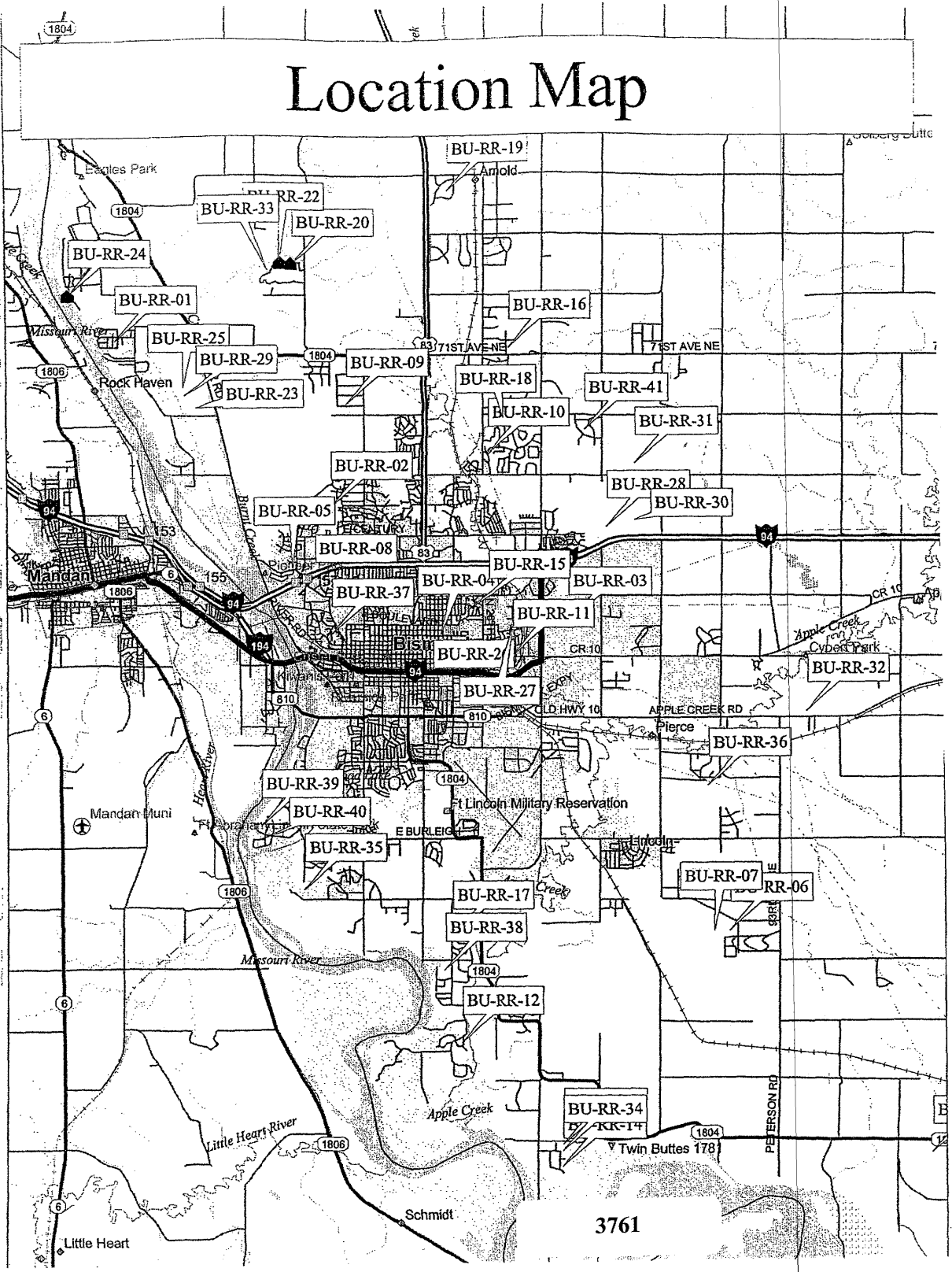
SALE # BU-RR-41

County:	Burleigh
Address/Location:	4600 Rolling Ridge, Bismarck, North Dakota
Property Type:	Residential
Legal:	Rolling Meadows, Lot 1, Block 1
Date of Sale:	09/01/00
Acres:	2.04
Sale Price:	$14,800.00
Comments:	Electricity and rural water, MDU gas. North on Centennial road, east on 57th to rolling ridge, corner lot, water membership.

Location Map



Location Map



3761

COUNTY BURLEIGH

SALE #	PROPERTY TYPE	SALE $	DATE	SQ FT	$ / SQ FT
BU-CM-01	Commercial	175,000	Mar-99	78,940	2.22
BU-CM-02	Commercial	375,000	Nov-99	155,945	2.4
BU-CM-03	Commercial	136,000	Apr-99	522,720	0.26

SALE # BU-CM-01

County:	Burleigh
Address/Location:	1675 Capitol Way, Bismarck, North Dakota
Property Type:	Commercial
Legal:	Casey Commercial Park, Lot 6, Block 5
Date of Sale:	03/30/99
Acres:	1.81 (78,940 sq ft)
Sale Price:	$175,000.00
Comments:	Water and sewer available, level lot ready to build on.

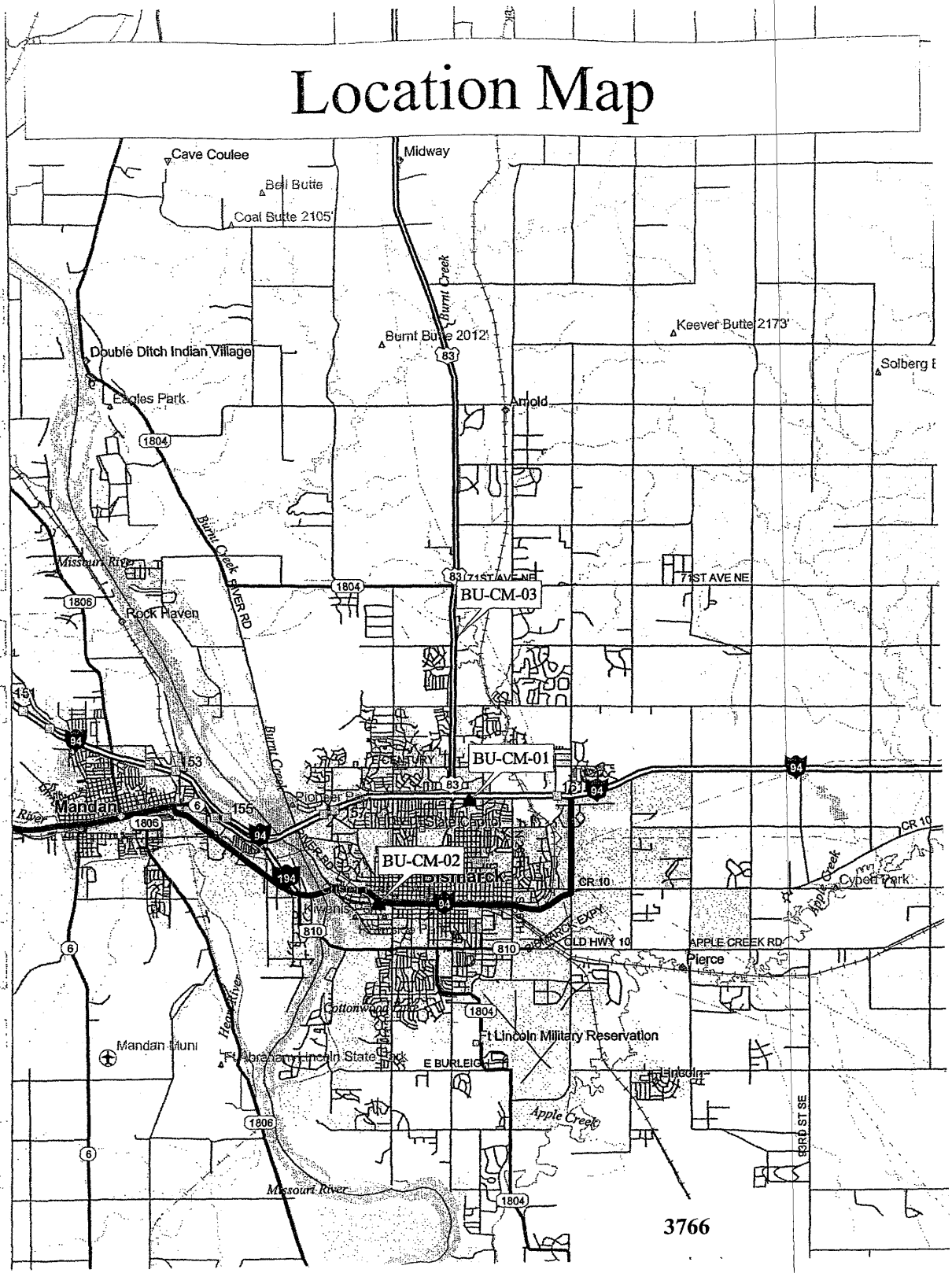
SALE # BU-CM-02

County:	Burleigh
Address/Location:	501 Memorial Highway, Bismarck, North Dakota
Property Type:	Commercial
Legal:	Park hill Addition, Lots 1,2, and 3 of Auditors Lot 15
Date of Sale:	11/15/99
Acres:	3.58
Sale Price:	$375,000.00
Comments:	Commercial land, corner of Memorial Highway and Hannifin Street.

SALE # BU-CM-03

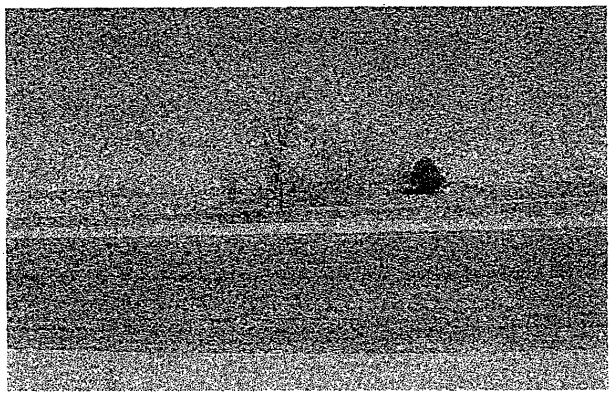
County:	Burleigh
Address/Location:	Highway 83 and Ridgedale Avenue, Bismarck, North Dakota
Property Type:	Commercial
Legal:	Northwest ¼, S15, T139N, R80
Date of Sale:	04/29/99
Acres:	12.00
Sale Price:	$136,000.00
Comments:	

Location Map



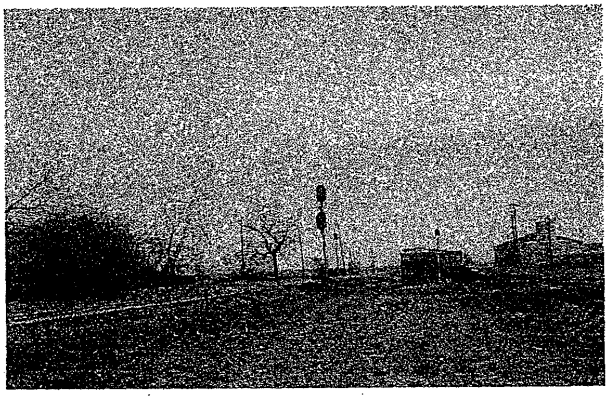


Kidder










STEELE

COUNTY KIDDER

SALE #	PROPERTY TYPE	SALE $	DATE	ACRES	$ / ACRE
KI-AG-01	Agricultural	115,500	Dec-99	770	150
KI-AG-02	Agricultural	72,000	Sep-00	331.1	217
KI-AG-03	Agricultural	73,000	Oct-00	425	172
KI-AG-04	Agricultural	14,850	Feb-99	90	165
KI-AG-05	Agricultural	150,000	Aug-01	147.4	1,018
KI-AG-06	Agricultural	35,140	Apr-00	200	176
KI-AG-07	Agricultural	96,000	Jan-00	316	304
KI-AG-08	Agricultural	45,750	Nov-99	175	261
KI-AG-09	Agricultural	50,000	Nov-99	295	169
KI-AG-10	Agricultural	76,624	Aug-99	311	246
KI-AG-11	Agricultural	20,000	Mar-99	136	147

SALE # KI-AG-01

County:	Kidder
Address/Location:	Tappen, North Dakota
Property Type:	Agricultural
Legal:	W1/2 of section 12, W1/2 of section 13, NE1/4 of section 14 TR139-72
Date of Sale:	12/99
Acres:	770
Sale Price:	$115,500.00
Comments:	South of Tappen

SALE # KI-AG-02

County:	Kidder
Address/Location:	West of Steele, North Dakota
Property Type:	Agricultural
Legal:	N1/2 and part of S1/2 of section 19 TR 139-74 of Pleasant Hill Subdivision
Date of Sale:	09/00
Acres:	331.10
Sale Price:	$72,000.00
Comments:	North of Railroad, borders the Railroad

SALE # KI-AG-03

County:	Kidder
Address/Location:	West of Steele, North Dakota
Property Type:	Agricultural
Legal:	N1/2 and SW1/4 of section 16 TR 139-74 of Pleasant Hill Subdivision
Date of Sale:	10/00
Acres:	424.62
Sale Price:	$73,000.00
Comments:	Has a swamp on property, property located within ½ mile of RR

SALE # KI-AG-04

County:	Kidder
Address/Location:	South of Steele, North Dakota
Property Type:	Agricultural
Legal:	NE1/2 of section 34 TR139 R73
Date of Sale:	02/99
Acres:	90
Sale Price:	$14,850.00
Comments:	

SALE # KI-AG-05

County:	Kidder
Address/Location:	South of Dawson, North Dakota
Property Type:	Agricultural
Legal:	NE1/4, E1/2, NW1/4; NW1/4; SW1/4, lots 1, 2, 3 and 4 of section 27 TR139 R72
Date of Sale:	08/01
Acres:	147.40
Sale Price:	$150,000.00
Comments:	Borders the lake, was split off later 133.61 acres in 08/01 for 40,116, split into lake shore lots.

SALE # KI-AG-06

County:	Kidder
Address/Location:	South Dawson, North Dakota
Property Type:	Agricultural
Legal:	SE1/2, NW1/4; SW1/4 of section 14 TR139-72
Date of Sale:	04/00
Acres:	200
Sale Price:	$35,140.00
Comments:	

SALE # KI-AG-07

County:	Kidder
Address/Location:	Southwest of Dawson, North Dakota
Property Type:	Agricultural
Legal:	E1/2 of section 19, TR139-72
Date of Sale:	01/00
Acres:	316
Sale Price:	$96,000.00
Comments:	

SALE # KI-AG-08

County:	Kidder
Address/Location:	South of Dawson, North Dakota
Property Type:	Agricultural
Legal:	N1/2, N1/2, N1/2, SE1/4 and NE1/4 of section 33, TR 139-72
Date of Sale:	11/99
Acres:	175
Sale Price:	$45,750.00
Comments:	Near Lake Isabel

SALE # KI-AG-09

County:	Kidder
Address/Location:	South of Dawson, North Dakota
Property Type:	Agricultural
Legal:	E1/2 33-139-72 and part of NE1/4 of section 33-139-72
Date of Sale:	11/99
Acres:	295
Sale Price:	$50,000.00
Comments:	Near Lake Isabel

SALE # KI-AG-10

County:	Kidder
Address/Location:	North of Dawson, North Dakota
Property Type:	Agricultural
Legal:	NW1/2 SW1/4 of section 3 TR139-72 Sibley
Date of Sale:	08/99
Acres:	311
Sale Price:	$76,624.00
Comments:	Near Lake Sibley

SALE # KI-AG-11

County:	Kidder
Address/Location:	Between Tappen and Dawson, North Dakota
Property Type:	Agricultural
Legal:	SE1/2 of Section 12 TR139-72 Sibley
Date of Sale:	03/99
Acres:	136
Sale Price:	$20,000.00
Comments:	

COUNTY KIDDER

SALE #	PROPERTY TYPE	SALE $	DATE	SQ FT	$ / SQ FT
KI-RES-01	Residential	3,000	May-01	10,500	0.29

SALE # KI-RES-01

County:	Kidder
Address/Location:	406 South Mitchell, Steele, North Dakota
Property Type:	Residential
Legal:	Lots 3, 4, and 5, Block 39
Date of Sale:	06/01/00
Acres:	10,500 sq ft
Sale Price:	3,000
Comments:	WF Steele's Addition

COUNTY KIDDER

SALE #	PROPERTY TYPE	SALE $	DATE	ACRES	$ / ACRE
KI-RR-01	Res Ranchette	45,000	Jul-00	23	1,957

SALE # KI-RR-01

County:	Kidder
Address/Location:	West of Steele, North Dakota
Property Type:	Residential Ranchette
Legal:	S1/2 of section 13 Pleasant Hill Subdivision
Date of Sale:	07/00
Acres:	23
Sale Price:	45,000
Comments:	Borders the Railroad, property has some outbuildings

COUNTY KIDDER

SALE #	PROPERTY TYPE	SALE $	DATE	SQ FT	$ / SQ FT
KI-CM-01	Commercial	15,000	May-01	10,500	1.43
KI-CM-02	Commercial	10,800	Oct-99	28,000	0.39
KI-CM-03	Commercial	6,000	Jul-99	24,500.00	0.24
KI-CM-04	Commercial	2,000	Jun-00	7,000	0.29
KI-CM-05	Commercial	8,000	Apr-01	10,500	0.76

SALE # KI-CM-01

County:	Kidder
Address/Location:	105 3rd St, Northwest, Steele, North Dakota
Property Type:	Commercial
Legal:	Lots 22, 23, 24, Block 40, platted
Date of Sale:	05/04/01
Acres:	10,500 sq ft
Sale Price:	$15,000.00
Comments:	Metal storage building on property

SALE # KI-CM-02

County:	Kidder
Address/Location:	120 3rd St. Northwest, Steele, North Dakota
Property Type:	Commercial
Legal:	Lots 13-21, Block 53
Date of Sale:	10/16/99
Acres:	28,000 sq ft
Sale Price:	$10,800.00
Comments:	WF Addition

SALE # KI-CM-03

County:	Kidder
Address/Location:	City of Steele, North Dakota
Property Type:	Commercial
Legal:	Lots 1-8, Block 25, Original Plat
Date of Sale:	07/99
Acres:	24,500 sq ft
Sale Price:	$6,000.00
Comments:	East of Broadway, 3rd block on the left.

SALE # KI-CM-04

County:	Kidder
Address/Location:	406 South Mitchell, Steele, North Dakota
Property Type:	Commercial
Legal:	Lots 1 and 2, Block 39
Date of Sale:	06/01/00
Acres:	7,000 sq ft
Sale Price:	$2,000.00
Comments:	

SALE # KI-CM-05

County:	Kidder
Address/Location:	436 3rd Avenue Northeast, Steele, North Dakota
Property Type:	Commercial
Legal:	Lots 1-4, Block 50, Steele's Addition
Date of Sale:	04/09/01
Acres:	10,500 sq ft
Sale Price:	$8,000.00
Comments:	East Broadway, 3rd block on the left

COUNTY STUTESMAN

SALE #	PROPERTY TYPE	SALE $	DATE	ACRES	$ / ACRE
ST-AG-01	Agricultural	64,000	Mar-00	160	292
ST-AG-02	Agricultural	84,000	Apr-00	320	263
ST-AG-03	Agricultural	16,000	Apr-00	80	200
ST-AG-04	Agricultural	34,500	Jun-00	160	216
ST-AG-05	Agricultural	80,000	Apr-00	480	167
ST-AG-06	Agricultural	56,000	Feb-99	160	350
ST-AG-07	Agricultural	25,000	Jul-99	160	156

SALE # ST-AG-01

County:	Stutesman
Address/Location:	Pingree, North Dakota
Property Type:	Agricultural
Legal:	SE1/4 of section 36, TWP143 R66 Stutesman County, ND
Date of Sale:	03/30/00
Acres:	160+
Sale Price:	$64,000.00
Comments:	3 miles west on Highway 36 from Pingree School, then south ½ mile to NE corner of property.

SALE # ST-AG-02

County:	Stutesman
Address/Location:	Approximately 10 miles southwest of Jamestown, North Dakota
Property Type:	Agricultural
Legal:	SE1/4 and NE1/4 of section 36-139-65
Date of Sale:	04/20/00
Acres:	320
Sale Price:	$84,000.00
Comments:	281 tillable acres

SALE # ST-AG-03

County:	Stutesman
Address/Location:	Northwest of Gackle, North Dakota
Property Type:	Agricultural
Legal:	N1/2, SW1/4 of section 13-137-68
Date of Sale:	04/03/00
Acres:	80
Sale Price:	$16,000.00
Comments:	Pasture seeded to grass, 69.4 acres are tillable, pastureland.

SALE # ST-AG-04

County:	Stutesman
Address/Location:	Moon Lake Township, Jamestown, North Dakota
Property Type:	Agricultural
Legal:	Southwest quarter of SW1/4 of section 26 T139 R66
Date of Sale:	06/19/00
Acres:	160
Sale Price:	$34,500.00
Comments:	This tract is presently divided into cropland and pasture. This tract has no good roads to it, access is by prairie trail only.

SALE # ST-AG-05

County:	Stutesman
Address/Location:	Jamestown, North Dakota
Property Type:	Agricultural
Legal:	NE1/4-35, NW1/4-36, S1/2,S1/2-26 all in section 139-69
Date of Sale:	04/20/00
Acres:	480
Sale Price:	$80,000.00
Comments:	Old buildings on the property are worthless. Mostly pasture with some crop.

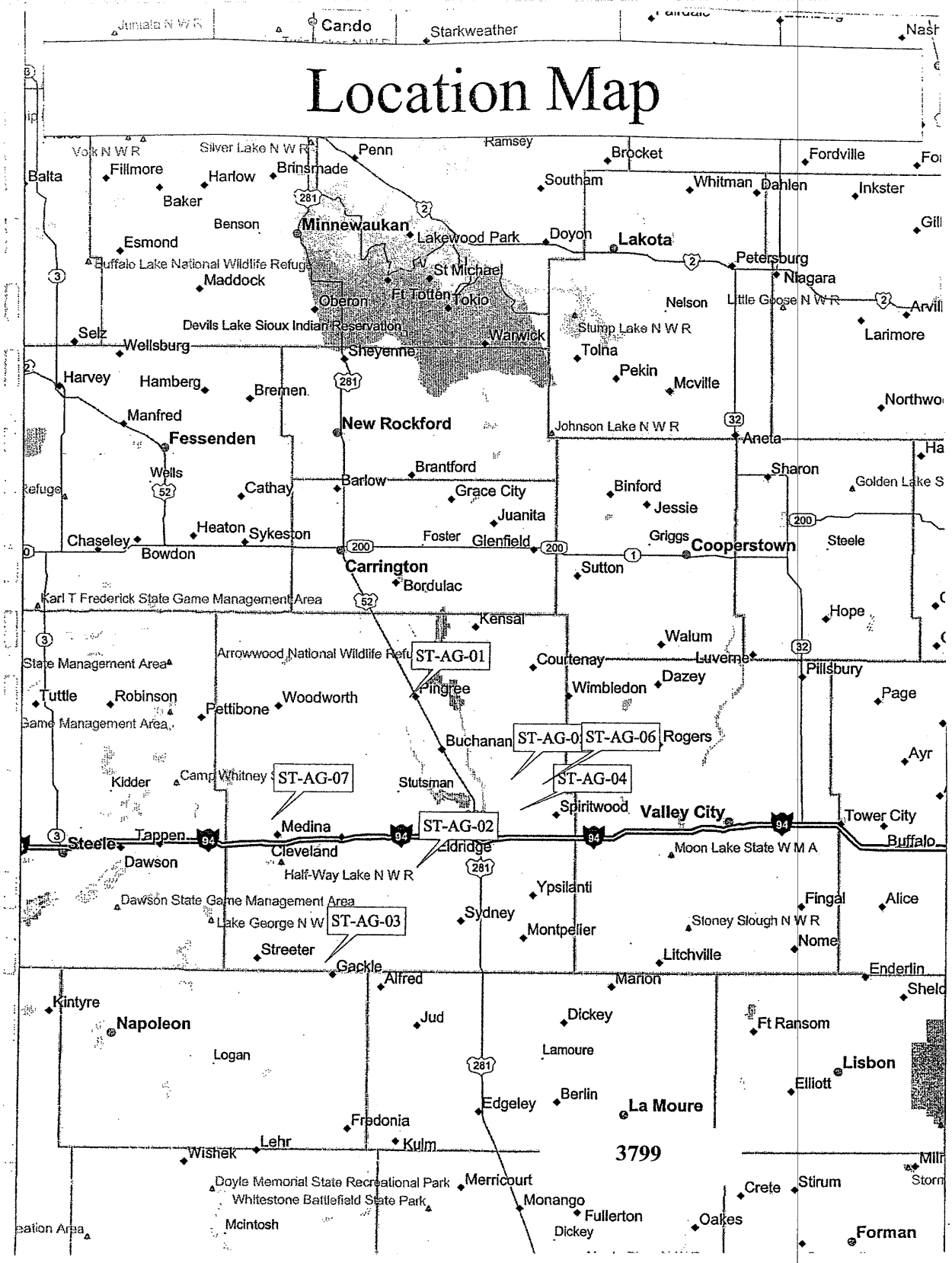
SALE # ST-AG-06

County:	Stutesman
Address/Location:	Jamestown, North Dakota
Property Type:	Agricultural
Legal:	SE1/4 of section 18-138-62
Date of Sale:	02/25/99
Acres:	160
Sale Price:	$56,000.00
Comments:	Cropland

SALE # ST-AG-07

County:	Stutesman
Address/Location:	Medina, North Dakota
Property Type:	Agricultural
Legal:	NE1/4 28-140-69, Peterson Township
Date of Sale:	07/19/99
Acres:	160
Sale Price:	$25,000.00
Comments:	Pastureland. All buffalo fencing. Small portion on west side across from the slough is not fenced. 2 miles north of Medina on paved road. Then take a good gravel road west 4 miles.

Location Map



COUNTY STUTESMAN

SALE #	PROPERTY TYPE	SALE $	DATE	SQ FT	$ / SQ FT
ST-RES-01	Residential	15,000	Aug-99	65,340	0.23
ST-RES-02	Residential	8,500	Jul-99	22,950	0.37
ST-RES-03	Residential	13,000	Apr-99	10,500	1.24
ST-RES-04	Residential	15,500	May-99	116,305	0.13
ST-RES-05	Residential	23,020	May-00	23,612	0.97
ST-RES-06	Residential	14,500	May-00	24,960	0.58
ST-RES-07	Residential	5,500	Feb-00	65,340	0.08
ST-RES-08	Residential	5,000	Feb-00	43,560	0.11
ST-RES-09	Residential	7,400	Jul-00	87,120	0.08
ST-RES-10	Residential	9,000	Mar-00	7,250	1.24
ST-RES-11	Residential	10,000	May-00	33,679	0.30
ST-RES-12	Residential	3,750	Mar-00	15,000	0.25
ST-RES-13	Residential	10,000	Mar-00	12,000	0.83
ST-RES-14	Residential	19,900	Sep-00	28,500	0.70

SALE # ST-RES-01

County:	Stutesman
Address/Location:	West side, Jamestown Reservoir, Jamestown, North Dakota
Property Type:	Residential
Legal:	Lots 1 and 2, Lakeside Estates 3rd Addition
Date of Sale:	08/26/99
Acres:	1.5
Sale Price:	$15,000.00
Comments:	¾ mile north of Fairgrounds entrance. Township Board allowed a variance to allow a home to be built on less than 2 acres in this area. 2 adjoining lots, approximately 1.73 acres.

SALE # ST-RES-02

County:	Stutesman
Address/Location:	Evergreen Properties, Jamestown, North Dakota
Property Type:	Residential
Legal:	Lot 6, Block 1, McElroy Addition
Date of Sale:	07/01/99
Acres:	85'x270' lot
Sale Price:	$8,500.00
Comments:	McElroy Addition of Evergreen Properties.

SALE # ST-RES-03

County:	Stutesman
Address/Location:	302 11th Avenue Southeast, Jamestown, North Dakota
Property Type:	Residential
Legal:	Lot 13, N1/2 of Lot 14, Jones and Vennum Addition
Date of Sale:	04/29/99
Acres:	75'x140' lot
Sale Price:	$13,000.00
Comments:	Older house and a 14x16 garage on property. Will be used as a commercial property and the buildings will be removed.

SALE # ST-RES-04

County:	Stutesman
Address/Location:	Jamestown, North Dakota
Property Type:	Residential
Legal:	Hoggarth Brothers Subdivision with section 1-140N-64W
Date of Sale:	05/25/99
Acres:	2.67
Sale Price:	$15,500.00
Comments:	Rural water available (membership is 700.00) Telephone and electric available.

SALE # ST-RES-05

County:	Stutesman
Address/Location:	Evergreen Properties, Jamestown, North Dakota
Property Type:	Residential
Legal:	Lots 4 and 5, Block 1, 2nd Northwest Addition
Date of Sale:	05/12/00
Acres:	68'x136' (lot 4) and 114'x126' (Lot 5) - irregular
Sale Price:	$23,020.00
Comments:	

SALE # ST-RES-06

County:	Stutesman
Address/Location:	9th Avenue southwest, across from Victory Lutheran, Jamestown, North Dakota
Property Type:	Residential lot
Legal:	Lot 11, Block 2 of Homestead Addition
Date of Sale:	05/15/00
Acres:	130'x192', irregular lot
Sale Price:	$14,500.00
Comments:	

SALE # ST-RES-07

County:	Stutesman
Address/Location:	North on highway 52 to Pipestem Dam Road, left ¼ mile on Pipestem Road. Jamestown, North Dakota
Property Type:	Residential lot
Legal:	Lots 8 and 9, Pipestem Acres within the SE1/4 of section 3, T140N R64W
Date of Sale:	02/28/00
Acres:	180'x363' lot
Sale Price:	$5,500.00
Comments:	Rural water, paved road.

SALE # ST-RES-08

County:	Stutesman
Address/Location:	Buchanan, North Dakota
Property Type:	Residential
Legal:	Part of the SE1/4NE1/4 of section 6-141-64
Date of Sale:	02/04/00
Acres:	1
Sale Price:	$5,000.00
Comments:	Go 281 north to first left into Buchanan. Go over railroad tract to intersection, property is northwest on the corner of intersection. Well on property, 197' feet deep.

SALE # ST-RES-09

County:	Stutesman
Address/Location:	Building lot northeast of Jamestown, North Dakota
Property Type:	Residential
Legal:	Block 4, Berge's subdivision and part of Block 5, Berge's subdivision as follows: beginning at the northwest corner of Block 4, Berge's subdivision, thence west 133 feet, thence south 300 feet: thence east 150 feet; thence north 150 feet: thence west 17 feet: thence north 150 feet to the point of beginning.
Date of Sale:	07/28/00
Acres:	2
Sale Price:	$7,400.00
Comments:	East on 3rd street southeast to the Hillcrest Club House, north approximately 800 feet. MDU available, rural water and serviced by Northern Plains Electric.

SALE # ST-RES-10

County:	Stutesman
Address/Location:	400 block of 8th street southwest (east ½ of block) Jamestown, North Dakota
Property Type:	Residential
Legal:	Lots 1,2, and 3 and the W20' of vacated 4th avenue southwest lying adjacent to said lots, block 6, except the W15' of lots 1,2, and 3, Klaus and Hager Park addition
Date of Sale:	03/29/00
Acres:	50'x145' (east and west irregular)
Sale Price:	$9,000.00
Comments:	Narrow river lot, overlooks icehouse dam pond.

SALE # ST-RES-11

County:	Stutesman
Address/Location:	Lots on Spiritwood Lake, North Dakota
Property Type:	Residential
Legal:	Lot 3, Wallace Grove 2nd Addition to the city of Spiritwood Lake
Date of Sale:	05/19/00
Acres:	100'+x323+, irregular in shape (33,679 sq ft)
Sale Price:	$10,000.00
Comments:	Lots 2 and 3, Wallace Grove 2nd Addition, a re-plat of lots 5-30, plat of Wallace Grove and a part of government lot 7, within the SW1/4 of section 32, T142 R62, city of Spiritwood Lake, ND

SALE # ST-RES-12

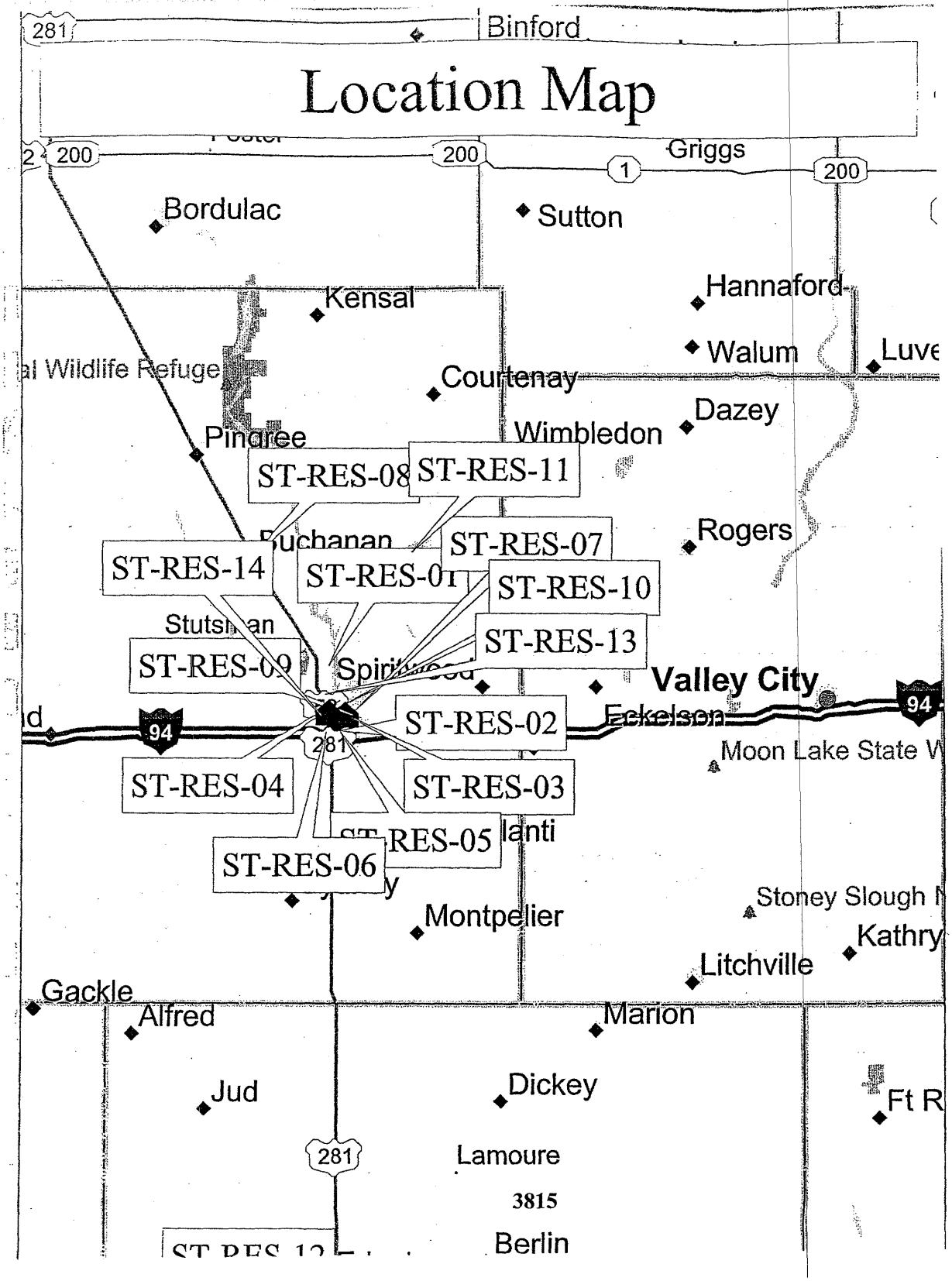
County:	Stutesman
Address/Location:	Kulm, North Dakota
Property Type:	Residential
Legal:	Lots 5 and 6, Hehn Addition to Kulm, ND
Date of Sale:	03/16/00
Acres:	100'x150' lot
Sale Price:	$3,750.00
Comments:	

SALE # ST-RES-13

County:	Stutesman
Address/Location:	Jamestown, North Dakota
Property Type:	Residential
Legal:	Lots 17 and 18 Block 2, 5th Northwest Addition
Date of Sale:	03/01/00
Acres:	100'x120' lot
Sale Price:	$10,000.00
Comments:	Just south of fairground, water and sewer available

SALE # ST-RES-14

County:	Stutesman
Address/Location:	500-block 8th street southwest, Jamestown, North Dakota
Property Type:	Residential
Legal:	Lot 1,Riverbend Addition, and Lot 2 Riverbend Addition
Date of Sale:	09/01/00
Acres:	100'x285' lot
Sale Price:	19,900 (2 lots)
Comments:	Lots in Riverbend Subdivision, but no river access


Location Map
281
Binford
200
200
1
200
Griggs
Bordulac
Sutton
Kensal
Hannaford
Walum
Courtenay
Dazey
Wimbledon
Pingree
ST-RES-08
ST-RES-11
ST-RES-07
Rogers
ST-RES-14
ST-RES-01
ST-RES-10
ST-RES-13
ST-RES-09
Valley City
94
ST-RES-02
Eckelson
281
Moon Lake State W
ST-RES-04
ST-RES-03
ST-RES-05
ST-RES-06
Montpelier
Stoney Slough
Kathry
Litchville
Gackle
Alfred
Marion
Jud
Dickey
Ft R
281
Lamoure
3815
Berlin

COUNTY STUTESMAN

SALE #	PROPERTY TYPE	SALE $	DATE	ACRES	$ / ACRE
ST-RR-01	Res Ranchette	13,000	Oct-99	24	542
ST-RR-02	Res Ranchette	19,000	Feb-00	2.49	7631
ST-RR-03	Res Ranchette	7,000	May-99	1.98	3535

SALE # ST-RR-01

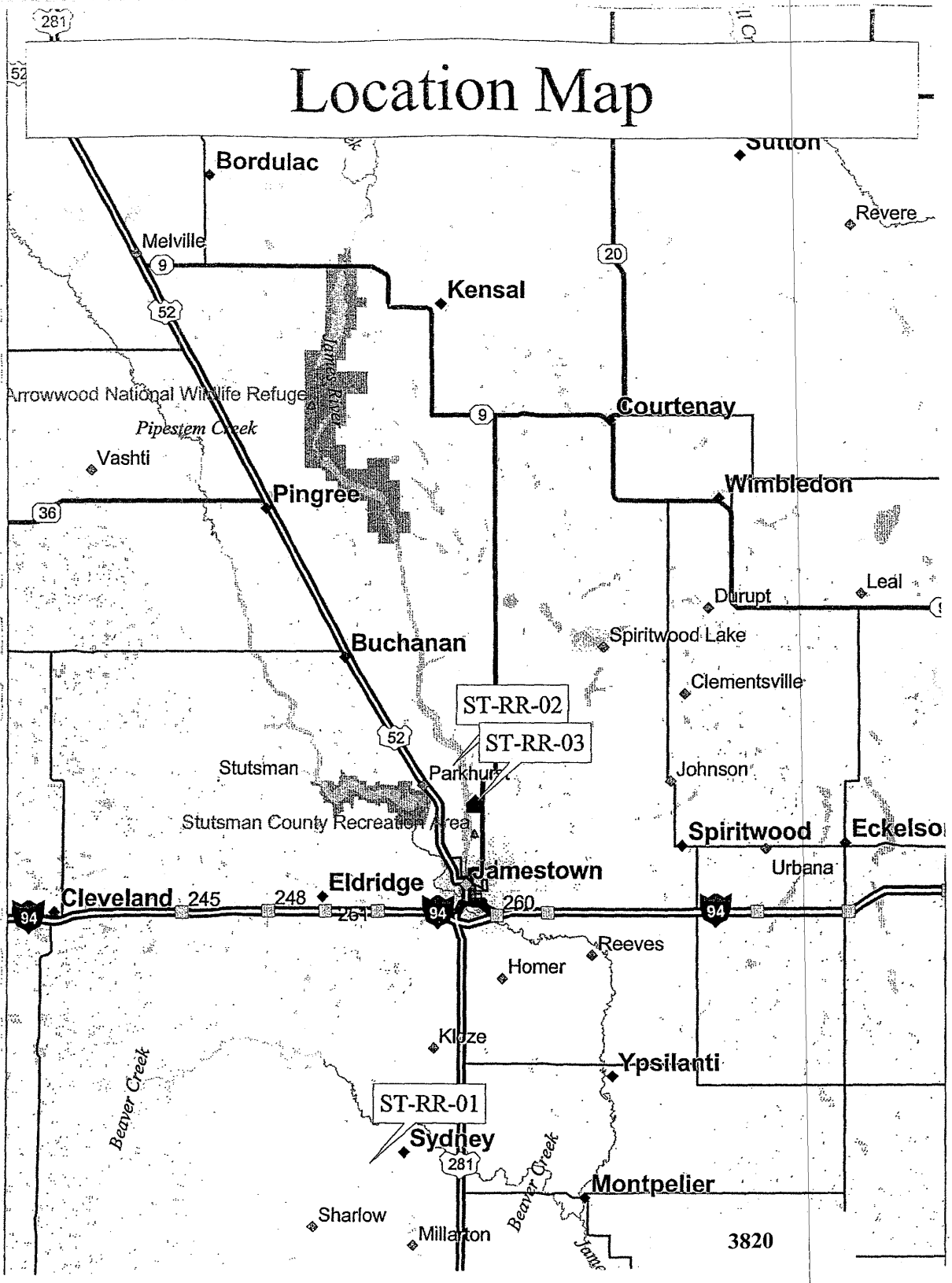
County:	Stutesman
Address/Location:	Jamestown, North Dakota
Property Type:	Residential Ranchette
Legal:	Auditor's Lot 22-1 in NE1/4 of 22-139-62
Date of Sale:	10/13/99
Acres:	24
Sale Price:	$13,000.00
Comments:	To Spiritwood exit on I-94, and south 3 miles. Property is on the West side of the road. It is a fenced property right off the paved road. No rural water available. Hay land, and trees.

SALE # ST-RR-02

County:	Stutesman
Address/Location:	West Side, Jamestown Reservoir, Jamestown, North Dakota
Property Type:	Residential Ranchette
Legal:	Auditor's Lot 14-1, within the N1/2 SE1/4 SE1/4 NE1/4 of section 14-140-64
Date of Sale:	02/25/00
Acres:	2.49
Sale Price:	$19,000.00
Comments:	water access

SALE # ST-RR-03

County:	Stutesman
Address/Location:	8352 31 ½ R. St. Southeast, Unit 2, Jamestown, North Dakota
Property Type:	Residential Ranchette
Legal:	Lot 1, Block 2 of Joos 3rd Addition in 12-140-64
Date of Sale:	05/26/99
Acres:	1.98
Sale Price:	$7,000.00
Comments:	North on highway 20 to first gravel road going west (approximately ½ mile), rural water and natural gas is available.


Location Map
Bordulac
Melville
Kensal
Courtenay
Wimbledon
Revere
Sutton
Arrowwood National Wildlife Refuge
Pipestem Creek
James River
Vashti
Pingree
Buchanan
Durupt
Leal
Spiritwood Lake
Clementsville
ST-RR-02
ST-RR-03
Stutsman
Parkhurst
Johnson
Stutsman County Recreation Area
Spiritwood
Urbana
Jamestown
Eldridge
Cleveland
245
248
261
260
Reeves
Homer
Kloze
Ypsilanti
Beaver Creek
ST-RR-01
Sydney
Montpelier
Sharlow
Millarton
3820
281
52
9
20
36
94

COUNTY STUTESMAN

SALE #	PROPERTY TYPE	SALE $	DATE	SQ FT	$ / SQ FT
ST-CM-01	Commercial	145,000	Sep-00	479,160	0.30
ST-CM-02	Commercial	102,700	May-00	1,306,800	0.79
ST-CM-03	Commercial	10,000	Mar-00	435,600	0.02
ST-CM-04	Commercial	8,000	Feb-00	7,000	1.14
ST-CM-05	Commercial	45,000	Jul-99	40,460	1.11

SALE # ST-CM-01

County:	Stutesman
Address/Location:	25th Street southwest and 10th avenue southwest, Jamestown, North Dakota
Property Type:	Commercial
Legal:	Block 6, Buffalo Mall Subdivision
Date of Sale:	09/07/00
Acres:	11
Sale Price:	$145,000.00
Comments:	Water and sewer available from city. Commercial land west of Buffalo Mall

SALE #ST-CM-02

County:	Stutesman
Address/Location:	Intersection of highway 281 and I-94, Jamestown, North Dakota
Property Type:	Commercial
Legal:	All of lot 2, of Block 1, Dakota Inn Addition, except the westerly 44.77 feet
Date of Sale:	05/08/00
Acres:	3
Sale Price:	$102,700.00
Comments:	Southeast quadrant of intersection just east of "old Big Jim's". Bare lot with exposure to I-94 and highway 281.

SALE # ST-CM-03

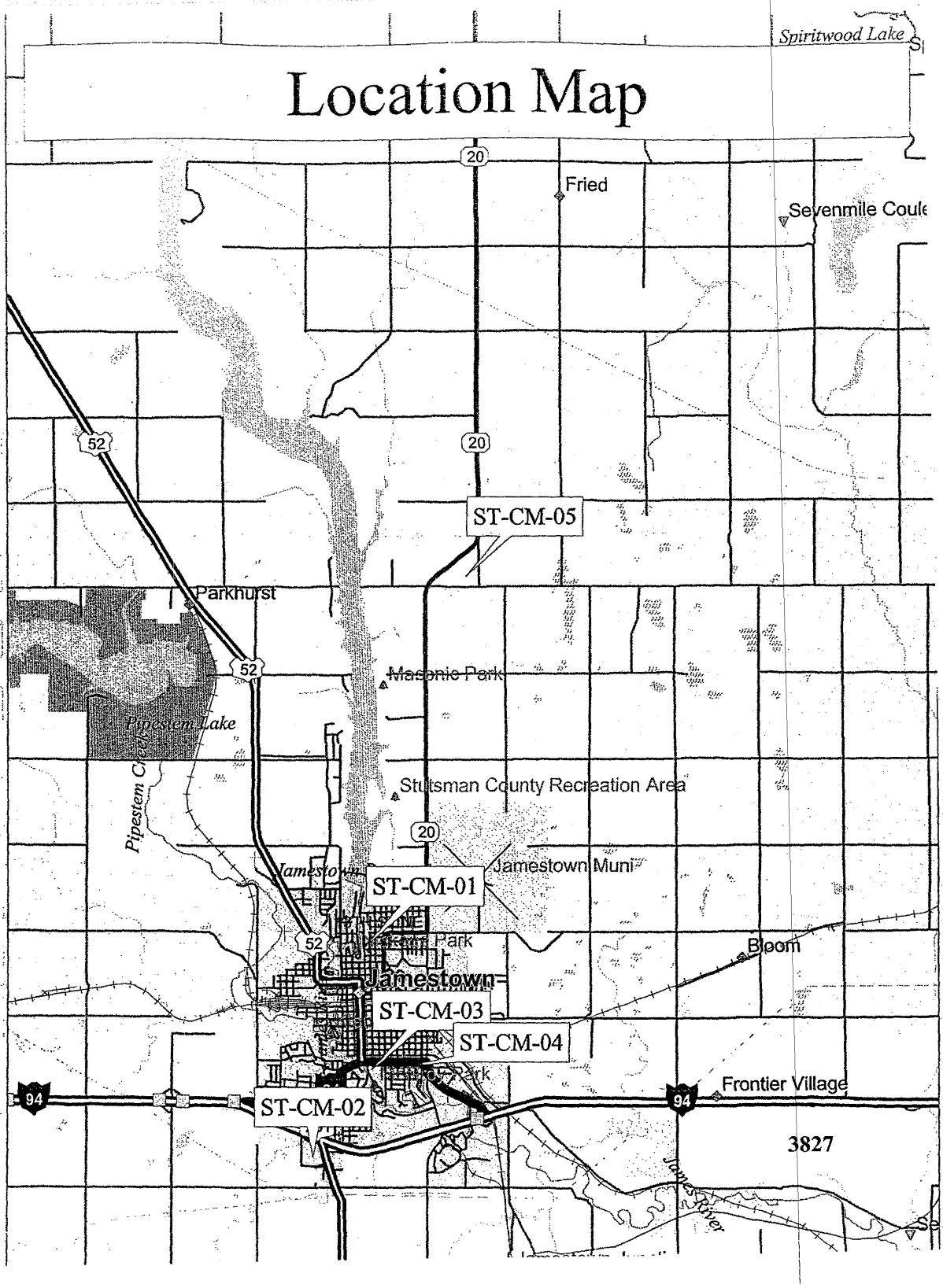
County:	Stutesman
Address/Location:	Diamond Acres, Jamestown, North Dakota
Property Type:	Commercial
Legal:	Lot 4; Block 1; Lots 1 and 3, Block 2; Lots 2 and 3, Block 3 of the W1/2 of section 34-140-64
Date of Sale:	03/30/00
Acres:	10
Sale Price:	$10,000.00
Comments:	Some slough area, frontage. Land fronts on busy I-94 and has black topped frontage road. Owner will sub-divide

SALE # ST-CM-04

County:	Stutesman
Address/Location:	Corner of 10th Street and 10th Avenue southeast, Jamestown, North Dakota
Property Type:	Commercial
Legal:	Lot 1 Block 2 Curtins Addition
Date of Sale:	02/24/00
Acres:	50'x140' lot
Sale Price:	$8,000.00
Comments:	

SALE # ST-CM-05

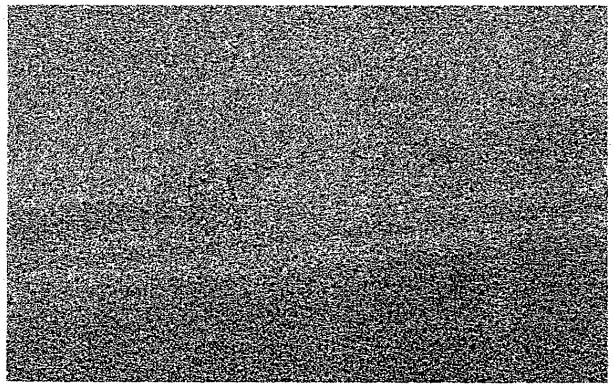
County:	Stutesman
Address/Location:	Northeast Jamestown, North Dakota
Property Type:	Commercial
Legal:	East 64' of the north 140' of lot 2, and the north 140' of lot 3, block 1, Meidinger Addition
Date of Sale:	07/30/99
Acres:	40,460 square feet lot
Sale Price:	$45,000.00
Comments:	bare commercial lot.


Location Map
Spiritwood Lake
20
Fried
Sevenmile Coule
52
20
ST-CM-05
Parkhurst
52
Masonic Park
Pipestem Lake
Pipestem Creek
Stutsman County Recreation Area
20
Jamestown
Jamestown Muni
ST-CM-01
52
Park
Bloom
Jamestown
ST-CM-03
ST-CM-04
Park
94
ST-CM-02
94
Frontier Village
3827
James River

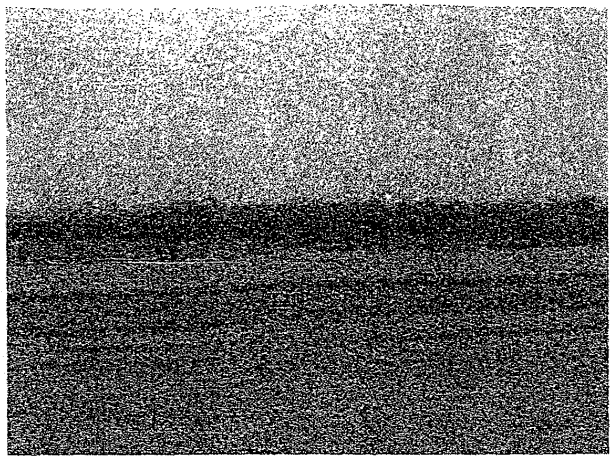


Big Stone

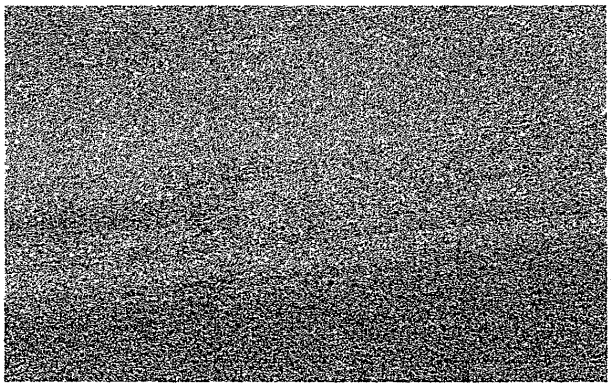


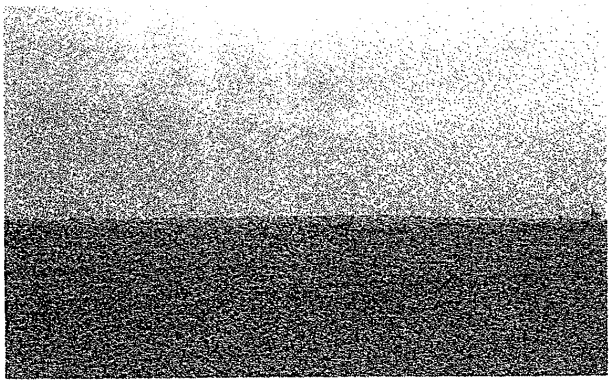












COUNTY BIG STONE

SALE #	PROPERTY TYPE	SALE $	DATE	ACRES	$ / ACRE
BS-AG-01	Agricultural	26,500	Oct-00	40.6	653
BS-AG-02	Agricultural	62,334	Sep-00	73	854
BS-AG-03	Agricultural	79,300	Dec-00	106	748
BS-AG-04	Agricultural	115,500	Nov-99	153	755
BS-AG-05	Agricultural	133,000	Oct-99	157.6	844
BS-AG-06	Agricultural	75,000	Dec-99	78	962
BS-AG-07	Agricultural	91,000	Dec-99	112	813
BS-AG-08	Agricultural	58,000	Dec-99	82.2	706
BS-AG-09	Agricultural	54,920	Feb-00	65	845
BS-AG-10	Agricultural	95,000	Mar-00	127	748
BS-AG-11	Agricultural	197,000	Mar-00	273	722
BS-AG-12	Agricultural	80,000	Feb-00	84	952
BS-AG-13	Agricultural	65,000	Apr-00	87.42	744
BS-AG-14	Agricultural	170,000	Sep-00	221	769
BS-AG-15	Agricultural	100,000	Sep-00	107	935
BS-AG-16	Agricultural	144,666	Sep-00	151	958

SALE # BS-AG-01

County:	Big Stone
Address/Location:	Big Stone Township, Minnesota
Property Type:	Agricultural
Legal:	Eternal Acres, Section 36 and 25-122-46, Big Stone Township
Date of Sale:	10/01/00
Acres:	40.6
Sale Price:	$26,500.00
Comments:	Karels/Holker sale

SALE # BS-AG-02

County:	Big Stone
Address/Location:	Malta Township, Minnesota
Property Type:	Agricultural
Legal:	N1/2, N1/4 of section 35-123-45 of Malta Township
Date of Sale:	09/26/00
Acres:	73
Sale Price:	$62,334.00
Comments:	Zahrbock/Dybdahl sale

SALE # BS-AG-03

County:	Big Stone
Address/Location:	Odessa Township, Minnesota
Property Type:	Agricultural
Legal:	N1/2,NW1/4 and NW1/4,NE1/4 of section 11-121-45 Odessa township
Date of Sale:	12/22/00
Acres:	106
Sale Price:	$79,300.00
Comments:	Rothi/Holker sale

SALE # BS-AG-04

County:	Big Stone
Address/Location:	Prior, Minnesota
Property Type:	Agricultural
Legal:	NE1/4 of section 16-123-47
Date of Sale:	11/01/99
Acres:	153
Sale Price:	$115,500.00
Comments:	Jenson/Hendricks sale

SALE # BS-AG-05

County:	Big Stone
Address/Location:	Moonshine, Minnesota
Property Type:	Agricultural
Legal:	SW1/4 of section 16-124-45
Date of Sale:	10/26/99
Acres:	157.6
Sale Price:	$133,000.00
Comments:	Baxter/Hutterian sale

SALE # BS-AG-06

County:	Big Stone
Address/Location:	Moonshine, Minnesota
Property Type:	Agricultural
Legal:	Section 18-124-45
Date of Sale:	12/01/99
Acres:	78
Sale Price:	$75,000.00
Comments:	Broderick/Waters sale

SALE # BS-AG-07

County:	Big Stone
Address/Location:	Bigstone, Minnesota
Property Type:	Agricultural
Legal:	NE1/4 of section 6-122-46
Date of Sale:	12/28/99
Acres:	112
Sale Price:	$91,000.00
Comments:	Etal/Nelsen sale

SALE # BS-AG-08

County:	Big Stone
Address/Location:	Almond, Minnesota
Property Type:	Agricultural
Legal:	SW1/4-SE1/4 and government lots 7 and 8 of section 3-123-46
Date of Sale:	12/30/99
Acres:	82.2
Sale Price:	$58,000.00
Comments:	Thorson/Murphy

SALE # BS-AG-09

County:	Big Stone
Address/Location:	Akron, Minnesota
Property Type:	Agricultural
Legal:	Section 13-120-44
Date of Sale:	02/04/00
Acres:	65
Sale Price:	$54,920.00
Comments:	Rolfsmeier/Bonnema

SALE # BS-AG-10

County:	Big Stone
Address/Location:	Odessa, Minnesota
Property Type:	Agricultural
Legal:	SW1/4 of section 10-121-45
Date of Sale:	03/17/00
Acres:	127
Sale Price:	$95,000.00
Comments:	Hillman/Kowalzyk trust

SALE # BS-AG-11

County:	Big Stone
Address/Location:	Odessa, Minnesota
Property Type:	Agricultural
Legal:	NW1/4 SE1/4 NW1/4 NE1/4 of section 17-121-45
Date of Sale:	03/17/00
Acres:	273
Sale Price:	$197,000.00
Comments:	Hillman/Kowalzyk trust

SALE # BS-AG-12

County:	Big Stone
Address/Location:	Browns Valley, Minnesota
Property Type:	Agricultural
Legal:	Government lots 1 and 2 of section 1-124-49
Date of Sale:	02/28/00
Acres:	84
Sale Price:	$80,000.00
Comments:	MLM Partnership/Maher

SALE # BS-AG-13

County:	Big Stone
Address/Location:	Moonshine, Minnesota
Property Type:	Agricultural
Legal:	SE1/4 of section 35-124-45
Date of Sale:	04/10/00
Acres:	87.42
Sale Price:	$65,000.00
Comments:	Lydia Nash Estate/Wulff

SALE # BS-AG-14

County:	Big Stone
Address/Location:	Bigstone, Minnesota
Property Type:	Agricultural
Legal:	NW1/4, NW1/4NE1/4 N1/2 SW1/4 all in 17-122-46
Date of Sale:	09/06/00
Acres:	221
Sale Price:	$170,000.00
Comments:	Whitfield Trust/Nelson

SALE # BS-AG-15

County:	Big Stone
Address/Location:	Otrey, Minnesota
Property Type:	Agricultural
Legal:	Government lots 10-13 of Section 30-122-45
Date of Sale:	09/22/00
Acres:	107
Sale Price:	$100,000.00
Comments:	MN Waterfowl Assn. Inc. Trustee/Dybdahl

SALE # BS-AG-16

County:	Big Stone
Address/Location:	Malta, Minnesota
Property Type:	Agricultural
Legal:	Section 27-123-45
Date of Sale:	09/26/00
Acres:	151
Sale Price:	$144,666.00
Comments:	Zahrbock/Dybdahl

COUNTY BIG STONE

SALE #	PROPERTY TYPE	SALE $	DATE	SQ FT	$ / SQ FT
BS-RES-01	Residential	8,000	Sep-00	41,530	0.19
BS-RES-02	Residential	3,000	Oct-00	8,750	0.34

SALE # BS-RES-01

County:	Big Stone
Address/Location:	RR1 Box B-270, New RR1 Box 278, City of Ortonville, Minnesota
Property Type:	Residential
Legal:	E 25' of the W 85' of lot 7, block 2, Lundell-Stegner Addition, city of Ortonville
Date of Sale:	06/23/00
Acres:	12,000 sq ft
Sale Price:	$1000.00
Comments:	Brush and slope, 100'x12' back lot

SALE # BS-RES-02

County:	Big Stone
Address/Location:	Ortonville, Minnesota
Property Type:	Residential
Legal:	Lots 11, 12, and 13 of Block 2, Point Place Addition of Ortonville
Date of Sale:	10/10/00
Acres:	8,750 sq ft
Sale Price:	$3,000.00
Comments:	70'x125' lot has water and sewer.

COUNTY BIG STONE

SALE #	PROPERTY TYPE	SALE $	DATE	SQ FT	$ / SQ FT
BS-ID-01	Industrial	8,000	Sep-00	41,530	0.19

SALE # BS-ID-01

County:	Big Stone
Address/Location:	North Highway 75, Ortonville, Minnesota
Property Type:	Commercial/Industrial
Legal:	Part of W 182' of sub lot "A" of lots 1, 2, and 3 of out lot 119
Date of Sale:	09/19/00
Acres:	41,530 sq ft
Sale Price:	$8000.00
Comments:	125'x 330' +280, irregular lot

SALE # SW-AG-01

County:	Swift
Address/Location:	Holloway Road in Moyer MN, 56208
Property Type:	Agricultural
Legal:	Parcel #14-0014-000, Section 3, Township 121, Range 42, Northwest ¼.
Date of Sale:	07/19/99
Acres:	149.73
Sale Price:	$164,703.00
Comments:	50 miles outside of Willmar. From Holloway North on 59, five miles west on 20th St. Northwest, ½ mile, south side of road. 149.73 acres of Agricultural land, all tillable. Rolling terrain, road surface gravel.

SALE # SW-AG-02

County:	Swift
Address/Location:	340 Northwest, Highway 59, Holloway Road, Fairfield MN, 56208
Property Type:	Agricultural
Legal:	Parcel #08-0135-000 and 08-0127-000
Date of Sale:	06/25/99
Acres:	213
Sale Price:	$239,200.00
Comments:	From Holloway 6 ½ miles North on Highway 59, west side of road. 213 acres and old building site. Could split the building site from part or all the farmland. 1930 house and 20x30 detached garage. Private sewer

SALE # SW-AG-03

County:	Swift
Address/Location:	Fairfield Township, Appleton MN, 56201
Property Type:	Agricultural
Legal:	Part of Section 19, township 122, range 42, S1/2 of SW1/4 and S1/2 of SE 1/4
Date of Sale:	04/16/99
Acres:	70
Sale Price:	$72,500.00
Comments:	50 miles from Wilmar. Level terrain. 70 acres of heavy sandy loam. Irrigation optional. Road surface gravel. No water or sewer or buildings.

SALE # SW-RR-01

County:	Swift
Address/Location:	2329 Hwy 7 SW, Appleton, MN, 56208
Property Type:	Residential Ranchette
Legal:	Section 16, Township 120, Range 43 of Section 01-0132-000
Date of Sale:	09/22/99
Acres:	6.3
Sale Price:	$42,500.00
Comments:	Hwy 59 and 7, go west approximately 1 mile, house is on south side of road. Close to town. 1998 three bedroom home, two attached garage. Propane, Sewer.

SALE # SW-RR-02

County:	Swift
Address/Location:	1545 100 Ave. NW, Appleton, MN, 56208
Property Type:	Residential Ranchette
Legal:	Parcel #07-0120-000 –
Date of Sale:	09/29/99
Acres:	4.8
Sale Price:	$46,000.00
Comments:	On County road 6, go approximately 5 miles east, turn south on 170 avenue southwest for 1 mile, turn east on 100 Street Southwest for ¾ of a mile on South side of road. 1940 house with 30x60 detached garage, private sewer, propane.

SALE # SW-RR-03

County:	Swift
Address/Location:	2319 Highway 7 southwest, Appleton MN, 56201
Property Type:	Residential Ranchette
Legal:	Section 16, township 120, range 43
Date of Sale:	06/09/99
Acres:	4.5
Sale Price:	$76,000.00
Comments:	1 ¼ mile west of Appleton on Highway 7. 1979 house with 24x32 attached garage. Private sewer, electric.

SALE # CS-CM-01

County:	Cass
Address/Location:	Fargo, North Dakota
Property Type:	Commercial
Legal:	Tract of land in SE1/4 OF 5-139-49
Date of Sale:	10/22/01
Acres:	52
Sale Price:	$425,000
Comments:	M – Heavy Industrial, purchased for use as a storage yard.

SALE # CS-CM-02

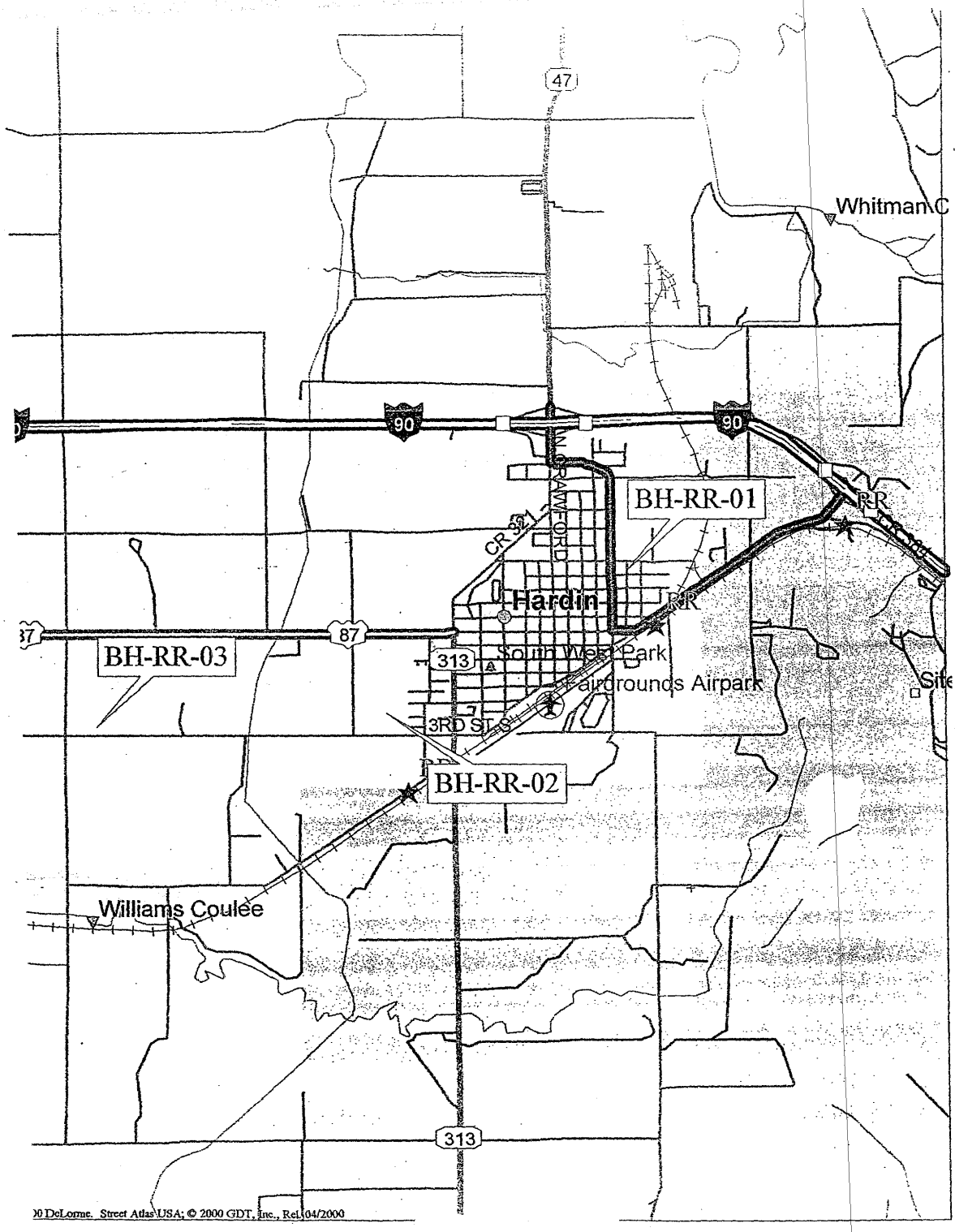
County:	Cass
Address/Location:	Fargo, North Dakota
Property Type:	Commercial
Legal:	Lots 7-14, Block 3 of Halverson's Industrial Park
Date of Sale:	12/17/02
Acres:	450,650 sq ft
Sale Price:	$261,377
Comments:	CM – Heavy Commercial / Light Industrial

SALE # CS-CM-03

County:	Cass
Address/Location:	Fargo, North Dakota
Property Type:	Commercial
Legal:	Part of west ½ of 5-139-45
Date of Sale:	08/16/00
Acres:	26.8
Sale Price:	$85,000.00
Comments:	M - Heavy Industrial. Bordered on the west by Center Street, bordered on the North by 7th Avenue and bordered on the South by railroad

COUNTY: Bighorn

SALE #	TYPE	SALE $	DATE	ACRES	$ / ACRE
BH-RR-01	Res Ranchette	5,950	May-99	0.24	24,792
BH-RR-02	Res Ranchette	7,000	May-96	0.31	22,581
BH-RR-03	Res Ranchette	15,900	Sep-95	5.2	3,058


47
Whitman C
90
90
BH-RR-01
RR
CR 321
CRAWFORD
Hardin
RR
87
87
BH-RR-03
313
Solon West Park
Fairgrounds Airpark
Site
3RD ST
BH-RR-02
Williams Coulee
313
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SALE # BH-RR-01

County:	Bighorn
Address/Location:	710 No. Cheyenne Avenue – Hardin, MT 59034
Property Type:	Residential Ranchette
Legal:	Block 11 S1/2 of Lot 3 Lot 4, 4th Addition
Date of Sale:	05/21/1999
Acres:	0.24
Sale Price:	$5,950.00
Comments:	Lots in nice area of town – 1 block off of Main Street

SALE # BH-RR-02

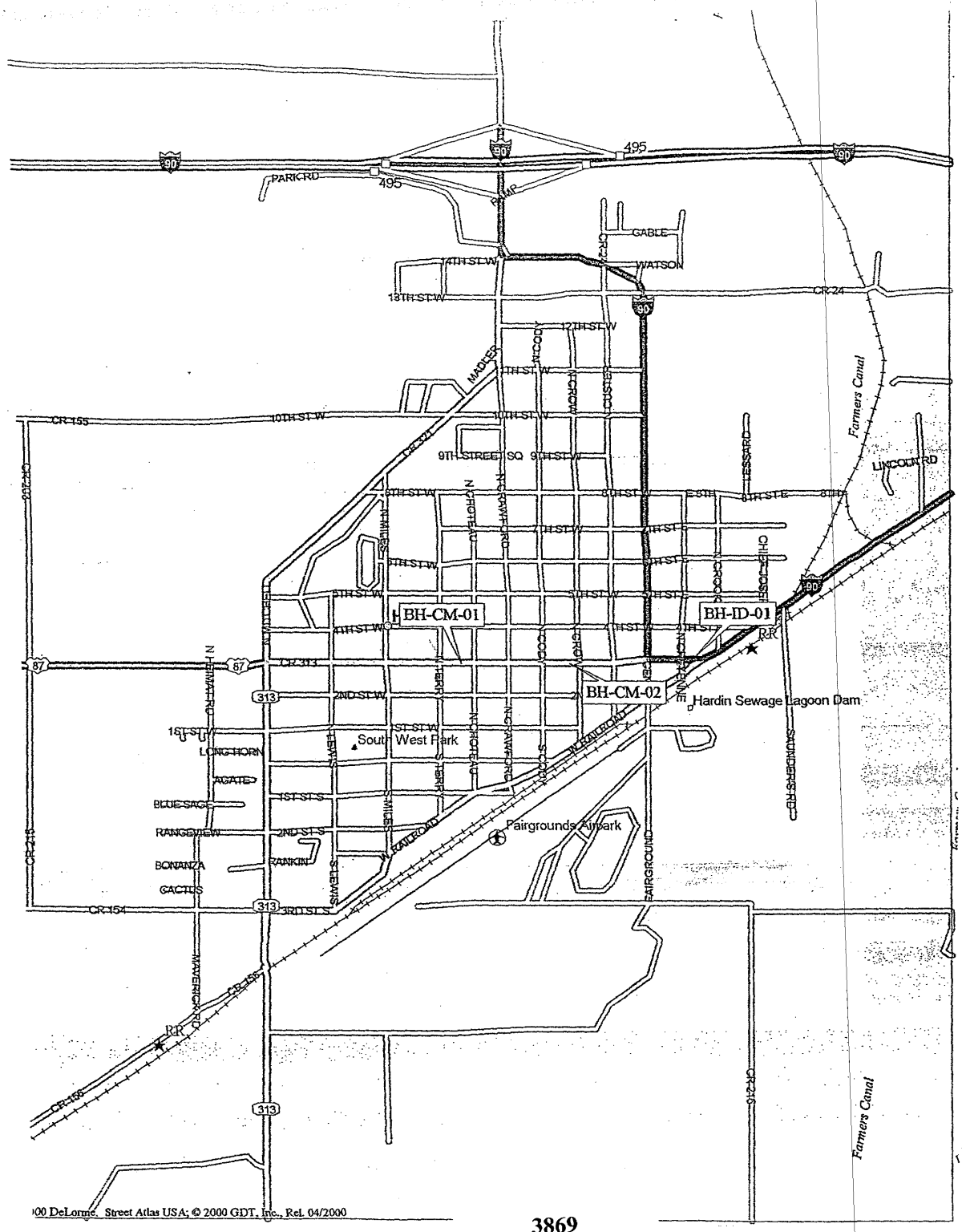
County:	Bighorn
Address/Location:	907 Hardin-Agate Court – Hardin, MT 59034
Property Type:	Residential Ranchette
Legal:	Lot 8 Block 9 West Heimet
Date of Sale:	05/20/1996
Acres:	0.31
Sale Price:	$7,000.00
Comments:	Vacant land.

SALE # BH-RR-03

County:	Bighorn
Address/Location:	Rural Route – Hardin, MT 59034
Property Type:	Residential Ranchette
Legal:	Block 1 Lot 10 Two Leggin Subdivision
Date of Sale:	09/25/1995
Acres:	5.20
Sale Price:	$15,900.00
Comments:	A-1 Agricultural Open Space – vacant.

COUNTY: Bighorn

SALE #	TYPE	LAND $	DATE	SQ FT	$ / SQ FT
BH-CM-01	Commercial	5,000	Oct-95	14,000	0.36
BH-CM-02	Commercial	7,200	Pending	14,000	0.51
BH-ID-01	Industrial	7,900	Active	17,563	0.45


BH-CM-01
BH-CM-02
BH-ID-01
Hardin Sewage Lagoon Dam
South West Park
Pairgrounds Airpark
Farmers Canal
Farmers Canal
PARK RD
495
GABLE
WATSON
CR 24
12TH ST W
11TH ST W
10TH ST W
9TH STREET SQ
9TH ST W
8TH ST W
7TH ST W
6TH ST W
5TH ST W
4TH ST W
3RD ST W
2ND ST W
1ST ST W
1ST ST S
2ND ST S
3RD ST S
CR 155
CR 313
CR 154
CR 216
LINCOLN RD
LONG HORN
AGATE
BLUE SAGE
RANGEVIEW
BONANZA
CACTUS
RANKIN
MADISON
N HOTCHKISS
N CROCKETT
N CROCKETT
N HERBERT
N HERBERT
N SCOTT
N SCOTT
N CHIEF JOSEPH
CHIEF JOSEPH
N HEMMITT RD
N HEMMITT RD
S HERBERT
S HERBERT
S SCOTT
S SCOTT
S CHIEF JOSEPH
S CHIEF JOSEPH
SAUNDERS RD
FAIRGROUND
RAILROAD
RAILROAD
RAILROAD
MAVERICK RD
87
313
90
RR
RR
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SALE # BH-CM-01

County:	Bighorn
Address/Location:	502 West 3rd Street – Hardin, MT 59034
Property Type:	Commercial
Legal:	Block 13 Lot 1 M & B Tract 100 FT X 140 FT
Date of Sale:	10/10/1995
Sq Ft:	14,000 sq ft
Sale Price:	$30,000.00
Land Value:	$5,000.00 - .36 per sq ft
Comments:	Sold with stucco building, built in 1916. Poor condition. Sold contract for deed. Building value @ $25,000

SALE # BH-CM-02

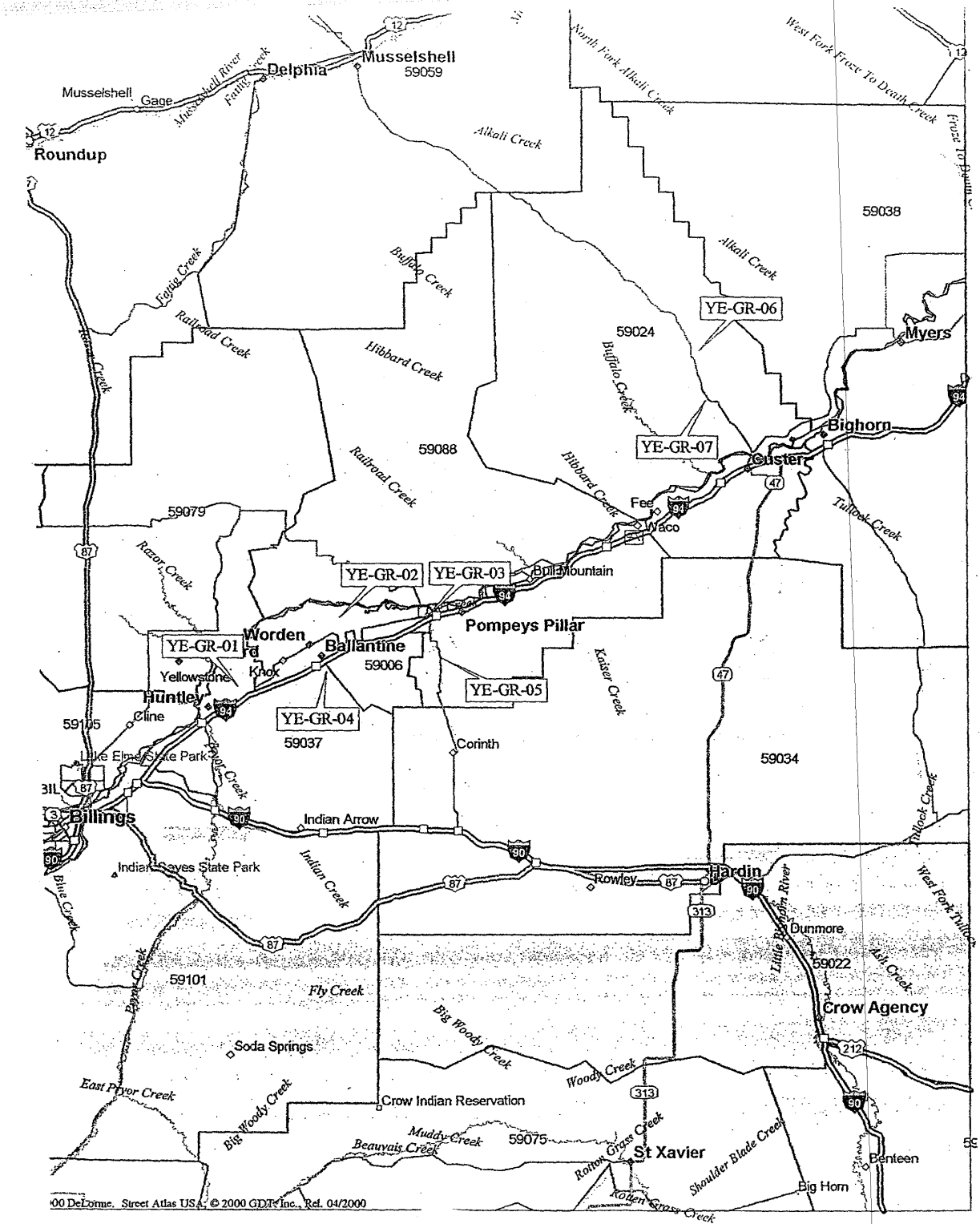
County:	Bighorn
Address/Location:	204 West Third Street – Hardin, MT 59034
Property Type:	Commercial
Legal:	Lots 1-2 Block 14 Hardin Old Town Subdivision
Date of Sale:	Pending Sale
Sq Ft:	14,000
Sale Price:	$39,500.00
Land Value:	$7,200.00 – .51 per sq ft
Comments:	Sold with building built in 1957. Corner lot Location. 1530 sq ft low rise shop. Plus another metal building for storage. Building values @ $32,300.

SALE # BH-ID-01

County:	Bighorn
Address/Location:	127 ½ E. Railroad – Hardin, MT 59034
Property Type:	Industrial
Legal:	Lots 3-4 Block 2 E 75' Lot 5, 4th Addition
Date of Sale:	Active
Sq. Ft.:	17,563 sq ft
Asking Price:	$55,000.00 (less 10%) - $5,500
Land Value:	$7,900.00 - .45 per sq ft
Comments:	Building has been used as an Auto Repair shop – Office space & rest rooms – also is being used as a travel bus stop – downtown Hardin location. Building value @ $41,600.

COUNTY: Yellowstone

SALE #	TYPE	LAND $	DATE	ACRES	$ / ACRE
YE-GR01	Grazing	73,760	Apr-99	33.4	2,208
YE-GR-02	Grazing	116,000	Feb-98	80	1,450
YE-GR-03	Grazing	94,500	May-99	46.98	2,011
YE-GR-04	Grazing	99,200	Sep-99	319	310
YE-GR-05	Grazing	339,320	Mar-99	1,146	296
YE-GR-06	Grazing	20,000	Jan-99	160	125
YE-GR-07	Grazing	18,000	Jun-99	120	150


Musselshell
59059
Delphia
Musselshell Gage
Roundup
Musselshell River
Fattig Creek
Alkali Creek
North Fork Alkali Creek
West Fork Froze To Death Creek
Froze To Death C
59038
Alkali Creek
Buffalo Creek
Fattig Creek
Railroad Creek
Hibbard Creek
YE-GR-06
59024
Myers
Buffalo Creek
Bighorn
YE-GR-07
59088
Hibbard Creek
Railroad Creek
Custer
Fee
Waco
59079
Tullock Creek
Razor Creek
YE-GR-02
YE-GR-03
Bull Mountain
Pompeys Pillar
YE-GR-01
Worden
Ballantine
59006
Yellowstone
Knox
Huntley
Cline
59105
YE-GR-05
Kaiser Creek
YE-GR-04
59037
Corinth
59034
Lake Elmo State Park
Billings
Indian Arrow
Indian Cayes State Park
Indian Creek
Rowley
Hardin
Tullock Creek
West Fork Tullock
Little Bighorn River
Dunmore
59022
Ash Creek
Crow Agency
59101
Fly Creek
Big Woody Creek
Soda Springs
Woody Creek
East Pryor Creek
Crow Indian Reservation
Muddy Creek
59075
Beauvais Creek
Rotten Grass Creek
St Xavier
Shoulder Blade Creek
Benteen
Big Horn
Rotten Grass Creek
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SALE # YE-GR-01

County:	Yellowstone
Address/Location:	579 Highway 312 - Huntley, MT 59037
Property Type:	Grazing
Legal:	Tract 1 in C/S 1361
Date of Sale:	04/02/1999
Acres:	33.40
Sale Price:	$95,000.00
Land Value:	$73,760 - $2,208 per acre
Comments:	33.4 acres with highway access to 312. Property consists of pasture land with corrals. Very nice heated shop 26 x 40, 14 x 66 trailer house. Shop value @ $12,000. Mobile house @ $9,240.

SALE # YE-GR-02

County:	Yellowstone
Address/Location:	West M/North 19 Road – Worden, MT 59088
Property Type:	Grazing
Legal:	NESW & SESW, Sec21,T3N, R29E,
Date of Sale:	02/10/1998
Acres:	80.00
Sale Price:	$116,000.00 - $1,450.00 per acre
Comments:	80 irrigated acres of pasture & crop with live creek year-round. Cement ditches, mostly fenced, Arrow creek zigzags through north 40. Wildlife.

SALE # YE-GR-03

County:	Yellowstone
Address/Location:	Near Pompey's Pillar - Pompey, MT 59064
Property Type:	Grazing
Legal:	Fraction of W2 NW4 Section 28 T3N R30E
Date of Sale:	05/18/1999
Acres:	46.98
Sale Price:	$94,500.00 - $2,011 per acre
Comments:	38 acres are irrigated. 3 wells. Fenced. Storage buildings of no value.

SALE # YE-GR-04

County:	Yellowstone
Address/Location:	East Arrow Creek Road – Ballantine, MT
Property Type:	Grazing
Legal:	Part of N2 Section 3 T1N R29E
Date of Sale:	09/30/1999
Acres:	319.00
Sale Price:	$140,000.00
Land Value:	$99,200 - $310.00 per acre
Comments:	8 miles south of Ballantine, exit on East Arrow Creek Road. Surrounded by running springs and trees, outbuildings of no value. Cross-fenced. Older house built in 1919 @ $40,800.

SALE # YE-GR-05

County:	Yellowstone
Address/Location:	1816 Fly Creek Road – Pompey, MT
Property Type:	Grazing
Legal:	Dale Small Ranch – unknown legal
Date of Sale:	03/08/1999
Acres:	1,146.00
Sale Price:	$375,000.00
Land Value:	$339,320.00 - $296.00 per acre
Comments:	Older house valued @ $23,680, 30 x 40 shop valued @ $12,000. 2 wells & fly creek for stock water, 1 well for domestic use & irrigation water.

SALE # YE-GR-06

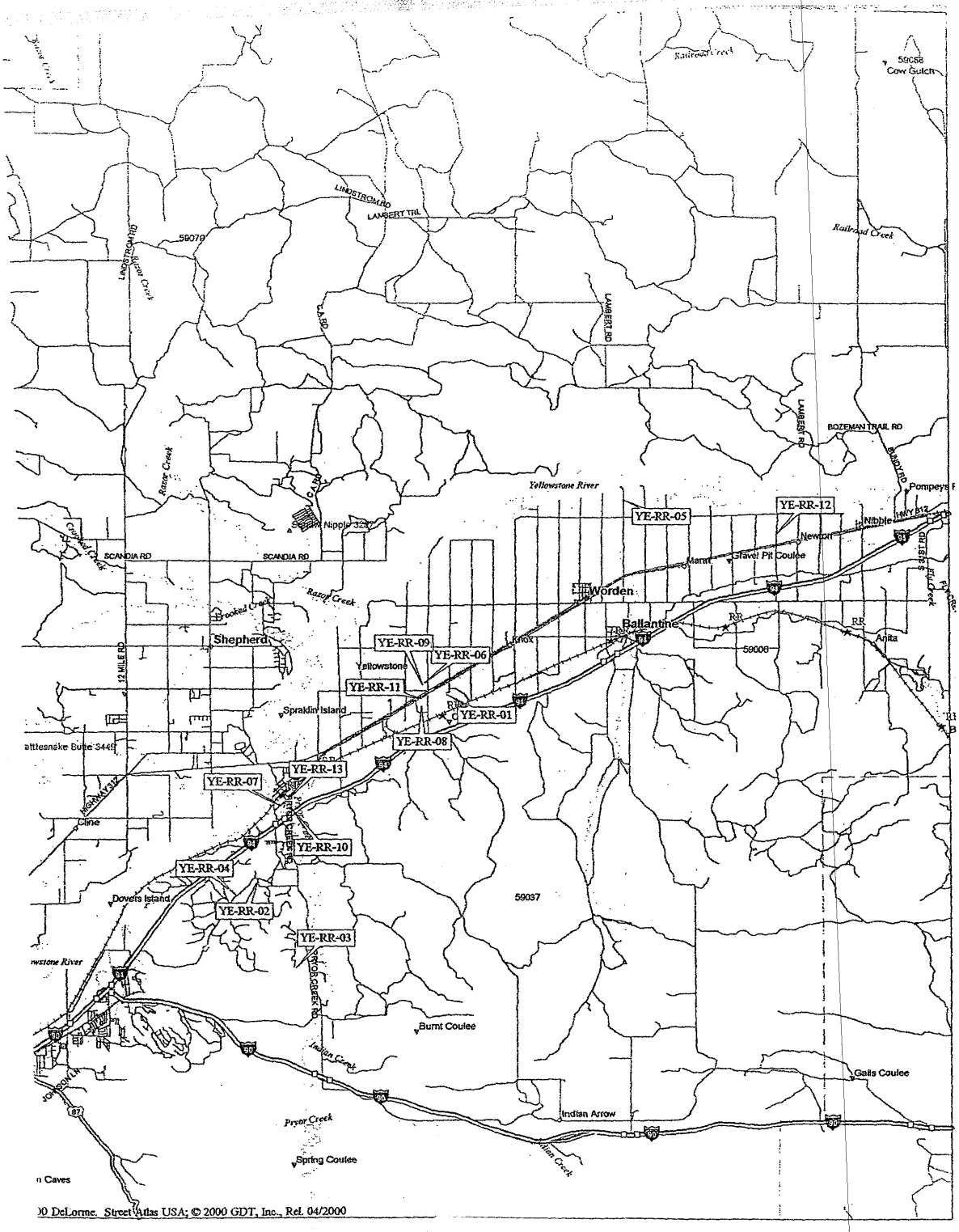
County:	Yellowstone
Address/Location:	North Custer – Custer, MT 59024
Property Type:	Grazing
Legal:	SW ¼ Section 12 T5N R31E
Date of Sale:	06/17/1999
Acres:	160.00
Sale Price:	$20,000.00 - $ 125.00 per acre
Comments:	Located 15 miles NW of Custer. Grassland.

SALE # YE-GR-07

County:	Yellowstone
Address/Location:	Northwest Custer – Custer, MT 59024
Property Type:	Grazing
Legal:	T5N R31E SEC 12
Date of Sale:	01/15/1999
Acres:	120.00
Sale Price:	$18,000.00 - $150.00 per acre
Comments:	13 miles NW of Custer. Open range land. Property is partial fenced.

COUNTY: **Yellowstone**

SALE #	TYPE	SALE $	DATE	ACRES	$ / ACRE
YE-RR-01	Res Ranchette	32,000	Jul-97	13.4	2,388
YE-RR-02	Res Ranchette	29,000	Jun-00	10	2,900
YE-RR-03	Res Ranchette	17,900	Sep-98	10.37	1,726
YE-RR-04	Res Ranchette	15,000	Mar-99	10.4	1,442
YE-RR-05	Res Ranchette	45,000	Nov-97	35	1,286
YE-RR-06	Res Ranchette	25,000	Jan-99	2.61	9,579
YE-RR-07	Res Ranchette	19,500	Jul-98	0.5	39,000
YE-RR-08	Res Ranchette	12,900	Oct-98	1	12,900
YE-RR-09	Res Ranchette	25,000	Apr-00	2	12,500
YE-RR-10	Res Ranchette	13,000	Jan-00	1.75	7,429
YE-RR-11	Res Ranchette	19,500	Jul-00	1	19,500
YE-RR-12	Res Ranchette	50,000	Oct-96	86.54	578


YE-RR-05
YE-RR-12
YE-RR-09
YE-RR-06
YE-RR-11
YE-RR-01
YE-RR-08
YE-RR-13
YE-RR-07
YE-RR-10
YE-RR-04
YE-RR-02
YE-RR-03
Worden
Ballantine
Shepherd
Cline
Dovers Island
Burnt Coulee
Gails Coulee
Indian Arrow
Spring Coulee
Yellowstone River
Railroad Creek
Razor Creek
Indian Creek
Pryor Creek
Gravel Pit Coulee
Spraklin Island
Yellowstone
Knox
Anita
Nibbler
Newton
Manni
Pompeys P
Cow Gulch
59068
59079
59006
59037
LINDSTROM RD
LAMBERT TRL
LAMBERT RD
BOZEMAN TRAIL RD
SCANDIA RD
12 MILE RD
HIGHWAY 87
JOHNSON LN
TOM GAUER RD
Rattlesnake Butte 3445
n Caves
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SALE # YE-RR-01

County:	Yellowstone
Address/Location:	9 North Road – Huntley, MT 59037
Property Type:	Residential Ranchette
Legal:	Tract 2 A of Amend Track 2 C/S 2191
Date of Sale:	07/25/1997
Acres:	13.4
Sale Price:	$32,000.00
Comments:	Irrigated Acreage. Access to property at sign on Road 9 North by easement.

SALE # YE-RR-02

County:	Yellowstone
Address/Location:	3410 Boothill Drive – Huntley, MT 59037
Property Type:	Residential Ranchette
Legal:	Tract 87, C/S 1363
Date of Sale:	06/26/00
Acres:	10.00
Sale Price:	$29,000.00
Comments:	Huntley interchange 1.6 miles, turn right.

SALE # YE-RR-03

County:	Yellowstone
Address/Location:	0 Shadow Canyon – Huntley, MT 59037
Property Type:	Residential Ranchette
Legal:	Tract 49 C/S 1363
Date of Sale:	09/10/1998
Acres:	10.37
Sale Price:	$17,900.00
Comments:	Mobile home acreage. Phone and power border property.

SALE # YE-RR-04

County:	Yellowstone
Address/Location:	2 miles west of Pryor Creek Golf Course – Huntley, MT 59037
Property Type:	Residential Ranchette
Legal:	Tract 185, C/S #1363
Date of Sale:	03/29/1999
Acres:	10.40
Sale Price:	$15,000.00
Comments:	Treed lot off Yellowstone Trail.

SALE # YE-RR-05

County:	Yellowstone
Address/Location:	2911 Road 17 North – Worden, MT 59088
Property Type:	Residential Ranchette
Legal:	NW1/4,SE1/4 in SEC20, TS3N, RG29E
Date of Sale:	11/20/1997
Acres:	35.00
Sale Price:	$45,000.00
Comments:	Good wells in area.

SALE # YE-RR-06

County:	Yellowstone
Address/Location:	NHN Lot 1 – Huntley, MT 59037
Property Type:	Residential Ranchette
Legal:	Lot 1, Block 55 of Osborn Townsite
Date of Sale:	01/01/1999
Acres:	2.61
Sale Price:	$25,000.00
Comments:	Neighborhood is of larger sized tracts. Subject's area supports typical manufactured houses.

SALE # YE-RR-07

County:	Yellowstone
Address/Location:	NHN South Canal Road – Huntley, MT 59037
Property Type:	Residential Ranchette
Legal:	unknown
Date of Sale:	07/24/1998
Acres:	0.50
Sale Price:	$19,500.00
Comments:	

SALE # YE-RR-08

County:	Yellowstone
Address/Location:	NHN Road 8 North – Huntley, MT 59037
Property Type:	Residential Ranchette
Legal:	unknown
Date of Sale:	10/01/1998
Acres:	1.00
Sale Price:	$12,900.00
Comments:	

SALE # YE-RR-09

County:	Yellowstone
Address/Location:	2035 Beech – Huntley, MT 59037
Property Type:	Residential Ranchette
Legal:	Block 55, Lot 2
Date of Sale:	04/14/2000
Acres:	2.00
Sale Price:	$28,500.00 w/improvements $25,000 w/out improvements
Comments:	Room for 2 horses and a mobile home. Price includes well and casing. Also includes septic tank and drain field for a three bedroom home. Drain field & septic valued @ $2,000. Well @ $1,500.

SALE # YE-RR-10

County:	Yellowstone
Address/Location:	1742 North Elmhurst Circle – Huntley, MT 59037
Property Type:	Residential Ranchette
Legal:	unknown
Date of Sale:	01/27/2000
Acres:	1.75
Sale Price:	$13,000.00
Comments:	Vacant building site against hillside, across from rail road tracts & an irrigation canal.

SALE # YE-RR-11

County:	Yellowstone
Address/Location:	NHN Beech Street – Worden, MT 59088
Property Type:	Residential Ranchette
Legal:	Lot 4, Block 55 of Osborne Townsite,
Date of Sale:	07/21/2000
Acres:	1.00
Sale Price:	$19,500.00
Comments:	Road 8 North between Huntley & Worden. New well & septic.

SALE # YE-RR-12

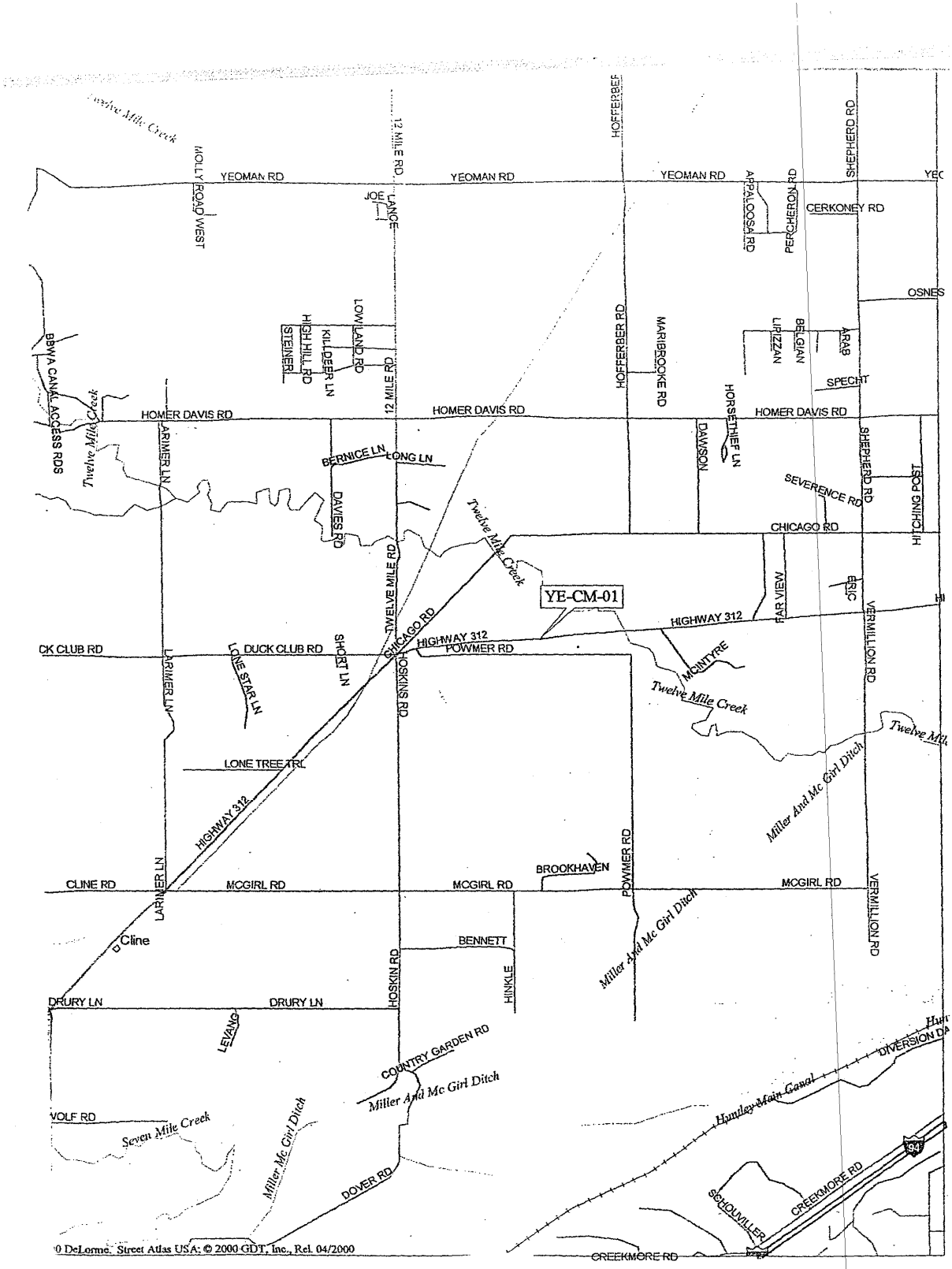
County:	Yellowstone
Address/Location:	Pompey's Pillar River Road – Pompey, MT 59064
Property Type:	Residential Ranchette
Legal:	C/S # 2861
Date of Sale:	10/11/1996
Acres:	86.54
Sale Price:	$50,000.00
Comments:	Highway frontage approximately 3 miles east of Pompey's Pillar on River Road. Some sub-irrigated pasture land.

SALE # YE-RR-13

County:	Yellowstone
Address/Location:	Canal Road South – Huntley, MT 59037
Property Type:	Residential Ranchette
Legal:	Lot 1, Block 72 of Huntley Townsite
Date of Sale:	07/24/1998
Acres:	0.50
Sale Price:	$19,500.00
Comments:	Manufactured houses on foundation okay.

COUNTY: Yellowstone

SALE #	TYPE	LAND $	DATE	ACRES	$ / SQ FT
YE-CM-01	Commercial	63,150	Active	5.58	0.26


YE-CM-01
YEOMAN RD
HOMER DAVIS RD
CHICAGO RD
HIGHWAY 312
DUCK CLUB RD
POWMER RD
MCGIRL RD
CLINE RD
DRURY LN
BENNETT
BROOKHAVEN
LONE TREE TRL
SEVERENCE RD
BERNICE LN
LONG LN
COUNTRY GARDEN RD
DOVER RD
CREEKMORE RD
SCHOULVILLER
OSNES
CERKONEY RD
SPECHT
HITCHING POST
VERMILLION RD
SHEPHERD RD
HOFFERBER RD
MARIBROOKE RD
HORSETHIEF LN
DAWSON
APPALOOSA RD
PERCHERON RD
ARAB
BELGIAN
LIPIZZAN
MOLLY ROAD WEST
12 MILE RD
JOE LANCE
LOWLAND RD
KILLDEER LN
HIGHHILL RD
STEINER
BBWA CANAL ACCESS RDS
LARIMER LN
DAVIES RD
TWELVE MILE RD
HOSKINS RD
SHORT LN
LONE STAR LN
MCINTYRE
FAIR VIEW
BERC
HINKLE
LEVANG
VOLF RD
D Cline
Twelve Mile Creek
Miller And Mc Girl Ditch
Seven Mile Creek
Hunley Main Canal
DIVERSION DA
0 DeLorme. Street Atlas USA; © 2000 GDT, Inc., Rel. 04/2000

SALE # YE-CM-01

County:	Yellowstone
Address/Location:	5165 Highway 312 East
Property Type:	Commercial
Legal:	Lot 4, Block 1, E2 Subdivision
Date of Sale:	Active Listing
Land Size:	5.58 acres – 243,064 sq ft
Sale Price:	$63,150
Zoning:	un-zoned
Land Value:	$ .26- $ /sq. ft.
Comments:	Selling with building. Highway frontage access with new 64 x 40 shop. Building has 6" concrete floor with rebar reinforcement. Building @ $53,760. Active offering (less 10%) @ $12,990.

BNSF Land Easement Documents

REDACTED

Land Assemblage Factor

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Valuation of Transportation/ Communication Corridors

by John P. Dolman, MAI, CRE, and Charles F. Seymour, MAI, CRE

INTRODUCTION

This paper presents a summary of our thoughts concerning the *value* of transportation/communication corridors in general, and those corridors used by railroads in particular. We recognize that certain legislation, regulations, and court orders may affect the *price* paid for the property used by ConRail and Amtrak in the future operation of the bankrupt northeast railroads, and the amount of *financing* that the U.S. Department of Transportation can make available for the acquisition of certain other corridors. We have made no attempt to identify, catalog, or apply the evolving (and still controversial) interpretations of these actions, but have confined our discussion to value and the process of valuation.

WHAT ARE TRANSPORTATION/COMMUNICATION CORRIDORS?

A transportation/communication corridor basically is a long narrow strip of property rights whose existence can be justified best by use for transportation and/or communication purposes, in contrast to other possible uses. The term "property rights" is used advisedly, because the strip may be of land and all its bundle of rights—including surface, subsurface, and air rights—or any one or combination of these rights. Title may be held in full fee or in a lesser estate such as a right of way or easement.

John P. Dolman, MAI, CRE, is Vice Chairman of Jackson-Cross Company, Philadelphia, REALTORS®. A former vice president of the Appraisal Institute's Central Atlantic Region, Mr. Dolman also is a member and past chairman of the Editorial Board of *The Appraisal Journal*. He was President of the American Society of Real Estate Counselors in 1971.

Charles F. Seymour, MAI, CRE, is President of Jackson-Cross Company. He served as President of the Appraisal Institute in 1973 and is a former member of the Editorial Board of *The Appraisal Journal*. Mr. Seymour also is a member of the American Society of Real Estate Counselors.

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In the 1961 edition of *Webster's New Collegiate Dictionary*, "corridor" is defined in two ways: "1: a passageway, usually covered; especially one, as in a hotel, into which rooms, etc., open 2: a narrow strip of land across territory previously foreign, joining a country to its seaport; as the Polish corridor."

Perhaps a pre-World War II trip to the Polish corridor was in the back of the authors' minds when we used the term "corridor" in the late 1950s to describe an abandoned canal right of way being appraised. Although we have no pride of authorship, we do not recall previously having seen the corridor terminology used in this context.

It is significant to note the expansion in the definition of corridor in the 1973 edition of the same dictionary:

> "1: a passageway (as in a hotel) into which compartments or rooms open 2: a usually narrow passageway or route as a: a narrow strip of land through foreign-held territory b(1): a restricted lane for air traffic (2): a restricted path a spacecraft must follow to accomplish its mission: Window 3 c: a major transportation route through a densely populated area (high-speed rail lines were also seen as the most practical means of travel in megalopolitan ~s)."

Whether or not we were the originators of this "transportation/communication corridor" terminology, it is apparent that its use is becoming increasingly popular. Generally, such terminology recognizes that some long narrow strips of land have utility for various communication and transportation purposes between two or more points where such services or functions are feasible and needed.

USES

The original uses of corridors probably included such primitive concepts as the Aborigine trails between their huts and water holes, which later evolved into roads and highways, the aqueducts, Mediterranean trade routes, railroads, pipelines, transmission lines, etc. In some cases when the original use no longer appeared viable to the original owners, reuses have been indicated, including the continued use of the corridor for its original purpose but under different ownership, management, or control. Other potential reuses include conversion from single to multiple use when a more intensive use no longer is desirable for economic, social, or political reasons. This might include using a canal or railroad right of way for a nature trail, cycling, snowmobiling, or hiking. This frequently may be an interim use pending future, more intensive use.

We suggest that corridor properties can be used for many purposes including, but not limited to, the following:

1) Short-line railroads (newly formed)
2) Highways
3) Chemical pipelines
4) Coal slurry pipelines
5) Oil pipelines

6) Gas pipelines
7) Coaxial cables
8) Television cables
9) Parks
10) Playgrounds
11) Bridle paths
12) Bikeways
13) Walking paths
14) Scenic gardens
15) Steam pipelines
16) Aqueducts
17) Storm sewer lines
18) Sanitary sewer lines
19) Flood control
20) Electric transmission lines
21) Industrial waste products lines
22) Industrial or commercial use of lands adjacent to basic subject parcel, including those dependent on or related to the right of way itself. These include, but are not limited to, rail-served building sites, pumping stations, parking lots, interchanges, etc.

OWNERSHIP

Many of the rights of way or corridors originally were assembled by public agencies or private parties under government controls—particularly highways, canals, and railroads. Some involved private operators under special public controls, such as the Interstate Commerce Commission, Public Utility Commission, or Department of Transportation. It has not been uncommon for corridors under reuse to be purchased by private industry or for municipal use, such as for a plant access—either by rail or highway, or for rights of way for electric generating companies, oil or gas pipelines, coal slurry lines, underground cables, sewer lines, and bicycle or nature trails.

One of the largest new transportation corridors is the highly publicized Alaskan Pipeline, developed to transport crude oil from the Arctic oilfields. It has been developed and is operated by a corporation owned by several of the major oil companies.

A number of states, including Connecticut, recently have been acquiring abandoned corridors as a matter of policy, landbanking them on the theory that future transportation and communication needs well could justify holding them on an interim basis. The corridors temporarily are being used as hiking trails or for other recreational purposes.

STATE OF THE ART OF APPRAISING TRANSPORTATION/COMMUNICATION CORRIDORS

HISTORY

In examining the history of the appraisal of corridor properties, it appears that there is virtually no background of published material on the valuation of a right of way or corridor as a whole.

In *The Appraisal Journal*, for instance, not more than a dozen articles between 1932 and the present have even remote references to right-of-way valuation in general, or railroads specifically. With very few exceptions, the material covers only the acquisition or assembly of property for ultimate use as a right of way. Except for a few brief statements here and there, most of the material is not significantly applicable to the valuation of an existing right of way or corridor property for continued use for transportation or communication. With one possible exception,[1] there appear to be no articles in *The Appraisal Journal* that specifically outline appraisal methodology or technique for the valuation of a right of way as a whole for sale, or for continued use for corridor purposes. A few comments from some of the articles may be of interest.

In "Just Compensation for, or the Law on Valuation of Rights of Way," by Clarence W. Beatty, Jr., there is mention of "two general types of easements or rights of way." The author describes these as "one is the easement which is taken from its owner by the condemning authority. . . . the more common type is the easement or right of way which is carved out of a tract of land by the condemning authority. This easement or right of way is created for the use of the taker."[2] This is one of the earliest references in the *Journal* that appears to be a recognition by an author of an existing right of way being taken from the owner.

In "Progress Toward More Accurate Valuation of Railroads for Taxation," James W. Martin, then Director of the Bureau of Business Research at the University of Kentucky, said: "In the valuation of any complicated property, the appraiser may attack the problem at the maximum in two ways. He may make a summation of the presumed value of the individual parts which make up the whole. Alternatively, he may undertake a unit valuation. The unit valuation may involve both capitalization of income and comparative sales analysis."[3]

Martin stated further: "Occasionally, whole public service enterprises are sold in open market transactions; but this sort of occurrence is an almost nonexistent line of evidence as to railroad values. If available, of course, sales data for whole railroads would be good evidence of the value of the same or of comparable other roads."[4]

In April, 1959, in "The Appraisal Docket," J. J. Edman commented on a California case involving condemnation of a portion of an abandoned street car right of way in Los Angeles for street widening.[5] A witness used prices paid on 12 sales of right of way, of which eight were to governmental

1. George R. Beetle, "Railroad Right-of-Way Use and Economic Value," *The Appraisal Journal*, October, 1977, pp. 511-518.
2. *The Appraisal Journal*, January, 1952, p. 101.
3. *The Appraisal Journal*, January, 1955, p. 77.
4. *Ibid.*, p. 81.
5. *The Appraisal Journal*, April, 1959, pp. 263-265.

bodies with condemnation power. The Supreme Court of California reversed the trial court on a four-to-three decision and permitted such sales to be introduced (*Los Angeles County* v. *Faus*, 312 P. 2d 680).

We find no literature in *The Appraisal Journal* that speaks to the subject of valuation of right-of-way corridor properties as a whole for continued rail use. This is also true of *Right of Way* magazine.

PROGRESS

The fact that the state of the art in the appraisal of transportation/communication corridors is in its infancy is not a reflection on the intelligence of the appraisal profession. It is attributable, in part, to the fact that until relatively recently there has been little need or opportunity for appraisers to study this particular valuation problem. Even more significantly, the whole concept now is evolving from ingredients, some of which never existed until recently, or which have been dormant and unrecognized.

As nearly as we can tell from our own company records, a 1958 appraisal of an abandoned canal right of way was our first formal appraisal presentation to develop the "corridor concept," or the unique ability to provide communication between widely separated points. It was the first of our appraisals we have been able to find in which the valuation for the whole was reduced to a unit rate "per mile." That report also contained data on sales of six other right-of-way properties, plus two right-of-way marketing examples that were used not only to develop direct comparisons, but also to confirm the interest of certain types of buyers in this type of property. It included a description of speculative sales to utilities and the state highway department. It also converted the common practice during this period of acquiring pipeline rights of way on a "running-foot" basis into a "dollars-per-mile" unit. This was also a before-and-after valuation, establishing the damage to the continuity of a right-of-way corridor.

We found then, as we do today, that the "continuity" (or "enhancement") factor tended to vary widely with the nature of the specific corridor. In those early interviews with utility people, particularly regarding electrical transmission lines, we heard comments that their right-of-way assemblies cost "two to three times" the prevailing price of farmland acreage through which the corridor passed. A higher multiplier was reflected in urban areas, where the leverage for severance damage was increased not only by higher land values, but also by extensive building takings or damages.

These value studies relied largely on data other than actual corridor sales, such as assembly costs of state and federal highway acquisitions (the Interstate Highway Acquisition Program was in full swing at that time). These costs tended to measure the total of "across-the-fence" (ATF) land values, plus the other factors of severance, continuity, building acquisition, etc., on a full replacement cost basis. Local sales of land for other purposes were considered, but more casually in terms of setting lower limit

guidelines—indicating probable prices obtainable in the event of subdivision or liquidation. By deriving the upper limit (replacement cost) and lower limit (liquidation value) of a corridor, we, in effect, had defined the range in which value was to be found; but we had not yet faced up to the ultimate task of determining the value of an existing corridor as such.

Contributions to our thinking during this early period of right-of-way valuation were developed through working with two veteran railroad men, the late John W. Barriger, then president of the Pittsburgh and Lake Erie Railroad, and Harold H. McLean, former general counsel of the New York Central and then vice president and general counsel of the Pittsburgh and Lake Erie. They were very knowledgeable about the desirable characteristics of a railroad transportation corridor and contributed to the thinking that resulted in the coining of the term "transportation/communication corridor." They also stressed the nature of railroad statistics, which are based almost entirely on mileage rather than acreage. Mr. Barriger once said that he hadn't the haziest idea how many acres were in their right of way, but he knew to the inch how long it was!

During exposure to these particular assignments, the "state of the art" in our own thinking developed rapidly. It became evident from background information obtainable at that time (the late 1950s or early 1960s) that a major evolution, if not revolution, was going on in mass transit, particularly in rail operations. Some of the elements of this revolution resulted in the railroad bankruptcies some seven or eight years later.

PRESENT STATUS

Based on our exposure to the situation outlined above and other materials we have examined, it is clear to us that the state of the art in this field of appraising, even today, is in its infancy. Few appraisers throughout the United States have had any exposure to this problem. Many have been engaged in the valuation of properties involved in the assembly of rights of way, but relatively few have experienced the problem of valuing an existing right of way for resale, either in theory or in practice.

Prior to the bankruptcy of a number of northeastern railroads, valuations of rights of way for transportation or communication corridors as a whole were rare. Of these rare instances, most, if not all, involved either abandonments or marginal corridors that were being bypassed or replaced with new corridors elsewhere, were otherwise inefficient, or were involved in a corporate takeover of some type. These frequently involved little, if any, elements of what would be termed market value as a corridor.

ELEMENTS OF VALUE

All land ultimately derives its value from the use or uses to which it can be put. A residential lot is valuable because it can support a house. An industrial tract is valuable because it can support a factory or a warehouse. The

value of a commercial site derives from its ability to support an office building or a shopping center. It is *use* that creates value.

What causes a long narrow strip of land to have value? Its size, shape, and access make it largely unsuitable for residential, industrial, or commercial use (although portions of it might have some modest value to enlarge the holdings of adjoining owners). There is a limited market for thin spaghetti factories or end-to-end bowling alleys. What creates value for a corridor? Why do some long narrow strips of land have more value than others?

The answer to these questions is really quite simple. A long narrow strip of land has value because of its ability to connect two points with resulting benefit. If there is economic advantage to connecting these points with a long narrow strip of land, it becomes a transportation/communication corridor, which, in turn, enjoys special value characteristics.

Appraisers recognize the fact that a prominent corner parcel may have some special elements of value, e.g., for use as a service station. This parcel may relate more to a market sale of another competitive corner parcel a mile away than to an adjacent inside parcel. Similarly, we cannot relate corridor values entirely to ATF sale prices if those sales are for quite different uses.

The special value of a corridor is illustrated well by the following story from the April, 1963, *Newsletter* of the American Right of Way Association:

> "Back in the days when agents representing a newly formed railroad were buying land for right of way, they encountered some shrewd bargainers among the Indians. One Chief was asked whether he would sell a small, eroded piece of land. 'Sure, me sell for $50,000,' said the Chief. '$50,000! Why that land is no good for planting or pasture. It is just no good for anything,' the agent exclaimed. The Chief grunted, 'It heap good for railroad.' "

When a group of parcels is put together to form a corridor, synergism results, because the value of the whole exceeds the sum of the values of the parts. Simply illustrated, a 200-foot length of three-quarter-inch rope is more valuable than the 30 pounds of nylon, dacron, or polypropylene, etc., used to make it. It is also more valuable than 100 two-foot lengths!

The concept of "plottage" illustrates this synergism: it is the increase in unit value resulting from improved usability when small plots are combined into larger ones. It is not the cost of assembling alone that is responsible for plottage value. For a plottage increment to be realized, there must be the basis of a superior operation in use after assembly. In order to enjoy a plottage increment, the character of use must change; a new highest and best use must be created.

Four conditions must exist for a plottage increment, or "special enhancement," to affect market value:

1) The property must be unique.
2) It must contain special benefits.

3) Added value must arise out of the avoidance of cost.
4) There must be demand for the special use.

If a long narrow strip of land connecting two points has these characteristics, it enjoys a special value enhancement as a transportation/communication corridor.

What, then, influences the value of a transportation/communication corridor? Primarily, the characteristics of the points it connects: the size, quality, value, use, and activity at the *ends* of the corridor. The size, quality, value, use, and activity *along* the corridor may have some modest influence on the lower limits of value; but it is the importance of the end points that sets the upper value limits, because they determine the need for, and economic justification of, connecting the points with a corridor. It is the end points, also, that have the greatest influence over what form or forms of transportation or communications can use the corridor, which, in turn, has an influence on value.

How wide is a transportation/communication corridor? It is wide enough to perform its primary function. A super highway may require a width of 200 feet or more. Railroads usually require 60 feet to 100 feet. Electrical transmission or pipeline corridors require enough width to construct and maintain the connection—as little as 40 feet to as much as 300 feet. But a bicycle path or nature trail may require only 10 feet or less. Obviously, the number of alternative uses increases as the upper limits of width requirements are approached; therefore, value sometimes tends to increase slightly with width. But value is largely a function of *length* and the importance of the end points and bears very little relationship to the *area* of the property. If it is wide enough to perform its function, additional width, although increasing the area, adds little or nothing to value.

In valuing an existing corridor, one important element of value is the presence or absence of competing corridors in relationship to the need to connect specific end points. If there is only one logical user for a corridor and three corridors connect the same points, value may be lower than if there are three potential users and only one available corridor. The laws of supply and demand apply to the marketing of corridors just as they apply to other properties of more "universal" shape, size, and access.

Another important element of value is the avoidance of cost. Presuming that demand exists to connect two points and that no other existing corridor connects those points, the only alternative available to the buyer is to acquire a new corridor and encounter all the severance costs, building acquisition and demolition expenses and delays, and political and social obstacles that may be involved. Obviously, one reason a buyer is interested in acquiring an existing corridor is to avoid the cost of assembling a new one. Thus, the cost of assembling a substitute corridor does not determine value *per se*, but it is an element to be considered.

PRINCIPLE OF SUBSTITUTION IN ACTION

An enterprise that needs a transportation/communication corridor has two basic choices:

1) With the assistance of eminent domain, it can assemble a corridor by condemning portions of other people's land between the two end points it desires to connect, or
2) It can acquire an existing corridor if a suitable one (or more) is available.

The advantages of condemning a new corridor are obvious. It can follow the most direct route (unless an existing one already occupies it) and be of the precise width required. But in a time when the citizen participation syndrome has advanced to a powerful political force, long delays are the rule, and the outright defeat of a proposed new corridor is a distinct possibility. Also, with so much of the area between points needing connection already built-up, the cost of assembling segments of developed industrial, commercial, and residential property under "just compensation" rules can be staggering, with severance damages to pay and probably some buildings to acquire and demolish.

Acquiring an existing corridor—even if wider than needed, even if longer than needed, even if it gets from Point A to Point B by a round-about route through Point C—frequently can be cheaper, and almost always is quicker, than creating a new one.

Under the principle of substitution, the cost of creating an ideal new corridor is clearly the upper limit of value. Nevertheless, an existing corridor seldom sells for this full amount for two principal reasons:

1) It is seldom ideal for the buyer.
2) The seller has a very limited market—frequently there is only one potential purchaser for corridor use.

The price negotiations between a knowledgeable buyer and seller when there is only one of each for a specific corridor can cover a very wide range. The upper limit for the buyer is the cost of assembling a new corridor. The lower limit for the seller is the value for alternative noncorridor use.

Until very recently, the appraiser had very little data available to determine where between these outer limits the "value" of an existing corridor lay. However, corridor sales now are taking place in sufficient numbers to provide the appraiser with substantial market data for analysis.

CORRIDOR CONCEPTS

A beginning point for appraising any long narrow strip of land is to determine whether or not a demand exists for its use, or continued use, as a corridor. This type of land either has potential use as a transportation/communication corridor or it does not. The appraiser must decide (or presume) this first, because the value concepts and resulting methodology

for a transportation/communication corridor are quite different from those applicable to a long narrow strip of land that derives no value from connecting its end points.

If it is decided that the strip has no value as a transportation/communication corridor, subparceling into logical parcels for sale for noncorridor use is the probable next step. Size, shape, and access adjustments then are applied to ATF value to estimate value for noncorridor use. Because most parcels are long, narrow, and have poor access, the adjustments for these factors usually are negative.

However, if the property to be valued is judged to enjoy the characteristics of a transportation/communication corridor, we are seeking a "value for corridor use." This requires an understanding of three additional concepts: highest and best alternative use, ATF value, and enhancement factor.[6]

The concept of highest and best alternative use speaks to the question: "What would the highest and best use of each segment of the corridor be if it enjoyed the characteristics of typical parcels found in the immediate vicinity, rather than its actual size, shape, and access attributes?" It is a matter of opinion as to what use each segment of the corridor would be put if its physical characteristics were "typical" of parcels found in the vicinity instead of being configured as a corridor.

The concept of ATF value speaks to the question: "What is the unit rate at which typical parcels with this estimated noncorridor highest and best use sell in this market?" Each segment of the corridor is considered to be either part of, or made up of, one or more such typical parcels, thereby disregarding the size, shape, and access characteristics of the segment. The ATF value for a segment of a corridor is the unit rate for the typical parcel times the area of the segment.

The concept of an enhancement factor speaks to the question: "How much more or less than ATF value is the entire corridor worth because of its ability to connect the end points?" It expresses the relationship between ATF value and value for corridor use.[7]

CORRIDOR APPRAISAL METHODOLOGY

As the appraisal profession has matured, most of us have come to realize that the traditional three approaches are so interrelated in many valuation problems as to be almost inseparable. They are variations on a theme, not different themes. In valuing corridors we use various types of *market data*,

6. If it is decided that the property does have continued potential use as a transportation/communication corridor, it often is useful to ascertain value for noncorridor use anyway as a definition of the alternative value available to the seller for noncorridor disposition. Obviously, a higher noncorridor value enhances the bargaining position of the seller *vis-a-vis* potential corridor purchasers.

7. The concept of liquidation value referred to in some of the legislation and litigation concerning rail corridors is of no help in determining the value of an existing corridor having a continuing corridor use. If there is a market for a transportation/communication corridor for continued corridor use, it can be "liquidated" for that use, and value for corridor use should be sought.

explore the *costs* of assembling new corridors, and convert the *income* from some corridors, or rights in corridors, to capital value for comparison purposes. The important thing is what we do, not how it is labeled.

ACROSS-THE-FENCE VALUE

Our usual first step in valuing a transportation/communication corridor is to estimate ATF value. We divide the corridor into segments of similar highest and best use derived from analyzing surrounding uses, gather sales data for these uses, and estimate ATF value from the unit rates reflected by sales of typical parcels—without adjustments for size, shape, or access.

VALUE FOR NONCORRIDOR USE

In some assignments we further divide or group these segments into disposition parcels; apply adjustments for size, shape, and access; and estimate the value of these segmented parcels for noncorridor use. This also represents the lower limit of value in a negotiation for sale as a corridor.

VALUE FOR CORRIDOR USE

The best evidence of real estate value usually is the price obtained for similar properties in the marketplace. We have gathered details on actual sales of existing corridors and actual costs of corridor assemblies. How can these data be used to value an existing corridor? As in other types of appraising, this involves the use of "yardsticks of comparisons" and an understanding of the "comparison factors" usually considered by buyers and sellers. And, of course, nonreal estate items such as pumping stations, transmission towers, substations, pipe, tracks, signals, tunnels, etc., must be eliminated or valued by other methods.

YARDSTICKS OF COMPARISON

Data on the sale or cost of corridors can be compared with the use of three different yardsticks of comparison:

1) *Price per acre or per square foot.* This is a traditional measure in many types of appraising but is probably the least important in corridor valuation because length and the importance of the end points are much more important than area.
2) *Price per mile.* This unit is in more general use by buyers and sellers of corridors. However, in using it care must be taken to add value for any useful "bulges" not needed as part of the corridor, such as yards or terminals.
3) *Enhancement factor.* We find this to be a very useful measure as related to ATF value.

The two sources of data to develop enhancement factors are acquisition cost of a substitute corridor and sales of other existing corridors. To determine the acquisition cost of a substitute corridor, it is possible to examine the cost records of recent assemblies of other new corridors. The most

accessible data concern highway acquisitions, but data also are available for electrical transmission lines and pipeline corridors. The total cost of such a corridor includes not only the value of the part taken, sometimes with a negotiating premium added, but also severance damages, appraisal costs, negotiating costs, title costs, grading costs, project management costs, and the acquisition and demolition of buildings. Dividing total acquisition cost by ATF value at the time of acquisition develops the "assemblage factor" applicable to that acquisition.

We have found that the actual assembly cost of new corridors usually reflects assemblage factors ranging from two to six times the ATF value. However, it always must be kept in mind that applying assemblage factors derived from actual assembly costs produces the upper limit of value when applying the principle of substitution. For this reason we distinguish the "assemblage" costs incurred in assembling a new "custom corridor" from the usually lower enhancement factor realized in the sale of an already existing corridor.

In the market approach to enhancement factors, actual sales of existing corridors are researched and compared to ATF value on the date of sale. As always in using the market data approach, care must be taken to recognize that we get out of an approach what we put into it. If we analyze sales of abandoned corridors segmented and purchased by adjoining owners, the resulting enhancement factors do not reflect value for continued corridor use. But if we analyze sales of corridors to buyers who continue to use them as corridors, we derive factors useful for valuation for corridor use.

Care also must be taken to ensure that *both* buyer and seller were knowledgeable about the potential value for continued corridor use. Some of the early railroad abandonments, for example, seem to have been sold off with considerations in mind other than realizing the highest possible value for the property as real estate. Also, many of these sales were to buyers for other than corridor use.

In analyzing sales of existing corridors, it also is important to recognize that they would not have been available if their original corridor use still were viable for the original owners. The degree of, and reasons for, this failure must be compared to the circumstances that caused the subject property to be appraised.

COMPARISON FACTORS

In comparing the price or cost of other corridors to the corridor being appraised, there are a number of unique comparison factors to be considered in addition to the usual considerations of time, size, location, etc. Because buyers and sellers of corridors consider these factors, we must do so as appraisers. The following list includes some of the significant considerations in this market—factors to be compared between the sold or assembled corridor and the subject property:

1) The relative importance of the end points.
2) The importance of other points along the corridors.
3) Density of development along the corridors.
4) General level of ATF value along the corridors.
5) The demand for corridor use in each location.
6) The availability of substitute corridors.
7) Length.
8) Width, related to use.
9) Straightness and curvature.
10) Grade, particularly as compared with surrounding terrain and site preparation implications.
11) The number of parcels that might have to be acquired to assemble a substitute parcel.

The use of these and other factors to determine the value of a subject corridor from analysis of past sales of comparable corridors is essentially no different in concept from traditional appraisal methodology. As past appraisal practice has indicated, the best way to ascertain the market value of a property in the real world is to analyze past real world transactions.

VALUATION PROCESS

The process we use to estimate the value of a transportation/communication corridor is both simple and traditional. We compare the market data to the subject property. In so doing, we use all available yardsticks of comparison and give consideration to all comparison factors pertinent to the particular case.

Use of the price-per-acre and price-per-mile yardsticks follows this process in a traditional manner. Further comment about our use of the third yardstick, the enhancement factor, may be useful.

If it is possible to ascertain the ATF value of typical parcels in the vicinity of the comparable transactions, it will be observed that the unit rate of ATF value with respect to each corridor transaction has some relationship to the unit rate realized in the sale. Our own analysis indicates that this relationship, which we have called the enhancement factor, usually ranges from one to three times ATF value although we recognize that in some cases the enhancement factor may be less than one.[8]

Analysis of the characteristics previously listed in comparing the market data to the subject property should indicate what factor in the range of enhancement factors observed should be applied to the subject property. For example, if the subject property connects end points of little significance, is crooked and narrow, and cost-avoidance in comparison to assembling a new corridor is minimal (e.g., a rural electric transmission corridor), the enhancement factor may be near 1 (or even less). But if the

8. However, application of this analysis never should result in a value less than value for noncorridor use. At this level, the seller presumably would subdivide and sell for noncorridor use because this would produce a higher net return.

corridor connects major urban centers, is relatively straight and of suitable width, and costs to assemble a substitute corridor would be both economically and socially prohibitive, analysis of past transactions indicates that a factor at the upper end of the enhancement factor range observed probably will prove appropriate.

SANITY TEST

If the valuation of a transportation/communication corridor is reasonable, it must reflect:

a) A reasonable enhancement factor, *and*
b) A reasonable value per mile, *and*
c) A reasonable value per acre.

In reconsidering what is reasonable, or applying a "sanity test," the appraiser again should be guided by the rates realized in past transactions involving comparable corridor properties, after considering the appropriate comparison factors.

CONCLUSION

The appraisal profession is faced with a challenge and an opportunity to develop concepts and data for a type of valuation that is just coming into its own. To approach these valuations on a stereotyped or dogmatic basis would be tragic. We must recognize legitimate legal and engineering factors and implications without placing a straightjacket around the appraisal concept, as unfortunately has been done in certain areas of appraisal practice.

One important factor that must be recognized by the appraiser is that in all appraisal techniques, although we recognize and learn from the *past*, we cannot ignore the *future*, because value is the present worth of future benefits. We cannot presume, for instance, because some railroad rights of way have been abandoned that the corridors no longer have a value as corridors. The reduction of railroad passenger traffic, for instance, has not resulted in less demand for transportation corridors. In fact, the development of transportation corridors for use by trucks, buses, and passenger cars is one of the influences reducing the use of rail corridors. Continued major abandonments of *rail* corridors should tend only to increase the market for these corridors *for other uses*. Major changes in the field of energy such as shortages and alternative power sources will play a part in providing new uses and demands for transportation/communication corridors.

As professional appraisers, it is up to us to understand the evolving markets for existing transportation/communication corridors in order to estimate their market value.

III - F-2

Engineering Reports

Form

Revised February, 1916.

B. V. Form No. 561
Owner Great Northern Railway Company,
Operating Company do.
Division ..... State Minnesota
Valuation Section No. Minnesota 23
From July 30 to June 30 1892
254.28 Miles Main Line, 57.984 Miles all Tracks.*

INTERSTATE COMMERCE COMMISSION
BUREAU OF VALUATION

SUMMARY SHEET
A - OWNED AND USED

Date of Inventory as of June 30, 1915
Date Compiled Feb. 16, 1922
Compiled by C.A.H.
Correct [signature] Engineer.
Approved ..... Supervising Engineer.

B. and E. Account Number. (a)	CLASSES. (b)	ORIGINAL COST TO DATE. (c)	COST OF REPRODUCTION. New. (d)	COST OF REPRODUCTION. Less Depreciation. (e)	B. and E. Account Number. (f)	REMARKS. (g)
	I. ROAD:	$	$	$		
1	Engineering,		18,872	18,872	1	
2	Land for transportation purposes,				2	
3	Grading,		44,991	44,991	3	
4	Underground power tubes,				4	
5	Tunnels and subways,				5	
6	Bridges, trestles, and culverts,		45,660	39,193	6	
7	Elevated structures,				7	
8	Ties,		55,694	32,470	8	
9	Rails,		123,447	110,823	9	
10	Other track material,		39,579	30,334	10	
11	Ballast,		33,576	28,276	11	
12	Track laying and surfacing,		50,973	39,249	12	
13	Right-of-way fences,		1,926	1,059	13	
14	Snow and sand fences and snowsheds,		390	195	14	
15	Crossings and signs,		10,147	7,133	15	
16	Station and office buildings,		20,360	14,177	16	
17	Roadway buildings,		5,075	2,896	17	
18	Water stations,		7,215	4,473	18	
19	Fuel stations,		1,150	575	19	
20	Shops and engine houses,				20	
21	Grain elevators,				21	
22	Storage warehouses,				22	
23	Wharves and docks,				23	
24	Coal and ore wharves,				24	
25	Gas producing plants,				25	
26	Telegraph and telephone lines,				26	
27	Signals and interlockers,		15,583	12,471	27	
28	Power dams, canals, and pipe lines,				28	
29	Power plant buildings,				29	
30	Power substation buildings,				30	
31	Power transmission systems,				31	
32	Power distribution systems,				32	
33	Power line poles and fixtures,				33	
34	Underground conduits,				34	
35	Miscellaneous structures,		276	150	35	
36	Paving,		430	356	36	
37	Roadway machines,		515	377	37	
38	Roadway small tools,		749	162	38	
39	Assessments for public improvements,				39	
40	Revenue and operating expenses during const.				40	
41	Cost of road purchased,				41	
42	Reconstruction of road purchased,				42	
43	Other expenditures—Road,				43	
44	Shop machinery,				44	
45	Power plant machinery,				45	
46	Power substation apparatus,				46	
47	Unapplied construction material and supplies,				47	
	Total, 1 to 47, inclusive Except Account 2		490,666	369,496		
	II. EQUIPMENT:					
51	Steam locomotives,				51	
52	Other locomotives,				52	
53	Freight-train cars,				53	
54	Passenger-train cars,				54	
55	Motor equipment of cars,				55	
56	Floating equipment,				56	
57	Work equipment,				57	
58	Miscellaneous equipment,				58	
	Total, 51 to 58, inclusive,					
	III. GENERAL EXPENDITURES:					
71	Organization expenses,				71	
72	General officers and clerks,				72	
73	Law,				73	
74	Stationery and printing,				74	
75	Taxes,				75	
77	Other expenditures—General,				77	
76	Interest during construction,				76	
	Total, 71 to 77, inclusive,					
	Grand total, 1 to 77, inclusive:					
	Grand total—Other,					

Form approved Oct. 7, 1916.

* State mileage to thousandths. 447

B. V. Form No. 561 — INTERSTATE COMMERCE COMMISSION — BUREAU OF VALUATION

Owner Great Northern Railway Company — Sheet No. ____ of this valuation section.

Val. Section No. Minnesota 23 — Miles Main Line, ____ Miles all Tracks.* — Approved: Chas. Hood

LOCATION. (1)	CHARACTER OF PROPERTY AND DESCRIPTION. Where but a single percentage is used it represents both per cent.	Base Unit Per Cent. (2)	Base Unit Per Cent. (3)	UNIT. (4)	NUMBER OF UNITS. (5)	COST OF REPRODUCTION. Per Unit. (6)	New. Total. (7)	Less Depreciation. (8)
	Acct. No. ____ Title ____ (C.O.E. Classification)							
	CONSTRUCTION CREDIT.							
	Items marked * are deductions.							
	Acct. 3 — GRADING.	Cost of Reproduct. New	Less Depr.					
	Page 448.							
	Deduct subsidence after operation	909	909	100	cu.yd.	2,020	0.40	
	Deduct for pricing as com.ere. instead of as ballast material. Orig.price $0.40 Now $0.198	1,656	1,656	100	"	8,279	0.206	*2,460
	Total deduction	*2,464	*2,464					*2,464
	Acct. 11 — BALLAST							
	Deduct for change in condition % and elimination of salvage.	Cost of Reproduction New	Less Depr.					
	Page 452 Main Track							
	Gravel from Downer Originally 72% now 85%	22,038	18,732	85	cu.yd.	61,213	0.34	
	Gravel from Buxton Originally 53% now 85%	3,822	7,499	95	"	13,157	0.57	
	New total	30,360	26,231					
	Original total	30,360	20,943					
	Net change - increase		5,288					5,288
	Page 452 - Yard Tracks and Sidings.							
	Timbers originally 85% now 50% Price originally $0.31 now $0.25	752	376	50	cu.yd.	2,255	0.16	
	Gravel from Downer Originally 70% now 85%	1,647	1,400	85	"	4,[illegible]	0.33	
	Gravel from Buxton Originally 53% now 85%	317	269	85	"	[illegible]98	0.34	
	New total	2,716	2,045					
	Original total	2,595	1,919					
	Net change - increase	120	126					126
	Total change - account 11- increase	120	5,414					5,414
	Acct. 12 - TRACK LAYING AND SURFACING.							
	Page 453 On account of change in ballast prices and depreciation, the condition % is changed from 75% to 77%	Cost of Reproduction New	Less Depr.					
	Original total	50,973	38,230					
	New total	50,973	39,249	77				1,019
	Net change - increase		1,019					

I. V. Form No. 561. INTERSTATE COMMERCE COMMISSION

Owner Great Northern Railway Company DIVISION OF VALUATION

Sheet No. ..... of this valuation section.

Val. Section No. Minnesota 23, 24.133 Miles Main Line, 27.614 Miles all Tracks.*

Appraised: H. J. Saunders
Supervising Engineer

LOCATION. Where not a single percentage is stated it represents both per cents. (1)	CHARACTER OF PROPERTY AND DESCRIPTION (2)	Carrier Ref. No. (3)	Unit Ref. No. (4)	UNIT. (5)	NUMBER OF UNITS. (6)	COST OF REPRODUCTION. Per Unit. (7)	New Total. (8)	Less Depreciation. (9)
	A - OWNED AND USED							
	Acct. No. 3 Title GRADING							
M.P. 0.000 to M.P. 22.802 - Barnesville to No.Dakota State Line								
	All Tracks							
	Excavation, common	100		Cu.Yd.	578	0.185	107.	107.
	Embankment Borrow, common	100		" "	221465	0.185	40,971.	40,971.
	Train Haul	100		" "	4511	0.10	2,337.	2,337.
	Subsidence	100		" "	10099	0.40	4,040.	4,040.
	Total for Valuation Section	100					$47,455.	$47,455.

Form approved Aug. 12, 1918. *Strike out one if Base not the same.

I. C. C. Form No. 351 — INTERSTATE COMMERCE COMMISSION — BUREAU OF VALUATION

Owner: Great Northern Railway Company — Sheet No. ____ of this valuation section.

Val. Section No.: Minn. 23 — Miles Main Line: ____ — Miles all Tracks: ____ — Approved: H. J. Skundera, Supervising Engineer.

LOCATION (a)	CHARACTER OF PROPERTY AND DESCRIPTION (When but a single percentage is noted it represents both per cents.)	Ret. Per Cent (b)	Unit (c)	Number of Units (d)	Per Unit (e)	Cost of Reproduction: New Total (f)	Cost of Reproduction: Less Depreciation (g)
	Acct. No. 13 Title: FENCES, SNOW AND SAND FENCES AND SNOWSHEDS (I. C. C. Classification)				$	$	$
All Tracks	10.064 Fence Miles						
	Cedar Posts - 7'	55	Each	3396	0.18	611.	336.
	Barbed Wire	55	Cwt.	241.99	2.80	395.	195.
	Staps, Galvanized Steel	55	Each	9604	0.03	288.	158.
	Labor Setting Posts	55	"	3396	0.10	340.	187.
	4" Stringing Barbed Wire, Posts spaced over 12 ft.	55	Wire Mile	40.337	3.60	145.	80.
	Standard Cattle Guard	55	Each	14	10.50	147.	81.
	Sundry Items	55				40.	22.
	Total for Valuation Section	55				$1,926.	$1,059.
	ACCOUNT 14 - SNOW AND SAND FENCES AND SNOWSHEDS						
All Tracks							
	140 Female Portable Snow Fence						
	Fir	50	M.B.M.	12.566	29.75	374.	187.
	Iron	50	Lb.	322	0.05	16.	8.
	Total for Valuation Section	50				$390.	$195.
	ACCOUNT 15 - CROSSINGS AND SIGNS						
60 Grade Crossings-							
	Embankment, common	100	Cu.Yd.	4545	0.185	841.	841.
	Planking	55	M.B.M.	23.007	35.75	823.	453.
	Sidewalk Lumber	55	"	27.850	35.75	996.	548.
	Crossing Gates	90	Set	1	545.00	545.	490.
	" Signal Bells	90	Each	3	332.00	996.	896.
	Warning Signs	55	"	14	4.85	165.	91.
	Wood Box Drainage Culverts	50	M.B.M.	35.740	46.75	1,671.	836.
	30" Corrugated Iron Pipe - 1	70	Lin.Ft.	66	2.80	185.	130.
	18" " " " - 4	70	" "	221	1.25	276.	193.
	24" " " " - 9	70	" "	671	2.30	1,543.	1,080.
	24" Vitrified Pipe Culverts - 10	82	" "	506	2.30	1,164.	954.
	Excavation for Drainage Culverts	75	Cu. Yd.	288	0.50	144.	108.
	Sundry Items	70				501.	349.
	Total (Grade Crossings)	71				9,850.	6,969.
Signs-							
	Mile Markers and Other Signs	55	Each	165		283.	156.
	Sundry Items	55				14.	8.
	Total (Signs)	55				297.	164.
	Total for Valuation Section	70				$10,147.	$7,133.

Form approved Aug. 17, 1918. *Cents mileage is thousandths.

B. V. Form No. 553
Owner Great Northern Railway Company,
Operating Company ..... &c.
Division ..... State Minnesota
Valuation Section No. Minnesota 22
From M.P. 8.892 to M.P. 42.815
56.867 Miles Main Line, 39.729 Miles all Tracks.*

INTERSTATE COMMERCE COMMISSION
BUREAU OF VALUATION
SUMMARY SHEET

A - OWNED AND USED

Date of Inventory as of ..... Sept 30, 1915
Date Compiled ..... Feb. 15, 1922
Compiled by ..... C. L. K.
Correct ..... Roper
Approved ..... Supervising Engineer.

R. and E. Account Number. (a)	CLASSES. (b)	ORIGINAL COST TO DATE. (c)	COST OF REPRODUCTION. New. (d)	COST OF REPRODUCTION. Less Depreciation. (e)	R. and E. Account Number. (a)	REMARKS. (f)
	I. ROAD:	$	$	$		
1	Engineering,		25,558	25,558	1	
2	Land for transportation purposes,				2	
3	Grading,		100,120	100,056	3	
4	Underground power tubes,				4	
5	Tunnels and subways,				5	
6	Bridges, trestles, and culverts,		59,199	39,760	6	
7	Elevated structures,				7	
8	Ties,		52,560	44,812	8	
9	Rails,		164,937	131,771	9	
10	Other track material,		47,740	30,843	10	
11	Ballast,		81,301	51,978	11	
12	Track laying and surfacing,		70,193	51,229	12	
13	Right-of-way fences,		2,460	1,231	13	
14	Snow and sand fences and snowsheds,		91	41	14	
15	Crossings and signs,		10,606	6,133	15	
16	Station and office buildings,		17,076	12,786	16	
17	Roadway buildings,		6,020	4,497	17	
18	Water stations,		6,224	4,651	18	
19	Fuel stations,				19	
20	Shops and engine houses,				20	
21	Grain elevators,				21	
22	Storage warehouses,				22	
23	Wharves and docks,				23	
24	Coal and ore wharves,				24	
25	Gas producing plants,				25	
26	Telegraph and telephone lines,				26	
27	Signals and interlockers,		72	65	27	
28	Power dams, canals, and pipe lines,				28	
29	Power plant buildings,				29	
30	Power substation buildings,				30	
31	Power transmission systems,				31	
32	Power distribution systems,				32	
33	Power line poles and fixtures,				33	
34	Underground conduits,				34	
35	Miscellaneous structures,				35	
36	Paving,				36	
37	Roadway machines,		134	102	37	
38	Roadway small tools,		166	134	38	
39	Assessments for public improvements,				39	
40	Revenues and operating expenses during const.				40	
41	Cost of road purchased,				41	
42	Reconstruction of road purchased,				42	
43	Other expenditures—Road,				43	
44	Shop machinery,				44	
45	Power plant machinery,				45	
46	Power substation apparatus,				46	
47	Unapplied construction material and supplies,				47	
	Total, 1 to 47, inclusive except account 2		564,497	525,796		
	II. EQUIPMENT:					
51	Steam locomotives,				51	
52	Other locomotives,				52	
53	Freight-train cars,				53	
54	Passenger-train cars,				54	
55	Motor equipment of cars,				55	
56	Floating equipment,				56	
57	Work equipment,				57	
58	Miscellaneous equipment,				58	
	Total, 51 to 58, inclusive,					
	III. GENERAL EXPENDITURES:					
71	Organization expenses,				71	
72	General officers and clerks,				72	
73	Law,				73	
74	Stationery and printing,				74	
75	Taxes,				75	
77	Other expenditures—General,				77	
78	Interest during construction,				78	
	Total, 71 to 77, inclusive,					
	Grand total, 1 to 77, inclusive,					
	Grand total—Other,					

Form approved, Oct. 7, 1913.

*State mileage to thousandths. 434

B. V. Form No. 561 — INTERSTATE COMMERCE COMMISSION — BUREAU OF VALUATION

Owner Great Northern Railway Company — Sheet No. ... of this valuation section.

Val. Section No. Minnesota 22 — Miles Main Line, ... Miles all Tracks.* — Approved: Irvin Hood.

LOCATION. Where but a single percentage is stated it represents both per cent.	CHARACTER OF PROPERTY AND DESCRIPTION.	Condition per cent.	Unit Price	Quan.	UNIT.	NUMBER OF UNITS.	COST OF REPRODUCTION. Per Cal.	New Total.	Less Depreciation.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Acct. No. ..., Title ... (I.C.C. classification.)						$	$	$
	CORRECTION SHEET								
	Items marked * are deductions.								
	Acct. 5 - GRADING.	Cost of Reproduction New	Less Depr.						
	Page 435.								
	Deduct subsidence after operation	4,972	4,972	100		cu.yd.	9,940	0.55		
	Deduct for pricing as com.exs. instead of as ballast material Orig.price $0.50 New $0.185	13,204	13,204	100			35,175	0.366	* 18,176	* 18,176
	Total deduction	* 18,176	* 18,176							
	Acct. 11 - BALLAST								
	Deduct for change in condition % and elimination of salvage.	Cost of Reproduction New	Less Depr.						
	Page 439 - Main Track								
	Gravel								
	Originally 65% now 35%	58,906	50,070	85		cu.yd.	115,202	0.51		
	New total	58,906	50,070							
	Original total	58,906	40,137							
	Net change - increase		9,933						9	9,933
	Page 439 - Yard Tracks and Sidings.								
	Cinders originally 7% now 50%									
	Price originally $0.33 now $0.440	156	68	50		cu.yd.	339	0.440		
	Gravel									
	Originally 93% now 85%	2,139	1,335	85		"	4,151	0.52		
	New total	2,295	1,906							
	Original total	2,233	1,559							
	Net change - increase	7	344						7	344
	Total change - account 11 - increase	7	10,277						7	10,277
	Acct. 12 - TRACK LAYING AND SURFACING									
	Page 440 - On account of change in ballast prices and depreciation, the condition % is changed from 70% to 73%	Cost of Reproduction New	Less Depr.							
	Original total	70,190	49,133							
	New total	70,190	51,239	73						
	Net change - increase		2,106							2,106

I. C. C. Form No. 501.

INTERSTATE COMMERCE COMMISSION
DIVISION OF VALUATION

Owner: Great Northern Railway Company

Sheet No. _____ of this valuation section.

Approved: H. J. Saunders
Supervising Engineer

Val. Section No. Minnesota 22 36.867 Miles Main Line 39.759 Miles all Tracks.*

LOCATION. (1)	CHARACTER OF PROPERTY AND DESCRIPTION. (2) Where but a single percentage is stated it represents both per cent. A.—OWNED AND USED	Section Base Per Cent. (3)	UNIT. (4)	NUMBER OF UNITS. (5)	COST OF REPRODUCTION. Per Unit. (6)	New Total. (7)	Less Depreciation. (8)
	Acct. No. 3 Title: GRADING (U.S.B. Classification)						
M.P. 5.693 to M.P. 42.815 — Brushvale to Moorhead							
	All Tracks-						
	Excavation, common	100	Cu.Yd.	1161	0.185	215.	215.
	Embankment Borrow, common	100	" "	502457	0.185	92,955.	92,955.
	Subsidence	100	" "	45219	0.55	24,870.	24,870.
	Protection of Roadway-						
	Sundry Items	75				256.	192.
	Total for Valuation Section	100				$118,296.	$118,232.

Form approved Nov. 12, 1918.

* Single mileage to each site.

I.C.V. Form No. 561 — INTERSTATE COMMERCE COMMISSION — BUREAU OF VALUATION

Owner: Great Northern Railway Company — Sheet No. ____ of this valuation section

Val. Section No. Minn. 22 — Miles Main Line ____ Miles off Tracks ____ — Approved: H. J. Saunders, Supervising Engineer

LOCATION. Where not a whole percentage is stated it represents both per cents. CHARACTER OF PROPERTY AND DESCRIPTION.	Ass'd No.	Unit	Number of Units	Unit Cost	Cost of Reproduction: New Total	Cost of Reproduction: Less Depreciation
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Acct. No. 13 — Title: FENCES, SNOW AND SAND FENCES AND SNOW SHEDS (Continued)						
All Tracks - 19.939 Miles Fence						
Cedar Posts - 7'	50	Each	4596	0.17	775.	388.
Barbed Wire "	50	Lbs.	171.58	2.55	438.	219.
Nuts "	50	"	13.92	2.50	35.	18.
Staps, Galvanized Steel	50	Each	10893	0.03	327.	164.
Labor Setting Posts	50	"	4550	0.10	455.	228.
" Stringing Barbed Wire, Posts spaced over 12 ft.	50	Wire Mile	48.743	3.60	175.	88.
" " Woven " " " " 12 ft.	50	Fence "	1.566		52.	25.
Sundry Items	50				53.	27.
Total for Valuation Section	50				$2,460.	$1,231.
ACCOUNT 14 - SNOW AND SAND FENCES AND SNOW SHEDS						
All Tracks						
30 Panels Portable Snow Fence						
Fir	50	M.B.M.	2.672	29.25	78.	39.
Iron	50	Lb.	64	0.05	3.	2.
Total for Valuation Section	50				$81.	$41.
ACCOUNT 15 - CROSSINGS AND SIGNS						
65 Grade Crossings-						
Embankment, common	100	Cu. Yd.	8646	0.185	1,637.	1,637.
" cinder	100	" "	42	0.57	24.	24.
Planking	50	M.B.M.	32.621	33.50	1,093.	547.
Iron and Steel	50	Cwt.	26.19	5.00	131.	66.
Warning Signs	50	Each	42	4.85	204.	102.
Excavation for Drainage Culverts	50	Cu. Yd.	530	0.50	265.	132.
24" Corrugated Iron Pipe	50	Lin.Ft.	288	2.35	677.	338.
15" " " "	50	" "	61	1.25	76.	38.
24" Vitrified Pipe	50	" "	830	2.25	1,868.	934.
15" " "	50	" "	191	1.45	277.	138.
Wood Box Drainage Culverts - Fir	50	M.B.M.	52.176	44.75	2,335.	1,168.
" " " " - Treated	50	"	24.182	61.00	1,475.	738.
Hand Placed Rip Rap	50	Cu.Yd.	6	3.50	21.	10.
Total (Grade Crossings)	58				10,065.	5,872.
Signs -						
Mile Markers and Other Signs	50	Each	317		448.	224.
Embankment, common	50	Cu.Yd.	398	0.185	74.	37.
Total (Signs)	50				522.	261.
Total for Valuation Section	58				$10,605.	$6,133.

Form approved Aug 13, 1918. *Make mileage in thousandths.

Revised February, 1922

I. C. C. Form No. 553.
Owner Great Northern Railway Company
Operating Company do
Division State Minnesota
Valuation Section No. Minn. 4.
From M.P. 24.792 to M.P. 215.251
190.879 Miles Main Line, 278.338 Miles all Tracks, 4. OWNED AND USED

INTERSTATE COMMERCE COMMISSION
BUREAU OF VALUATION
SUMMARY SHEET

Date of Inventory as of June 30, 1915
Date Compiled February 15, 1922
Compiled by G. A. K.
Correct Report Engineer
Approved Supervising Engineer

U. and E. Account Number (1)	CLASSES (2)	ORIGINAL COST TO DATE. (3)	COST OF REPRODUCTION: New (4)	COST OF REPRODUCTION: Less Depreciation (5)	U. and E. Account Number (6)	REMARKS (7)
	I. ROAD:	$	$	$		
1	Engineering,		281,991	281,991	1	
2	Land for transportation purposes,				2	
3	Grading,		2,290,146	2,274,089	3	
4	Underground power tubes,				4	
5	Tunnels and subways,				5	
6	Bridges, trestles, and culverts,		331,905	296,529	6	
7	Elevated structures,				7	
8	Ties,		534,529	339,902	8	
9	Rails,		1,038,376	956,451	9	
10	Other track material,		351,441	270,826	10	
11	Ballast,		609,707	515,521	11	
12	Track laying and surfacing,		676,028	627,302	12	
13	Right-of-way fences,		51,660	38,606	13	
14	Snow and sand fences and snowsheds,		21,374	20,016	14	
15	Crossings and signs,		115,381	97,049	15	
16	Station and office buildings,		359,077	297,168	16	
17	Roadway buildings,		55,781	37,595	17	
18	Water stations,		116,142	93,043	18	
19	Fuel stations,		47,655	33,224	19	
20	Shops and engine houses,		224,801	180,719	20	
21	Grain elevators,				21	
22	Storage warehouses,				22	
23	Wharves and docks,				23	
24	Coal and ore wharves,				24	
25	Gas producing plants,				25	
26	Telegraph and telephone lines,				26	
27	Signals and interlockers,		14,532	12,760	27	
28	Power dams, canals, and pipe lines,				28	
29	Power plant buildings,		15,726	14,190	29	
30	Power substation buildings,				30	
31	Power transmission systems,		251	180	31	
32	Power distribution systems,		2,433	2,044	32	
33	Power line poles and fixtures,		604	522	33	
34	Underground conduits,				34	
35	Miscellaneous structures,				35	
36	Paving,				36	
37	Roadway machines,		14,743	10,775	37	
38	Roadway small tools,		6,845	3,656	38	
39	Assessments for public improvements,				39	
40	Revenues and operating expenses during const.				40	
41	Cost of road purchased,				41	
42	Reconstruction of road purchased,				42	
43	Other expenditures—Road,				43	
44	Shop machinery,		50,406	34,131	44	
45	Power plant machinery,				45	
46	Power substation apparatus,				46	
47	Unapplied construction material and supplies,				47	
	Total, 1 to 47, inclusive, - except Account 2	7,331,754	6,316,503			
	II. EQUIPMENT:					
51	Steam locomotives,				51	
52	Other locomotives,				52	
53	Freight-train cars,				53	
54	Passenger-train cars,				54	
55	Motor equipment of cars,				55	
56	Floating equipment,				56	
57	Work equipment,				57	
58	Miscellaneous equipment,				58	
	Total, 51 to 58, inclusive,					
	III. GENERAL EXPENDITURES:					
71	Organization expenses,				71	
72	General officers and clerks,				72	
73	Law,				73	
74	Stationery and printing,				74	
75	Taxes,				75	
77	Other expenditures—General,				77	
76	Interest during construction,				76	
	Total, 71 to 77, inclusive,					
	Grand total, 1 to 77, inclusive,					
	Grand total—Other,					

Revised February 1922.

I.C.C. Form No. 991 — INTERSTATE COMMERCE COMMISSION — BUREAU OF VALUATION

Owner: Great Northern Railway Company. Sheet No. ____ of this valuation section.

Val. Section No. 4-Minnesota Miles Main Line, ____ Miles all Tracks.* Approved: Louis Hood

When but a single percentage is stated it represents land per cent.

(1) LOCATION	CHARACTER OF PROPERTY AND DESCRIPTION.	(2) Land Per Cent	(3) Unit Per Cent	(4) UNIT.	(5) NUMBER OF UNITS.	(6) COST OF REPRODUCTION. Per Unit.	(7) New. Total.	(8) Less Depreciation.
	Acct. No. ____ Title ____ (I. C. C. accounting)							
	CORRECTION SHEET.							
	Items marked * are deductions.							
	Acct. 3 - GRADING							
			Cost of Reproduction: New	Less Depr.				
Page 107								
	Deduct subsidence after operation.		67,445	67,445	100	Cu.Yd.	145232 0.465	
	Deduct for pricing as com. excavation instead of as ballast material. Orig. price $0.465 now $0.31		86,976	86,976	100	"	592929 0.145	*153,421 *153,421
	Total deduction.		153,421	153,421				
	Acct. 11 - BALLAST.							
	Deduct for change in condition % and elimination of salvage.							
Page 114 - Main Track								
	Cinders originally 100% now 50% Price originally $0.21 now $0.25		740	370	50	"	2962 0.25	
	Gravel from Hereford Originally 75% now 85%		179,302	152,407	85	"	426909* 0.42	
	Gravel from New London Originally 74% now 85%		192,591	163,702	85	"	437706 0.44	
	Gravel from Hopkins Jct. Originally 75% now 85%		117,337	99,736	85	"	279374 0.42	
	New total		489,970	416,215				
	Original total		489,852	368,216				
	Net Change - Increase		118	47,999				118 47,999
Page 114 - Yard Tracks and Sidings.								
	Cinders originally 100% now 50% Price originally $0.21 now $0.25		7,056	3,528	50	"	28225 0.25	
	Gravel from Hereford Originally 75% now 85%		41,467	35,247	85	"	98751 0.42	
	Gravel from New London Originally 75% now 85%		47,197	40,117	85	"	118115 0.41	
	Gravel from Hopkins Jct. Originally 75% now 85%		24,017	20,414	85	"	55853 0.43	
	New total		119,737	99,306				
	Original total		118,609	91,261				
	Net Change - Increase		1,128	8,045				1,128 8,045
	Total Change - Acct. 11 Increase		1,246	56,044				1,246 56,044
	Acct. 12 - TRACK LAYING AND SURFACING							
Page 115 -	On account of change in ballast prices and depreciation, the condition % is changed from 76% to 78%							
	Original total		676,028	513,781				
	New total		676,028	527,302				
	Net Change - Increase		-	13,521				13,521

Form approved, Aug. 12, 1918. — 107A

I. C. C. Form No. 561.

INTERSTATE COMMERCE COMMISSION

Owner Great Northern Railway Company — DIVISION OF VALUATION

Sheet No. _____ of this valuation section

Val. Section No. Minneapolis 4 — 190.879 — Miles Main Line 278.338 — Miles all Tracks

Approved: E. J. Saunderson, Supervising Engineer

LOCATION (1)	CHARACTER OF PROPERTY AND DESCRIPTION (When not a single percentage is stated in following sub-accounts, the percentage to be used in distributing sub-accounts is shown in parentheses.) (2)	Ac. No. (3)	Pct. (4)	UNIT (5)	NUMBER OF UNITS (6)	COST OF REPRODUCTION: Per Unit ($) (7)	COST OF REPRODUCTION: Total ($) (8)	Depreciation ($) (9)
	A - OWNED AND USED							
	Mile No. 1 — Title GRADING							
	Mile 26.192 to Mile 215.271 — Interlinear Junction to Brookbridge							
	All Tracks:							
	Clearing	101		Acre	90.71	27.00	2,449.	2,449.
	Rubbing	100		"	93.13	122.00	11,362.	2,840.
	Excavation, common	100		Cu.Yd.	3769131		833,462.	833,462.
	" loose rock	100		"	117683	0.43	50,604.	50,604.
	" solid "	100		"	836	1.12	1,006.	1,006.
	Embankment Borrow, common	100		"	2502589		993,767.	993,767.
	Rock Overhaul, 500' Free Haul	100		Cu.Yd.-Sta.	6954135	0.0159	111,670.	111,670.
	Main Haul	100		Cu.Yd.	2416085		463,277.	463,277.
C	Additional Ballast 24" to 42" below Tie	100		"	28134	0.235	6,603.	6,603.
	Subsidence	100		"	741161		337,523.	337,523.
	Protection of Roadway:							
	Ditching, common - Drain Ditches	100		"	30285		6,664.	6,664.
	Trench Excavation for Drain Tile, common	80		"	9171	0.50	4,585.	3,668.
	" " " " " " wet	80		"	19592	1.50	29,253.	23,402.
	Rip Rap, Handlaid	80		"	3427		9,422.	9,422.
	Piling, Cedar	50		Lin.Ft.	2745	0.43	1,180.	590.
	Timber Cribs	50		M.F.M.	22.260	34.00	757.	378.
	6" Drain Tile	80		Lin.Ft.	3460	0.15	519.	415.
	12" " "	80		" "	111945	0.13	14,553.	11,642.
	27" Vitrified Pipe	85		" "	612	1.80	1,102.	937.
	Sandfill Cisterns	80		Cu.Yd.	28573	0.50	14,336.	11,469.
	Sundry Items	79					1,872.	1,485.
	Total for Valuation Section		99				$2,443,567.	$2,427,510.

B. V. Form No. 501 — INTERSTATE COMMERCE COMMISSION — Sheet No. _____ of this valuation section.

Owner: Great Northern Railway Company — BUREAU OF VALUATION — Approved: E. J. Saunders, Supervising Engineer

Val. Section No. Minnesota 4 — Miles Main Line _____ Miles all Tracks _____

Location	Character of property and description (Where land is owned in fee, right of way and terminal areas should be shown separately)	Ac. No.	Sub. No.	Unit	Number of units	Cost or reproduction new: Per unit	Cost or reproduction new: Total	Cost or reproduction less depreciation
	Acc. No. 13 Sub. RIGHT OF WAY FENCES							
All Tracks	87.516 Miles Fence							
	Cedar Posts 7'-7 1/2"	75		Each	54692	0.15	11,048.	8,733.
	" " 8'-8"	75		"	9667	0.15	1,517.	1,369.
	Labor Setting Posts	75		"	74559	0.11	8,201.	6,151.
	Barbed Wire	75		Cwt.	2100.83	2.35	4,907.	4,075.
	Labor Stringing Barbed Wire, Posts spaced over 12 ft.	75		Wire Mile	665.565	3.80	2,529.	1,897.
	Woven Wire 26"- 80	75		Cwt.	295.19	2.30	679.	488.
	Labor Stringing Woven Wire, Posts spaced over 12 ft.	80		Fence Mile	7.690		191.	137.
	Lumber	75		M.B.M.	416.405	20.25	8,432.	6,324.
	Labor placing Lumber	75		"	416.405	8.00	7,331.	2,495.
	Stay Galvanized Steel	75		Each	144930	0.03	4,348.	3,261.
	Standard Cattle Guard #1059-14	60		"	67	10.50	914.	548.
	" 14'-0" Board	60		"	14	21.00	294.	176.
	" 16'-0" Wood Gates - #1219-2	72		"	25	3.00	79.	54.
	" 16'-0" " "	72		"	260	3.00	780.	345.
	Sundry Items	75					706.	529.
	Total for Valuation Section		75				$51,680.	$36,605.
	ACCOUNT 14 - SNOW AND SAND FENCES AND SNOW SHEDS							
All Tracks	1502 Panels Portable Snow Fence							
	Lumber	68		M.B.M.	135.456	29.75	4,030.	2,740.
	Iron	68		Lbs.	4130	0.05	206.	140.
	Trees	100		Each	34277	0.50	17,138.	17,138.
	Total for Valuation Section		94				$21,374.	$20,018.

Revised February, 1922.

I. V. Form No. 563
Owner Great Northern Railway Company
Operating Company ..... do .....
Division ..... State Minnesota
Valuation Section No. Zone 9
From M.P. 0.00 to M.P. 46.908
45.908 Miles Main Line, 50.128 Miles all Tracks.

INTERSTATE COMMERCE COMMISSION
BUREAU OF VALUATION

SUMMARY SHEET

A — OWNED AND USED

Date of Inventory as of June 30, 1915
Date Compiled February 16, 1922
Compiled by C. A. K.
Correct [signature] Engineer.
Approved ..... Engineer.

P. and E. Account Number.	CLASSES.	ORIGINAL COST TO DATE.	COST OF REPRODUCTION. New.	COST OF REPRODUCTION. Less Depreciation.	P. and E. Account Number.	REMARKS.
(1)	(2)	(32)	(40)	(41)	(46)	(47)
	I. ROAD:	$	$	$		
1	Engineering,		26,193	26,193	1	
2	Land for transportation purposes,				2	
3	Grading,		196,512	192,896	3	
4	Underground power tubes,				4	
5	Tunnels and subways,				5	
6	Bridges, trestles, and culverts,		74,512	58,606	6	
7	Elevated structures,				7	
8	Ties,		95,539	47,713	8	
9	Rails,		139,909	114,484	9	
10	Other track material,		19,796	13,788	10	
11	Ballast,		7,856	6,626	11	
12	Track laying and surfacing,		62,277	42,972	12	
13	Right-of-way fences,		11,274	5,636	13	
14	Snow and sand fences and snowsheds,		3,331	1,665	14	
15	Crossings and signs,		6,524	4,841	15	
16	Station and office buildings,		24,828	18,574	16	
17	Roadway buildings,		3,943	2,928	17	
18	Water stations,		8,210	6,160	18	
19	Fuel stations,				19	
20	Shops and engine houses,				20	
21	Grain elevators,				21	
22	Storage warehouses,				22	
23	Wharves and docks,				23	
24	Coal and ore wharves,				24	
25	Gas producing plants,				25	
26	Telegraph and telephone lines,				26	
27	Signals and interlockers,		102	87	27	
28	Power dams, canals, and pipe lines,				28	
29	Power plant buildings,				29	
30	Power substation buildings,				30	
31	Power transmission systems,				31	
32	Power distribution systems,				32	
33	Power line poles and fixtures,				33	
34	Underground conduits,				34	
35	Miscellaneous structures,				35	
36	Paving,				36	
37	Roadway machines,		403	266	37	
38	Roadway small tools,		397	196	38	
39	Assessments for public improvements,				39	
40	Revenue and operating expenses during const.				40	
41	Cost of road purchased,				41	
42	Reconstruction of road purchased,				42	
43	Other expenditures—Road,				43	
44	Shop machinery,				44	
45	Power plant machinery,				45	
46	Power substation apparatus,				46	
47	Unapplied construction material and supplies,				47	
	Total, 1 to 47, inclusive, — except Account 2		681,004	543,634		
	II. EQUIPMENT:					
51	Steam locomotives,				51	
52	Other locomotives,				52	
53	Freight-train cars,				53	
54	Passenger-train cars,				54	
55	Motor equipment of cars,				55	
56	Floating equipment,				56	
57	Work equipment,				57	
58	Miscellaneous equipment,				58	
	Total, 51 to 58, inclusive,					
	III. GENERAL EXPENDITURES:					
71	Organization expenses,				71	
72	General officers and clerks,				72	
73	Law,				73	
74	Stationery and printing,				74	
76	Taxes,				76	
77	Other expenditures—General,				77	
76	Interest during construction,				76	
	Total, 71 to 77, inclusive,					
	Grand total, 1 to 77, inclusive,					
	Grand total—Other,					

Form approved Oct. 7, 1913

* Strike out reference to thousandths.

Revised February 1922.

B. V. Form No. 561

INTERSTATE COMMERCE COMMISSION

BUREAU OF VALUATION

Owner Great Northern Railway Company.

Sheet No. _____ of this valuation section.

Val. Section No. 2-MINN3958, _____ Miles Main Line, _____ Miles all Tracks.*

Approved: Louis Hood

LOCATION. (1)	CHARACTER OF PROPERTY AND DESCRIPTION. Where but a single percentage is stated it represents both per cents.	Reproduction Per Cent.	Depreciation Per Cent.	UNIT. (2)	NUMBER OF UNITS. (3)	COST OF REPRODUCTION. Per Unit. (4) $	Net Total. (5) $	Less Depreciation. (6) $
	Acct. No. _____ Title _____ (I. C. C. classification.)							
	CORRECTION SHEET							
	Items marked * are deductions.							
	Acct. 3 - GRADING.	Cost of Reproduction New : Less Depr.						
Page 217								
	Deduct subsidence after operation	2,848 : 2,848	100	Cu.Yd.	4928.	0.578		
	Deduct for pricing as common excavation instead of as ballast material. Orig. price $0.578 now $0.22	7,057 : 7,057	100	"	19713	0.358		
	Total deduction	*9,905 : *9,905					*9,905	*9,905
	Acct. 11 - BALLAST							
	Deduct for change in condition % and elimination of salvage.							
Page 221 - Main Track								
	Cinders originally 66% now 50% Price originally $0.39 now $0.41	127 : 64	50	"	309	0.41		
	Gravel from New London Originally 58% now 85%	5,673 : 4,822	85	"	10704	0.53		
	Gravel from South Shore Originally 62% now 85%	1,656 : 1,409	85	"	3585	0.48		
	New total	7,456 : 6,295						
	Original total	7,452 : 4,380						
	Net Change - Increase	6 : 1,915					6	1,915
Page 221 - Yard Tracks and Sidings								
	Cinders originally 50% now 50% Price originally $0.46% now $0.47%	21 : 10	50	"	44	0.47		
	Gravel from South Shore Originally 89% now 85%	135 : 115	85	"	394	0.46		
	Gravel from New London Originally 59% now 85%	242 : 206	85	"	483	0.50		
	New total	398 : 331						
	Original total	397 : 238						
	Net Change - Increase	1 : 93					1	93
	Total Change - Account 11 - Increase	7 : 2,008					7	2,008

Form approved Aug. 12, 1918.

D. V. Form No. 561.

INTERSTATE COMMERCE COMMISSION

DIVISION OF VALUATION

Sheet No. ..... of this valuation section.

Owner Great Northern Railway Company.

Val. Section No. Minnesota 9 ..., 45.908 ... Miles Main Line, 50.138 ... Miles all Tracks.

Approved: E. J. Saunders
Supervising Engineer

LOCATION. When last a single percentage is stated it includes all equipment built per cent.	CHARACTER OF PROPERTY AND DESCRIPTION.	Quantities (Per Cent Used)	UNIT.	NUMBER OF UNITS.	COST OF REPRODUCTION. Per Unit.	New, Total.	Less Depreciation.
(1)	(2)		(3)	(4)	(5)	(6)	(7)
	A - OWNED AND USED						
	Acct. No. 3 Title GRADING (I. C. C. classification.)						
M.P. 0.000 to M.P. 45.908 - Benson to Nassau							
	All Tracks-						
	Clearing	100	Acre	6.7	27.00	181.	181.
	Grubbing	100	"	1.67	220.00	367.	367.
	Excavation, common	100	Cu.Yd.	173630	0.195	33,741.	33,741.
	" loose rock	100	" "	3027	0.43	1,302.	1,302.
	" solid "	100	" "	1346	1.12	1,508.	1,508.
	Embankment Borrow, common	100	" "	624233	0.195	121,725.	121,725.
	Team Overhaul, 500' Free Haul	100	Cu.Yd.Sta.	295622	0.0125	3,695.	3,695.
	Train Haul	100	Cu.Yd.	102742		15,196.	15,196.
	Subsidence	100	" "	24641		14,236.	14,236.
	Protection of Roadway-						
	Rip Rap, Loose	75	" "	300	1.90	570.	428.
	" " hand laid	75	" "	4963	2.80	13,896.	10,422.
	Total for Valuation Section		98			$205,417.	$202,801.

Form approved Aug. 17, 1914.

217

*Rate mileage is fractionable.

B. V. Form No. 551

INTERSTATE COMMERCE COMMISSION

BUREAU OF VALUATION

Owner Great Northern Railway Company, Sheet No. ..... of this valuation section.

Val. Section No. Minn. 9 Miles Main Line, Miles all Tracks. Approved: W. J. Saunders, Superintending Engineer.

LOCATION.	CHARACTER OF PROPERTY AND DESCRIPTION. Where but a single percentage is stated it represents both per cents.	Condition Per Cent.	Per Cent Dep.	UNIT.	NUMBER OF UNITS.	COST OF REPRODUCTION. Per Unit.	New, Total.	Less Depreciation.
50								
			(1)		(2)	(3)	(4)	(5)
	Acct. No. 13 Title RIGHT-OF-WAY FENCES (I.C.C. classification.)							
	All Tracks - 42.286 Miles Fence							
	Cedar Posts 7'-6"	50		Each	12770	0.18	2,299.	1,150.
	" " 6'-6" - 8'	50		"	306		68.	30.
	Barbed Wire	50		Cwt.	517.10	2.38	1,215.	608.
	Stays-Galvanized Steel	50		Each	26066	0.03	752.	376.
	Woven Wire	50		Cwt.	84.60	2.30	196.	98.
	Lumber	50		M.B.M.	106.333	20.75	2,206.	1,103.
	Cedar Posts - 9'	50		Each	3259	0.33	1,075.	538.
	Labor Setting Posts	50		"	16337	0.11	1,797.	899.
	" Stringing Barbed Wire- Posts spaced over 12'	50		Wire Mile	145.894	3.85	566.	283.
	" " Woven " - " " " 12'	50		Fence "	2.782		70.	33.
	" Placing Lumber	50		M.B.M.	106.333	6.50	585.	292.
	Standard Cattle Guards	50		Each	21	10.50	220.	110.
	" 16' Gates	50		"	31	3.00	93.	46.
	" 13' "	50		"	13	3.50	45.	23.
	Sundry Items	50					97.	47.
	Total for Valuation Section	50					$11,274.	$5,636.

ACCOUNT 14 - SNOW AND SAND FENCES AND SHEDDING.

All Tracks							
1153 Panels Portable Snow Fence							
Fir	50		M.B.M.	106.827	30.00	3,205.	1,602.
Iron	50		Lb.	2522	0.05	126.	63.
Total for Valuation Section	50					$3,331.	$1,665.

REPRODUCED AT THE NATIONAL ARCHIVES

L.

B. V. Form No. 564
Owner Chicago, Milwaukee and St. Paul Railway Company
Operating Company do
Division ____ State Minnesota
Valuation Section No. 4-Minn.
From Granite Falls to So. Dak. State Line.
61.980 Miles Main Line, 132.661 Miles all Tracks.*

INTERSTATE COMMERCE COMMISSION
BUREAU OF VALUATION

SUMMARY SHEET
WHOLLY OWNED AND USED.

Date of Inventory as of June 30, 1918
Date Compiled Aug. 1, 1927
Compiled by A.J.C.
Correct [signature] Engineer.
Approved Report Engineer.

B. and E. Account Number.	CLASSES.	ORIGINAL COST TO DATE.	COST OF REPRODUCTION. New.	COST OF REPRODUCTION. Less Depreciation.	B. and E. Account Number.	REMARKS.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
	I. ROAD:	$	$	$		
1	Engineering,		131,951	131,951	1	Miles all tracks includes
2	Land for transportation purposes,				2	26.752 miles second main tracks.
3	Grading,		1,035,803	1,033,728	3	
4	Underground power tubes,				4	
5	Tunnels and subways,				5	
6	Bridges, trestles, and culverts,		290,092	261,239	6	
7	Elevated structures,				7	
8	Ties,		313,054	155,705	8	
9	Rails,		515,004	456,576	9	
10	Other track material,		187,712	137,876	10	
11	Ballast,		194,817	127,777	11	
12	Track laying and surfacing,		256,976	187,594	12	
13	Right-of-way fences,		30,925	18,244	13	
14	Snow and sand fences and snowsheds,		669	325	14	
15	Crossings and signs,		39,507	35,004	15	
16	Station and office buildings,		147,585	94,529	16	
17	Roadway buildings,		13,954	9,240	17	
18	Water stations,		38,695	30,596	18	
19	Fuel stations,		17,535	14,190	19	
20	Shops and engine houses,		136,256	100,213	20	
21	Grain elevators,				21	
22	Storage warehouses,				22	
23	Wharves and docks,				23	
24	Coal and ore wharves,				24	
25	Gas producing plants,				25	
26	Telegraph and telephone lines,		29,153	25,090	26	
27	Signals and interlockers,		8,771	7,835	27	
28	Power dams, canals, and pipe lines,				28	
29	Power plant buildings,		6,520	6,129	29	
30	Power substation buildings,				30	
31	Power transmission systems,				31	
32	Power distribution systems,		1,138	942	32	
33	Power line poles and fixtures,		302	239	33	
34	Underground conduits,				34	
35	Miscellaneous structures,				35	
36	Paving,				36	
37	Roadway machines,		3,668	2,376	37	
38	Roadway small tools,		1,458	730	38	
39	Assessments for public improvements,				39	
40	Revenues and operating expenses during const.				40	
41	Cost of road purchased,				41	
42	Reconstruction of road purchased,				42	
43	Other expenditures—Road,				43	
44	Shop machinery,		16,876	10,490	44	
45	Power plant machinery,		12,297	9,046	45	
46	Power substation apparatus,				46	
47	Unapplied construction material and supplies,				47	
	Total, 1 to 47, inclusive,		3,430,732	2,859,675		
	II. EQUIPMENT:					
51	Steam locomotives,				51	
52	Other locomotives,				52	
53	Freight-train cars,				53	
54	Passenger-train cars,				54	
55	Motor equipment of cars,				55	
56	Floating equipment,				56	
57	Work equipment,				57	
58	Miscellaneous equipment,				58	
	Total, 51 to 58, inclusive,					
	III. GENERAL EXPENDITURES:					
71	Organization expenses,				71	
72	General officers and clerks,				72	
73	Law,				73	
74	Stationery and printing,				74	
75	Taxes,				75	
77	Other expenditures—General,				77	
76	Interest during construction,				76	
	Total, 71 to 77, inclusive,					
	Grand total, 1 to 77, inclusive,		Revised August 1, 1927			
	Grand total—Other,					1,203

Form approved Oct. 7, 1916. * State mileage to thousandths. 13—30 1

REPRODUCED AT THE NATIONAL ARCHIVES

I. V. Form No. 551

INTERSTATE COMMERCE COMMISSION
BUREAU OF VALUATION

Owner Chicago, Milwaukee and St.Paul Railway Company

Sheet No. _____ of this valuation section.

Val. Section No. 4-Minn. Miles Main Line. _____ Miles all Tracks.*

Approved: C.A. Foglund

LOCATION (1)	CHARACTER OF PROPERTY AND DESCRIPTION (Where but a single percentage is stated it represents both per cents.)	Condition Per Cent (2)	Per Cent New (3)	UNIT	NUMBER OF UNITS (4)	COST OF REPRODUCTION Per Unit (5)	New, Total (6)	Less Depreciation (7)
	Acct. No. 3 Title GRADING (I. C. C. classifications)					$	$	$
	All Tracks:							
	Clearing	100		Acre	138.0	35.00	4,830	4,830
	Grubbing	100		"	79.0	90.00	7,110	7,110
	Excavation:							
	Common	100		Cu.yd.	2223401	.22	489,148	489,148
	Subsidence, common	100		"	53178	.22	11,699	11,699
	" loose rock	100		"	8568	.42	3,598	3,598
	" solid "	100		"	1301	.85	1,106	1,106
	Hard pan	100		"	30738	.22	6,762	6,762
	Loose rock	100		"	706523	.42	296,740	296,740
	Solid rock	100		"	110199	.85	93,669	93,669
	Team overhaul 500' free haul	100		C.Y.Sta.	3451497	.0125	43,144	43,144
	Train " 5,000' to 10,000'	100		C.Y.1000	59401	.015	891	891
	10,000 to 25,000	100		"	2584453	.01	25,945	25,945
	25,000 to 55,000	100		"	9183703	.005	45,919	45,919
	Binder backfill, wet	98		Cu.yd.	1125	1.50	1,688	1,485
	" " haul 21.2 miles	88		"	825	.50	413	333
	Protection of Roadway:							
	Riprap	96		"	2871		4,496	4,519
	Masonry, concrete (plain)	94		"	4	8.50	34	32
	" stone dry rubble	85		"	819	4.00	3,276	2,785
	" " rubble in mortar	85		"	346	7.00	2,422	2,059
	Vitrified tile drains 8" -24"	88		Lin.ft.	6536		3,452	3,038
	Excavation, common, dykes, channel changes, etc.	100		Cu.yd.	17761	.22	3,907	3,907
	hard pan " " "	100		"	1218	.22	268	268
	loose rock " " "	100		"	782	.42	328	328
	Solid rock " " "	100		"	44	.85	37	37
	Sundry items	89					284	143
	Total for Valuation Section		100				1,031,346	1,049,525
	Acct. 6 - BRIDGES, TRESTLES AND CULVERTS					Approved: F.B. Scheetz		
	Metal Bridges and Combination Trusses							
	Bridge 0.222, one 20' concrete slab span over highway and one 40' deck plate girder span over stream at Wegdahe, two tracks, three concrete abutments, length 65', built 1913:							
	Substructure:							
	Excavation and cofferdams	95					2,525	2,399
	Concrete plain	95		Cu.yd.	835	8.50	7,098	6,743
	" reinforced	95		"	74	10.00	740	703
	Reinforcing rods	95		Lb.	11444	.0315	360	342
	Superstructure:							
	Deck-plate girders	93	94	Lb.	30150	.037	1,116	1,049
	" "	100	100	"	30150	.037	1,116	1,116
	Concrete, reinforced, slabs	93		Cu.yd.	73	.12	876	815
	Reinforcing	93		Lb.	9290	.0315	296	275
	Sundry items	66					79	52
	Total bridge		95				14,306	13,494
	Bridge C-244½							
	One 37.5' thru plate girder span, three tracks, 2 concrete abutments and length 38', built substructure 1913, superstructure 1913							
	Substructure:							
	Excavation	96					284	278
	Concrete, plain	98		Cu.yd.	775	8.50	6,571	6,440
	Reinforcing rods	98		Lb.	160	.0315	5	5
	Superstructure:							
	Thru plate girders	92	93	"	156140	.039	6,089	5,663
	Sundry items	77					488	374
	Total bridge		98				13,437	12,760

Revised page prepared by direction of the Commission March 1, 1935

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Form approved Aug. 12, 1918.

* Main tracks to Intermediate.

REPRODUCED AT THE NATIONAL ARCHIVES

I. C. C. Form No. 661

INTERSTATE COMMERCE COMMISSION
BUREAU OF VALUATION

Owner Chicago, Milwaukee and St.Paul Railway Company

Sheet No. ____ of this valuation section.

Approved: C. A. Englund

Val. Section No. 4-Minn. Miles Main Line. ____ Miles all Tracks.*

LOCATION (1)	CHARACTER OF PROPERTY AND DESCRIPTION (Where but a single percentage is stated it represents both per cents.)	Condition Per Cent (2)	Cost Per Cent New (2)	UNIT (3)	NUMBER OF UNITS (3)	COST OF REPRODUCTION Per Unit (4)	New, Total (4)	Less Depreciation (4)
	Acct. No. 13 Title RIGHT OF WAY FENCES (I. C. C. classification)					$	$	$
	All Tracks - 152.533 Miles of Fence							
	Posts	60		Each	60084		11,028	6,580
	Labor setting posts	60		"	60084		6,053	3,605
	Barbed wire	60		Cwt.	2243.39	2.55	5,721	3,433
	Labor stringing barbed wire	60		Wire Mile	637.328	5.00	3,187	1,912
	Woven wire	60		Cwt.	444.35	2.45	1,089	653
	Labor stringing woven wire	60		Fence mi.	11.716		299	179
	Lumber	50		M.B.M.	116.336	32.00	3,721	1,861
	Sundry items	60					585	349
	Farm gates	74		Each	190		754	561
	Cattle guards	60		"	88		1,355	933
	Total for Valuation Section		59				33,982	20,066
	Acct. 14 - SNOW AND SAND FENCES AND SNOW SHEDS							
	All Tracks:							
	Portable snow fence	50		Panel	97	4.25	412	206
	Permanent snow fence	50		Mile	0.318		257	129
	Total for Valuation Section		50				669	335
	Acct. 15 - CROSSINGS AND SIGNS							
	173 Grade Crossings:							
	Grading:							
	Embankment	100		Cu.yd.	50308	.22	11,068	11,068
	Excavation, common	100		"	17474	.22	3,844	3,844
	" loose rock	100		"	13513	.42	5,675	5,675
	" solid "	100		"	1439	.85	1,223	1,223
	Surfacing gravel haul 17 miles	100		"	2637	.80	2,110	2,110
	" cinder " 19 "	100		"	1059	.60	635	635
	Surfacing:							
	Planking	50		M.B.M.	77.346	36.00	2,784	1,392
	Concrete paving 4" on 6" gravel base	70		Sq.yd.	161	1.10	199	139
	" 8"	70		"	249	1.90	473	331
	Drainage:							
	20" C.I.P.	83		Ton	11.746	35.00	411	341
	12" corrugated iron pipe	80		Lin.ft.	80	.90	72	58
	20" "	80		"	1040	1.25	1,300	1,040
	24" "	80		"	308	1.45	447	358
	30" "	80		"	115	1.75	201	161
	36" "	80		"	183	2.15	393	314
	8" V.T.P.	80		"	24	.30	7	6
	12" "	80		"	137	.60	82	66
	15" "	80		"	18	.80	14	11
	18" "	80		"	76	1.05	80	64
	20" "	80		"	986	1.30	1,282	1,026
	36" "	80		"	52	4.45	231	185
	24" concrete pipe	92		"	42	3.65	153	141
	Wood boxes	50		M.B.M.		41.00	567	284
	Concrete manholes	83		Each	6	35.00	210	174
	Excavation	82					2,840	1,837

Revised page prepared by direction of the Commission March 1, 1935

2042

Form approved Aug. 12, 1919. * State mileage to thousandths.

REPRODUCED AT THE NATIONAL ARCHIVES

BM

B. V. Form No. 563

INTERSTATE COMMERCE COMMISSION
BUREAU OF VALUATION

SUMMARY SHEET
WHOLLY OWNED AND USED

Owner Chicago, Milwaukee and St. Paul Railway Company
Operating Company do
Division ____ State South Dakota
Valuation Section No. 5-S.Dak.
From Minn. State Line to Aberdeen
108.247 Miles Main Line, 246.833 Miles all Tracks.*

Date of Inventory as of June 30, 1918
Date Compiled Aug. 1, 1927
Compiled by G.A.J.C.
Correct D S Douglass
Co-ordinating Engineer.
Approved ____ Engineer.

R. and R. Account Number (1)	CLASSES (2)	ORIGINAL COST TO DATE (3)	COST OF REPRODUCTION New (4)	COST OF REPRODUCTION Less Depreciation (5)	R. and R. Account Number (6)	REMARKS (7)
	I. Road:	$	$	$		
1	Engineering,		276,013	276,013	1	Miles all tracks includes
2	Land for transportation purposes,				2	105.017 miles second main
3	Grading,		2,084,137	2,081,083	3	tracks.
4	Underground power tubes,				4	
5	Tunnels and subways,				5	
6	Bridges, trestles, and culverts,		575,778	511,923	6	
7	Elevated structures,				7	
8	Ties,		723,872	398,130	8	
9	Rails,		1,148,892	1,051,480	9	
10	Other track material,		419,576	337,406	10	
11	Ballast,		569,451	453,946	11	
12	Track laying and surfacing,		559,534	438,437	12	
13	Right-of-way fences,		103,776	70,568	13	
14	Snow and sand fences and snowsheds,		21,075	12,645	14	
15	Crossings and signs,		160,417	145,236	15	
16	Station and office buildings,		139,472	94,999	16	
17	Roadway buildings,		13,763	8,969	17	
18	Water stations,		114,358	97,638	18	
19	Fuel stations,		47,597	43,094	19	
20	Shops and engine houses,		54,925	43,405	20	
21	Grain elevators,				21	
22	Storage warehouses,				22	
23	Wharves and docks,				23	
24	Coal and ore wharves,				24	
25	Gas producing plants,				25	
26	Telegraph and telephone lines,		18,741	16,061	26	
27	Signals and interlockers,		125,004	114,666	27	
28	Power dams, canals, and pipe lines,				28	
29	Power plant buildings,				29	
30	Power substation buildings,				30	
31	Power transmission systems,				31	
32	Power distribution systems,				32	
33	Power line poles and fixtures,		189	175	33	
34	Underground conduits,		5	5	34	
35	Miscellaneous structures,				35	
36	Paving,		942	780	36	
37	Roadway machines,				37	
38	Roadway small tools,		4,423	3,220	38	
39	Assessments for public improvements,		2,195	1,098	39	
40	Revenues and operating expenses during const.,				40	
41	Cost of road purchased,				41	
42	Reconstruction of road purchased,				42	
43	Other expenditures—Road,				43	
44	Shop machinery,				44	
45	Power plant machinery,		9,189	4,654	45	
46	Power substation apparatus,				46	
47	Unapplied construction material and supplies,				47	
	Total, 1 to 47, inclusive,		7,176,344	6,203,631		
	II. Equipment:					
51	Steam locomotives,				51	
52	Other locomotives,				52	
53	Freight-train cars,				53	
54	Passenger-train cars,				54	
55	Motor equipment of cars,				55	
56	Floating equipment,				56	
57	Work equipment,				57	
58	Miscellaneous equipment,				58	
	Total, 51 to 58, inclusive,					
	III. General Expenditures:					
71	Organization expenses,				71	
72	General officers and clerks,				72	
73	Law,				73	
74	Stationery and printing,				74	
75	Taxes,				75	
77	Other expenditures—General,				77	
76	Interest during construction,				76	
	Total, 71 to 77, inclusive,					
	Grand total, 1 to 77, inclusive,					
	Grand total—Other,					Revised page prepared by direction of the Commission March 1, 1935.

Form approved Oct. 7, 1913.

*State mileage to thousandths.

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REPRODUCED AT THE NATIONAL ARCHIVES

BM

B. V. Form No. 861

INTERSTATE COMMERCE COMMISSION

Sheet No. _____ of this valuation section.

Owner Chicago, Milwaukee and St. Paul Railway Company BUREAU OF VALUATION

Val. Section No. 5-So.Dak. _____ Miles Main Line, _____ Miles all Tracks.*

Approved: C.A.Hoglund

12-493

LOCATION (1)	CHARACTER OF PROPERTY AND DESCRIPTION (Where but a single percentage is stated it represents both per cents.)	Condition Per Cent	Per Cent of Cash Value	UNIT (2)	NUMBER OF UNITS (3)	COST OF REPRODUCTION Per Unit (4)	New, Total (5)	Less Depreciation (6)
	Acct. No. 3 Title GRADING (I. C. C. classification)					$	$	$
	All Tracks:							
	Excavation:							
	Common	100		Cu.yd.	5900752	.215	1,268,662	1,268,662
	Subsidence, common	100		"	103485	.215	22,249	22,249
	" loose rock	100		"	5642	.45	2,539	2,539
	" solid rock	100		"	295	.90	266	266
	Loose rock	100		"	944922	.45	425,215	425,215
	Solid rock	100		"	132346	.90	119,111	119,111
	Team overhaul, 500' free haul	100		C.Y.Sta.	8427504	.01½	105,344	105,344
	Train " 5000' to 10000'	100		" 1000'	812817	.015	12,192	12,192
	" " 10000' to 25000'	100		"	4400619	.01	44,006	44,006
	" " 25000' to 55000'	100		"	3156392	.005	15,782	15,782
	Protection of Roadway:							
	Rip rap			Cu.yd.	3869		6,728	6,654
	C.I. pipe, 30"	86		Ton	33.663	40.00	1,347	1,158
	8" tile drain	75		Lin.ft.	12870	.45	5,792	4,344
	Piling, 12" cedar	75		"	1800	.65	1,134	851
	1/2" long chain	75		"	180	.14	25	19
	Cinders in sacks used as rip rap	75		Sacks	1900	1.50	2,850	2,138
	Cinders, backfill	75		Cu.yd.	2010	.50	1,005	754
	Lumber	75		M.B.M.	1.862	45.00	84	63
	Old ties	75		Each	82	.25	21	16
	Snow fence	50		Panel	29	4.50	131	66
	Excavation, common dykes, channel changes, etc	100		Cu.yd.	111155	.215	23,898	23,898
	" loose rock	100		"	38350	.45	17,258	17,258
	" solid rock	100		"	8608	.90	7,747	7,747
	" hard pan	100		"	700	.215	151	151
	" common wet	100		"	2790	.215	600	600
	Total for Valuation Section		100				2,084,137	2,081,083
	ACCT. 6 - BRIDGES, TRESTLES AND CULVERTS					Approved: F.B.Schaatz		
	Metal Bridges and Combination Trusses							
	Bridge 0-266.							
	Over 70' and one 75' deck plate girder span, one track, two concrete and one pile pier, length 145', built 1905 and 1907.							
	Substructure:							
	Excavation, piling and cofferdams	86					2,557	2,299
	Concrete, plain	87		Cu.yd.	320	9.50	3,040	2,645
	Superstructure:							
	Deck plate girders	85	87	Lb.	171485	.0379	6,499	5,654
	Sundry items	70					1,475	1,033
	Total Bridge		85				13,571	11,631
	Bridge 0-276.							
	One 65' thru plate girder span, two track, two concrete abutments, length 65', built 1910-1912.							
	Substructure:							
	Excavation, piling and cofferdams	93					2,512	2,338
	Concrete, plain	93		Cu.yd.	465	9.50	4,418	4,109
	Reinforcing rods	93		Lb.	562	.033	22	20
	Superstructure:							
	Thru plate girders	90	91	Lb.	192522	.0399	7,682	6,991
	Sundry items	71					343	343
	Total Bridge		91				14,977	13,643
	Bridge 0-418.							
	Two 50' thru plate girder spans and two 16' concrete spans, two tracks, two concrete abutments and three concrete piers, length 133', built 1911-1912.							
	Substructure:							
	Excavation, piling and cofferdams	95					4,083	3,879
	Concrete, plain	95		Cu.yd.	501	9.50	4,760	4,522
	" special	91		"	45	13.00	624	568
	Reinforcing rods	91		Lb.	5223	.033	172	157

2422

Form approved Aug. 19, 1916. * State mileage to thousandths.

dmc

B. V. Form No. 561

INTERSTATE COMMERCE COMMISSION

BUREAU OF VALUATION

Owner Chicago, Milwaukee and St. Paul Railway Company

Sheet No. _____ of this valuation section.

Val. Section No. 5-So. Dak. _____ Miles Main Line, _____ Miles all Tracks.*

Approved: C. H. Spencer

LOCATION. (1)	CHARACTER OF PROPERTY AND DESCRIPTION. Where but a single percentage is stated it represents both per cents.	Condition Per Cent.	Per Cent of Cost Repr.	UNIT. (2)	NUMBER OF UNITS. (3)	COST OF REPRODUCTION. Per Unit. (4)	New, Total. (5)	Less Depreciation. (6)
	Acct. No. 11. Title BALLAST. (I. C. C. classification.)					$	$	$
	Main Track-Single Track:							
	Gravel ballast from Ortley, average haul 25 miles	80		Cu.Yd.	57654	.36	20,755	16,604
	Main Track-Double Track:							
	Gravel ballast from Ortley, average haul 37 miles	80		Cu.Yd.	1038340	.42	436,103	348,882
	Cinder ballast from Bristol, average haul 56 miles	50		"	4298	.42	1,806	903
	Total Main Track		80				458,663	366,389
	Yard Tracks and Sidings:							
	Gravel ballast from Ortley, average haul 26 miles	80		Cu.Yd.	100067	.37	37,025	29,620
	Cinder ballast from Bristol, average haul 36 miles	50		"	8516	.42	3,577	1,789
	Total Yard Tracks and Sidings.		77				40,602	31,409
	Total for Valuation Section		80				499,265	397,798
	Acct. 12 - TRACK LAYING AND SURFACING.							
	Main Track:							
	Track laying and initial surfacing, rail 61#-90#			Mile	212.647	1050.00	223,279	
	" " " " " " 60# and under			"	0.617	1000.00	617	
	Placing bridge and curve guard rail			Lin.Ft.	400	.025	10	
	" gravel ballast			Cu.Yd.	1095994	.23	252,079	
	" cinder "			"	4298	.19	817	
	" bridge ties			M.B.M.	32.838	10.00	328	
	" turnouts			Each	46		1,365	
	" Clamsen derail			"	2	10.00	20	
	" Hayes derails			"	2	3.00	6	
	" rail braces			"	280	.02	6	
	" tieplates			"	1054303	..01½	13,179	
	" anticreepers			"	268049	.02	5,361	
	" clips			"	1330	.02	27	
	Yard Tracks and Sidings:							
	Track laying and initial surfacing, rail 61#-90#			Mile	27.931	900.00	25,138	
	" " " " " " 60# and below			"	5.638	850.00	4,792	
	Placing bridge and curve guard rail			Lin.Ft.	925	.025	23	
	" gravel ballast			Cu.Yd.	100067	.23	23,015	
	" cinder "			"	8516	.19	1,618	
	" turnouts			Each	153	30.00	4,590	
	" switch point, 1 point derail, with stand			"	21	7.50	158	
	" Hayes derail			"	3	3.00	9	
	" rail braces			"	3354	.02	67	
	" tieplates			"	106144	.0125	1,327	
	" anticreepers			"	516	.02	10	
	" Ellis bumping post			"	1	15.00	15	
	Total for Valuation Section		77				557,856	429,549
	Acct. 13 - RIGHT OF WAY FENCES.							
	All Tracks- 225.782 miles.							
	Posts	68		Each	98276		31,938	21,718
	Labor setting posts	68		"	98124		9,051	6,155
	Barbed wire	68		Cwt.	2933.19	2.70	7,920	5,386
	Labor stringing barbed wire	68		Wire Mi	833.292	4.00	3,333	2,266
	Woven wire	68		Cwt.	760.06	2.60	1,976	1,344
	Labor stringing woven wire	68		Fence M.	20.642		504	343
	Lumber	68		M.B.M.	1217.067	33.00	40,163	27,311
	Sundry items	68					2,526	1,718
							2430	

Form approved Aug. 12, 1918.

*Slide mileage to thousandths.

RM

B. V. Form No. 561

INTERSTATE COMMERCE COMMISSION

Owner Chicago, Milwaukee and St. Paul Railway Company BUREAU OF VALUATION

Sheet No. _____ of this valuation section.

Val. Section No. 5-So. Dak. _____ Miles Main Line, _____ Miles all Tracks.*

Approved: C.A.Hoglund

LOCATION (1)	CHARACTER OF PROPERTY AND DESCRIPTION (Where but a single percentage is stated it represents both per cents.)	Condition Per Cent	Per Cent of Cost New	UNIT (3)	NUMBER OF UNITS (3)	COST OF REPRODUCTION Per Unit (4)	New, Total (5)	Less Depreciation (6)
						$	$	$
	Acct. No. 13 Title RIGHT OF WAY FENCES (I. C. C. classification)							
	Farm gates	68		Each	132		555	377
	Cattle guards	68		"	66		2,306	1,568
	Total for Valuation Section		68				103,776	70,568
	ACCT. 14 - SNOW AND SAND FENCES							
	Portable snow fence	60		Panel	4577	4.50	20,597	12,358
	Stationary snow fence	60		Mile	0.517		478	287
	Total for Valuation Section		60				21,075	12,645

Revised page prepared by direction of the Commission March 1, 1935.

2431

Form approved Aug. 12, 1916.

* State mileage to thousandths.

B. V. Form No. 553

INTERSTATE COMMERCE COMMISSION
BUREAU OF VALUATION

Owner Chicago, Burlington & Quincy Railroad Company
Operating Company Do.
Division ____ State Wyoming
Valuation Section No. CB&Q-6AB-Wyo.
From So.Dak.Line (Dakoming) to Montana Line (Parkman)
256.908 Miles Main Line, 339.276 Miles all Tracks.*

Date of Inventory as of June 30 17
Date Compiled Feb. 1 28
Compiled by R. A. F.
Correct Report Engineer.
Approved ____ Engineer.

SUMMARY SHEET
WHOLLY OWNED AND USED

R. and R. Account Number.	CLASSES.	ORIGINAL COST TO DATE.	COST OF REPRODUCTION. New.	COST OF REPRODUCTION. Less Depreciation.	R. and R. Account Number.	REMARKS.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
	I. ROAD:	$	$	$		
1	Engineering,		382,518	382,518	1	
2	Land for transportation purposes,				2	Includes the carrier's interest in certain joint property. See explanatory text, paragraph 12.
3	Grading,		2,564,218	2,543,400	3	
4	Underground power tubes,				4	
5	Tunnels and subways,				5	
6	Bridges, trestles, and culverts,		990,370	875,564	6	
7	Elevated structures,				7	
8	Ties,		1,164,858	747,788	8	
9	Rails,		1,398,740	1,174,121	9	
10	Other track material,		531,328	329,098	10	
11	Ballast,		825,344	657,224	11	
12	Track laying and surfacing,		749,744	554,811	12	
13	Right-of-way fences,		97,693	47,988	13	
14	Snow and sand fences and snowsheds,		17,120	10,166	14	
15	Crossings and signs,		18,883	12,968	15	
16	Station and office buildings,		258,489	209,454	16	
17	Roadway buildings,		130,306	95,138	17	
18	Water stations,		253,098	212,484	18	
19	Fuel stations,		57,669	46,330	19	
20	Shops and engine houses,		238,512	177,698	20	
21	Grain elevators,				21	
22	Storage warehouses,				22	
23	Wharves and docks,				23	
24	Coal and ore wharves,				24	
25	Gas producing plants,				25	
26	Telegraph and telephone lines,		131,494	95,377	26	
27	Signals and interlockers,		3,980	3,382	27	
28	Power dams, canals, and pipe lines,				28	
29	Power plant buildings,		10,745	7,084	29	
30	Power substation buildings,				30	
31	Power transmission systems,				31	
32	Power distribution systems,		7,015	4,472	32	
33	Power line poles and fixtures,		167	58	33	
34	Underground conduits,				34	
35	Miscellaneous structures,				35	
36	Paving,				36	
37	Roadway machines,		9,148	5,031	37	
38	Roadway small tools,		4,220	2,322	38	
39	Assessments for public improvements,				39	
40	Revenues and operating expenses during const.				40	
41	Cost of road purchased,				41	
42	Reconstruction of road purchased,				42	
43	Other expenditures—Road,				43	
44	Shop machinery,		72,386	39,837	44	
45	Power plant machinery,		27,433	19,207	45	
46	Power substation apparatus,				46	
47	Unapplied construction material and supplies,				47	
	Total, 1 to 47, inclusive,		9,945,478	8,253,520		
	II. EQUIPMENT:					
51	Steam locomotives,				51	
52	Other locomotives,				52	
53	Freight-train cars,				53	
54	Passenger-train cars,				54	
55	Motor equipment of cars,				55	
56	Floating equipment,				56	
57	Work equipment,				57	
58	Miscellaneous equipment,		215	143	58	
	Total, 51 to 58, inclusive,		215	143		
	III. GENERAL EXPENDITURES:					
71	Organization expenses,				71	
72	General officers and clerks,				72	
73	Law,				73	
74	Stationery and printing,				74	
75	Taxes,				75	
77	Other expenditures—General,				77	
76	Interest during construction,				76	
	Total, 71 to 77, inclusive,					
	Grand total, 1 to 77, inclusive,					
	Grand total—Other,					

Revised page prepared by direction of the Commission Feb. 1, 1928.

hcc

I. C. C. Form No. 561

INTERSTATE COMMERCE COMMISSION

Chicago, Burlington and Quincy Railroad Company BUREAU OF VALUATION

Sheet No. _____ of this valuation section.

Val. Section No. 6AB-Wyo. _____ Miles Main Line, _____ Miles all Tracks.*

Approved: Louis Hood

12—060

LOCATION.	CHARACTER OF PROPERTY AND DESCRIPTION. Where but a single percentage is stated it represents both per cents.	Condition Per Cent	Per Cent New.	UNIT.	NUMBER OF UNITS.	COST OF REPRODUCTION. Per Unit.	New, Total.	Less Depreciation.
			(2)		(3)	(4)	(5)	(6)
						$	$	$
	Acct. No. 3 Title GRADING (I. C. C. classification.)							
	Clearing	100		Acre	256.92	35.00	8,992	8,992
	Grubbing	100		"	65.28	80.00	5,222	5,222
	Excavation:							
	Common	100		Cu.Yd.	3293318	.17	559,864	559,864
	Loose rock	100		"	555675	.40	221,823	221,823
	Solid "	100		"	317929	.80	254,343	254,343
	Backfill in rock cuts	100		"	4531	.17	770	770
	Embankment:							
	Common	100		"	8042009	.17	1,367,142	1,367,142
	Loose rock	100		"	1069	.40	428	428
	Protection of Roadway:							
	Riprap	90		"	12985		19,773	17,796
	Drain tile 4" and 6"	90		Lin.Ft.	15108		4,286	3,857
	Timber, fir	67		M.B.M.	49.3	42.00	2,071	1,388
	" pine	50		"	0.8	42.00	34	17
	" bridge ties	50		"	20.8	42.00	874	437
	" ties, second-hand	50		Each	763	.35	267	134
	Willow mattress	50		Cord	31	3.00	93	47
	Logs, oak	50		Lin.Ft.	20	.15	3	2
	" cottonwood	25		"	506	.15	76	19
	" pine	50		"	50	.15	8	4
	Posts, cedar	50		Each	57	.56	32	16
	Surfacing in yards, cinders, local	75		Cu.Yds.	91280	.35	31,948	23,961
	" " " " sandstone, average haul 87 miles	75		"	2537	1.09	2,765	2,074
	Surfacing berms, cinders " " 18 "	90		"	158	.65	103	93
	" " " sandstone " " 25 "	90		"	42	.98	41	37
	Bark protection, sandstone " " 29 "	90		"	124268	.67	83,260	74,934
	Total for Valuation Section		99				2,564,218	2,543,400

4283

Form approved Aug. 12, 1916.

*State miles to thousandths.

Revised March 2, 1925

9121

Form No. 561

INTERSTATE COMMERCE COMMISSION

Chicago, Burlington & Quincy Railroad Company BUREAU OF VALUATION

Sheet No. ____ of this valuation section.

Section No. 6-AB.Wyo., 236.908 Miles Main Line, 539.819 Miles all Tracks.*

Approved: ____

SECTION.	CHARACTER OF PROPERTY AND DESCRIPTION. (Where but a single percentage is stated it represents both per cents.)	Condition Per Cent. Per Cent Of Cost New.	UNIT.	NUMBER OF UNITS.	COST OF REPRODUCTION. Per Unit.	New, Total.	Less Depreciation.
		(2)		(3)	(4) $	(5) $	(6) $
	Acct. No. 13.- Title RIGHT OF WAY FENCES. (I. C. C. classification.)						
	Posts, oak		Each	4,687	0.44	2,062	
	" cedar, white		"	12,899	0.42	5,418	
	" " red		"	48,221	0.27	13,020	
	" " split		"	216	0.42	91	
		46				20,591	9,472
	Posts flue	47	Each	8,974	0.51	4,576	2,151
	" concrete	96	"	2,969	0.55	1,633	1,568
	" gate concrete	96	"	18	2.37	43	41
	" s.h. oak corner	55	"	18	0.50	9	5
	" snow, 8"x8'		"	32	0.96	31	
	" " 8"x9'		"	6,962	1.12	7,797	
	" " 8"x10'		"	6,375	1.29	8,224	
		46				16,052	7,384
	Braces, fir	46	M.B.M.	42.9	44.70	1,918	882
	" pipe, 12'	46	Each	82	1.06	87	40
	Stays, wire	45	Each	140,348	0.045	6,316	2,842
	" wood	46	"	64,543	0.08	5,163	2,375
	Fence, 3 barbed wires	45	Mile	0.07	39.00	3	1
	" 4 " "	45	"	423.25	51.00	21,586	9,714
	" 18" woven wire	90	"	0.48	76.00	36	32
	" 36" " " Triangular mesh	90	"	0.09	113.00	10	9
	Fence wood, 6 boards		Mile	0.05	589.00	29	
	" " 8 "		"	10.33	781.00	8,068	
	" " 9 "		"	9.45	877.00	8,288	
		58				16,385	9,503
	Cattle guards, wood	56	Each	2 -	11.05	22	12
	" " sheet iron	43	"	3	15.60	47	20
	" " flue	58	"	150	11.45	1,718	996
	Aprons	56	Each	4	3.45	14	8
	Aprons	56	"	258	2.25	581	325
	Gates, 13'9" flue	87	Each	16	6.55	98	85
	" wood, 14'		"	33	4.75	157	
	" " 14'		"	9	3.55	32	
	" " 16'		"	17	5.15	88	
	" " 16'		"	10	5.50	55	
	" " 16'		"	40	4.70	188	
	" " 12'		"	3	4.30	13	
	" " 11'		"	6	3.25	20	
	" "		"	1	2.50	3	
	Extra posts		"	14	0.30	4	
		65				560	364
	Gates, wire 18'	65	Each	245	1.00	245	159
	Total for Valuation Section CB&Q-6 AB. Wyo.	49				97,693	47,988
	Acct. 14.- SNOW AND SAND FENCES AND SNOW SHEDS.						
	Posts 8"x9' cedar	68	Each	2,914	1.12	3,264	2,220
	" 8"x10' "	68	"	2,860	1.29	3,689	2,509
	Fence, 8 boards	58	Mile	4.32	781.00	3,374	1,957
	" 9 "	58	"	4.25	877.00	3,727	2,162
	" portable	43	Panel	840	3.66	3,066	1,318
	Total for Val.Sec. C.B.&Q. 6 AB. Wyo.	59				17,120	10,166

B. V. Form No. 563

Owner Chicago, Burlington & Quincy Railroad Company

Operating Company do

Division ____ State Montana

Valuation Section No. Ca.B.&Q. 1 Mont.

From Wyo. Line (Bordeau) to Huntley

101.944 Miles Main Line, 151.742 Miles all Tracks.*

INTERSTATE COMMERCE COMMISSION
BUREAU OF VALUATION
SUMMARY SHEET
WHOLLY OWNED AND USED

Date of Inventory as of June 30, 1917

Date Compiled April 25, 1922

Compiled by W.W.S.-R.A.P.

Correct Louis Pond, Engineer.

Approved ____ Engineer.

B. and E. Account Number. (1)	CLASSES. (2)	ORIGINAL COST TO DATE. (3)	COST OF REPRODUCTION. New. (4)	COST OF REPRODUCTION. Less Depreciation. (5)	B. and E. Account Number. (6)	REMARKES. (7)
	I. ROAD:	$	$	$		
1	Engineering,		120,123	120,123	1	Includes the carriers
2	Land for transportation purposes,				2	interest in certain joint
3	Grading,		677,072	662,662	3	property see explanatory
4	Underground power tubes,				4	text paragraph 12
5	Tunnels and subways,				5	
6	Bridges, trestles, and culverts,		422,642	384,800	6	
7	Elevated structures,				7	
8	Ties,		350,107	225,488	8	
9	Rails,		543,928	461,281	9	
10	Other track material,		227,500	133,516	10	
11	Ballast,		213,802	159,118	11	
12	Track laying and surfacing,		257,876	188,249	12	
13	Right-of-way fences,		44,789	20,714	13	
14	Snow and sand fences and snowsheds,				14	
15	Crossings and signs,		11,532	7,970	15	
16	Station and office buildings,		49,809	35,620	16	
17	Roadway buildings,		28,230	19,055	17	
18	Water stations,		60,705	48,389	18	
19	Fuel stations,		38,563	30,535	19	
20	Shops and engine houses,		36,616	28,015	20	
21	Grain elevators,				21	
22	Storage warehouses,				22	
23	Wharves and docks,				23	
24	Coal and ore wharves,				24	
25	Gas producing plants,				25	
26	Telegraph and telephone lines,		35,376	20,123	26	
27	Signals and interlockers,		1,224	1,053	27	
28	Power dams, canals, and pipe lines,				28	
29	Power plant buildings,				29	
30	Power substation buildings,				30	
31	Power transmission systems,				31	
32	Power distribution systems,				32	
33	Power line poles and fixtures,				33	
34	Underground conduits,				34	
35	Miscellaneous structures,				35	
36	Paving,				36	
37	Roadway machines,				37	
38	Roadway small tools,		1,250	688	38	
39	Assessments for public improvements,				39	
40	Revenues and operating expenses during const.				40	
41	Cost of road purchased,				41	
42	Reconstruction of road purchased,				42	
43	Other expenditures—Road,				43	
44	Shop machinery,		1,856	1,118	44	
45	Power plant machinery,				45	
46	Power substation apparatus,				46	
47	Unapplied construction material and supplies,				47	
	Total, 1 to 47, inclusive,		3,123,199	2,548,517		
	II. EQUIPMENT:					
51	Steam locomotives,				51	
52	Other locomotives,				52	
53	Freight-train cars,				53	
54	Passenger-train cars,				54	
55	Motor equipment of cars,				55	
56	Floating equipment,				56	
57	Work equipment,				57	
58	Miscellaneous equipment,				58	
	Total, 51 to 58, inclusive,					
	III. GENERAL EXPENDITURES:					
71	Organization expenses,				71	
72	General officers and clerks,				72	
73	Law,				73	
74	Stationery and printing,				74	
75	Taxes,				75	
76	Other expenditures—General,				76	
77	Interest during construction,				77	
	Total, 71 to 77, inclusive,					
	Grand total, 1 to 77, inclusive,					
	Grand total—Other,					

Revised March 2, 1925. 2496

Form approved Oct. 7, 1916.

*State mileage to thousandths.

R. V. Form No. 561

INTERSTATE COMMERCE COMMISSION
BUREAU OF VALUATION

Owner Chicago, Burlington & Quincy Railroad Company

Sheet No. ..... of this valuation section.

Val. Section No. 14 Belmont Miles Main Line, ... Miles all Tracks.*

Approved: Louis Hood

LOCATION. (1) CHARACTER OF PROPERTY AND DESCRIPTION. Where but a single percentage is stated it represents both per cents.	Condition Per Cent.	Per Cent New.	UNIT. (2)	NUMBER OF UNITS. (3)	COST OF REPRODUCTION. Per Unit. (4)	New, Total. (5)	Less Depreciation. (6)
					$	$	$
Acct. No. 3 Title GRADING (I. C. C. classification.)							
Clearing	100		Acre	799.17	35.00	27,971	27,971
Grubbing	100		"	68.38	80.00	5,470	5,470
Excavations:							
Common	100		Cu.yd.	1077614	.17	183,194	183,194
Loose rock	100		"	6399	.40	2,560	2,560
Solid rock	100		"	2111	.80	1,689	1,689
Embankment:							
Common	100		"	2296937	.17	390,479	390,479
Protection of Roadway:							
Riprap	90		"	17802		25,591	23,032
Timber, fir	68		M.B.M.	362.4	41.00	14,858	10,103
Piling, oak	68		Lin.ft.	486	.77	370	252
" fir	68		"	25651	.59	15,134	10,291
Matting, brush and pole	68		Cord	70	3.00	210	143
" willow	68		"	204	3.00	612	416
Hardware	68		Cwt.	579.3	4.00	2,317	1,576
Surfacing in yards, cinder, local,	75		Cu.yds	8747	.35	3,061	2,296
" " " average haul 49 miles	75		"	111	.64	71	53
Protection work, " " " 82 "	90		"	4586	.76	3,485	3,137
Total for Valuation Section		98				677,072	662,662

4286

Revised Mar 2,1925.

Form approved Aug. 12, 1918. *State mileage to thousandths.

9407

V. Form No. 561

INTERSTATE COMMERCE COMMISSION

BUREAU OF VALUATION

Sheet No. _____ of this valuation section.

Approved: _____ 19—

ine Chicago, Burlington & Quincy R.R. Co.

l. Section No. 1-AB-Mont., 101.944 Miles Main Line, 131.801 Miles all Tracks.*

JATION. CHARACTER OF PROPERTY AND DESCRIPTION. Where but a single percentage is stated it represents both per cents.	Condition Per Cent	Reproduction Cost Per Cent	UNIT. (1)	NUMBER OF UNITS. (2)	COST OF REPRODUCTION. Per Unit. (4) $	New, Total. (5) $	Less Depreciation. (6) $
Acct. No. 17 Title Right of Way Fence (I. C. C. classification.)							
Posts, red cedar		42	each	30,290	0.29	8,784	3,689
" white "		69	"	769	0.42	323	223
" concrete		96	"	1,847	0.73	1,348	1,294
" flue		45	"	1,570	0.62	973	448
" cedar, 10' long		43	"	196	1.32	259	111
" " 9' "		43	"	5,751	1.14	6,556	2,819
Stays, wire		41	"	8,791	0.045	396	162
" wood		41	"	57,938	0.09	5,214	2,138
Braces, fir, Class A		41	M.B.M.	33.1	43.30	1,433	588
Fence, 4 bar bed wires		41	Mile	188.25	51.00	9,601	3,936
" 4 " " and 26" woven wire		47	"	3.08	152.00	468	220
" 2 " " " 48" " "		47	"	0.03	171.00	5	2
" 1 " " " 48" " "		47	"	0.40	159.00	64	30
" 48" woven wire		52	"	0.10	148.00	15	8
" 9 boards		52	"	0.29	839.00	243	125
" 8 "		52	"	8.48	748.00	6,343	3,298
Cattle guards, flue		57	each	108	15.00	1,620	923
" " " double		57	"	5	37.25	186	106
Aprons		55	"	226	2.40	542	298
Gates, iron		84	"	20	6.55	131	110
" wood		65	"	3	3.45	10	7
" "		65	"	34	4.60	156	101
" wire		65	"	119	1.00	119	77
Total for Val.Sec. C.B.& Q.-1AB-Mont.		46				44,789	20,714

2509

Form approved Aug. 12, 1914.

*State mileage to thousandths.

dpt

B. V. Form No. 563
Owner Northern Pacific Railway Company
Operating Company ..... do .....
Division ..... State Montana
Valuation Section No. Montana 1
From N.D. State Line to Huntley
251.424 Miles Main Line, 334.998 Miles all Tracks.*

INTERSTATE COMMERCE COMMISSION
BUREAU OF VALUATION

SUMMARY SHEET
WHOLLY OWNED AND USED

Date of Inventory as of June 30, 19 17
Date Compiled November 4, 19 29
Compiled by R.A.Mc.
Correct Louis Hoad
Report Engineer.
Approved ..... Engineer.

B. and E. Account Number (1)	CLASSES (2)	ORIGINAL COST TO DATE (3)	COST OF REPRODUCTION New (4)	COST OF REPRODUCTION Less Depreciation (5)	B. and E. Account Number (6)	REMARKS (7)
	I. ROAD:	$	$	$		
1	Engineering,		547,772	547,772	1	
2	Land for transportation purposes,				2	
3	Grading,		5,757,758	5,577,924	3	
4	Underground power tubes,				4	
5	Tunnels and subways,		96,182	88,290	5	
6	Bridges, trestles, and culverts,		1,042,009	884,658	6	
7	Elevated structures,				7	
8	Ties,		840,766	480,287	8	
9	Rails,		1,523,987	1,352,066	9	
10	Other track material,		489,255	300,856	10	
11	Ballast,		436,279	343,597	11	
12	Track laying and surfacing,		625,940	469,455	12	
13	Right-of-way fences,		121,538	57,478	13	
14	Snow and sand fences and snowsheds,				14	
15	Crossings and signs,		33,522	28,320	15	
16	Station and office buildings,		319,429	227,413	16	
17	Roadway buildings,		178,499	116,735	17	
18	Water stations,		234,910	202,686	18	
19	Fuel stations,		66,273	52,481	19	
20	Shops and engine houses,		305,196	235,241	20	
21	Grain elevators,				21	
22	Storage warehouses,				22	
23	Wharves and docks,				23	
24	Coal and ore wharves,				24	
25	Gas producing plants,				25	
26	Telegraph and telephone lines,				26	
27	Signals and interlockers,		3,492	2,847	27	
28	Power dams, canals, and pipe lines,				28	
29	Power plant buildings,				29	
30	Power substation buildings,				30	
31	Power transmission systems,		621	400	31	
32	Power distribution systems,		869	506	32	
33	Power line poles and fixtures,		367	184	33	
34	Underground conduits,				34	
35	Miscellaneous structures,		6,994	4,024	35	
36	Paving,				36	
37	Roadway machines,		26,628	19,208	37	
38	Roadway small tools,		10,064	5,033	38	
39	Assessments for public improvements,				39	
40	Revenues and operating expenses during const.,				40	
41	Cost of road purchased,				41	
42	Reconstruction of road purchased,				42	
43	Other expenditures—Road,				43	
44	Shop machinery,		52,128	28,322	44	
45	Power plant machinery,				45	
46	Power substation apparatus,				46	
47	Unapplied construction material and supplies,				47	
	Total, 1 to 47, inclusive,		12,720,478	11,025,793		
	II. EQUIPMENT:					
51	Steam locomotives,				51	
52	Other locomotives,				52	
53	Freight-train cars,				53	
54	Passenger-train cars,				54	
55	Motor equipment of cars,				55	
56	Floating equipment,				56	
57	Work equipment,				57	
58	Miscellaneous equipment,				58	
	Total, 51 to 58, inclusive,					
	III. GENERAL EXPENDITURES:					
71	Organization expenses,				71	
72	General officers and clerks,				72	
73	Law,				73	
74	Stationery and printing,				74	
75	Taxes,				75	
77	Other expenditures—General,				77	
76	Interest during construction,				76	
	Total, 71 to 77, inclusive,		4288			
	Grand total, 1 to 77, inclusive.					
	Grand total—Other,					

Form approved Oct. 7, 1916.

*State mileage to thousandths.

Revised page prepared by direction of the Commission Nov. 20, 1929.

V. Form No. 501

INTERSTATE COMMERCE COMMISSION

BUREAU OF VALUATION

Sheet No. _____ of this valuation section

Approved: O. H. Spencer

ner Northern Pacific Railway Company

l. Section No. Montana 1 Miles Main Line, Miles all Tracks.*

CATION. CHARACTER OF PROPERTY AND DESCRIPTION. Where but a single percentage is stated it represents both per cents.	Condition Per Cent	Per Cent New	UNIT. (1)	NUMBER OF UNITS. (2)	COST OF REPRODUCTION. Per Unit. (4)	New Total. (3)	Less Depreciation. (5)
					$	$	$
Acct. No. 3 Title GRADING (I. C. C. classification.)							
All Tracks:							
Clearing	100		Acre	415.49		19,321	19,321
Grubbing	100		"	1.00		139	139
Excavation:							
Common	100		Cu.Yds	3842493	.23	883,773	883,773
Hard Pan	100		"	3065235	.35	1,072,832	1,072,832
Loose Rock	100		"	197440	.42	82,925	82,925
Solid Rock	100		"	3638318	.85	3,092,570	3,092,570
Team O.H. 500' free haul	100		CY.Sta	4367100	.0125	54,589	54,589
Train O.H. over 5,000' under 10,000'	100		C.Y.1000'	823400	.015	12,351	12,351
" O.H. " 10,000' " 25,000'	100		"	3266700	.01	32,667	32,667
" O.H. " 25,000' " 55,000'	100		"	2892300	.005	14,462	14,462
Protection of Roadway:							
Rip rap	84		Cu.Yds	113,539		259,487	217,969
Dykes Loose Rock & Gravel	40		"	22503		38,355	15,342
" Hd. Pl. Rock & Brush	40		"	54437	2.95	160,589	64,236
" Brush	40		Cords	3306	4.60	15,208	6,082
Masonry - Rubble, Dry	80		Cu.Yds.	46	5.80	267	214
" " grouted	80		"	28	8.80	246	197
Vitrified Clay Pipe 4" diam.	100		Lin.Ft.	6370	.15	956	956
Excavation, Hard Pan	100		Cu.Yd.	10.61	.75	796	796
Timber	40		M.B.M.	14.005	29.25	410	164
Piling 12"-16"	40		Lin.Ft.	5518	.48	2,649	1,060
Logs	40		Lin.Ft.	53,759		12,693	5,077
Hardware	40		Lbs.	10427	.04	417	167
Ties	40		Each	70	.51	36	14
Total for Valuation Section	97					5,757,758	5,577,924

Note:
On Account of subsidence 62610 cu.yds. have been added to the measured volume of embankment before the distribution of pay quantities.

Account 5 - TUNNELS AND SUBWAYS

Big Horn Tunnel, M.P. - 171.4 - 1069 ft. long concrete lined							
Solid Rock Excavation, Neat Section	100		Cu.Yd.	11420	3.85	43,967	43,967
" " " Overbreak	100		"	914	1.50	1,371	1,371
" " " Enlargement	100		"	3298	3.00	9,894	9,894
Concrete lining	81		"	3910	10.00	39,100	31,671
" portals	81		"	133	9.50	1,264	1,024
6" Tile Drain	62		Lin.Ft	2441	0.24	586	363
Total	92					96,182	88,290
Total for Valuation Section	92					96,182	88,290

Approved: F. B. Scheetz.

Account 6 - BRIDGES TRESTLES AND CULVERTS.

Steel Bridges-							
Bridge 12, length 157', single track; built 1905;							
Substructure: Two concrete abutments: two concrete piers							
Excavation, piling and cofferdams:	90					1,104	993
Concrete	90		Cu.Yd.	350	9.50	3,325	2,993
Superstructure: Three steel deck plate girder spans 50' long							
Steel	85 86		Lbs.	136510	.0427	5,829	5,013
Sundry items	85					67	57
Total	88					10,325	9,056
Bridge 35, length 175', single track, built 1897							
Substructure: Two concrete abutments; one concrete pier							
Excavation, piling and cofferdams:	90					759	683
Concrete	90		Cu.Yd.	453	9.50	4,304	3,874
Superstructure: Two steel deck lattice girder spans, 85' long							
Steel	75 77		Lb.	190870	.0487	9,295	7,157
Sundry items	80					117	94
Total	82					14,475	11,808

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Revised page prepared by direction of the Commission November 20,1929

Form approved Aug. 12, 1916. * State mileage to thousandths.

B.V. Form No. 501

INTERSTATE COMMERCE COMMISSION
BUREAU OF VALUATION

Owner Northern Pacific Railway Company — Sheet No. _____ of this valuation section

Val. Section No. Montana 1 _____ Miles Main Line, _____ Miles all Tracks.* — Approved: G. H. Spencer

LOCATION.	CHARACTER OF PROPERTY AND DESCRIPTION. Where but a single percentage is stated it represents both per cents.	Condition Per Cent	Per Cent Mon.	UNIT. (2)	NUMBER OF UNITS. (3)	COST OF REPRODUCTION. Per Unit. (4)	New, Total. (5)	Less Depreciation. (6)
						$	$	$
	Acct. No. 12 Title TRACKLAYING AND SURFACING (CONT'D.) (I. C. C. classification.)							
	Yard Tracks and Sidings:							
	Tracklaying and initial surfacing 61#-90# Rail			Mile	51.153	925.00	47,317	
	" " " " 56# Rail			"	31.995	875.00	27,996	
	Placing Inner Guard Rail			Rail Ft.	285	.025	7	
	" Gravel Ballast			Cu. Yd.	122960	.23	28,281	
	" Cinder "			"	38867	.19	7,383	
	All Tracks:							
	Placing Turnouts			Each	336	30.00	10,080	
	" scale track switches			"	4	15.00	60	
	" 61#-90# extra frogs			"	25	8.00	200	
	" 61#-90# Split derails with stands			"	19	7.50	143	
	" Tie Plates			"	1663243	.0125	20,791	
	" Anti Creepers			"	153491	.02	3,070	
	" Rail Braces			"	12970	.02	259	
	Framing and Placing Bridge Ties			M.B.M.	748.986	10.00	7,490	
	Placing guard rail points			Each	34	.94	32	
	" Rail Clamps			"	432	.02	9	
	" tie rods			"	12	.05	1	
	Total for Valuation Section		75				625,940	469,465
	ACCOUNT 13 - RIGHT-OF-WAY FENCES							
	All Tracks:							
	Posts	49		Each	170255		40,595	19,892
	Barbed Wire	60		Cwt.	2557.19	2.90	7,416	4,450
	Woven "	40		"	6618.43	2.95	19,524	7,810
	Labor setting posts	49		Each	170255		22,604	11,138
	" stringing barbed wire, posts spaced over 12'	60		Wire Mile	495.718	4.30	2,131	1,279
	" " " " " " 12' and under	60		"	230.757	5.05	1,165	699
	" " 36"-48" Woven Wire, posts spaced over 12'	40		Fence "	263.425		8,968	3,587
	" " 48" " " " 12Ft. & under	40		" "	0.376	40.35	15	6
	" " 24" woven wire, posts spaced 12'& under	40		" "	0.753	20.20	15	6
	Lumber in place	40		M.B.M.	424.013	28.50	12,084	4,834
	Stays, wire	60		Each	622	.03	19	11
	" , sapling	60		"	1345	.03	40	24
	Braces in place	50		M.B.M.	82.176	30.00	2,465	1,232
	Iron and Steel	40		Cwt.	77.96	5.00	390	156
	Staples	50		"	140.14	2.90	406	203
	Cattle Guards, Wood Surface, Single Track	60		Each	119	17.25	2,053	1,232
	" " " " , Double "	60		"	8	32.75	262	157
	Steel Gates, 14' - 16'	50		"	142		689	413
	Wood " 16' and under	50		"	233		696	348
	Turnstile	50		"	2		1	1
	Total for Valuation Section		47				121,638	57,478
	ACCOUNT 15 - CROSSINGS AND SIGNS							
	1 Undergrade Crossing							
	Footway at Glendive							
	Excavation, common	97		Cu. Yd.	1725	.23	397	385
	Concrete, reinforced	97		"	891	11.00	9,801	9,507
	Reinforcing steel	97		Cwt.	528.12	4.00	2,112	2049
	Guard and Hand Rail	94		Lin.Ft.	1561	0.15	233	219
	Vitrified Pipe Culverts, 6"	94		"	1962	0.30	589	554
	Wood stave pipe 6"	90		"	10	.50	5	4
	Sundry Items	100					177	177
	Total (Undergrade Crossings)		97				13,514	12,895

Form approved Aug. 12, 1916. *State mileage to thousandths. Revised August 1, 1928.

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B. V. Form No. 563

INTERSTATE COMMERCE COMMISSION
BUREAU OF VALUATION

Owner Northern Pacific Railway Company
Operating Company Northern Pacific Railway Company
Division ____ State No.Dak.
Valuation Section No. ____ " 2
From Bismarck to N.D.-Mont.line
198.050 Miles Main Line, 257.297 Miles all Tracks.*

Date of Inventory as of June 30, 1917
Date Compiled Nov. 5, 1929
Compiled by V.W.B.
Correct Louis Hamm
Approved ____ Engineer.

SUMMARY SHEET

WHOLLY OWNED AND USED

R. and L. Account Number	CLASSES	ORIGINAL COST TO DATE	COST OF REPRODUCTION New	COST OF REPRODUCTION Less Depreciation	R. and L. Account Number	REMARKS
(1)	(2)	(3)	(4)	(5)	(6)	(7)
	I. ROAD:	$	$	$		
1	Engineering,		363,707	363,707	1	
2	Land for transportation purposes,				2	
3	Grading,		2,661,836	2,598,569	3	
4	Underground power tubes,				4	
5	Tunnels and subways,				5	
6	Bridges, trestles, and culverts,		1,356,750	1,077,740	6	
7	Elevated structures,				7	
8	Ties,		714,928	359,959	8	
9	Rails,		1,156,184	1,020,666	9	
10	Other track material,		356,800	251,542	10	
11	Ballast,		762,318	631,309	11	
12	Track laying and surfacing,		523,416	397,796	12	
13	Right-of-way fences,		79,001	50,782	13	
14	Snow and sand fences and snowsheds,		82,553	49,532	14	
15	Crossings and signs,		35,388	28,723	15	
16	Station and office buildings,		346,869	255,053	16	
17	Roadway buildings,		100,233	59,576	17	
18	Water stations,		334,169	288,892	18	
19	Fuel stations,		54,482	43,199	19	
20	Shops and engine houses,		427,708	350,091	20	
21	Grain elevators,				21	
22	Storage warehouses,				22	
23	Wharves and docks,				23	
24	Coal and ore wharves,				24	
25	Gas producing plants,				25	
26	Telegraph and telephone lines,				26	
27	Signals and interlockers,		5,750	5,192	27	
28	Power dams, canals, and pipe lines,				28	
29	Power plant buildings,				29	
30	Power substation buildings,				30	
31	Power transmission systems,		3,032	2,136	31	
32	Power distribution systems,		1,490	913	32	
33	Power line poles and fixtures,		2,406	1,440	33	
34	Underground conduits,				34	
35	Miscellaneous structures,		7,818	4,720	35	
36	Paving,				36	
37	Roadway machines,		13,844	8,919	37	
38	Roadway small tools,		4,863	2,432	38	
39	Assessments for public improvements,				39	
40	Revenues and operating expenses during const.,				40	
41	Cost of road purchased,				41	
42	Reconstruction of road purchased,				42	
43	Other expenditures—Road,				43	
44	Shop machinery,		60,828	29,473	44	
45	Power plant machinery,				45	
46	Power substation apparatus,				46	
47	Unapplied construction material and supplies,				47	
	Total, 1 to 47, inclusive,		9,455,373	7,882,361		
	II. EQUIPMENT:					
51	Steam locomotives,				51	
52	Other locomotives,				52	
53	Freight-train cars,				53	
54	Passenger-train cars,				54	
55	Motor equipment of cars,				55	
56	Floating equipment,				56	
57	Work equipment,				57	
58	Miscellaneous equipment,				58	
	Total, 51 to 58, inclusive,					
	III. GENERAL EXPENDITURES:					
71	Organization expenses,				71	
72	General officers and clerks,				72	
73	Law,				73	
74	Stationery and printing,				74	
75	Taxes,				75	
77	Other expenditures—General,				77	
76	Interest during construction,				76	
	Total, 71 to 77, inclusive,					
	Grand total, 1 to 77, inclusive,					
	Grand total—Other,					

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Revised page prepared by direction of the Commission Nov. 20, 1929.

Form approved Oct. 7, 1916.

*State mileage to thousandths.

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I. V. Form No. 501

INTERSTATE COMMERCE COMMISSION
BUREAU OF VALUATION

Owner Northern Pacific Railway Company

Sheet No. _____ of this valuation section

Val. Section No. 2-N.Dak. _____ Miles Main Line, _____ Miles all Tracks.*

Approved: C.H. Spencer

LOCATION. Where but a single percentage is stated it represents both per cents. CHARACTER OF PROPERTY AND DESCRIPTION.	Condition Per Cent.	Per Cent of Cost to Date	UNIT. (2)	NUMBER OF UNITS. (3)	COST OF REPRODUCTION. Per Unit. (4)	New, Total. (5)	Less Depreciation. (6)
One way pay					$	$	$
Acct. No. 3 Title GRADING (I. C. C. classification.)							
All Tracks:							
Clearing	100		acre	509.6	25.00	12,740	12,740
Grubbing	100		"	57.5	50.00	2,875	2,875
Excavation:							
Common	100		cu.yd.	4255308	.205	872,338	872,338
Hard pan	100		"	2072158	.30	621,647	621,647
Loose rock	100		"	263925	.40	105,570	105,570
Solid "	100		"	502714	.75	377,036	377,036
Team O.H. 500' free haul	100		Cy.Sta.	5405650	.0125	67,571	67,571
Train haul 16 miles special haul	100		cu.yd.	133182	.40	53,273	53,273
" O.H. over 5000' under 10000'	100		C.Y.1000	909584	.015	13,644	13,644
" " " 10000' " 25000'	100		"	4166020	.01	41,660	41,660
" " " 25000' " 55000'	100		"	16835000	.005	84,175	84,175
Protection of Roadway:							
Riprap	88		cu.yd.	128090		386,811	322,617
Timber	40		M.B.M.	5.240	32.50	170	68
Piling 12" cedar	40		lin.ft.	5070	.49	2,484	994
Round stakes 4"	40		Each	800	.35	280	112
Iron	40		lb.	19120	.04	765	306
Brush	50		cu.ft.	41364	.035	1,448	724
Logs	40		lin.ft.	26680	.18	4,802	1,921
Fence posts	50		Each	50	.30	15	8
Rail relay	75		Gr.Ton	0.333	31.60	11	8
Rubble masonry in mortar	90		Cu.Yd.	12	8.00	96	86
Concrete plain	90		"	16	9.50	152	137
Chain	75		Cwt.	0.18	4.10	1	1
Gravel	93		cu.yd.	3836	.80	3,069	2,854
Cinders	91		"	6512	.60	3,907	3,555
Timber dykes	50					23,096	11,548
Drainage tunnel:							
Excavation common	50		"	161	6.15	990	495
" hard pand	50		"	93	6.15	572	286
Cedar posts	50		Each	274	.30	82	41
Iron	50		lb.	100	.04	4	2
Timber fir	50		M.B.M.	10.638	41.50	441	221
Old ties	50		Each	445	.25	111	56
Total for Valuation Section		98				2,661,836	2,598,569

Note: Due to subsidence 26,520 cu.yds. have been added to the measured volume of embankment before distribution of pay quantities.

Account 6 - BRIDGES, TRESTLES AND CULVERTS.

Approved: F. B. Schaetz

Metal Bridges and Combination Trusses

Bridge 196:
Over Missouri River at Bismarck.
Three 400' thru pin, one 140' and one 113' deck truss spans, single track, on one timber abutment and cylinder, and 4 stone piers. Length 1470'. Built 1892, 1904 and 1905.

Substructure:							
Excavation, piling, grillage & cofferdams	65					82,505	53,628
Caissons	65		cu.yd.	3315	17.00	56,355	36,631
Cribs	65		"	2183	11.00	24,013	15,608
Masonry, granite	65		"	7402	29.00	214,658	139,528
Concrete, plain	90		"	153	10.00	1,530	1,377
Cylinder, pier	65		lb.	8290	.0452	284	185
Riprap loose	35		cu.yd.	7497	3.00	22,482	14,613
Superstructure:							
Trusses	84	65	lb.	6,013,910	.0460	276,778	225,261
Sundry items	84					9,858	9,264
Total Bridge		73				688,445	505,095

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Revised page prepared by direction of the Commission Nov. 20, 1929.

550

Form approved Aug. 22, 1916.

* State mileage to thousandths.

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INTERSTATE COMMERCE COMMISSION

Pacific Railway Company — BUREAU OF VALUATION — Sheet No. _____ of this valu

-N.Dak.-, _____ Miles Main Line, _____ Miles all Tracks.* — Approved: C.H. Spencer

CHARACTER OF PROPERTY AND DESCRIPTION. (Where but a single percentage is stated it represents both per cents.)	Condition Per Cent.	Per Cent of Cost New.	UNIT.	NUMBER OF UNITS.	COST OF REPRODU Per Unit.	New, Total.
		(2)		(3)	(4) $	(5) $
13 Title RIGHT OF WAY FENCES (I.C.C. classification.)						
: rack cattle guards	50		Each	129	19.25	2,483
	60		Cwt.	8.01	2.45	20
tems	63					23
Total for Valuation Section		64				79,001
14 - SNOW AND SAND FENCES AND SNOWSHEDS						
: Permanent Snow Fence.						
edar			Each	28212		21,054
dacing posts			"	28550	0.23	6,566
			M.B.M.	1628.259	33.25	54,139
			Cwt.	215.12	2.45	527
els portable snow fence:			M.B.M.	7.344	35.50	261
			Each	216	.10	22
items						4
Total for Valuation Section		60				82,553
: 15 - CROSSINGS AND SIGNS						
ossings:						
Highway Crossing - Mile 0+1951						
de, 451 ft. long, frame on pile bents:built 1913						
3	90		lin.ft.	3620	.59	2,136
r in truss, 136' long	90		M.B.M.	43.100	69.00	2,974
	90		"	147.800	44.95	6,641
In truss	90	91	lb.	30170	.0459	2,732
	90		"	3680	.04	147
Total Overgrade Crossings		90				14,663
ssings:						
ment borrow, common	100		cu.yd.	19277	.205	3,952
tion, common	100		"	696	.205	143
hard pan	100		"	4572	.30	1,372
loose rock	100		"	1407	.40	563
solid "	100		"	498	.75	374
ng	50		M.B.M.	119.853	33.50	4,015
rving	60		Sq.Yd.	191	1.35	258
sidewalk	75		M.B.M.	105.593	33.50	3,537
e " 5" and 6"	88		Sq.Yd.	188		234
s	50		Each	2451	.25	613
ed pipe culverts 18"	83		lin.ft.	60	1.40	84
e " " 24"	96		"	16	4.50	72
" drainage culverts 18"	96		"	44	2.99	138
on " " " 12" - 48"	75		Net Ton	13.248	48.30	599
ox culverts	53		M.B.M.	23.864	46.55	1,120
timber	75		"	30.351	44.65	1,348
	62		Cwt.	10.329	.04	423
asonry, dry rubble	60		Cu.Yd.	5	5.50	28
" in mortar	83		"	7	8.00	
tems						

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B. V. Form No. 563
Owner Northern Pacific Railway Company
Operating Company Northern Pacific Railway Company
Division ..... State No. Dakota
Valuation Section No. ..... " 1
From Minn.-N.D.Line to Bismarck

INTERSTATE COMMERCE COMMISSION
BUREAU OF VALUATION
SUMMARY SHEET

198.824 Miles Main Line, 379.315 Miles all Tracks.* WHOLLY OWNED AND USED

Date of Inventory as of June 30, 19 17
Date Compiled Nov. 5, 19 29
Compiled by V.A.B.
Correct Isaac Hyland Report Engineer.
Approved ..... Engineer.

B. and E. Account Number (1)	CLASSES (2)	ORIGINAL COST TO DATE (3)	COST OF REPRODUCTION New (4)	COST OF REPRODUCTION Less Depreciation (5)	B. and E. Account Number (6)	REMARKS (7)
	I. ROAD:	$	$	$		
1	Engineering,		394,759	394,759	1	Miles all tracks wholly owned includes 51.931 miles 2nd main track.
2	Land for transportation purposes,				2	
3	Grading,		2,129,834	2,123,255	3	
4	Underground power tubes,				4	
5	Tunnels and subways,				5	Includes carrier's interest in certain joint property. See explanatory text.
6	Bridges, trestles, and culverts,		1,075,553	987,156	6	
7	Elevated structures,				7	
8	Ties,		1,046,533	689,036	8	
9	Rails,		1,561,516	1,353,978	9	Carrier's portion of the estimated cost of 0.294 miles track jointly owned at Bismarck as follows:
10	Other track material,		494,943	350,251	10	
11	Ballast,		789,840	589,982	11	
12	Track laying and surfacing,		893,491	687,988	12	
13	Right-of-way fences,		121,197	60,598	13	Northern Pacific Ry.Co. 50%
14	Snow and sand fences and snowsheds,		251,021	181,873	14	M.St.P.&S.S.M.Ry.Co. 50%
15	Crossings and signs,		70,072	52,157	15	
16	Station and office buildings,		595,717	444,697	16	
17	Roadway buildings,		120,547	75,022	17	
18	Water stations,		288,776	245,339	18	
19	Fuel stations,		45,378	37,861	19	
20	Shops and engine houses,		248,127	186,192	20	
21	Grain elevators,				21	
22	Storage warehouses,				22	
23	Wharves and docks,				23	
24	Coal and ore wharves,				24	
25	Gas producing plants,				25	
26	Telegraph and telephone lines,				26	
27	Signals and interlockers,		18,019	16,397	27	
28	Power dams, canals, and pipe lines,				28	
29	Power plant buildings,		21,943	20,487	29	
30	Power substation buildings,				30	
31	Power transmission systems,		1,564	1,383	31	
32	Power distribution systems,		1,438	1,045	32	
33	Power line poles and fixtures,		1,482	1,275	33	
34	Underground conduits,				34	
35	Miscellaneous structures,		11,273	8,896	35	
36	Paving,				36	
37	Roadway machines,		17,050	11,146	37	
38	Roadway small tools,		8,295	4,147	38	
39	Assessments for public improvements,				39	
40	Revenues and operating expenses during const.,				40	
41	Cost of road purchased,				41	
42	Reconstruction of road purchased,				42	
43	Other expenditures—Road,				43	
44	Shop machinery,		24,050	13,587	44	
45	Power plant machinery,		31,323	24,865	45	
46	Power substation apparatus,				46	
47	Unapplied construction material and supplies,				47	
	Total, 1 to 47, inclusive,		10,263,741	8,563,372		
	II. EQUIPMENT:					
51	Steam locomotives,				51	
52	Other locomotives,				52	
53	Freight-train cars,				53	
54	Passenger-train cars,				54	
55	Motor equipment of cars,				55	
56	Floating equipment,				56	
57	Work equipment,				57	
58	Miscellaneous equipment,				58	
	Total, 51 to 58, inclusive,					
	III. GENERAL EXPENDITURES:					
71	Organization expenses,				71	
72	General officers and clerks,				72	
73	Law,				73	
74	Stationery and printing,				74	
75	Taxes,				75	
77	Other expenditures—General,				77	
76	Interest during construction,				76	
	Total, 71 to 77, inclusive,					
	Grand total, 1 to 77, inclusive,					
	Grand total—Other,					

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Revised page prepared by Bis-

B. V. Form No. 561

INTERSTATE COMMERCE COMMISSION
BUREAU OF VALUATION

Sheet No. ____ of this valuation section.

Owner Northern Pacific Railway Company

Val. Section No. 1-N.D. , ____ Miles Main Line, ____ Miles all Tracks.*

Approved: C.H. Spencer

LOCATION. (1)	CHARACTER OF PROPERTY AND DESCRIPTION. Where but a single percentage is stated it represents both per cents.	Condition Per Cent.	Per Cent Not Trans.	UNIT. (2)	NUMBER OF UNITS. (3)	COST OF REPRODUCTION. Per Unit. (4)	New, Total. (5)	Less Depreciation. (6)
						$	$	$
	Acct. No. 3 Title GRADING. (I. C. C. classification.)							
	All Tracks:							
	Grubbing	100		acre	0.23	50.00	12	12
	Excavation:							
	Common	100		cu.yd.	7401971	.24	1,776,473	1,776,473
	loose rock	100		"	17915	.44	7,883	7,883
	solid "	100		"	43190	.95	41,031	41,031
	Team O.H. - 500' free haul	100		CY.Sta.	5348700	.0125	66,859	66,859
	Train O.H. over 5000' under 10000'	100		" 1000	2944600	.015	44,169	44,169
	" " " 10000' " 25000'	100		"	6841700	.01	68,417	68,417
	" " " 25000' " 55000'	100		"	20586000	.005	102,930	102,930
	Protection of Roadway:							
	Rip rap	70		cu.yd.	10952		17,888	12,522
	Sacked sand	50		sack	300	.15	45	23
	Piling - cedar	70		lin.ft.	6450	.44	2,838	1,987
	Brush mattress - Placed around piling	70		cu.yd.	192	.90	173	121
	Ties - second hand	50		each	6	.25	2	1
	V.C. pipe 24"	50		lin.ft.	6	1.40	8	4
	Ditch drains - timber	65		M.B.M.	17.059	46.00	785	510
	Dry masonry	70		cu.yd.	5	5.50	28	20
	Jointly owned by:							
	Nothern Pacific Railway Co. 50%							
	M.St.P.&S.S. M. Ry.Co. 50%							
	0.294 miles tracks at Bismarck, N.D.							
	Cost of Reproduction: New / Less Depr.							
	Excavation, common 37 / 37	100		cu.yd.	244	.15		
	Embankment " 548 / 548	100		"	3653	.15		
	No.Pac. Ry.Co's. portion 585 / 585	100					293	293
	Total for Valuation Section		100				2,129,834	2,123,255
	Note: Due to subsidence 210,140 cu.yds. have been added to the measured volume of embankment before distribution of pay quantities.							
	Account 6 - BRIDGES, TRESTLES AND CULVERTS.					Approved: F. B. Scheetz		
	Steel Bridges:							
	Bridge 6A, length 190; single track; built 1887-1897, 1911							
	Note: For remainder of bridge see Val.Sec. 13-Minn.							
	Substructure: three concrete and stone piers							
	Excavation, piling and cofferdams	90					5,575	5,018
	Concrete	90		cu.yd.	415	9.50	3,943	3,549
	Masonry stone	90		"	439	16.50	7,244	6,520
	Timber	90		M.B.M.	14.53	44.95	653	588
	Superstructure: One steel thru pin connected draw span 187' long							
	Steel in draw span	70	72	lbs.	160260	.0522	8,366	6,024
	Sundry items	79					306	242
	Total		84				26,087	21,941

4295

Revised page prepared by direction of the Commission Nov. 20, 1929. 502

Form approved Aug. 12, 1916.

* State mileage to thousandths.

Form No. 551

INTERSTATE COMMERCE COMMISSION
BUREAU OF VALUATION

Sheet No. _____ of this valuation section

Owner Northern Pacific Railway Company

Val. Section No. North Dakota 1 Miles Main Line, _____ Miles all Tracks.*

Approved: C. H. Spencer 19—

LOCATION. (1)	CHARACTER OF PROPERTY AND DESCRIPTION. Where but a single percentage is stated it represents both per cents.	Condition Per Cent.	Per Cent of Cost Wire	UNIT. (2)	NUMBER OF UNITS. (3)	COST OF REPRODUCTION. Per Unit. (4)	New, Total. (5)	Less Depreciation. (6)
						$	$	$
	Acct. No. 13 Title RIGHT-OF-WAY FENCES (I. C. C. classification.)							
	All Tracks:							
	Posts, oak	50			436		78	
	Posts, cedar	50		Each	89193		37,364	
	" steel angles	50		"	81	.42	34	
	" round iron	50		"	96	.35	34	
	Barbed wires	50		Cwt.	2190.66		5,697	
	Woven "	50		"	2094.62		5,390	
	Smooth "	50		"	0.29	2.45	1	
	Labor setting posts - 7' or less	50		Each	68121	0.12	8,175	
	" " " - 10' to 14'	50		"	21685	0.20	4,337	
	" stringing barbed wire - posts spaced over 12'	50		Wire Mile	589.532	4.05	2,388	
	" " " " " " 12' and under	50		" "	32.816	4.75	156	
	" " 48" woven wire " " over 12'	50		Fence Mile	72.943	32.00	2,334	
	" " 24" " " " " " 12'	50		" "	3.268	16.60	54	
	" " 25"-30" " " " " " 12'	50		" "	2.208	20.15	44	
	" " 32-36" " " " " " 12'	50		" "	2.307	23.70	55	
	" " 36" " " " " 12' and under	50		" "	0.286	28.45	8	
	" " 42" " " " " " 12'	50		" "	0.272	28.45	8	
	" " 48" " " " " 12' and under	50		" "	0.102	37.95	4	
	" " 60" " " " " over 12'	50		" "	0.227	40.30	9	
	Lumber in place	50		M. B. M.	1644.528		45,036	
	Braces " "	50		"	48.346		1,482	
	Stakes	50		Each	20590		3,088	
	Stays	50		"	43913		1,320	
	Cattle guards, single track, wood surface	50		"	122	19.00	2,318	
	" " " " corrugated iron	50		"	2	20.00	40	
	Gates, Bureka; 16' - 14'	50		"	64		303	
	" wood, 16'	50		"	97		291	
	Nails and staples	50		Cwt.	482.24		1,138	
	Jointly owned by: 0.294 miles of track at Bismarck, N. D. Northern Pacific Ry. Co. 50% M. St. P. & S.S.M.Ry.Co. 50%							
	Cost of Reproduction: New / Less Depr.							
	Cattle guards and sundry items 22 / 11	50						
	Northern Pacific Ry. Co's. portion						11	
	Total for Valuation Section	50					121,197	60,598
	ACCT. 14 - SNOW AND SAND FENCES AND SNOWSHEDS							
	All Tracks:							
	5048 Panels Portable Snow Fence							
	Lumber	50		M.B.M.	731.960		23,092	11,546
	Iron	50		Cwt.	252.40	5.00	1,262	631
	Total		50				24,354	12,177
	21 Panels Iron Snow Fence - Portable	83					333	276
	Total (Portable Snow Fences)		50				24,687	12,453
	47.969 Miles Permanent Snow Fence							
	Posts	50		Each	33238		35,582	17,789
	Labor setting posts	50		"	33238		6,622	3,311
	Lumber	50		M.B.M.	2164.975		63,884	31,942
	Iron	50		Cwt.	607.11	5.00	3,035	1,518
	Stakes - 3' long	50		Each	31353	0.15	4,703	2,352
	Trees	100		"	133829	0.36	48,178	48,178
	Hedges	100		Lin.Ft.	285456	0.20	57,091	57,091
	Thick trees - not in rows	100		Sq.Yd.	60133	0.12	7,216	7,216
	Willow Clumps 30' centers	100		Lin.Ft.	585	0.04	23	23
	Total (Permanent Snow Fence)		75				226,334	169,420
	Total for Valuation Section		72				251,021	181,873

Form approved Aug. 13, 1916.

*State mileage to thousandths.

Revised August 1, 1926.

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B. V. Form No. 563
Owner Northern Pacific Railway Company
Operating Company do
Division ____ State Montana
Valuation Section No. Montana 6
From Glendive to Sidney
53.942 Miles Main Line, 59.868 Miles all Tracks.*

INTERSTATE COMMERCE COMMISSION
BUREAU OF VALUATION

SUMMARY SHEET
WHOLLY OWNED AND USED

Date of Inventory as of June 30, 1917.
Date Compiled November 4, 1929
Compiled by F. A. Mc.
Correct Report Engineer.
Approved Engineer.

B. and O. Account Number (1)	CLASSES (2)	ORIGINAL COST TO DATE (3)	COST OF REPRODUCTION New (4)	COST OF REPRODUCTION Less Depreciation (5)	B. and O. Account Number (6)	REMARKS (7)
		$	$	$		
	I. ROAD:					
1	Engineering,		99,580	99,580	1	
2	Land for transportation purposes,				2	
3	Grading,		1,351,698	1,346,197	3	
4	Underground power tubes,				4	
5	Tunnels and subways,				5	
6	Bridges, trestles, and culverts,		330,538	305,791	6	
7	Elevated structures,				7	
8	Ties,		121,475	71,426	8	
9	Rails,		190,296	177,310	9	
10	Other track material,		35,597	28,668	10	
11	Ballast,		18,109	10,597	11	
12	Track laying and surfacing,		77,182	60,974	12	
13	Right-of-way fences,		11,472	9,977	13	
14	Snow and sand fences and snowsheds,		2,260	1,876	14	
15	Crossings and signs,		10,271	9,430	15	
16	Station and office buildings,		24,715	19,630	16	
17	Roadway buildings,		10,486	8,744	17	
18	Water stations,		26,640	23,591	18	
19	Fuel stations,		439	351	19	
20	Shops and engine houses,				20	
21	Grain elevators,				21	
22	Storage warehouses,				22	
23	Wharves and docks,				23	
24	Coal and ore wharves,				24	
25	Gas producing plants,				25	
26	Telegraph and telephone lines,				26	
27	Signals and interlockers,		102	87	27	
28	Power dams, canals, and pipe lines,				28	
29	Power plant buildings,				29	
30	Power substation buildings,				30	
31	Power transmission systems,				31	
32	Power distribution systems,				32	
33	Power line poles and fixtures,				33	
34	Underground conduits,				34	
35	Miscellaneous structures,				35	
36	Paving,				36	
37	Roadway machines,		1,270	828	37	
38	Roadway small tools,		340	170	38	
39	Assessments for public improvements,				39	
40	Revenues and operating expenses during const.,				40	
41	Cost of road purchased,				41	
42	Reconstruction of road purchased,				42	
43	Other expenditures—Road,				43	
44	Shop machinery,				44	
45	Power plant machinery,				45	
46	Power substation apparatus,				46	
47	Unapplied construction material and supplies,				47	
	Total, 1 to 47, inclusive,		2,312,470	2,175,327		
	II. EQUIPMENT:					
51	Steam locomotives,				51	
52	Other locomotives,				52	
53	Freight-train cars,				53	
54	Passenger-train cars,				54	
55	Motor equipment of cars,				55	
56	Floating equipment,				56	
57	Work equipment,				57	
58	Miscellaneous equipment,				58	
	Total, 51 to 58, inclusive,					
	III. GENERAL EXPENDITURES:					
71	Organization expenses,				71	
72	General officers and clerks,				72	
73	Law,				73	
74	Stationery and printing,				74	
75	Taxes,				75	
77	Other expenditures—General,				77	
76	Interest during construction,				76	
	Total, 71 to 77, inclusive,		4297			
	Grand total, 1 to 77, inclusive.					
	Grand total—Other,					

Revised page prepared by direction of the Commission Nov. 20, 1929.

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Form approved Oct. 7, 1916.

*State mileage to thousandths.

V. Form No. 501

INTERSTATE COMMERCE COMMISSION
BUREAU OF VALUATION

mer Northern Pacific Railway Company — Sheet No. _____ of this valuation section

Section No. 6-Mont., _____ Miles Main Line, _____ Miles all Tracks.* — Approved: C. H. Spencer

LATION. CHARACTER OF PROPERTY AND DESCRIPTION. Where but a single percentage is stated it represents both per cents.	Condition Per Cent	Per Cent Wire Mfrs.	UNIT. (2)	NUMBER OF UNITS. (3)	COST OF REPRODUCTION. Per Unit. (4)	New, Total. (5)	Less Depreciation. (6)
					$	$	$
Acct. No. 3 Title GRADING (I. C. C. classification.)							
All Tracks:							
Clearing	100		Acre	284.11		9,790	9,790
Excavation:							
Common	100		Cu.yd.	1379129	.23	432,200	432,200
Hard pan	100		"	1381589	.35	483,556	483,556
Loose rock	100		"	106713	.42	45,659	45,659
Solid rock	100		"	233287	.85	198,294	198,294
Team O.H. 500' free haul	100		C.Y.Sta.	4723496	.0125	59,044	59,044
Train " over 5000' under 10000'	100		C.Y.1000'	702600	.015	10,539	10,539
" " " 10000' " 25000'	100		"	565600	.01	5,656	5,656
Protection of Roadway:							
Riprap	95		Cu.yd.	51711		106,062	100,759
Sundry items	78					898	700
Total for Valuation Section		100				1,351,698	1,346,197

Note: Due to Subsidence 19177 C.Y. have been added to the measured volume of embankment before distribution of pay quantities.

Acct. 6 - BRIDGES, TRESTLES AND CULVERTS — Approved: F. B. Scheetz.

Steel Bridges.

Bridge 0 - Mile 1.0 - Yellowstone River.

Single track, length 1321', built 1911.
Substructure: Two concrete abutments and six concrete piers.

Concrete	95		Cu.yd.	4567	9.50	43,387	41,218
Excavation, piling and cofferdams	95					20,992	19,942
Iron	95		Lb.	27970	.04	1,119	1,063
Riprap, loose	95		Cu.yd.	75	1.25	94	89
Superstructure: Six 200' steel thru pin connected truss span	95	95	Lb.	3084440	.0487	150,212	142,701
One 100' steel deck plate girder span	95	95	"	152080	.0427	6,494	6,169
Sundry items	95					6,648	6,316
Total Steel Bridges		95				228,946	217,498

Pile and Frame Trestles.

34 Pile and Frame Trestles - total length 3804'.

Piling, cedar	80		Lin.ft.	29280	.59	17,275	13,820
Stringers	80		M.B.M.	293,700	44.95	13,202	10,562
Other timber	80		"	191,100	42.95	8,208	6,566
Iron	80		Lb.	58450	.04	2,338	1,870
Galv. iron fire protection	80		"	36740	.054	1,984	1,587
Excavation, common	80		Cu.yd.	32	.50	16	13
Sundry items	80					147	118
Total Pile and Frame Trestles		80				43,170	34,536

Masonry Culverts.

2 Double 4'x4' [illegible]forced Concrete Box Culverts.

[illegible]oncrete	94		Cu.yd.	250	11.00	2,750	2,585
[illegible]steel bars	94		Cwt.	129.33	4.25	550	517
[illegible]t - span 8'							
	94		Cu.yd.	82	9.50	779	732
[illegible]d	95		"	40	2.00	80	76
[illegible]on, culverts	94		"	478	.50	239	225
[illegible]pan "	94		"	180	.60	108	102
[illegible]al Masonry Culverts		94				4,506	4,237

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Revised page prepared by direction of the Commission Nov. 20, 1929.

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* State mileage to thousandths.

B. V. Form No. 501

INTERSTATE COMMERCE COMMISSION

BUREAU OF VALUATION

Owner Northern Pacific Railway Company — Sheet No. ____ of this valuation section

Val. Section No. Montana 6 — Miles Main Line, ____ Miles all Tracks.* — Approved: C.E. Spencer.

LOCATION. (1)	CHARACTER OF PROPERTY AND DESCRIPTION. Where but a single percentage is stated it represents both per cents.	Condition Per Cent.	Per Cent of Cost New. (2)	UNIT.	NUMBER OF UNITS. (3)	COST OF REPRODUCTION. Per Unit. (4) $	New, Total. (5) $	Less Depreciation. (6) $
	Acct. No. 11 Title Ballast. (I.C.C. Classification.)							
	Main Track:							
	Gravel Ballast from Local Cuts, average haul 1 mi.	80		Cu.yd.	22257	0.26	5,267	4,214
	Cinder " " Glendive, " 30 "	50		"	29168	0.43	12,542	5,271
	Total Main Track		59				17,809	10,485
	Yard Tracks and Sidings:							
	Gravel ballast from Local Cuts, average haul 1 mi.	80		Cu.yd.	788	0.26	205	164
	Cinder " " Glendive, " 55 "	50		"	176	0.54	95	48
	Total Yard Tracks and Sidings		71				300	212
	Total for Valuation Section		59				18,109	10,697
	Acct. 12 - TRACKLAYING AND SURFACING.							
	Main Track:							
	Tracklaying and initial surfacing, 72# Rail			Mile	55.942	1000.00	55,942	
	Extra for full earth surfacing			Mile	25.577	100.00	2,568	
	Placing Inner Guard Rail			Rail feet	2882	.025	72	
	" Gravel Ballast			Cu.yd.	20257	.23	4,659	
	" Cinder "			"	29168	.19	5,542	
	Yard Tracks and Sidings:							
	Tracklaying and initial surfacing, 65#-65# Rail			Mile	5.791	900.00	5,212	
	" " " " 56# Rail			"	0.135	850.00	115	
	Placing gravel ballast			Cu.yd.	788	.23	181	
	" cinder "			"	176	.19	33	
	All Tracks:							
	Placing turnouts			Each	35	30.00	1,050	
	" tie plates			"	82359	.0125	1,029	
	" derails, split and stub, with stand			"	3	7.50	23	
	" rail braces			"	34	.02	1	
	Framing and placing bridge ties			M.B.M.	275.451	10.00	2,755	
	Total for Valuation Section		79				77,182	60,974
	Acct. 13 - RIGHT OF WAY FENCES.							
	All Tracks:							
	Posts	68		Each	15066	0.21	3,165	2,765
	Barbed wire	68		Cwt.	760.345	2.90	2,205	1,940
	Wire Stays	68		Each	41721	0.03	1,252	1,102
	Lumber Bracing	82		M.B.M.	15.536	31.75	493	434
	Labor setting posts	85		Each	15066	0.14	2,110	1,857
	Labor stringing barbed wire, posts spaced over 12'	88		Wire Mi.	216.655	4.45	961	846
	Bureau Gates	83		Each	49	5.65	277	230
	Wooden Gates	77		"	32		102	79
	Cattle guards, single track	77		"	48		830	635
	Sundry Items	90					77	69
	Total for Valuation Section		87				11,472	9,977

Form approved Aug. 12, 1916. — *State mileage to thousandths. — Revised Aug. 1, 1926. — 10-19

Form No. 501

INTERSTATE COMMERCE COMMISSION
BUREAU OF VALUATION

Northern Pacific Railway Company — Sheet No. _____ of this valuation section

Section No. Mont.-6 _____ Miles Main Line, _____ Miles all Tracks.* — Approved: C. H. Spencer

ION. CHARACTER OF PROPERTY AND DESCRIPTION. Where but a single percentage is stated it represents both per cents.	Condition Per Cent	Per Cent New	UNIT. (2)	NUMBER OF UNITS. (3)	COST OF REPRODUCTION. Per Unit. (4)	New, Total. (5)	Less Depreciation. (6)
					$	$	$
Acct. No. 14 Title SNOW AND SAND FENCES (I. C. C. classification.)							
All Tracks:							
Portable Fence - 486 Panels							
Timber	83		M.B.M.	58.520	34.50	2,012	1,670
Iron	83		Cwt.	20.08	5.00	100	83
Total						2,112	1,753
Permanent Fence - 0.185 Miles Fence							
Posts in place	83		Each	128		45	37
Timber	83		M.B.M.	2.928	34.50	101	84
Iron	83		Cwt.	0.35	5.00	2	2
Total						148	123
Total for Valuation Section		83				2,260	1,876
Acct. 15 - CROSSINGS AND SIGNS.							
82 Grade Crossings:							
Excavation, common	100		Cu.yd.	1207	.23	278	278
Embankment, borrow, common	100		"	32241	.23	7,415	7,415
" " hard pan	100		"	1635	.38	621	621
Planking, fir	50		M.B.M.	27.913	32.50	907	454
Corrugate iron pipe, 12"	87		Lin.ft.	18	.65	12	10
Vitrified pipe 24"	85		"	32	2.55	82	71
" " 18"	86		"	32	1.55	50	43
Excavation, common culvert	57		Cu.yd.	23	.50	12	7
Wood box drainage culverts	54		M.B.M.	11.351	44.95	510	275
Hardware	50		Cwt.	11.15	4.00	45	23
Rail, flange	90	94	Gr.Ton	0.321	25.50	8	8
Ties, second hand	52		Each	57	.25	14	7
Logs, 4" and 12"	50		Lin.ft.	340	.12	41	21
Riprap, loose	95		Cu.yd.	6	1.25	8	8
Total Grade Crossings		92				10,003	9,241
Signs:							
116 Mile markers and other signs	71		Each	116		268	189
Total Signs		71				268	189
Total for Valuation Section		92				10,271	9,430

4300

Revised page prepared by direction of the Commission Nov. 20, 1929.

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Revised Aug. 12, 1914.

* State mileage to thousandths.

$04581

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B. V. Form No. 563
Owner Montana Eastern Railway Company
Operating Company Great Northern Railway Company.
Division ____ State Montana
Valuation Section No. 1.
From M.P. -0.00 to M.P. 5.194
5.315 Miles Main Line, 7.158 Miles all Tracks.*

INTERSTATE COMMERCE COMMISSION
BUREAU OF VALUATION
SUMMARY SHEET
USED BUT NOT OWNED.

Date of Inventory as of June 30, 1915
Date Compiled February 16,1922
Compiled by L.W.R. - R.W.P.
Correct Louis Hood Engineer.
Approved Earl B. Wolff Engineer.

B. and B. Account Number. (1)	CLASSES. (2)	ORIGINAL COST TO DATE. (3)	COST OF REPRODUCTION. New. (4)	COST OF REPRODUCTION. Less Depreciation. (5)	B. and B. Account Number. (6)	REMARKS. (7)
	I. ROAD:	$	$	$		
1	Engineering,		24,942	24,942	1	
2	Land for transportation purposes,				2	
3	Grading,		79,155	78,433	3	
4	Underground power tubes,				4	
5	Tunnels and subways,				5	
6	Bridges, trestles, and culverts,		469,725	459,883	6	
7	Elevated structures,				7	
8	Ties,		20,584	16,426	8	
9	Rails,		24,680	23,704	9	
10	Other track material,		9,313	8,587	10	
11	Ballast,		1,059	900	11	
12	Track laying and surfacing,		11,035	9,821	12	
13	Right-of-way fences,		3,054	2,745	13	
14	Snow and sand fences and snowsheds,				14	
15	Crossings and signs,		1,262	1,217	15	
16	Station and office buildings,		16	16	16	
17	Roadway buildings,		2,911	1,224	17	
18	Water stations,				18	
19	Fuel stations,		403	302	19	
20	Shops and engine houses,				20	
21	Grain elevators,				21	
22	Storage warehouses,				22	
23	Wharves and docks,				23	
24	Coal and ore wharves,				24	
25	Gas producing plants,				25	
26	Telegraph and telephone lines,				26	
27	Signals and interlockers,				27	
28	Power dams, canals, and pipe lines.				28	
29	Power plant buildings,				29	
30	Power substation buildings,				30	
31	Power transmission systems,				31	
32	Power distribution systems,				32	
33	Power line poles and fixtures,				33	
34	Underground conduits,				34	
35	Miscellaneous structures,		299	156	35	
36	Paving,				36	
37	Roadway machines,				37	
38	Roadway small tools,		50	25	38	
39	Assessments for public improvements,				39	
40	Revenues and operating expenses during const.				40	
41	Cost of road purchased,				41	
42	Reconstruction of road purchased,				42	
43	Other expenditures--Road,				43	
44	Shop machinery,				44	
45	Power plant machinery,				45	
46	Power substation apparatus,				46	
47	Unapplied construction material and supplies,				47	
	Total, 1 to 47, Inclusive		648,486	628,381		
	II. EQUIPMENT:					
51	Steam locomotives,				51	
52	Other locomotives,				52	
53	Freight-train cars,				53	
54	Passenger-train cars,				54	
55	Motor equipment of cars,				55	
56	Floating equipment,				56	
57	Work equipment,				57	
58	Miscellaneous equipment,				58	
	Total, 51 to 58, inclusive,					
	III. GENERAL EXPENDITURES:					
71	Organization expenses,				71	
72	General officers and clerks,				72	
73	Law,				73	
74	Stationery and printing,				74	
75	Taxes,				75	
77	Other expenditures—General,				77	
76	Interest during construction,				76	
	Total, 71 to 77, inclusive,		4301			
	Grand total, 1 to 77, inclusive,					
	Grand total—Other,					

Revised page prepared by direction of the Commission Jan.3, 1928.

2005

Form approved Oct. 7, 1915.

* State mileage to thousandths.

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B. V. Form No. 561

INTERSTATE COMMERCE COMMISSION
BUREAU OF VALUATION

Owner Montana Eastern Railway Company. Sheet No. ____ of this valuation section.

Val. Section No. Montana 1. ____ Miles Main Line, ____ Miles all Tracks.* Approved: C. H. Spencer.

LOCATION.	CHARACTER OF PROPERTY AND DESCRIPTION. Where but a single percentage is stated it represents both per cents.	Condition Per Cent	Per Cent Not Used	UNIT. (2)	NUMBER OF UNITS. (3)	COST OF REPRODUCTION. Per Unit. (4) $	New. Total. (5) $	Less Depreciation. (6) $
	Acct. No. 3 Title GRADING. (I. C. C. classification.)							
	M.P. 00 to M.P. 5.194 - Snowden to North Dakota State Line							
	All Tracks -							
	Clearing	100		Acre	23.33	29.50	688	688
	Grubbing	100		"	2.63	234.50	617	617
	Excavation, common	100		Cu.Yd.	26137	0.21	5,489	5,489
	Embankment Borrow, common	100		"	136594	0.21	28,685	28,685
	Team Overhaul - 500' free haul	100		Cu.Yd.Sta	604440	0.0125	7,556	7,556
	Brush - Mattress	98		Sq.Yd.	22575	1.60	36,120	35,398
	Total for Valuation Section	99					79,155	78,433
	ACCOUNT 6 - BRIDGES TRESTLES AND CULVERTS			Approved: F. B. Schaetz.				
	Steel Bridges -							
	Bridge 12.1 - Mile 3; single track; length 1162.4'; built 1914							
	Substructure: Two masonry abutments; three masonry piers, concrete	98		Cu.Yd.	8438	10.08	85,055	83,354
	Concrete piling	98		Lin.Ft.	1837	1.30	1,998	1,958
	Steel Plating on piers	98		Lb.	362603	0.04	14,504	14,214
	Excavation including pneumatic caissons	98					63,110	61,848
	Superstructure: Thru truss spans, 2- 266'8 long, 1-265'2" long	98	98	Lb.	2940090	0.048	141,124	138,302
	Lift span, 1- 300' 0" long	98	98	"	1940000	0.06	116,400	114,072
	Girder spans, 1- 60' 4-1/2" long	98	98	"	60000	0.042	2,520	2,470
	Sundry Items						8,798	8,622
	Total		98				433,509	424,840
	Total Steel Bridge		98				433,509	424,840
	Pile and Frame Trestles -							
	2 Timber Trestles, total length 2140.3'							
	Piling	97		Lin.Ft.	25920	0.61	15,811	15,337
	Stringers	97		MBM	181,200	43.40	7,864	7,628
	Other Timber	97		Lb.	111.600	41.10	4,587	4,449
	Iron	97		"	51000	0.04	2,040	1,979
	Galvanized Iron	97		"	40680	0.05	2,034	1,973
	Sundry Items	97					7	7
	Total Pile and Frame Trestles		97				32,345	31,375
	Pipe and Timber Culverts -							
	9 Cast Iron Pipe Culverts	96		Net Ton	67.746	46.50	3,150	3,024
	1 Wood Box Culvert, fir	86		MBM	9.900	43.25	428	364
	Common Excavation	95		Cu.Yd.	322	0.50	161	153
	Sundry Items	96					134	129
	Total Pipe and Timber Culverts		95				3,873	3,670
	Total for Valuation Section		98				469,725	459,883

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	ACCOUNT 8 TIES							
	Main Track							
	Cross ties sawn for treated	75		Each	408	.97	396	297
	" " #1 fir	75		"	10414	.85	8,844	6,483
	" " #1 fir treated	75		"	2340	1.03	2,410	1,806
	Switch " Treated	75		MBM	3.014	24.00	72	54
	Bridge "	90		"	223.973	24.50	5,487	4,938
	Total Main Track		80				17,009	15,580
	2nd Tracks and Sidings							
	Cross Ties # 1 fir	80		Each	1119	.83	929	745
	" " #2 fir	80		Each	2027	.64	1,297	1,038
	" " #2 cedar	80		"	1028	56	571	457
	" " #2 tamarack	80		"	544	.64	348	278

Revised page prepared by direction of the Commission Jan. 3, 1928

Approved Aug. 12, 1916.

*State mileage in Exhibit.

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V. Form No. 561

INTERSTATE COMMERCE COMMISSION
BUREAU OF VALUATION

Sheet No. _____ of this valuation section.

Owner Montana Eastern Railway Company

Approved: C. H. Spencer.

Val. Section No. Mont. 1. _____ Miles Main Line, _____ Miles all Tracks.*

13-200

LOCATION. (1)	CHARACTER OF PROPERTY AND DESCRIPTION. Where but a single percentage is stated it represents both per cents.	Section Cost per Cent New.	UNIT. (2)	NUMBER OF UNITS. (3)	COST OF REPRODUCTION. Per Unit. (4) $	New, Total. (5) $	Less Depreciation. (6) $
	Acct. No. 12 Title TRACKLAYING AND SURFACING. (I.C.C. classification.)						
	Main Track:						
	Tracklaying and initial surfacing, 75-90# Rail		Mile	5.315	1000.00	5,315	
	Extra for full earth surface		"	3.276	100.00	328	
	Tracklaying, 75-77-1/2# Rail, Bridge Guard Rail		"	0.647	628.00	406	
	Placing Gravel Ballast		Cu.Yd.	1436	0.25	359	
	Yard Tracks and Sidings						
	Tracklaying and initial surfacing, 75-77.5# Rail		Mile	1.843	850.00	1,567	
	Placing Gravel Ballast		Cu.Yd.	818	0.25	204	
	All Tracks						
	Framing and Placing Bridge Ties		MBM	226.021	11.00	2,487	
	Placing Tie Plates		Each	3031	0.0145	44	
	Placing turnouts 75#-80# with stands		"	8	36.50	292	
	" " 75#-80# no stands		"	1	33.00	33	
	Total for Valuation Section	89				11,035	9,821
	ACCOUNT 13 - RIGHT-OF-WAY FENCES.						
	All Tracks - 10.137 Miles Fence						
	Fence Posts, 7' 6"	90	Each	3066	0.25	766	689
	" " 11'	90	"	368	0.99	364	328
	Labor Setting Posts	90	"	3434	0.13	446	401
	Barbed wire, two point galvanized	90	Cwt.	163.75	2.70	442	398
	Labor stringing barbed wire, posts over 12' centers	90	Wire Mil	46.5	3.95	184	166
	48" Cinch Fence Stays	90	Each	9198	0.03	276	248
	1" x 6" Boards, fir	90	MBM	13.234	24.00	318	286
	Cattle Guards, G.N. Standard	90	Each	9	13.75	124	112
	Sundry Items	87				134	117
	Total for Valuation Section	90				3,054	2,745
	ACCOUNT 15 - CROSSINGS AND SIGNS.						
	7 Grade Crossings						
	Common Embankment Borrow	100	Cu.Yd.	3907	0.21	820	820
	Planking, fir	85	MBM	3.627	33.50	122	101
	Warning Signs	90	Each	3	5.50	16	14
	2 Corrugated Iron Drainage Pipes, 18" - 36"	95	Lin.Ft.	78		171	159
	Sundry Items	88				58	52
	Total Grade Crossings	97				1,187	1,146
	Signs						
	22 Mile Boards and Other Signs	90	Each	22		33	29
	Common Embankment Sign Berms	100	Cu.Yd.	202	0.31	42	42
	Total Signs	95				75	71
	Total for Valuation Section	99				1,262	1,217
	ACCOUNT 16 - HTATION AND OFFICE BUILDINGS		Approved: F. T. Oakley.				
	Station Signs						
	Located at Mile 2 and Mile 3	98	Each	2		16	16
	Total for Valuation Section	98				16	16

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Revised page prepared by direction of the Commission Jan. 5, 1928. 2068

Approved Aug. 12, 1918.

* State mileage in thousandths.

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B. V. Form No. 563
Owner Montana Eastern Railway Company
Operating Company Great Northern Railway Company.
Division ____ State North Dakota
Valuation Section No. North Dakota 1
From M.P. 0.194 to M.P. 15.820
8.671 Miles Main Line, 9.757 Miles all Tracks.*

INTERSTATE COMMERCE COMMISSION
BUREAU OF VALUATION

SUMMARY SHEET
USED BUT NOT OWNED

Date of Inventory as of June 30, 19 15
Date Compiled February 15, 19 22
Compiled by V.W.B. - R.W.P.
Correct Louis Hoch, Engineer.
Approved Earl C. Hill, Engineer.

B. and E. Account Number. (1)	CLASSES. (2)	ORIGINAL COST TO DATE. (3)	COST OF REPRODUCTION. New. (4)	COST OF REPRODUCTION. Less Depreciation. (5)	B. and E. Account Number. (6)	REMARKS. (7)
	I. ROAD:	$	$	$		
1	Engineering,		5,810	5,810	1	
2	Land for transportation purposes,				2	
3	Grading,		45,825	45,825	3	
4	Underground power tubes,				4	
5	Tunnels and subways,				5	
6	Bridges, trestles, and culverts,		17,874	17,395	6	
7	Elevated structures,				7	
8	Ties,		23,902	18,092	8	
9	Rails,		30,161	28,955	9	
10	Other track material,		6,793	6,922	10	
11	Ballast,		177	150	11	
12	Track laying and surfacing,		10,942	9,520	12	
13	Right-of-way fences,		4,000	3,797	13	
14	Snow and sand fences and snowsheds,				14	
15	Crossings and signs,		1,838	1,793	15	
16	Station and office buildings,		2,246	2,213	16	
17	Roadway buildings,		1,401	1,198	17	
18	Water stations,				18	
19	Fuel stations,				19	
20	Shops and engine houses,				20	
21	Grain elevators,				21	
22	Storage warehouses,				22	
23	Wharves and docks,				23	
24	Coal and ore wharves,				24	
25	Gas producing plants,				25	
26	Telegraph and telephone lines,				26	
27	Signals and interlockers,				27	
28	Power dams, canals, and pipe lines,				28	
29	Power plant buildings,				29	
30	Power substation buildings,				30	
31	Power transmission systems,				31	
32	Power distribution systems,				32	
33	Power line poles and fixtures,				33	
34	Underground conduits,				34	
35	Miscellaneous structures,				35	
36	Paving,				36	
37	Roadway machines,				37	
38	Roadway small tools,		82	41	38	
39	Assessments for public improvements,				39	
40	Revenues and operating expenses during const.				40	
41	Cost of road purchased,				41	
42	Reconstruction of road purchased,				42	
43	Other expenditures—Road,				43	
44	Shop machinery,				44	
45	Power plant machinery,				45	
46	Power substation apparatus,				46	
47	Unapplied construction material and supplies,				47	
	Total, 1 to 47, inclusive,		151,051	140,711		
	II. EQUIPMENT:					
51	Steam locomotives,				51	
52	Other locomotives,				52	
53	Freight-train cars,				53	
54	Passenger-train cars,				54	
55	Motor equipment of cars,				55	
56	Floating equipment,				56	
57	Work equipment,				57	
58	Miscellaneous equipment,				58	
	Total, 51 to 58, inclusive,					
	III. GENERAL EXPENDITURES:					
71	Organization expenses,				71	
72	General officers and clerks,				72	
73	Law,				73	
74	Stationery and printing,				74	
75	Taxes,				75	
77	Other expenditures—General,				77	
76	Interest during construction,				76	
	Total, 71 to 77, inclusive,					
	Grand total, 1 to 77, inclusive,					
	Grand total—Other,					

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Revised page prepared by direction of the Commission Jan. 3,1928.

2084

Form approved Oct. 7, 1916. 1 * State mileage to thousandths. 72—472

UB

Form No. 561

INTERSTATE COMMERCE COMMISSION
BUREAU OF VALUATION

Sheet No. ____ of this valuation section.

Of Montana Eastern Railway Company.

Section No. North Dakota 1 Miles Main Line, ____ Miles all Tracks.*

Approved: C. H. Spencer.

TION. CHARACTER OF PROPERTY AND DESCRIPTION. Where but a single percentage is stated it represents both per cents.	Condition Per Cent.	Per Cent Of Cost Not New	UNIT. (2)	NUMBER OF UNITS. (3)	COST OF REPRODUCTION. Per Unit. (4) $	New, Total. (5) $	Less Depreciation. (6) $
Acct. No. 3 Title GRADING. (I. C. C. classification.)							
M.P. 5.194 to M.P. 13.830 -Montana State Line to Fairview							
All Tracks -							
Excavation, common	100		Cu.Yd.	51698	0.21	10,857	10,857
" loose rock	100		"	9011	0.43	3,875	3,875
" solid rock	100		"	2506	0.93	2,331	2,331
Embankment Borrow, common	100		"	124171	0.21	26,076	26,076
Team Overhaul, 500' free haul	100		Cu.Yd.Sta.	214895	0.0125	2,686	2,686
Total for Valuation Section	100					45,825	45,825
ACCOUNT 6 - BRIDGES TRESTLES AND CULVERTS							
Pile and Frame Trestles -							
Piling	100		Lin.Ft.	3460	0.61	2,111	2,111
Stringers	100		MBM	30.800	43.40	1,337	1,337
Other Timber	100		"	14.800	41.10	608	608
Iron	100		Lb.	7880	0.04	315	315
Galvanized Iron	100		"	7020	0.05	351	351
Sundry Items	100					9	9
Total Pile and Frame Trestles	100					4,731	4,731
Masonry Culverts-							
4 Concrete Syphons, span 4' or less							
Excavation, common	97		Cu.Yd.	615	0.50	308	299
" loose rock	97		"	477	0.75	358	347
Reinforced Concrete	97		"	259.8	11.59	3,011	2,921
Reinforcing Steel	97		Cwt.	351.51	3.30	1,160	1,125
3" Cast Iron Bleeder Pipe	97		Net.Ton	12.911	42.00	542	526
30" " " Pipe	97		"	14.999	42.00	630	611
Drop Box, Fir	97		MBM	0.099	38.00	4	4
Total Masonry Culverts	97					6,013	5,833
Pipe and Timber Culverts -							
24 Case Iron Pipe Culverts, 18"-36"	96		NetTon	146.141	42.00	6,138	5,892
11 - 18" Corrugated Iron Pipe Culverts	90		Lin.Ft.	210	1.30	273	246
Excavation, common	95		Cu.Yd.	502	0.50	251	238
Hand Placed Riprap	97		"	132	3.00	396	384
Sundry Items	98					72	71
Total Pipe and Timber Culverts	96					7,130	6,831
Total for Valuation Section	97					17,874	17,395

Approved Aug 12, 1914

*State mileage in thousandths.

Revised page prepared by direction of the Commission Jan. 3, 1928.

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.V. Form No. 561 — INTERSTATE COMMERCE COMMISSION — Sheet No. ____ of this valuation section.

wner Montana Eastern Railway Company. — BUREAU OF VALUATION — Approved: C. H. Spencer.

d. Section No. North Dakota 1. Miles Main Line, ____ Miles all Tracks.*

CATION.	CHARACTER OF PROPERTY AND DESCRIPTION. Where but a single percentage is stated it represents both per cents.	Condition Per Cent	Per Cent New	UNIT. (2)	NUMBER OF UNITS. (3)	COST OF REPRODUCTION. Per Unit. (4)	New, Total. (3)	Less Depreciation. (4)
						$	$	$
	Acct. No. 12 Title TRACKLAYING AND SURFACING (I. C. C. classification.)							
	Main Track-							
	Tracklaying and Initial Surfacing 77.5# Rail			Mile	8.671	1000.00	8,671	
	Extra for Full Earth Surface			"	8.318	100.00	832	
	Placing Gravel ballast			Cu.Yd.	422	0.25	106	
	Yard Tracks and Sidings -							
	Tracklaying and initial surfacing 75#-80# Rail			Mile	1.066	850.00	906	
	All Tracks -							
	Framing and placing bridge ties			MBM	17.376	11.00	191	
	Placing turnouts 80# - 77-1/2# with stands			Each	6	36.50	219	
	Placing tie plates			"	1181	0.0145	17	
	Total for Valuation Section		87				10,942	9,520
	ACCOUNT 13 - RIGHT OF WAY FENCES.							
	All Tracks - 16.884 Miles Fence							
	Fence Posts, 7' 6"		95	Each	5470	0.25	1,368	1,300
	Labor Setting Posts		95	"	5470	0.13	711	675
	Barbed Wire, 2 point galvanized		95	Cwt.	297.16	2.70	802	762
	Labor stringing barbed wire, posts 16.5' centers		95	Wire Mile	84.4	3.95	333	316
	48" "Cinch" Wire Fence stays		95	Each	16209	0.03	486	462
	Staples		95	Cwt.	4.09	2.70	11	10
	Cattle Guards, G.N. Ry. Standard		95	Each	15	13.75	206	196
	Gates, Standard Steel Frame		92	"	20	4.15	83	76
	Total for Valuation Section		95				4,000	3,797
	ACCOUNT 15 - CROSSINGS AND SIGNS.							
	9 Grade Crossings -							
	Common Embankment Borrow		100	Cu.Yd.	4099	0.21	861	861
	Common Excavation		100	"	1035	0.21	217	217
	Planking fir		90	MBM	9.773	33.50	327	294
	18" Corrugated Iron Drainage Pipe		97	Lin.Ft.	72	1.30	94	91
	Sundry Items		93				75	70
	Total Grade Crossings		97				1,574	1,533
	Signs -							
	72 Mile Markers and Other Signs		95	Each	72		88	84
	Common Embankment Sign Berms		100	Cu.Yd.	839	0.21	176	176
	Total Signs		98				264	260
	Total for Valuation Section		98				1,838	1,793

Revised page prepared by direction of the Commission Jan. 3, 1928. 2087

Form approved Aug. 12, 1918. * State mileage to thousandths.

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B. V. Form No. 563
Owner Montana Eastern Railway Company.
Operating Company Great Northern Railway Company.
Division ..... State Montana.
Valuation Section No. Montana 2.
From M.P. 14.245 to 24.540
10.296 Miles Main Line, 11.047 Miles all Tracks.*

INTERSTATE COMMERCE COMMISSION
BUREAU OF VALUATION

SUMMARY SHEET
USED BUT NOT OWNED.

Date of Inventory as of June 30, 1916
Date Compiled February 16, 1922
Compiled by B.W.P. - V.W.P.
Correct Louis Hood, Engineer.
Approved [illegible] Engineer.

B. and E. Account Number.	CLASSES.	ORIGINAL COST TO DATE.	COST OF REPRODUCTION. New.	COST OF REPRODUCTION. Less Depreciation.	B. and E. Account Number.	REMARKS.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
	I. ROAD:	$	$	$		
1	Engineering,		7,681	7,681	1	
2	Land for transportation purposes,				2	
3	Grading,		41,337	41,337	3	
4	Underground power tubes,				4	
5	Tunnels and subways,				5	
6	Bridges, trestles, and culverts,		32,933	32,159	6	
7	Elevated structures,				7	
8	Ties,		33,918	28,295	8	
9	Rails,		37,628	36,499	9	
10	Other track material,		7,328	5,589	10	
11	Ballast,		253	215	11	
12	Track laying and surfacing,		12,745	11,599	12	
13	Right-of-way fences,		5,102	4,841	13	
14	Snow and sand fences and snowsheds,		54	51	14	
15	Crossings and signs,		4,279	4,109	15	
16	Station and office buildings,		8,056	7,886	16	
17	Roadway buildings,		2,660	2,525	17	
18	Water stations,		5,507	5,396	18	
19	Fuel stations,				19	
20	Shops and engine houses,				20	
21	Grain elevators,				21	
22	Storage warehouses,				22	
23	Wharves and docks,				23	
24	Coal and ore wharves,				24	
25	Gas producing plants,				25	
26	Telegraph and telephone lines,				26	
27	Signals and interlockers,		180	171	27	
28	Power dams, canals, and pipe lines,				28	
29	Power plant buildings,				29	
30	Power substation buildings,				30	
31	Power transmission systems,				31	
32	Power distribution systems,				32	
33	Power line poles and fixtures,				33	
34	Underground conduits,				34	
35	Miscellaneous structures,				35	
36	Paving,				36	
37	Roadway machines,				37	
38	Roadway small tools,		44	26	38	
39	Assessments for public improvements,				39	
40	Revenues and operating expenses during const.				40	
41	Cost of road purchased,				41	
42	Reconstruction of road purchased,				42	
43	Other expenditures--Road,				43	
44	Shop machinery,				44	
45	Power plant machinery,				45	
46	Power substation apparatus,				46	
47	Unapplied construction material and supplies,				47	
	Total, 1 to 47, inclusive		199,706	189,279		
	II. EQUIPMENT:					
51	Steam locomotives,				51	
52	Other locomotives,				52	
53	Freight-train cars,				53	
54	Passenger-train cars,				54	
55	Motor equipment of cars,				55	
56	Floating equipment,				56	
57	Work equipment,				57	
58	Miscellaneous equipment,				58	
	Total, 51 to 58, inclusive,					
	III. GENERAL EXPENDITURES:					
71	Organization expenses,				71	
72	General officers and clerks,				72	
73	Law,				73	
74	Stationery and printing,				74	
75	Taxes,				75	
77	Other expenditures—General,				77	
76	Interest during construction,				76	
	Total, 71 to 77, inclusive,					
	Grand total, 1 to 77, inclusive,					
	Grand total—Other,					

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Revised page prepared by direction of the Commission Jan. 3, 1923.

a approved Oct. 7, 1916.

* State mileage to thousandths.

2070 12—473

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B.V. Form No. 561 — INTERSTATE COMMERCE COMMISSION — BUREAU OF VALUATION

Owner Montana Eastern Railway Company. Sheet No. ____ of this valuation section.

Val. Section No. Montana 2. ____ Miles Main Line, ____ Miles all Tracks.* Approved: C. H. Spencer.

LOCATION. (1)	CHARACTER OF PROPERTY AND DESCRIPTION. Where but a single percentage is stated it represents both per cents.	Condition Per Cent.	Per Cent New. (2)	UNIT. (3)	NUMBER OF UNITS.	COST OF REPRODUCTION. Per Unit. (4) $	New. Total. (5) $	Less Depreciation. (6) $
	Acct. No. 5 Title GRADING. (I. C. C. classification.)							
	M.P. 14.245 to M.P. 24.540 - Fairview to Sidney							
	All Tracks							
	Excavation, common	100		Cu.Yd.	28360	0.21	5,956	5,956
	Embankment Borrow, common	100		"	104103	0.21	21,862	21,862
	" " hardpan	100		"	28394	0.34	9,654	9,654
	Team Overhaul, 500' free haul	100		Cu.Yd.Sta.	172212	0.0125	2,153	2,153
	Subsidence	100		Cu.Yd.	4175	0.41	1,712	1,712
	Total for Valuation Section		100				41,337	41,337
	ACCOUNT 6 - BRIDGES, TRESTLES And CULVERTS					Approved: F. B. Scheetz.		
	Masonry Culverts							
	5 Masonry Culverts, span 4' or less							
	Excavation, common	98		Cu.Yd.	619	0.50	310	304
	" loose rock	98		"	468	0.75	351	344
	Reinforced Concrete	98		"	467.0	11.58	5,408	5,300
	Reinforced Steel	98		Cwt.	236.00	3.35	791	775
	Grouted Riprap	98		Cu.Yd.	24	9.20	221	217
	3" Wrought Iron Bleeder Pipe	97		Lin.Ft.	405	0.30	122	118
	Sundry Items	97					70	68
	Total Masonry Culverts		98				7,273	7,126
	Pipe and Timber Culverts							
	46 Cast Iron Pipe Culverts, 18" - 36"	98		Net Ton	319.110	42.50	13,562	13,291
	1 Wood Box Culvert - fir	90		MBM	1.842	37.00	68	61
	Excavation, common	98		Cu.Yd.	1012	0.50	506	496
	Cobble Paving	98		Sq.Yd.	613	1.35	828	811
	Plain Concrete	98		Cu.Yd.	34.2	10.08	345	338
	Sundry Items	98					178	169
	Total Pipe and Timber Culverts		98				15,487	15,166
	Pile and Frame Trestles							
	11 Timber Trestles - total length 836.3'							
	Piling	97		Lin.Ft.	6630	0.61	4,044	3,923
	Stringers	97		M.B.M.	71.900	43.40	3,120	3,026
	Other Timber	97		"	36.500	41.10	1,500	1,455
	Iron	97		Lb.	17080	0.04	684	663
	Galvanized Iron	97		"	16060	0.05	803	779
	Sundry Items	97					22	21
	Total Pile and Frame Trestles		97				10,173	9,867
	Total for Valuation Section		98				32,933	32,159
	ACCOUNT 8 - TIES.					Approved: C. H. Spencer.		
	Main Track							
	Cross ties, sawn fir treated	83		Each	31858	.97	30,902	25,649
	Bridge " Treated	90		MBM	47.968	24.50	1,175	1,058
	Switch " "	83		"	13.656	24.00	328	272
	Total Main Track		83				32,405	26,979
	Yard Tracks and Sidings							
	Cross ties # 2 fir	87		Each	1750	.64	1,120	974
	" " sawn fir treated	87		"	405	.97	393	342
	Total Yard Tracks and Sidings		87				1,513	1,316
	Total for Valuation Section		83				33,918	28,295

Revised page prepared by direction of the Commission Jan. 3, 1928. 2071

Form approved Aug. 12, 1914

* State mileage to thousandths.

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B. V. Form No. 561

INTERSTATE COMMERCE COMMISSION
BUREAU OF VALUATION

Owner Montana Eastern Railway Company.

Sheet No. ____ of this valuation section.

Val. Section No. Mont. 2., Miles Main Line, ____ Miles all Tracks.*

Approved: C. H. Spencer.

12—300

LOCATION. CHARACTER OF PROPERTY AND DESCRIPTION. Where but a single percentage is stated it represents both per cents.	Condition Per Cent. Per Cent Good When New. (2)	UNIT.	NUMBER OF UNITS. (3)	COST OF REPRODUCTION. Per Unit. (4) $	New Total. (5) $	Less Depreciation. (6) $
Acct. No. 13 Title RIGHT OF WAY FENCES. (I. C. C. classification.)						
All Tracks - 19.396 Miles fence						
Fence Posts, 7'-6"	95	Each	6108	0.25	1,527	1,451
" " 11'	95	"	231	0.99	229	218
Labor Setting Posts	95	"	6339	0.13	824	783
Woven Wire, 52", 10 bar	95	Cwt.	337.42	3.00	1,012	961
Labor stringing woven wire, posts spaced over 12' center	95	Mile	18.358	36.00	660	627
1" x 6" Boards	95	MBM	8.292	24.00	199	189
Cattle Guards, G.N. Ry. Standard	95	Each	23	13.75	316	300
Gates, standard steel frame	92	"	52	4.15	216	199
Sundry Items	95				119	113
Total for Valuation Section	95				5,102	4,841
ACCOUNT 14 - SNOW AND SAND FENCES AND SNOWSHEDS						
All Tracks						
14 Panels Portable snow fence						
Sundry Items	94				54	51
Total for Valuation Section	94				54	51
ACCOUNT 15 - CROSSINGS AND SIGNS.						
15 Grade Crossings						
Common Embankment Borrow	100	Cu.Yd.	7533	0.21	1,582	1,582
Loose Rock " "	100	"	1572	0.43	676	676
Planking, fir	83	MBM	10.274	33.50	344	286
Warning Signs	83	Each	15	5.50	82	68
Corrugated Iron Drainage Pipe 18" - 24"	93	Lin.Ft.	888		1,260	1,172
Sundry Items	89				35	31
Total Grade Crossings	96				3,979	3,815
104 Signs						
Mile Boards and Other Signs	95	Each	104		112	106
Common Embankment Sign Berms	100	Cu.Yd.	897	.21	188	188
Total Signs	98				300	294
Total for Valuation Section	96				4,279	4,109
ACCOUNT 16 - STATION AND OFFICE BUILDINGS.						
Fairview, Mile 0.0						
Passenger and Freight Depot	98	Each	1		4,983	4,883
Furniture	98				553	542
Platform 5480 sq. ft., frame	98	"	1		902	884
" 6400 sq. ft., gravel	98	"	1		1,244	1,219
Sundry Items	95				119	113
Total Fairview	98				7,801	7,641
Ridgelawn, Mile 4.0						
Platform						
1200 sq. ft. ; cinder	96	Each	1		226	217
Sundry Items	95				29	28
Total Ridgelawn	96				255	245
Total for Valuation Section	98				8,056	7,886

Revised page prepared by direction of the Commission Jan. 3, 1928. 2073

Form approved Aug. 12, 1910.

* State mileage to thousandths.

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MAINTENANCE
OF
WAY AND STRUCTURES

BY
WILLIAM C. WILLARD, C. E., M. S.,
ASSOCIATE MEMBER AMERICAN SOCIETY OF CIVIL ENGINEERS, MEMBER AMERICAN RAILWAY ENGINEERING ASSOCIATION, ASSISTANT PROFESSOR OF RAILWAY ENGINEERING, McGILL UNIVERSITY.

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FOURTH IMPRESSION

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of legislation making trespassing on the right-of-way illegal and where such legislation exists section-foremen should see that it is enforced. Workmen standing by the side of the track as a train passes should be taught to scrutinize the passing train for any broken, loose, or dragging parts or other dangerous condition. Each workman should see that the tools he uses are in proper condition. When passing through long tunnels trackmen should carry lanterns. Employees whose duties require them to stand or walk on the track, where there are two or more tracks, should face against the current of traffic. Tongs should be used for handling rails, and a competent man should be at each end of the rail and the rest of the gang should pay attention to them. Track-jacks should be handled carefully to avoid accidental tripping. Jumping on and off moving trains, cars, motor-cars, hand-cars, and push-cars; crawling under cars; passing between the ends of cars standing close together; running hand- and push-cars or motor-cars over interlocked switches without permission from the towerman; leaving tools on or near the track; applying brakes on hand- or motor-cars without first warning the men on the car; standing close to the track when a train is passing; and riding or working near a ballast-plow or near the cable to the plow when unloading material—all are dangerous practices and should not be allowed.

In case of personal injury, loss of life, or damage to property section-foremen must, as soon as possible, telegraph or report to the division engineer and the division superintendent. If the breaking of any appliances contributed to the accident, the broken parts should be carefully inspected, labeled, and preserved. In case of personal injury, first-aid measures should be applied and proper medical attention secured as soon as possible. In the case of death all local laws governing the removal of the body must be complied with.

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CHAPTER III

ROADWAY

22. Definitions.—The following definitions relating to roadway are given by the American Railway Engineering Association:

1. RIGHT-OF-WAY.—The land or water rights necessary for the roadbed and its accessories.
2. ROADWAY.—That part of the right-of-way of a railway prepared to receive the track. (During construction the roadway is often referred to as the grade.)
3. ROADBED.—The finished surface of the roadway upon which the track and ballast rest.
4. ALIGNMENT.—The horizontal location of a railway with reference to curves and tangents.
5. GRADE-LINE.—The line on the profile representing the tops of embankments and bottoms of cuts ready to receive the ballast.
6. GRADIENT.—The rate of inclination of the grade-line from the horizontal.
7. BERM.—The space left between the top of a slope and any other excavation; also a horizontal space introduced in a slope.
8. SUBGRADE.—The tops of embankments and the bottoms of cuttings ready to receive the ballast.
9. TAMPED.—Packed down by light blows.
10. CENTER STAKES.—Stakes indicating the center line.
11. FINISHING STAKES.—Final stakes set for the completion of the work.

23. Roadbed.—The width of roadbed at subgrade for single track is from 13 ft. 6 in. to 20 ft. in cut, exclusive of ditches, and from 14 ft. to 24 ft. on embankment. The individual practice of several railways is shown in Table 3.

In most cases the widths for double track are the single-track widths plus the distance between track centers—generally 13 ft. Several railways vary the width of embankments with the height. For instance, the width of single-track roadbed on main track of the Grand Trunk Pacific is 16 ft. for fills up to a height of fill of 16 ft., and 18 ft. for a height greater than 16 ft. On branch lines the width is 15 ft. up to a height of fill of 15 ft., and 17 ft. for a height greater than 15 ft. The Chicago, Milwaukee and St. Paul uses a single-track width of 18 ft. in cuts, 22 ft. on fills up to 20 ft. in height, and 24 ft. on fills over 20 ft. in height; for each of these conditions the width for double track is 13 ft. greater. The width of roadbed for four tracks on the New York Central is 57 ft. in rock cuts and 59 ft. elsewhere. The roadbed is often made wider on curves than on tangents. If the toe of the ballast is carried

out to the edge of the roadbed, the width of roadbed must necessarily change with each change in superelevation. This is illustrated by Fig. 22, which shows the ballast section of the Northern Pacific Railway for single track on curves. The changes in width are explained in the last paragraph of Art. 49, page 66. On the Pennsylvania Railroad the four-track width is 60 ft. 2½ in. for cut and 63 ft. 8½ in. for fill.

TABLE 3.—WIDTHS OF ROADBED FOR SINGLE TRACK

Railway	Width of roadbed				Remarks
	Cut		Fill		
	ft.	in.	ft.	in	
A. T. & S. F.	16 to 18		16 to 18		
B. & O. and Frisco Lines	20	0	20	0	Class A track.
	16	0	16	0	Class C track.
C. P. R.	14 to 16		14 to 16		
C. R. I. & P.	18 to 20		18 to 20		Width on double track with washed gravel ballast is 27 ft. 7½ in. in cut.
D. L. & W.	14	1½	19	1½	
L. S. & M. S.	22	0	22	0	12 in. of gravel sub-ballast.
N. & W.	16	0			Rock cuts.
	19	0	19	0	Earth cuts and fills.
P. & R.	13	6	18	6	Width is 27 ft. ½ in. for double track in cut.
P. R. R.	18	5	19	8½	
U. P., S. P., O. S. L.	15	0	16	0	Rock ballast (28 ft. double track).
	16	0	17	0	Gravel, burnt clay, and cinder ballast.
W. & L. E.	17	0	18	0	

The minimum permanent widths of single-track roadbed for Classes A, B and C track, as recommended by the American Railway Engineering Association, are shown in Fig. 5.

Following out the theory upon which the width of an embankment at subgrade is based, the width of roadbed in cut should be made the same as on an embankment. On each side additional width must be provided in a cut for side ditches. The digging of these ditches really leaves the track resting on a low embankment which, if made the same width as the true embankment, will present uniform conditions immediately under the track along the entire line. In any case, the width of the subgrade should be at least 3 ft. greater than the width at toe of ballast. This is not always the case as some railways carry the toe of the ballast entirely out to the edge of roadbed (see Figs. 17 and 22).

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The ultimate economy of this is doubtful. With a narrow embankment or where there is little margin between the toe of ballast and edge of roadbed much ballast is lost over the top of the embankment slope.

The different types of roadbed cross-sections may be classified thus: (1) level, (2) two-plane, (3) three-plane, (4) three-plane extended. Typical sections of these are shown in Fig. 6. The section of ditch may be two-plane or three-plane for any of the four classes of roadbed sections. The full lines of the ditches in Fig. 6 indicate the more common ditch section used with that roadbed section. The roadbed of practically every railway in the United States, Canada and Mexico corresponds to some one of these sections. By far the largest number of roads use either section (1) or (2), the two being used on about an equal number of roads. In section (2) the planes intersect in the center of the roadbed for both double and single track. The practice of the Canadian Pacific is an exception to this, since for double track the roadbed is level between track centers and from each track center out to the edge of roadbed the slope is the same as for single track (see Fig. 17). This really becomes a three-plane section. On the C. M. & St. P. the roadbed for double track is made level for 5 ft. at the center. The height of crown varies

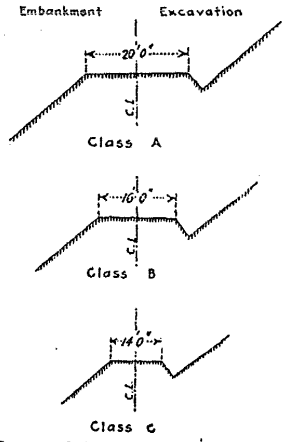


FIG. 5.—Minimum widths for single-track roadbed.

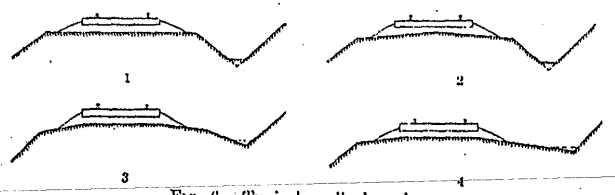


FIG. 6.—Typical roadbed sections.

from 1½ in. for single track on the N. Y. C. & H. R., U. P. and S. P., to 4 in. on the C. P. R., 5 in. on the Lehigh Valley, and 6 in. on the Canadian Northern; and from 2 in. for double track on the N. Y. C. & H. R. to 5 in. on the Lehigh Valley and D. L. & W. For four-track lines the N. Y. C. & H. R. uses both sections (1) and (2) (see Fig. 13). The

Orin Line Data

4313

BEFORE THE

INTERSTATE COMMERCE COMMISSION

DOCKET NO. 37021

ANNUAL VOLUME RATES ON COAL
RAWHIDE JUNCTION, WY TO SERGEANT BLUFF, IA

IOWA PUBLIC SERVICE COMPANY

V.

BURLINGTON NORTHERN RAILROAD COMPANY

AND

CHICAGO AND NORTH WESTERN TRANSPORTATION COMPANY

VERIFIED STATEMENT

OF

JERRY R. MASTERS

E. Real Estate

The value of the right-of-way was developed under the direction of Mr. J. H. Ilkka, Assistant Director, Property Management Division of the Industrial Development and Property Management Department of the BN. Real estate values for an average 100 ft. wide right-of-way, based on an "across the fence" value of property along the route, average $5,033 per mile. This valuation is conservative as it only considers the 12.1 acres per mile generated by the 100 ft. right-of-way. Nothing additional has been added to account for the normal cost to purchase property such as survey and court costs, appraisal or attorney's fees, etc. Further, nothing has been added for the purchase of improvements on the property, such as the addition of buildings, etc., nor for damages including severance costs. Nothing has been added to adjust for the real estate required for major highway overpasses, or locomotive and car servicing facilities, microwave installations, interchange trackage, etc.

F. Grading

Grading costs for the Stand-Alone railroad are from the newly constructed Gillette-Orin coal route serving the Powder River Basin. The grading items specified in the grading contract for the construction of the Reno to Bridger Junction portion (the south half) of the new coal main, hereafter called the "Orin Line" were used in my grading cost calculations. (See Exhibits JRM-3A, 3B and 3C). The cost for grading items along this 81.1 miles of new heavy haul construction as applied to the UPS Railroad; after adjusting to

single track construction; after adjusting to reflect a lighter/narrower sub-grade section; after adjusting for inflation and after adjusting to reflect route specific culvert costs is $197,693 per mile.

The use of the Orin line grading items is especially appropriate when estimating the grading for the Stand-Alone railroad. The standards which would be required today for any new major railroad construction are reflected in these costs. Further, these costs are conservative both by the way they have been adjusted for use for a single track road and by the way they have been applied. (See Exhibit JRM-3A).

On the portion of the Orin line used for grading cost analysis, one half was graded for double main track or sidings and the grading costs had to be converted to single track quantities. I have been conservative while making this conversion. The mainline single track shoulder width of the subgrade is typically 28' for heavy haul construction. I have used a 24' section in my calculation of this expense. (See Exhibit JRM-1A for standard mainline section). Also, the culverts used in the Stand-Alone grading costs reflect lengths of the culverts in place along the IPS route. The calculations of culvert costs are conservative, as they do not reflect the lengths which would be necessary with the larger section and flatter slopes required for new heavy axle load railroad. The cost as developed has conservatively been applied to the entire Stand-Alone route.

Further, as stated earlier, nothing has been added to take into account the additional grading required for sidings, facilities, highway overpasses, interchange track, etc.

G. Bridges

For the IPS annual volume, where pile trestle bridges are indicated the least expensive is used in my analysis, i.e., open deck wood pile trestles. Where other than pile trestles are indicated, the costs for construction statistically reflects actual in place structures, except that open deck prices were applied to both the open and ballast deck structures to continue my conservatism. (See Exhibit JRM-4)

The estimate of bridge costs was accomplished by analyzing over 170 miles of the existing route. This analysis generated, for each mile, the average lineal feet (LF) of bridges by structure type:

Structure Type	Cost Per LF	LF Per Mile	Cost Per Mile
Pile trestles	$ 950	30.99	$29,444
Beam Spans	2200	1.22	2,679
Deck girders	2800	10.51	29,433
			$61,556

Special Structures - Missouri River Bridge at Sioux City = $17,300,000
Cost of other bridges - $61,556/mile x 564.6 miles = 34,754,500
Total Cost of Bridges on IPS Railroad = $52,054,500
Per Mile Costs = 92,197

H. Tunnels

There are no tunnels on the existing route of movement of the IPS destined coal.

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21st Annual Edition

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			CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P	
200	0010	**CLEAR AND GRUB** Cut & chip light, trees to 6" diam.	B-7	1	48	Acre		1,200	950	2,150	2,900	200
	0150	Grub stumps and remove	B-30	2	12			325	825	1,150	1,400	
	0160	Clear & grub brush including stumps	"	.58	41.379			1,125	2,850	3,975	4,825	
	0200	Cut & chip medium, trees to 12" diam.	B-7	.70	68.571			1,725	1,350	3,075	4,150	
	0250	Grub stumps and remove	B-30	1	24			650	1,650	2,300	2,775	
	0260	Clear & grub dense brush including stumps	"	.47	51.064			1,375	3,500	4,875	5,950	
	0300	Cut & chip heavy, trees to 24" diam.	B-7	.30	160			4,025	3,175	7,200	9,700	
	0350	Grub stumps and remove	B-30	.50	48			1,300	3,300	4,600	5,600	
	0400	If burning is allowed, reduce cut & chip				▼					40%	
	3000	Chipping stumps, to 18" deep, 12" diam.	B-86	20	.400	Ea.		12.50	6.80	19.30	26.50	
	3040	18" diameter		16	.500			15.60	8.50	24.10	33	
	3080	24" diameter		14	.571			17.85	9.70	27.55	37.50	
	3100	30" diameter		12	.667			21	11.30	32.30	44	
	3120	36" diameter		10	.800			25	13.55	38.55	52.50	
	3160	48" diameter	▼	8	1	▼		31	16.95	47.95	65.50	
	5000	Tree thinning, feller buncher, conifer										
	5080	Up to 8" diameter	B-93	240	.033	Ea.		1.04	1.68	2.72	3.42	
	5120	12" diameter		160	.050			1.56	2.52	4.08	5.15	
	5240	Hardwood, up to 4" diameter		240	.033			1.04	1.68	2.72	3.42	
	5280	8" diameter		180	.044			1.39	2.24	3.63	4.56	
	5320	12" diameter	▼	120	.067	▼		2.08	3.36	5.44	6.85	
	7000	Tree removal, congested area, aerial lift truck										
	7040	8" diameter	B-85	7	5.714	Ea.		145	99	244	330	
	7080	12" diameter		6	6.667			169	116	285	385	
	7120	18" diameter		5	8			202	139	341	465	
	7160	24" diameter		4	10			253	174	427	580	
	7240	36" diameter		3	13.333			335	231	566	775	
	7280	48" diameter	▼	2	20	▼		505	345	850	1,150	
220	0010	**CLEARING** Brush with brush saw	A-1	.25	32	Acre		750	243	993	1,450	220
	0100	By hand	"	.12	66.667			1,575	505	2,080	2,975	
	0300	With dozer, ball and chain, light clearing	B-11A	2	8			219	410	629	790	
	0400	Medium clearing		1.50	10.667			292	550	842	1,050	
	0500	With dozer and brush rake, light		10	1.600			43.50	82.50	126	158	
	0550	Medium brush to 4" diameter		8	2			54.50	103	157.50	197	
	0600	Heavy brush to 4" diameter	▼	6.40	2.500	▼		68.50	129	197.50	247	
	1000	Brush mowing, tractor w/rotary mower, no removal										
	1020	Light density	B-84	2	4	Acre		125	99.50	224.50	299	
	1040	Medium density		1.50	5.333			166	133	299	395	
	1080	Heavy density	▼	1	8	▼		250	199	449	595	
250	0010	**FELLING TREES & PILING** With tractor, large tract, firm										250
	0020	level terrain, no boulders, less than 12" diam. trees										
	0300	300 HP dozer, up to 400 trees/acre, 0 to 25% hardwoods	B-10M	.75	16	Acre		460	1,375	1,835	2,225	
	0340	25% to 50% hardwoods		.60	20			570	1,725	2,295	2,775	
	0370	75% to 100% hardwoods		.45	26.667			765	2,300	3,065	3,700	
	0400	500 trees/acre, 0% to 25% hardwoods		.60	20			570	1,725	2,295	2,775	
	0440	25% to 50% hardwoods		.48	25			715	2,150	2,865	3,475	
	0470	75% to 100% hardwoods		.36	33.333			955	2,875	3,830	4,600	
	0500	More than 600 trees/acre, 0 to 25% hardwoods		.52	23.077			660	2,000	2,660	3,175	
	0540	25% to 50% hardwoods		.42	28.571			820	2,450	3,270	3,950	
	0570	75% to 100% hardwoods	▼	.31	38.710	▼		1,100	3,325	4,425	5,375	
	0900	Large tract clearing per tree										
	1500	300 HP dozer, to 12" diameter, softwood	B-10M	320	.037	Ea.		1.07	3.23	4.30	5.20	
	1550	Hardwood		100	.120			3.43	10.35	13.78	16.60	
	1600	12" to 24" diameter, softwood		200	.060			1.72	5.15	6.87	8.30	
	1650	Hardwood	▼	80	.150	▼		4.29	12.95	17.24	21	

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			CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P
120	6000	For compaction, see div. 02315-300									
	6010	For trench backfill, see div. 02315-900 & 02315-940									
130	0010	**BEDDING** For pipe and conduit, not incl. compaction									
	0050	Crushed or screened bank run gravel	B-6	150	.160	C.Y.	18	4.09	1.19	23.28	27.50
	0100	Crushed stone 3/4" to 1/2"		150	.160		14.15	4.09	1.19	19.43	23
	0200	Sand, dead or bank		150	.160		3.88	4.09	1.19	9.16	11.90
	0500	Compacting bedding in trench	A-1	90	.089			2.08	.67	2.75	3.98
200	0010	**BORROW, LOADING AND/OR SPREADING**									
	4000	Common earth, shovel, 1 C.Y. bucket	B-12N	840	.019	C.Y.	6.85	.56	.82	8.23	9.30
	4010	1-1/2 C.Y. bucket	B-12O	1,135	.014		6.85	.42	.81	8.08	9.05
	4020	3 C.Y. bucket	B-12T	1,800	.009		6.85	.26	.72	7.83	8.75
	4030	Front end loader, wheel mounted									
	4050	3/4 C.Y. bucket	B-10R	550	.022	C.Y.	6.85	.62	.39	7.86	8.95
	4060	1-1/2 C.Y. bucket	B-10S	970	.012		6.85	.35	.28	7.48	8.40
	4070	3 C.Y. bucket	B-10T	1,575	.008		6.85	.22	.24	7.31	8.15
	4080	5 C.Y. bucket	B-10U	2,600	.005		6.85	.13	.30	7.28	8.10
	5000	Select granular fill, shovel, 1 C.Y. bucket	B-12N	925	.017		7.90	.51	.75	9.16	10.30
	5010	1-1/2 C.Y. bucket	B-12O	1,250	.013		7.90	.38	.74	9.02	10.10
	5020	3 C.Y. bucket	B-12T	1,980	.008		7.90	.24	.65	8.79	9.80
	5030	Front end loader, wheel mounted									
	5050	3/4 C.Y. bucket	B-10R	800	.015	C.Y.	7.90	.43	.27	8.60	9.65
	5060	1-1/2 C.Y. bucket	B-10S	1,065	.011		7.90	.32	.26	8.48	9.50
	5070	3 C.Y. bucket	B-10T	1,735	.007		7.90	.20	.21	8.31	9.25
	5080	5 C.Y. bucket	B-10U	2,850	.004		7.90	.12	.27	8.29	9.20
	6000	Clay, till, or blasted rock, shovel, 1 C.Y. bucket	B-12N	715	.022		5.10	.66	.97	6.73	7.65
	6010	1-1/2 C.Y. bucket	B-12O	965	.017		5.10	.49	.95	6.54	7.40
	6020	3 C.Y. bucket	B-12T	1,530	.010		5.10	.31	.85	6.26	7
	6030	Front end loader, wheel mounted									
	6035	3/4 C.Y. bucket	B-10R	465	.026	C.Y.	5.10	.74	.46	6.30	7.25
	6040	1-1/2 C.Y. bucket	B-10S	825	.015		5.10	.42	.34	5.86	6.60
	6045	3 C.Y. bucket	B-10T	1,340	.009		5.10	.26	.28	5.64	6.30
	6050	5 C.Y. bucket	B-10U	2,200	.005		5.10	.16	.35	5.61	6.25
	6060	Front end loader, track mounted									
	6065	1-1/2 C.Y. bucket	B-10N	715	.017	C.Y.	5.10	.48	.37	5.95	6.75
	6070	3 C.Y. bucket	B-10P	1,190	.010		5.10	.29	.58	5.97	6.70
	6075	5 C.Y. bucket	B-10Q	1,835	.007		5.10	.19	.53	5.82	6.45
	7000	Topsoil or loam from stockpile, shovel, 1 C.Y. bucket	B-12N	840	.019		11.20	.56	.82	12.58	14.05
	7010	1-1/2 C.Y. bucket	B-12O	1,135	.014		11.20	.42	.81	12.43	13.80
	7020	3 C.Y. bucket	B-12T	1,800	.009		11.20	.26	.72	12.18	13.50
	7030	Front end loader, wheel mounted									
	7050	3/4 C.Y. bucket	B-10R	550	.022	C.Y.	11.20	.62	.39	12.21	13.70
	7060	1-1/2 C.Y. bucket	B-10S	970	.012		11.20	.35	.28	11.83	13.15
	7070	3 C.Y. bucket	B-10T	1,575	.008		11.20	.22	.24	11.66	12.90
	7080	5 C.Y. bucket	B-10U	2,600	.005		11.20	.13	.30	11.63	12.85
	8900	For larger hauling units, deduct from above								30%	
	9200	For flowable fill, see section 03310-220									
300	0010	**COMPACTION** R02315-300									
	5000	Riding, vibrating roller, 6" lifts, 2 passes	B-10Y	3,000	.004	C.Y.		.11	.10	.21	.28
	5020	3 passes		2,300	.005			.15	.13	.28	.38
	5040	4 passes		1,900	.006			.18	.16	.34	.46
	5060	12" lifts, 2 passes		5,200	.002			.07	.06	.13	.16
	5080	3 passes		3,500	.003			.10	.09	.19	.25
	5100	4 passes		2,600	.005			.13	.12	.25	.33
	5600	Sheepsfoot or wobbly wheel roller, 6" lifts, 2 passes	B-10G	2,400	.005			.14	.32	.46	.57

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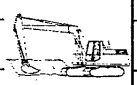
8" pipe = (32" x 1/12" x (12" + 8" + 4") x 1/12 - π(4"/12")² x 1' x 1 CY/27 CF
= .18 CY per LF

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				CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P	
300	5620	3 passes	R02315 -300	B-10G	1,735	.007	C.Y.		.20	.44	.64	.78	300
	5640	4 passes			1,300	.009			.26	.59	.85	1.05	
	5680	12" lifts, 2 passes			5,200	.002			.07	.15	.22	.26	
	5700	3 passes			3,500	.003			.10	.22	.32	.39	
	5720	4 passes		▼	2,600	.005			.13	.29	.42	.52	
	6000	Towed sheepsfoot or wobbly wheel roller, 6" lifts, 2 passes		B-10D	10,000	.001			.03	.09	.12	.15	
	6020	3 passes			2,000	.006			.17	.45	.62	.75	
	6030	4 passes			1,500	.008			.23	.60	.83	1.01	
	6050	12" lifts, 2 passes			6,000	.002			.06	.15	.21	.25	
	6060	3 passes			4,000	.003			.09	.22	.31	.38	
	6070	4 passes		▼	3,000	.004			.11	.30	.41	.50	
	6200	Vibrating roller, 6" lifts, 2 passes		B-10C	2,600	.005			.13	.38	.51	.62	
	6210	3 passes			1,735	.007			.20	.58	.78	.93	
	6220	4 passes			1,300	.009			.26	.77	1.03	1.24	
	6250	12" lifts, 2 passes			5,200	.002			.07	.19	.26	.31	
	6260	3 passes			3,465	.003			.10	.29	.39	.47	
	6270	4 passes		▼	2,600	.005			.13	.38	.51	.62	
	7000	Walk behind, vibrating plate 18" wide, 6" lifts, 2 passes		A-1	200	.040			.94	.30	1.24	1.79	
	7020	3 passes			185	.043			1.01	.33	1.34	1.94	
	7040	4 passes			140	.057			1.34	.43	1.77	2.57	
	7200	12" lifts, 2 passes			560	.014			.34	.11	.45	.64	
	7220	3 passes			375	.021			.50	.16	.66	.96	
	7240	4 passes		▼	280	.029			.67	.22	.89	1.28	
	7500	Vibrating roller 24" wide, 6" lifts, 2 passes		B-10A	420	.029			.82	.29	1.11	1.57	
	7520	3 passes			280	.043			1.23	.44	1.67	2.35	
	7540	4 passes			210	.057			1.64	.59	2.23	3.14	
	7600	12" lifts, 2 passes			840	.014			.41	.15	.56	.78	
	7620	3 passes			560	.021			.61	.22	.83	1.17	
	7640	4 passes		▼	420	.029			.82	.29	1.11	1.57	
	8000	Rammer tamper, 6" to 11", 4" lifts, 2 passes		A-1	130	.062			1.44	.47	1.91	2.76	
	8050	3 passes			97	.082			1.93	.63	2.56	3.70	
	8100	4 passes			65	.123			2.89	.93	3.82	5.50	
	8200	8" lifts, 2 passes			260	.031			.72	.23	.95	1.38	
	8250	3 passes			195	.041			.96	.31	1.27	1.84	
	8300	4 passes			130	.062			1.44	.47	1.91	2.76	
	8400	13" to 18", 4" lifts, 2 passes			390	.021			.48	.16	.64	.92	
	8450	3 passes			290	.028			.65	.21	.86	1.24	
	8500	4 passes			195	.041			.96	.31	1.27	1.84	
	8600	8" lifts, 2 passes			780	.010			.24	.08	.32	.46	
	8650	3 passes			585	.014			.32	.10	.42	.61	
	8700	4 passes		▼	390	.021			.48	.16	.64	.92	
	9000	Water, 3000 gal. truck, 3 mile haul		B-45	1,888	.008		.20	.24	.35	.79	.97	
	9010	6 mile haul			1,444	.011		.20	.31	.46	.97	1.20	
	9020	12 mile haul		▼	1,000	.016		.20	.45	.67	1.32	1.63	
	9030	6000 gal. wagon, 3 mile haul		B-59	2,000	.004		.20	.10	.23	.53	.62	
	9040	6 mile haul		"	1,600	.005	▼	.20	.13	.28	.61	.72	
340	0010	**DRILLING AND BLASTING** Only, rock, open face, under 1500 C.Y.		B-47	225	.107	C.Y.	1.80	2.80	3.69	8.29	10.35	340
	0100	Over 1500 C.Y.			300	.080		1.80	2.10	2.76	6.66	8.25	
	0200	Areas where blasting mats are required, under 1500 C.Y.			175	.137		1.80	3.60	4.74	10.14	12.75	
	0250	Over 1500 C.Y.		▼	250	.096		1.80	2.52	3.32	7.64	9.50	
	0300	Bulk drilling and blasting, can vary greatly, average										5	
	0500	Pits, average										20	
	1300	Deep hole method, up to 1500 C.Y.		B-47	50	.480		1.80	12.60	16.60	31	39.50	
	1400	Over 1500 C.Y.			66	.364		1.80	9.55	12.55	23.90	30.50	
	1900	Restricted areas, up to 1500 C.Y.			13	1.846		1.80	48.50	64	114.30	146	
	2000	Over 1500 C.Y.		▼	20	1.200	▼	1.80	31.50	41.50	74.80	96	

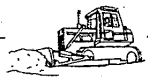
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			CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P	
340	2200	Trenches, up to 1500 C.Y.	B-47	22	1.091	C.Y.	5.20	28.50	37.50	71.20	91.50	340
	2300	Over 1500 C.Y.		26	.923		5.20	24	32	61.20	78.50	
	2500	Pier holes, up to 1500 C.Y.		22	1.091		1.80	28.50	37.50	67.80	87.50	
	2600	Over 1500 C.Y.		31	.774		1.80	20.50	27	49.30	63	
	2800	Boulders under 1/2 C.Y., loaded on truck, no hauling	B-100	80	.150			4.29	6.25	10.54	13.40	
	2900	Boulders, drilled, blasted	B-47	100	.240		1.80	6.30	8.30	16.40	21	
	3100	Jackhammer operators with foreman compressor, air tools	B-9	1	40	Day		955	178	1,133	1,675	
	3300	Track drill, compressor, operator and foreman	B-47	1	24	"		630	830	1,460	1,875	
	3500	Blasting caps				Ea.	3.27			3.27	3.60	
	3700	Explosives					.28			.28	.30	
	3900	Blasting mats, rent, for first day					90			90	99	
	4000	Per added day					30			30	33	
	4200	Preblast survey for 6 room house, individual lot, minimum	A-6	2.40	6.667			224		224	350	
	4300	Maximum	"	1.35	11.852			400		400	625	
	4500	City block within zone of influence, minimum	A-8	25,200	.001	S.F.		.04		.04	.06	
	4600	Maximum	"	15,100	.002	"		.07		.07	.10	
	5000	Excavate and load boulders, less than 0.5 C.Y.	B-10T	80	.150	C.Y.		4.29	4.63	8.92	11.65	
	5020	0.5 C.Y. to 1 C.Y.	B-10U	100	.120			3.43	7.80	11.23	13.80	
	5200	Excavate and load blasted rock, 3 C.Y. power shovel	B-12T	1,530	.010			.31	.85	1.16	1.40	
	5400	Haul boulders, 25 Ton off-highway dump, 1 mile round trip	B-34E	330	.024			.61	2.81	3.42	4.01	
	5420	2 mile round trip		275	.029			.73	3.37	4.10	4.82	
	5440	3 mile round trip		225	.036			.89	4.12	5.01	5.90	
	5460	4 mile round trip		200	.040			1	4.64	5.64	6.60	
	5600	Bury boulders on site, less than 0.5 C.Y., 300 H.P. dozer										
	5620	150' haul	B-10M	310	.039	C.Y.		1.11	3.34	4.45	5.35	
	5640	300' haul		210	.057			1.64	4.92	6.56	7.90	
	5800	0.5 to 1 C.Y., 300 H.P. dozer, 150' haul		300	.040			1.14	3.45	4.59	5.55	
	5820	300' haul		200	.060			1.72	5.15	6.87	8.30	
345	0010	**DRILLING ONLY** 2" hole for rock bolts, average	B-47	316	.076	L.F.		1.99	2.62	4.61	5.95	345
	0800	2-1/2" hole for pre-splitting, average		600	.040			1.05	1.38	2.43	3.14	
	1600	Quarry operations, 2-1/2" to 3-1/2" diameter		715	.034			.88	1.16	2.04	2.64	
	1610	6" diameter drill holes	B-47A	1,350	.018			.50	.59	1.09	1.41	
400	0010	**EXCAVATING, BULK BANK MEASURE** Common earth piled R02315-400										400
	0020	For loading onto trucks, add								15%	15%	
	0050	For mobilization and demobilization, see division 02305-250 R02315-450										
	0100	For hauling, see division 02320-200										
	0200	Backhoe, hydraulic, crawler mtd., 1 C.Y. cap. = 75 C.Y./hr.	B-12A	600	.027	C.Y.		.79	.94	1.73	2.22	
	0250	1-1/2 C.Y. cap. = 100 C.Y./hr.	B-12B	800	.020			.59	.88	1.47	1.86	
	0260	2 C.Y. cap. = 130 C.Y./hr.	B-12C	1,040	.015			.45	.93	1.38	1.71	
	0300	3 C.Y. cap. = 160 C.Y./hr.	B-12D	1,280	.013			.37	1.64	2.01	2.36	
	0310	Wheel mounted, 1/2 C.Y. cap. = 30 C.Y./hr.	B-12E	240	.067			1.97	1.33	3.30	4.44	
	0360	3/4 C.Y. cap. = 45 C.Y./hr.	B-12F	360	.044			1.31	1.27	2.58	3.38	
	0500	Clamshell, 1/2 C.Y. cap. = 20 C.Y./hr.	B-12G	160	.100			2.95	2.21	5.16	6.90	
	0550	1 C.Y. cap. = 35 C.Y./hr.	B-12H	280	.057			1.69	2.51	4.20	5.30	
	0950	Dragline, 1/2 C.Y. cap. = 30 C.Y./hr.	B-12I	240	.067			1.97	2.17	4.14	5.35	
	1000	3/4 C.Y. cap. = 35 C.Y./hr.	"	280	.057			1.69	1.86	3.55	4.59	
	1050	1-1/2 C.Y. cap. = 65 C.Y./hr.	B-12P	520	.031			.91	1.61	2.52	3.14	
	1100	3 C.Y. cap. = 112 C.Y./hr.	B-12V	900	.018			.52	1.30	1.82	2.22	
	1200	Front end loader, track mtd., 1-1/2 C.Y. cap. = 70 C.Y./hr.	B-10N	560	.021			.61	.47	1.08	1.45	
	1250	2-1/2 C.Y. cap. = 95 C.Y./hr.	B-10O	760	.016			.45	.66	1.11	1.41	
	1300	3 C.Y. cap. = 130 C.Y./hr.	B-10P	1,040	.012			.33	.66	.99	1.23	
	1350	5 C.Y. cap. = 160 C.Y./hr.	B-10Q	1,280	.009			.27	.76	1.03	1.25	
	1500	Wheel mounted, 3/4 C.Y. cap. = 45 C.Y./hr.	B-10R	360	.033			.95	.60	1.55	2.10	
	1550	1-1/2 C.Y. cap. = 80 C.Y./hr.	B-10S	640	.019			.54	.43	.97	1.30	
	1600	2-1/4 C.Y. cap. = 100 C.Y./hr.	B-10T	800	.015			.43	.46	.89	1.16	
	1601	3 C.Y. cap. = 140 C.Y./hr.	"	1,120	.011			.31	.33	.64	.83	



02315 | Excavation and Fill

				CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P	
400	1650	5 C.Y. cap. = 185 C.Y./hr.	R02315 -400	B-10U	1,480	.008	C.Y.		.23	.53	.76	.93	400
	1800	Hydraulic excavator, truck mtd, 1/2 C.Y. = 30 C.Y./hr.		B-12J	240	.067			1.97	3.07	5.04	6.35	
	1850	48 inch bucket, 1 C.Y. = 45 C.Y./hr.	R02315 -450	B-12K	360	.044			1.31	2.41	3.72	4.63	
	3700	Shovel, 1/2 C.Y. capacity = 55 C.Y./hr.		B-12L	440	.036			1.07	.80	1.87	2.50	
	3750	3/4 C.Y. capacity = 85 C.Y./hr.		B-12M	680	.024			.69	.80	1.49	1.93	
	3800	1 C.Y. capacity = 120 C.Y./hr.		B-12N	960	.017			.49	.72	1.21	1.53	
	3850	1-1/2 C.Y. capacity = 160 C.Y./hr.		B-12O	1,280	.013			.37	.72	1.09	1.35	
	3900	3 C.Y. cap. = 250 C.Y./hr.		B-12T	2,000	.008			.24	.65	.89	1.07	
	4000	For soft soil or sand, deduct									15%	15%	
	4100	For heavy soil or stiff clay, add									60%	60%	
	4200	For wet excavation with clamshell or dragline, add									100%	100%	
	4250	All other equipment, add									50%	50%	
	4400	Clamshell in sheeting or cofferdam, minimum		B-12H	160	.100			2.95	4.39	7.34	9.30	
	4450	Maximum		"	60	.267			7.85	11.70	19.55	25	
	8000	For hauling excavated material, see div. 02320-200											
410	0010	**EXCAVATING, BULK, DOZER** Open site											410
	2000	75 H.P., 50' haul, sand & gravel		B-10L	460	.026	C.Y.		.75	.63	1.38	1.84	
	2020	Common earth			400	.030			.86	.73	1.59	2.11	
	2040	Clay			250	.048			1.37	1.17	2.54	3.37	
	2200	150' haul, sand & gravel			230	.052			1.49	1.27	2.76	3.66	
	2220	Common earth			200	.060			1.72	1.46	3.18	4.22	
	2240	Clay			125	.096			2.75	2.33	5.08	6.75	
	2400	300' haul, sand & gravel			120	.100			2.86	2.43	5.29	7.05	
	2420	Common earth			100	.120			3.43	2.91	6.34	8.45	
	2440	Clay			65	.185			5.30	4.48	9.78	13	
	3000	105 H.P., 50' haul, sand & gravel		B-10W	700	.017			.49	.62	1.11	1.43	
	3020	Common earth			610	.020			.56	.71	1.27	1.64	
	3040	Clay			385	.031			.89	1.12	2.01	2.60	
	3200	150' haul, sand & gravel			310	.039			1.11	1.40	2.51	3.23	
	3220	Common earth			270	.044			1.27	1.60	2.87	3.70	
	3240	Clay			170	.071			2.02	2.54	4.56	5.90	
	3300	300' haul, sand & gravel			140	.086			2.45	3.09	5.54	7.15	
	3320	Common earth			120	.100			2.86	3.61	6.47	8.35	
	3340	Clay			100	.120			3.43	4.33	7.76	10	
	4000	200 H.P., 50' haul, sand & gravel		B-10B	1,400	.009			.25	.59	.84	1.02	
	4020	Common earth			1,230	.010			.28	.67	.95	1.17	
	4040	Clay			770	.016			.45	1.07	1.52	1.86	
	4200	150' haul, sand & gravel			595	.020			.58	1.38	1.96	2.40	
	4220	Common earth			516	.023			.67	1.60	2.27	2.77	
	4240	Clay			325	.037			1.06	2.53	3.59	4.40	
	4400	300' haul, sand & gravel			310	.039			1.11	2.66	3.77	4.61	
	4420	Common earth			270	.044			1.27	3.05	4.32	5.30	
	4440	Clay			170	.071			2.02	4.84	6.86	8.45	
	5000	300 H.P., 50' haul, sand & gravel		B-10M	1,900	.006			.18	.54	.72	.88	
	5020	Common earth			1,650	.007			.21	.63	.84	1.01	
	5040	Clay			1,025	.012			.34	1.01	1.35	1.62	
	5200	150' haul, sand & gravel			920	.013			.37	1.12	1.49	1.81	
	5220	Common earth			800	.015			.43	1.29	1.72	2.07	
	5240	Clay			500	.024			.69	2.07	2.76	3.32	
	5400	300' haul, sand & gravel			470	.026			.73	2.20	2.93	3.53	
	5420	Common earth			410	.029			.84	2.52	3.36	4.05	
	5440	Clay			250	.048			1.37	4.14	5.51	6.65	
	5500	460 H.P., 50' haul, sand & gravel		B-10X	1,930	.006			.18	.71	.89	1.05	
	5510	Common earth			1,680	.007			.20	.82	1.02	1.21	
	5520	Clay			1,050	.011			.33	1.31	1.64	1.94	



02315 | Excavation and Fill

		CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P	
5530	150' haul, sand & gravel	B-10X	1,290	.009	C.Y.		.27	1.06	1.33	1.58	410
5540	Common earth		1,120	.011			.31	1.23	1.54	1.82	
5550	Clay		700	.017			.49	1.96	2.45	2.91	
5560	300' haul, sand & gravel		660	.018			.52	2.08	2.60	3.08	
5570	Common earth		575	.021			.60	2.39	2.99	3.54	
5580	Clay		350	.034			.98	3.93	4.91	5.80	
6000	700 H.P., 50' haul, sand & gravel	B-10V	3,500	.003			.10	.84	.94	1.07	
6010	Common earth		3,035	.004			.11	.96	1.07	1.23	
6020	Clay		1,925	.006			.18	1.52	1.70	1.94	
6030	150' haul, sand & gravel		2,025	.006			.17	1.45	1.62	1.85	
6040	Common earth		1,750	.007			.20	1.67	1.87	2.14	
6050	Clay		1,100	.011			.31	2.66	2.97	3.40	
6060	300' haul, sand & gravel		1,030	.012			.33	2.84	3.17	3.63	
6070	Common earth		900	.013			.38	3.25	3.63	4.15	
6080	Clay		550	.022			.62	5.30	5.92	6.80	
6090	For dozer with ripper, see div. 02315-800										
0010	**EXCAVATION, BULK, DRAG LINE**										420
0011	Excavate and load on truck, bank measure										
0012	Bucket drag line, 3/4 C.Y., sand/gravel	B-12I	440	.036	C.Y.		1.07	1.18	2.25	2.92	
0100	Light clay		310	.052			1.52	1.68	3.20	4.15	
0110	Heavy clay		250	.064			1.89	2.08	3.97	5.15	
0120	Unclassified soil		280	.057			1.69	1.86	3.55	4.59	
0200	1-1/2 C.Y. bucket, sand/gravel	B-12P	575	.028			.82	1.46	2.28	2.85	
0210	Light clay		440	.036			1.07	1.91	2.98	3.72	
0220	Heavy clay		352	.045			1.34	2.38	3.72	4.65	
0230	Unclassified soil		300	.053			1.57	2.80	4.37	5.45	
0300	3 C.Y., sand/gravel	B-12V	720	.022			.66	1.62	2.28	2.77	
0310	Light clay		700	.023			.67	1.67	2.34	2.86	
0320	Heavy clay		600	.027			.79	1.95	2.74	3.33	
0330	Unclassified soil		550	.029			.86	2.12	2.98	3.64	
0010	**EXCAVATION, BULK, SCRAPERS** R02315-400										430
0100	Elevating scraper 11 C.Y., sand & gravel 1500' haul	B-33F	690	.020	C.Y.		.59	1.45	2.04	2.50	
0150	3000' haul R02315-450		610	.023			.67	1.64	2.31	2.82	
0200	5000' haul		505	.028			.80	1.99	2.79	3.41	
0300	Common earth, 1500' haul		600	.023			.68	1.67	2.35	2.87	
0350	3000' haul		530	.026			.77	1.89	2.66	3.25	
0400	5000' haul		440	.032			.92	2.28	3.20	3.91	
0500	Clay, 1500' haul		375	.037			1.08	2.68	3.76	4.59	
0550	3000' haul		330	.042			1.23	3.04	4.27	5.20	
0600	5000' haul		275	.051			1.48	3.65	5.13	6.25	
1000	Self propelled scraper, 14 C.Y. 1/4 push dozer, sand										
1050	and gravel, 1500' haul	B-33D	920	.015	C.Y.		.44	1.82	2.26	2.68	
1100	3000' haul		805	.017			.50	2.08	2.58	3.06	
1200	5000' haul		645	.022			.63	2.60	3.23	3.82	
1300	Common earth, 1500' haul		800	.017			.51	2.10	2.61	3.08	
1350	3000' haul		700	.020			.58	2.40	2.98	3.52	
1400	5000' haul		560	.025			.72	3	3.72	4.40	
1500	Clay, 1500' haul		500	.028			.81	3.36	4.17	4.93	
1550	3000' haul		440	.032			.92	3.81	4.73	5.60	
1600	5000' haul		350	.040			1.16	4.79	5.95	7	
2000	21 C.Y., 1/4 push dozer, sand & gravel, 1500' haul	B-33E	1,180	.012			.34	2.06	2.40	2.79	
2100	3000' haul		910	.015			.45	2.67	3.12	3.62	
2200	5000' haul		750	.019			.54	3.24	3.78	4.39	
2300	Common earth, 1500' haul		1,030	.014			.39	2.36	2.75	3.20	
2350	3000' haul		790	.018			.51	3.08	3.59	4.17	
2400	5000' haul		650	.022			.62	3.74	4.36	5.05	

02315 | Excavation and Fill

			CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P	
440	3040	2 C.Y. bucket (R02315-400)	B-12C	175	.091	C.Y.		2.70	5.50	8.20	10.15	440
	9010	For mobilization or demobilization, see div. 02305-250										
	9020	For dewatering, see div. 02240-500										
	9022	For larger structures, see Bulk Excavation, div. 02315-400										
	9024	For loading onto trucks, add								15%		
	9026	For hauling, see div. 02320-200										
	9030	For sheeting or soldier beams/lagging, see div. 02250 & 02260										
	9040	For trench excavation of strip footings, see div. 02315-900										
505	0010	**FILL** Spread dumped material, by dozer, no compaction	B-10B	1,000	.012	C.Y.		.34	.82	1.16	1.43	505
	0100	By hand	1 Clab	12	.667	"		15.65		15.65	24.50	
	0150	Spread fill, from stockpile with 2-1/2 C.Y. F.E. loader										
	0170	130 H.P., 300' haul	B-10P	600	.020	C.Y.		.57	1.15	1.72	2.14	
	0190	With dozer 300 H.P., 300' haul	B-10M	600	.020	"		.57	1.72	2.29	2.77	
	0400	For compaction of embankment, see div. 02315-300										
	0500	Gravel fill, compacted, under floor slabs, 4" deep	B-37	10,000	.005	S.F.	.16	.12	.01	.29	.36	
	0600	6" deep		8,600	.006		.24	.14	.01	.39	.49	
	0700	9" deep		7,200	.007		.40	.17	.02	.59	.72	
	0800	12" deep		6,000	.008		.55	.20	.02	.77	.94	
	1000	Alternate pricing method, 4" deep		120	.400	C.Y.	11.90	9.95	.98	22.83	29.50	
	1100	6" deep		160	.300		11.90	7.45	.73	20.08	25.50	
	1200	9" deep		200	.240		11.90	5.95	.59	18.44	23	
	1300	12" deep		220	.218		11.90	5.40	.53	17.83	22	
	1500	For fill under exterior paving, see division 02720-200										
	1600	For flowable fill, see division 03310-220										
800	0010	**RIPPING** Trap rock, soft, 200 HP dozer, ideal conditions	B-10B	710	.017	C.Y.		.48	1.16	1.64	2.02	800
	1500	Adverse conditions	"	660	.018			.52	1.25	1.77	2.16	
	1600	Medium hard, 300 HP dozer, ideal conditons	B-10M	600	.020			.57	1.72	2.29	2.77	
	1700	Adverse conditions	"	540	.022			.64	1.91	2.55	3.08	
	2000	Very hard, 460 HP dozer, ideal conditions	B-10X	300	.040			1.14	4.58	5.72	6.80	
	2100	Adverse conditions	"	270	.044			1.27	5.10	6.37	7.55	
	2200	Shale, soft, 200 HP dozer, ideal conditons	B-10B	850	.014			.40	.97	1.37	1.69	
	2300	Adverse conditions	"	790	.015			.43	1.04	1.47	1.81	
	2310	Grader rear ripper, 180 H.P. ideal conditions	B-11L	740	.022			.59	.58	1.17	1.54	
	2320	Adverse conditions	"	630	.025			.69	.69	1.38	1.81	
	2400	Medium hard, 300 HP dozer, ideal conditons	B-10M	720	.017			.48	1.44	1.92	2.31	
	2500	Adverse conditions	"	650	.018			.53	1.59	2.12	2.55	
	2510	Grader rear ripper, 180 H.P. ideal conditions	B-11L	625	.026			.70	.69	1.39	1.83	
	2520	Adverse conditions	"	530	.030			.83	.81	1.64	2.16	
	2600	Very hard, 460 HP dozer, ideal conditons	B-10X	360	.033			.95	3.82	4.77	5.65	
	2700	Adverse conditions	"	320	.037			1.07	4.29	5.36	6.35	
	2800	Till, boulder clay/hardpan, soft, 200 H.P. dozer, ideal conditions	B-10B	1,400	.009			.25	.59	.84	1.02	
	2810	Adverse conditions	"	1,315	.009			.26	.63	.89	1.09	
	2815	Grader rear ripper, 180 H.P. ideal conditions	B-11L	1,500	.011			.29	.29	.58	.77	
	2816	Adverse conditions	"	1,275	.013			.34	.34	.68	.90	
	2820	Medium hard, 300 H.P. dozer, ideal conditions	B-10M	1,200	.010			.29	.86	1.15	1.39	
	2830	Adverse conditions	"	1,080	.011			.32	.96	1.28	1.53	
	2835	Grader rear ripper, 180 H.P. ideal conditions	B-11L	1,300	.012			.34	.33	.67	.88	
	2836	Adverse conditions	"	1,100	.015			.40	.39	.79	1.04	
	2840	Very hard, 460 H.P. dozer, ideal conditions	B-10X	600	.020			.57	2.29	2.86	3.39	
	2850	Adverse conditions	"	530	.023			.65	2.59	3.24	3.84	
	3000	Dozing ripped material, 200 HP, 100' haul	B-10B	700	.017			.49	1.18	1.67	2.04	
	3050	300' haul	"	250	.048			1.37	3.29	4.66	5.70	
	3200	300 HP, 100' haul	B-10M	1,150	.010			.30	.90	1.20	1.44	
	3250	300' haul	"	400	.030			.86	2.59	3.45	4.15	
	3400	460 HP, 100' haul	B-10X	1,680	.007			.20	.82	1.02	1.21	
	3450	300' haul	"	600	.020			.57	2.29	2.86	3.39	

02320 | Hauling

			CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P
200	0450	3 mile round trip, 1.9 loads/hr. R02315-400	B-34B	170	.047	C.Y.		1.18	2.77	3.95	4.84
	0500	4 mile round trip, 1.6 loads/hr.		125	.064			1.60	3.77	5.37	6.60
	0540	5 mile round trip, 1 load/hr.		78	.103			2.56	6.05	8.61	10.55
	0550	10 mile round trip, 0.60 load/hr.		58	.138			3.45	8.10	11.55	14.20
	0560	20 mile round trip, 0.4 load/hr.		39	.205			5.15	12.05	17.20	21
	0600	16.5 C.Y. dump trailer, 1 mile round trip, 2.6 loads/hr.	B-34C	280	.029			.71	1.80	2.51	3.07
	0700	2 mile round trip, 2.1 loads/hr.		225	.036			.89	2.24	3.13	3.81
	1000	3 mile round trip, 1.8 loads/hr.		193	.041			1.04	2.61	3.65	4.45
	1100	4 mile round trip, 1.6 loads/hr.		172	.047			1.16	2.92	4.08	4.99
	1110	5 mile round trip, 1 load/hr.		108	.074			1.85	4.66	6.51	7.90
	1120	10 mile round trip, .60 load/hr.		80	.100			2.50	6.30	8.80	10.70
	1130	20 mile round trip, .4 load/hr.		54	.148			3.70	9.30	13	15.90
	1150	20 C.Y. dump trailer, 1 mile round trip, 2.5 loads/hr.	B-34D	325	.025			.62	1.58	2.20	2.68
	1200	2 mile round trip, 2 loads/hr.		260	.031			.77	1.97	2.74	3.34
	1220	3 mile round trip, 1.7 loads/hr.		221	.036			.91	2.32	3.23	3.93
	1240	4 mile round trip, 1.5 loads/hr.		195	.041			1.03	2.63	3.66	4.45
	1245	5 mile round trip, 1.1 load/hr.		143	.056			1.40	3.58	4.98	6.05
	1250	10 mile round trip, .75 load/hr.		110	.073			1.82	4.66	6.48	7.90
	1255	20 mile round trip, .5 load/hr.		78	.103			2.56	6.55	9.11	11.15
	1300	Hauling in medium traffic, add								20%	20%
	1400	Heavy traffic, add								30%	30%
	1600	Grading at dump, or embankment if required, by dozer	B-10B	1,000	.012			.34	.82	1.16	1.43
	1800	Spotter at fill or cut, if required	1 Clab	8	1	Hr.		23.50		23.50	36.50
	2000	Off highway haulers									
	2010	22 C.Y. rear/bottom dump, 1000' rnd trip, 4.5 loads/hr.	B-34F	645	.012	C.Y.		.31	1.50	1.81	2.12
	2020	1/2 mile round trip, 4.2 loads/hr.		600	.013			.33	1.61	1.94	2.28
	2030	1 mile round trip, 3.9 loads/hr.		555	.014			.36	1.74	2.10	2.46
	2040	2 mile round trip, 3.3 loads/hr.		470	.017			.43	2.05	2.48	2.91
	2050	34 C.Y. rear or bottom dump, 1000' round trip, 4 loads/hr.	B-34G	885	.009			.23	1.54	1.77	2.04
	2060	1/2 mile round trip, 3.8 loads/hr.		840	.010			.24	1.62	1.86	2.15
	2070	1 mile round trip, 3.5 loads/hr.		775	.010			.26	1.76	2.02	2.33
	2080	2 mile round trip, 3.0 loads/hr.		665	.012			.30	2.05	2.35	2.72
	2090	42 C.Y. rear or bottom bump, 1000' round trip, 3.8 loads/hr.	B-34H	1,040	.008			.19	1.40	1.59	1.83
	2100	1/2 mile round trip, 3.6 loads/hr.		980	.008			.20	1.48	1.68	1.94
	2110	1 mile round trip, 3.3 loads/hr.		900	.009			.22	1.61	1.83	2.12
	2120	2 mile round trip, 2.8 loads/hr.		765	.010			.26	1.90	2.16	2.49
	2130	60 C.Y. rear or bottom dump, 1000' round trip, 3.6 loads/hr.	B-34J	1,400	.006			.14	1.48	1.62	1.85
	2140	1/2 mile round trip, 3.4 loads/hr.		1,325	.006			.15	1.56	1.71	1.95
	2150	1 mile round trip, 3.1 loads/hr.		1,200	.007			.17	1.73	1.90	2.15
	2160	2 mile round trip, 2.6 loads/hr.		1,015	.008			.20	2.04	2.24	2.55
	3000	Rough terrain or steep grades, add to above								100%	
	4500	Dust control, light	B-59	1	8	Day		200	455	655	805
	4501	Heavy	"	.50	16			400	910	1,310	1,600
	4600	Haul road maintenance	B-86A	1	8			250	430	680	850
	4700	Highway hauling beyond 20 miles, per loaded mile, minimum				Mile					1
	4750	Maximum				"					2

02325 | Dredging

250	0010	DREDGING Mobilization and demobilization., add to below, minimum	B-8	.53	120	Total		3,200	4,450	7,650	9,775
	0100	Maximum	"	.10	640	"		16,900	23,600	40,500	52,000
	0300	Barge mounted clamshell excavation into scows,									
	0310	Dumped 20 miles at sea, minimum	B-57	310	.155	C.Y.		4.16	4.09	8.25	10.85
	0400	Maximum	"	213	.225	"		6.05	5.95	12	15.80
	0500	Barge mounted dragline or clamshell, hopper dumped,									
	0510	pumped 1000' to shore dump, minimum	B-57	340	.141	C.Y.		3.79	3.73	7.52	9.90
	0525	All pumping uses 2000 gallons of water per cubic yard									

4341

		02370 | Erosion & Sedimentation Control	CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P	
300	0010	**RIP-RAP** Random, broken stone										300
	0100	Machine placed for slope protection	B-12G	62	.258	C.Y.	14.15	7.60	5.70	27.45	33.50	
	0110	3/8 to 1/4 C.Y. pieces, grouted	B-13	80	.700	S.Y.	35	17.80	9.05	61.85	76	
	0200	18" minimum thickness, not grouted	"	53	1.057	"	23.50	27	13.65	64.15	82.50	
	0300	Dumped, 50 lb. average	B-11A	800	.020	Ton	13.50	.55	1.03	15.08	16.80	
	0350	100 lb. average		700	.023		19.30	.62	1.18	21.10	23.50	
	0370	300 lb. average		600	.027		22.50	.73	1.37	24.60	27	
	0400	Gabions, galvanized steel mesh mats or boxes, stone filled, 6" deep	B-13	200	.280	S.Y.	12.65	7.15	3.62	23.42	29	
	0500	9" deep		163	.344		19.70	8.75	4.45	32.90	40	
	0600	12" deep		153	.366		22.50	9.30	4.74	36.54	44.50	
	0700	18" deep		102	.549		29	14	7.10	50.10	61.50	
	0800	36" deep		60	.933		49	24	12.10	85.10	104	
550	0010	**EROSION CONTROL** Jute mesh, 100 S.Y. per roll, 4' wide, stapled	B-80A	2,400	.010	S.Y.	.64	.23	.08	.95	1.15	550
	0060	Nylon, 3 dimensional geomatrix, 9 mil thick		700	.034		3.77	.80	.26	4.83	5.70	
	0062	12 mil thick		515	.047		5.10	1.09	.35	6.54	7.75	
	0064	18 mil thick		460	.052		5.40	1.22	.40	7.02	8.30	
	0070	Paper biodegradable mesh	B-1	2,500	.010		.07	.23		.30	.44	
	0080	Paper mulch	B-64	20,000	.001		.05	.02	.01	.08	.10	
	0100	Plastic netting, stapled, 2" x 1" mesh, 20 mil	B-1	2,500	.010		.59	.23		.82	1.01	
	0120	Revegetation mat, webbed	2 Clab	1,000	.016		4.71	.38		5.09	5.80	
	0160	Underdrain fabric, 18" x 100' roll	"	32	.500	Roll	19.65	11.75		31.40	40	
	0200	Polypropylene mesh, stapled, 6.5 oz./S.Y.	B-1	2,500	.010	S.Y.	1.22	.23		1.45	1.70	
	0300	Tobacco netting, or jute mesh #2, stapled	"	2,500	.010		.07	.23		.30	.44	
	0400	Soil sealant, liquid sprayed from truck	B-81	5,000	.005		.40	.13	.11	.64	.75	
	1000	Silt fence, polypropylene, 3' high, ideal conditions	2 Clab	1,600	.010	L.F.	.29	.23		.52	.69	
	1100	Adverse conditions	"	950	.017	"	.29	.39		.68	.93	
	1130	Cellular confinement, poly, 3-dimen, 8' x 20' panels, 4" deep cell	B-6	1,600	.015	S.F.	1.58	.38	.11	2.07	2.45	
	1140	8" deep cells	"	1,200	.020	"	2.17	.51	.15	2.83	3.34	
	1200	Place and remove hay bales	A-2	3	8	Ton	51	190	52	293	405	
	1250	Hay bales, staked	"	2,500	.010	L.F.	2.04	.23	.06	2.33	2.66	
	1305	For less than 3 To 1 slope, add						15%				
	1310	For greater than 3 To 1 slope, add						25%				
		02390 | Shore Protect/Mooring Structures										
150	0010	**BULKHEADS** Reinforced concrete, include footing and tie-backs										150
	0020	Up to 6' high, minimum	C-17C	28	2.964	L.F.	34.50	93	18.15	145.65	203	
	0060	Maximum		24.25	3.423		55	107	21	183	252	
	0100	12' high, minimum		20	4.150		89.50	130	25.50	245	330	
	0160	Maximum		18.50	4.486		104	141	27.50	272.50	365	
	0180	Precast bulkhead, complete, including										
	0190	vertical and battered piles, face panels, and cap										
	0195	Using 16' vertical piles				L.F.				225	260	
	0196	Using 20' vertical piles				"				240	275	
	0200	Steel sheeting, with 4' x 4' x 8" concrete deadmen, @ 10' O.C.										
	0210	12' high, shore driven	B-40	27	2.370	L.F.	56.50	72	81.50	210	268	
	0260	Barge driven	B-76	15	4.800	"	84.50	145	165	394.50	510	
	6000	Crushed stone placed behind bulkhead by clam bucket	B-12H	120	.133	C.Y.	14.55	3.93	5.85	24.33	28.50	
180	0010	**BULKHEADS, RESIDENTIAL CANAL**										180
	0020	Aluminum panel sheeting, incl. concrete cap and anchor										
	0030	Coarse compact sand, 4'-0" high, 2'-0" embedment	B-40	200	.320	L.F.	33	9.70	11	53.70	64	
	0040	3'-6" embedment		140	.457		39	13.85	15.70	68.55	82.50	
	0060	6'-0" embedment		90	.711		49.50	21.50	24.50	95.50	116	
	0120	6'-0" high, 2'-6" embedment		170	.376		43.50	11.40	12.95	67.85	80	
	0140	4'-0" embedment		125	.512		51	15.50	17.60	84.10	100	
	0160	5'-6" embedment		95	.674		67	20.50	23	110.50	133	

02455 | Driven Piles

			CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P
850	6020	Steel pipe pile end plates, 8" diameter	1 Sswl	14	.571	Ea.	36.50	19.55		56.05	75.50
	6050	10" diameter		14	.571		38.50	19.55		58.05	77.50
	6100	12" diameter		12	.667		40.50	23		63.50	86
	6150	14" diameter		10	.800		42	27.50		69.50	96
	6200	16" diameter		9	.889		45	30.50		75.50	105
	6250	18" diameter		8	1		50.50	34.50		85	118
	6300	Steel pipe pile shoes, 8" diameter		12	.667		78	23		101	127
	6350	10" diameter		12	.667		80.50	23		103.50	130
	6400	12" diameter		10	.800		86	27.50		113.50	145
	6450	14" diameter		9	.889		99.50	30.50		130	164
	6500	16" diameter		8	1		110	34.50		144.50	183
	6550	18" diameter		6	1.333		124	45.50		169.50	219
900	0010	**PILES, WOOD** Friction or end bearing, not including (R02455-900)									900
	0050	mobilization or demobilization									
	0100	Untreated piles, up to 30' long, 12" butts, 8" points	B-19	625	.102	V.L.F.	5.70	3.10	3.02	11.82	14.60
	0200	30' to 39' long, 12" butts, 8" points		700	.091		5.70	2.77	2.69	11.16	13.75
	0300	40' to 49' long, 12" butts, 7" points		720	.089		5.70	2.69	2.62	11.01	13.50
	0400	50' to 59' long, 13"butts, 7" points		800	.080		5.80	2.42	2.36	10.58	12.85
	0500	60' to 69' long, 13" butts, 7" points		840	.076		6.50	2.31	2.24	11.05	13.35
	0600	70' to 80' long, 13" butts, 6" points		840	.076		7.25	2.31	2.24	11.80	14.15
	0800	Treated piles, 12 lb. per C.F.,									
	0810	friction or end bearing, ASTM class B									
	1000	Up to 30' long, 12" butts, 8" points	B-19	625	.102	V.L.F.	8.90	3.10	3.02	15.02	18.10
	1100	30' to 39' long, 12" butts, 8" points		700	.091		9.10	2.77	2.69	14.56	17.45
	1200	40' to 49' long, 12" butts, 7" points		720	.089		9.05	2.69	2.62	14.36	17.15
	1300	50' to 59' long, 13" butts, 7" points		800	.080		9.85	2.42	2.36	14.63	17.30
	1400	60' to 69' long, 13" butts, 6" points	B-19A	840	.076		13.15	2.31	2.61	18.07	21
	1500	70' to 80' long, 13" butts, 6" points	"	840	.076		16.85	2.31	2.61	21.77	25
	1600	Treated piles, C.C.A., 2.5# per C.F.									
	1610	8" butts, 10' long	B-19	400	.160	V.L.F.	6.20	4.85	4.71	15.76	19.85
	1620	11' to 16' long		500	.128		6.20	3.88	3.77	13.85	17.25
	1630	17' to 20' long		575	.111		6.20	3.37	3.28	12.85	15.90
	1640	10" butts, 10' to 16' long		500	.128		7.10	3.88	3.77	14.75	18.20
	1650	17' to 20' long		575	.111		7.10	3.37	3.28	13.75	16.85
	1660	21' to 40' long		700	.091		7.10	2.77	2.69	12.56	15.25
	1670	12" butts, 10' to 20' long		575	.111		7.65	3.37	3.28	14.30	17.45
	1680	21' to 35' long		650	.098		7.65	2.98	2.90	13.53	16.40
	1690	36' to 40' long		700	.091		7.65	2.77	2.69	13.11	15.85
	1695	14" butts. to 40' long		700	.091		10.95	2.77	2.69	16.41	19.50
	1700	Boot for pile tip, minimum	1 Pile	27	.296	Ea.	17.45	8.85		26.30	34
	1800	Maximum		21	.381		52.50	11.35		63.85	76.50
	2000	Point for pile tip, minimum		20	.400		17.45	11.90		29.35	39
	2100	Maximum		15	.533		63	15.90		78.90	95.50
	2300	Splice for piles over 50' long, minimum	B-46	35	1.371		43.50	37	1.14	81.64	109
	2400	Maximum		20	2.400		52.50	64.50	1.99	118.99	165
	2600	Concrete encasement with wire mesh and tube		331	.145	V.L.F.	8.20	3.91	.12	12.23	15.50
	2700	Mobilization for 10,000 L.F. pile job, add	B-19	3,300	.019			.59	.57	1.16	1.58
	2800	25,000 L.F. pile job, add	"	8,500	.008			.23	.22	.45	.61

02465 | Bored Piles

600	0010	**CAISSONS** Incl. excav., concrete, 50 lbs. reinf. per C.Y., not (R02465-600)									600
	0020	incl. mobilization, boulder removal, disposal									
	0100	Open style, machine drilled, to 50' deep, in stable ground, no									
	0110	casings or ground water, 18" diam., 0.065 C.Y./L.F.	B-43	200	.240	V.L.F.	5.35	6.20	9.95	21.50	26.50
	0200	24" diameter, 0.116 C.Y./L.F.		190	.253		9.60	6.50	10.50	26.60	32
	0300	30" diameter, 0.182 C.Y./L.F.		150	.320		15.05	8.25	13.30	36.60	44

02620 | Subdrainage

			CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P
240	3000	Uncoated galvanized, perforated									
	3020	6" diameter, 18 ga.	B-20	380	.063	L.F.	4.08	1.68		5.76	7.10
	3200	8" diameter, 16 ga.	"	370	.065		5.60	1.73		7.33	8.85
	3220	10" diameter, 16 ga.	B-21	360	.078		8.40	2.13	.44	10.97	13.05
	3240	12" diameter, 16 ga.		285	.098		8.80	2.70	.55	12.05	14.50
	3260	18" diameter, 16 ga.	↓	205	.137	↓	13.45	3.75	.77	17.97	21.50
	4000	Steel, perforated, asphalt coated									
	4020	6" diameter 18 ga.	B-20	380	.063	L.F.	3.26	1.68		4.94	6.20
	4030	8" diameter 18 ga	"	370	.065		5.10	1.73		6.83	8.30
	4040	10" diameter 16 ga	B-21	360	.078		5.85	2.13	.44	8.42	10.25
	4050	12" diameter 16 ga		285	.098		6.75	2.70	.55	10	12.20
	4060	18" diameter 16 ga	↓	205	.137	↓	9.20	3.75	.77	13.72	16.75
250	0010	PIPING, SUBDRAINAGE, PLASTIC									
	0020	Not including excavation and backfill									
	1110	10"				Ea.	3.86			3.86	4.25
	2100	Perforated PVC, 4" diameter	B-14	314	.153	L.F.	1.40	3.80	.57	5.77	8.05
	2110	6" diameter		300	.160		2.59	3.97	.60	7.16	9.65
	2120	8" diameter		290	.166		2.94	4.11	.62	7.67	10.25
	2130	10" diameter		280	.171		4.55	4.26	.64	9.45	12.30
	2140	12" diameter	↓	270	.178	↓	6.30	4.42	.66	11.38	14.55
265	0010	PIPING, SUBDRAINAGE, CORR. PLASTIC TUBING, PERF. OR PLAIN									
	0020	In rolls, not including excavation and backfill									
	0030	3" diameter	2 Clab	1,200	.013	L.F.	.46	.31		.77	1
	0040	4" diameter		1,200	.013		.58	.31		.89	1.12
	0041	With silt sock		1,200	.013		.67	.31		.98	1.23
	0050	5" diameter		900	.018		1.38	.42		1.80	2.17
	0060	6" diameter		900	.018		1.84	.42		2.26	2.67
	0080	8" diameter	↓	700	.023	↓	2.58	.54		3.12	3.67
	0200	Fittings									
	0230	Elbows, 3" diameter	1 Clab	32	.250	Ea.	4.49	5.85		10.34	14.10
	0240	4" diameter		32	.250		4.94	5.85		10.79	14.60
	0250	5" diameter		32	.250		5.85	5.85		11.70	15.55
	0260	6" diameter		32	.250		7.85	5.85		13.70	17.80
	0280	8" diameter		32	.250		9.65	5.85		15.50	19.75
	0330	Tees, 3" diameter		27	.296		4.38	6.95		11.33	15.60
	0340	4" diameter		27	.296		4.60	6.95		11.55	15.85
	0350	5" diameter		27	.296		5.70	6.95		12.65	17.05
	0360	6" diameter		27	.296		7.65	6.95		14.60	19.25
	0370	6" x 6" x 4"		27	.296		7.90	6.95		14.85	19.45
	0380	8" diameter		27	.296		9.20	6.95		16.15	21
	0390	8" x 8" x 6"		27	.296		16.45	6.95		23.40	29
	0430	End cap, 3" diameter		32	.250		1.69	5.85		7.54	11
	0440	4" diameter		32	.250		1.86	5.85		7.71	11.20
	0460	6" diameter		32	.250		2.79	5.85		8.64	12.20
	0480	8" diameter		32	.250		5.85	5.85		11.70	15.55
	0530	Coupler, 3" diameter		32	.250		1.40	5.85		7.25	10.70
	0540	4" diameter		32	.250		1.47	5.85		7.32	10.75
	0550	5" diameter		32	.250		1.82	5.85		7.67	11.15
	0560	6" diameter		32	.250		2.45	5.85		8.30	11.85
	0580	8" diameter	↓	32	.250		4.55	5.85		10.40	14.15
	0590	Heavy duty highway type, add					10%				
	0660	Reducer, 6" to 4"	1 Clab	32	.250		3.14	5.85		8.99	12.60
	0680	8" to 6"		32	.250		5	5.85		10.85	14.70
	0730	"Y" fitting, 3" diameter		27	.296		5.50	6.95		12.45	16.85
	0740	4" diameter		27	.296		6.35	6.95		13.30	17.75
	0750	5" diameter	↓	27	.296	↓	8	6.95		14.95	19.55

02630 | Storm Drainage

		CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P
2275	24" diameter, 16 ga.	B-13	16	3.500	Ea.	110	89	45.50	244.50	
2280	30" diameter, 16 ga.		14	4		208	102	52	362	
2285	36" diameter, 14 ga.		14	4		274	102	52	428	
2290	48" diameter, 14 ga.		10	5.600		570	143	72.50	785.50	
2292	60" diameter, 14 ga.	▼	6	9.333		780	238	121	1,139	
2294	72" diameter, 14 ga.	B-13B	5	11.200		1,350	285	194	1,829	
2300	Bends or elbows, 8" diameter	B-14	28	1.714		52.50	42.50	6.40	101.40	
2320	10" diameter		25	1.920		65	47.50	7.15	119.65	
2340	12" diameter, 16 ga.		30	1.600		75.50	39.50	5.95	120.95	
2342	18" diameter, 16 ga.		20	2.400		116	59.50	8.95	184.45	
2344	24" diameter, 14 ga.		16	3		162	74.50	11.15	247.65	
2346	30" diameter, 14 ga.	▼	15	3.200		202	79.50	11.90	293.40	
2348	36" diameter, 14 ga.	B-13	15	3.733		272	95	48.50	415.50	
2350	48" diameter, 12 ga.	"	12	4.667		390	119	60.50	569.50	
2352	60" diameter, 10 ga.	B-13B	10	5.600		520	143	97	760	
2354	72" diameter, 10 ga.	"	6	9.333		645	238	162	1,045	
2360	Wyes or tees, 8" diameter	B-14	25	1.920		73.50	47.50	7.15	128.15	
2380	10" diameter		21	2.286		91.50	57	8.50	157	
2400	12" diameter, 16 ga.		22.48	2.135		76	53	7.95	136.95	
2410	18" diameter, 16 ga.		16	3		155	74.50	11.15	240.65	
2412	24" diameter, 14 ga.	▼	16	3		234	74.50	11.15	319.65	
2414	30" diameter, 14 ga.	B-13	12	4.667		305	119	60.50	484.50	
2416	36" diameter, 14 ga.		11	5.091		375	130	66	571	
2418	48" diameter, 12 ga.	▼	10	5.600		565	143	72.50	780.50	
2420	60" diameter, 10 ga.	B-13B	8	7		825	178	122	1,125	
2422	72" diameter, 10 ga.	"	5	11.200	▼	990	285	194	1,469	
2500	Galvanized, uncoated, 20' lengths									
2520	8" diameter, 16 ga.	B-14	355	.135	L.F.	4.63	3.36	.50	8.49	
2540	10" diameter, 16 ga.		280	.171		5.10	4.26	.64	10	
2560	12" diameter, 16 ga.		220	.218		5.80	5.40	.81	12.01	
2580	15" diameter, 16 ga.		220	.218		7.80	5.40	.81	14.01	
2600	18" diameter, 16 ga.		205	.234		10.30	5.80	.87	16.97	
2610	21" diameter, 16 ga.		285	.168		12.10	4.18	.63	16.91	
2620	24" diameter, 14 ga.		175	.274		14.15	6.80	1.02	21.97	
2630	27" diameter, 14 ga.	▼	270	.178		19.90	4.42	.66	24.98	
2640	30" diameter, 14 ga.	B-13	130	.431		18	10.95	5.55	34.50	
2660	36" diameter, 12 ga.		130	.431		29.50	10.95	5.55	46	
2680	48" diameter, 12 ga.	▼	110	.509		39.50	12.95	6.60	59.05	
2690	60" diameter, 10 ga.	B-13B	78	.718		62	18.30	12.45	92.75	
2695	72" diameter, 10 ga.	"	60	.933	▼	78.50	24	16.20	118.70	
2711	Bends or elbows, 12" diameter, 16 ga.	B-14	30	1.600	Ea.	69.50	39.50	5.95	114.95	
2712	15" diameter, 16 ga.		25.04	1.917		86	47.50	7.15	140.65	
2714	18" diameter, 16 ga.		20	2.400		96.50	59.50	8.95	164.95	
2716	24" diameter, 14 ga.		16	3		141	74.50	11.15	226.65	
2718	30" diameter, 14 ga.	▼	15	3.200		176	79.50	11.90	267.40	
2720	36" diameter, 14 ga.	B-13	15	3.733		241	95	48.50	384.50	
2722	48" diameter, 12 ga.		12	4.667		330	119	60.50	509.50	
2724	60" diameter, 10 ga.		10	5.600		510	143	72.50	725.50	
2726	72" diameter, 10 ga.	▼	6	9.333		630	238	121	989	
2728	Wyes or tees, 12" diameter, 16 ga.	B-14	22.48	2.135		92.50	53	7.95	153.45	
2730	18" diameter, 16 ga.		15	3.200		135	79.50	11.90	226.40	
2732	24" diameter, 14 ga.		15	3.200		209	79.50	11.90	300.40	
2734	30" diameter, 14 ga.	▼	14	3.429		273	85	12.75	370.75	
2736	36" diameter, 14 ga.	B-13	14	4		355	102	52	509	
2738	48" diameter, 12 ga.		12	4.667		520	119	60.50	699.50	
2740	60" diameter, 10 ga.	▼	10	5.600	▼	760	143	72.50	975.50	

02630 | Storm Drainage

		CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL. O&P
1080	30" diameter	B-21	200	.140	L.F.	22.50	3.84	.79	27.13	
1090	36" diameter		180	.156		28.50	4.27	.88	33.65	
1100	42" diameter		175	.160		39.50	4.39	.90	44.79	
1110	48" diameter		170	.165		51.50	4.52	.93	56.95	
1120	54" diameter		160	.175		79.50	4.80	.99	85.29	
1130	60" diameter		150	.187		92.50	5.10	1.05	98.65	
0010	**CATCH BASINS OR MANHOLES** not including footing, excavation,									
0020	backfill, frame and cover									
0050	Brick, 4' inside diameter, 4' deep	D-1	1	16	Ea.	285	430		715	
0100	6' deep		.70	22.857		400	615		1,015	
0150	8' deep		.50	32		510	865		1,375	
0200	For depths over 8', add		4	4	V.L.F.	105	108		213	
0400	Concrete blocks (radial), 4' I.D., 4' deep		1.50	10.667	Ea.	233	288		521	
0500	6' deep		1	16		310	430		740	
0600	8' deep		.70	22.857		385	615		1,000	
0700	For depths over 8', add		5.50	2.909	V.L.F.	39	78.50		117.50	
0800	Concrete, cast in place, 4' x 4', 8" thick, 4' deep	C-14H	2	24	Ea.	355	715	17.75	1,087.75	
0900	6' deep		1.50	32		515	950	23.50	1,488.50	
1000	8' deep		1	48		735	1,425	35.50	2,195.50	
1100	For depths over 8', add		8	6	V.L.F.	85.50	178	4.44	267.94	
1110	Precast, 4' I.D., 4' deep	B-22	4.10	7.317	Ea.	420	203	57.50	680.50	
1120	6' deep		3	10		540	278	79	897	
1130	8' deep		2	15		625	415	118	1,158	
1140	For depths over 8', add		16	1.875	V.L.F.	89	52	14.80	155.80	
1150	5' I.D., 4' deep	B-6	3	8	Ea.	445	205	59.50	709.50	
1160	6' deep		2	12		605	305	89.50	999.50	
1170	8' deep		1.50	16		760	410	119	1,289	
1180	For depths over 8', add		12	2	V.L.F.	99	51	14.90	164.90	
1190	6' I.D., 4' deep		2	12	Ea.	730	305	89.50	1,124.50	
1200	6' deep		1.50	16		950	410	119	1,479	
1210	8' deep		1	24		1,175	615	179	1,969	
1220	For depths over 8', add		8	3	V.L.F.	153	76.50	22.50	252	
1250	Slab tops, precast, 8" thick									
1300	4' diameter manhole	B-6	8	3	Ea.	156	76.50	22.50	255	
1400	5' diameter manhole		7.50	3.200		297	82	24	403	
1500	6' diameter manhole		7	3.429		355	87.50	25.50	468	
1510	Grates only, for pipe bells, plastic, 4" diameter pipe	1 Clab	50	.160		4.23	3.75		7.98	
1514	6" diameter pipe		50	.160		5.10	3.75		8.85	
1516	8" diameter pipe		50	.160		5.85	3.75		9.60	
1520	For beehive type grate, add					50%				
1550	Gray iron, 4" dia. pipe, light duty	1 Clab	50	.160		14.30	3.75		18.05	
1551	Heavy duty		50	.160		22	3.75		25.75	
1552	6" diameter, pipe, light duty		50	.160		16	3.75		19.75	
1553	Heavy duty		50	.160		13	3.75		16.75	
1554	8" diamter pipe, light duty		50	.160		25	3.75		28.75	
1555	Heavy duty		50	.160		21	3.75		24.75	
1556	10" diameter pipe, light duty		40	.200		37	4.69		41.69	
1557	Heavy duty		40	.200		23	4.69		27.69	
1558	12" diamter pipe, light duty		40	.200		52	4.69		56.69	
1559	Heavy duty		40	.200		48	4.69		52.69	
1560	15" diamter pipe, light duty		32	.250		61	5.85		66.85	
1561	Heavy duty		32	.250		62	5.85		67.85	
1562	18" diameter pipe, light duty		32	.250		71	5.85		76.85	
1563	Heavy duty		32	.250		82	5.85		87.85	
1568	For beehive type grate, add					50%				
1570	Covers only for pipe bells, gray iron, med. duty									

		02630 | Storm Drainage	CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P	
200	1571	4" diameter pipe	1 Clab	50	.160	Ea.	41	3.75		44.75	51	200
	1572	6" diameter pipe		50	.160		44	3.75		47.75	54.50	
	1573	8" diameter pipe		50	.160		61	3.75		64.75	73.50	
	1574	10" diameter pipe		40	.200		107	4.69		111.69	125	
	1575	12" diameter pipe		40	.200		70	4.69		74.69	84.50	
	1576	15" diameter pipe		32	.250		80	5.85		85.85	97	
	1577	18" diameter pipe		32	.250		97	5.85		102.85	116	
	1578	24" diameter pipe	2 Clab	24	.667		149	15.65		164.65	189	
	1579	36" diameter pipe	"	24	.667		165	15.65		180.65	207	
	1580	Curb inlet frame, grate, and curb box										
	1582	Large 24" x 36" heavy duty	B-24	2	12	Ea.	425	330		755	975	
	1590	Small 10" x 21" medium duty	"	2	12		281	330		611	815	
	1600	Frames & covers, C.I., 24" square, 500 lb.	B-6	7.80	3.077		215	78.50	23	316.50	380	
	1700	26" D shape, 600 lb.		7	3.429		350	87.50	25.50	463	550	
	1800	Light traffic, 18" diameter, 100 lb.		10	2.400		116	61.50	17.85	195.35	242	
	1900	24" diameter, 300 lb.		8.70	2.759		158	70.50	20.50	249	305	
	2000	36" diameter, 900 lb.		5.80	4.138		385	106	31	522	615	
	2100	Heavy traffic, 24" diameter, 400 lb.		7.80	3.077		161	78.50	23	262.50	325	
	2200	36" diameter, 1150 lb.		3	8		470	205	59.50	734.50	900	
	2300	Mass. State standard, 26" diameter, 475 lb.		7	3.429		360	87.50	25.50	473	560	
	2400	30" diameter, 620 lb.		7	3.429		300	87.50	25.50	413	495	
	2500	Watertight, 24" diameter, 350 lb.		7.80	3.077		254	78.50	23	355.50	425	
	2600	26" diameter, 500 lb.		7	3.429		249	87.50	25.50	362	435	
	2700	32" diameter, 575 lb.		6	4		515	102	30	647	755	
	2800	3 piece cover & frame, 10" deep,										
	2900	1200 lbs., for heavy equipment	B-6	3	8	Ea.	800	205	59.50	1,064.50	1,250	
	3000	Raised for paving 1-1/4" to 2" high,										
	3100	4 piece expansion ring										
	3200	20" to 26" diameter	1 Clab	3	2.667	Ea.	105	62.50		167.50	214	
	3300	30" to 36" diameter	"	3	2.667	"	147	62.50		209.50	260	
	3320	Frames and covers, existing, raised for paving, 2", including										
	3340	row of brick, concrete collar, up to 12" wide frame	B-6	18	1.333	Ea.	32	34	9.90	75.90	99	
	3360	20" to 26" wide frame		11	2.182		42	56	16.25	114.25	150	
	3380	30" to 36" wide frame		9	2.667		52.50	68	19.85	140.35	185	
	3400	Inverts, single channel brick	D-1	3	5.333		59	144		203	286	
	3500	Concrete		5	3.200		46	86.50		132.50	184	
	3600	Triple channel, brick		2	8		89.50	216		305.50	430	
	3700	Concrete		3	5.333		78	144		222	305	
	3800	Steps, heavyweight cast iron, 7" x 9"	1 Bric	40	.200		9.45	6.10		15.55	19.75	
	3900	8" x 9"		40	.200		14.20	6.10		20.30	25	
	3928	12" x 10-1/2"		40	.200		13.05	6.10		19.15	23.50	
	4000	Standard sizes, galvanized steel		40	.200		11.75	6.10		17.85	22.50	
	4100	Aluminum		40	.200		15	6.10		21.10	26	
		02660 | Ponds & Reservoirs										
400	0010	**MEMBRANE LINING SYSTEMS**, HDPE, 100,000 S.F. or more										400
	1100	30 mil thick	3 skwk	1850	.013	S.F.	.26	.40		.66	.92	
	1200	60 mil thick		1600	.015		.54	.46		1.00	1.32	
	1300	120 mil thick		1440	.017		1.20	.52		1.72	2.13	

02720 | Unbound Base Courses & Ballasts

			CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P
200	0010	**BASE COURSE** For roadways and large paved areas									
	0050	Crushed 3/4" stone base, compacted, 3" deep	B-36C	5,200	.008	S.Y.	1.52	.22	.48	2.22	2.54
	0100	6" deep		5,000	.008		3.04	.23	.50	3.77	4.24
	0200	9" deep		4,600	.009		4.55	.25	.55	5.35	6
	0300	12" deep		4,200	.010		6.05	.27	.60	6.92	7.80
	0301	Crushed 1-1/2" stone base, compacted to 4" deep	B-36B	6,000	.011		4.34	.30	.47	5.11	5.75
	0302	6" deep		5,400	.012		6.50	.33	.53	7.36	8.25
	0303	8" deep		4,500	.014		8.65	.39	.63	9.67	10.85
	0304	12" deep		3,800	.017		13	.47	.75	14.22	15.85
	0350	Bank run gravel, spread and compacted									
	0370	6" deep	B-32	6,000	.005	S.Y.	7.70	.16	.24	8.10	9
	0390	9" deep		4,900	.007		11.55	.19	.29	12.03	13.35
	0400	12" deep		4,200	.008		15.45	.22	.34	16.01	17.65
	0500	Bituminous concrete, 4" thick	B-25	4,545	.019		6.10	.50	.37	6.97	7.90
	0550	6" thick		3,700	.024		8.95	.61	.46	10.02	11.30
	0560	8" thick		3,000	.029		11.90	.76	.57	13.23	14.90
	0570	10" thick		2,545	.035		14.75	.89	.67	16.31	18.35
	0600	Cold laid asphalt pavement, see div. 02740-400									
	0700	Liquid application to gravel base, asphalt emulsion	B-45	6,000	.003	Gal.	2.65	.08	.11	2.84	3.15
	0800	Prime and seal, cut back asphalt		6,000	.003	"	3.13	.08	.11	3.32	3.67
	1000	Macadam penetration crushed stone, 2 gal. per S.Y., 4" thick		6,000	.003	S.Y.	5.30	.08	.11	5.49	6.10
	1100	6" thick, 3 gal. per S.Y.		4,000	.004		7.95	.11	.17	8.23	9.10
	1200	8" thick, 4 gal. per S.Y.		3,000	.005		10.60	.15	.22	10.97	12.10
	1500	Alternate method to figure base course									
	1510	Crushed stone, 3/4", compacted, 3" deep	B-36C	435	.092	C.Y.	18.30	2.65	5.80	26.75	30.50
	1511	6" deep	B-36B	835	.077		18.30	2.13	3.40	23.83	27
	1512	9" deep		1,150	.056		18.30	1.55	2.47	22.32	25
	1513	12" deep		1,400	.046		18.30	1.27	2.03	21.60	24
	1520	Crushed stone, 1-1/2", compacted 4" deep		665	.096		18.80	2.67	4.27	25.74	29.50
	1521	6" deep		900	.071		18.80	1.97	3.16	23.93	27
	1522	8" deep		1,000	.064		18.80	1.78	2.84	23.42	26.50
	1523	12" deep		1,265	.051		18.80	1.40	2.25	22.45	25
	1530	Gravel, bank run, compacted, 6" deep	B-36C	835	.048		18.70	1.38	3.02	23.10	26
	1531	9" deep		1,150	.035		18.70	1	2.19	21.89	24.50
	1532	12" deep		1,400	.029		18.70	.82	1.80	21.32	23.50
	2000	Alternate method to figure base course									
	2005	Bituminous concrete, 4" thick	B-25	1,000	.088	Ton	27	2.27	1.70	30.97	35.50
	2006	6" thick		1,220	.072		27	1.86	1.39	30.25	34.50
	2007	8" thick		1,320	.067		27	1.72	1.29	30.01	34
	2008	10" thick		1,400	.063		27	1.62	1.21	29.83	34
	2010	Crushed stone, 3/4" maximum size, 3" deep	B-36	540	.074		13.60	2	1.95	17.55	20
	2011	6" deep		1,625	.025		13.60	.66	.65	14.91	16.70
	2012	9" deep		1,785	.022		13.60	.60	.59	14.79	16.55
	2013	12" deep		1,950	.021		13.60	.55	.54	14.69	16.40
	2020	Crushed stone, 1-1/2" maximum size, 4" deep		720	.056		14	1.50	1.46	16.96	19.30
	2021	6" deep		815	.049		14	1.32	1.29	16.61	18.85
	2022	8" deep		835	.048		14	1.29	1.26	16.55	18.75
	2023	12" deep		975	.041		14	1.11	1.08	16.19	18.30
	2030	Bank run gravel, 6" deep	B-32A	875	.027		36	.79	.99	37.78	42
	2031	9" deep		970	.025		36	.71	.89	37.60	41.50
	2032	12" deep		1,060	.023		36	.65	.82	37.47	41.50
	6000	Stabilization fabric, polypropylene, 6 oz./S.Y.	B-6	10,000	.002	S.Y.	.84	.06	.02	.92	1.03
	8900	For small and irregular areas, add						50%	50%		
215	0010	**BASE** Prepare and roll sub-base, small areas to 2500 S.Y.	B-32A	1,500	.016	S.Y.		.46	.58	1.04	1.34
	0100	Large areas over 2500 S.Y.	B-32	3,700	.009	"		.25	.38	.63	.80

02740 | Flexible Pavement

			CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P	
300	0010	**ASPHALTIC CONCRETE PAVEMENT** for highways	R02065 -300									300
	0020	and large paved areas										
	0080	Binder course, 1-1/2" thick	B-25	7,725	.011	S.Y.	2.07	.29	.22	2.58	2.96	
	0120	2" thick		6,345	.014		2.75	.36	.27	3.38	3.87	
	0160	3" thick		4,905	.018		4.09	.46	.35	4.90	5.60	←
	0200	4" thick		4,140	.021		5.45	.55	.41	6.41	7.30	
	0300	Wearing course, 1" thick	B-25B	10,575	.009		1.52	.24	.18	1.94	2.24	←
	0340	1-1/2" thick		7,725	.012		2.32	.33	.24	2.89	3.32	
	0380	2" thick		6,345	.015		3.12	.40	.29	3.81	4.36	
	0420	2-1/2" thick		5,480	.018		3.84	.46	.34	4.64	5.30	
	0460	3" thick		4,900	.020		4.58	.51	.38	5.47	6.25	
	0800	Alternate method of figuring paving costs										
	0810	Binder course, 1-1/2" thick	B-25	630	.140	Ton	27	3.60	2.69	33.29	38.50	
	0811	2" thick		690	.128		27	3.28	2.46	32.74	38	
	0812	3" thick		800	.110		27	2.83	2.12	31.95	36.50	
	0813	4" thick		850	.104		27	2.67	2	31.67	36.50	
	0850	Wearing course, 1" thick	B-25B	575	.167		28.50	4.37	3.24	36.11	41.50	
	0851	1-1/2" thick		630	.152		28.50	3.99	2.96	35.45	40.50	
	0852	2" thick		690	.139		28.50	3.65	2.70	34.85	39.50	
	0853	2-1/2" thick		745	.129		28.50	3.38	2.50	34.38	39	
	0854	3" thick		800	.120		28.50	3.14	2.33	33.97	38.50	
	1000	Pavement replacement over trench, 2" thick	B-37	90	.533	S.Y.	3.17	13.25	1.30	17.72	25.50	
	1050	4" thick		70	.686		6.30	17.05	1.67	25.02	35	
	1080	6" thick		55	.873		10	21.50	2.13	33.63	47	
315	0011	**PAVING** Asphaltic concrete, parking lots & driveways										315
	0020	6" stone base, 2" binder course, 1" topping	B-25C	9,000	.005	S.F.	1.21	.14	.16	1.51	1.73	
	0300	Binder course, 1-1/2" thick		35,000	.001		.32	.04	.04	.40	.46	
	0400	2" thick		25,000	.002		.41	.05	.06	.52	.59	
	0500	3" thick		15,000	.003		.64	.08	.10	.82	.94	
	0600	4" thick		10,800	.004		.83	.12	.13	1.08	1.25	
	0800	Sand finish course, 3/4" thick		41,000	.001		.18	.03	.04	.25	.29	
	0900	1" thick		34,000	.001		.22	.04	.04	.30	.35	
	1000	Fill pot holes, hot mix, 2" thick	B-16	4,200	.008		.42	.19	.11	.72	.87	
	1100	4" thick		3,500	.009		.61	.22	.13	.96	1.17	
	1120	6" thick		3,100	.010		.83	.25	.15	1.23	1.47	
	1140	Cold patch, 2" thick	B-51	3,000	.016		.48	.38	.05	.91	1.17	
	1160	4" thick		2,700	.018		.90	.43	.06	1.39	1.72	
	1180	6" thick		1,900	.025		1.41	.60	.08	2.09	2.58	
400	0010	**COLD LAID ASPHALT PAVEMENT** 0.5 gal. asphalt/S.Y. per in. depth										400
	0020	Well graded granular aggregate										
	0100	Blade mixed in windrows, spread & compacted 4" course	B-90A	1,600	.035	S.Y.	4.35	.99	.79	6.13	7.15	
	0200	Traveling plant mixed in windrows, compacted 4" course	B-90B	3,000	.016		4.35	.44	.57	5.36	6.10	
	0300	Rotary plant mixed in place, compacted 4" course	*	3,500	.014		4.35	.38	.49	5.22	5.90	
	0400	Central stationary plant, mixed, compacted 4" course	B-36	7,200	.006		8.70	.15	.15	9	9.95	

02750 | Rigid Pavement

100	0010	**CONCRETE PAVEMENT** Including joints, finishing, and curing										100
	0020	Fixed form, 12' pass, unreinforced, 6" thick	B-26	3,000	.029	S.Y.	17.35	.78	.63	18.76	21	
	0030	7" thick		2,850	.031		22	.82	.66	23.48	26	
	0100	8" thick		2,750	.032		24	.85	.68	25.53	28.50	
	0200	9" thick		2,500	.035		28	.93	.75	29.68	33	
	0300	10" thick		2,100	.042		30	1.11	.90	32.01	35.50	
	0400	12" thick		1,800	.049		32.50	1.30	1.05	34.85	38.50	
	0500	15" thick		1,500	.059		36	1.55	1.26	38.81	44	
	0510	For small irregular areas, add						100%				
	0600	For continuous welded steel reinforcement over 10' wide, add				S.Y.				3.60	4.25	

4349

REDACTED

City Cost Indexes

DIVISION		MISSISSIPPI			MISSOURI												
		MERIDIAN			CAPE GIRARDEAU			COLUMBIA			JOPLIN			KANSAS CITY			SPRINGFIELD	
		MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL
01590	EQUIPMENT RENTAL	.0	98.5	98.5	.0	109.6	109.6	.0	109.7	109.7	.0	105.0	105.0	.0	103.2	103.2	.0	103.4	103.4
02	SITE CONSTRUCTION	101.5	86.6	90.2	93.3	93.3	93.3	98.6	94.4	95.5	100.3	95.8	96.9	92.6	94.6	94.1	91.9	93.5	93.1
03100	CONCRETE FORMS & ACCESSORIES	74.4	40.2	44.7	83.1	83.9	83.8	84.2	75.7	76.8	103.0	68.9	73.4	102.4	103.9	103.7	101.1	58.2	63.9
03200	CONCRETE REINFORCEMENT	102.6	54.1	74.3	106.1	92.9	98.4	100.4	106.5	103.9	104.0	78.2	89.0	98.9	107.7	104.0	96.5	106.5	102.3
03300	CAST-IN-PLACE CONCRETE	100.0	48.8	79.4	84.6	92.2	87.7	89.1	74.9	83.4	103.3	76.7	92.6	96.0	99.7	97.5	100.7	71.2	88.8
03	CONCRETE	91.1	48.0	69.7	85.0	90.2	87.6	83.3	83.3	83.3	97.3	74.8	86.1	93.4	103.6	98.5	96.4	73.5	85.0
04	MASONRY	88.9	34.8	55.8	117.4	82.7	96.2	131.2	75.8	97.3	93.5	61.1	73.7	98.4	104.1	101.9	86.8	73.0	78.4
05	METALS	96.4	80.7	90.6	93.8	115.4	101.7	93.0	121.0	103.2	95.8	95.4	95.7	99.3	112.2	104.0	96.3	106.7	100.1
06	WOOD & PLASTICS	74.2	39.2	56.2	83.0	83.4	83.2	89.8	72.0	80.7	100.9	69.3	84.6	100.9	104.0	102.4	100.0	54.4	76.5
07	THERMAL & MOISTURE PROTECTION	95.2	45.8	71.8	96.2	85.9	91.4	92.6	79.1	86.2	98.3	67.2	83.6	97.5	103.2	100.2	96.8	72.9	85.5
08	DOORS & WINDOWS	95.8	43.4	83.2	94.2	84.0	91.7	91.2	93.0	91.6	92.2	77.5	88.7	98.5	105.5	100.2	96.7	70.8	90.5
09200	PLASTER & GYPSUM BOARD	99.9	37.8	59.8	97.4	82.5	87.8	100.9	70.8	81.5	109.8	68.0	82.8	104.5	103.7	104.0	106.5	52.6	71.7
095,098	CEILINGS & ACOUSTICAL TREATMENT	90.1	37.8	54.9	93.1	82.5	86.0	92.9	70.8	78.1	97.8	68.0	77.8	103.5	103.7	103.6	98.5	52.6	67.7
09600	FLOORING	104.8	33.2	87.1	98.6	87.8	96.0	107.5	73.1	99.0	118.4	59.1	103.8	96.5	95.7	96.3	109.9	59.1	97.4
097,099	WALL FINISHES, PAINTS & COATINGS	105.0	40.4	67.2	99.7	88.2	93.0	98.8	69.9	81.8	92.9	52.1	69.0	97.7	105.3	102.1	93.2	74.5	82.3
09	FINISHES	98.9	38.2	67.3	93.8	84.4	88.9	95.9	72.4	83.7	105.8	64.8	84.4	100.4	102.3	101.4	100.8	58.5	78.8
10 - 14	TOTAL DIV. 10000 - 14000	100.0	63.1	92.3	100.0	79.8	95.8	100.0	96.0	99.2	100.0	88.5	97.6	100.0	99.5	99.9	100.0	86.3	97.1
15	MECHANICAL	99.9	41.2	73.8	100.1	94.3	97.5	100.1	95.5	98.0	100.2	61.4	83.0	100.1	101.9	100.9	100.2	72.6	87.9
16	ELECTRICAL	95.0	59.1	70.1	95.3	114.3	108.5	93.8	83.6	86.7	89.2	70.3	76.1	103.4	101.6	102.1	100.2	75.7	83.2
01 - 16	WEIGHTED AVERAGE	96.4	52.9	75.4	96.1	95.6	95.9	96.5	88.6	92.7	97.6	73.0	85.7	98.8	102.7	100.7	97.7	76.8	87.6

DIVISION		MISSOURI						MONTANA											
		ST. JOSEPH			ST. LOUIS			BILLINGS			BUTTE			GREAT FALLS			HELENA	
		MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL
01590	EQUIPMENT RENTAL	.0	101.8	101.8	.0	110.8	110.8	.0	95.7	95.7	.0	95.4	95.4	.0	95.4	95.4	.0	95.4	95.4
02	SITE CONSTRUCTION	94.0	91.6	92.2	92.9	96.9	95.9	83.7	97.5	94.1	89.7	96.1	94.6	93.2	96.7	95.9	95.0	96.6	96.2
03100	CONCRETE FORMS & ACCESSORIES	102.3	77.0	80.3	99.3	109.0	107.7	96.3	73.0	76.1	82.3	70.2	71.8	102.6	71.3	75.5	102.7	71.7	75.8
03200	CONCRETE REINFORCEMENT	97.7	102.0	100.2	97.0	110.4	104.8	100.2	81.1	89.0	108.7	81.0	92.5	100.2	81.0	89.0	103.7	75.0	87.0
03300	CAST-IN-PLACE CONCRETE	95.9	96.7	96.2	84.6	114.1	96.5	115.6	75.2	99.3	119.0	75.3	101.4	125.7	62.7	100.3	128.1	73.5	106.1
03	CONCRETE	93.2	89.7	91.5	85.0	112.1	98.5	102.8	75.8	89.4	102.5	74.6	88.6	108.3	70.8	89.6	110.0	73.5	91.8
04	MASONRY	97.8	93.1	94.9	98.6	110.6	105.9	123.9	76.0	94.6	122.2	73.7	92.6	126.0	75.8	95.3	123.2	73.5	92.8
05	METALS	97.9	108.8	101.9	96.3	126.3	107.2	98.2	85.2	93.5	97.6	84.6	92.9	98.7	84.8	93.6	97.8	81.6	91.9
06	WOOD & PLASTICS	101.5	71.1	85.9	98.1	106.9	102.6	100.5	73.3	86.5	88.4	71.6	79.8	108.3	71.4	89.3	108.5	71.4	89.4
07	THERMAL & MOISTURE PROTECTION	98.1	93.1	95.7	96.2	105.7	100.7	98.9	74.6	87.4	98.1	71.7	85.6	99.1	72.2	86.4	99.1	73.4	86.9
08	DOORS & WINDOWS	97.2	86.5	94.6	93.2	113.2	98.0	100.2	69.7	92.9	96.9	68.7	90.1	100.5	68.7	92.8	99.9	67.3	92.1
09200	PLASTER & GYPSUM BOARD	110.6	69.8	84.3	104.2	106.7	105.8	103.6	73.0	83.8	96.1	71.3	80.1	103.6	71.0	82.5	103.0	71.0	82.3
095,098	CEILINGS & ACOUSTICAL TREATMENT	102.0	69.8	80.4	97.3	106.7	103.6	114.0	73.0	86.4	111.2	71.3	84.4	114.0	71.0	85.1	111.2	71.0	84.2
09600	FLOORING	99.1	94.6	98.0	106.2	99.1	104.5	110.4	57.5	97.4	102.1	45.8	88.2	110.4	62.1	98.5	110.4	60.1	98.0
097,099	WALL FINISHES, PAINTS & COATINGS	93.5	90.1	91.5	99.7	109.6	105.5	102.6	70.9	84.0	102.6	48.3	70.8	102.6	54.3	74.4	102.6	60.3	77.8
09	FINISHES	101.6	80.3	90.5	98.1	106.9	102.6	107.6	69.7	87.8	103.1	62.9	82.2	107.7	67.5	86.7	107.2	68.1	86.8
10 - 14	TOTAL DIV. 10000 - 14000	100.0	93.1	98.6	100.0	106.4	101.3	100.0	75.4	94.9	100.0	74.1	94.6	100.0	75.2	94.8	100.0	66.8	93.1
15	MECHANICAL	100.2	88.9	95.2	100.1	107.9	103.6	100.3	81.1	91.8	100.3	76.3	89.6	100.3	81.2	91.8	100.3	79.9	91.3
16	ELECTRICAL	102.8	79.3	86.4	99.0	114.3	109.7	95.0	82.9	86.6	106.5	73.9	83.9	94.9	78.1	83.2	94.9	78.0	83.2
01 - 16	WEIGHTED AVERAGE	98.6	88.7	93.8	96.1	110.4	103.0	101.5	80.0	91.1	101.2	76.0	89.0	102.7	78.0	90.8	102.6	77.4	90.4

DIVISION		MONTANA			NEBRASKA												NEVADA		
		MISSOULA			GRAND ISLAND			LINCOLN			NORTH PLATTE			OMAHA			CARSON CITY		
		MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL
01590	EQUIPMENT RENTAL	.0	95.4	95.4	.0	102.3	102.3	.0	102.3	102.3	.0	102.3	102.3	.0	91.3	91.3	.0	100.3	100.3
02	SITE CONSTRUCTION	73.7	96.0	90.6	94.8	90.7	91.7	85.9	90.7	89.6	95.7	90.2	91.5	77.4	89.4	86.5	64.4	102.1	93.0
03100	CONCRETE FORMS & ACCESSORIES	86.7	66.1	68.8	97.4	57.6	62.9	102.5	50.7	57.5	97.3	54.1	59.8	97.1	74.5	77.5	99.3	106.4	105.5
03200	CONCRETE REINFORCEMENT	110.6	85.3	95.8	105.1	75.0	87.6	96.5	74.9	83.9	106.5	74.8	88.1	101.0	76.5	86.7	108.5	115.1	112.3
03300	CAST-IN-PLACE CONCRETE	87.6	72.3	81.5	116.3	65.4	95.8	105.1	68.0	90.1	116.3	58.9	93.2	109.0	76.6	95.9	118.3	92.4	107.9
03	CONCRETE	81.1	72.6	76.8	106.5	65.0	85.9	98.6	62.8	80.8	106.7	61.4	84.1	100.0	75.8	88.0	113.9	102.8	108.4
04	MASONRY	148.7	69.3	100.2	105.1	57.3	75.9	94.9	54.7	70.4	90.4	46.5	63.6	100.7	83.9	90.4	133.8	81.7	102.0
05	METALS	97.7	85.7	93.3	92.9	86.1	90.4	95.8	85.7	92.1	93.1	89.7	91.8	98.4	77.9	90.9	103.8	101.7	103.1
06	WOOD & PLASTICS	92.9	67.4	79.8	96.7	52.4	73.9	101.2	43.3	71.4	96.5	52.4	73.8	95.2	74.0	84.3	94.1	110.2	102.4
07	THERMAL & MOISTURE PROTECTION	97.3	77.2	87.8	97.3	63.1	81.1	97.7	55.8	77.8	97.2	53.1	76.3	92.9	75.7	84.7	105.4	91.2	98.6
08	DOORS & WINDOWS	96.9	68.3	90.1	90.4	55.0	81.9	95.9	52.2	85.4	89.7	60.2	82.6	99.3	68.6	91.9	93.4	112.0	97.8
09200	PLASTER & GYPSUM BOARD	98.1	66.9	77.9	103.1	50.6	69.2	106.5	41.2	64.3	103.4	50.6	69.3	112.6	73.6	87.4	83.7	110.3	100.9
095,098	CEILINGS & ACOUSTICAL TREATMENT	111.2	66.9	81.4	91.5	50.6	64.0	98.5	41.2	60.0	92.9	50.6	64.5	135.3	73.6	93.9	101.5	110.3	107.4
09600	FLOORING	104.1	71.5	96.0	99.2	40.8	84.7	100.9	42.5	86.5	99.1	42.5	85.1	129.6	51.0	110.2	105.1	75.0	97.7
097,099	WALL FINISHES, PAINTS & COATINGS	102.6	54.3	74.4	90.7	48.1	65.8	90.7	48.6	66.0	90.7	58.2	71.7	145.1	58.2	94.2	108.1	89.1	97.0
09	FINISHES	103.2	65.4	83.5	95.8	52.2	73.1	97.9	47.3	71.6	96.1	51.7	73.0	123.2	67.9	94.4	97.1	99.0	98.1
10 - 14	TOTAL DIV. 10000 - 14000	100.0	63.2	92.3	100.0	83.5	96.6	100.0	82.3	96.3	100.0	64.1	92.5	100.0	84.5	96.8	100.0	118.7	103.9
15	MECHANICAL	100.3	74.0	88.6	100.2	83.4	92.7	100.2	83.3	92.7	100.2	78.8	90.7	99.9	85.6	93.5	100.0	94.0	97.3
16	ELECTRICAL	103.1	78.2	85.8	91.0	50.8	63.0	100.5	50.8	66.0	94.3	50.7	64.0	88.3	86.8	87.3	92.7	89.1	90.2
01 - 16	WEIGHTED AVERAGE	99.4	75.8	88.0	97.6	68.2	83.4	97.8	66.5	82.7	97.0	65.4	81.8	100.4	80.8	90.9	101.7	96.7	99.3

City Cost Indexes

DIVISION		NORTH CAROLINA			NORTH DAKOTA												OHIO		
		WINSTON-SALEM			BISMARCK			FARGO			GRAND FORKS			MINOT			AKRON		
		MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL
01590	EQUIPMENT RENTAL	.0	99.6	99.6	.0	95.4	95.4	.0	95.4	95.4	.0	95.4	95.4	.0	95.4	95.4	.0	100.1	100.1
02	SITE CONSTRUCTION	103.4	82.8	87.7	86.6	96.1	93.8	86.1	96.2	93.7	94.1	95.5	95.2	91.8	96.2	95.1	100.5	109.3	107.2
03100	CONCRETE FORMS & ACCESSORIES	96.9	44.9	51.7	95.1	56.9	61.9	95.8	57.8	62.8	91.6	50.4	55.8	86.1	65.1	67.9	104.5	100.8	101.3
03200	CONCRETE REINFORCEMENT	93.1	42.8	63.8	108.7	75.3	89.2	100.2	75.3	85.7	107.0	58.3	78.6	110.7	75.8	90.4	99.1	98.0	98.5
03300	CAST-IN-PLACE CONCRETE	96.6	52.2	78.7	101.9	61.6	85.6	106.8	64.2	89.6	104.3	59.8	86.4	104.3	60.1	86.5	102.8	108.5	105.1
03	CONCRETE	97.0	49.2	73.2	96.8	62.9	79.9	98.3	64.1	81.3	102.8	56.1	79.6	101.3	66.0	83.7	102.7	101.8	102.3
04	MASONRY	77.1	40.6	54.8	107.3	57.8	77.1	107.6	57.4	76.9	107.5	59.1	77.9	108.3	66.9	83.0	92.2	105.0	100.0
05	METALS	95.2	78.8	89.2	95.4	77.0	88.7	95.3	77.2	88.7	95.4	69.8	86.1	95.8	77.9	89.2	91.7	83.5	88.7
06	WOOD & PLASTICS	96.5	45.6	70.4	87.4	52.9	69.7	87.4	53.7	70.1	84.2	48.7	65.9	79.2	63.6	71.2	99.2	99.4	99.3
07	THERMAL & MOISTURE PROTECTION	96.6	46.8	73.0	99.6	57.2	79.5	100.2	58.4	80.4	100.4	57.7	80.2	100.0	60.4	81.3	106.0	102.8	104.5
08	DOORS & WINDOWS	95.7	44.8	83.5	100.7	55.1	89.7	100.7	55.5	89.8	100.7	45.7	87.5	100.9	60.8	91.2	104.5	100.0	103.4
09200	PLASTER & GYPSUM BOARD	108.5	43.8	66.7	119.7	52.0	75.9	119.7	52.8	76.5	118.7	47.6	72.8	117.3	63.1	82.2	105.6	98.6	101.1
095,098	CEILINGS & ACOUSTICAL TREATMENT	91.3	43.8	59.4	147.2	52.0	83.2	147.2	52.8	83.7	147.2	47.6	80.2	147.2	63.1	90.6	98.9	98.6	98.7
09600	FLOORING	95.9	46.6	83.7	111.0	53.5	96.8	110.8	52.6	96.4	109.3	52.6	95.3	106.6	70.1	97.6	107.9	99.5	105.8
097,099	WALL FINISHES, PAINTS & COATINGS	105.9	44.2	69.8	102.6	43.7	68.1	102.6	82.7	91.0	102.6	33.4	62.1	102.6	36.6	64.0	105.3	117.8	112.6
09	FINISHES	95.5	44.9	69.2	116.1	54.0	83.8	115.9	58.8	86.2	116.0	48.5	80.8	114.7	62.9	87.7	104.3	102.2	103.2
10 - 14	TOTAL DIV. 10000 - 14000	100.0	64.0	92.5	100.0	85.2	96.9	100.0	85.2	96.9	100.0	55.2	90.7	100.0	86.6	97.2	100.0	101.8	100.4
15	MECHANICAL	100.1	48.2	77.0	100.6	66.5	85.4	100.6	72.8	88.2	100.6	53.0	79.4	100.6	66.5	85.4	100.1	104.6	102.1
16	ELECTRICAL	98.6	44.2	60.8	96.9	67.9	76.8	96.8	48.8	63.5	101.7	66.6	77.3	106.8	67.9	79.8	98.0	101.8	100.6
01 - 16	WEIGHTED AVERAGE	96.6	52.8	75.4	100.5	67.4	84.5	100.6	66.1	83.9	101.7	61.2	82.2	101.7	70.3	86.5	99.7	101.7	100.7

DIVISION		OHIO																	
		CANTON			CINCINNATI			CLEVELAND			COLUMBUS			DAYTON			LORAIN		
		MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL
01590	EQUIPMENT RENTAL	.0	100.1	100.1	.0	104.2	104.2	.0	100.4	100.4	.0	95.7	95.7	.0	98.4	98.4	.0	100.1	100.1
02	SITE CONSTRUCTION	100.6	108.2	106.4	77.1	110.8	102.7	100.5	109.0	107.0	84.9	100.1	96.5	75.9	110.7	102.3	99.8	108.6	106.5
03100	CONCRETE FORMS & ACCESSORIES	104.5	89.3	91.3	102.0	88.8	90.5	104.7	107.2	106.9	96.0	93.1	93.5	101.9	87.6	89.5	104.6	90.5	92.4
03200	CONCRETE REINFORCEMENT	99.1	82.6	89.5	93.4	85.8	89.0	99.6	98.2	98.8	103.2	85.2	92.7	93.4	84.2	88.0	99.1	98.1	98.5
03300	CAST-IN-PLACE CONCRETE	103.8	105.4	104.4	86.4	90.9	88.2	100.8	116.0	107.0	87.8	96.5	91.3	78.7	92.5	84.2	97.8	111.5	103.4
03	CONCRETE	103.2	92.8	98.0	92.9	89.0	91.0	101.8	107.4	104.6	95.1	92.2	93.6	89.1	88.1	88.6	100.2	98.4	99.3
04	MASONRY	93.1	94.7	94.1	86.4	96.1	92.3	96.8	111.5	105.8	97.0	95.3	95.9	85.8	93.0	90.2	89.1	105.0	98.8
05	METALS	91.7	76.5	86.1	94.9	89.4	92.9	93.1	86.5	90.7	96.3	81.3	90.8	94.2	78.6	88.5	92.2	84.2	89.3
06	WOOD & PLASTICS	99.2	87.9	93.4	102.7	86.4	94.3	98.4	104.4	101.5	99.4	93.0	96.1	105.1	86.8	95.7	99.2	86.0	92.4
07	THERMAL & MOISTURE PROTECTION	106.6	98.2	102.6	90.1	97.8	93.8	104.7	114.6	109.4	100.7	97.9	99.3	95.5	93.6	94.6	106.5	106.5	106.5
08	DOORS & WINDOWS	98.9	81.1	94.6	96.7	85.2	94.0	95.3	102.7	97.1	99.8	88.7	97.1	95.0	84.4	92.4	98.9	92.9	97.4
09200	PLASTER & GYPSUM BOARD	105.6	86.8	93.5	102.6	86.3	92.0	104.9	103.8	104.2	102.2	92.5	95.9	102.6	86.7	92.4	105.6	84.8	92.2
095,098	CEILINGS & ACOUSTICAL TREATMENT	98.9	86.8	90.7	91.3	86.3	87.9	97.5	103.8	101.7	95.7	92.5	93.6	92.9	86.7	88.8	98.9	84.8	89.4
09600	FLOORING	108.1	88.8	103.3	93.1	101.8	95.2	107.7	114.4	109.3	97.4	92.6	96.2	95.5	90.9	94.4	108.1	111.6	109.0
097,099	WALL FINISHES, PAINTS & COATINGS	105.3	91.7	97.3	102.3	97.4	99.4	105.3	121.0	114.5	99.8	106.0	103.4	102.3	95.9	98.6	105.3	121.0	114.5
09	FINISHES	104.4	88.6	96.2	93.6	91.9	92.7	103.9	109.7	107.0	97.8	94.4	96.0	94.7	88.9	91.7	104.4	97.0	100.5
10 - 14	TOTAL DIV. 10000 - 14000	100.0	90.0	97.9	100.0	90.4	98.0	100.0	106.1	101.3	100.0	94.0	98.8	100.0	89.2	97.7	100.0	101.0	100.2
15	MECHANICAL	100.1	89.5	95.4	99.8	98.5	99.2	100.1	111.0	104.9	100.1	95.1	97.9	100.8	89.0	95.5	100.1	95.0	97.8
16	ELECTRICAL	96.5	97.4	97.1	95.8	84.9	88.3	97.1	106.5	103.7	102.1	89.4	93.3	94.5	90.1	91.4	96.5	99.1	98.3
01 - 16	WEIGHTED AVERAGE	99.1	92.2	95.8	95.3	93.4	94.4	98.8	106.8	102.7	98.2	92.7	95.5	94.9	90.5	92.8	98.5	98.0	98.3

DIVISION		OHIO									OKLAHOMA						MUSKOGEE		
		SPRINGFIELD			TOLEDO			YOUNGSTOWN			ENID			LAWTON					
		MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL
01590	EQUIPMENT RENTAL	.0	98.4	98.4	.0	98.7	98.7	.0	100.1	100.1	.0	76.1	76.1	.0	77.2	77.2	.0	85.8	85.8
02	SITE CONSTRUCTION	76.4	109.8	101.7	84.1	101.4	97.2	100.4	109.6	107.4	110.8	89.0	94.2	105.9	90.6	94.3	96.1	85.0	87.7
03100	CONCRETE FORMS & ACCESSORIES	101.9	92.1	93.3	96.0	107.5	106.0	104.5	94.0	95.4	96.9	45.7	52.4	101.4	62.8	67.9	103.1	41.3	49.4
03200	CONCRETE REINFORCEMENT	93.4	84.2	88.0	103.2	92.1	96.7	99.1	91.9	94.9	95.4	84.3	88.9	95.6	84.4	89.0	95.4	43.3	65.0
03300	CAST-IN-PLACE CONCRETE	82.5	93.0	86.7	87.8	110.9	97.1	101.8	109.9	105.1	94.1	56.8	79.1	91.0	56.9	77.2	84.6	43.5	68.1
03	CONCRETE	91.0	90.2	90.6	95.1	104.9	100.0	102.3	98.2	100.2	91.2	57.1	74.2	87.7	64.6	76.2	83.2	43.7	63.5
04	MASONRY	86.1	94.1	91.0	107.4	110.0	109.0	92.3	103.1	98.9	101.3	58.6	75.2	96.8	58.6	73.5	110.0	49.7	73.2
05	METALS	94.2	78.5	88.5	96.1	88.7	93.4	91.8	81.8	88.1	93.4	68.5	84.3	95.4	68.6	85.6	93.3	63.0	82.2
06	WOOD & PLASTICS	105.1	92.4	98.6	99.4	108.1	103.9	99.2	91.3	95.1	101.1	43.0	71.2	104.8	66.2	85.0	106.9	42.5	73.5
07	THERMAL & MOISTURE PROTECTION	95.5	94.7	95.1	102.5	109.2	105.6	106.7	102.6	104.8	99.6	64.0	82.7	99.3	66.3	83.7	99.1	51.1	76.2
08	DOORS & WINDOWS	95.0	87.3	93.1	97.7	100.0	98.2	98.9	96.3	98.3	95.1	56.5	85.8	96.6	68.9	89.9	95.1	41.4	82.2
09200	PLASTER & GYPSUM BOARD	102.6	92.5	96.1	102.2	108.1	106.0	105.6	90.2	95.7	93.3	42.3	60.4	96.0	66.2	76.7	95.3	41.7	60.9
095,098	CEILINGS & ACOUSTICAL TREATMENT	92.9	92.5	92.6	95.7	108.1	104.0	98.9	90.2	93.1	93.4	42.3	59.1	101.9	66.2	77.9	93.4	41.7	56.2
09600	FLOORING	95.5	90.9	94.4	96.6	106.9	99.2	108.1	104.0	107.1	115.1	60.3	101.6	118.1	60.3	103.9	119.4	48.6	101.2
097,099	WALL FINISHES, PAINTS & COATINGS	102.3	95.9	98.6	99.8	115.4	108.9	105.3	107.0	106.3	95.8	64.2	77.3	95.8	64.2	77.3	95.8	40.6	63.5
09	FINISHES	94.7	92.4	93.5	97.5	108.7	103.3	104.4	96.7	100.4	100.9	48.7	73.7	103.3	62.1	81.9	101.5	42.9	70.2
10 - 14	TOTAL DIV. 10000 - 14000	100.0	90.3	98.0	100.0	97.7	99.5	100.0	99.9	100.0	100.0	73.8	94.5	100.0	76.8	95.2	100.0	38.0	87.5
15	MECHANICAL	100.8	89.6	95.8	100.1	105.1	102.3	100.1	95.7	98.1	100.1	68.2	85.9	100.1	68.3	85.9	100.1	34.2	70.5
16	ELECTRICAL	94.5	89.4	90.9	102.8	106.8	105.6	96.5	92.6	93.8	95.0	72.4	79.3	97.7	63.7	74.1	94.4	40.5	56.2
01 - 16	WEIGHTED AVERAGE	95.2	91.5	93.4	98.5	104.2	101.3	98.9	96.7	97.8	97.5	65.5	82.1	97.6	67.7	83.2	96.7	47.5	73.1

City Cost Indexes

DIVISION		SOUTH CAROLINA												SOUTH DAKOTA					
		COLUMBIA			FLORENCE			GREENVILLE			SPARTANBURG			ABERDEEN			PIERRE		
		MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL
01590	EQUIPMENT RENTAL	.0	99.3	99.3	.0	99.3	99.3	.0	99.3	99.3	.0	99.3	99.3	.0	95.4	95.4	.0	95.4	95.4
02	SITE CONSTRUCTION	95.8	81.8	85.2	107.4	81.8	88.0	102.2	81.4	86.4	102.0	81.4	86.4	82.4	95.0	92.0	80.8	95.0	91.6
03100	CONCRETE FORMS & ACCESSORIES	100.3	46.2	53.3	79.6	46.2	50.6	95.0	46.1	52.5	99.1	46.1	53.0	95.4	43.4	50.3	93.6	45.7	52.0
03200	CONCRETE REINFORCEMENT	93.1	62.3	75.2	92.8	62.6	75.2	92.7	44.1	64.4	92.7	44.1	64.4	107.3	54.6	76.6	106.7	63.5	81.5
03300	CAST-IN-PLACE CONCRETE	78.6	50.5	67.3	70.9	54.5	64.3	70.9	54.4	64.3	70.9	54.4	64.3	99.4	54.9	81.5	96.6	50.8	78.1
03	CONCRETE	88.1	52.7	70.5	90.4	54.1	72.3	89.1	50.6	69.9	89.3	50.6	70.0	96.1	50.8	73.5	93.8	52.1	73.1
04	MASONRY	83.1	36.3	54.5	70.9	41.5	53.0	69.0	41.5	52.2	70.9	41.5	53.0	109.3	56.5	77.0	106.0	47.6	70.3
05	METALS	95.2	83.2	90.8	94.2	83.6	90.3	94.0	77.0	87.8	94.1	77.0	87.8	107.2	71.1	94.0	107.1	74.3	95.1
06	WOOD & PLASTICS	102.3	47.0	73.9	80.3	47.0	63.2	95.8	47.0	70.7	100.1	47.0	72.8	100.3	41.2	69.9	98.5	44.6	70.8
07	THERMAL & MOISTURE PROTECTION	96.1	47.1	72.9	96.5	49.5	74.2	96.5	49.5	74.2	96.5	49.5	74.3	97.9	51.1	75.7	98.1	49.0	74.8
08	DOORS & WINDOWS	95.7	47.5	84.1	91.8	47.5	81.1	91.7	43.0	80.0	91.8	43.0	80.0	96.1	44.4	83.6	99.5	48.9	87.3
09200	PLASTER & GYPSUM BOARD	108.5	45.2	67.6	97.1	45.2	63.6	102.7	45.2	65.5	104.7	45.2	66.2	104.8	39.9	62.9	103.6	43.4	64.7
095,098	CEILINGS & ACOUSTICAL TREATMENT	91.3	45.2	60.3	88.5	45.2	59.4	87.1	45.2	58.9	87.1	45.2	58.9	110.7	39.9	63.1	109.3	43.4	65.0
09600	FLOORING	95.7	46.1	83.4	87.0	46.1	76.9	93.5	47.0	82.0	95.1	47.0	83.2	111.3	66.2	100.2	110.4	47.2	94.8
097,099	WALL FINISHES, PAINTS & COATINGS	105.9	44.4	69.9	105.9	44.4	69.9	105.9	44.4	69.9	105.9	44.4	69.9	102.6	39.5	65.7	102.6	39.5	65.7
09	FINISHES	95.7	45.9	69.8	91.8	45.9	67.9	94.1	46.1	69.1	94.9	46.1	69.5	107.2	47.0	75.8	106.4	45.0	74.4
10 - 14	TOTAL DIV. 10000 - 14000	100.0	71.9	94.1	100.0	71.8	94.1	100.0	71.9	94.1	100.0	71.9	94.1	100.0	65.8	92.9	100.0	66.3	93.0
15	MECHANICAL	100.1	42.6	74.5	100.1	42.6	74.5	100.1	42.6	74.5	100.1	42.6	74.5	100.2	39.9	73.4	100.2	40.0	73.4
16	ELECTRICAL	99.6	40.3	58.4	95.4	23.0	45.1	98.9	36.7	55.7	98.9	36.7	55.7	102.5	46.4	63.6	96.1	55.7	68.1
01 - 16	WEIGHTED AVERAGE	95.7	51.9	74.5	94.1	49.8	72.7	94.3	50.8	73.3	94.6	50.8	73.4	101.0	54.2	78.4	100.4	55.3	78.6

DIVISION		SOUTH DAKOTA						TENNESSEE											
		RAPID CITY			SIOUX FALLS			CHATTANOOGA			JACKSON			JOHNSON CITY			KNOXVILLE		
		MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL
01590	EQUIPMENT RENTAL	.0	95.4	95.4	.0	96.7	96.7	.0	104.7	104.7	.0	105.1	105.1	.0	97.6	97.6	.0	97.6	97.6
02	SITE CONSTRUCTION	81.0	94.7	91.4	82.0	97.0	93.4	104.1	97.4	99.0	103.4	95.4	97.3	113.5	86.1	92.7	91.2	86.1	87.4
03100	CONCRETE FORMS & ACCESSORIES	106.8	42.0	50.5	93.7	44.0	50.6	93.6	52.4	57.8	84.3	37.9	44.0	78.2	54.6	57.7	92.5	54.7	59.7
03200	CONCRETE REINFORCEMENT	100.2	64.3	79.3	100.2	64.5	79.4	94.0	49.2	67.9	99.7	48.6	70.0	98.0	49.4	69.7	94.0	49.4	68.0
03300	CAST-IN-PLACE CONCRETE	95.8	47.9	76.5	99.9	55.1	81.8	103.5	54.1	83.6	101.6	38.4	76.1	83.2	60.4	74.0	97.2	55.4	80.3
03	CONCRETE	93.5	49.7	71.7	94.7	53.1	74.0	94.0	54.3	74.2	93.6	42.4	68.1	98.8	57.5	78.2	91.0	55.8	73.5
04	MASONRY	106.0	56.3	75.7	103.2	65.1	80.0	97.4	51.1	69.1	110.6	30.7	61.8	108.4	50.8	73.2	75.7	50.8	60.5
05	METALS	109.2	75.7	97.0	109.8	76.3	97.5	97.0	82.5	91.7	95.1	79.1	89.3	94.7	82.2	90.1	97.2	82.3	91.8
06	WOOD & PLASTICS	108.3	41.7	74.1	98.5	41.2	69.0	95.7	53.4	74.0	82.3	40.1	60.6	71.8	56.7	64.0	85.1	56.7	70.5
07	THERMAL & MOISTURE PROTECTION	98.6	50.8	76.0	98.0	55.2	77.7	102.0	54.3	79.4	100.0	40.1	71.6	96.5	55.1	76.9	94.1	54.5	75.4
08	DOORS & WINDOWS	100.5	47.3	87.7	100.5	47.1	87.6	99.0	52.5	87.8	99.8	43.9	86.3	95.1	55.8	85.7	91.8	55.8	83.2
09200	PLASTER & GYPSUM BOARD	104.7	40.4	63.2	104.7	39.9	62.9	93.2	52.6	66.9	96.8	38.8	59.3	104.5	55.9	73.1	111.1	55.9	75.4
095,098	CEILINGS & ACOUSTICAL TREATMENT	114.9	40.4	64.8	114.9	39.9	64.5	95.9	52.6	66.8	96.4	38.8	57.7	87.1	55.9	66.1	92.7	55.9	68.0
09600	FLOORING	110.4	75.7	101.9	110.4	81.5	103.3	99.3	58.0	89.1	90.4	28.1	75.0	92.6	59.6	84.4	98.1	59.6	88.6
097,099	WALL FINISHES, PAINTS & COATINGS	102.6	39.5	65.7	102.6	39.5	65.7	105.0	48.9	72.1	94.1	31.9	57.7	102.9	62.5	79.3	102.9	62.5	79.3
09	FINISHES	107.7	47.8	76.5	107.6	50.1	77.7	97.5	53.1	74.4	95.5	36.0	64.5	98.2	56.6	76.5	92.8	56.6	73.9
10 - 14	TOTAL DIV. 10000 - 14000	100.0	63.7	92.4	100.0	65.9	92.9	100.0	64.0	92.5	100.0	57.7	91.2	100.0	69.6	93.7	100.0	69.7	93.7
15	MECHANICAL	100.2	37.1	72.1	100.2	40.1	73.5	100.2	52.9	79.1	100.1	46.9	76.5	99.9	58.6	81.5	99.9	62.5	83.2
16	ELECTRICAL	96.9	55.7	68.3	95.8	69.7	77.6	103.5	62.3	74.9	99.3	35.7	55.1	90.9	38.1	54.2	100.4	61.2	73.1
01 - 16	WEIGHTED AVERAGE	101.1	55.6	79.1	101.0	60.5	81.4	98.7	61.8	80.9	98.5	49.1	74.6	98.1	58.9	79.1	94.8	63.3	79.6

DIVISION		TENNESSEE						TEXAS											
		MEMPHIS			NASHVILLE			ABILENE			AMARILLO			AUSTIN			BEAUMONT		
		MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL
01590	EQUIPMENT RENTAL	.0	102.8	102.8	.0	105.4	105.4	.0	85.8	85.8	.0	85.8	85.8	.0	86.1	86.1	.0	88.0	88.0
02	SITE CONSTRUCTION	97.5	92.0	93.3	95.2	100.1	98.9	103.2	85.0	89.4	103.5	85.9	90.2	86.1	85.7	85.8	94.9	87.2	89.1
03100	CONCRETE FORMS & ACCESSORIES	94.6	62.6	66.8	92.0	68.3	71.4	99.3	49.9	56.4	103.0	59.2	65.0	97.4	64.8	69.0	107.0	62.2	68.1
03200	CONCRETE REINFORCEMENT	92.3	65.6	76.7	95.1	64.5	77.2	95.6	58.1	73.8	95.6	57.8	73.6	94.1	60.3	74.4	94.9	51.4	69.6
03300	CAST-IN-PLACE CONCRETE	91.9	65.9	81.4	96.2	65.0	83.6	95.6	47.8	76.4	100.5	54.9	82.1	91.5	56.7	77.5	87.8	62.8	77.7
03	CONCRETE	87.5	66.2	76.9	91.7	68.0	79.9	89.9	51.8	70.9	92.6	58.2	75.5	82.0	61.6	71.9	86.7	61.1	73.9
04	MASONRY	85.4	61.5	70.8	85.7	64.0	72.4	99.3	53.1	71.1	103.1	46.1	68.3	93.8	52.0	68.2	105.6	64.6	80.2
05	METALS	96.5	94.2	95.7	99.7	92.3	97.0	96.7	69.7	86.8	96.7	69.3	86.7	95.7	69.8	86.2	95.7	69.6	86.1
06	WOOD & PLASTICS	94.3	64.3	78.9	88.4	70.4	79.1	101.8	50.1	75.2	104.8	62.6	83.1	98.3	69.2	83.3	109.9	63.8	86.2
07	THERMAL & MOISTURE PROTECTION	98.0	64.5	82.2	97.7	66.5	82.9	99.2	55.1	78.3	101.8	52.1	78.3	96.5	58.3	78.4	102.4	65.1	84.7
08	DOORS & WINDOWS	98.8	67.3	91.2	96.5	69.9	90.1	92.3	51.8	82.5	92.3	55.9	83.5	94.6	66.5	87.9	95.8	57.6	86.2
09200	PLASTER & GYPSUM BOARD	102.4	63.5	77.3	101.9	70.0	81.3	96.0	49.4	65.9	96.0	62.4	74.3	99.2	69.1	79.7	98.0	63.5	75.2
095,098	CEILINGS & ACOUSTICAL TREATMENT	89.6	63.5	72.1	89.6	70.0	76.4	101.9	49.4	66.6	101.9	62.4	75.3	91.0	69.1	76.3	106.6	63.5	77.2
09500	FLOORING	91.7	52.9	82.1	103.2	72.0	95.5	118.1	62.3	104.4	117.9	50.5	101.3	97.9	58.1	88.1	116.8	76.3	106.2
097,099	WALL FINISHES, PAINTS & COATINGS	93.8	63.4	76.0	109.1	58.9	79.7	94.7	63.8	76.6	94.7	44.2	65.1	95.3	49.6	68.5	91.4	59.6	72.3
09	FINISHES	92.8	60.5	76.0	101.9	68.1	84.3	102.8	53.5	77.1	102.9	56.0	78.5	93.8	62.1	77.3	97.9	64.7	80.6
10 - 14	TOTAL DIV. 10000 - 14000	100.0	76.4	95.1	100.0	71.7	94.1	100.0	72.1	94.2	100.0	73.7	94.5	100.0	74.7	94.7	100.0	77.1	95.1
15	MECHANICAL	100.0	69.7	86.5	100.0	69.3	86.3	100.1	53.3	79.3	100.1	59.1	81.9	99.8	64.9	84.2	100.0	64.7	84.1
16	ELECTRICAL	99.1	72.5	80.7	101.6	69.9	79.6	97.7	57.7	69.9	98.7	65.1	75.3	97.1	73.5	80.7	96.6	75.4	83.5
01 - 16	WEIGHTED AVERAGE	96.0	72.1	84.4	97.7	73.7	86.1	97.6	58.8	78.8	98.3	62.0	80.8	94.8	67.0	81.3	97.1	68.7	83.2

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DIVISION	WISCONSIN																	
	GREEN BAY			KENOSHA			LA CROSSE			MADISON			MILWAUKEE			RACINE		
	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL
01590 EQUIPMENT RENTAL	.0	95.4	95.4	.0	97.7	97.7	.0	97.7	97.7	.0	99.9	99.9	.0	86.1	86.1	.0	99.9	99.9
02 SITE CONSTRUCTION	85.4	98.0	94.9	90.5	101.7	99.0	77.4	102.1	96.1	85.6	104.8	100.2	86.8	93.7	92.0	85.9	105.5	100.8
03100 CONCRETE FORMS & ACCESSORIES	117.3	95.7	98.5	113.4	104.4	105.6	80.5	96.0	93.9	100.6	97.2	97.7	103.6	108.5	107.9	100.3	104.4	103.9
03200 CONCRETE REINFORCEMENT	100.2	90.3	94.4	111.7	99.4	104.5	102.2	89.0	94.5	104.7	89.3	95.7	102.9	99.6	101.0	104.7	99.4	101.6
03300 CAST-IN-PLACE CONCRETE	100.6	98.8	99.9	111.7	101.6	107.6	87.4	95.8	90.8	100.6	98.4	99.7	100.6	107.8	103.5	100.6	101.3	100.9
03 CONCRETE	96.6	95.8	96.2	105.9	102.4	104.2	86.1	94.6	90.3	98.6	96.2	97.4	98.8	105.7	102.3	98.6	102.3	100.4
04 MASONRY	115.3	98.2	104.8	100.4	109.8	106.1	92.9	99.3	96.8	104.2	102.6	103.2	104.2	114.5	110.5	104.2	109.7	107.6
05 METALS	96.4	94.2	95.6	96.5	100.8	98.1	93.8	93.6	93.7	96.8	95.3	96.3	98.4	91.4	95.8	96.8	100.8	98.3
06 WOOD & PLASTICS	124.2	95.8	109.6	120.5	103.1	111.6	94.7	95.8	95.3	113.9	96.5	104.9	116.9	107.4	112.0	114.1	103.1	108.5
07 THERMAL & MOISTURE PROTECTION	100.1	89.3	95.0	97.9	102.4	100.0	96.7	89.9	93.5	96.9	97.6	97.2	96.2	107.3	101.5	97.6	101.8	99.6
08 DOORS & WINDOWS	100.3	88.1	97.3	97.2	103.9	98.8	101.8	85.6	97.9	102.1	96.1	100.6	104.4	106.2	104.8	102.1	103.9	102.5
09200 PLASTER & GYPSUM BOARD	99.1	96.2	97.2	96.4	103.7	101.2	107.6	96.2	100.2	107.7	96.9	100.7	107.7	107.9	107.8	107.7	103.7	105.1
095,098 CEILINGS & ACOUSTICAL TREATMENT	104.5	96.2	98.9	87.8	103.7	98.5	104.1	96.2	98.8	97.1	96.9	97.0	97.1	107.9	104.4	97.1	103.7	101.6
09600 FLOORING	111.5	106.3	110.2	108.7	109.5	108.9	85.5	106.3	90.6	92.2	101.3	94.4	94.9	112.4	99.3	92.2	109.5	96.5
097,099 WALL FINISHES, PAINTS & COATINGS	102.6	69.6	83.3	103.6	92.0	96.8	92.0	77.1	83.3	92.9	92.5	92.7	95.4	104.6	100.8	92.9	97.1	95.4
09 FINISHES	105.9	95.3	100.3	101.4	104.3	102.9	96.8	96.4	96.6	98.3	97.6	97.9	99.4	109.1	104.5	98.3	104.9	101.7
10 - 14 TOTAL DIV. 10000 - 14000	100.0	90.7	98.1	100.0	99.1	99.8	100.0	91.8	98.3	100.0	92.0	98.3	100.0	100.8	100.2	100.0	99.1	99.8
15 MECHANICAL	100.6	89.2	95.5	100.4	97.6	99.1	100.2	87.6	94.6	100.1	94.1	97.4	100.1	99.3	99.7	100.1	97.6	99.0
16 ELECTRICAL	96.1	87.8	90.3	93.3	99.1	97.3	105.4	88.0	93.3	92.1	94.8	94.0	92.9	103.7	100.4	91.0	98.9	96.5
01 - 16 WEIGHTED AVERAGE	100.2	92.8	96.6	99.5	101.6	100.5	96.5	92.9	94.7	98.8	97.0	97.9	99.5	102.9	101.1	98.7	102.0	100.3

DIVISION	WYOMING									CANADA								
	CASPER			CHEYENNE			ROCK SPRINGS			CALGARY, ALBERTA			EDMONTON, ALBERTA			HALIFAX, NOVA SCOTIA		
	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL
01590 EQUIPMENT RENTAL	.0	100.3	100.3	.0	100.3	100.3	.0	100.3	100.3	.0	98.6	98.6	.0	98.6	98.6	.0	98.6	98.6
02 SITE CONSTRUCTION	83.6	99.0	95.3	83.4	99.0	95.2	87.1	98.6	95.8	108.9	97.2	100.0	110.3	97.2	100.4	97.8	96.6	96.9
03100 CONCRETE FORMS & ACCESSORIES	100.1	49.1	55.8	100.2	49.1	55.8	105.7	34.7	44.0	123.2	78.7	84.6	120.6	78.7	84.2	89.2	75.0	76.8
03200 CONCRETE REINFORCEMENT	107.3	52.5	75.4	100.7	52.6	72.7	109.4	52.2	76.1	161.2	61.5	103.1	161.2	61.5	103.1	147.9	56.1	94.4
03300 CAST-IN-PLACE CONCRETE	105.3	63.8	88.6	105.3	63.8	88.6	105.8	48.0	82.5	162.8	81.8	130.1	163.6	81.8	130.6	178.4	76.8	137.5
03 CONCRETE	107.3	55.6	81.6	106.5	55.7	81.2	108.1	43.9	76.1	146.7	77.1	112.0	146.9	77.1	112.1	152.3	72.7	112.6
MASONRY	107.0	44.8	69.0	106.0	47.2	70.1	172.6	36.6	89.5	177.8	80.0	118.1	177.8	80.0	118.1	160.2	79.4	110.8
METALS	105.0	65.6	90.6	106.3	65.7	91.5	105.0	64.3	90.2	100.8	81.4	93.7	100.8	81.4	93.7	100.7	78.3	92.5
06 WOOD & PLASTICS	95.4	47.6	70.9	94.6	47.6	70.5	101.5	33.8	66.7	114.8	78.1	95.9	111.1	78.1	94.1	83.9	74.3	78.9
07 THERMAL & MOISTURE PROTECTION	105.1	60.3	83.9	105.1	60.9	84.2	105.8	45.9	77.4	104.6	79.4	92.7	104.5	79.4	92.6	103.4	76.2	90.5
08 DOORS & WINDOWS	92.5	48.7	82.0	93.3	48.7	82.5	99.5	41.3	85.5	90.5	73.5	86.4	90.5	73.5	86.4	81.3	68.8	78.3
09200 PLASTER & GYPSUM BOARD	83.4	45.8	59.1	84.9	45.8	59.6	87.3	31.5	51.3	151.9	77.5	103.8	149.4	77.5	102.9	188.1	73.5	114.1
095,098 CEILINGS & ACOUSTICAL TREATMENT	100.1	45.8	63.6	107.2	45.8	65.9	100.1	31.5	54.0	101.9	77.5	85.5	101.9	77.5	85.5	101.9	73.5	82.8
09600 FLOORING	105.1	48.0	91.0	105.1	73.8	97.4	107.4	47.1	92.5	132.5	80.9	119.8	132.5	80.9	119.8	110.2	70.6	100.5
097,099 WALL FINISHES, PAINTS & COATINGS	108.1	63.4	81.9	108.0	63.4	81.9	108.1	38.5	67.3	109.3	76.4	90.0	109.4	76.4	90.1	109.3	68.1	85.2
09 FINISHES	97.6	49.6	72.6	99.0	54.9	76.0	98.9	36.5	66.4	120.6	79.3	99.1	120.4	79.3	99.0	117.1	73.5	94.4
10 - 14 TOTAL DIV. 10000 - 14000	100.0	77.3	95.3	100.0	77.2	95.3	100.0	57.9	91.2	100.0	86.3	97.1	100.0	82.1	96.3	100.0	71.6	94.1
15 MECHANICAL	100.0	66.6	85.1	100.0	50.4	78.0	100.0	35.6	71.4	99.2	70.6	86.5	99.2	70.6	86.5	98.6	78.6	89.7
16 ELECTRICAL	92.6	65.1	73.5	92.6	60.1	70.0	91.6	51.8	64.0	114.0	77.9	89.0	113.9	77.9	88.9	123.7	81.1	94.2
01 - 16 WEIGHTED AVERAGE	100.0	63.0	82.1	100.3	59.9	80.8	104.9	49.4	78.1	112.6	79.0	96.4	112.6	78.9	96.3	110.7	78.8	95.2

DIVISION	CANADA																	
	HAMILTON, ONTARIO			KITCHENER, ONTARIO			LAVAL, QUEBEC			LONDON, ONTARIO			MONTREAL, QUEBEC			OSHAWA, ONTARIO		
	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL
01590 EQUIPMENT RENTAL	.0	98.6	98.6	.0	98.6	98.6	.0	98.6	98.6	.0	98.6	98.6	.0	98.6	98.6	.0	98.6	98.6
02 SITE CONSTRUCTION	112.2	97.4	101.0	99.5	97.0	97.6	92.6	97.6	96.4	112.2	97.1	100.8	92.4	97.6	96.3	113.8	97.2	101.2
03100 CONCRETE FORMS & ACCESSORIES	122.6	102.4	105.0	116.4	93.7	96.7	132.3	94.0	99.0	122.4	97.1	100.4	132.3	94.0	99.0	124.2	98.2	101.6
03200 CONCRETE REINFORCEMENT	174.5	100.8	131.6	110.2	100.7	104.6	156.6	92.7	119.4	123.0	99.0	109.0	159.3	92.7	120.5	174.5	101.5	131.9
03300 CAST-IN-PLACE CONCRETE	157.2	104.8	136.1	146.7	84.7	121.7	140.1	100.7	124.2	157.2	102.1	135.0	138.6	100.7	123.3	169.7	90.7	137.8
03 CONCRETE	145.4	102.7	124.1	125.4	91.6	108.6	135.3	96.0	115.7	139.2	99.1	119.2	134.8	96.0	115.5	151.8	96.1	124.1
04 MASONRY	161.8	108.9	129.5	159.9	104.0	125.8	158.8	95.2	119.9	161.8	105.6	127.5	158.7	95.2	119.9	162.7	108.0	129.3
05 METALS	100.9	97.0	99.5	100.7	90.5	96.9	101.0	91.7	97.6	99.2	96.5	98.2	101.0	91.7	97.6	100.7	96.7	99.3
06 WOOD & PLASTICS	115.6	101.6	108.4	109.3	92.4	100.6	128.3	94.3	110.8	115.6	95.7	105.3	128.3	94.3	110.8	116.6	96.7	106.3
07 THERMAL & MOISTURE PROTECTION	104.6	100.6	102.7	103.1	95.6	99.5	104.8	96.7	101.0	104.6	98.5	101.7	104.8	96.7	101.0	104.6	96.2	100.6
08 DOORS & WINDOWS	90.5	99.6	92.7	82.0	88.9	83.7	90.5	82.6	88.6	91.4	95.3	92.3	90.5	82.6	88.6	89.7	96.6	91.3
09200 PLASTER & GYPSUM BOARD	209.7	101.7	139.9	153.2	92.2	113.8	148.3	94.2	113.3	209.7	95.6	136.0	148.3	94.2	113.3	157.1	96.6	118.0
095,098 CEILINGS & ACOUSTICAL TREATMENT	101.9	101.7	101.8	101.9	92.2	95.4	101.9	94.2	96.7	101.9	95.6	97.7	101.9	94.2	96.7	101.9	96.6	98.3
09600 FLOORING	132.5	105.4	125.8	128.2	105.4	122.5	132.5	106.2	126.0	132.5	105.4	125.8	132.5	106.2	126.0	132.5	108.1	126.5
097,099 WALL FINISHES, PAINTS & COATINGS	109.3	113.7	111.9	109.3	104.2	106.3	109.3	99.0	103.3	109.3	113.7	111.9	109.3	99.0	103.3	109.3	119.5	115.3
FINISHES	128.0	104.5	115.8	118.2	97.2	107.3	119.1	97.4	107.8	128.0	100.6	113.8	119.1	97.4	107.8	120.9	102.7	111.4
10 - 14 TOTAL DIV. 10000 - 14000	100.0	106.7	101.4	100.0	104.1	100.8	100.0	91.5	98.2	100.0	105.1	101.1	100.0	91.5	98.2	100.0	105.7	101.2
15 MECHANICAL	99.2	98.3	98.8	98.6	93.9	96.5	98.6	85.5	92.8	99.2	94.4	97.0	99.2	85.5	93.1	98.6	96.0	97.4
16 ELECTRICAL	127.1	108.8	114.4	127.1	105.0	111.8	123.7	85.9	97.5	127.2	105.2	111.9	123.7	85.9	97.5	127.2	105.8	112.4
01 - 16 WEIGHTED AVERAGE	113.3	102.6	108.1	108.1	96.9	102.7	110.2	91.5	101.1	112.4	99.5	106.2	110.3	91.5	101.2	113.2	100.1	106.9

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.1 MAJOR CLIMATIC ZONES

The major climatic factor which influences crop growth is rainfall. In areas with little rainfall the natural vegetation is limited, while in areas with high annual rainfall dense tropical rain forests are found.

Based on the annual rainfall, a distinction can be made between 6 major climatic zones as is shown in Table 1. Figure 2 indicates, as an example, the major climatic zones of Africa.

Table 1 MAJOR CLIMATIC ZONES

Climatic Zone	Annual Rainfall (mm)	Wet period (months)	Vegetation
Desert	less than 100	0-1	Little or no vegetation
Arid	100-400	1-3	Some scrubs, some grassland
Semi-arid	400-600	3-4	Scrubs & bushes, grassland
Sub - humid	600-1200	4-6	Bushes to woodland, grassland
Moist sub-humid	1200-1500	6-9	Forest and woodland
Humid	more than 1500	9-12	Tropical rain forest

The wet period (see Table 1) refers to the period during which the rainfall is higher than the evapotranspiration. Evapotranspiration is the sum of the evaporation from the soil surface and the transpiration by the plants (see Volume 1, Chapter 4).

BILL 12 W, WYOMING USA

Located at *about* 43.25°N 105.48°W. Height *about* 1470m / 4823 feet above sea level.

Average Rainfall

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
mm	5.9	14.1	8.4	20.7	41.7	36.8	9.9	32.2	11.3	11.6	13.9	7.8	215.2
inches	0.2	0.6	0.3	0.8	1.6	1.4	0.4	1.3	0.4	0.5	0.5	0.3	8.5

Source: derived from NCDC Cooperative Stations. 5 complete years between 1948 and 1957

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RENO, CAMPBELL COUNTY, WYOMING USA

Located at *about* 43.68°N 105.51°W. Height *about* 1548m / 5078 feet above sea level.

Average Rainfall

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
mm	8.2	8.5	8.1	26.9	68.8	102.1	22.1	22.1	38.1	9.3	9.1	12.1	336.3
inches	0.3	0.3	0.3	1.1	2.7	4.0	0.9	0.9	1.5	0.4	0.4	0.5	13.2

Source: derived from NCDC Cooperative Stations. 3 complete years between 1963 and 1983

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GILLETTE 6 SE, CAMPBELL COUNTY, WYOMING USA

Located at *about* 44.23°N 105.43°W. Height *about* 1399m / 4590 feet above sea level.

(19)

Average Rainfall

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
mm	13.2	13.9	20.8	45.9	75.4	76.7	42.6	31.7	37.0	30.9	17.2	16.0	421.8
inches	0.5	0.5	0.8	1.8	3.0	3.0	1.7	1.2	1.5	1.2	0.7	0.6	16.6

Source: derived from NCDC TD 9641 Clim 81 1961-1990 Normals. 30 years between 1961 and 1990

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DECKER 4 NNE, BIG HORN COUNTY, MONTANA USA

Located at *about* 45.05°N 106.80°W. Height *about* 1066m / 3497 feet above sea level.

Average Rainfall

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
mm	12.7	9.1	15.4	35.8	56.6	58.9	23.8	24.6	31.2	22.6	17.0	14.2	322.3
inches	0.5	0.4	0.6	1.4	2.2	2.3	0.9	1.0	1.2	0.9	0.7	0.6	12.7

Source: derived from NCDC TD 9641 Clim 81 1961-1990 Normals. 30 years between 1961 and 1990

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SHERIDAN/COUNTY,WY., UNITED STATES OF AMERICA

Located at *about* 44.77°N 106.90°W. Height *about* 1226m / 4022 feet above sea level.

9

Average Rainfall

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
mm	19.3	17.6	30.5	49.1	64.6	56.5	28.2	20.8	33.8	29.1	19.9	16.7	387.1
inches	0.8	0.7	1.2	1.9	2.5	2.2	1.1	0.8	1.3	1.1	0.8	0.7	15.2

Source: derived from GHCN 1. 1172 months between 1893 and 1990

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PARKMAN 5 WNW, SHERIDAN COUNTY, WYOMING USA

Located at *about* 44.98°N 107.43°W. Height *about* 1352m / 4435 feet above sea level.

(3)

Average Rainfall

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
mm	18.3	24.2	37.1	69.9	90.4	65.8	26.4	28.1	48.1	33.5	27.4	17.6	487.9
inches	0.7	1.0	1.5	2.8	3.6	2.6	1.0	1.1	1.9	1.3	1.1	0.7	19.2

Source: derived from NCDC Cooperative Stations. 20 complete years between 1949 and 1983

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CROW AGENCY, BIG HORN COUNTY, MONTANA USA

Located at *about* 45.60°N 107.45°W. Height *about* 923m / 3028 feet above sea level.

Average Rainfall

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
mm	21.3	17.7	25.4	46.2	66.0	56.3	22.6	27.9	45.4	32.5	23.6	19.0	404.3
inches	0.8	0.7	1.0	1.8	2.6	2.2	0.9	1.1	1.8	1.3	0.9	0.7	15.9

Source: derived from NCDC TD 9641 Clim 81 1961-1990 Normals. 30 years between 1961 and 1990

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CUSTER, YELLOWSTONE COUNTY, MONTANA USA

Located at *about* 46.13°N 107.53°W. Height *about* 836m / 2742 feet above sea level.

Average Rainfall

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
mm	14.7	8.3	14.3	36.5	46.2	76.2	24.3	26.0	29.0	22.7	10.0	11.0	320.1
inches	0.6	0.3	0.6	1.4	1.8	3.0	1.0	1.0	1.1	0.9	0.4	0.4	12.6

Source: derived from NCDC Cooperative Stations. 20 complete years between 1941 and 1975

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BIG SKY 3 S, GALLATIN COUNTY, MONTANA USA

Located at *about* 45.21°N 111.28°W. Height *about* 2013m / 6604 feet above sea level.

Average Rainfall

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
mm	44.7	29.1	44.4	38.2	66.2	80.0	45.1	47.4	53.7	39.8	36.7	43.9	570.2
inches	1.8	1.1	1.7	1.5	2.6	3.1	1.8	1.9	2.1	1.6	1.4	1.7	22.4

Source: derived from NCDC Cooperative Stations. 16 complete years between 1967 and 1984

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COLSTRIP, ROSEBUD COUNTY, MONTANA USA

(2)

Located at *about* 45.88°N 106.61°W. Height *about* 980m / 3215 feet above sea level.

Average Rainfall

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
mm	16.5	12.7	19.8	41.1	66.5	67.8	29.7	30.9	36.8	29.4	15.4	15.4	382.5
inches	0.6	0.5	0.8	1.6	2.6	2.7	1.2	1.2	1.4	1.2	0.6	0.6	15.1

Source: derived from NCDC TD 9641 Clim 81 1961-1990 Normals. 30 years between 1961 and 1990

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FORSYTH, ROSEBUD COUNTY, MONTANA USA

Located at *about* 46.26°N 106.66°W. Height *about* 766m / 2513 feet above sea level.

(15)

Average Rainfall

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
mm	10.1	9.8	20.4	33.2	66.4	56.5	37.8	24.4	42.6	26.4	17.4	13.0	359.0
inches	0.4	0.4	0.8	1.3	2.6	2.2	1.5	1.0	1.7	1.0	0.7	0.5	14.1

Source: derived from NCDC Cooperative Stations. 17 complete years between 1975 and 1995

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MILES CITY MUNI AP, CUSTER COUNTY, MONTANA USA

Located at *about* 46.43°N 105.86°W. Height *about* 800m / 2624 feet above sea level.

Average Rainfall

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
mm	13.9	11.4	15.7	34.5	57.6	70.3	39.3	29.2	32.2	22.8	13.7	16.2	357.3
inches	0.5	0.4	0.6	1.4	2.3	2.8	1.5	1.1	1.3	0.9	0.5	0.6	14.1

Source: derived from NCDC TD 9641 Clim 81 1961-1990 Normals. 30 years between 1961 and 1990

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TERRY, PRAIRIE COUNTY, MONTANA USA

Located at *about* 46.80°N 105.30°W. Height *about* 685m / 2247 feet above sea level.

(17)

Average Rainfall

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
mm	7.8	5.5	9.1	24.6	49.2	62.7	35.3	30.4	32.7	18.2	8.8	7.1	292.1
inches	0.3	0.2	0.4	1.0	1.9	2.5	1.4	1.2	1.3	0.7	0.3	0.3	11.5

Source: derived from NCDC TD 9641 Clim 81 1961-1990 Normals. 30 years between 1961 and 1990

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GLENDIVE, DAWSON COUNTY, MONTANA USA

Located at *about* 47.10°N 104.71°W. Height *about* 632m / 2073 feet above sea level.

(16)

Average Rainfall

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
mm	11.6	8.1	14.4	30.2	53.3	73.9	41.9	36.0	34.5	19.0	10.6	11.6	345.6
inches	0.5	0.3	0.6	1.2	2.1	2.9	1.6	1.4	1.4	0.7	0.4	0.5	13.6

Source: derived from NCDC TD 9641 Clim 81 1961-1990 Normals. 30 years between 1961 and 1990

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SAVAGE, RICHLAND COUNTY, MONTANA USA

Located at *about* 47.45°N 104.35°W. Height *about* 605m / 1985 feet above sea level.

(25)

Average Rainfall

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
mm	8.6	6.3	12.7	31.7	52.8	75.1	50.0	32.7	36.0	19.8	8.8	10.1	345.1
inches	0.3	0.2	0.5	1.2	2.1	3.0	2.0	1.3	1.4	0.8	0.3	0.4	13.6

Source: derived from NCDC TD 9641 Clim 81 1961-1990 Normals. 30 years between 1961 and 1990

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BEACH, GOLDEN VALLEY COUNTY, NORTH DAKOTA USA

Located at *about* 46.91°N 104.00°W. Height *about* 850m / 2788 feet above sea level.

Average Rainfall

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
mm	11.9	7.6	16.0	35.0	60.1	73.6	43.9	41.9	39.8	23.6	12.1	9.9	375.9
inches	0.5	0.3	0.6	1.4	2.4	2.9	1.7	1.6	1.6	0.9	0.5	0.4	14.8

Source: derived from NCDC TD 9641 Clim 81 1961-1990 Normals. 30 years between 1961 and 1990

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DICKINSON EXP STN, STARK COUNTY, NORTH DAKOTA USA

(14)

Located at *about* 46.88°N 102.80°W. Height *about* 749m / 2457 feet above sea level.

Average Rainfall

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
mm	8.6	7.6	16.7	46.7	66.5	92.2	53.5	42.6	41.4	25.4	11.4	10.4	423.4
inches	0.3	0.3	0.7	1.8	2.6	3.6	2.1	1.7	1.6	1.0	0.4	0.4	16.7

Source: derived from NCDC TD 9641 Clim 81 1961-1990 Normals. 30 years between 1961 and 1990

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MANDAN EXP STN, MORTON COUNTY, NORTH DAKOTA USA

Located at *about* 46.80°N 100.90°W. Height *about* 533m / 1748 feet above sea level.

Average Rainfall

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
mm	8.3	7.3	13.7	43.4	57.1	75.1	59.9	49.2	41.1	24.3	10.6	9.1	399.7
inches	0.3	0.3	0.5	1.7	2.2	3.0	2.4	1.9	1.6	1.0	0.4	0.4	15.7

Source: derived from NCDC TD 9641 Clim 81 1961-1990 Normals. 30 years between 1961 and 1990

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BISMARCK 12 ENE, BURLEIGH COUNTY, NORTH DAKOTA USA

(13)

Located at *about* 46.85°N 100.53°W. Height *about* 524m / 1719 feet above sea level.

Average Rainfall

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
mm	13.9	12.7	22.3	46.4	54.3	80.2	57.6	48.7	42.4	25.4	13.2	14.7	432.3
inches	0.5	0.5	0.9	1.8	2.1	3.2	2.3	1.9	1.7	1.0	0.5	0.6	17.0

Source: derived from NCDC TD 9641 Clim 81 1961-1990 Normals. 30 years between 1961 and 1990

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STEELE, KIDDER COUNTY, NORTH DAKOTA USA

Located at *about* 46.86°N 99.90°W. Height *about* 568m / 1863 feet above sea level.

Average Rainfall

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
mm	10.6	10.4	22.0	43.1	58.6	84.5	58.1	45.4	43.9	27.6	11.1	10.9	426.9
inches	0.4	0.4	0.9	1.7	2.3	3.3	2.3	1.8	1.7	1.1	0.4	0.4	16.8

Source: derived from NCDC TD 9641 Clim 81 1961-1990 Normals. 30 years between 1961 and 1990

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JAMESTOWN MUNI AP, STUTSMAN COUNTY, NORTH DAKOTA USA

Located at *about* 46.91°N 98.68°W. Height *about* 454m / 1489 feet above sea level.

Average Rainfall

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
mm	15.7	11.9	22.3	39.1	47.2	75.9	70.1	52.5	44.7	24.3	12.7	12.1	429.0
inches	0.6	0.5	0.9	1.5	1.9	3.0	2.8	2.1	1.8	1.0	0.5	0.5	16.9

Source: derived from NCDC TD 9641 Clim 81 1961-1990 Normals. 30 years between 1961 and 1990

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VALLEY CITY 3 NNW, BARNES COUNTY, NORTH DAKOTA USA

Located at *about* 46.96°N 98.03°W. Height *about* 368m / 1207 feet above sea level. 24

Average Rainfall

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
mm	13.2	10.1	21.8	41.6	58.6	83.0	64.2	63.2	52.8	30.7	14.2	13.2	467.1
inches	0.5	0.4	0.9	1.6	2.3	3.3	2.5	2.5	2.1	1.2	0.6	0.5	18.4

Source: derived from NCDC TD 9641 Clim 81 1961-1990 Normals. 30 years between 1961 and 1990

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FARGO HECTOR FIELD, CASS COUNTY, NORTH DAKOTA USA

Located at *about* 46.90°N 96.80°W. Height *about* 274m / 898 feet above sea level.

Average Rainfall

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
mm	16.1	12.0	24.3	43.0	58.6	78.9	81.8	60.9	46.4	37.4	20.7	16.3	497.6
inches	0.6	0.5	1.0	1.7	2.3	3.1	3.2	2.4	1.8	1.5	0.8	0.6	19.6

Source: derived from NCDC Cooperative Stations. 47 complete years between 1948 and 1995

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MOORHEAD, CLAY COUNTY, MINNESOTA USA

Located at *about* 46.85°N 96.75°W. Height *about* 271m / 889 feet above sea level.

(8)

Average Rainfall

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
mm	30.7	24.6	20.3	75.6	35.8	78.2	175.2	83.3	47.4	96.5	33.2	6.8	708.1
inches	1.2	1.0	0.8	3.0	1.4	3.1	6.9	3.3	1.9	3.8	1.3	0.3	27.9

Source: derived from NCDC Cooperative Stations. 1 complete years between 1991 and 1995

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WAHPETON 3 N, RICHLAND COUNTY, NORTH DAKOTA USA

Located at *about* 46.31°N 96.60°W. Height *about* 291m / 954 feet above sea level.

Average Rainfall

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
mm	12.7	9.6	23.3	53.8	71.3	96.5	85.5	68.5	60.4	41.1	15.7	12.1	551.1
inches	0.5	0.4	0.9	2.1	2.8	3.8	3.4	2.7	2.4	1.6	0.6	0.5	21.7

Source: derived from NCDC TD 9641 Clim 81 1961-1990 Normals. 30 years between 1961 and 1990

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HERMAN, MINNESOTA USA

Located at *about* 45.80°N 96.15°W. Height *about* 329m / 1079 feet above sea level.

Average Rainfall

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
mm	20.8	16.9	41.5	58.2	76.3	127.2	62.6	68.3	35.0	32.5	22.4	27.1	589.7
inches	0.8	0.7	1.6	2.3	3.0	5.0	2.5	2.7	1.4	1.3	0.9	1.1	23.2

Source: derived from NCDC Cooperative Stations. 5 complete years between 1948 and 1957

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BENSON, SWIFT COUNTY, MINNESOTA USA

(10)

Located at *about* 45.31°N 95.60°W. Height *about* 317m / 1040 feet above sea level.

Average Rainfall

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
mm	21.8	21.5	43.1	60.7	76.7	111.5	89.1	87.1	71.6	60.7	32.2	20.8	697.2
inches	0.9	0.8	1.7	2.4	3.0	4.4	3.5	3.4	2.8	2.4	1.3	0.8	27.4

Source: derived from NCDC TD 9641 Clim 81 1961-1990 Normals. 30 years between 1961 and 1990

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ORTONVILLE, BIG STONE COUNTY, MINNESOTA USA

Located at *about* 45.30°N 96.45°W. Height *about* 299m / 981 feet above sea level. 22

Average Rainfall

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
mm	9.6	17.3	23.0	52.4	73.0	92.8	79.3	67.0	41.8	36.5	19.3	13.0	526.1
inches	0.4	0.7	0.9	2.1	2.9	3.7	3.1	2.6	1.6	1.4	0.8	0.5	20.7

Source: derived from NCDC Cooperative Stations. 18 complete years between 1948 and 1983

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BIG STONE CITY 2 NW, GRANT COUNTY, SOUTH DAKOTA USA

21

Located at *about* 45.30°N 96.50°W. Height *about* 338m / 1108 feet above sea level.

Average Rainfall

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
mm	9.7	17.4	26.0	79.3	53.6	88.2	97.4	63.1	63.6	40.5	18.8	6.8	565.5
inches	0.4	0.7	1.0	3.1	2.1	3.5	3.8	2.5	2.5	1.6	0.7	0.3	22.3

Source: derived from NCDC Cooperative Stations. 8 complete years between 1983 and 1995

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WYOMING DEPARTMENT OF TRANSPORTATION
AVERAGE UNIT BID PRICES FOR 2001 ENGLISH

ITEM	ITEM DESCRIPTION	UNIT	N	TOTAL QUANTITY	AVERAGE PRICE
203.02800	LINEAR GRADING	MI	5	48	14,176.53
204.03200	HAUL	TMI	1	2,503,000	0.12
205.03100	HAUL ROAD RESTORATION	FA	5	96,000	0.85
206.03200	TRENCH EXCAVATION	CY	1	327	8.01
206.03300	CULVERT SUBEXCAVATION	CY	16	8,033	10.32
206.03315	CULVERT CLEANING	EA	5	63	5,959.40
207.03100	TOPSOIL STORING	CY	51	1,616,451	1.31
207.03200	TOPSOIL PLACING	CY	49	1,618,699	1.68
207.03300	TOPSOIL BORROW	CY	4	19,141	9.77
208.03100	OLD ROAD OBLITERATION	MI	3	1	27,692.19
208.03200	OLD ROAD OBLITERATION	STA	2	112	291.73
209.01000	WATER	MG	65	411,191	8.83
210.03200	BULLDOZER	HR	15	929	116.83
210.03300	MOTOR GRADER	HR	65	4,940	78.25
210.03420	ROLLER,TYPE II	HR	1	20	79.67
210.03430	ROLLER,TYPE III	HR	3	130	66.48
210.03460	ROLLER,TYPE VI	HR	3	150	68.00
210.03470	ROLLER,TYPE VII	HR	2	20	77.88
210.03500	SCRAPER	CYHR	5	3,835	15.20
210.03600	TRUCK	CYHR	2	3,116	19.35
210.03700	LOADER	HR	4	285	98.37
210.03710	BACKHOE	HR	3	85	130.02
212.02100	DRY EXCAVATION	CY	19	24,183	13.84
212.02200	WET EXCAVATION	CY	6	4,722	72.51
212.03900	PERVIOUS BACKFILL MATERIAL	CY	9	965	49.03
213.03100	STRIPPING PITS	CY	43	2,291,112	0.56
215.03100	TEMPORARY SOIL EROSION CONTROL	FA	2	7,000	0.95
215.03200	BURLAP BAG CURBS	LF	3	10,138	4.71
215.03300	SILT FENCE	LF	4	19,619	3.38
215.03400	EROSION BALES	EA	6	745	17.26
216.03100	SEEDING (PLS)	LB	62	49,608	12.58
216.03105	SEEDING	SF	16	1,319,464	0.11
216.03120	FERTILIZER TYPE I (AVAILABLE NITROGEN)	LB	58	97,451	1.63
216.03130	FERTILIZER TYPE II (AVAILABLE NITROGEN)	LB	3	4,318	2.13
216.03150	FERTILIZER TYPE V COMPOST	TON	1	193	61.69
216.03180	FERTILIZER SPECIAL	LB	4	53,345	0.67
216.03500	DRY MULCH, HYDRAULIC SEEDING	TON	1	3	1,232.52
216.03600	DRY MULCH, HYDRAULIC MULCHING	TON	7	87	939.74
216.03700	SODDING	SF	5	52,422	0.63
216.03900	DRY MULCH	TON	59	4,930	124.91
216.03910	EROSION CONTROL BLANKET	SY	22	718,933	1.76
216.03920	EROSION CONTROL NETTING	SY	1	32,000	0.47
216.03930	EROSION CONTROL AGENT	ACRE	2	59	833.25
216.03940	MULCH TACK TYPE AR	ACRE	2	15	544.91
216.03950	MULCH TACK TYPE M	ACRE	3	25	312.16
216.03955	COCONUT FIBER DITCH LINING	SY	2	18,777	1.49
216.07600	PAVERS	SF	1	10,500	6.97
218.01205	SCALING (MACHINE)	HR	1	5	4,305.93
218.01210	SCALING (MANUAL)	HR	1	30	1,790.09
218.01900	DYNAMIC COMPACTION DROP	EA	2	86,200	14.64
218.02100	CONTROLLED BLASTING	LF	1	2,100	9.15

* N = NUMBER OF CONTRACTS ON WHICH THIS ITEM WAS BID.
** LS HAS BEEN REPLACED WITH THE COMMON UNIT FOR THIS LUMP SUM ITEM.

APPENDIX A

NETWORK CONFIGURATION

The following table details the figures used by the parties, and those that we have applied in our SAC analysis, for the miles and type of track that would be required to serve the traffic group selected by WTU in this case.

Table A-1

WTRR SYSTEM MILES

TYPE OF TRACK	BN	WTU	STB
1. Main Line			
Constructed	1,392.8	1,386.0	1,392.8
Joint facility	23.5	23.5	23.5
TOTAL ROUTE MILES	1,416.3	1,409.5	1,416.3
2. Passing Track	108.8	107.6	107.6
3. Yard Track			
a. Services			
Guernsey	26.10	8.23	26.10
Denver	0.00	9.89	0.00
Amarillo	3.03	0.00	3.03
b. Staging			
Reno	6.06	0.00	6.06
Rochelle/Antelope	1.42	0.00	1.42
c. Interchange	14.21	0.00	0.00
d. Bad Order	11.36	7.03	7.03
e. Helper Track			
Whitetail	.19	.19	.19
Palmer Lake	.19	.19	.19
Logan Hill	.19	.00	.00
TOTAL YARD TRACK MILES	62.75[91]	25.53	44.02
TOTAL SYSTEM MILES	1,587.85	1,542.63	1,567.92

[91] In his reply statement (at 13-14) BN witness Simons states that 67.9 yard track miles are needed. The discrepancy cannot be accounted for in the record.

TABLE D-3

WTRR GRADING COSTS
($000)

Category	WTU	BN	STB
a. Earthwork	$110,688	$346,149	$230,562
b. Special ditch excavation	1,558	2,085	1,558
c. Relocation of utilities	6,421	6,456	6,456
d. Clearing and grubbing	19,873	44,414	19,674[147]
e. Seeding	4,543	4,543	4,543
f. Lateral drainage and riprap	3,540	3,540	3,540
g. Geotextiles	326	31,549	31,549
h. Erosion control	0	8,720	0
i. Soil stabilization	2,610	2,610	2,610
j. Topsoil placement	0	34,303	0
k. Water for compaction	0	17,267	17,267
l. Road surfacing	14,374	14,451	14,451
TOTAL	163,933	516,087	332,209

a. Earthwork. WTU estimates that earthmoving activities would cost $110,688,350; BN estimates $346,148,961. The discrepancy results principally from WTU's use of a 22-foot (rather than BN's 24-foot wide roadbed), and WTU's use of price quotes from independent contractors, rather than BN's reliance on a Colorado Department of Transportation (CODOT) cost for earthwork.

WTU asserts that a 20-pound per square inch (psi) bearing pressure can be attained with a 22-foot wide roadbed and would be sufficient for the WTRR tonnages and speeds.[148] Witness Brown further asserts that modern compaction equipment and careful attention to placement and moisture content of the materials would permit WTRR to achieve this goal. BN asserts that the 22-foot roadbed width would be insufficient to adequately support the ballast section. It uses a 24-foot cross-section for the WTRR, while noting that a 28-foot roadway is standard on its railroad.

WTU bases unit costs upon recent quotations from contractors regularly working on earthwork or from cost compilation services such as Building Construction Cost Data (1995) (Means Handbook) or the National Construction Estimator, 43rd Edition, by Martin D. Kiley. WTU maintains that BN's use of the CODOT earthwork prices overstates costs, because it is based mainly upon state projects in urban areas and restrictions and complexities not associated with construction of the WTRR.

WTU'S evidence does not demonstrate that a 22-foot wide roadbed could be used to carry the tonnage and permit the speeds

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[147] WTU's estimate less mobilization costs.

[148] Witness Brown cites William W. Hay, Railroad Engineering, John Wiley & Sons, New York.

28578
EB

SERVICE DATE – May 12, 2000

This decision will be printed in the bound volumes of the STB printed reports at a later date.

SURFACE TRANSPORTATION BOARD

DECISION

STB Docket No. 42022

FMC WYOMING CORPORATION AND FMC CORPORATION
v.
UNION PACIFIC RAILROAD COMPANY

STB Ex Parte No. 346 (Sub-No. 29A)

RAIL GENERAL EXEMPTION AUTHORITY—PETITION OF AAR
TO EXEMPT RAIL TRANSPORTATION OF SELECTED COMMODITY GROUPS

PETITION FOR PARTIAL REVOCATION OF EXEMPTION FOR COKE

Decided: May 10, 2000

The Board addresses a complaint challenging the reasonableness of 16 rates. The Board finds that the defendant railroad has market dominance over the transportation involved with respect to 15 of the rates, but not with respect to the rate applicable to the transportation of coke. The Board further finds that the 15 rates that are subject to maximum rate regulation are unreasonably high. Maximum reasonable rates are prescribed and reparations are ordered.

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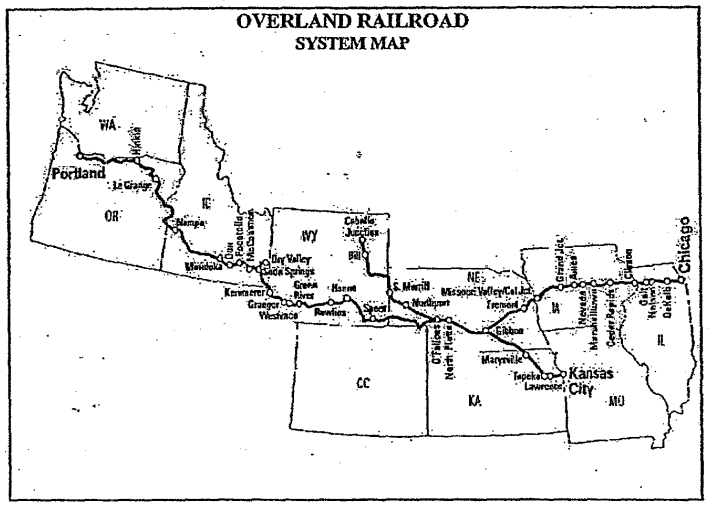
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APPENDIX B — ORR CONFIGURATION

FMC designed the ORR to be a trunk and branch line rail system handling traffic moving through Oregon, Idaho, Wyoming, Colorado, Nebraska, Kansas, Iowa and Illinois. The ORR would extend over 2,500 miles from Portland, OR to Chicago, IL and Kansas City, KS, with a 375-mile extension into the Powder River Basin coal field (from O'Fallons, NE to Caballo Jct., WY). The following map shows the ORR system.



UP claims that some additional branch lines and industrial spurs would be necessary to serve the traffic included in the group. UP also contends that FMC has failed to include sufficient multiple main line, maintenance and yard tracks, given the volume of traffic FMC assumes would

Table C-3

Grading Costs ($ millions)			
	UP	FMC	STB
1. Clearing & Grubbing	$29.8	$21.4	$21.1
2. Earthwork Costs	2,080.7	998.2	1,115.7
3. Drainage at Major Yards	40.1	0.0	40.1
4. Water for Compaction	21.7	0.7	21.7
5. Topsoil	27.9	0.0	0.0
6. Geotextiles	20.1	9.0	9.0
7. Seeding	28.2	0.0	0.0
8. Road Resurf. & Util. Relocation	49.4	1.7	1.7
9. Environmental Mitigation	1.5	0.0	1.5
10. Riprap, Wing Walls and Aprons[163]	50.7	48.7	50.7
Total	$2,350.1	$1,079.7	$1,261.5

1. Clearing and Grubbing

Before grading can begin, the ROW must be cleared of trees and other vegetation. The parties agree on the unit cost (the cost of clearing an acre of land) for such work. The difference between their total estimates for this work reflects the difference in the amount of land each assumed must be cleared to construct the ORR. We have determined the amount of ROW that

[163] The parties include the costs for riprap, wing walls and aprons for culverts in their grading spreadsheets. For convenience we also include these costs in grading, but discuss these issues in the section on culverts, infra.

In McCarty and West Texas, the parties agreed on the need for seeding. In Arizona, we found that seeding was a barrier to entry because the vegetation along the ROW was natural growth. Here, UP has provided no verifiable evidence (the engineering reports it relied upon were not supplied) that significant portions of the ROW were replanted after grading was completed. Because we generally regard seeding costs as a barrier to entry, we will not include such costs.

8. Road Surfacing and Utility Relocation

UP included costs for resurfacing roads damaged during construction and for relocating utilities in the construction corridor, claiming that any new construction would incur these costs. It claims that FMC is inconsistent in assuming that the ORR would use existing roads and utilities to construct the line, but also assuming that this infrastructure does not exist because it has not included costs associated with such infrastructure. FMC argues that most of UP's ROW that the ORR would replace was constructed before surfaced roads or utilities in the area existed. It claims, therefore, that resurfacing and relocation costs are barriers to entry because UP or its predecessor railroads did not incur these costs. FMC does agree that such costs should be included for that portion of the ORR that would replace the Orin line, which was constructed in the 1970s.

Because most of the lines that the ORR would replicate were constructed before there were any utilities or paved roads in the area, we agree with FMC that these costs, with the exception of those incurred during construction of the Orin line, are barriers to entry.[169] UP does not argue that it incurred these costs, but rather it contends that, because the ORR would benefit from use of this infrastructure, it should pay all costs associated with repair and relocation of that infrastructure. We disagree. These costs fall into the category of costs we consider barriers to entry, i.e., "costs that a new entrant must incur that were not incurred by the incumbent."[170] In the absence of any proof from UP that such costs were incurred on lines other than the Orin line, we exclude these costs as barriers to entry.

9. Environmental Mitigation

Current environmental regulatory requirements increase the costs of modern railroad construction. UP included such costs for the portion of the ORR that would replace the Orin line.

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[169] While FMC agrees that these costs should be included for the Orin line, it did not estimate what these costs would be. We have developed the cost ($1.67 million) for the Orin line by multiplying UP's unit cost per mile by the estimated length of the Orin line.

[170] See Burlington N.R.R. v. STB, 114 F.3d at 214.

FMC claims that UP did not incur environmental regulatory costs itself and thus these costs represent a barrier to entry. However, the Orin line was constructed in the 1970s, when environmental mitigation costs were imposed on rail construction. Thus, the costs associated with the Orin line should be included.

C. Bridges

Bridge construction includes construction of superstructures (the bridge spans carrying the track) and substructures (the foundations, abutments and piers). The parties agree on the number, length, and location of bridges, and superstructure unit cost for specific size spans. They disagree on the design of bridges less than 150 feet and the transportation cost for some of the superstructure components.

1. Bridge Design

To limit bridge construction costs, FMC would have the ORR use a single-span type bridge for all bridges under 150 feet and, where multiple tracks would be needed, FMC would have the ORR install bridges capable of carrying multiple tracks. UP maintains that the use of spans of up to 150 feet may not be cost effective because, while reducing the number of piers, it increases the cost per linear foot for the span. UP also maintains that the use of designs different from those currently used would require additional studies to ensure that the different configuration of piers and superstructure spans would provide an adequate hydrologic flow area or road clearance beneath each bridge. UP does not directly address the use of multiple-track bridges; rather, it developed bridge costs based on the installation of a separate bridge for each set of tracks.

SAC permits the complaining party to specify the least cost alternative to the incumbent railroad. Here, UP has failed to show that FMC's proposal to limit bridge costs by using longer spans and multiple track bridges would not be feasible. Indeed, we note that UP currently uses some multiple-track bridges. Furthermore, UP's mere assertion that in some instances adjustments would be required to accommodate flow or clearances does not rebut the feasibility of FMC's bridge design.[171] Accordingly, we use FMC's evidence on this issue.

2. Bridge Width

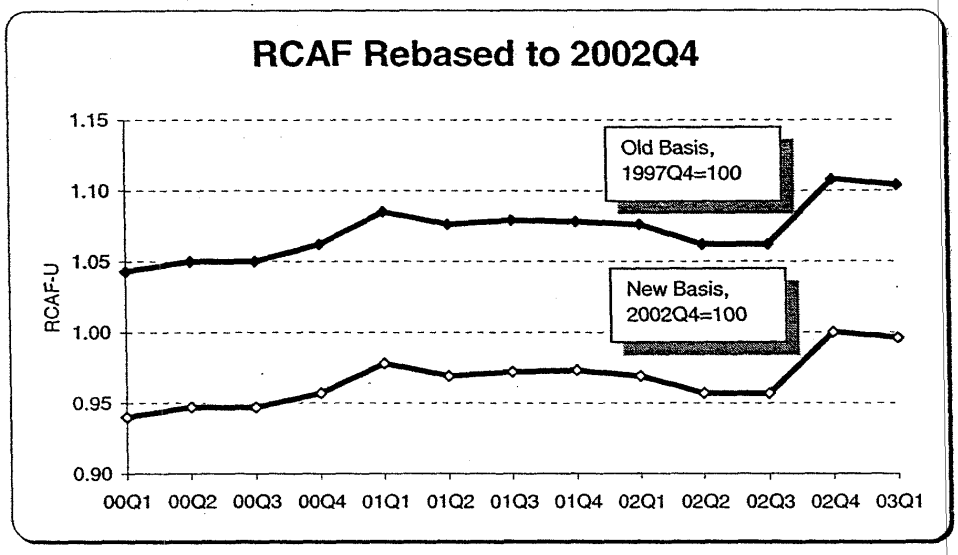
UP states that bridge decks must be 16-feet wide to provide walkways for railroad personnel. FMC argues that UP's proposed bridge width varies from UP's current bridge design

[171] We note that minor modifications to some bridges could be funded from monies set aside for contingencies, discussed infra.

December 2002

ASSOCIATION
OF AMERICAN
RAILROADS

AAR RAILROAD COST INDEXES



Including Series RCR,
The All-Inclusive Index,
and The Rail Cost Adjustment Factor

Table A

ANNUAL INDEXES OF CHARGEOUT PRICES AND WAGE RATES (1977=100)

WEST

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	
Wage rates	232.1	251.3	250.9	251.0	264.8	273.6	274.2	281.6	282.3	304.6	314.1	318.4	p
Wage supplements	366.0	377.7	369.1	366.4	373.8	366.2	395.3	367.6	372.4	391.2	441.0	461.1	p
Fuel	190.4	184.4	185.6	175.0	175.8	205.8	200.1	161.0	164.7	261.9	255.5	220.1	
Materials and supplies	183.0	208.9	217.1	223.9	224.1	225.0	231.5	232.3	230.8	228.3	234.0	228.1	
Equipment rents	215.6	218.9	222.8	225.7	235.4	239.4	236.6	240.0	239.9	240.3	243.4		
Purchased services	246.9	266.8	267.0	268.2	278.8	283.4	289.9	289.9	290.9	309.1	325.0		
Depreciation	226.4	229.3	240.4	248.3	286.4	300.9	321.8	363.9	369.8	386.9	408.8		
Interest	327.5	291.3	260.6	270.7	291.0	330.4	353.7	420.6	414.7	422.0	396.1		
Taxes (other than income and payroll)	170.6	170.7	176.6	221.7	239.6	244.0	218.3	240.9	202.7	230.0	251.7		
All other operating expenses	179.5	180.4	183.1	185.5	192.0	196.5	196.6	191.6	193.3	204.3	206.6		
Wage rates and supplements	261.5	279.3	277.2	276.7	290.2	295.6	302.1	302.0	303.6	325.8	343.7	351.3	p
All materials (incl. fuel)	179.0	189.1	193.8	192.2	191.9	208.7	208.4	185.8	187.4	255.3	252.4	225.5	
Matl. prices & wage rates combined (excl. fuel)	221.0	242.1	244.1	246.0	256.3	263.5	265.2	271.2	271.4	288.8	297.5	300.0	p
Matl. prices & wage rates combined (incl. fuel)	216.5	232.3	234.1	233.5	241.5	253.7	253.8	248.5	249.6	295.2	299.6	290.4	p
Materials prices, wage rates and supplements combined (excl. fuel)	246.9	266.8	267.0	268.2	278.8	283.4	289.9	289.9	290.9	309.1	325.0	330.6	p
Materials prices, wage rates and supplements combined (incl. fuel) - QMPW	241.0	256.6	257.1	256.1	264.9	274.4	278.7	270.1	271.7	315.4	326.1	320.7	p
Taxes, purchased serv. and other expenses	202.4	210.5	212.6	219.3	226.7	231.1	230.1	230.4	227.1	240.4	249.4		
Equip. rents, deprec. and interest	243.0	239.3	240.0	246.2	269.0	282.3	290.8	317.7	319.1	327.1	332.2		
Equip. rents, taxes, deprec., purch. serv., interest & other expenses	224.8	227.2	228.7	235.3	250.7	259.7	263.9	278.1	277.2	287.8	295.0		
Total excl. fuel	238.3	250.2	251.0	254.7	268.1	275.0	280.6	288.1	288.2	302.6	314.0		
Total excl. interest	232.5	244.3	246.4	248.3	260.2	268.6	272.3	272.0	272.7	301.5	312.0		
Total excl. interest and depreciation	231.2	243.8	245.0	246.3	255.3	262.9	264.9	260.2	260.4	289.8	299.1		
Railroad Cost Recovery Index	235.9	246.1	246.9	249.1	261.4	270.8	275.1	277.2	277.7	306.4	315.5		

Note: The final annual wage rates and wage supplements are derived from the Annual Wage Statistics and the Annual Report Form R-1, consequently the final annual values may not equal the average of the four quarterly figures. The preliminary annual indexes, which appear in the December publication each year (indicated by a "p"), are averages of the four quarters.

Table C

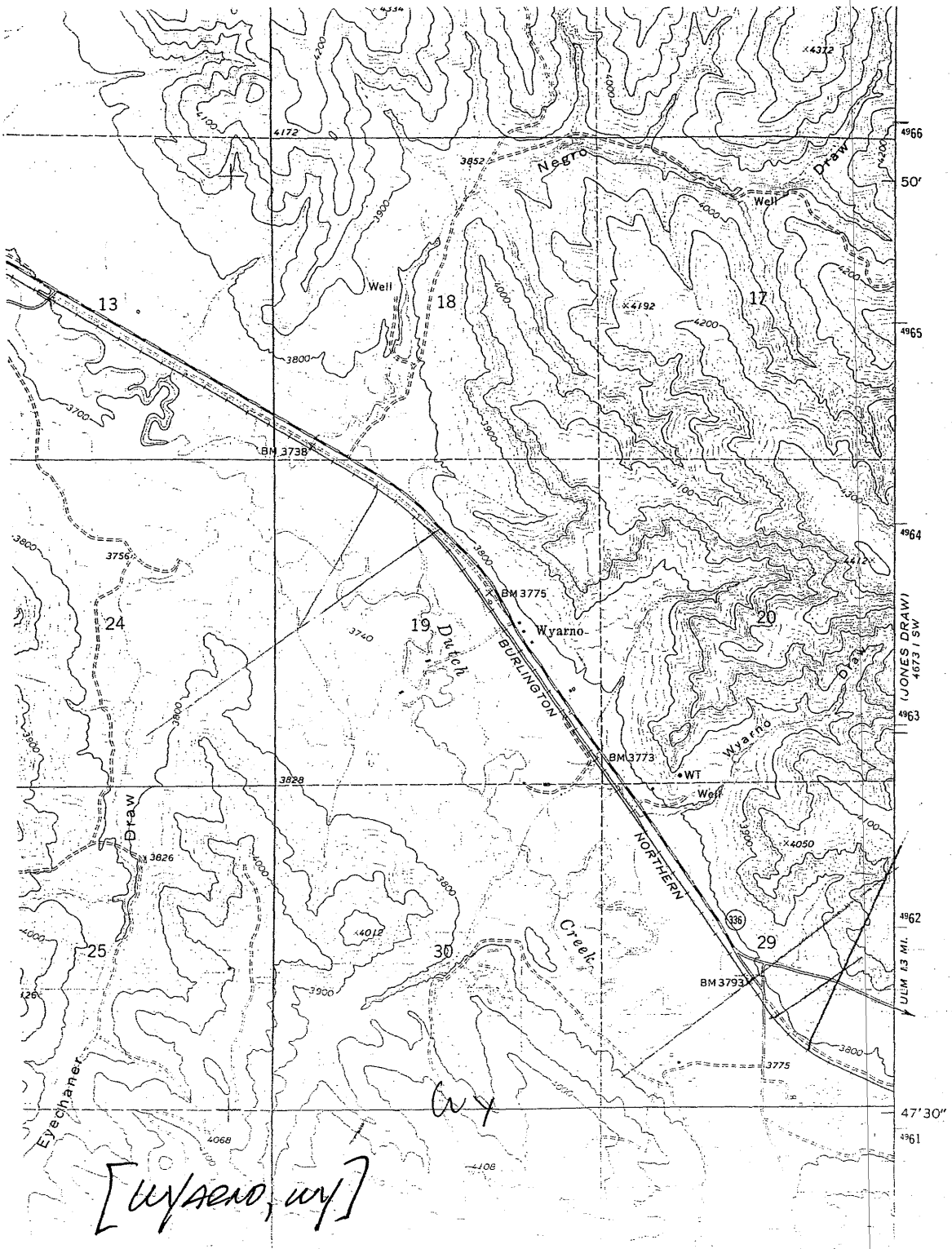
QUARTERLY INDEXES OF CHARGEOUT PRICES AND WAGE RATES (1977=100)

WEST

	1Q00	2Q00	3Q00	4Q00	1Q01	2Q01	3Q01	4Q01	1Q02	2Q02	3Q02	4Q02
Wage rates	293.6	293.6	297.8	297.8	308.9	309.9	311.4	311.4	316.3	316.1	320.6 r	320.7
Wage supplements	415.6	415.6	416.1	416.2	415.9	416.4	423.8	423.9	459.7	460.5	462.0 r	462.1
Fuel	225.6	247.7	260.9	313.5	281.8	261.6	244.2	234.3	177.0	221.5	219.9	262.0
Materials and supplies	227.5	226.4	229.4	230.0	229.9	234.9	235.5	235.6	234.6	233.5	226.3	218.0
Equipment rents	239.0	240.9	240.9	240.2	240.7	243.6	243.8	245.3	244.5	243.3	242.6	
Purchased services	305.8	305.6	309.0	309.1	316.6	318.1	320.5	320.5	329.9	329.8	331.9	
Depreciation	384.7	383.7	387.0	392.0	403.4	404.7	404.8	422.2	422.3	423.7	436.9	
Interest	435.1	428.7	425.8	398.4	401.7	394.8	401.7	386.3	379.7	368.5	372.2	
Taxes (other than income and payroll)	214.3	305.3	240.9	159.5	214.5	284.6	271.2	236.5	252.6	265.4	286.2	
All other operating expenses	199.8	203.1	206.0	208.3	211.7	209.8	205.4	199.5	198.7	201.8	202.7	
Wage rates and supplements	322.0	322.0	325.4	325.4	334.4	335.3	338.0	338.0	349.4	349.3	353.2 r	353.4
All materials (incl. fuel)	229.3	244.6	254.9	292.3	269.8	257.0	244.9	237.9	197.0	228.2	224.8	252.1
Matl. prices & wage rates combined (excl. fuel)	279.7	279.5	283.5	283.6	292.6	294.3	295.6	295.7	299.5	299.1	301.4 r	300.0
Matl. prices & wage rates combined (incl. fuel)	277.1	283.8	290.9	307.3	304.1	299.1	294.7	291.6	276.6	290.2	291.4 r	303.4
Materials prices, wage rates and supplements combined (excl. fuel)	305.8	305.6	309.0	309.1	316.6	318.1	320.5	320.5	329.9	329.8	331.9 r	330.8
Materials prices, wage rates and supplements combined (incl. fuel) - QMPW	302.7	308.7	315.0	329.5	326.7	322.3	319.4	316.7	308.3	320.4	321.7 r	332.4
Taxes, purchased serv. and other expenses	235.3	245.7	242.2	235.6	245.4	251.7	249.0	242.7	247.3	250.0	253.3	
Equip. rents, deprec. and interest	327.6	327.4	328.1	325.2	329.8	330.8	332.0	336.3	334.9	333.1	337.5	
Equip. rents, taxes, deprec., purch. serv., interest & other expenses	285.6	290.6	289.2	284.5	291.7	295.4	294.7	293.7	295.3	295.7	299.6	
Total excl. fuel	299.8	302.5	303.3	300.7	308.2	310.9	311.7	311.2	316.5	316.6	319.8	
Total excl. interest	292.9	299.0	301.8	308.6	310.4	310.1	307.9	306.5	302.9	310.2	312.8	
Total excl. interest and depreciation	280.8	287.3	290.2	297.0	298.0	297.4	295.1	292.0	288.1	295.9	297.4	
Railroad Cost Recovery Index	298.5	304.2	306.8	312.3	314.3	313.7	311.8	309.9	306.2	312.8	315.4	

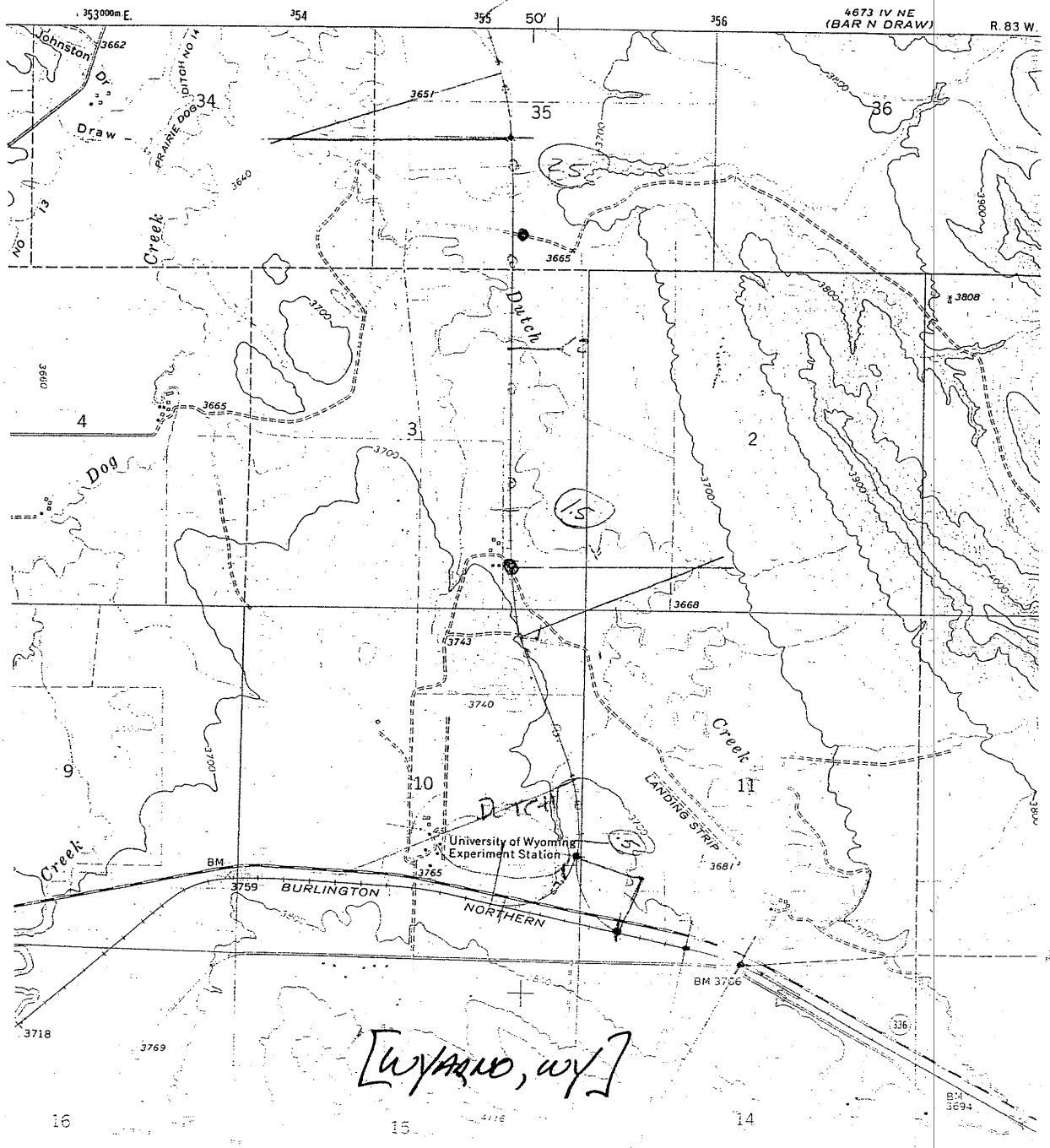
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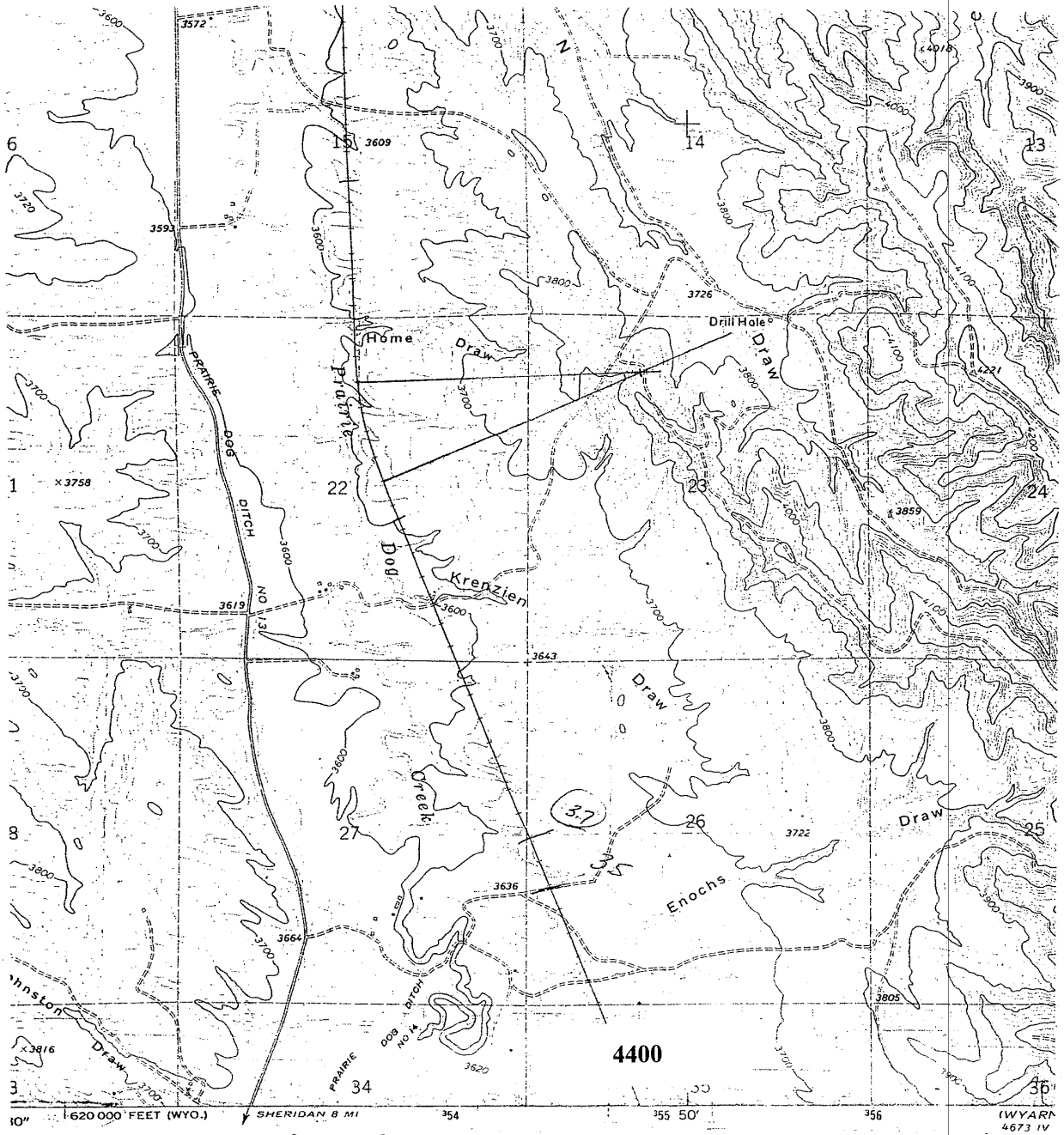
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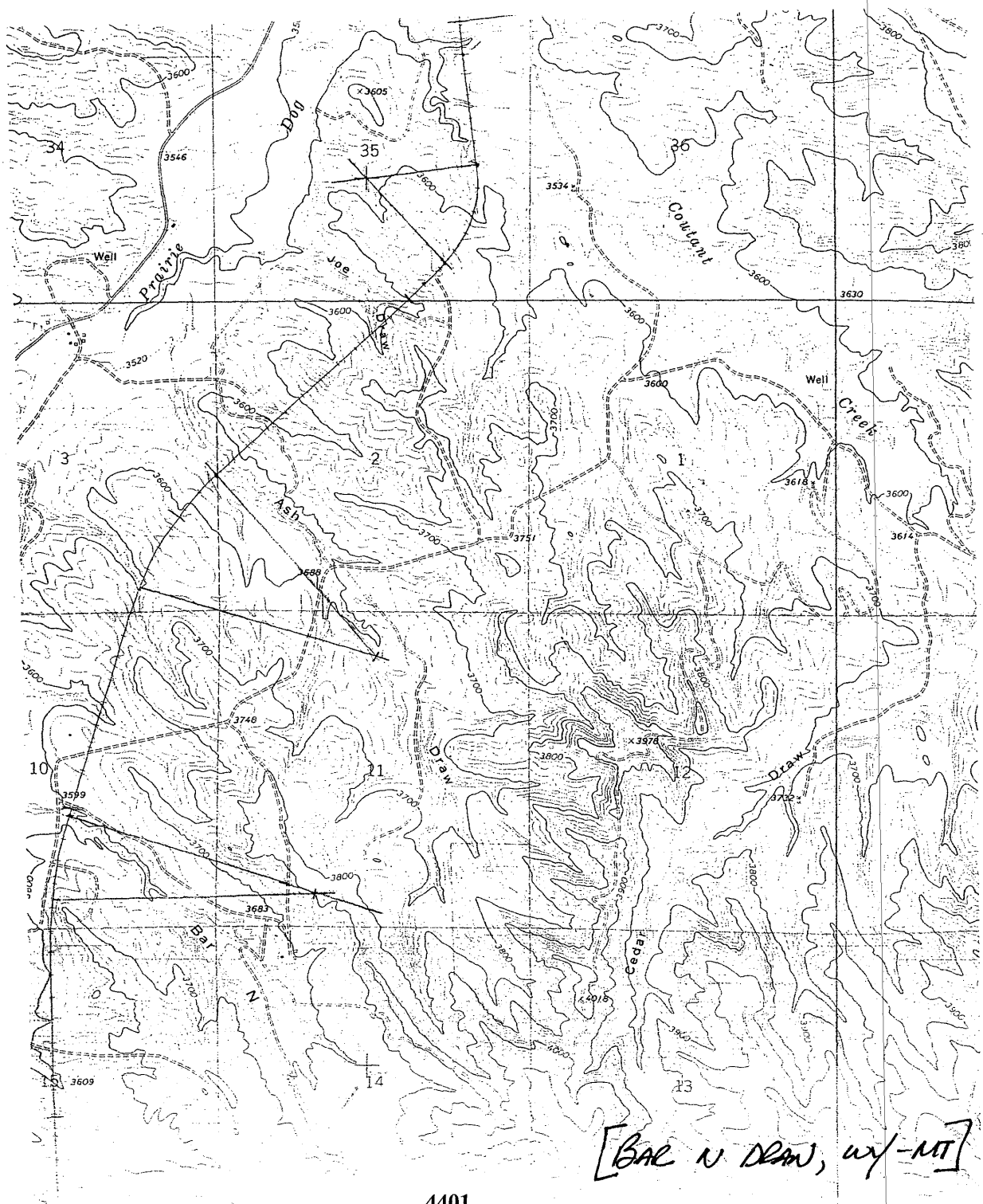
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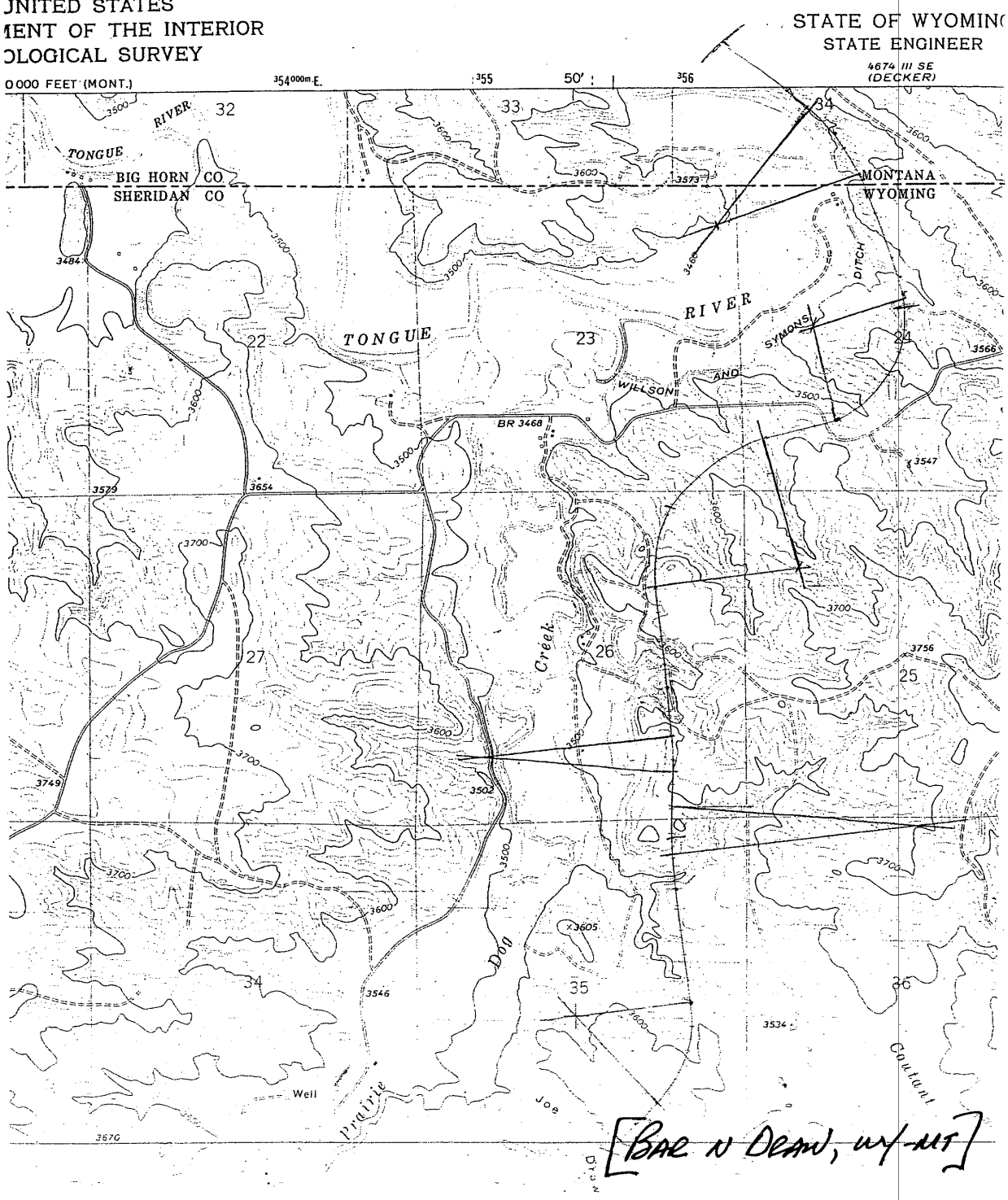
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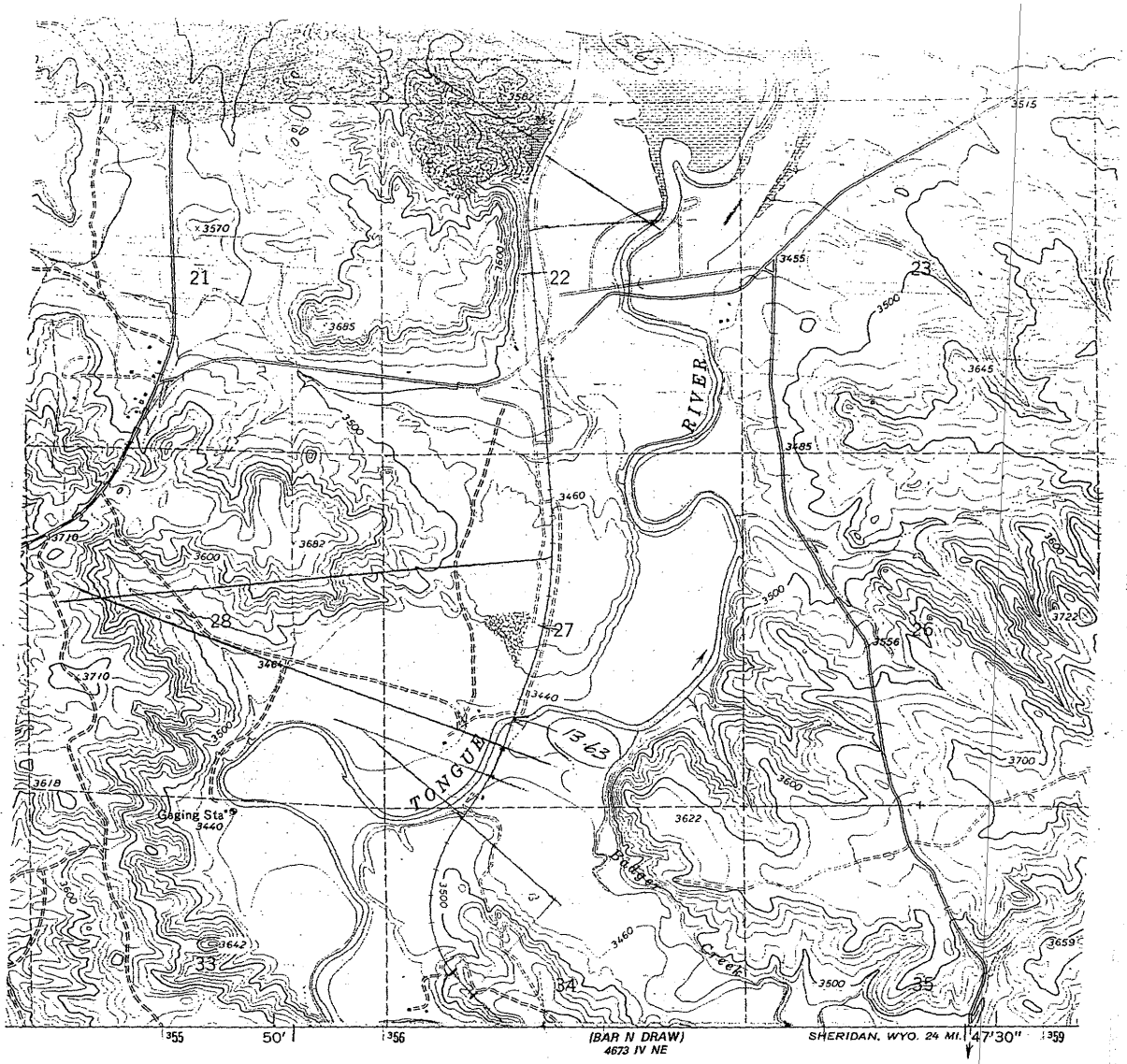
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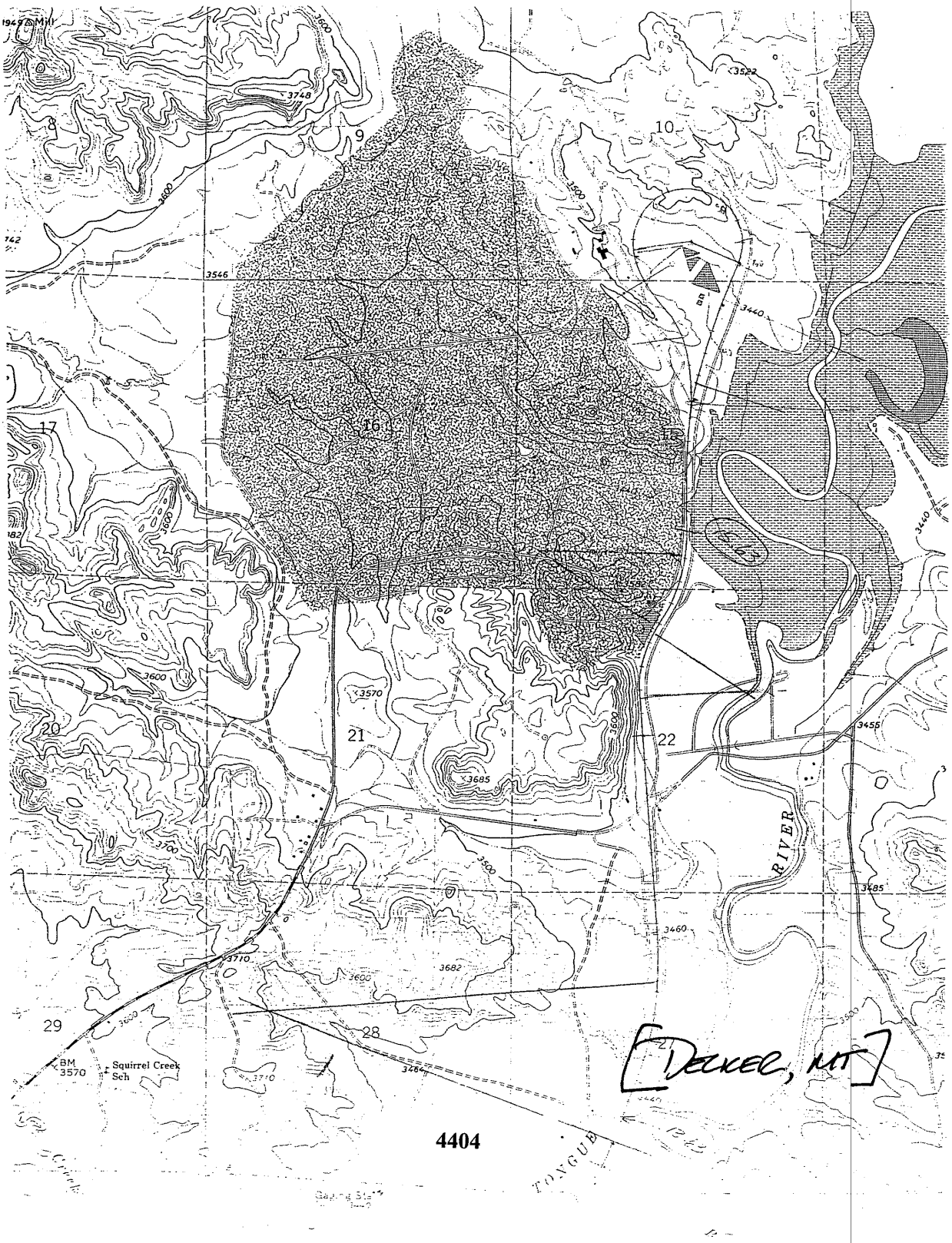
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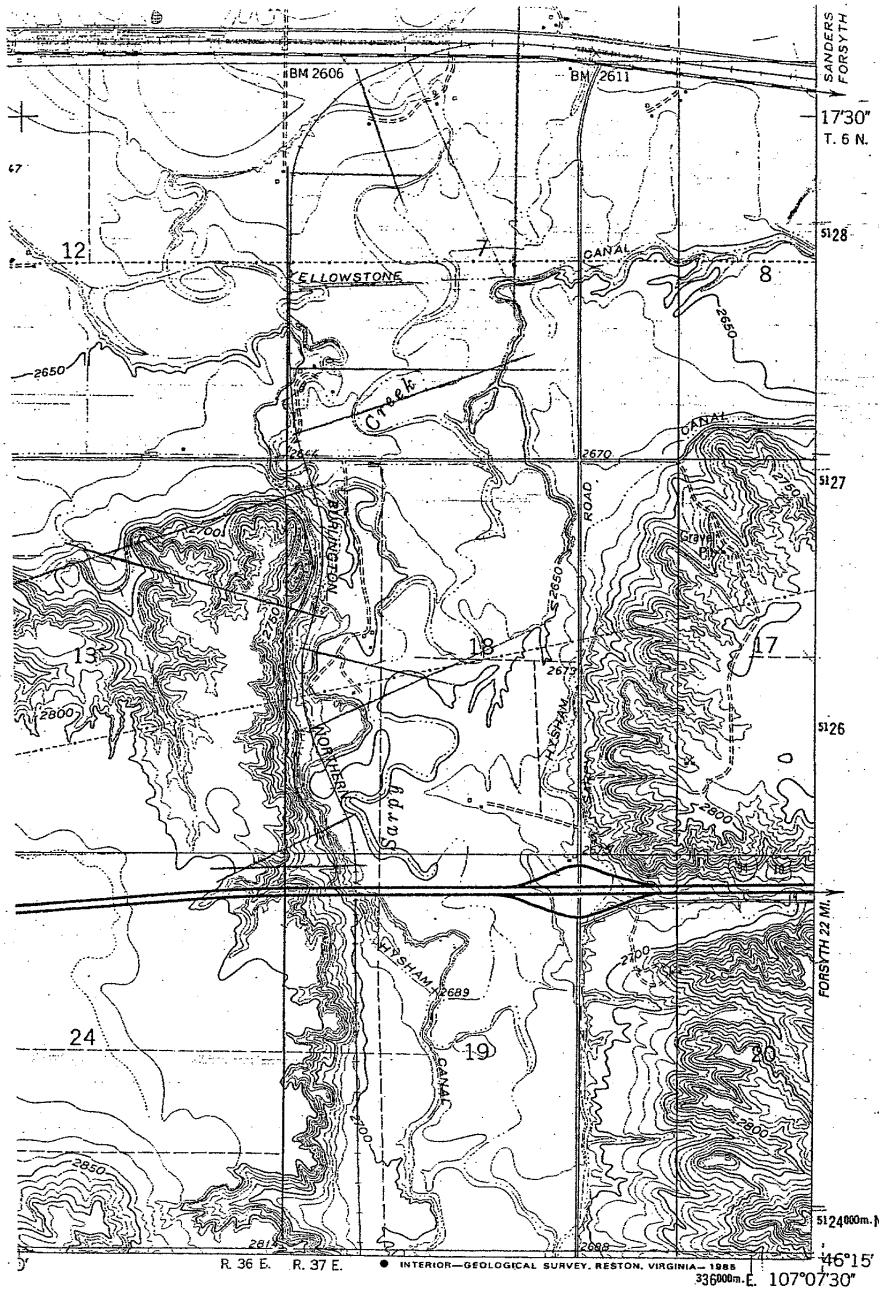
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A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST


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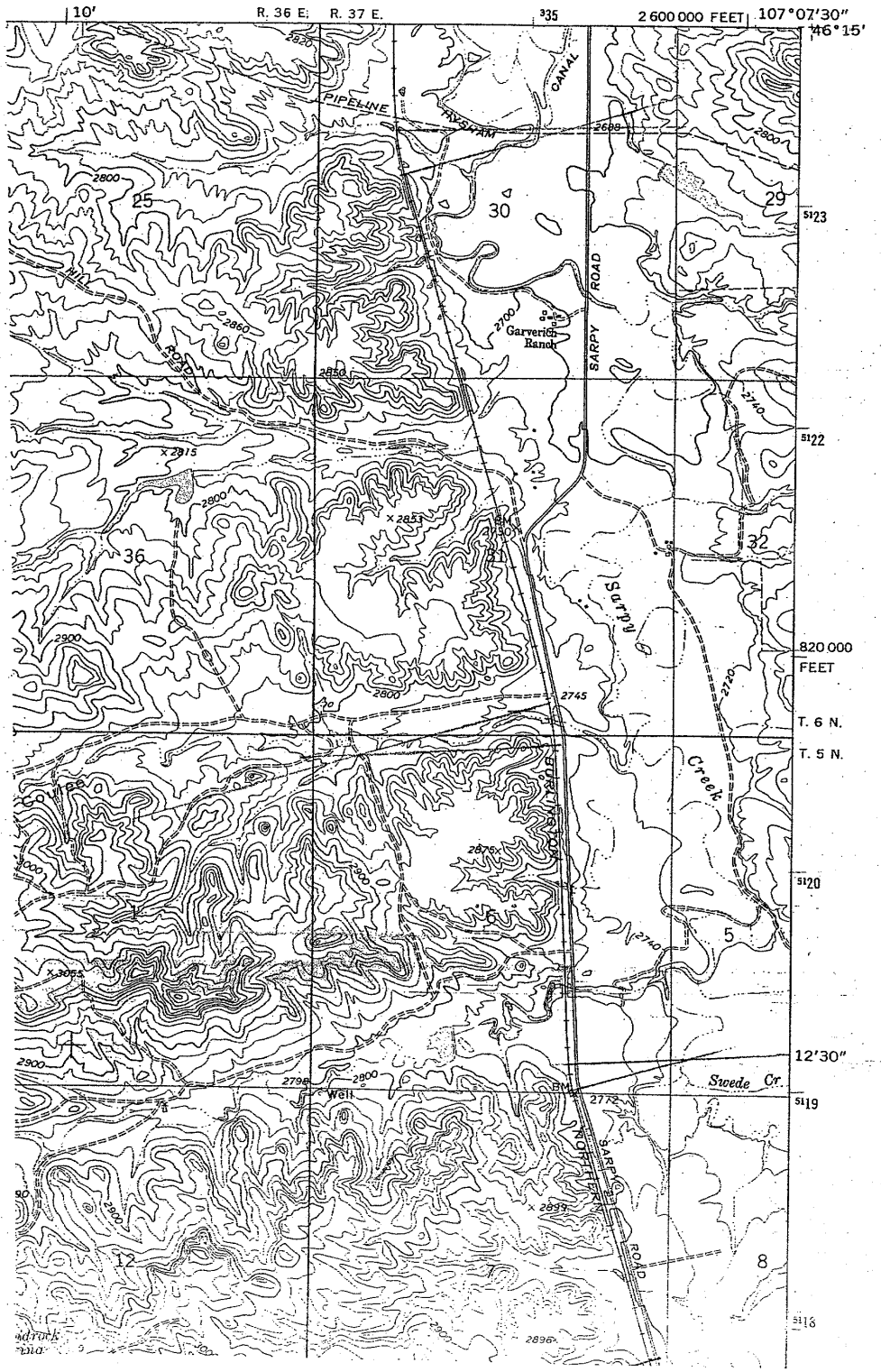
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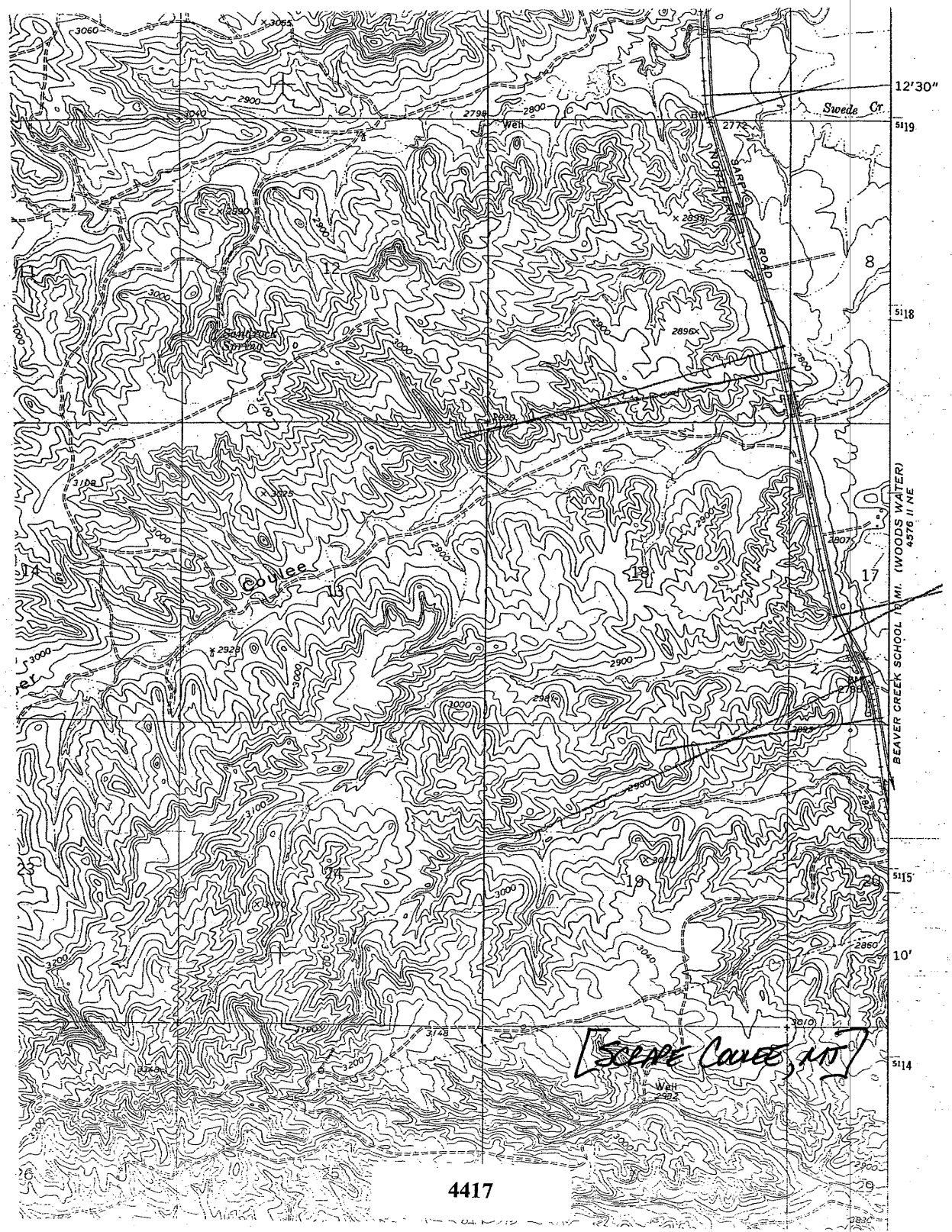
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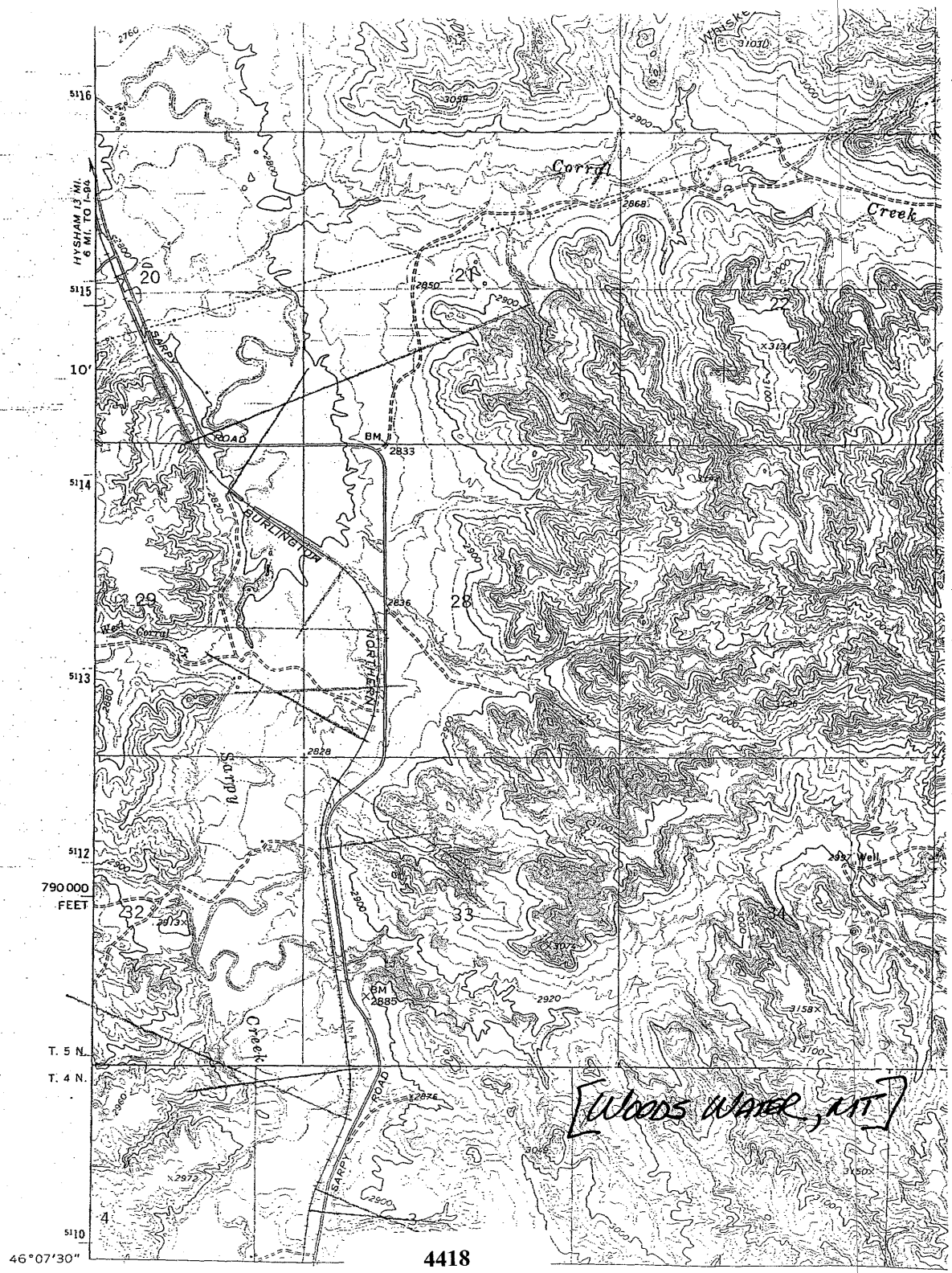
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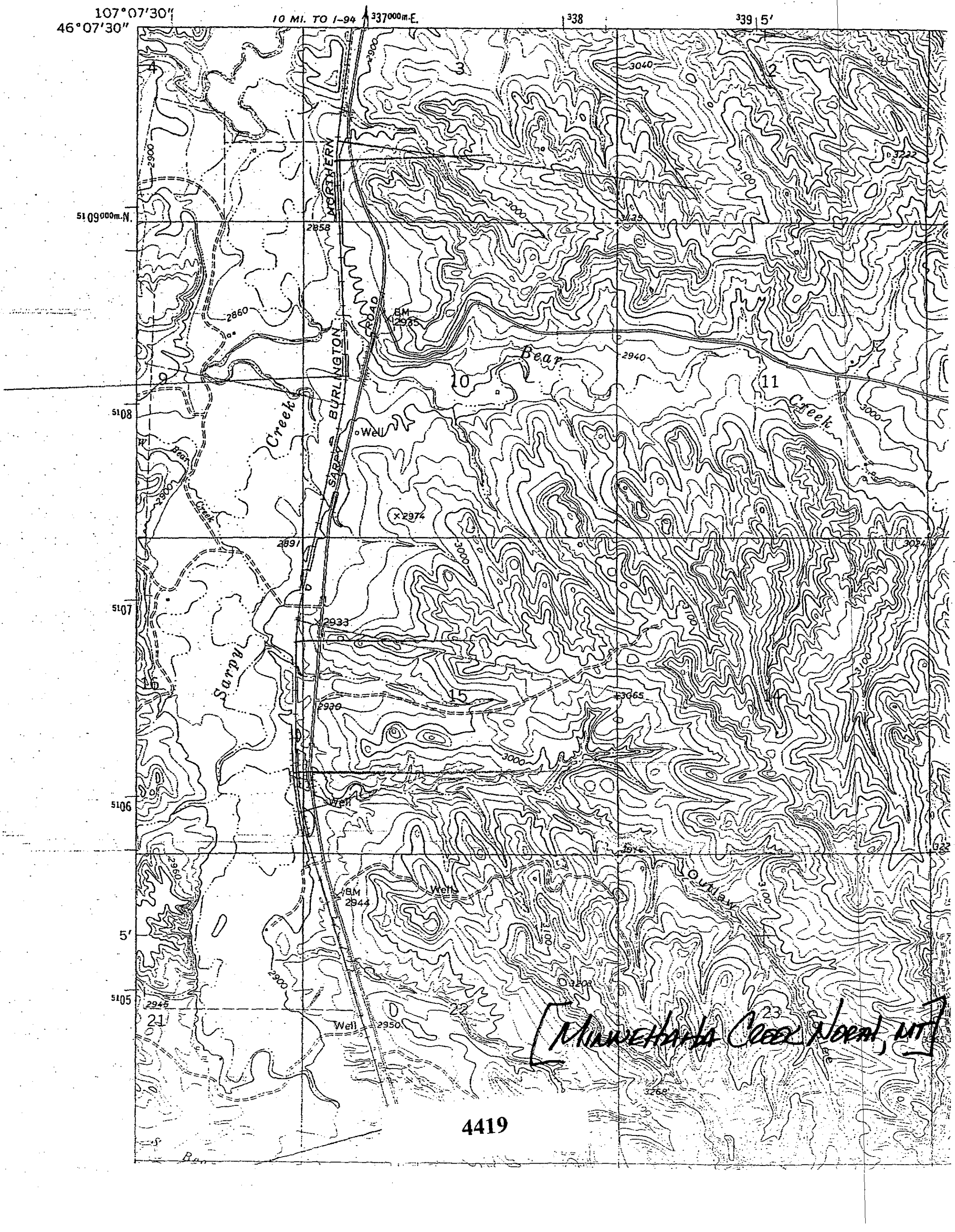
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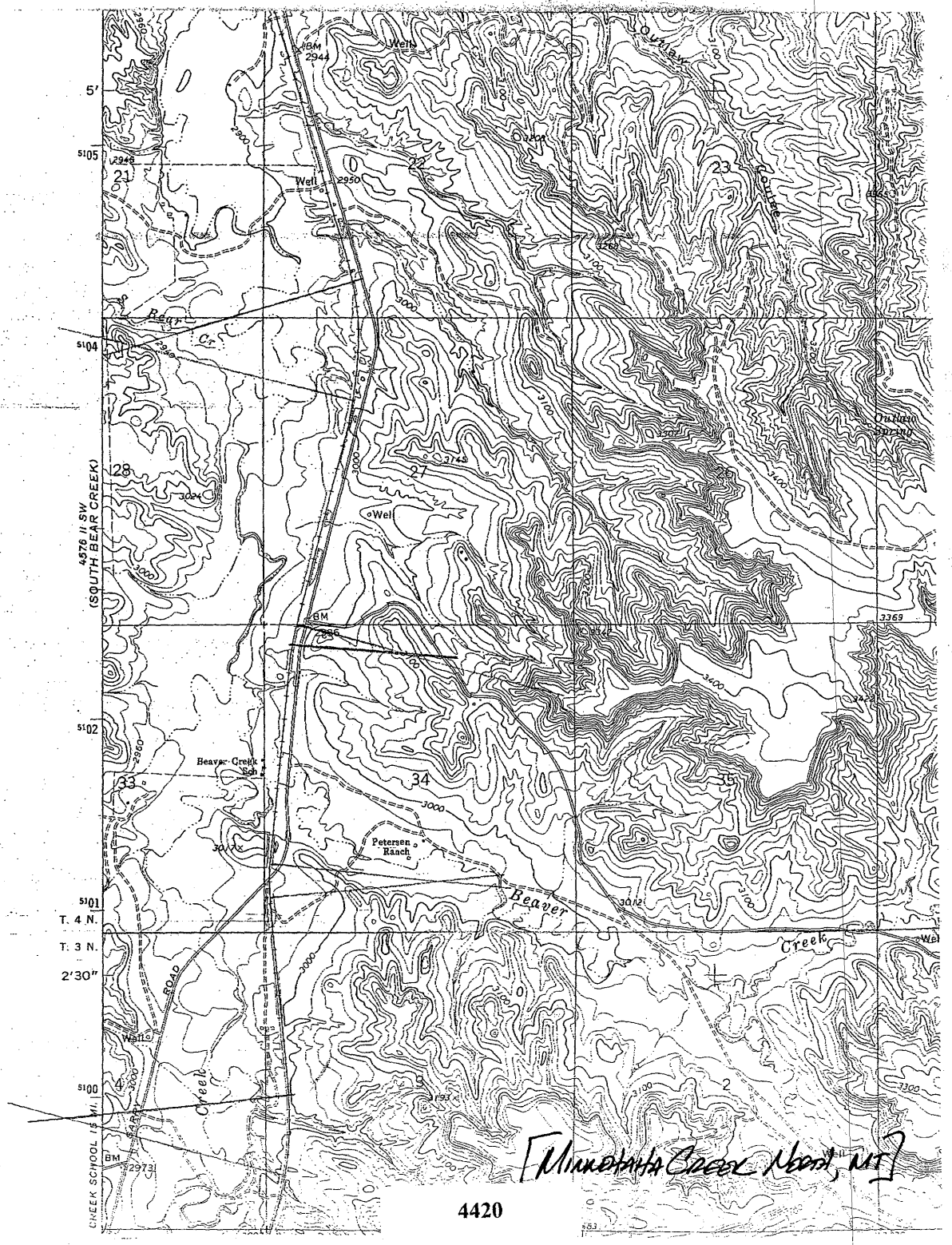

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[SCALE Coulee, 1/7]

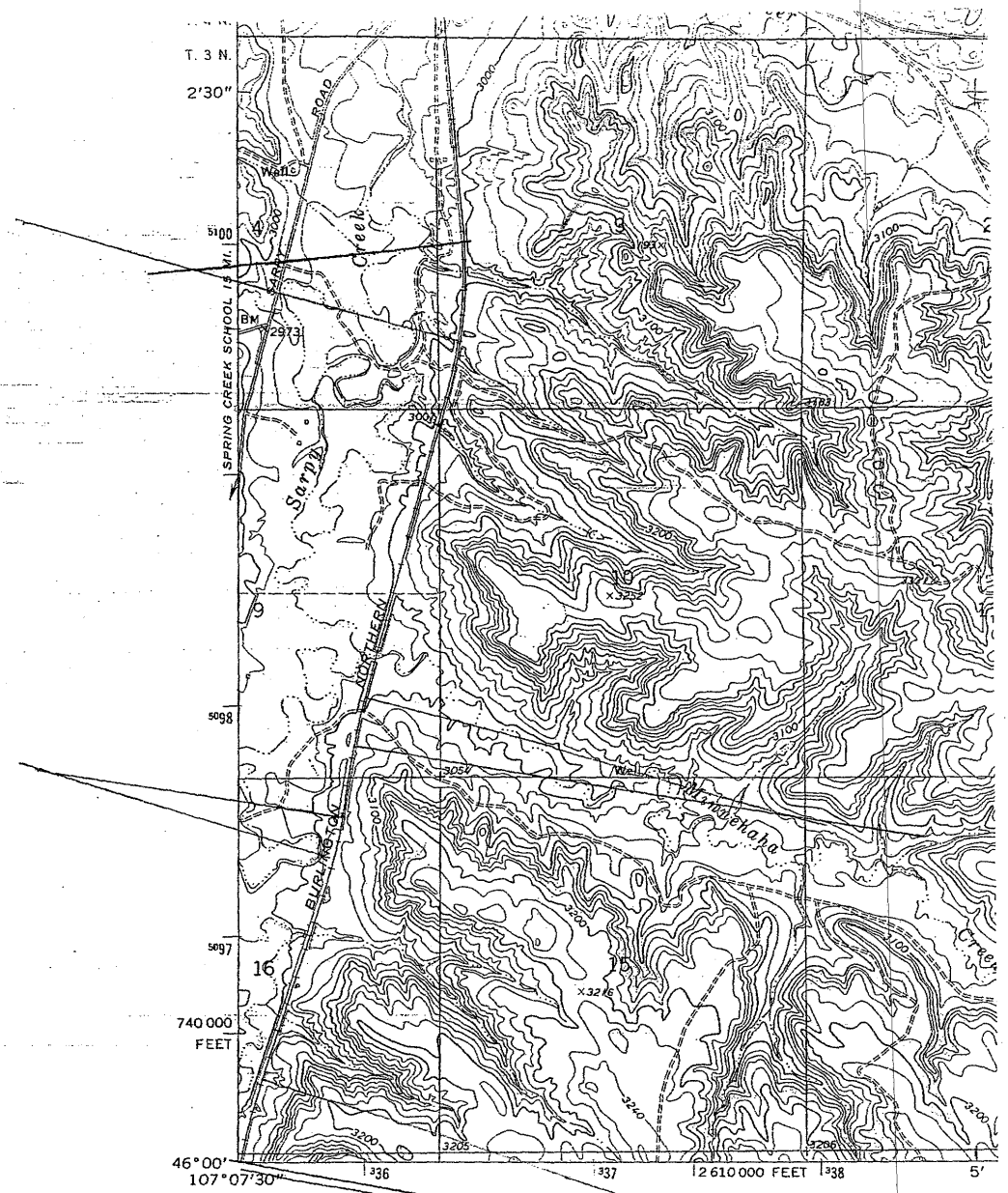

HYSHAM 13 MI.
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BURLINGTON
NORTHERN
Sarpy
Creek
Corral
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790 000
FEET
T. 5 N.
T. 4 N.
5110
46°07'30"
[WOODS WATER, MT]

4576 II NW
(SCRAPER COULEE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY




Beaver Cr.
Beaver Creek
Petersen Ranch
Outlaw Spring
Beaver Creek Sch
4376 II SW
(SOUTH BEAR CREEK)
CREEK SCHOOL 15 MI.
ROAD
T. 4 N.
T. 3 N.
2'30"
5'
5105
5104
5103
5102
5101
5100
21
22
23
27
28
33
34
35
4
3
2
Well
Wells
BM 2944
BM 2973
3000
3100
3200
3300
3400
[Milkhatha Creek Mont, MT]



Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography by photogrammetric methods from aerial photographs taken 1971. Field checked 1972

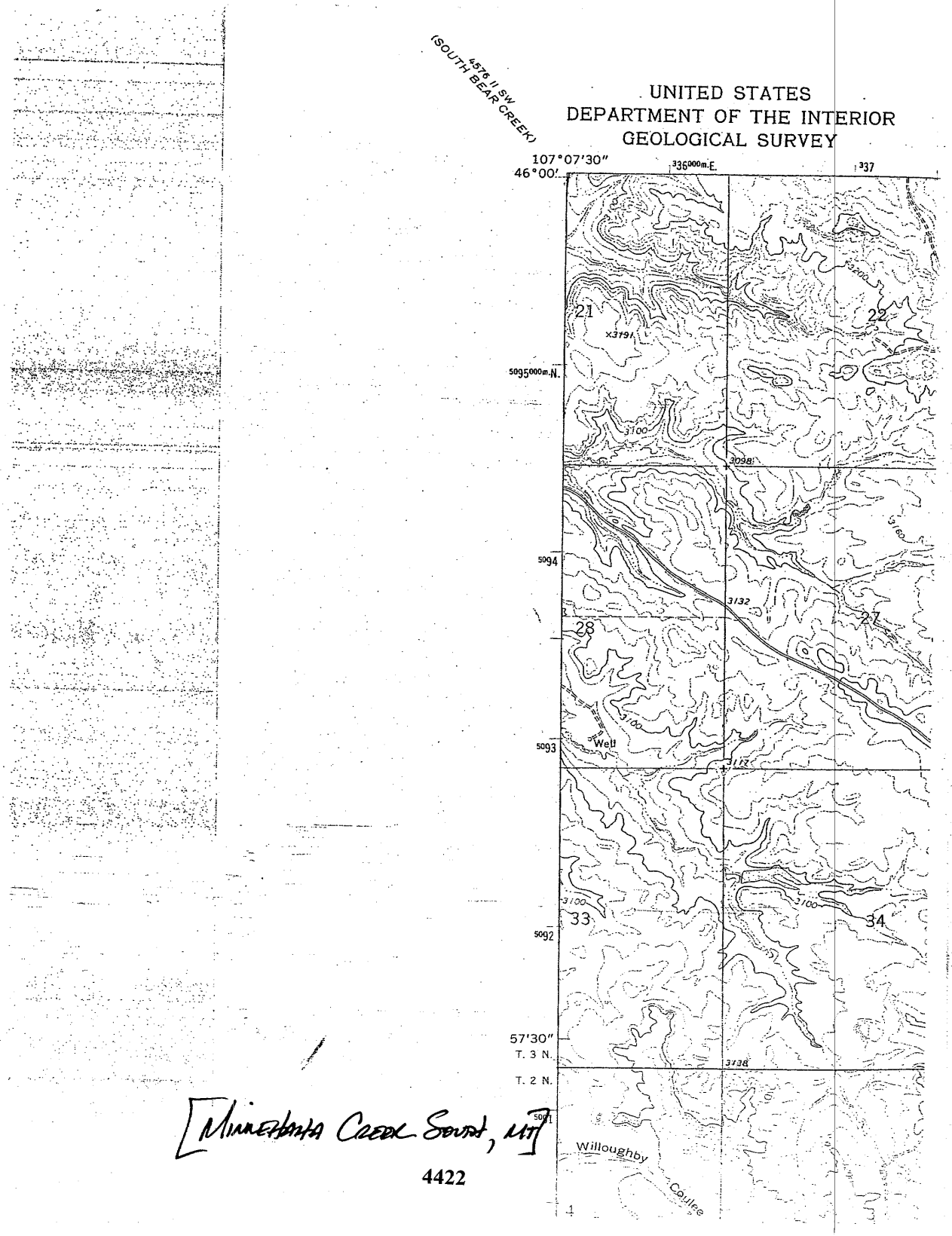
Projection and 10,000-foot grid ticks: Montana coordinate system, south zone (Lambert conformal conic) 1000-meter Universal Transverse Mercator grid ticks, zone 13, shown in blue. 1927 North American datum

Fine red dashed lines indicate selected fence lines

[Minnehaha Creek North, MT]

4421

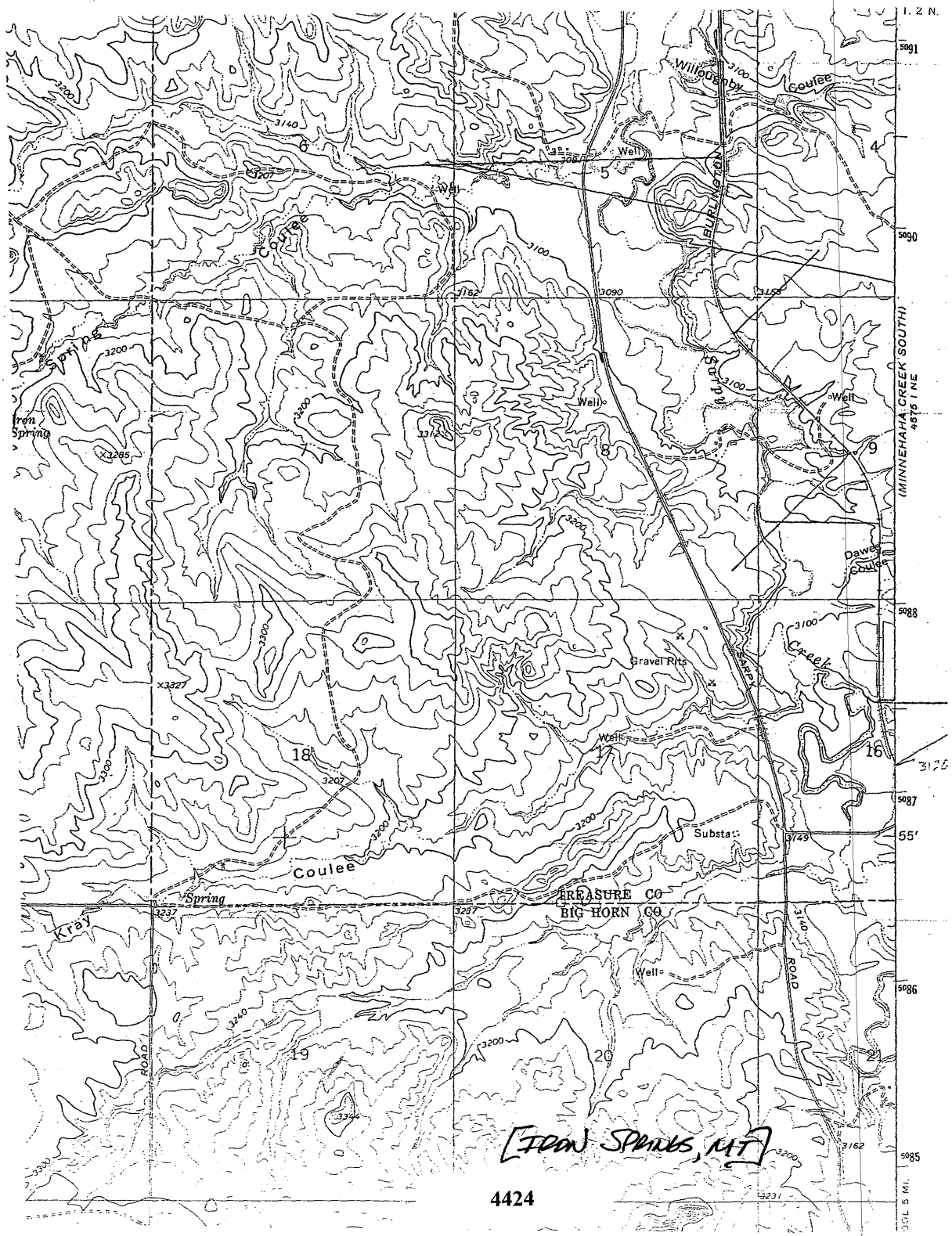
FOI

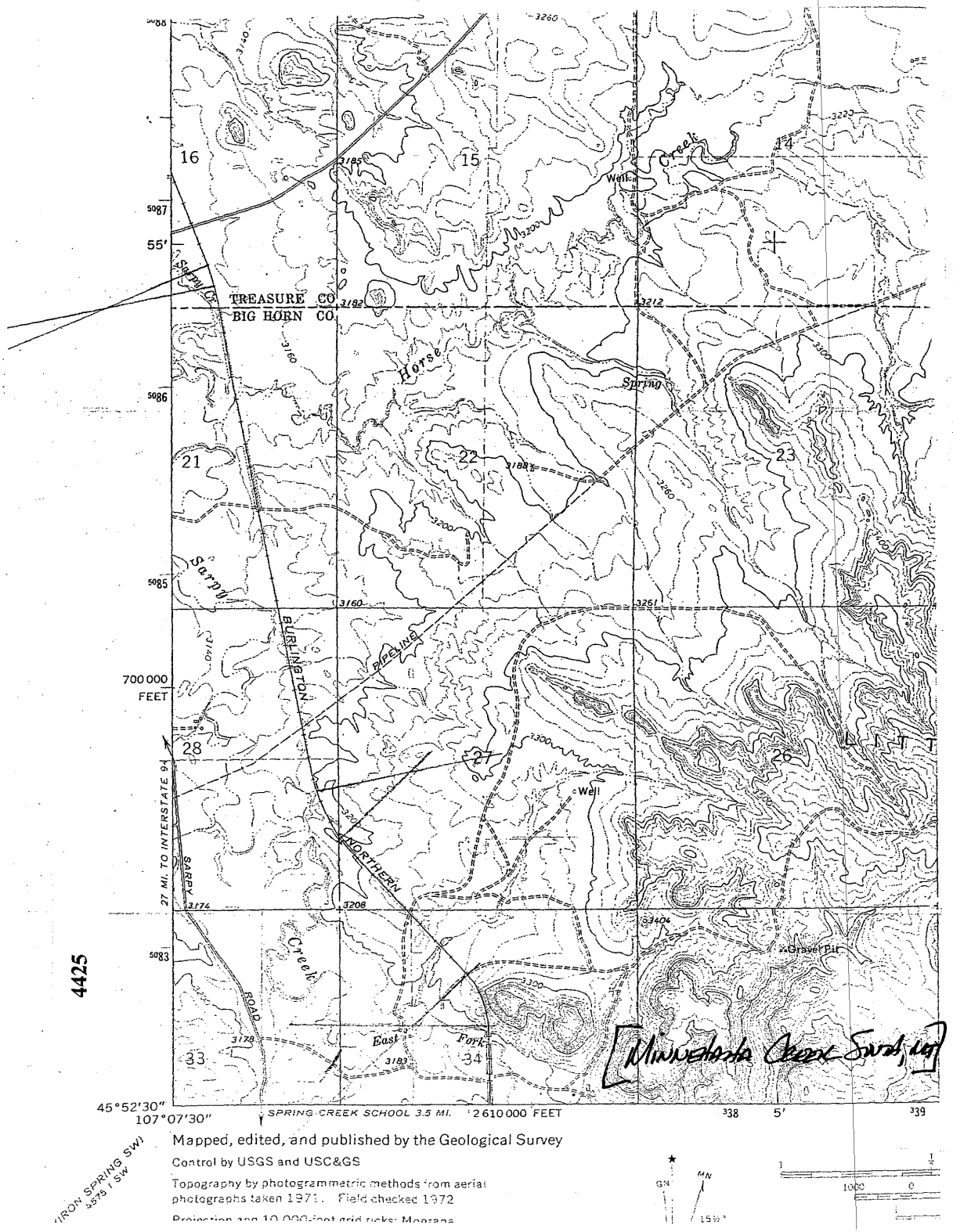


[Minnesota Creek South, MT]

IRON SPRING QUADRANGLE
MONTANA
7.5 MINUTE SERIES (TOPOGRAPHIC)




T. 2 N.
Willousby Coulee
Well
Coulee
BURLINGTON
Spring
Iron Spring
Well
Well
(MINNEHAHA CREEK SOUTH)
4576 I NE
Dawes Coulee
Gravel Pits
Creek
Well
Substa
Coulee
Spring
TREASURE CO
BIG HORN CO
Kray
ROAD
Well
ROAD
[IRON SPRINGS, MT]
5091
5090
5088
5087
5086
5085
55'
3120
SCALE 5 MI.



4425

Mapped, edited, and published by the Geological Survey

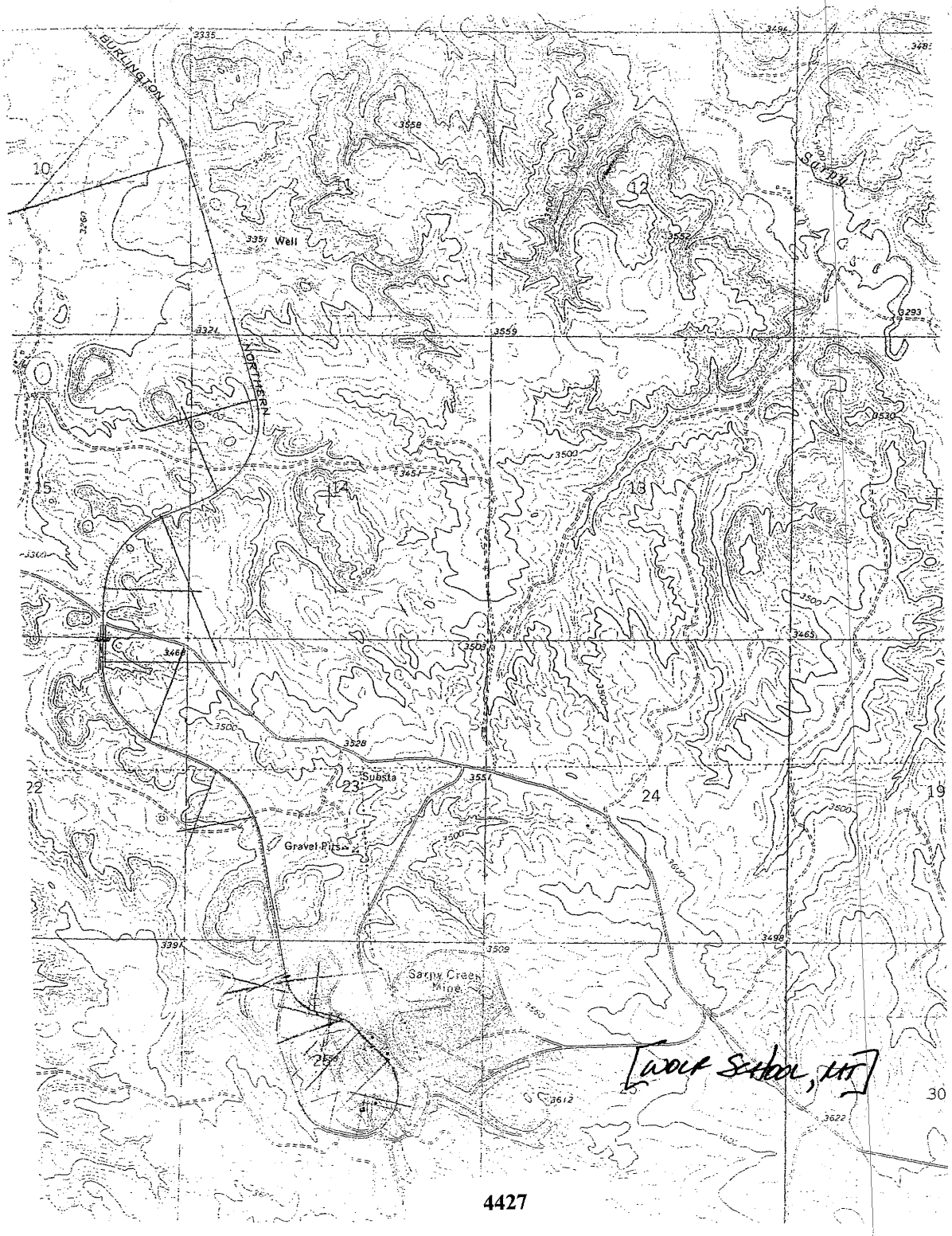
Control by USGS and USC&GS

Topography by photogrammetric methods from aerial photographs taken 1971. Field checked 1972

Projection and 10 000-foot grid ticks: Montana

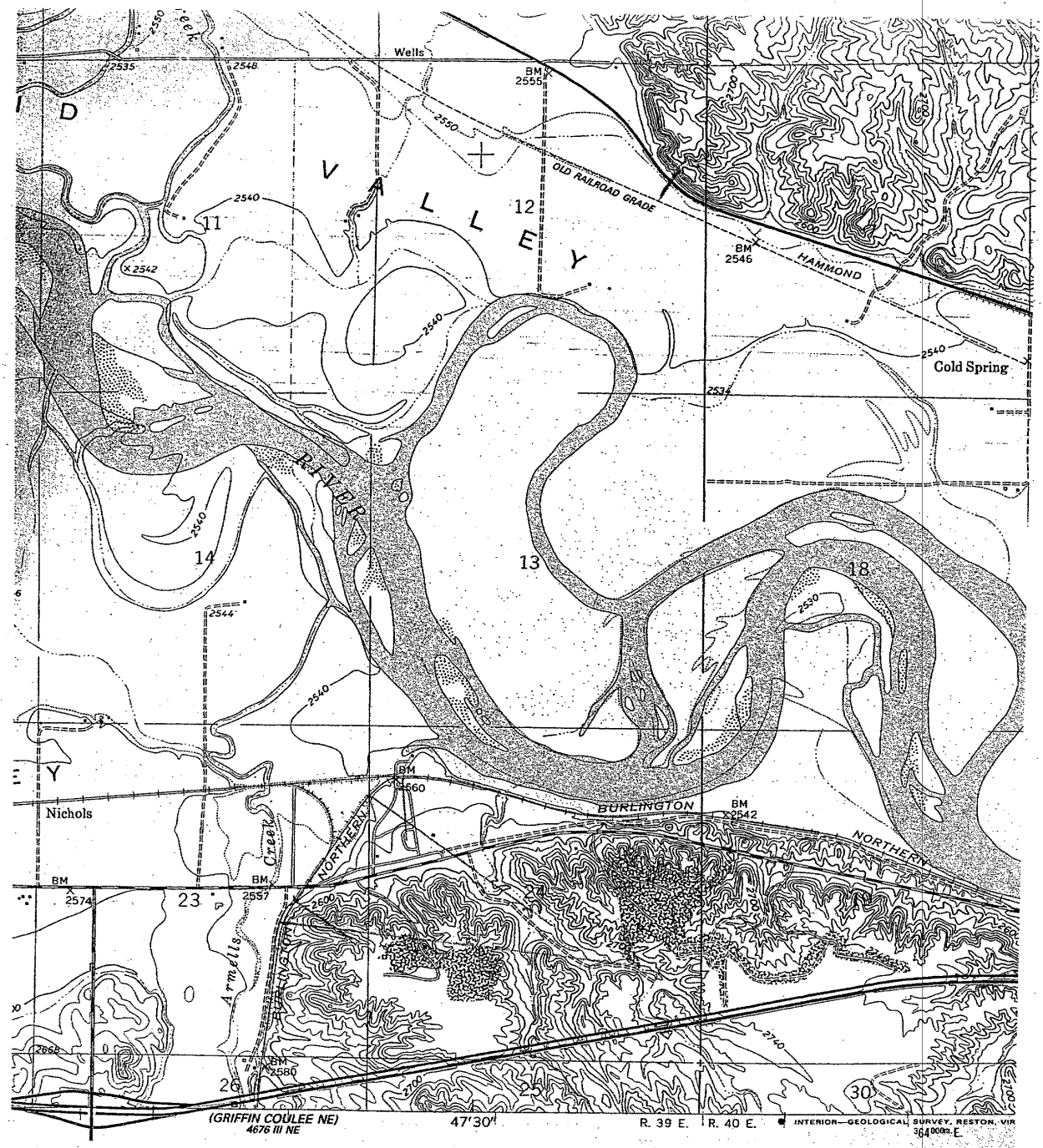
IRON SPRING SW
4575 I SW


Well
3209
3249
Well
Bar
East
Fork
SARPY
ROAD
3262
BURLINGTON
Creek
NORTHERN
Well
3292
Well
3357
3559
3489
Well
Spring
Creek
SARPY
ROAD
3292
3500
3451
3272
Well
3468
3503
3528
3652
Well
Substa
3551
21
22
Gravel Pits
[Wolf School, MT]


BURLINGTON
NORTHERN
Well
Substa
Gravel Pits
Sandy Creek
Mine
[Lodge School, MT]
10
11
12
13
14
15
22
23
24
25
30
19

REDACTED

Big Sky Branch (CARDS)



SCALE 1:24 000

0 1 MILE

1000 2000 3000 4000 5000 6000 7000 FEET

.5 0 1 KILOMETER

CONTOUR INTERVAL 20 FEET
ED LINES REPRESENT 10-FOOT CONTOURS
ONAL GEODETIC VERTICAL DATUM OF 1929

ROAD CLASSIFICATION

Primary highway, all weather, hard surface — Light-duty ro improved sur

Secondary highway, all weather, hard surface — Unimproved weather

Interstate Route — U

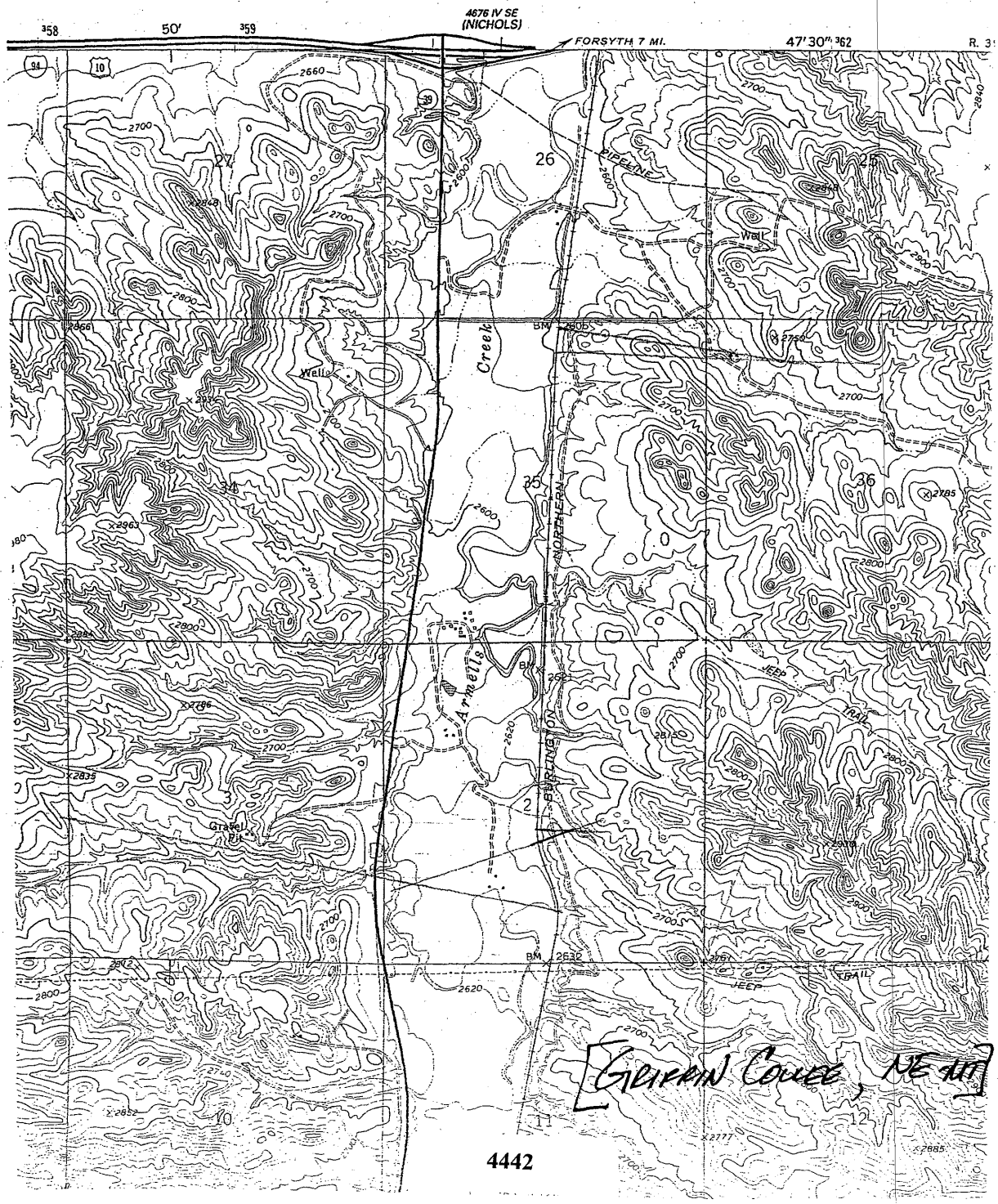
MONTANA

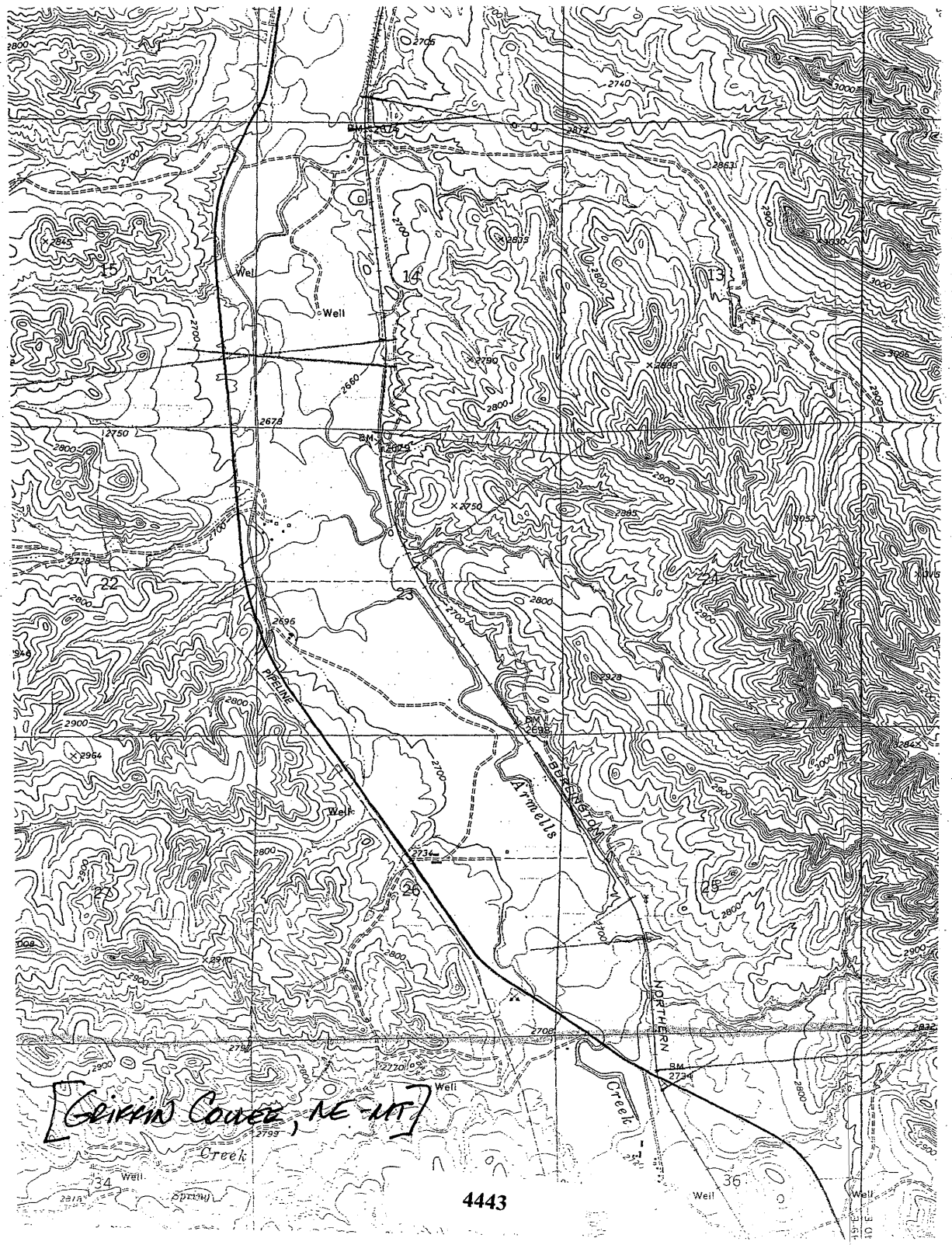
QUADRANGLE LOCATION

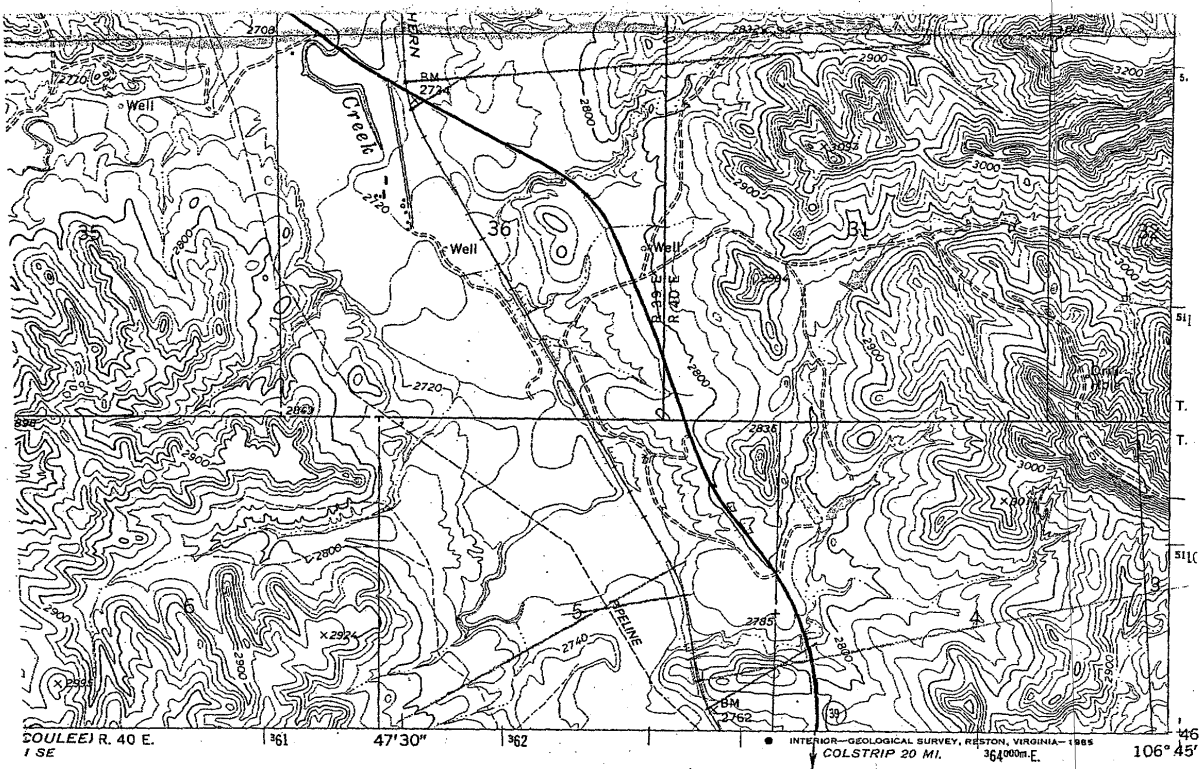
4441

[NICHOLS, MT]

NICHO


4676 IV SE
(NICHOLS)
FORSYTH 7 MI.
47'30"
50'
R. 3
Creek
Wells
Well
PIPELINE
BURLINGTON NORTHERN
Arnetts
Gravel Pit
JEEP TRAIL
JEEP
BM 2605
BM 2632
GRIFFIN COULEE, NE 4th


[Griffin Coulee, NE-MT]
PIPELINE
Armells
Creek
Well
BM 2678
BM 2695
BM 2734
NORTHERN
15
14
13
22
23
26
25
34
36



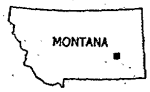
COULEE) R. 40 E.
I SE

:24 000

1 MILE
0 4000 5000 6000 7000 FEET
1 KILOMETER

RVAL 20 FEET
TICAL DATUM OF 1929

AL MAP ACCURACY STANDARDS
COLORADO 80225, OR RESTON, VIRGINIA 22092
ND SYMBOLS IS AVAILABLE ON REQUEST



QUADRANGLE LOCATION

Revisions shown in purple compiled from aerial photographs taken 1980 and other source data. This information not field checked. Map edited 1984

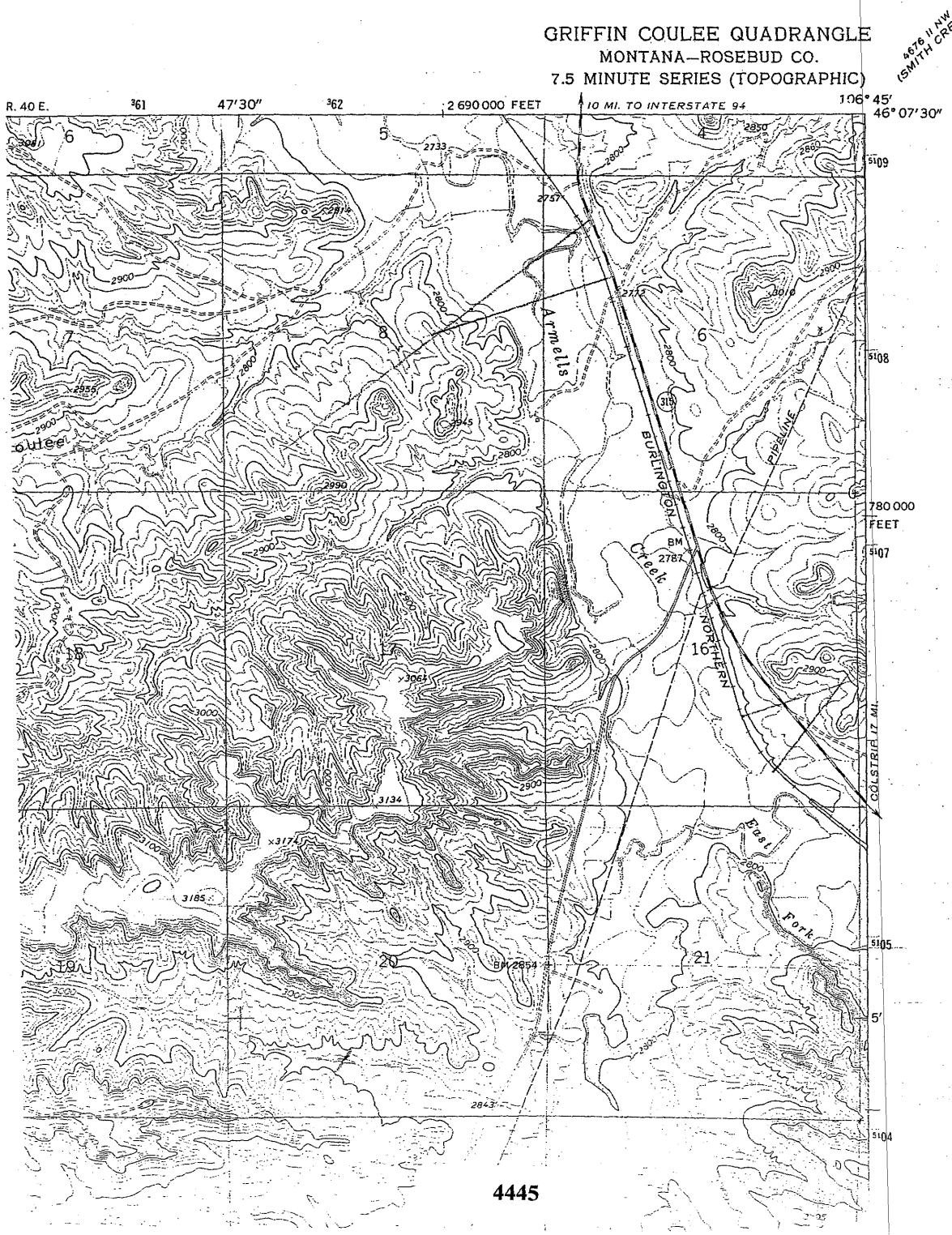
ROAD CLASSIFICATION

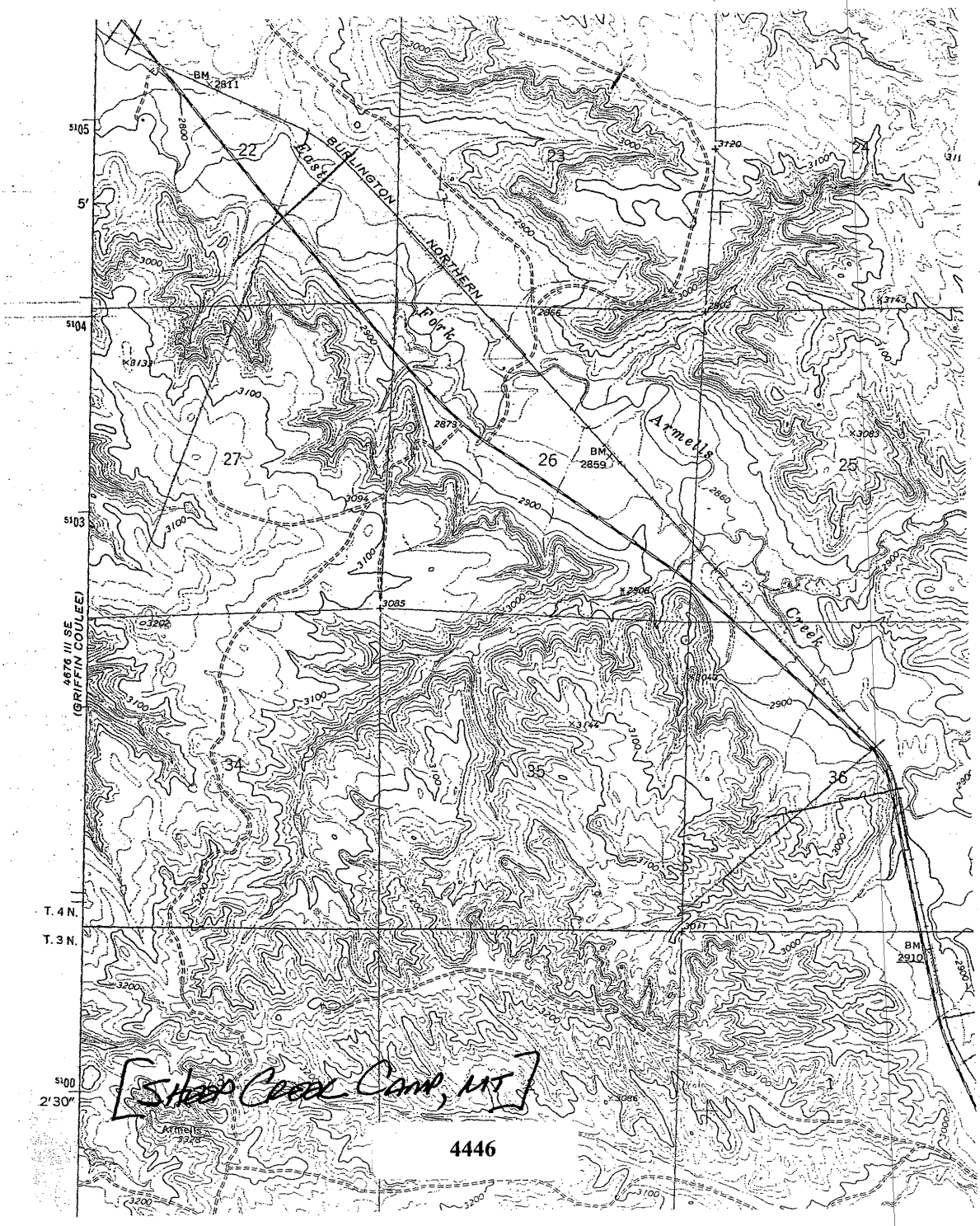
Primary highway, hard surface
Secondary highway, hard surface
Light-duty road, hard or improved surface
Unimproved road
Interstate Route
U. S. Route
State Route

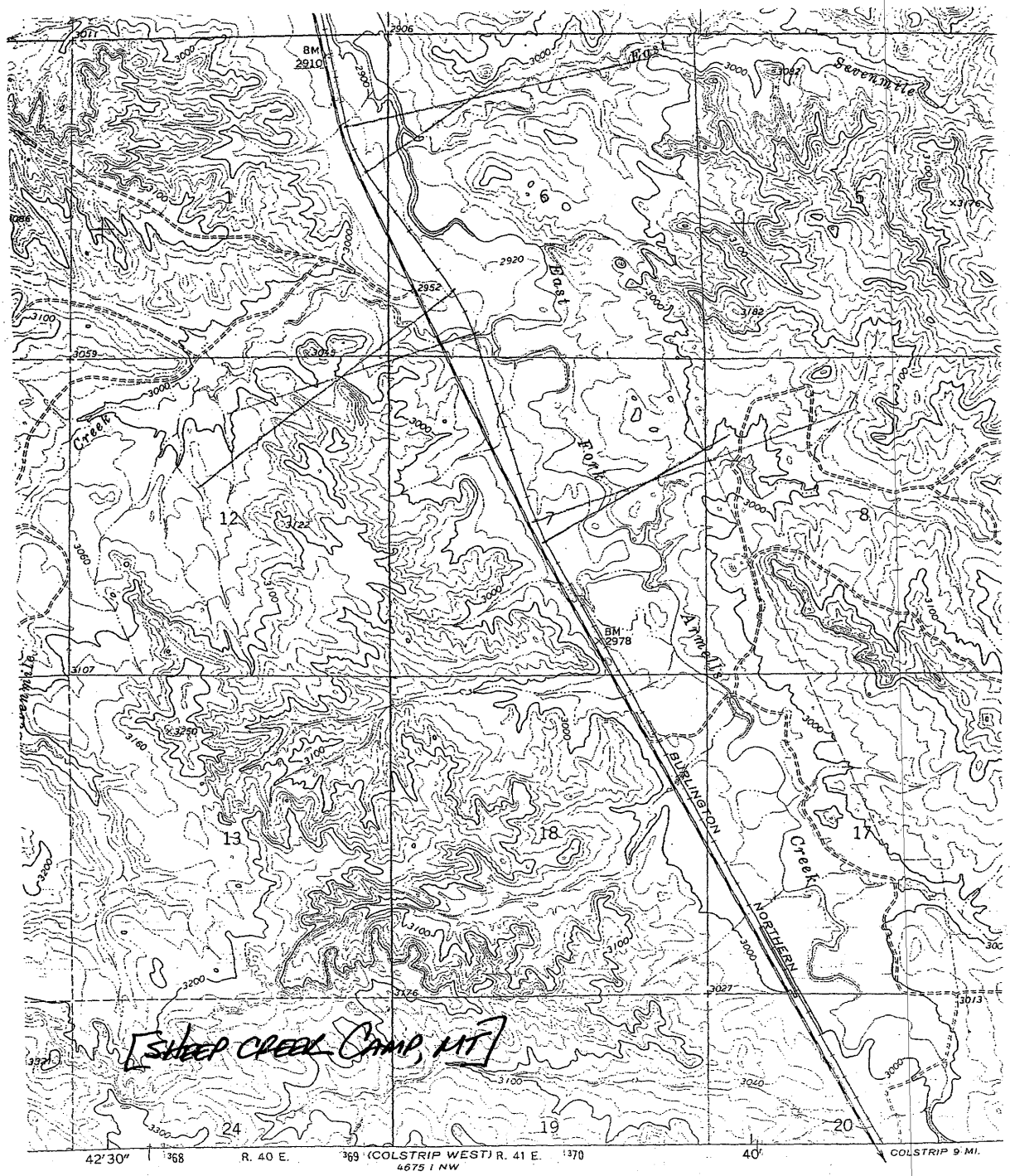
GRIFFIN COULEE NE, MONT.

46106-B7-TF-024

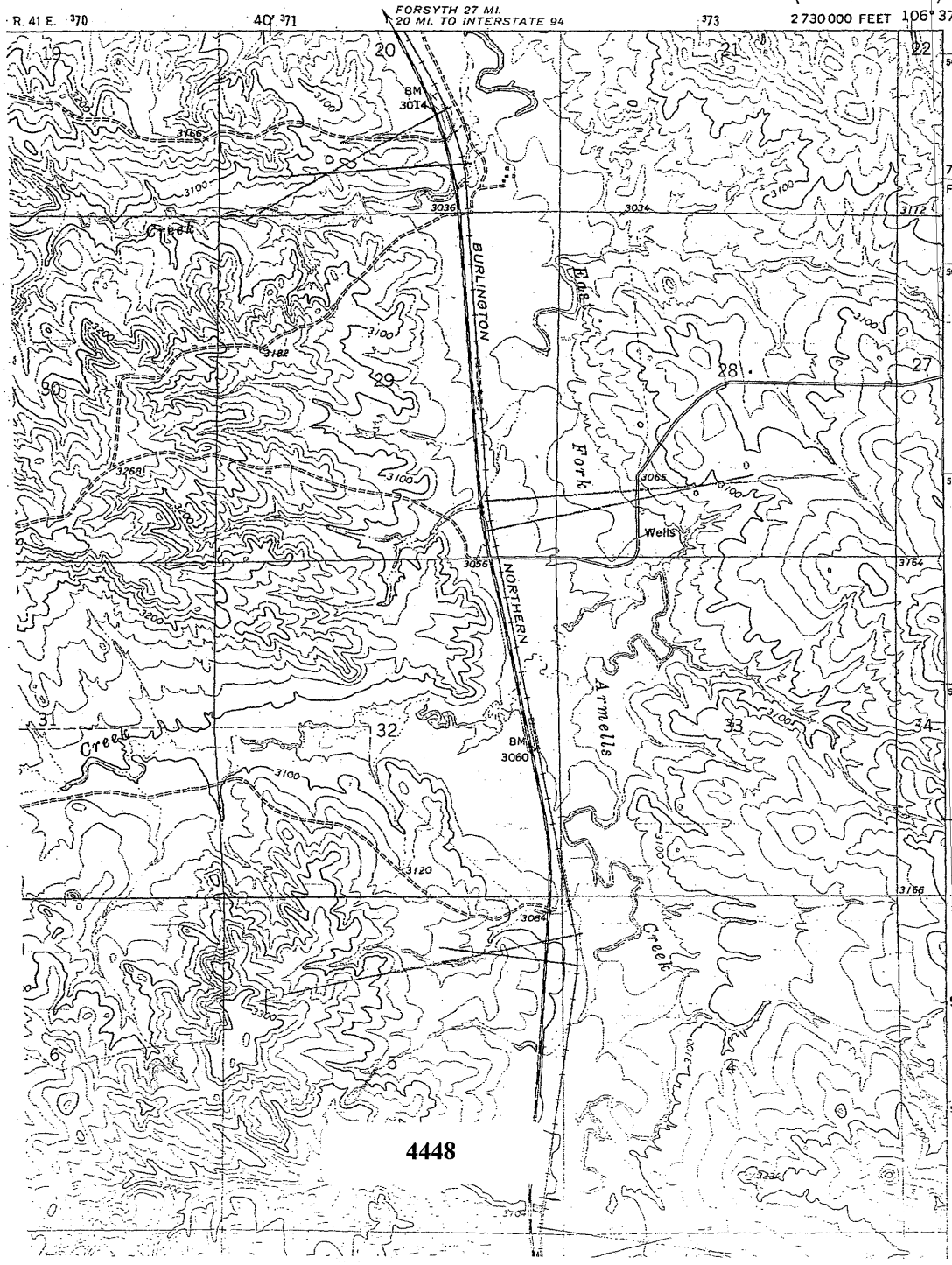
1971
PHOTOREVISED 1984
DMA 4676 III NE—SERIES V894

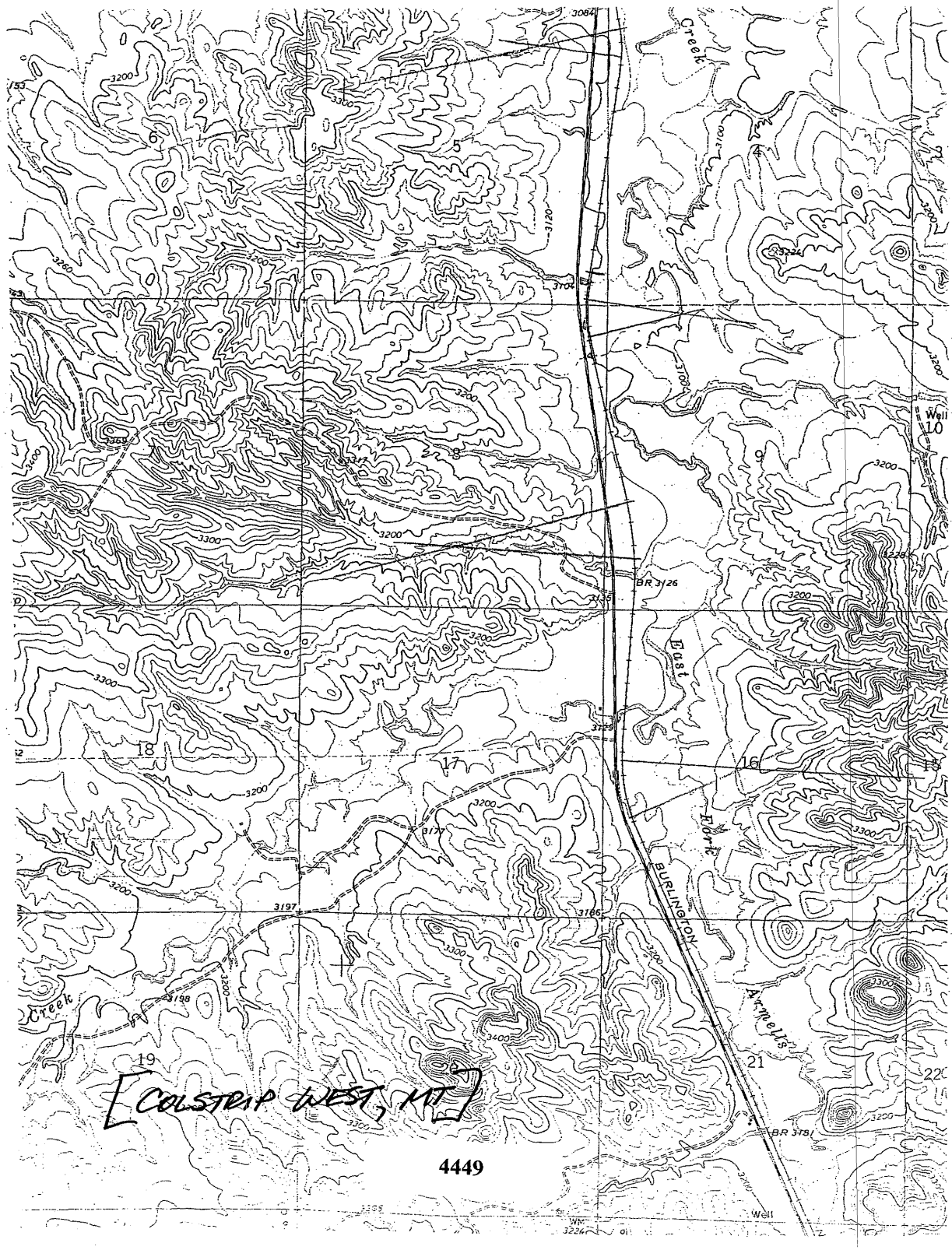

GRIFFIN COULEE QUADRANGLE
MONTANA—ROSEBUD CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
4676 II NW
(SMITH CREEK)
R. 40 E.
361
47'30"
362
2 690 000 FEET
10 MI. TO INTERSTATE 94
106° 45'
46° 07'30"
5109
5108
780 000
FEET
5107
5105
5'
5104
Armells
Creek
BURLINGTON
NORTHERN
PIPELINE
COLSTRIP 17 MI.
East
Fork
BM 2787
BM 2854
2843
3134
3185
3061
3174
2733
2757
2712
2855
2945
3018
2850
2990
3000
3100
2900
2800
16
17
18
19
20
21

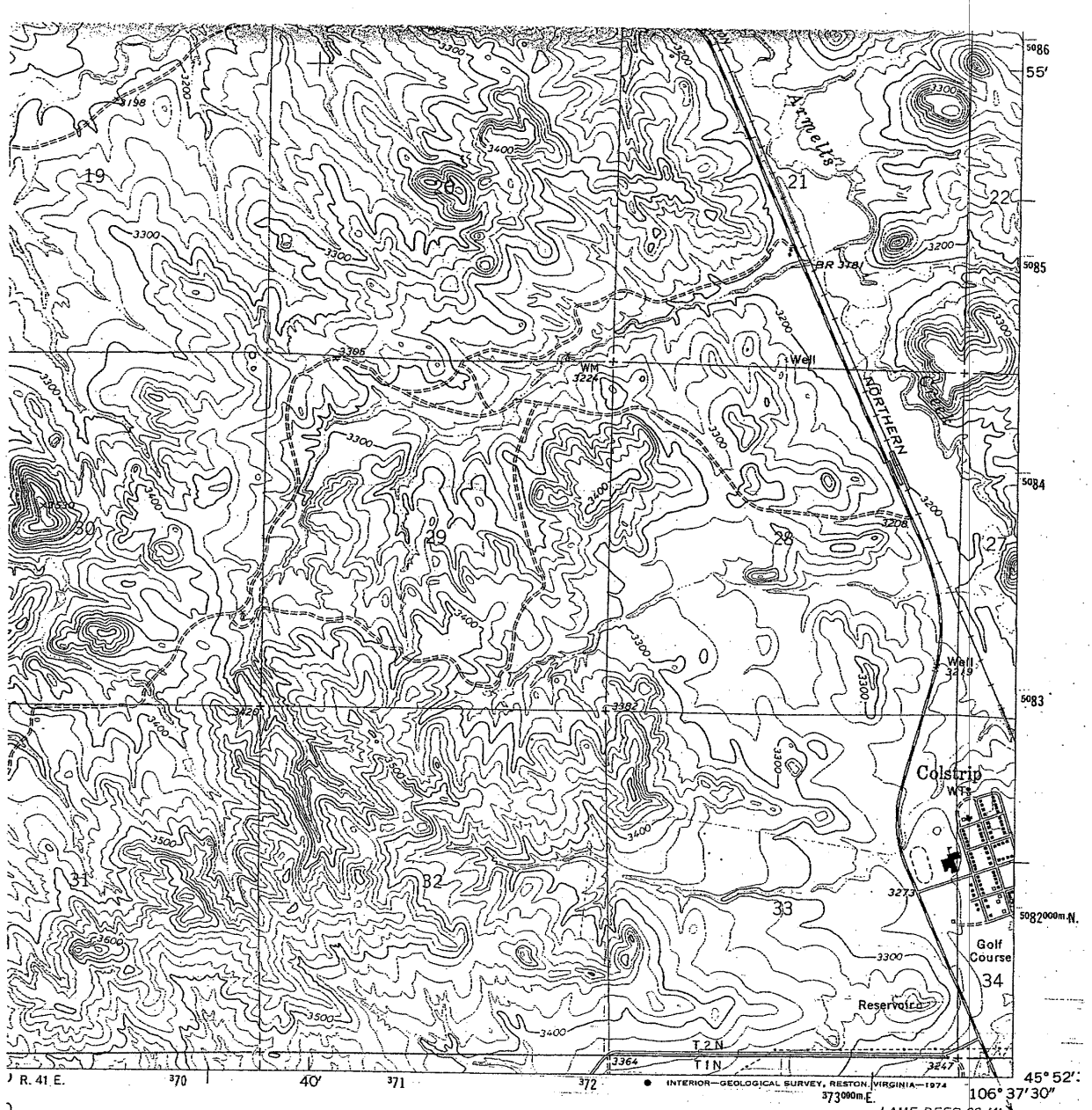

BM 2811
BURLINGTON NORTHERN
Fork
Armells
Creek
BM 2859
BM 2910
22
23
24
25
26
27
34
35
36
5105
5104
5103
5100
5'
2'30"
T. 4 N.
T. 3 N.
4676 III SE
(GRIFFIN COULEE)
[Sheep Creek Camp, MT]


BM 2910
2906
East
Seven Mile
3000
3100
3182
2920
2952
3059
3122
Creek
Fork
12
7
8
BM 2978
Armells
3107
3250
3160
3200
13
18
17
BURLINGTON
NORTHERN
Creek
3027
3013
3176
3040
24
19
20
42°30"
368
R. 40 E.
369
(COLSTRIP WEST) R. 41 E.
370
40'
COLSTRIP 9 MI.
4675 I NW
SCALE 1:24000
1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
KILOMETER
CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL
9½" MILS
[SHEEP CREEK CAMP, MT]
4447

COLSTRIP WEST QUADRANGLE
MONTANA—ROSEBUD CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)




Creek
East Fork
BURLINGTON
Armells
BR 3126
BR 3181
Well
Creek
[COLSTRIP WEST, MT]



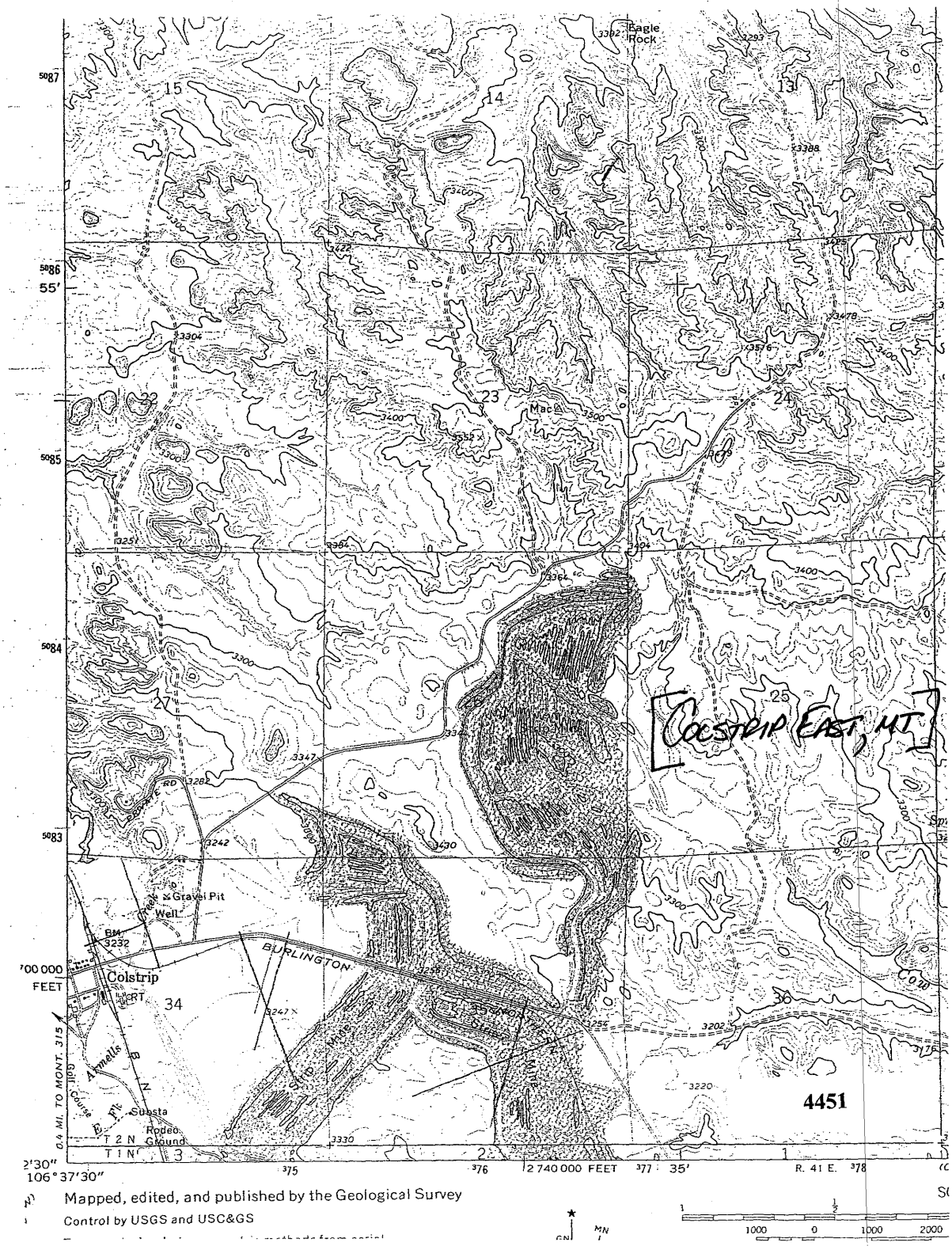
AP ACCURACY STANDARDS
RADO 80225, OR RESTON, VIRGINIA 22092
MBOLS IS AVAILABLE ON REQUEST

COLSTRIP WEST, MONT.

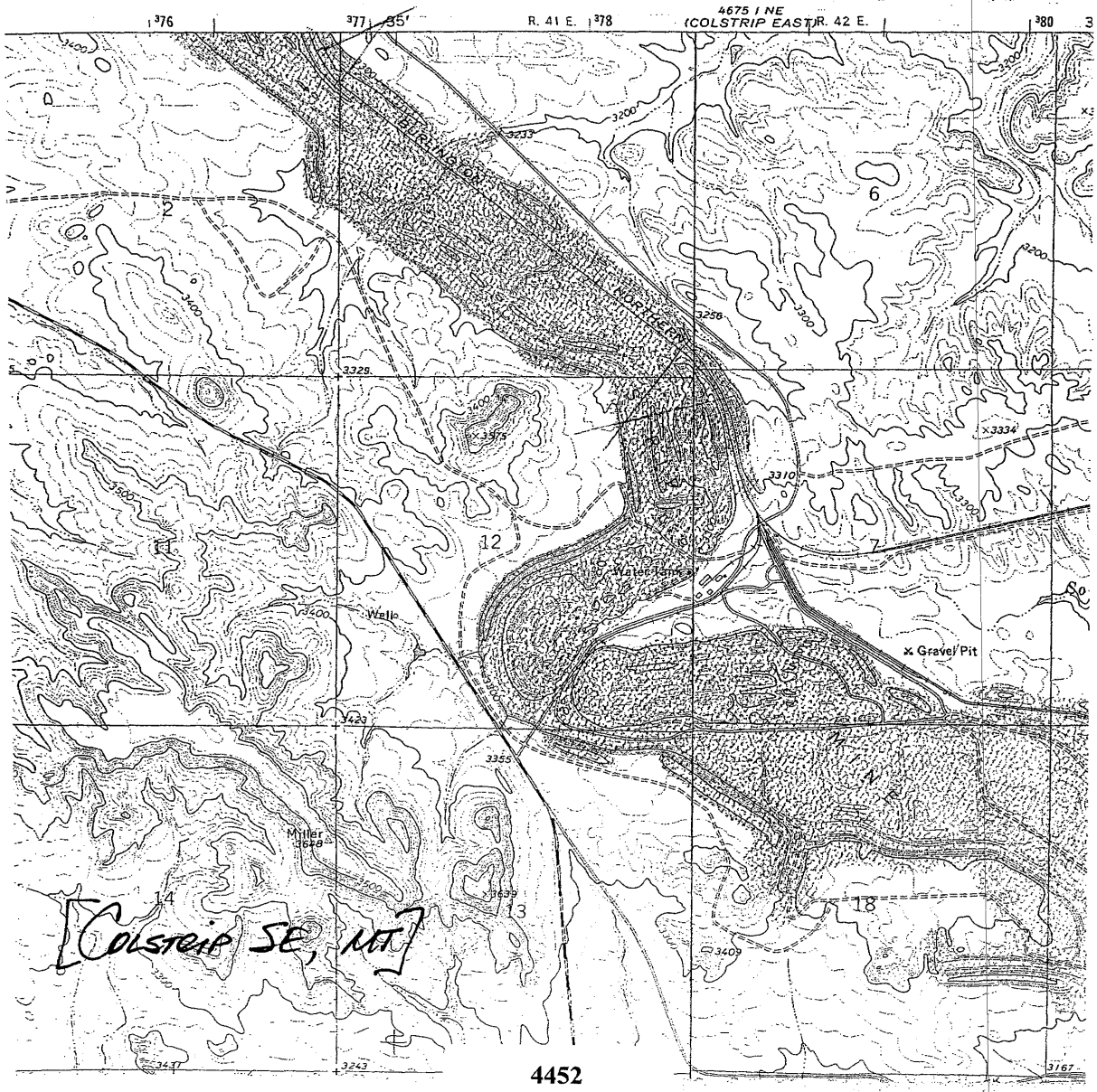
N4552.5—W10637.5/7.5

1971

AMS 4675 I NW—SERIES V894


Eagle Rock
Mac
Colstrip
Gravel Pit
Well
BM 3232
BURLINGTON
Substa
Rodeo Ground
0.4 MI. TO MONT. 315
COLSTRIP EAST, MT
4451
106°37'30"
2 740 000 FEET
R. 41 E.
Mapped, edited, and published by the Geological Survey
Control by USGS and USC&GS
1000 0 1000 2000

ERIOR


R. 41 E.
4675 I NE
(COLSTRIP EAST)
R. 42 E.
BURLINGTON NORTHERN
Water Tank
Well
Gravel Pit
Miller
3639
3355
3423
3329
3256
3233
3310
3243
3767
[COLSTRIP SE, MT]

REDACTED

Culvert Costs

REDACTED

Steel Pipe

RS Means 2001cost of:	02630-100-3360 Multi-plate arch, steel	$ 1.25 per lb.
Location Factor:	see electronic workpaper OTP Grading.xls sheet: Location Factor	0.9414
Cost per lb.		$ 1.18

02315 | Excavation and Fill

			CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P
120	6000	For compaction, see div. 02315-300									
	6010	For trench backfill, see div. 02315-900 & 02315-940									
130	0010	**BEDDING** For pipe and conduit, not incl. compaction									
	0050	Crushed or screened bank run gravel	B-6	150	.160	C.Y.	18	4.09	1.19	23.28	27.50
	0100	Crushed stone 3/4" to 1/2"		150	.160		14.15	4.09	1.19	19.43	23
	0200	Sand, dead or bank		150	.160		3.88	4.09	1.19	9.16	11.90
	0500	Compacting bedding in trench	A-1	90	.089			2.08	.67	2.75	3.98
200	0010	**BORROW, LOADING AND/OR SPREADING**									
	4000	Common earth, shovel, 1 C.Y. bucket	B-12N	840	.019	C.Y.	6.85	.56	.82	8.23	9.30
	4010	1-1/2 C.Y. bucket	B-12O	1,135	.014		6.85	.42	.81	8.08	9.05
	4020	3 C.Y. bucket	B-12T	1,800	.009		6.85	.26	.72	7.83	8.75
	4030	Front end loader, wheel mounted									
	4050	3/4 C.Y. bucket	B-10R	550	.022	C.Y.	6.85	.62	.39	7.86	8.95
	4060	1-1/2 C.Y. bucket	B-10S	970	.012		6.85	.35	.28	7.48	8.40
	4070	3 C.Y. bucket	B-10T	1,575	.008		6.85	.22	.24	7.31	8.15
	4080	5 C.Y. bucket	B-10U	2,600	.005		6.85	.13	.30	7.28	8.10
	5000	Select granular fill, shovel, 1 C.Y. bucket	B-12N	925	.017		7.90	.51	.75	9.16	10.30
	5010	1-1/2 C.Y. bucket	B-12O	1,250	.013		7.90	.38	.74	9.02	10.10
	5020	3 C.Y. bucket	B-12T	1,980	.008		7.90	.24	.65	8.79	9.80
	5030	Front end loader, wheel mounted									
	5050	3/4 C.Y. bucket	B-10R	800	.015	C.Y.	7.90	.43	.27	8.60	9.65
	5060	1-1/2 C.Y. bucket	B-10S	1,065	.011		7.90	.32	.26	8.48	9.50
	5070	3 C.Y. bucket	B-10T	1,735	.007		7.90	.20	.21	8.31	9.25
	5080	5 C.Y. bucket	B-10U	2,850	.004		7.90	.12	.27	8.29	9.20
	6000	Clay, till, or blasted rock, shovel, 1 C.Y. bucket	B-12N	715	.022		5.10	.66	.97	6.73	7.65
	6010	1-1/2 C.Y. bucket	B-12O	965	.017		5.10	.49	.95	6.54	7.40
	6020	3 C.Y. bucket	B-12T	1,530	.010		5.10	.31	.85	6.26	7
	6030	Front end loader, wheel mounted									
	6035	3/4 C.Y. bucket	B-10R	465	.026	C.Y.	5.10	.74	.46	6.30	7.25
	6040	1-1/2 C.Y. bucket	B-10S	825	.015		5.10	.42	.34	5.86	6.60
	6045	3 C.Y. bucket	B-10T	1,340	.009		5.10	.26	.28	5.64	6.30
	6050	5 C.Y. bucket	B-10U	2,200	.005		5.10	.16	.35	5.61	6.25
	6060	Front end loader, track mounted									
	6065	1-1/2 C.Y. bucket	B-10N	715	.017	C.Y.	5.10	.48	.37	5.95	6.75
	6070	3 C.Y. bucket	B-10P	1,190	.010		5.10	.29	.58	5.97	6.70
	6075	5 C.Y. bucket	B-10Q	1,835	.007		5.10	.19	.53	5.82	6.45
	7000	Topsoil or loam from stockpile, shovel, 1 C.Y. bucket	B-12N	840	.019		11.20	.56	.82	12.58	14.05
	7010	1-1/2 C.Y. bucket	B-12O	1,135	.014		11.20	.42	.81	12.43	13.80
	7020	3 C.Y. bucket	B-12T	1,800	.009		11.20	.26	.72	12.18	13.50
	7030	Front end loader, wheel mounted									
	7050	3/4 C.Y. bucket	B-10R	550	.022	C.Y.	11.20	.62	.39	12.21	13.70
	7060	1-1/2 C.Y. bucket	B-10S	970	.012		11.20	.35	.28	11.83	13.15
	7070	3 C.Y. bucket	B-10T	1,575	.008		11.20	.22	.24	11.66	12.90
	7080	5 C.Y. bucket	B-10U	2,600	.005		11.20	.13	.30	11.63	12.85
	8900	For larger hauling units, deduct from above								30%	
	9200	For flowable fill, see section 03310-220									
300	0010	**COMPACTION** R02315-300									
	5000	Riding, vibrating roller, 6" lifts, 2 passes	B-10Y	3,000	.004	C.Y.		.11	.10	.21	.28
	5020	3 passes		2,300	.005			.15	.13	.28	.38
	5040	4 passes		1,900	.006			.18	.16	.34	.46
	5060	12" lifts, 2 passes		5,200	.002			.07	.06	.13	.16
	5080	3 passes		3,500	.003			.10	.09	.19	.25
	5100	4 passes		2,600	.005			.13	.12	.25	.33
	5600	Sheepsfoot or wobbly wheel roller, 6" lifts, 2 passes	B-10G	2,400	.005			.14	.32	.46	.57

02530 | Sanitary Sewerage

			CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P	
100	0700	200,000 GPD				Gal.				2.50	2.88	100
	0800	500,000 GPD				↓				2.45	2.80	
	1000	Concrete, extended aeration, primary and secondary treatment										
	1010	10,000 GPD				Gal.				11	12.65	
	1100	30,000 GPD								5.50	6.35	
	1200	50,000 GPD								4.50	5.18	
	1400	100,000 GPD								3.50	4.05	
	1500	500,000 GPD				↓				2.50	2.90	
	1700	Municipal wastewater treatment facility										
	1720	1.0 MGD				Gal.				4.30	4.95	
	1740	1.5 MGD								4.25	4.90	
	1760	2.0 MGD								3.65	4.20	
	1780	3.0 MGD								2.85	3.30	
	1800	5.0 MGD				↓				2.60	3	
	2000	Holding tank system, not incl. excavation or backfill										
	2010	Recirculating chemical water closet	2 Plum	4	4	Ea.	720	144		864	1,000	
	2100	For voltage converter, add	"	16	1		191	36		227	264	
	2200	For high level alarm, add	1 Plum	7.80	1.026	↓	109	37		146	176	
720	0010	PIPING, DRAINAGE & SEWAGE, SEWAGE VENT CAST IRON										720
	0020	Not including excavation or backfill										
	2022	Sewage vent cast iron, B & S, 4" diameter	Q-1	44	.364	L.F.	3.76	11.75		15.51	22	
	2024	5" diameter	Q-2	62	.387		5.30	13		18.30	25.50	
	2026	6" diameter	"	59	.407		6.45	13.65		20.10	27.50	
	2028	8" diameter	Q-3	49	.653		10.35	22.50		32.85	45	
	2030	10" diameter		45	.711		17.25	24.50		41.75	55.50	
	2032	12" diameter		39	.821		25	28		53	70	
	2034	15" diameter	↓	35	.914	↓	36.50	31.50		68	87.50	
	2048	For push on joint deduct						25%				
	2050	5" diameter						25%				
	2052	6" diameter						25%				
	2054	8" diameter						25%				
	2056	10" diameter						25%				
	2058	12" diameter						25%				
	2060	15" diameter						25%				
	8001	Fittings, bends and elbows										
	8110	4" diameter	Q-1	13	1.231	Ea.	10.40	40		50.40	71.50	
	8112	5" diameter	Q-2	18	1.333		14.55	44.50		59.05	83.50	
	8114	6" diameter	"	17	1.412		18.15	47.50		65.65	91.50	
	8116	8" diameter	Q-3	11	2.909		54.50	99.50		154	210	
	8118	10" diameter		10	3.200		80	110		190	253	
	8120	12" diameter		9	3.556		108	122		230	305	
	8122	15" diameter	↓	7	4.571	↓	345	157		502	615	
	8500	Wyes and tees										
	8510	4" diameter	Q-1	8	2	Ea.	13.80	64.50		78.30	113	
	8512	5" diameter	Q-2	12	2		27.50	67		94.50	131	
	8514	6" diameter	"	11	2.182		31	73		104	145	
	8516	8" diameter	Q-3	7	4.571		90.50	157		247.50	335	
	8518	10" diameter		6	5.333		151	183		334	445	
	8520	12" diameter		4	8		252	274		526	690	
	8522	15" diameter	↓	3	10.667	↓	395	365		760	985	
730	0010	PIPING, DRAINAGE & SEWAGE, CONCRETE R02510 -810										730
	0020	Not including excavation or backfill										
	0050	Box culvert, cast in place, 6' x 6'	C-15	16	4.500	L.F.	96	127		223	305	
	0060	8' x 8'		14	5.143		141	145		286	380	
	0070	12' x 12'	↓	10	7.200		277	203		480	620	
	0100	Box culvert, precast, base price, 8' long, 6' x 3'	B-69	140	.343	↓	156	8.85	9.70	174.55	196	

02530 | Sanitary Sewerage

			CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P
730	0150	6' x 7' R02510 -810	B-69	125	.384	L.F.	243	9.90	10.85	263.75	294
	0200	8' x 3'		133	.361		179	9.30	10.20	198.50	223
	0250	8' x 8'		100	.480		296	12.40	13.55	321.95	360
	0300	10' x 3'		110	.436		385	11.25	12.35	408.60	450
	0350	10' x 8'		80	.600		370	15.50	16.95	402.45	450
	0400	12' x 3'		100	.480		305	12.40	13.55	330.95	370
	0401	Piping, precast concrete, box culvert, 8' long, 12' x 3'		100	.480			12.40	13.55	25.95	34
	0450	12' x 8'		67	.716		530	18.50	20	568.50	635
	0500	Set up charge at plant, add to base price				Job	2,800			2,800	3,100
	0510	Inserts and keyway, add				Ea.	247			247	272
	0520	Sloped or skewed end, add				"	395			395	435
	1000	Non-reinforced pipe, extra strength, B&S or T&G joints									
	1010	6" diameter	B-14	265.04	.181	L.F.	3.50	4.50	.67	8.67	11.55
	1020	8" diameter		224	.214		3.85	5.30	.80	9.95	13.35
	1030	10" diameter		216	.222		4.27	5.50	.83	10.60	14.15
	1040	12" diameter		200	.240		5.25	5.95	.89	12.09	16.05
	1050	15" diameter		180	.267		6.15	6.60	.99	13.74	18.10
	1060	18" diameter		144	.333		7.55	8.30	1.24	17.09	22.50
	1070	21" diameter		112	.429		9.30	10.65	1.59	21.54	28.50
	1080	24" diameter		100	.480		11.40	11.90	1.79	25.09	33
	1560	Reinforced culvert, class 2, no gaskets									
	1590	27" diameter	B-21	88	.318	L.F.	20.50	8.75	1.79	31.04	38
	1592	30" diameter	B-13	80	.700		23.50	17.80	9.05	50.35	63.50
	1594	36" diameter	"	72	.778		27.50	19.80	10.05	57.35	72
	2000	Reinforced culvert, class 3, no gaskets									
	2010	12" diameter	B-14	210	.229	L.F.	10.25	5.70	.85	16.80	21
	2020	15" diameter		175	.274		12.65	6.80	1.02	20.47	25.50
	2030	18" diameter		130	.369		12.75	9.15	1.37	23.27	30
	2035	21" diameter		120	.400		15.55	9.95	1.49	26.99	34
	2040	24" diameter		100	.480		18.65	11.90	1.79	32.34	41
	2045	27" diameter	B-13	92	.609		22.50	15.50	7.90	45.90	57.50
	2050	30" diameter		88	.636		26	16.20	8.25	50.45	62.50
	2060	36" diameter		72	.778		36.50	19.80	10.05	66.35	82
	2070	42" diameter	B-13B	72	.778		50	19.80	13.50	83.30	100
	2080	48" diameter		64	.875		62	22.50	15.20	99.70	120
	2090	60" diameter		48	1.167		99.50	29.50	20.50	149.50	179
	2100	72" diameter		40	1.400		141	35.50	24.50	201	237
	2120	84" diameter		32	1.750		257	44.50	30.50	332	385
	2140	96" diameter		24	2.333		310	59.50	40.50	410	475
	2200	With gaskets, class 3, 12" diameter	B-21	168	.167		11.30	4.57	.94	16.81	20.50
	2220	15" diameter		160	.175		13.55	4.80	.99	19.34	23.50
	2230	18" diameter		152	.184		16.95	5.05	1.04	23.04	27.50
	2240	24" diameter		136	.206		25.50	5.65	1.16	32.31	38
	2260	30" diameter	B-13	88	.636		34	16.20	8.25	58.45	71.50
	2270	36" diameter	"	72	.778		51	19.80	10.05	80.85	97.50
	2290	48" diameter	B-13B	64	.875		83	22.50	15.20	120.70	143
	2310	72" diameter	"	40	1.400		215	35.50	24.50	275	320
	2330	Flared ends, 6'-1" long, 12" diameter	B-21	190	.147		38.50	4.04	.83	43.37	49
	2340	15" diameter		155	.181		44.50	4.96	1.02	50.48	58
	2400	6'-2" long, 18" diameter		122	.230		47	6.30	1.29	54.59	63
	2420	24" diameter		88	.318		57	8.75	1.79	67.54	78
	2440	36" diameter	B-13	60	.933		87.50	24	12.10	123.60	146
	2500	Class 4									
	2510	12" diameter	B-21	168	.167	L.F.	12.80	4.57	.94	18.31	22
	2512	15" diameter		160	.175		14.90	4.80	.99	20.69	25
	2514	18" diameter		152	.184		17.75	5.05	1.04	23.84	28.50

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		02620 | Subdrainage	CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P	
265	0760	6" diameter	1 Clab	27	.296	Ea.	9.65	6.95		16.60	21.50	265
	0780	8" diameter	↓	27	.296	↓	11.85	6.95		18.80	24	
	0860	Silt sock only for above tubing, 6" dia.				L.F.	.62			.62	.68	
	0880	8" diameter				"	1.02			1.02	1.13	
280	0010	PIPING, SUBDRAINAGE, VITRIFIED CLAY										280
	0020	Not including excavation and backfill										
	3000	Perforated, 5' lengths, C700, 4" diameter	B-14	400	.120	L.F.	2	2.98	.45	5.43	7.30	
	3020	6" diameter		315	.152		3.31	3.79	.57	7.67	10.10	
	3040	8" diameter		290	.166		4.71	4.11	.62	9.44	12.25	
	3050	10" diameter		320	.150		7.60	3.73	.56	11.89	14.70	
	3060	12" diameter	↓	275	.175		9.95	4.34	.65	14.94	18.30	
	4000	Channel pipe, 4" diameter	B-20	430	.056		1.89	1.49		3.38	4.40	
	4020	6" diameter		335	.072		3.32	1.91		5.23	6.60	
	4060	8" diameter	↓	295	.081		5.05	2.17		7.22	8.95	
	4080	12" diameter	B-21	280	.100	↓	11.10	2.74	.56	14.40	17.05	
	7998	Standard fittings										
	8000	4" diameter	B-20	35	.686	Ea.	11.30	18.25		29.55	41	
	8020	6" diameter		30	.800		19.25	21.50		40.75	54	
	8040	8" diameter		28	.857		30.50	23		53.50	69	
	8060	10" diameter		25	.960		47.50	25.50		73	92.50	
	8080	12" diameter	↓	20	1.200	↓	66	32		98	123	
400	0010	DRAINAGE Geotextiles										400
	0100	Fabric, laid in trench, polypropylene, ideal conditions	2 Clab	2,400	.007	S.Y.	1.25	.16		1.41	1.62	
	0110	Adverse conditions		1,600	.010	"	1.34	.23		1.57	1.84	
	0170	Fabric ply bonded to 3 dimen. nylon mat, .4" thk, ideal conditions		2,000	.008	S.F.	.84	.19		1.03	1.21	
	0180	Adverse conditions		1,200	.013	"	1.06	.31		1.37	1.66	
	0185	Soil drainage mat on vertical wall, 0.44" thick		265	.060	S.Y.	14.85	1.42		16.27	18.50	
	0188	0.25" thick		300	.053	"	9	1.25		10.25	11.85	
	0190	0.8" thick, ideal conditions		2,400	.007	S.F.	1.33	.16		1.49	1.70	
	0200	Adverse conditions	↓	1,600	.010	"	1.75	.23		1.98	2.30	
	0300	Drainage material, 3/4" gravel fill in trench	B-6	260	.092	C.Y.	47.50	2.36	.69	50.55	57	
	0400	Pea stone	"	260	.092	"	12.65	2.36	.69	15.70	18.35	
		02630 | Storm Drainage										
100	0010	PIPING, STORM DRAINAGE, CORRUGATED METAL										100
	0020	Not including excavation or backfill										
	2000	Corrugated metal pipe, galvanized and coated										
	2020	Bituminous coated with paved invert, 20' lengths										
	2040	8" diameter, 16 ga.	B-14	330	.145	L.F.	5.85	3.61	.54	10	12.65	
	2060	10" diameter, 16 ga.		260	.185		7.05	4.59	.69	12.33	15.60	
	2080	12" diameter, 16 ga.		210	.229		8.50	5.70	.85	15.05	19.10	
	2100	15" diameter, 16 ga.		200	.240		10.25	5.95	.89	17.09	21.50	
	2120	18" diameter, 16 ga.		190	.253		13.20	6.30	.94	20.44	25	
	2140	24" diameter, 14 ga.	↓	160	.300		16.20	7.45	1.12	24.77	30.50	
	2160	30" diameter, 14 ga.	B-13	120	.467		21	11.90	6.05	38.95	48.50	
	2180	36" diameter, 12 ga.		120	.467		31	11.90	6.05	48.95	59.50	
	2200	48" diameter, 12 ga.	↓	100	.560		47.50	14.25	7.25	69	82	
	2220	60" diameter, 10 ga.	B-13B	75	.747		61.50	19	12.95	93.45	111	
	2240	72" diameter, 8 ga.	"	45	1.244	↓	93.50	31.50	21.50	146.50	176	
	2250	End sections, 8" diameter, 16 ga.	B-14	20	2.400	Ea.	39.50	59.50	8.95	107.95	146	
	2255	10" diameter, 16 ga.		20	2.400		45	59.50	8.95	113.45	152	
	2260	12" diameter, 16 ga.		18	2.667		49	66	9.90	124.90	168	
	2265	15" diameter, 16 ga.		18	2.667		61	66	9.90	136.90	181	
	2270	18" diameter, 16 ga.	↓	16	3	↓	77	74.50	11.15	162.65	212	



		02630 | Storm Drainage	CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P	
100	2742	72" diameter, 10 ga.	B-13	6	9.333	Ea.	900	238	121	1,259	1,500	100
	2780	End sections, 8" diameter	B-14	24	2		55	49.50	7.45	111.95	146	
	2785	10" diameter		22	2.182		56.50	54	8.10	118.60	155	
	2790	12" diameter		35	1.371		42.50	34	5.10	81.60	105	
	2800	18" diameter	↓	30	1.600		65.50	39.50	5.95	110.95	140	
	2810	24" diameter	B-13	25	2.240		95.50	57	29	181.50	225	
	2820	30" diameter		25	2.240		182	57	29	268	320	
	2825	36" diameter		20	2.800		241	71.50	36	348.50	415	
	2830	48" diameter	↓	10	5.600		500	143	72.50	715.50	845	
	2835	60" diameter	B-13B	5	11.200		650	285	194	1,129	1,375	
	2840	72" diameter	"	4	14		1,175	355	243	1,773	2,100	
	2850	Couplings, 12" diameter					10.70			10.70	11.75	
	2855	18" diameter					15.60			15.60	17.20	
	2860	24" diameter					21			21	23	
	2865	30" diameter					26			26	28.50	
	2870	36" diameter					36			36	40	
	2875	48" diameter					49			49	54	
	2880	60" diameter					77.50			77.50	85	
	2885	72" diameter				↓	107			107	118	
	3000	Corrugated galvanized or alum. oval arch culverts, coated & paved										
	3020	17" x 13", 16 ga., 15" equivalent	B-14	200	.240	L.F.	17.40	5.95	.89	24.24	29.50	
	3040	21" x 15", 16 ga., 18" equivalent		150	.320		22.50	7.95	1.19	31.64	38	
	3060	28" x 20", 14 ga., 24" equivalent		125	.384		32	9.55	1.43	42.98	52	
	3080	35" x 24", 14 ga., 30" equivalent	↓	100	.480		40	11.90	1.79	53.69	64.50	
	3100	42" x 29", 12 ga., 36" equivalent	B-13	100	.560		58.50	14.25	7.25	80	94.50	
	3120	49" x 33", 12 ga., 42" equivalent		90	.622		70.50	15.85	8.05	94.40	111	
	3140	57" x 38", 12 ga., 48" equivalent	↓	75	.747	↓	79.50	19	9.65	108.15	128	
	3160	Steel, plain oval arch culverts, plain										
	3180	17" x 13", 16 ga., 15" equivalent	B-14	225	.213	L.F.	9.55	5.30	.79	15.64	19.55	
	3200	21" x 15", 16 ga., 18" equivalent		175	.274		11.35	6.80	1.02	19.17	24	
	3220	28" x 20", 14 ga., 24" equivalent	↓	150	.320		18.20	7.95	1.19	27.34	33.50	
	3240	35" x 24", 14 ga., 30" equivalent	B-13	108	.519		23	13.20	6.70	42.90	53	
	3260	42" x 29", 12 ga., 36" equivalent		108	.519		37.50	13.20	6.70	57.40	69.50	
	3280	49" x 33", 12 ga., 42" equivalent		92	.609		44.50	15.50	7.90	67.90	81.50	
	3300	57" x 38", 12 ga., 48" equivalent		75	.747	↓	39.50	19	9.65	68.15	83	
	3320	End sections, 17" x 13"		22	2.545	Ea.	52.50	65	33	150.50	194	
	3340	42" x 29"	↓	17	3.294	"	215	84	42.50	341.50	410	
	3360	Multi-plate arch, steel	B-20	1,690	.014	Lb.	.60	.38		.98	1.25	
	8000	Bends or elbows, 6" diameter		30	.800	Ea.	38	21.50		59.50	74.50	
	8020	8" diameter		28	.857		48	23		71	88.50	
	8040	10" diameter	↓	25	.960		58.50	25.50		84	104	
	8060	12" diameter	B-21	20	1.400		66	38.50	7.90	112.40	141	
	8100	Wyes or tees, 6" diameter	B-20	27	.889		55.50	23.50		79	98	
	8120	8" diameter		25	.960		70.50	25.50		96	118	
	8140	10" diameter	↓	21	1.143		83	30.50		113.50	139	
	8160	12" diameter	B-21	18	1.556	↓	96	42.50	8.75	147.25	181	
150	0010	PIPING, DRAINAGE & SEWAGE, CORRUGATED HDPE TYPE S										150
	0020	Not including excavation & backfill, bell & spigot										
	1000	With gaskets, 4" diameter	B-20	425	.056	L.F.	.69	1.50		2.19	3.10	
	1010	6" diameter		400	.060		1.59	1.60		3.19	4.24	
	1020	8" diameter	↓	380	.063		3.06	1.68		4.74	6	
	1030	10" diameter	B-21	375	.075		4.22	2.05	.42	6.69	8.30	
	1040	12" diameter		350	.080		4.71	2.20	.45	7.36	9.10	
	1050	15" diameter		300	.093		6.40	2.56	.53	9.49	11.60	
	1060	18" diameter		275	.102		9.10	2.79	.57	12.46	15	
	1070	24" diameter	↓	250	.112	↓	14.15	3.07	.63	17.85	21	

III - F-3

Track Material Units Costs

REDACTED

31522 SERVICE DATE – LATE RELEASE March 24, 2003

This decision will be printed in the bound volumes of the STB printed reports at a later date.

SURFACE TRANSPORTATION BOARD

DECISION

STB Docket No. 42056

TEXAS MUNICIPAL POWER AGENCY
v.
THE BURLINGTON NORTHERN AND SANTA FE RAILWAY COMPANY

Decided: March 21, 2003

The Board finds that the defendant railroad has market dominance over the transportation at issue and that the challenged rate is unreasonably high. A maximum reasonable rate is prescribed and reparations are ordered.

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that it is essential that welded rail be used in the yards to prevent joints from becoming battered and chipped, leading to broken rails. Because TMPA provided no evidence on the cost for jointed bars that would be needed to join the sections of 119-lb. rail together, we use BNSF's evidence, which is based on the use of CWR in yards.

The parties also disagree on the indexing procedures to use to develop the price of rail as of the 2nd quarter of 2001. As discussed earlier, we use BNSF's method of indexing. Accordingly, we find that the total rail cost for the GCRR would be $300,312,449.[216]

b. Field Welds

The parties agree on the cost of field welding ($50.68 per weld) and the need for welds every 1,440 feet.[217] TMPA assumes that 8,795 welds would be needed, while BNSF contends that 18,671 welds would be required. The large discrepancy between these figures is due to TMPA's failure to multiply its weld quantity by 2 (i.e., TMPA's evidence mistakenly provides funds for a weld on only one side of the track). Based on our restatement of track miles, we calculate a need for 17,619 field welds, at a total cost of $892,931.

5. Turnouts

Table D-8 below shows the parties' costs and our restatement for various types of turnouts.

[216] This figure is based on 8,718,985 LF of 136-lb. standard rail at $11.05/LF; 14,994,569 LF of 136-lb. premium rail at $12.79/LF; and 34,656 tons of 119-lb. relay rail at $351.66 a ton.

[217] Track is welded into 1,440-foot-long strings at the rail plant. Field welding is required to weld the strings of track into CWR.

Table D-8
Turnouts

Type	TMPA	BNSF	STB
#20 Spring			
Unit Cost	$98,939	$103,801	$103,801
Quantity	63	30	33
Total Cost	$6,233,168	$3,114,030	$3,425,433
#20 Electric			
Unit Cost	$118,839	$96,548	$96,548
Quantity	157	413	257
Total Cost	$18,657,750	$39,874,234	$24,812,836
#14 Electric			
Unit Cost	$73,566	$76,971	$76,971
Quantity	61	43	37
Total Cost	$4,487,549	$3,309,735	$2,847,927
#14 Manual			
Unit Cost	$53,566	$75,421	$75,421
Quantity	6	10	9
Total Cost	$321,398	$754,213	$678,789
#10 Manual			
Unit Cost	$24,106	$56,781	$56,781
Quantity	396	361	386
Total Cost	$9,545,936	$20,497,815	$21,917,466
TOTAL	**$39,245,801**	**$67,550,027**	**$53,682,451**

The parties agree to the use of #20 turnouts between main-line tracks and certain sidings where trains travel at high speeds; #14 turnouts where trains maintain lower speeds and also at

75,421 / 76,971 = .9798625 Power to Manual

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REDACTED

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Phone: 703/836-0100 Fax: 703/836-0205

FAXED
JAN 02 2003

DATE January 2, 2003

YOUR INQUIRY

QUOTATION NO. MP-010203-01

WE THANK YOU FOR YOUR INQUIRY AND ARE PLEASED TO QUOTE AS FOLLOWS:

QUANTITY	DESCRIPTION	PRICE
	132#RE No.1 relay rail in 39' lengths	$330.00/NT ←
	115#RE No.1 relay rail in 39' lengths	$450.00/NT
	Relay 5-1/2" base double shoulder tie plates 7-3/4x14"	$4.60/EA
	*Alternates: 13" @ $3.75/EA, 12" @ $3.00/EA	
	Relay 6" base double shoulder tie plates, 7-3/4x14"	$4.00/EA ←

132/3'/2000 = .022 x 330 = 7.26 LF

CONDITIONS: All material quoted is subject to the conditions on the reverse side. All material quoted is subject to prior sale. Prices quoted are subject to change without notice

F.O.B. Salt Lake City, UT

DELIVERY: From Stock

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Megan Parry
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Form A-5

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Current Market Conditions as of TIME: 17:20 EST - Thursday, May 15, 2003

RECYCLENET COMPOSITE INDEX:	30890.00	30890.00	+/- 0.00

RECYCLENET SCRAP METALS INDEX:	7965.00	7965.00	+/- 0.00

Benchmark - Average Market Prices	10:00 AM Fix	Current Market As of: 17:20 EST	(+/-)
Scrap Steel Average (US $/ton) :	85.00	85.00	0.00
Scrap Copper Average (US $/lbs) :	1.02	1.02	0.00
Scrap Brass Average (US $/lbs) :	0.52	0.52	0.00
Scrap Aluminum Average (US $/lbs) :	0.71	0.71	0.00
Scrap UBC Average (US $/lbs) :	0.72	0.72	0.00
Scrap Zinc Average (US $/lbs) :	0.51	0.51	0.00
Scrap Lead Average (US $/lbs) :	0.19	0.19	0.00
Stainless Steel Scrap Average (US $/lbs) :	0.27	0.27	0.00

To view current quotes and market details, click on the Market Price for any specific benchmark grade.

RECYCLENET COMPOSITE INDEX:	30890.00	30890.00	+/- 0.00

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SERVICE DATE – LATE RELEASE March 24, 2003

This decision will be printed in the bound volumes of the STB printed reports at a later date.

SURFACE TRANSPORTATION BOARD

DECISION

STB Docket No. 42056

TEXAS MUNICIPAL POWER AGENCY
v.
THE BURLINGTON NORTHERN AND SANTA FE RAILWAY COMPANY

Decided: March 21, 2003

The Board finds that the defendant railroad has market dominance over the transportation at issue and that the challenged rate is unreasonably high. A maximum reasonable rate is prescribed and reparations are ordered.

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11. Crossing Diamonds

The parties agree that a crossing diamond would cost $65,307.92.[225] TMPA identified 12 locations where crossing diamonds would be needed, but it only included the cost for three. It notes that BNSF was the first railroad at the other locations, and it concludes that the other railroad would have paid for the crossing diamond. Because BNSF has not shown that it paid for any of the other crossings, we include the cost for only three crossing diamonds.

12. Rail Lubricators

The parties agree that four automatic in-gauge rail lubricators would be installed at the entrance to all curves of 4 degrees or greater. The parties also agree on a unit cost of $5,260 in 2000. Applying the indexing method that we use throughout yields a unit cost of $5,566 per lubricator. Based on our restated track configuration, we calculate a total cost of $3,384,128 for 608 rail lubricators.

13. Tie Plates, Pandrol Plates and Clips, Spikes, and Screws

For all trackage with curves of less than 3 degrees, TMPA would use AREMA-specified 14-inch plates punched with eight holes to secure the rail to the ties. TMPA would use six spikes per tie—one plate-holding spike and two rail-holding spikes on each rail. In yards, TMPA would use tie plates and six spikes per tie. While BNSF agrees with the use of new standard eight-hole 14-inch tie plates for all trackage with less than 3 degrees of curvature, it claims that eight spikes per tie are necessary for pre-plated ties. TMPA, however, does not plan for the GCRR to use pre-plated ties, and BNSF has not argued that it would be necessary to do so. Therefore, we accept TMPA's tie plate configuration.

For curves greater than 3 degrees, TMPA would follow the manufacturer's guidelines and use Pandrol tie plates with four screws on each plate and no spikes.[226] For curves greater than 3 degrees and less than 5 degrees, BNSF would use Pandrol plates with two clips per plate and five spikes per plate. For curves greater than 5 degrees, BNSF would use Pandrol plates with two clips per plate and six spikes per plate. Based on the Pandrol guidelines that TMPA submitted, however, we agree with TMPA that the GCRR could use four screws on each Pandrol plate for all curves greater than 3 degrees.

---

[225] Although TMPA agreed to use BNSF's indexed unit cost of $65,307.92, it failed to update its electronic files to reflect this cost.

[226] See TMPA Reb. W.P. at 10434-35.

		CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P	
02325 | Dredging											
0600	Maximum	B-57	243	.198	C.Y.		5.30	5.20	10.50	13.85	250
1000	Hydraulic method, pumped 1000' to shore dump, minimum		460	.104			2.80	2.76	5.56	7.30	
1100	Maximum		310	.155			4.16	4.09	8.25	10.85	
1400	Into scows dumped 20 miles, minimum		425	.113			3.03	2.98	6.01	7.95	
1500	Maximum		243	.198			5.30	5.20	10.50	13.85	
1600	For inland rivers and canals in South, deduct								30%	30%	
02340 | Soil Stabilization											
0010	**CALCIUM CHLORIDE** Delivered, 100 lb. bags, truckload lots				Ton	430			430	470	160
0200	Solution, 4 lb. flake per gallon, tank truck delivery				Gal.	.91			.91	1	
0010	**SOIL STABILIZATION** Including scarifying and compaction										500
0020	Asphalt, 1-1/2" deep, 1/2 gal/S.Y.	B-75	4,000	.014	S.Y.	.87	.40	.77	2.04	2.42	
0040	3/4 gal/S.Y.		4,000	.014		1.31	.40	.77	2.48	2.90	
0100	3" deep, 1 gal/S.Y.		3,500	.016		1.74	.45	.88	3.07	3.57	
0140	1-1/2 gal/S.Y.		3,500	.016		2.61	.45	.88	3.94	4.53	
0200	6" deep, 2 gal/S.Y.		3,000	.019		3.48	.53	1.03	5.04	5.75	
0240	3 gal/S.Y.		3,000	.019		5.20	.53	1.03	6.76	7.70	
0300	8" deep, 2-2/3 gal/S.Y.		2,800	.020		4.65	.57	1.10	6.32	7.20	
0340	4 gal/S.Y.		2,800	.020		6.95	.57	1.10	8.62	9.75	
0500	12" deep, 4 gal/S.Y.		5,000	.011		6.95	.32	.62	7.89	8.80	
0540	6 gal/S.Y.		2,600	.022		10.45	.61	1.19	12.25	13.75	
1020	Cement, 4% mix, by volume, 6" deep	B-74	1,100	.058		.94	1.63	3.19	5.76	7.05	
1030	8" deep		1,050	.061		1.23	1.70	3.35	6.28	7.65	
1060	12" deep		960	.067		1.85	1.86	3.66	7.37	8.90	
1100	6% mix, 6" deep		1,100	.058		1.35	1.63	3.19	6.17	7.50	
1120	8" deep		1,050	.061		1.76	1.70	3.35	6.81	8.20	
1160	12" deep		960	.067		2.67	1.86	3.66	8.19	9.80	
1200	9% mix, 6" deep		1,100	.058		2.05	1.63	3.19	6.87	8.25	
1220	8" deep		1,050	.061		2.67	1.70	3.35	7.72	9.20	
1260	12" deep		960	.067		4.02	1.86	3.66	9.54	11.30	
1300	12% mix, 6" deep		1,100	.058		2.67	1.63	3.19	7.49	8.90	
1320	8" deep		1,050	.061		3.57	1.70	3.35	8.62	10.20	
1360	12" deep		960	.067		5.35	1.86	3.66	10.87	12.70	
1500	Geotextile fabric, woven, 200 lb. tensile strength	2 Clab	2,500	.006		1.74	.15		1.89	2.14	
1510	Heavy Duty, 600 lb. tensile strength		2,400	.007		1.55	.16		1.71	1.95	
1550	Non-woven, 120 lb. tensile strength		2,500	.006		.89	.15		1.04	1.21	
2020	Hydrated lime, for base, 2% mix by weight, 6" deep	B-74	1,800	.036		2.35	.99	1.95	5.29	6.25	
2030	8" deep		1,700	.038		3.13	1.05	2.07	6.25	7.30	
2060	12" deep		1,550	.041		2.31	1.15	2.27	5.73	6.80	
2100	4% mix, 6" deep		1,800	.036		2.35	.99	1.95	5.29	6.25	
2120	8" deep		1,700	.038		3.17	1.05	2.07	6.29	7.35	
2160	12" deep		1,550	.041		4.74	1.15	2.27	8.16	9.45	
2200	6% mix, 6" deep		1,800	.036		3.56	.99	1.95	6.50	7.60	
2220	8" deep		1,700	.038		4.74	1.05	2.07	7.86	9.05	
2260	12" deep		1,550	.041		7.05	1.15	2.27	10.47	12	
02360 | Soil Treatment											
0010	**TERMITE PRETREATMENT**										800
0020	Slab and walls, residential	1 Skwk	1,200	.007	SF Flr.	.24	.21		.45	.58	
1100	Commercial, minimum		2,496	.003		.26	.10		.36	.45	
1200	Maximum		1,645	.005		.39	.15		.54	.67	
1400	Insecticides for termite control, minimum		14.20	.563	Gal.	10.60	17.45		28.05	38.50	
1500	Maximum		11	.727	"	18.10	22.50		40.60	55	
3000	Soil poisoning (sterilization)	1 Clab	4,496	.002	S.F.	.10	.04		.14	.18	
3100	Herbicide application from truck	B-59	19,000	.001	S.Y.		.01	.02	.03	.05	

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BEFORE THE
SURFACE TRANSPORTATION BOARD

FMC CORPORATION and FMC WYOMING CORPORATION, Complainants, v. UNION PACIFIC RAILROAD COMPANY, Defendant.	)	Docket No. 42022

UNION PACIFIC'S REPLY EVIDENCE

VOLUME 5 OF 18: STAND ALONE NETWORK

JAMES V. DOLAN
LOUISE A. RINN
Union Pacific Railroad Company
1416 Dodge Street
Omaha, Nebraska 68179
(402) 271-4227

ARVID E. ROACH II
S. WILLIAM LIVINGSTON, JR.
J. MICHAEL HEMMER
Covington & Burling
1201 Pennsylvania Avenue, N.W.
P. O. Box 7566
Washington, D.C. 20044-7566
(202) 662-5380

Attorneys for Union Pacific Railroad Company

March 31, 1999

TABLE GM/HW-12 Track-Laying Cost Per Track Mile			
Item	**115 CWR**	**133 CWR**	**115 CWR (Yards)**
Transportation Costs from Railhead to Installation Site			
Rail	$848	$981	$848
OTM (plates, spikes, anchors, etc.)	$1,021	$1,083	$883
Ties	$4,868	$4,868	$3,215
Ballast	$23,713	$23,713	$14,962
Sub-Total: Material Transportation (Railhead to Installation Site)	$30,450	$30,645	$19,908
Installation (labor and equipment only)			
Pre-Plate Crossties (3,249 Ties @ $1.40 each)	$4,548	$4,548	$3,638
Distribute and Place OTM	$3,690	$3,690	$2,952
Tie Unloading and Distribution	$3,574	$3,574	$2,859
Unload Rail	$2,580	$2,580	$2,580
Place Rail on Plates	$6,300	$6,300	$5,040
Tie Installation and Fasten Rail to Ties	$38,988	$38,988	$35,736
Unload Ballast @ $0.94/Ton	$4,990	$4,990	$3,356
Ballast Distribution	$3,000	$3,000	$3,000
Apply Anchors	$6,900	$6,900	$5,520
Surfacing (2 lifts @ $8,320 each)	$16,640	$16,640	$16,640
Final Surfacing	$8,320	$8,320	$8,320
Destressing Rail	$4,560	$4,560	$4,560
Sub-Total: Installation	$104,090	$104,090	$94,201
Total	**$134,540**	**$134,735**	**$114,109**

Our estimate is conservative in significant respects because we have not attempted to adjust it upward to account for many of the unique circumstances of this epic project, including the inevitable inefficiencies and down-time that will occur as a result of adverse weather

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AREMA
American Railway Engineering and Maintenance-of-Way Association

2002

Manual for Railway Engineering

Volume 1

Track

Introduction

Foreword

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(Chapters 3 and 10 were combined in 2000 to form Chapter 30)

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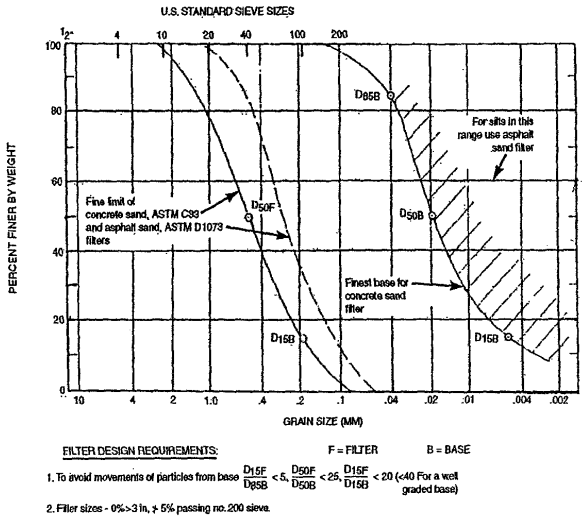


Figure 1-1-10. Graded Filters

1.2.5.4 Ballast Thickness

a. To give proper support to ties in a main-line track a minimum of 12 inches of top ballast under ties and 6 inches of sub-ballast should be provided. To spread the load to subgrade, however, a greater combined thickness of ballast and sub-ballast may be needed depending on the strength of the subgrade soil. This required thickness may vary over the length of a railway line, depending on variations in the subgrade strength.

b. Prediction of the design strength of a roadbed soil should be based on laboratory testing of saturated remolded samples. If the same soil is in use in a railway roadbed in similar conditions elsewhere, the design strength should be found from in-place strength tests.

c. The design strength of subgrade should not be exceeded by the traffic loads to be applied, distributed through the rail, ties, and ballast. The load distribution may be estimated on the basis of Talbot's work (Bibliography 54) and a factor of safety of 1.5 or greater depending on the frequency of traffic expected. This analysis will give a first approach to finding the combined thickness of ballast and sub-ballast required for a given axle load and subgrade strength. Judgement from experience should then be applied to choose a final design thickness.

d. When select soils are to be placed at the top of a fill or after sub-excavation in a cut, or when subgrade soils are to be stabilized, the above analysis will assist in deciding the economic depth of treatment required.

e. In the same way when axle loads or frequency of traffic is to be increased on an existing track, the analysis is useful in helping to predict how much more ballast is required to avoid subgrade failure. In this instance the design should be based on the in-place strength of the saturated roadbed soils.

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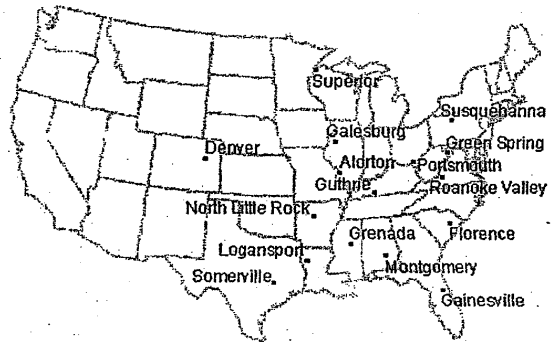
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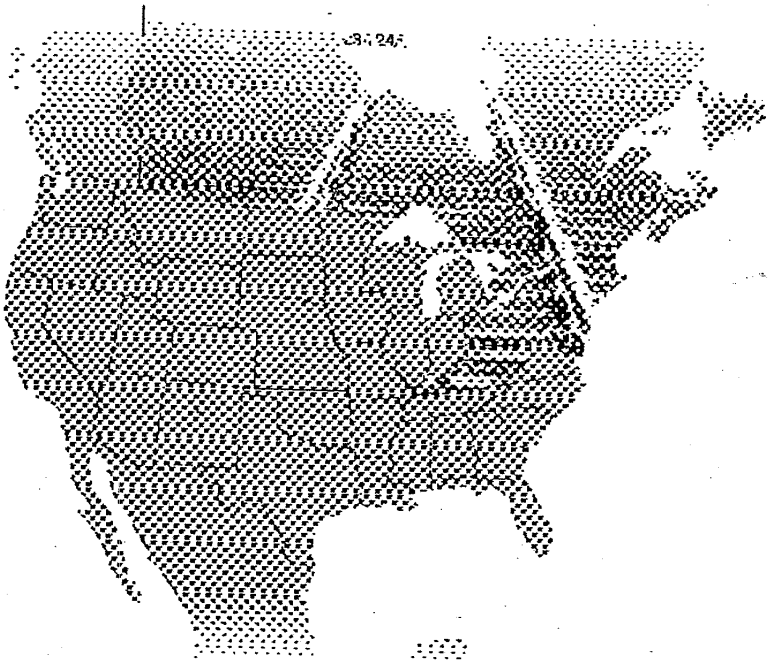
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Contacts and Locations



Customer Service Group

L.B. Foster Company, 415 Holiday Drive,Pittsburgh, PA 15220

Michelle Chapin
Customer Service Manager
Ph.: 412-928-3505, Fax: 412-928-3427
e-mail: mchapin@lbfosterco.com

Jean McCormack
Customer Service Representative
Ph.: 412-928-3538, Fax: 412-928-3427
e-mail: jmccormack@lbfosterco.com

Melanie Plummer
Customer Service Representative
Ph.: 412-928-3535, Fax: 412-928-3427
e-mail: mplummer@lbfosterco.com

Dusty Popovich
Customer Service Representative
Ph.: 412-928-7844, Fax: 412-928-3427

Brian Richardson
Customer Service Representative
Ph.: 412-928-3433, Fax: 412-928-3427

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e-mail: dpopovich@lbfosterco.com

e-mail: brichardson@lbfosterco.com

Foster Rail Corporate Management

L.B. Foster Company, 415 Holiday Drive, Pittsburgh, PA 15220

Samuel K. Fisher
Sr. Vice President, Product
Ph.: 412-928-3517, Fax: 412-928-3515
e-mail: sfisher@lbfosterco.com

Gregory W. Lippard
Vice President, Rail Products Sales
Ph.: 412-928-3506, Fax: 412-928-3512
e-mail: glippard@lbfosterco.com

Sidney A. Shue
General Manager, Engineered Products
Ph.: 412-928-3503, Fax: 412-928-3512
e-mail: sshue@lbfosterco.com

D. Dale Leake
Sr. Marketing Consultant
Ph.: 770-662-7722, Fax: 770-662-7792
e-mail: dleake@lbfosterco.com

Product Offices:

Allegheny Rail Products

L.B. Foster Company, 415 Holiday Drive, Pittsburgh, PA 15220

Sidney A. Shue
General Manager
Ph.: 412-928-3503, Fax: 412-928-3512
e-mail: sshue@lbfosterco.com

RETURN TO TOP

Gerry Coyne
Assistant General Manager
Ph.: 412-928-3441, Fax: 412-928-3512
e-mail: gcoyne@lbfosterco.com

Debbie George
Product Administrator
Ph.: 412-928-3501, Fax: 412-928-3512
e-mail: dgeorge@lbfosterco.com

Transit Products

L.B. Foster Company, 6455 Old Peachtree Rd., Norcross, GA 30071

Hakan Eksioglu
Division Manager
Ph.: 770-662-7770, Fax: 770-662-7797
e-mail: heksioglu@lbfosterco.com

Bill Harper
Development Director
Ph.: 770-662-7774, Fax: 770-662-7797
e-mail: wharper@lbfosterco.com

Trackwork

L.B. Foster Company, 1195 Salt Spring Road, Niles, OH 44446

Scott Calhoun
Product Manager
Ph.: 330-652-1461 x22, Fax: 330-652-7494
e-mail: scalhoun@lbfosterco.com

Track Panels

L.B. Foster Company, 25 Carmen Place, Pueblo, CO 81003

Jim Rodgers
General Manager
Ph.: 412-928-3499, Fax: 412-928-3515
e-mail: jrodgers@lbfosterco.com

RETURN TO TOP

Bart Peterson
Plant Manager
Ph.: 719-253-2551, Fax: 719-253-2554
e-mail: bpeterson@lbfosterco.com

Joady Blumer
Purchasing and Sales Coordinator
Ph.: 412-928-3489, Fax: 412-928-3515
e-mail: jblumer@lbfosterco.com

New Rail Products

L.B. Foster Company, 415 Holiday Drive, Pittsburgh, PA 15220

Laurie Ruemler
General Manager
Ph.: 412-928-3476, Fax: 412-928-3515
e-mail: lruemler@lbfosterco.com

Relay Rail Products

L.B. Foster Company, 1195 Salt Spring Road, Niles, OH 44446

Rick Steininger
General Manager
Ph.: 330-652-1461 x15, Fax: 330-652-7494
e-mail: rsteininger@lbfosterco.com

L.B. Foster Company, 6500 Langfield Road, Houston, TX 77092

John Wilhoit
Product Manager
Ph.: 713-460-1937, Fax: 713-460-1981
e-mail: jwilhoit@lbfosterco.com

RETURN TO TOP

Project Management

L.B. Foster Company, 415 Holiday Drive, Pittsburgh, PA 15220

Jim Rodgers
General Manager
Ph.: 412-928-3499, Fax: 412-928-3515
e-mail: jrodgers@lbfosterco.com

Jeremy Collins
Project Estimator
Ph.: 412-928-3536, Fax: 412-928-3515
e-mail: jcollins@lbfosterco.com

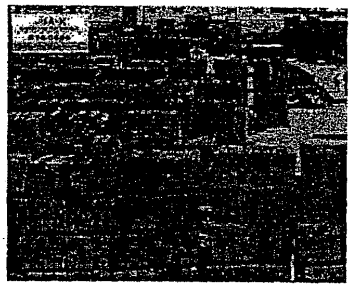
Bob Eritz
Sr. Project Manager
Ph.: 412-928-7834, Fax: 412-928-3515
e-mail: beritz@lbfosterco.com

Matt Williams
Sr. Project Manager
Ph.: 412-928-3515, Fax: 509-892-3270
e-mail: mwilliams@lbfosterco.com

Victor Wood
Sr. Project Manager
Ph.: 509-921-8775, Fax: 509-892-3270
e-mail: vwood@lbfosterco.com

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About A&K Railroad Materials



A&K Railroads Materials Inc. began in Oakland, California when a young man with unusual business savvy recognized an opportunity. It was 1959. Nineteen year-old Kern Schumacher learned that thousands of railroad ties were about to be removed from the lower deck of the Oakland Bay Bridge. He persuaded a Bay Area salvage expert to help him organize the A&K Tie Company. Kern soon found himself co-owner of the largest supply of used railroad ties in the country.

Today, A&K Railroad Materials, is the nation's leading supplier of new and used track materials. Headquartered in Salt Lake City, Utah, A&K has regional sales offices, satellite sales offices and a network of storage and distribution centers strategically located throughout the United States. Together, these offices and locations maintain the most extensive and comprehensive inventory of new, relay, and reconditioned rail and track materials in the nation.

The reasons to choose A&K Railroad Materials are clear. A&K's team of rail specialists deliver the quality products you need on time and exactly right. They back up commitments with performance.

Railroad professionals around the world know when they need it, A&K has it all. Such as fasteners from our own fasteners division, a trackwork manufacturing plant, continuous welding plant and fleet of CWR trains. We also travel the world for materials our customers need, buying and recovering about 500 miles of track every year.

A&K Railroad Materials is proud of our record of success stories. Our goal oriented, customer service driven personnel will do whatever it takes to make sure you're amazed by our performance and problem solving capabilities. Whether it's welding thousands of tons of Continuous Welded Rail, taking up hundreds of miles of track, or overnighting the materials you need for a rush order, A&K wants the opportunity to create success stories within your organization.



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LOCATIONS

CORPORATE HEADQUARTERS	
Mailing Address:	P.O. Box 30076, Salt Lake City, UT 84130
Physical Address:	1505 S. Redwood Rd. Salt Lake City, UT 84104
Toll Free Number:	(800) 453-8812
Fax Number:	(801) 973-7393

OFFICERS/CUSTOMER SERVICE NUMBERS	
To contact an individual via e-mail, simply click where their name appears.	
President:	Morris H. Kulmer Phone: (801) 974-5484
VP/Marketing	David E. Muirbrook Phone: (801) 977-6310
Marketing Director	Debra Xavier Phone: (801) 977-6340
Chief Financial Officer	Ray Yamasaki Phone: (801) 977-6314
VP/Real Estate	George Ross Phone: (801) 977-6366
VP/General Counsel	Michael Van Wagenen Phone: (801) 977-6346
Assistant Controller	Bruce Skousen Phone: (801) 977-6324
VP/Operations	Jim Okroy Phone: (801) 977-6304
Asst. Operations Manager	Fred Chipp Phone: (801) 977-6307
Operations Assistant	Karla Anderson Phone: (801) 977-6302
Asst. Operations Manager	Shane Hunter

	Phone: (801) 977-6305
Trans Manager	Louise Granger (801) 977-6375
Credit Manager	Allen Vickers (801) 977-6334
Collections	Stephanie Doudna (801) 977-6349
Invoicing	Lisa Earl (801) 977-6333
Receivables	Sandy Grosh (801) 977-6321
Payables	Kathy Rothman (801) 977-6317
WESTERN REGION	
Western Region Manager	Rhonda Nicoloff Phone: (801) 977-6342 Fax: (801) 972-2041
Sales Representative	Megan Parry Phone: (801) 977-6331 Fax: (801) 972-2041
INTERNATIONAL SALES	
Address	5206 FM 1960 West - Suite 103 Houston, TX 77069
Phone:	(281) 893-3908
Fax:	(281) 893-8371
Vice President-International Sales	Alfredo Sansores
International Sales Manager	Octavio Urtaza
PACIFIC REGION	
Stockton, CA Office Address:	4242 Wilcox Road, Stockton, CA 95215
Phone:	(800) 453-8812
Fax:	(801) 972-2041

Western Region Manager	Rhonda Nicoloff
Vancouver, WA Office Address:	6424 NE 109th Street Vancouver, WA 98686
Phone:	(360) 574-3204
Fax:	(360) 574-5596
Sales Represenative	Tom Scott
CENTRAL REGION	
St. Louis, MO Office Address:	928 Neidringhaus Ave., Granite City, IL 62040
Phone:	(618) 451-5330
Fax:	(618) 451-5333
Central Region Manager	Bob Radinsky
Acct Rep	Shirley Keasling
Kansas City, KS Office Address:	2131 S. 74th St., Kansas City, KS 66106
Toll Free:	(800) 527-5276
Fax:	(913) 375-9374
VP/Operations	Phil Poce
Midwest Dist Manager	Beth Wyatt
Sales Rep	Jim Huenefeldt
General Manager	Pat Reeves
G.M. Trackwork Div.	Greg Cornett
G.M. Fastener Div.	Dan Britten
Manager of Quality Assurance	Jim Sharp
Logistics Manager	Scott Randolph
KC Operations Manager	Rick Gasser
SOUTHERN REGION	

New Orleans Office Address:	10555 Lake Forest Blvd. Suite #7K, New Orleans, LA 70127
Phone:	(504) 241-9173
Fax:	(504) 245-1987
VP/Sales	John L. Boisdore
Southern Region Manager	Milton Reese
Sales Executive	Paul Theriot
Sales Executive	Katrina Gougis
Birmingham, AL Office Address:	107-A Sunset Dr. Hueytown, AL 35023
Phone:	(205) 491-9565
Fax:	(205) 491-9571
Distrist Sales Manager	Pete Chiaramonte
EASTERN REGION	
Pittsburgh PA Office:	157 Waterdam Road - Suite 220, McMurray, PA 15317
Phone:	(724) 941-1950
Fax:	(724) 941-1970
Eastern Region Manager	David Minor
Sales Rep	Mark Belfiore
Chicago, IL Office Address:	8792 E. Ridge Road - Suite D, Hobart, IN 46342
Phone:	(800) 962-1411
Fax:	(219) 763-9298
Grt Lks Dist Manager	Kurt Maidl
New Haven, CT Yard & Rail Welding Facility:	200 Benton Street, Hamden, CT 06517
Phone:	(203) 495-8790
Fax:	(203) 495-8794

General Manager	Ron Johnson
PERMANENT YARDS	
Eagle Lake, TX	Rt. 1, Box 226K Eagle Lake, TX 77434
Phone:	(979) 234-7558
Fax:	(979) 234-7563
Yard Manager	Dennis Mortensen
Gary, IN	3rd & Ohio Gary, IN 46402
Phone:	(219) 882-1411
Fax:	(219) 882-6175
Yard Manager	Carl Kurek
Granite City, IL	600 Chicago Ave. Granite City, IL 62040
Phone:	(618) 451-6165
Fax:	(618) 451-6166
Yard Manager	Lester Lynch
Birmingham, AL	2200 Woodward Rd. Dolomite, AL 35061
Phone:	(205) 774-5239
Fax:	(205) 426-3525
Yard Manager	Perry Whitledge
Manchester, NY	P.O. Box 275 Manchester, NY 14504
Phone:	(716) 289-3997
Fax:	
Yard Manager	Fred Chipp
Mira Loma, CA	12180 Mission Blvd. Mira Loma, CA 91752
Phone:	(909) 681-8437

Fax:	(909) 681-7156
Yard Manager	Glenn Miller
Salt Lake City, UT	1505 South Redwood Road Salt Lake City, UT 84104
Phone:	(801) 973-TIES
Fax:	(801) 972-8817
Yard Manager	Rod Mathiason
Tacoma, WA	4816 River Road - East Tacoma, WA 98443
Phone:	(253) 926-0408
Fax:	(253) 926-0903
Yard Manager	Jim Akins
Sales Representative	Tom Scott
Toledo, OH	2750 Hill Ave. Toledo, OH 43607
Phone:	(419) 537-9470
Fax:	(419) 537-1987
Yard Manager	Joe Shinsky
Executive Director - Railroad Tie Division	John Uhrman
Tie Sales	Loren Wheatley
Tie Sales	Bonnie Phillips
New Orleans, LA	3400 Industrial Parkway, New Orleans, LA 70129
Phone:	(504) 254-3940
Fax:	(504) 254-3839
Yard Manager	Greg Krok
Belle Vernon, PA	296 Findley Road, Belle Vernon, PA 15012
Phone:	(724) 929-7491

Fax:	(724) 929-8581
Yard Manager	Todd Weightman
Kansas City, KS	2131 South 74th Street, Kansas City, KS 66106
Phone:	(800) 527-5276
Fax:	(913) 375-9374
Yard Manager	Rick Gasser
New Haven, CT	200 Benton Street, Hamden, CT 06517
Phone:	(203) 495-8790
Fax:	(203) 495-8794
General Manager	Ron Johnson
Stockton, CA	4242 Wilcox Road, Stockton, CA 95215
Phone:	(209) 931-9490
Fax:	(209) 931-9493
Yard Manager	Don Cook
Trackwork Manufacturing Facility	
Kansas City, KS	2131 South 74th South, Kansas City, KS 66106
Phone:	(800) 527-5276
Fax:	(913) 375-9374
General Manager of Manufacturing	Karl Renner
Rail Welding Plant	
New Haven, CT	200 Benton Street, Hamden, CT 06517
Phone:	(203) 495-8790
Fax:	(203) 495-8794
General Manager	Ron Johnson

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A & K Railroad Materials, Inc.
Corporate Headquarters
Info@akrailroad.com

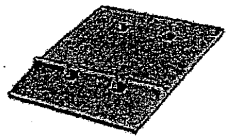
1505 South Redwood Road
P.O. Box 30076
Salt Lake City, UT 84130

Phone (801) 974-5484
Toll Free: (800) 453-8812
FAX: (801) 972-2041

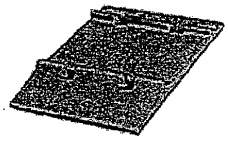
Track Accessories

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Tie Plates



Single Shoulder



Double Shoulder

A&K Tie Plates add to the stability of track, lengthen the life of wood ties and provide uniform wear on the rail head. Tie plates are available in single or double shoulder design. When ordering, identify the rail section or the width of the rail base. A&K maintains a vast inventory of new and quality relaying tie plates.

Rail Anchors

A&K Rail Anchors are designed to eliminate creepage of track by providing a large bearing surface against the rail base and tie. The anchors prolong the life of wood ties by preventing cutting and wear. Other anchor designs are available.

Channel Lock Drive-on

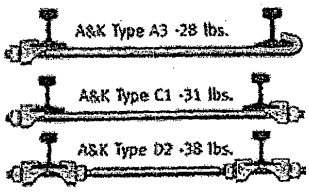


Unit Wrench



Unit Drive-on





Gauge Rods

A&K Gauge Rods are designed to hold track in gauge by preventing spreading and tilting of rails. Gauge rod are recommended at weak points in track, sharp curves, switches, bad ties, temporary track, etc. The malleable jaws are manufactured of highly corrosive resistant material for long life. Lock nuts are supplied only when specified.



Track Spikes

ll spikes are manufactured to A.R.E.A. and ASTM standards with reinforced throat, chisel point and square body.

Track Spike Size*	Avg. No. Per Keg of 200 lbs.	**Kegs Per Mile of Track	Rail Wt. Per Yard
3/8& x 2 1/2"	1470	7.18	12 to 20
3/8& x 3"	1270	8.32	12 to 20
3/8& x 3 1/2"	1135	9.30	12 to 20
1/2& x 3"	700	15.08	20 to 30
1/2& x 3 1/2"	638	16.55	20 to 30
1/2" x 4"	550	19.20	30 to 40
1/2" x 4 1/2"	505	20.91	30 to 40
9/16" x 5 1/2"	315	33.52	65 to 100
5/8" x 5 1/2	260	40.62	75 to 140
5/8" x 6"	244	43.28	75 to 140

*Measured under Head
**Based on ties spaced 24" center to center, 4 spikes per tie



Track Bolts

Bolts are manufactured to A.R.E.A. specifications with button head, oval neck, and rolled thread. Heavy duty lock or spring washers are available from stock in 3/4", 7/8", 15/16", 1", 1-1/16", and 1-1/8".

Track Bolt Size*	Avg. No. Per Keg of 200 lbs.	**Kegs Per Mile of Track	Rail Wt. Per Yard
1/2" x 2"	990	1.41	12 to 20
1/2" x 2 1/2"	880	1.59	20 to 25
5/8" x 2 1/2"	520	2.69	30 to 40
5/8" x 3"	484	2.89	30 to 40
3/4" x 3"	300	4.67	40 to 45
3/4" x 3 1/2"	280	5	50 to 60
3/4" x 4"	260	5.38	70 to 75
7/8" x 4 1/2"	161	8.7	85 to 90
7/8" x 5	152	10.68	90 to 100
7/8" x 5 1/2"	144	11.28	90 to 100
15/16" x 5 1/4"	127	12.79	90 to 100

**Kegs per mile of track - based 30'-10% shorts for 60 lb. rails and lighter; and 33'-10% shorts for 70 lb. rails and heavier, and all joints 4-hole punching.

Track Bolt Size*	Avg. No. Per Keg of 200 lbs.	**Kegs Per Mile of Track	Rail Wt. Per Yard
15/16" x 5 1/2"	124	13.1	90 to 100
1" x 5"	112	14.5	90 to 100
1" x 5 1/4"	110	14.76	90 to 130
1" x 5 1/2"	106	15.32	110 to 130
1" x 5 3/4"	104	15.62	110 to 130
1" x 6"	100	16.24	131 to 140
1 1/16" x 6"	98	16.57	131 to 140
1 1/16" x 6 1/4"	85	19.11	131 to 140
1 1/8" x 6"	79	20.56	131 to 140
1 1/8" x 6 1/2"	75	21.65	131 to 140

**Kegs per mile of track - based 30'-10% shorts for 60 lb. rails and lighter; and 33'-10% shorts for 70 lb. rails and heavier, and all joints 4-hole punching.

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Rail Cross Sections

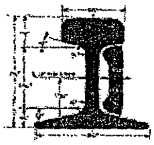
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25 lb. A.S.C.E Rail

Section 2540
25 lbs. per yard
44 net tons per mile of track
50 feet of track per net ton
120 feet of track per net ton
Stock lengths 30'
AREA In2 2.40
Sec. Modulus In3 Head 1.76
Mom. Inertia In4 2.50

Splice Bars
16-1/8" length 5.7 lbs. per pair

Click on the thumbnail to view large-scale diagram of rail section with specs

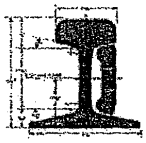


30 lb. A.S.C.E Rail

Section 3040
30 lbs. per yard
52.8 net tons per mile of track
100 feet of track per net ton
Stock lengths 15', 20' & 30'
AREA In2 3.00
AREA In2 2.40
Sec. Modulus In3 Head 2.55
Mom. Inertia In4 4.10

Angle Bars
10.9 lbs. per pair

Splice Bars
16-1/8" length 7.0 lbs. per pair

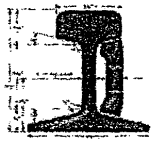


40 lb. A.S.C.E Rail

Section 4040
40 lbs. per yard
70.4 net tons per mile of track
75 feet of track per net ton
Stock lengths 30'
AREA In^2 3.94
Sec. Modulus In^3 Head 3.59
Mom. Inertia In^4 6.54

Angle Bars
15.2 lbs. per pair

Splice Bars
20" length 12.0 lbs. per pair



60 lb. A.S.C.E Rail

Section 6040
60 lbs. per yard
105.6 net tons per mile of track

Angle Bars
20' length 27.2 lbs. per pair
24' length 32.5 lbs. per pair

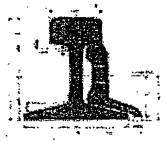
50 feet of track per net ton
Stock lengths 30'& 33'
AREA In2 5.93
Sec. Modulus In3 Head 6.62
Sec. Modulus In3 Base 7.10
Mom. Inertia In4 14.56



80 lb. A.S.C.E. Rail

Section 8040
80 lbs. per yard
140.8 net tons per mile of track
37.5 feet of track per net ton
Stock lengths 30'& 33'
AREA In2 7.86
Sec. Modulus In3 Head 10.07
Sec. Modulus In3 Base 11.08
Mom. Inertia In4 26.38

Angle Bars
24" length 46.0 lbs. per pair



90 lb. A.R.A.-A. Rail

Section 9020
90 lbs. per yard
158.4 net tons per mile of track
33.3 feet of track per net ton
Stock lengths 30' & 33'
AREA In2 8.82
Sec. Modulus In3 Head 12.56
Sec. Modulus In3 Base 15.23
Mom. Inertia In4 38.70

Angle Bars
24" length 66.6 lbs. per pair
(Toeless and Headfree bars also available)



100 lb. A.R.E.A. Rail

Section 10025
100 lbs. per yard
176 net tons per mile of track
30 feet of track per net ton
Stock lengths 33' & 39'AREA2 AREA In2 9.95
Sec. Modulus In3 Head 15.10
Sec. Modulus In3 Base 17.80
Sec. Modulus In3 Base 15.23
Mom. Inertia In4 49.00

Angle Bars
24" length 69.5 lbs. per pair



105 lb. Dudley Rail

Section 10524
105 lbs. per yard
184.8 net tons per mile of track
28.5 feet of track per net ton
Stock lengths 33 and 39'
AREA In2 10.26
Sec. Modulus In3 Head 15.96
Sec. Modulus In3 Base 17.31
Mom. Inertia In4 49.86

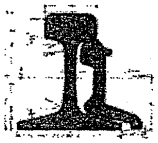
Angle Bars
24" length 61.7 lbs. per pair



110-lb. A.R.E.A. Rail

Section 11025
110 lbs. per yard
193.6 net tons per mile of track
27.3 feet of track per net ton
Stock lengths 33' & 39'
AREA In2 10.82
Sec. Modulus In3 Head 16.70
Sec. Modulus In3 Base 20.10
Mom. Inertia In4 57.00

Angle Bars
24" length 71.6 lbs. per pair



112-lb. A.R.E.A. Rail

Section 11225
112 lbs. per yard
197.1 net tons per mile of track
26.8 feet of track per net ton
Stock lengths 3
AREA In2 11.01
Sec. Modulus In3 Head 18.1
Sec. Modulus In3 Base 21.8
Mom. Inertia In4 65.5

Angle Bars
24" length 77.24 lbs. per pair



115-lb. A.R.E.A. Rail

Section 11525
115 lbs. per yard
202.4 net tons per mile of track
26.1 feet of track per net ton
Stock lengths 39' and 80'
AREA In2 11.26
Sec. Modulus In3 Head 18.53
Sec. Modulus In3 Base 22.0
Mom. Inertia In4 65.6

Angle Bars
36" length 107 lbs. per pair



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119-lb. A.R.E.A. Rail

Section 11925
118.8 lbs. per yard
209.1 net tons per mile of track
25.25 feet of track per net ton
Stock lengths 39' & 80'
AREA In2 11.65
Sec. Modulus In3 Head 19.4
Sec. Modulus In3 Base 22.9
Mom. Inertia In4 71.4

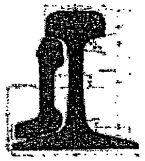
Angle Bars
36" length 107 lbs. per pair



127-lb. Dudley Rail

Section 12723
127 lbs. per yard
223.87 net tons per mile of track
23.58 feet of track per net ton
Stock lengths 39'
AREA In2 12.5
Sec. Modulus In3 Head 20.9
Sec. Modulus In3 Base 26.4
Mom. Inertia In4 71.4

Angle Bars
36" length 118.3 lbs. per pair



131-lb. A.R.E.A. Rail

Section 13125
131 lbs. per yard
230.5 net tons per mile of track
22.9 feet of track per net ton
Stock lengths 39'
AREA In2 12.82
Sec. Modulus In3 Head 22.53
Sec. Modulus In3 Base 27.6
Mom. Inertia In4 88.5

Angle Bars
36" length 113.0 lbs. per pair



132-lb. A.R.E.A. Rail

Section 13225
132 lbs. per yard
232.3 net tons per mile of track
22.7 feet of track per net ton
Stock lengths 39' & 80'
AREA In2 12.95
Sec. Modulus In3 Head 22.5
Sec. Modulus In3 Base 27.6

Angle Bars
36" length 115.40 lbs. per pair



Mom. Inertia In4 88.2

133-lb. A.R.E.A. Rail

Section 13325
133.4 lbs. per yard
234.8 net tons per mile of track
22.48 feet of track per net ton
Stock lengths 39' & 80'
AREA In2 13.10
Sec. Modulus In3 Head 22.3
Sec. Modulus In3 Base 26.9
Mom. Inertia In4 86.3

Angle Bars
38" length 121.70 lbs. per pair



136-lb. A.R.E.A. Rail

Section 13625
135.8 lbs. per yard
239.7 net tons per mile of track
22.03 feet of track per net ton
Stock lengths 39' and 80'
AREA In2 13.41
Sec. Modulus In3 Head 23.70
Sec. Modulus In3 Base 28.20
Mom. Inertia In4 94.20

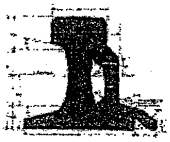
Angle Bars
36" length 115.40 lbs. per pair



104-lb. Crane Rail

Crane Rail - No. 104
Nominal Weight - 104 lbs. per yard
AREA In2 10.29
Sec. Modulus In^3 Head 10.69
Sec. Modulus In^3 Base 13.51
Mom. Inertia In^4 29.84

Joint Bars
34" length 60.2 lbs. per pair
Hex Head Bolts 1"x 5" and
Heavy Hex nuts-Heat Treated



105-lb. Crane Rail

Crane Rail - No. 105
Nominal Weight - 105 lbs. per yard
AREA in2 10.30
Sec. Modulus In^3 Head 12.39
Sec. Modulus In^3 Base 14.28
Mom. Inertia In^4 34.41

Joint Bars
34" length 51.6 lbs. per pair
Hex Head Bolts 7/8"x 4-7/8" and
Heavy Hex nuts-Heat Treated



135-lb. Crane Rail

Crane Rail - No. 135
Nominal Weight - 135 lbs. per yard
AREA In2 13.32
Sec. Modulus In^3 Head 17.20
Sec. Modulus In^3 Base 18.02
Mom. Inertia In^4 50.59

Joint Bars
34" length 57.8 lbs. per pair
Hex Head Bolts 1-1/8"x 5-1/2"and
Heavy Hex nuts-Heat Treated



171-lb. Crane Rail

Crane Rail - No. 171
Nominal Weight - 171 lbs. per yard
AREA In2 16.81
Sec. Modulus In^3 Head 24.51
Sec. Modulus In^3 Base 24.42
Mom. Inertia In^4 73.40

Joint Bars
34" length 72.1 lbs. per pair
Hex Head Bolts 1-1/8"x 6" and
Heavy Hex nuts-Heat Treated



175-lb. Crane Rail

Crane Rail - No. 175
Nominal Weight - 175 lbs. per yard
AREA In2 17.12
Sec. Modulus In^3 Head 22.53
Sec. Modulus In^3 Base 23.28
Mom. Inertia In^4 70.22

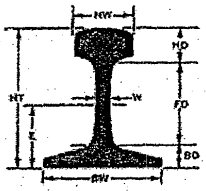
Joint Bars
34" length 69.4 lbs. per pair
Hex Head Bolts 1-1/8"x 6" and
Heavy Hex nuts-Heat Treated



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Tee Rail Sections Data



Dimensions for Tee Rail Data Table

HT - Height
BW - Width of Base
HW - Width of Head
W - Web (at center point)
HD - Depth of Head
FD - Fishing
BD - Depth of Base
E - Bolt Hole Elevation

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		Dimensions in Inches							
Normal Weight Per Yard	Type of Rail	HT	BW	HW	W	HD	FD	BD	E
12lb.	asce	2	2	1	3/16	9/16	13/32	11/32	57/64
16lb.	asce	2 3/8	2 3/8	1 11/64	7/32	4 1/64	1 23/64	3/8	11/16
20lb.	asce	25/8	25/8	1 11/32	1/4	23/32	1 15/32	7/16	1 11/6
25lb.	asce	2 3/4	2 3/4	1 1/2	19/64	25/32	1 31/64	31/64	1 15/6
30lb.	asce	3 1/8	3 1/8	1 11/16	21/64	7/8	1 23/32	17/32	1 25/6
35lb.	asce	3 5/16	3 5/16	1 3/4	23/64	61/64	1 25/32	37/64	1 15/3
40lb.	asce	3 1/2	3 1/2	1 7/8	25/64	1 1/64	1 55/64	5/8	1 9/1
45lb.	asce	3 11/16	3 11/16	2	27/64	1 1/16	1 31/32	21/32	1 41/6
50lb.	asce	37/8	37/8	21/8	7/16	11/8	21/16	11/16	123/3
55lb.	asce	4 1/16	4 1/16	2 1/4	15/32	1 11/64	2 11/64	23/32	1 103/1
60lb.	asce	41/4	41/4	23/8	31/64	17/32	217/64	49/64	1115/1
	misc.	4 1/4	4 1/16	2 5/16	1/2	1 7/16	2 1/8	11/16	1 3/4
65lb.	asce	4 7/16	4 7/16	2 13/32	1/2	1 9/32	2 3/8	25/32	1 31/3
70lb.	asce	4 5/8	4 5/8	2 7/16	33/64	1 11/32	2 15/32	13/16	2 3/6
75lb.	asce	4 13/16	4 13/16	215/32	17/32	1 27/64	2 35/64	27/32	2 15/1
	mo. pac.	4 3/4	4 3/4	2 9/16	9/16	1 7/16	2 15/32	27/32	2 5/6
	s. pac.	4 15/16	4 7/16	2 7/16	33/64	1 3/8	2 5/8	15/16	2 1/4
80lb.	asce	5	5	2 1/2	35/64	1 1/2	2 5/8	7/8	2 3/1
	dudley	5 1/8	5	2 21/32	17/32	1 1/2	2 3/4	7/8	2 1/4
85lb.	asce	5 3/16	5 3/16	2 9/16	9/16	1 35/64	2 3/4	57/64	2 17/6
	can. pac.	5 1/8	5	2 1/2	9/16	1 7/16	2 11/16	1	2 1/3
	cb&q	5 3/16	5 3/16	2 21/3	9/16	1 35/64	2 3/4	57/64	2 17/6
	mo. pac.	5 7/32	5 1/4	2 15/32	75/128	1 3/4	2 39/64	55/64	2 21/1
	ps	5 1/8	4 5/8	2 1/2	17/32	1 21/32	2 15/32	1	2 15/6
	prr	5	5	2 9/16	17/32	1 3/4	2 3/8	7/8	2 1/1
	soo line	5 3/8	4 7/8	2 1/2	9/16	1 15/32	2 29/32	1	2 29/6
90lb.	asce	5 3/8	5 3/8	2 5/8	9/16	1 19/32	2 55/64	59/64	2 45/1
	ara-a	5 5/8	5 1/8	2 9/16	9/16	1 15/32	35/32	1	2 37/6
	ara-b	5 17/64	4 49/64	2 9/16	9/16	1 39/64	2 5/8	1 1/32	2 11/3

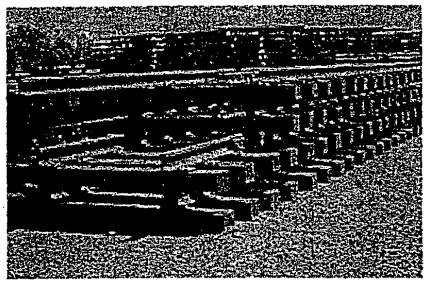
	at&sf	5 5/8	5 3/164	29/16	9/16	1 15/32	35/32	1	2 37/6
	c&nw	5 17/32	5 3/32	2 1/2	1/2	1 17/32	2 31/32	1 1/32	2 23/6
	intrbgh	5	5	2 7/8	11/16	1 25/32	2 11/32	7/8	2 3/6
	intrbgh	5	5	2 7/8	11/16	1 25/32	2 11/32	7/8	2 3/6
	grt. no.	5 3/8	5	2 5/8	9/16	1 15/32	2 7/8	1 1/32	2 15/3
	u. pac.	5 3/4	5 3/8	2 3/4	17/32	1 1/2	3 3/8	7/8	2 9/1
	dudley	5 1/2	5	2 21/32	9/16	1 1/2	3 1/32	31/32	2 3/8
100lb.	asce	5 3/4	5 3/4	2 3/4	9/16	1 45/64	3 5/64	31/32	2 65/1
	ps	5 11/16	5	2 43/64	9/16	1 13/16	2 25/32	1 3/32	2 31/6
	prr	5 1/2	5 1/2	2 13/16	5/8	1 7/8	2 11/16	15/16	2 9/3
	ara-a	6	5 1/2	2 3/4	9/16	1 9/16	3 3/8	1 1/16	2 3/4
	ara-b	5 41/64	5 9/64	2 21/32	9/16	1 45/64	2 55/64	1 5/64	2 65/1
	area	6	5 3/8	2 11/16	9/16	1 21/32	3 9/32	1 1/16	2 45/6
	c&nw	5 45/64	5 9/64	2 9/16	9/16	1 39/64	2 61/64	1 9/64	2 79/1
	grt. no.	5 3/4	5	2 3/4	9/16	1 5/8	3	1 1/8	2 5/8
	intrbgh	5 3/4	5 3/4	2 7/8	9/16	1 45/64	3 5/64	31/32	2 65/1
	ny. nh&h	6	5 1/2	2 3/4	19/32	1 23/32	3 11/32	15/16	2 39/6
	reading	5 5/8	5 3/8	2 21/32	9/16	1 45/64	2 55/64	1 1/16	2 63/1
101lb.	dl&w	5 7/16	5 3/8	2 3/4	5/8	1 23/32	2 11/16	1 1/32	2 3/8
105lb.	dl&w	6	5 3/8	2 3/4	5/8	1 23/32	3 1/4	1 1/32	2 21/3
	dudley	6	5 1/2	3	5/8	1 5/8	3 13/32	31/32	2 43/6
110lb.	area	6 1/4	5 1/2	2 25/32	19/32	1 23/32	3 13/32	1 1/8	2 53/6
	gr. no.	61/2	51/2	23/4	19/32	15/8	33/4	11/8	3
	gr. no.	6 1/2	5 1/2	2 3/4	19/32	1 5/8	3 3/4	1 1/8	3
	le. val.	6	5 1/2	2 7/8	19/32	1 7/8	3 1/16	1 1/16	2 19/3
112lb.	area	6 5/8	5 1/2	2 23/32	19/32	1 11/16	3 13/16	1 1/8	2 7/8
	tr.	6 3/4	5 1/2	2 1/2	5/8	1 3/4	3 7/8	1 1/8	3 1/8
113lb.	so. pac.	613/16	51/2	211/16	19/32	17/8	313/16	11/8	33/4
115lb.	area	6 5/8	5 1/2	2 23/32	5/8	1	3 13/16	1 1/8	2 7/8

						11/16			
	dudley	6 1/2	5 1/2	3	5/8	1 11/16	3 3/14	1 1/16	3 3/8
119lb.	area	6 13/16	5 1/2	2 21/32	5/8	1 7/8	3 13/16	1 1/8	2 7/8
127lb.	dudley	7	6 1/4	3	21/32	1 11/16	4 5/32	1 5/32	3 1/8
130lb.	ps	6 5/8	5 1/2	3	11/16	2	3 13/32	1 7/32	2 3/4
	area	6 3/4	6	2 15/16	21/32	1 27/32	3 11/16	1 7/32	3 1/1
131lb.	area	7 1/8	6	3	21/32	1 3/4	4 3/16	1 3/16	3 1/4
132lb.	area	7 1/8	6	3	21/32	1 3/4	4 3/16	1 3/16	3 3/3
133lb.	area	7 1/16	6	3	11/16	1 15/16	3 15/16	1 3/16	3
136lb.	area	7 5/16	6	2 15/16	11/16	1 15/16	4 3/16	1 3/16	3 3/3
140lb.	area	7 5/16	6	3	3/4	2 1/16	4 1/16	1 3/16	3
152lb.	ps	8	6 3/4	3	11/16	1 27/32	4 7/8	1 9/32	3 3/4
155lb.	ps	8	6 3/4	3	3/4	2 1/16	4 21/32	1 9/32	3 3/8

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Panelized Track

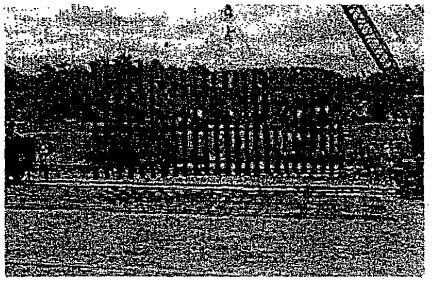
CLICK FOR SALES INFORMATION



A&K has the capability to panelize track at all of our strategically located facilities from New Haven, CT to Stockton, CA, and many points in between. Using new and/or relay track materials, track panels are built to customer specifications in a variety of lengths, and gages. All sections of rail can be assembled on wood, concrete or steel ties with the joints being straight across from each other or staggered. Track panels sav installation time and labor costs. They can be made to order or warehoused at the nearest A&K location for exactly right and on time delivery to your destination.

Panelized Turnouts

A&K furnishes fully panelized turnouts completely assembled. They are shipped in our fleet of custom panel cars for easy unloading and quick installation. Turnouts can be custom built to any customer specification. Contact your A&K sales representative for details.



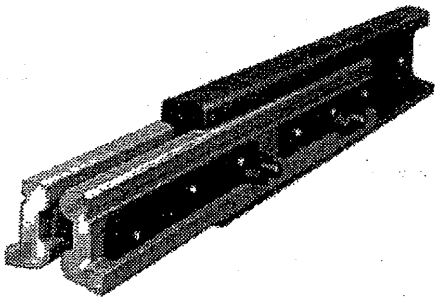
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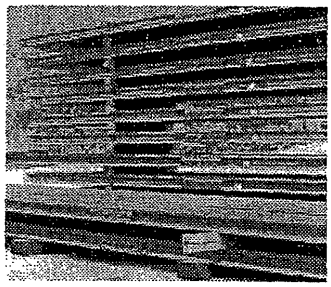
Insulated Joints

CLICK FOR SALES INFORMATION

Poly-Insulated Joints

A&K Insulated Rail Joints feature a tough polyurethane insulation bonded to micro-alloy joint bar sections. The one piece polyurethane/steel structure provides reliable circuit isolation and maintains electrical and physical stability in heavy rail traffic under varying environmental conditions. A&K's polyurethane is a specially formulated compound highly resistant to deterioration by ultra-violet, ozone, weathering abrasion, or the shock and flexing stresses of heavy rail traffic. The dense polyurethane material is firmly bonded to the entire rail joint and provides superior insulation between the joint and the rail. The result is a rigid unitized structure designed to withstand years of heavy-duty service, provide high-dielectric isolation for signal circuits, and require little or no maintenance. A&K Insulated Rail Joints meet all AREA specifications; test data is available upon request. Designs are available for rail sizes up to 140 pounds. When ordering, please specify rail size, rail drilling, bolt diameter, and elevation.





Bonded Insulated Joints

The goal of every railroad is to have a first class road that is maintenance free at a reasonable cost. We at A&K have just the product to help you meet that goal, BONDED INSULATED JOINTS. Our bonded insulated joints have built-in quality and are factory produced utilizing our state of the art assembly line. Each joint is custom made to meet your specific need utilizing new or relay Class I, II or III rail that will match your existing track. We have full-service capabilities to provide almost any length joint, premium or standard rail, end hardening and weld-mate holes. For your turnout requirements, we can custom build closure rails to include the bonded insulated joints which eliminate two field welds. These closure rails can also be pre-curved and drilled if necessary to meet your exact needs and to facilitate easy installation.

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Charles Stedman

From: Megan Parry <MParry@akrailroad.com>
To: 'cstedman@lepeabody.com'
Subject: RE: Price quote
Date: Friday, January 03, 2003 4:32 PM

Charlie,

The prices would remain the same per Net Ton for longer lengths. However, we do not have any longer lengths of either 132RE or 115RE in stock. We do have 780 NT of 133RE #1 relay rail in 80' lengths. It's in stock here in Salt Lake. If you are interested in that, the price is the same as the 132RE.

For New 132RE Standard Carbon rail, it will be $550.00/NT F.O.B. Pueblo, CO.
For New 132RE Head Hardened rail, it will be $650.00/NT F.O.B. Pueblo, CO
Prices are the same for New 115RE.

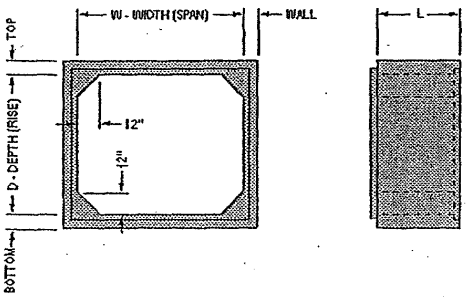
Please let me know if I can help you with anything else.

Thank you,
Megan

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PRODUCT INFORMATION

ASTM C-850 Reinforced Concrete Box Culvert (0' - 2' of cover)



SIZE W D	TOP SLAB	BTM & WALLS	WT. / FT.	WT. / 6' SECTION	AREA (SQ. FEET)
6' x 3'	8"	7"	2,170	13,020	16
6' x 4'	8"	7"	2,345	14,070	22
6' x 5'	8"	7"	2,520	15,210	28
6' x 6'	8"	7"	2,695	16,170	34
8' x 4'	8"	8"	2,960	17,760	30
8' x 5'	8"	8"	3,160	18,960	38
8' x 6'	8"	8"	3,360	20,160	46
8' x 7'	8"	8"	3,560	21,360	54
8' x 8'	8"	8"	3,760	22,560	62
10' x 4'	10"	10"	4,215	25,290	38
10' x 5'	10"	10"	4,465	26,790	48
10' x 6'	10"	10"	4,710	28,290	58
10' x 7'	10"	10"	4,965	29,790	68
10' x 8'	10"	10"	5,214	31,290	78
10' x 9'	10"	10"	5,465	32,790	88
10' x 10'	10"	10"	5,715	34,290	98
12' x 4'	12"	12"	5,700	34,200	46
12' x 6'	12"	12"	6,300	37,800	70
12' x 8'	12"	12"	6,900	41,400	94
12' x 10'	12"	12"	7,500	45,000	118
12' x 12'	12"	12"	8,100	48,600	142

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Bridge Design and Costs

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Heavy Construction Cost Data

17th Annual Edition

2003

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First Printing

			CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2003 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P	
02340 | Soil Stabilization												
500	2160	12" deep	B-74	1,550	.041	S.Y.	4.90	1.20	2.41	8.51	9.90	500
	2200	6% mix, 6" deep		1,800	.036		3.68	1.04	2.07	6.79	7.90	
	2220	8" deep		1,700	.038		4.90	1.10	2.20	8.20	9.50	
	2260	12" deep		1,550	.041		7.30	1.20	2.41	10.91	12.50	
02360 | Soil Treatment												
800	0010	TERMITE PRETREATMENT										800
	0020	Slab and walls, residential	1 Skwk	1,200	.007	SF Flr.	.25	.22		.47	.62	
	0100	Commercial, minimum		2,496	.003		.27	.10		.37	.46	
	0200	Maximum		1,645	.005		.41	.16		.57	.70	
	0400	Insecticides for termite control, minimum		14.20	.563	Gal.	10.90	18.15		29.05	40.50	
	0500	Maximum		11	.727	"	18.65	23.50		42.15	57	
	3000	Soil poisoning (sterilization)	1 Clab	4,496	.002	S.F.	.10	.04		.14	.18	
	3100	Herbicide application from truck	B-59	19,000	.001	S.Y.		.01	.02	.03	.04	
02370 | Erosion & Sedimentation Control												
300	0010	RIP-RAP Random, broken stone										300
	0100	Machine placed for slope protection	B-12G	62	.258	C.Y.	18.75	8	4.93	31.68	38	
	0110	3/8 to 1/4 C.Y. pieces, grouted	B-13	80	.700	S.Y.	36	18.75	8.20	62.95	77.50	
	0200	18" minimum thickness, not grouted	"	53	1.057	"	11.70	28.50	12.35	52.55	70	
	0300	Dumped, 50 lb. average	B-11A	800	.020	Ton	13.50	.57	1.10	15.17	16.95	
	0350	100 lb. average		700	.023		19.30	.65	1.26	21.21	23.50	
	0370	300 lb. average		600	.027		22.50	.76	1.47	24.73	27.50	
	0400	Gabions, galvanized steel mesh mats or boxes, stone filled, 6" deep	B-13	200	.280	S.Y.	12.75	7.50	3.27	23.52	29	
	0500	9" deep		163	.344		19.55	9.20	4.02	32.77	40	
	0600	12" deep		153	.366		20.50	9.80	4.28	34.58	42.50	
	0700	18" deep		102	.549		26.50	14.70	6.40	47.60	58.50	
	0800	36" deep		60	.933		45	25	10.90	80.90	100	
550	0010	EROSION CONTROL Jute mesh, 100 S.Y. per roll, 4' wide, stapled	B-80A	2,400	.010	S.Y.	.64	.25	.06	.95	1.15	550
	0060	Nylon, 3 dimensional geomatrix, 9 mil thick		700	.034		3.77	.85	.20	4.82	5.70	
	0062	12 mil thick		515	.047		5.10	1.15	.27	6.52	7.75	
	0064	18 mil thick		460	.052		5.40	1.29	.30	6.99	8.30	
	0070	Paper biodegradable mesh	B-1	2,500	.010		.07	.24		.31	.46	
	0080	Paper mulch	B-64	20,000	.001		.05	.02	.01	.08	.10	
	0100	Plastic netting, stapled, 2" x 1" mesh, 20 mil	B-1	2,500	.010		.59	.24		.83	1.03	
	0120	Revegetation mat, webbed	2 Clab	1,000	.016		4.71	.39		5.10	5.80	
	0200	Polypropylene mesh, stapled, 6.5 oz./S.Y.	B-1	2,500	.010		1.22	.24		1.46	1.72	
	0300	Tobacco netting, or jute mesh #2, stapled	"	2,500	.010		.07	.24		.31	.46	
	0400	Soil sealant, liquid sprayed from truck	B-81	5,000	.005		.40	.13	.09	.62	.74	
	1000	Silt fence, polypropylene, 3' high, ideal conditions	2 Clab	1,600	.010	L.F.	.29	.25		.54	.71	
	1100	Adverse conditions	"	950	.017	"	.29	.42		.71	.97	
	1130	Cellular confinement, poly, 3-dimen, 8' x 20' panels, 4" deep cell	B-6	1,600	.015	S.F.	1.58	.40	.14	2.12	2.51	
	1140	8" deep cells	"	1,200	.020	"	2.17	.54	.18	2.89	3.42	
	1200	Place and remove hay bales	A-2	3	8	Ton	51	198	40	289	405	
	1250	Hay bales, staked	"	2,500	.010	L.F.	2.04	.24	.05	2.33	2.66	
02390 | Shore Protect/Mooring Structures												
150	0010	BULKHEADS Reinforced concrete, include footing and tie-backs										150
	0020	Up to 6' high, minimum	C-17C	28	2.964	L.F.	35	97	14.65	146.65	207	
	0060	Maximum		24.25	3.423		56	112	16.90	184.90	255	
	0100	12' high, minimum		20	4.150		91	136	20.50	247.50	335	
	0160	Maximum		18.50	4.486		105	147	22	274	370	
	0180	Precast bulkhead, complete, including										
	0190	vertical and battered piles, face panels, and cap										
	0195	Using 16' vertical piles								240	280	

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02455 | Driven Piles

			CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2003 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P
850	0010	PILES, STEEL Not including mobilization or demobilization	R02450-820								850
	0100	Step tapered, round, concrete filled									
	0110	8" tip, 60 ton capacity, 30' depth	B-19	760	.084	V.L.F.	5.15	2.66	2.23	10.04	12.40
	0120	60' depth		740	.086		5.80	2.73	2.29	10.82	13.30
	0130	80' depth		700	.091		6.05	2.88	2.42	11.35	13.95
	0150	10" tip, 90 ton capacity, 30' depth		700	.091		6.35	2.88	2.42	11.65	14.25
	0160	60' depth		690	.093		6.50	2.92	2.45	11.87	14.55
	0170	80' depth		670	.096		7.05	3.01	2.53	12.59	15.40
	0190	12" tip, 120 ton capacity, 30' depth		660	.097		9	3.06	2.56	14.62	17.65
	0200	60' depth, 12" diameter		630	.102		9	3.20	2.69	14.89	18
	0210	80' depth		590	.108		7.75	3.42	2.87	14.04	17.15
	0250	"H" Sections, 50' long, HP8 x 36		640	.100		8.40	3.15	2.64	14.19	17.25
	0400	HP10 X 42		610	.105		9.80	3.31	2.77	15.88	19.20
	0500	HP10 X 57		610	.105		13.30	3.31	2.77	19.38	23
	0700	HP12 X 53		590	.108		12.55	3.42	2.87	18.84	22.50
	0800	HP12 X 74	B-19A	590	.108		17.50	3.42	2.86	23.78	28
	1000	HP14 X 73		540	.119		17.35	3.74	3.13	24.22	28.50
	1100	HP14 X 89		540	.119		21	3.74	3.13	27.87	33
	1300	HP14 X 102		510	.125		24	3.96	3.31	31.27	36.50
	1400	HP14 X 117		510	.125		28	3.96	3.31	35.27	40.50
	1600	Splice on standard points, not in leads, 8" or 10"	1 Sswl	5	1.600	Ea.	55	57		112	165
	2600	Pipe piles, 50' lg. 8" diam., 29 lb. per L.F., no concrete	B-19	500	.128	V.L.F.	9.55	4.04	3.38	16.97	20.50
	2700	Concrete filled		460	.139		10.25	4.39	3.68	18.32	22.50
	2900	10" diameter, 34 lb. per L.F., no concrete		500	.128		11.90	4.04	3.38	19.32	23.50
	3000	Concrete filled		450	.142		13.30	4.48	3.76	21.54	26
	3200	12" diameter, 44 lb. per L.F., no concrete		475	.135		14.75	4.25	3.56	22.56	27
	3300	Concrete filled		415	.154		15.60	4.86	4.08	24.54	29.50
	3500	14" diameter, 46 lb. per L.F., no concrete		430	.149		15.80	4.69	3.94	24.43	29.50
	3600	Concrete filled		355	.180		17.30	5.70	4.77	27.77	33.50
	3800	16" diameter, 52 lb. per L.F., no concrete		385	.166		17.55	5.25	4.40	27.20	32.50
	3900	Concrete filled		335	.191		19.95	6	5.05	31	37.50
	4100	18" diameter, 59 lb. per L.F., no concrete		355	.180		23	5.70	4.77	33.47	40
	4200	Concrete filled		310	.206		23.50	6.50	5.45	35.45	42.50
	4400	Splices for pipe piles, not in leads, 8" diameter	1 Sswl	4.67	1.713	Ea.	43	61		104	158
	4500	14" diameter		3.79	2.111		56	75.50		131.50	199
	4600	16" diameter		3.03	2.640		69.50	94		163.50	248
	4650	18" diameter		4.50	1.778		92	63.50		155.50	216
	4800	Points, standard, 8" diameter		4.61	1.735		48	62		110	165
	4900	14" diameter		4.05	1.975		66.50	70.50		137	202
	5000	16" diameter		3.37	2.374		81.50	84.50		166	244
	5050	18" diameter		5	1.600		127	57		184	244
	5200	Points, heavy duty, 10" diameter		2.89	2.768		33.50	98.50		132	216
	5300	14" or 16" diameter		2.02	3.960		53	141		194	315
	5500	For reinforcing steel, add		1,150	.007	Lb.	.40	.25		.65	.89
	5700	For thick wall sections, add				*	.45			.45	.50
	6020	Steel pipe pile end plates, 8" diameter	1 Sswl	14	.571	Ea.	36.50	20.50		57	77
	6050	10" diameter		14	.571		38.50	20.50		59	79
	6100	12" diameter		12	.667		40.50	24		64.50	88
	6150	14" diameter		10	.800		42	28.50		70.50	98.50
	6200	16" diameter		9	.889		45	31.50		76.50	107
	6250	18" diameter		8	1		50.50	35.50		86	121
	6300	Steel pipe pile shoes, 8" diameter		12	.667		78	24		102	129
	6350	10" diameter		12	.667		80.50	24		104.50	132
	6400	12" diameter		10	.800		86	28.50		114.50	147
	6450	14" diameter		9	.889		99.50	31.50		131	167
	6500	16" diameter		8	1		110	35.50		145.50	186

02850 | Prefabricated Bridges

			CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2003 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P
205	0010	**BRIDGES, HIGHWAY**									
	0020	Structural steel, rolled beams	E-5	8.50	9.412	Ton	1,275	330	151	1,756	2,150
	0500	Built up, plate girders	E-6	10.50	12.190	"	1,525	430	134	2,089	2,575
	1000	Concrete in place, no reinforcing, abutment footings	C-17B	30	2.733	C.Y.	91	89.50	9.40	189.90	250
	1050	Abutment		23	3.565		91	117	12.25	220.25	296
	1100	Walls, stems and wing walls		20	4.100		123	134	14.10	271.10	360
	1150	Parapets		12	6.833		123	223	23.50	369.50	510
	1170	Pier footings		40	2.050		91	67	7.05	165.05	213
	1180	Piers and columns, see div. 03310-240									
	1190	Pier caps including shoring	C-17B	10	8.200	C.Y.	150	268	28	446	615
	1210	Beams, including shoring	C-14	15	9.600		184	296	73	553	750
	1220	Haunches		10	14.400		213	445	109	767	1,050
	1230	Bridge sidewalks		750	.192	S.F.	4	5.90	1.46	11.36	15.35
	1250	Decks, including finish and cure, 8" thick									
	1260	Shored forms	C-14	3,000	.048	S.F.	3.23	1.48	.36	5.07	6.30
	1270	Beam supported forms		3,500	.041		2.37	1.27	.31	3.95	4.95
	1280	Stay in place metal slab forms, 20 gauge		5,000	.029		3.23	.89	.22	4.34	5.20
	1500	Precast, prestressed concrete									
	1510	Box girders, 35' to 50' span				Ea.				11,200	12,900
	1520	50' to 65' span								15,000	17,200
	1530	65' to 85' span								19,300	22,100
	1540	Deck beams, 12" deep				S.F.				43	49
	1541	15" deep								48	55.50
	1542	18" deep								53.50	62
	1543	20" deep								59	67.50
	1550	Double T, 40' to 45' span				Ea.				8,125	9,350
	1555	45' to 55' span								8,550	9,850
	1560	55' to 65' span								8,875	9,050
	1580	Price per S.F.				S.F.				18.50	21.30
	1600	I beams, 60' to 80' span				Ea.				8,775	10,100
	1610	80' to 100' span								10,400	11,900
	1620	100' to 120' span								13,900	16,000
	1630	120' to 140' span								16,600	19,100
	2000	Reinforcing, in place	4 Rodm	3	10.667	Ton	1,075	380		1,455	1,800
	2050	Galvanized coated		3	10.667		1,350	380		1,730	2,100
	2100	Epoxy coated		3	10.667		1,975	380		2,355	2,800
	2110	See also Div. 03200									
	3000	Expansion dams, steel, double upset 4" x 8" angles welded to									
	3010	double 8" x 8" angles, 1-3/4" compression seal	C-22	30	1.400	L.F.	280	50	2.73	332.73	395
	3040	Double 8" x 8" angles only, 1-3/4" compression seal		35	1.200		210	43	2.34	255.34	305
	3050	Galvanized		35	1.200		259	43	2.34	304.34	360
	3060	Double 8" x 6" angles only, 1-3/4" compression seal		35	1.200		161	43	2.34	206.34	251
	3100	Double 10" channels, 1-3/4" compression seal		35	1.200		147	43	2.34	192.34	236
	3420	For 3" compression seal, add					30.50			30.50	33.50
	3440	For double slotted extrusions with seal strip, add					140			140	154
	3490	For galvanizing, add				Lb.	.51			.51	.56
	4000	Approach railings, steel, galv. pipe, 2 line	C-22	140	.300	L.F.	65.50	10.70	.59	76.79	90.50
	4200	Bridge railings, steel, galv. pipe, 3 line w/screen		85	.494		205	17.65	.96	223.61	257
	4220	4 line w/screen		75	.560		177	20	1.09	198.09	229
	4300	Aluminum, pipe, 3 line w/screen		95	.442		70	15.80	.86	86.66	104
	8000	For structural excavation, see div. 02315-440									
	8010	For dewatering, see div. 02240									
210	0010	**BRIDGES** Pedestrian, spans over streams, roadways, etc.									
	0020	including erection, not including foundations									
	0050	Precast concrete, complete in place, 8' wide, 60' span	E-2	215	.260	S.F.	35.50	9	5.60	50.10	61
	0100	100' span		185	.303		39	10.50	6.50	56	68.50

03310 | Structural Concrete

				CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2003 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P	
220	3700	Green, 1.8 lb. per bag, add	R03310 -060				C.Y.	34.50			34.50	38	220
	3800	7.5 lb. per bag, add					↓	165			165	181	
	4000	Flowable fill, ash cement aggregate water											
	4100	40 - 80 psi					C.Y.	62.50			62.50	69	
	4150	Structural: ash cement aggregate water & sand											
	4200	50 psi					C.Y.	66.50			66.50	73.50	
	4250	140 psi			4618			69.50			69.50	76.50	
	4300	500 psi						72.50			72.50	79.50	
	4350	1000 psi						76.50			76.50	84	
	5000	For hot water, add					↓	2			2	2.40	
240	0010	CONCRETE IN PLACE Including forms (4 uses), reinforcing											240
	0050	steel, including finishing unless otherwise indicated											
	0300	Beams, 5 kip per L.F., 10' span		C-14A	15.62	12.804	C.Y.	227	405	49.50	681.50	945	
	0350	25' span			18.55	10.782		210	340	41.50	591.50	815	
	0700	Columns, square, 12" x 12", minimum reinforcing			11.96	16.722		245	530	64.50	839.50	1,175	
	0720	Average reinforcing			10.13	19.743		340	625	76	1,041	1,450	
	0740	Maximum reinforcing			9.03	22.148		420	700	85.50	1,205.50	1,650	
	0800	16" x 16", minimum reinforcing			16.22	12.330		195	390	47.50	632.50	880	
	0820	Average reinforcing			12.57	15.911		310	505	61.50	876.50	1,200	
	0840	Maximum reinforcing			10.25	19.512		425	620	75	1,120	1,525	
	0900	24" x 24", minimum reinforcing			23.66	8.453		165	268	32.50	465.50	645	
	0920	Average reinforcing			17.71	11.293		257	360	43.50	660.50	895	
	0940	Maximum reinforcing			14.15	14.134		350	450	54.50	854.50	1,150	
	1000	36" x 36", minimum reinforcing			33.69	5.936		152	188	23	363	490	
	1020	Average reinforcing			23.32	8.576		239	272	33	544	730	
	1040	Maximum reinforcing			17.82	11.223		325	355	43	723	970	
	1200	16" diameter, minimum reinforcing			31.49	6.351		201	201	24.50	426.50	570	←
	1220	Average reinforcing			19.12	10.460		330	330	40.50	700.50	935	
	1240	Maximum reinforcing			13.77	14.524		460	460	56	976	1,300	
	1300	20" diameter, minimum reinforcing			41.04	4.873		194	155	18.75	367.75	480	←
	1320	Average reinforcing			24.05	8.316		310	264	32	606	790	
	1340	Maximum reinforcing			17.01	11.758		420	375	45.50	840.50	1,100	
	1400	24" diameter, minimum reinforcing			51.85	3.857		184	122	14.85	320.85	410	←
	1420	Average reinforcing			27.06	7.391		300	234	28.50	562.50	730	
	1440	Maximum reinforcing			18.29	10.935		415	345	42	802	1,050	
	1500	36" diameter, minimum reinforcing			75.04	2.665		172	84.50	10.25	266.75	335	←
	1520	Average reinforcing			37.49	5.335		260	169	20.50	449.50	575	
	1540	Maximum reinforcing		↓	22.84	8.757		375	278	33.50	686.50	885	
	1900	Elevated slabs, flat slab, 125 psf Sup. Load, 20' span		C-14B	38.45	5.410		156	171	20	347	465	←
	1950	30' span			50.99	4.079		143	129	15.10	287.10	375	←
	2100	Flat plate, 125 psf Sup. Load, 15' span			30.24	6.878		166	218	25.50	409.50	555	
	2150	25' span			49.60	4.194		137	133	15.50	285.50	375	
	2300	Waffle const., 30" domes, 125 psf Sup. Load, 20' span			37.07	5.611		229	178	21	428	555	
	2350	30' span			44.07	4.720		205	149	17.45	371.45	480	
	2500	One way joists, 30" pans, 125 psf Sup. Load, 15' span			27.38	7.597		380	240	28	648	830	
	2550	25' span			31.15	6.677		340	211	24.50	575.50	735	
	2700	One way beam & slab, 125 psf Sup. Load, 15' span			20.59	10.102		189	320	37.50	546.50	755	
	2750	25' span			28.36	7.334		173	232	27	432	585	
	2900	Two way beam & slab, 125 psf Sup. Load, 15' span			24.04	8.652		178	274	32	484	660	
	2950	25' span		↓	35.87	5.799	↓	151	184	21.50	356.50	480	
	3100	Elevated slabs including finish, not											
	3110	including forms or reinforcing											
	3150	Regular concrete, 4" slab		C-8	2,613	.021	S.F.	.96	.59	.28	1.83	2.28	
	3200	6" slab			2,585	.022		1.50	.60	.29	2.39	2.88	
	3250	2-1/2" thick floor fill			2,685	.021		.66	.58	.27	1.51	1.90	
	3300	Lightweight, 110# per C.F., 2-1/2" thick floor fill		↓	2,585	.022	↓	.92	.60	.29	1.81	2.25	

Historical Cost Indexes

The table below lists both the Means Historical Cost Index based on Jan. 1, 1993 = 100 as well as the computed value of an index based on Jan. 1, 2003 costs. Since the Jan. 1, 2003 figure is estimated, space is left to write in the actual index figures as they become available through either the quarterly "Means Construction Cost Indexes" or as printed in the "Engineering News-Record." To compute the actual index based on Jan. 1, 2003 = 100, divide the Historical Cost Index for a particular year by the actual Jan. 1, 2003 Construction Cost Index. Space has been left to advance the index figures as the year progresses.

Year	Historical Cost Index Jan. 1, 1993 = 100		Current Index Based on Jan. 1, 2003 = 100		Year	Historical Cost Index Jan. 1, 1993 = 100	Current Index Based on Jan. 1, 2003 = 100		Year	Historical Cost Index Jan. 1, 1993 = 100	Current Index Based on Jan. 1, 2003 = 100	
	Est.	Actual	Est.	Actual		Actual	Est.	Actual		Actual	Est.	Actual
Oct 2003					July 1988	89.9	69.0		July 1970	28.7	22.0	
July 2003					1987	87.7	67.3		1969	26.9	20.7	
April 2003					1986	84.2	64.7		1968	24.9	19.1	
Jan 2003	130.2		100.0	100.0	1985	82.6	63.5		1967	23.5	18.0	
July 2002		128.7	98.8		1984	82.0	62.9		1966	22.7	17.4	
2001		125.1	96.1		1983	80.2	61.6		1965	21.7	16.7	
2000		120.9	92.9		1982	76.1	58.5		1964	21.2	16.3	
1999		117.6	90.3		1981	70.0	53.8		1963	20.7	15.9	
1998		115.1	88.4		1980	62.9	48.3		1962	20.2	15.5	
1997		112.8	86.6		1979	57.8	44.4		1961	19.8	15.2	
1996		110.2	84.6		1978	53.5	41.1		1960	19.7	15.1	
1995		107.6	82.6		1977	49.5	38.0		1959	19.3	14.8	
1994		104.4	80.2		1976	46.9	36.0		1958	18.8	14.4	
1993		101.7	78.1		1975	44.8	34.4		1957	18.4	14.1	
1992		99.4	76.4		1974	41.4	31.8		1956	17.6	13.5	
1991		96.8	74.4		1973	37.7	29.0		1955	16.6	12.7	
1990		94.3	72.4		1972	34.8	26.7		1954	16.0	12.3	
1989		92.1	70.8		1971	32.1	24.7		1953	15.8	12.1	

Adjustments to Costs

The Historical Cost Index can be used to convert National Average building costs at a particular time to the approximate building costs for some other time.

Example:

Estimate and compare construction costs for different years in the same city.

To estimate the National Average construction cost of a building in 1970, knowing that it cost $900,000 in 2003:

INDEX in 1970 = 28.7

INDEX in 2003 = 130.2

Time Adjustment using the Historical Cost Indexes:

$$\frac{\text{Index for Year A}}{\text{Index for Year B}} \times \text{Cost in Year B} = \text{Cost in Year A}$$

$$\frac{\text{INDEX 1970}}{\text{INDEX 2003}} \times \text{Cost 2003} = \text{Cost 1970}$$

$$\frac{28.7}{130.2} \times \$900{,}000 = .220 \times \$900{,}000 = \$198{,}000$$

The construction cost of the building in 1970 is $198,000.

Note: The City Cost Indexes for Canada can be used to convert U.S. National averages to local costs in Canadian dollars.

1/1/03 = 130.2

1/1/02 = $\frac{128.7 + 125.1}{2}$ = 126.9

INDEX 2003 TO 2002

$\frac{126.9}{130.2}$ = 0.97465

L. E. PEABODY & ASSOCIATES, INC.

MEMORANDUM

January 2, 2003

To: File

From: CAS

RE: Phone Calls With Suppliers Regarding Bridge Steel Costs

On December 31, 2002, I spoke with Jim Montgomery of Bethlehem Steel. He provided me with a price for deck plate and thru pate girder bridge steel in place (painted) of $1.08 per pound. On January 2, 2003, I spoke with Clark Olsen of Utah Pacific Bridge and Steel. He provided me with the following price quotes for bridge steel in place (painted): (1) deck plate girder (fillet weld) - $0.92 per pound; (2) deck plate girder (full penetration weld) - $1.05 per pound; and (3) thru plate girder - $1.15 per pound.

Charles Stedman

From: Brent Brubaker <bbrubaker@pdmbridge.com>
To: Charles Stedman <cstedman@lepeabody.com>
Subject: RE: Estimate of Cost of Bridge Steel in Place
Date: Thursday, January 02, 2003 2:31 PM

Charlie,

The cost for the structural steel in-place for the deck girder bridge painted would be approx. $1.10 to $1.20 per lb.

The cost for the structural steel in-place for the thru-girder bridge painted would be approx. $1.15 to $1.25 per lb.

PDM Bridge

Brent Brubaker
Project Engineer

REDACTED

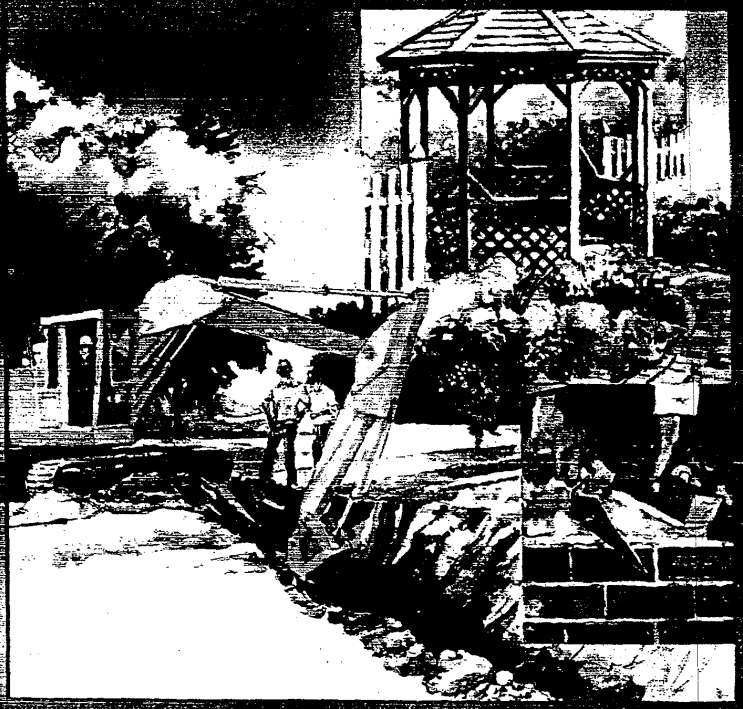
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2002



4623

City Cost Indexes

DIVISION		MISSISSIPPI			MISSOURI												
		MERIDIAN			CAPE GIRARDEAU			COLUMBIA			JOPLIN			KANSAS CITY			SPRINGFIELD	
		MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL
01590	EQUIPMENT RENTAL	.0	98.5	98.5	.0	109.6	109.6	.0	109.7	109.7	.0	105.0	105.0	.0	103.2	103.2	.0	103.4	103.4
02	SITE CONSTRUCTION	101.5	86.6	90.2	93.3	93.3	93.3	98.6	94.4	95.5	100.3	95.8	96.9	92.6	94.6	94.1	91.9	93.5	93.1
03100	CONCRETE FORMS & ACCESSORIES	74.4	40.2	44.7	83.1	83.9	83.8	84.2	75.7	76.8	103.0	68.9	73.4	102.4	103.9	103.7	101.1	58.2	63.9
03200	CONCRETE REINFORCEMENT	102.6	54.1	74.3	106.1	92.9	98.4	100.4	106.5	103.9	104.0	78.2	89.0	98.9	107.7	104.0	96.5	106.5	102.3
03300	CAST-IN-PLACE CONCRETE	100.0	48.8	79.4	84.6	92.2	87.7	89.1	74.9	83.4	103.3	76.7	92.6	96.0	99.7	97.5	100.7	71.2	88.8
03	CONCRETE	91.1	48.0	69.7	85.0	90.2	87.6	83.3	83.3	83.3	97.3	74.8	86.1	93.4	103.6	98.5	96.4	73.5	85.0
04	MASONRY	88.9	34.8	55.8	117.4	82.7	96.2	131.2	75.8	97.3	93.5	61.1	73.7	98.4	104.1	101.9	86.8	73.0	78.4
05	METALS	96.4	80.7	90.6	93.8	115.4	101.7	93.0	121.0	103.2	95.8	95.4	95.7	99.3	112.2	104.0	96.3	106.7	100.1
06	WOOD & PLASTICS	74.2	39.2	56.2	83.0	83.4	83.2	89.8	72.0	80.7	100.9	69.3	84.6	100.9	104.0	102.4	100.0	54.4	76.5
07	THERMAL & MOISTURE PROTECTION	95.2	45.8	71.8	96.2	85.9	91.4	92.6	79.1	86.2	98.3	67.2	83.6	97.5	103.2	100.2	96.8	72.9	85.5
08	DOORS & WINDOWS	95.8	43.4	83.2	94.2	84.0	91.7	91.2	93.0	91.6	92.2	77.5	88.7	98.5	105.5	100.2	96.7	70.8	90.5
09200	PLASTER & GYPSUM BOARD	99.9	37.8	59.8	97.4	82.5	87.8	100.9	70.8	81.5	109.8	68.0	82.8	104.5	103.7	104.0	106.5	52.6	71.7
095,098	CEILINGS & ACOUSTICAL TREATMENT	90.1	37.8	54.9	93.1	82.5	86.0	92.9	70.8	78.1	97.8	68.0	77.8	103.5	103.7	103.6	98.5	52.6	67.7
09600	FLOORING	104.8	33.2	87.1	98.6	87.8	96.0	107.5	73.1	99.0	118.4	59.1	103.8	96.5	95.7	96.3	109.9	59.1	97.4
097,099	WALL FINISHES, PAINTS & COATINGS	105.0	40.4	67.2	99.7	88.2	93.0	98.8	69.9	81.8	92.9	52.1	69.0	97.7	105.3	102.1	93.2	74.5	82.3
09	FINISHES	98.9	38.2	67.3	93.8	84.4	88.9	95.9	72.4	83.7	105.8	64.8	84.4	100.4	102.3	101.4	100.8	58.5	78.8
10-14	TOTAL DIV. 10000 - 14000	100.0	63.1	92.3	100.0	79.8	95.8	100.0	96.0	99.2	100.0	88.5	97.6	100.0	99.5	99.9	100.0	86.3	97.1
15	MECHANICAL	99.9	41.2	73.8	100.1	94.3	97.5	100.1	95.5	98.0	100.2	61.4	83.0	100.1	101.9	100.9	100.2	72.6	87.9
16	ELECTRICAL	95.0	59.1	70.1	95.3	114.3	108.5	93.8	83.6	86.7	89.2	70.3	76.1	103.4	101.6	102.1	100.2	75.7	83.2
01-16	WEIGHTED AVERAGE	96.4	52.9	75.4	96.1	95.6	95.9	96.5	88.6	92.7	97.6	73.0	85.7	98.8	102.7	100.7	97.7	76.8	87.6

DIVISION		MISSOURI						MONTANA											
		ST. JOSEPH			ST. LOUIS			BILLINGS			BUTTE			GREAT FALLS			HELENA	
		MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL
01590	EQUIPMENT RENTAL	.0	101.8	101.8	.0	110.8	110.8	.0	95.7	95.7	.0	95.4	95.4	.0	95.4	95.4	.0	95.4	95.4
02	SITE CONSTRUCTION	94.0	91.6	92.2	92.9	96.9	95.9	83.7	97.5	94.1	89.7	96.1	94.6	93.2	96.7	95.9	95.0	96.6	96.2
03100	CONCRETE FORMS & ACCESSORIES	102.3	77.0	80.3	99.3	109.0	107.7	96.3	73.0	76.1	82.3	70.2	71.8	102.6	71.3	75.5	102.7	71.7	75.8
03200	CONCRETE REINFORCEMENT	97.7	102.0	100.2	97.0	110.4	104.8	100.2	81.1	89.0	108.7	81.0	92.5	100.2	81.0	89.0	103.7	75.0	87.0
03300	CAST-IN-PLACE CONCRETE	95.9	96.7	96.2	84.6	114.1	96.5	115.6	75.2	99.3	119.0	75.3	101.4	125.7	62.7	100.3	128.1	73.5	106.1
03	CONCRETE	93.2	89.7	91.5	85.0	112.1	98.5	102.8	75.8	89.4	102.5	74.6	88.6	108.3	70.8	89.6	110.0	73.5	91.8
04	MASONRY	97.8	93.1	94.9	98.6	110.6	105.9	123.9	76.0	94.6	122.2	73.7	92.6	126.0	75.8	95.3	123.2	73.5	92.8
05	METALS	97.9	108.8	101.9	96.3	126.3	107.2	98.2	85.2	93.5	97.6	84.6	92.9	98.7	84.8	93.6	97.8	81.6	91.9
06	WOOD & PLASTICS	101.5	71.1	85.9	98.1	106.9	102.6	100.5	73.3	86.5	88.4	71.6	79.8	108.3	71.4	89.3	108.5	71.4	89.4
07	THERMAL & MOISTURE PROTECTION	98.1	93.1	95.7	96.2	105.7	100.7	98.9	74.6	87.4	98.1	71.7	85.6	99.1	72.2	86.4	99.1	73.4	86.9
08	DOORS & WINDOWS	97.2	86.5	94.6	93.2	113.2	98.0	100.2	69.7	92.9	96.9	68.7	90.1	100.5	68.7	92.8	99.9	67.3	92.1
09200	PLASTER & GYPSUM BOARD	110.6	69.8	84.3	104.2	106.7	105.8	103.6	73.0	83.8	96.1	71.3	80.1	103.6	71.0	82.5	103.0	71.0	82.3
095,098	CEILINGS & ACOUSTICAL TREATMENT	102.0	69.8	80.4	97.3	106.7	103.6	114.0	73.0	86.4	111.2	71.3	84.4	114.0	71.0	85.1	111.2	71.0	84.2
09600	FLOORING	99.1	94.6	98.0	106.2	99.1	104.5	110.4	57.5	97.4	102.1	45.8	88.2	110.4	62.1	98.5	110.4	60.1	98.0
097,099	WALL FINISHES, PAINTS & COATINGS	93.5	90.1	91.5	99.7	109.6	105.5	102.6	70.9	84.0	102.6	48.3	70.8	102.6	54.3	74.4	102.6	60.3	77.8
09	FINISHES	101.6	80.3	90.5	98.1	106.9	102.6	107.6	69.7	87.8	103.1	62.9	82.2	107.7	67.5	86.7	107.2	68.1	86.8
10-14	TOTAL DIV. 10000 - 14000	100.0	93.1	98.6	100.0	106.4	101.3	100.0	75.4	94.9	100.0	74.1	94.6	100.0	75.2	94.8	100.0	66.8	93.1
15	MECHANICAL	100.2	88.9	95.2	100.1	107.9	103.6	100.3	81.1	91.8	100.3	76.3	89.6	100.3	81.2	91.8	100.3	79.9	91.3
16	ELECTRICAL	102.8	79.3	86.4	99.0	114.3	109.7	95.0	82.9	86.6	106.5	73.9	83.9	94.9	78.1	83.2	94.9	78.0	83.2
01-16	WEIGHTED AVERAGE	98.6	88.7	93.8	96.1	110.4	103.0	101.5	80.0	91.1	101.2	76.0	89.0	102.7	78.0	90.8	102.6	77.4	90.4

DIVISION		MONTANA			NEBRASKA												NEVADA		
		MISSOULA			GRAND ISLAND			LINCOLN			NORTH PLATTE			OMAHA			CARSON CITY		
		MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL
01590	EQUIPMENT RENTAL	.0	95.4	95.4	.0	102.3	102.3	.0	102.3	102.3	.0	102.3	102.3	.0	91.3	91.3	.0	100.3	100.3
02	SITE CONSTRUCTION	73.7	96.0	90.6	94.8	90.7	91.7	85.9	90.7	89.6	95.7	90.2	91.5	77.4	89.4	86.5	64.4	102.1	93.0
03100	CONCRETE FORMS & ACCESSORIES	86.7	66.1	68.8	97.4	57.6	62.9	102.5	50.7	57.5	97.3	54.1	59.8	97.1	74.5	77.5	99.3	106.4	105.5
03200	CONCRETE REINFORCEMENT	110.6	85.3	95.8	105.1	75.0	87.6	96.5	74.9	83.9	106.5	74.8	88.1	101.0	76.5	86.7	108.5	115.1	112.3
03300	CAST-IN-PLACE CONCRETE	87.6	72.3	81.5	116.3	65.4	95.8	105.1	68.0	90.1	116.3	58.9	93.2	109.0	76.6	95.9	118.3	92.4	107.9
03	CONCRETE	81.1	72.6	76.8	106.5	65.0	85.9	98.6	62.8	80.8	106.7	61.4	84.1	100.0	75.8	88.0	113.9	102.8	108.4
04	MASONRY	148.7	69.3	100.2	105.1	57.3	75.9	94.9	54.7	70.4	90.4	46.5	63.6	100.7	83.9	90.4	133.8	81.7	102.0
05	METALS	97.7	85.7	93.3	92.9	86.1	90.4	95.8	85.7	92.1	93.1	89.7	91.8	98.4	77.9	90.9	103.8	101.7	103.1
06	WOOD & PLASTICS	92.9	67.4	79.8	96.7	52.4	73.9	101.2	43.3	71.4	96.5	52.4	73.8	95.2	74.0	84.3	94.1	110.2	102.4
07	THERMAL & MOISTURE PROTECTION	97.3	77.2	87.8	97.3	63.1	81.1	97.7	55.8	77.8	97.2	53.1	76.3	92.9	75.7	84.7	105.4	91.2	98.6
08	DOORS & WINDOWS	96.9	68.3	90.1	90.4	55.0	81.9	95.9	52.2	85.4	89.7	60.2	82.6	99.3	68.6	91.9	93.4	112.0	97.8
09200	PLASTER & GYPSUM BOARD	98.1	66.9	77.9	103.1	50.6	69.2	106.5	41.2	64.3	103.4	50.6	69.3	112.6	73.6	87.4	83.7	110.3	100.9
095,098	CEILINGS & ACOUSTICAL TREATMENT	111.2	66.9	81.4	91.5	50.6	64.0	98.5	41.2	60.0	92.9	50.6	64.5	135.3	73.6	93.9	101.5	110.3	107.4
09600	FLOORING	104.1	71.5	96.0	99.2	40.8	84.7	100.9	42.5	86.5	99.1	42.5	85.1	129.6	51.0	110.2	105.1	75.0	97.7
097,099	WALL FINISHES, PAINTS & COATINGS	102.6	54.3	74.4	90.7	48.1	65.8	90.7	48.6	66.0	90.7	58.2	71.7	145.1	58.2	94.2	108.1	89.1	97.0
09	FINISHES	103.2	65.4	83.5	95.8	52.2	73.1	97.9	47.3	71.6	96.1	51.7	73.0	123.2	67.9	94.4	97.1	99.0	98.1
10-14	TOTAL DIV. 10000 - 14000	100.0	63.2	92.3	100.0	83.5	96.6	100.0	82.3	96.3	100.0	64.1	92.5	100.0	84.5	96.8	100.0	118.7	103.9
15	MECHANICAL	100.3	74.0	88.6	100.2	83.4	92.7	100.2	83.3	92.7	100.2	78.8	90.7	99.9	85.6	93.5	100.0	94.0	97.3
16	ELECTRICAL	103.1	78.2	85.8	91.0	50.8	63.0	100.5	50.8	66.0	94.3	50.7	64.0	88.3	86.8	87.3	92.7	89.1	90.2
01-16	WEIGHTED AVERAGE	99.4	75.8	88.0	97.6	68.2	83.4	97.8	66.5	82.7	97.0	65.4	81.8	100.4	80.8	90.9	101.7	96.7	99.3

City Cost Indexes

DIVISION		NORTH CAROLINA			NORTH DAKOTA												
		WINSTON-SALEM			BISMARCK			FARGO			GRAND FORKS			MINOT			AKRON	
		MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL
01590	EQUIPMENT RENTAL	.0	99.6	99.6	.0	95.4	95.4	.0	95.4	95.4	.0	95.4	95.4	.0	95.4	95.4	.0	100.1	100.1
02	SITE CONSTRUCTION	103.4	82.8	87.7	86.6	96.1	93.8	86.1	96.2	93.7	94.1	95.5	95.2	91.8	96.2	95.1	100.5	109.3	107.2
03100	CONCRETE FORMS & ACCESSORIES	96.9	44.9	51.7	95.1	56.9	61.9	95.8	57.8	62.8	91.6	50.4	55.8	86.1	65.1	67.9	104.5	100.8	101.3
03200	CONCRETE REINFORCEMENT	93.1	42.8	63.8	108.7	75.3	89.2	100.2	75.3	85.7	107.0	58.3	78.6	110.7	75.8	90.4	99.1	98.0	98.5
03300	CAST-IN-PLACE CONCRETE	96.6	52.2	78.7	101.9	61.6	85.6	106.8	64.2	89.6	104.3	59.8	86.4	104.3	60.1	86.5	102.8	108.5	105.1
03	CONCRETE	97.0	49.2	73.2	96.8	62.9	79.9	98.3	64.1	81.3	102.8	56.1	79.6	101.3	66.0	83.7	102.7	101.8	102.3
04	MASONRY	77.1	40.6	54.8	107.3	57.8	77.1	107.6	57.4	76.9	107.5	59.1	77.9	108.3	66.9	83.0	92.2	105.0	100.0
05	METALS	95.2	78.8	89.2	95.4	77.0	88.7	95.3	77.2	88.7	95.4	69.8	86.1	95.8	77.9	89.2	91.7	83.5	88.7
06	WOOD & PLASTICS	96.5	45.6	70.4	87.4	52.9	69.7	87.4	53.7	70.1	84.2	48.7	65.9	79.2	63.6	71.2	99.2	99.4	99.3
07	THERMAL & MOISTURE PROTECTION	96.6	46.8	73.0	99.6	57.2	79.5	100.2	58.4	80.4	100.4	57.7	80.2	100.0	60.4	81.3	106.0	102.8	104.5
08	DOORS & WINDOWS	95.7	44.8	83.5	100.7	55.1	89.7	100.7	55.5	89.8	100.7	45.7	87.5	100.9	60.8	91.2	104.5	100.0	103.4
09200	PLASTER & GYPSUM BOARD	108.5	43.8	66.7	119.7	52.0	75.9	119.7	52.8	76.5	118.7	47.6	72.8	117.3	63.1	82.2	105.6	98.6	101.1
095,098	CEILINGS & ACOUSTICAL TREATMENT	91.3	43.8	59.4	147.2	52.0	83.2	147.2	52.8	83.7	147.2	47.6	80.2	147.2	63.1	90.6	98.9	98.6	98.7
09600	FLOORING	95.9	46.6	83.7	111.0	53.5	96.8	110.8	52.6	96.4	109.3	52.6	95.3	106.6	70.1	97.6	107.9	99.5	105.8
097,099	WALL FINISHES, PAINTS & COATINGS	105.9	44.2	69.8	102.6	43.7	68.1	102.6	82.7	91.0	102.6	33.4	62.1	102.6	36.6	64.0	105.3	117.8	112.6
09	FINISHES	95.5	44.9	69.2	116.1	54.0	83.8	115.9	58.8	86.2	116.0	48.5	80.8	114.7	62.9	87.7	104.3	102.2	103.2
10 - 14	TOTAL DIV. 10000 - 14000	100.0	64.0	92.5	100.0	85.2	96.9	100.0	85.2	96.9	100.0	55.2	90.7	100.0	86.6	97.2	100.0	101.8	100.4
15	MECHANICAL	100.1	48.2	77.0	100.6	66.5	85.4	100.6	72.8	88.2	100.6	53.0	79.4	100.6	66.5	85.4	100.1	104.6	102.1
16	ELECTRICAL	98.6	44.2	60.8	96.9	67.9	76.8	96.8	48.8	63.5	101.7	66.6	77.3	106.8	67.9	79.8	98.0	101.8	100.6
01 - 16	WEIGHTED AVERAGE	96.6	52.8	75.4	100.5	67.4	84.5	100.6	66.1	83.9	101.7	61.2	82.2	101.7	70.3	86.5	99.7	101.7	100.7

DIVISION		OHIO																	
		CANTON			CINCINNATI			CLEVELAND			COLUMBUS			DAYTON			LORAIN		
		MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL
01590	EQUIPMENT RENTAL	.0	100.1	100.1	.0	104.2	104.2	.0	100.4	100.4	.0	95.7	95.7	.0	98.4	98.4	.0	100.1	100.1
02	SITE CONSTRUCTION	100.6	108.2	106.4	77.1	110.8	102.7	100.5	109.0	107.0	84.9	100.1	96.5	75.9	110.7	102.3	99.8	108.6	106.5
03100	CONCRETE FORMS & ACCESSORIES	104.5	89.3	91.3	102.0	88.8	90.5	104.7	107.2	106.9	96.0	93.1	93.5	101.9	87.6	89.5	104.6	90.5	92.4
03200	CONCRETE REINFORCEMENT	99.1	82.6	89.5	93.4	85.8	89.0	99.6	98.2	98.8	103.2	85.2	92.7	93.4	84.2	88.0	99.1	98.1	98.5
03300	CAST-IN-PLACE CONCRETE	103.8	105.4	104.4	86.4	90.9	88.2	100.8	116.0	107.0	87.8	96.5	91.3	78.7	92.5	84.2	97.8	111.5	103.4
03	CONCRETE	103.2	92.8	98.0	92.9	89.0	91.0	101.8	107.4	104.6	95.1	92.2	93.6	89.1	88.1	88.6	100.2	98.4	99.3
04	MASONRY	93.1	94.7	94.1	86.4	96.1	92.3	96.8	111.5	105.8	97.0	95.3	95.9	85.8	93.0	90.2	89.1	105.0	98.8
05	METALS	91.7	76.5	86.1	94.9	89.4	92.9	93.1	86.5	90.7	96.3	81.3	90.8	94.2	78.6	88.5	92.2	84.2	89.3
06	WOOD & PLASTICS	99.2	87.9	93.4	102.7	86.4	94.3	98.4	104.4	101.5	99.4	93.0	96.1	105.1	86.8	95.7	99.2	86.0	92.4
07	THERMAL & MOISTURE PROTECTION	106.6	98.2	102.6	90.1	97.8	93.8	104.7	114.6	109.4	100.7	97.9	99.3	95.5	93.6	94.6	106.5	106.5	106.5
08	DOORS & WINDOWS	98.9	81.1	94.6	96.7	85.2	94.0	95.3	102.7	97.1	99.8	88.7	97.1	95.0	84.4	92.4	98.9	92.9	97.4
09200	PLASTER & GYPSUM BOARD	105.6	86.8	93.5	102.6	86.3	92.0	104.9	103.8	104.2	102.2	92.5	95.9	102.6	86.7	92.4	105.6	84.8	92.2
095,098	CEILINGS & ACOUSTICAL TREATMENT	98.9	86.8	90.7	91.3	86.3	87.9	97.5	103.8	101.7	95.7	92.5	93.6	92.9	86.7	88.8	98.9	84.8	89.4
09600	FLOORING	108.1	88.8	103.3	93.1	101.8	95.2	107.7	114.4	109.3	97.4	92.6	96.2	95.5	90.9	94.4	108.1	111.6	109.0
097,099	WALL FINISHES, PAINTS & COATINGS	105.3	91.7	97.3	102.3	97.4	99.4	105.3	121.0	114.5	99.8	106.0	103.4	102.3	95.9	98.6	105.3	121.0	114.5
09	FINISHES	104.4	88.6	96.2	93.6	91.9	92.7	103.9	109.7	107.0	97.8	94.4	96.0	94.7	88.9	91.7	104.4	97.0	100.5
10 - 14	TOTAL DIV. 10000 - 14000	100.0	90.0	97.9	100.0	90.4	98.0	100.0	106.1	101.3	100.0	94.0	98.8	100.0	89.2	97.7	100.0	101.0	100.2
15	MECHANICAL	100.1	89.5	95.4	99.8	98.5	99.2	100.1	111.0	104.9	100.1	95.1	97.9	100.8	89.0	95.5	100.1	95.0	97.8
16	ELECTRICAL	96.5	97.4	97.1	95.8	84.9	88.3	97.1	106.5	103.7	102.1	89.4	93.3	94.5	90.1	91.4	96.5	99.1	98.3
01 - 16	WEIGHTED AVERAGE	99.1	92.2	95.8	95.3	93.4	94.4	98.8	106.8	102.7	98.2	92.7	95.5	94.9	90.5	92.8	98.5	98.0	98.3

DIVISION		OHIO									OKLAHOMA								
		SPRINGFIELD			TOLEDO			YOUNGSTOWN			ENID			LAWTON			MUSKOGEE		
		MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL
01590	EQUIPMENT RENTAL	.0	98.4	98.4	.0	98.7	98.7	.0	100.1	100.1	.0	76.1	76.1	.0	77.2	77.2	.0	85.8	85.8
02	SITE CONSTRUCTION	76.4	109.8	101.7	84.1	101.4	97.2	100.4	109.6	107.4	110.8	89.0	94.2	105.9	90.6	94.3	96.1	85.0	87.7
03100	CONCRETE FORMS & ACCESSORIES	101.9	92.1	93.3	96.0	107.5	106.0	104.5	94.0	95.4	96.9	45.7	52.4	101.4	62.8	67.9	103.1	41.3	49.4
03200	CONCRETE REINFORCEMENT	93.4	84.2	88.0	103.2	92.1	96.7	99.1	91.9	94.9	95.4	84.3	88.9	95.6	84.4	89.0	95.4	43.3	65.0
03300	CAST-IN-PLACE CONCRETE	82.5	93.0	86.7	87.8	110.9	97.1	101.8	109.9	105.1	94.1	56.8	79.1	91.0	56.9	77.2	84.6	43.5	68.1
03	CONCRETE	91.0	90.2	90.6	95.1	104.9	100.0	102.3	98.2	100.2	91.2	57.1	74.2	87.7	64.6	76.2	83.2	43.7	63.5
04	MASONRY	86.1	94.1	91.0	107.4	110.0	109.0	92.3	103.1	98.9	101.3	58.6	75.2	96.8	58.6	73.5	110.0	49.7	73.2
05	METALS	94.2	78.5	88.5	96.1	88.7	93.4	91.8	81.8	88.1	93.4	68.5	84.3	95.4	68.6	85.6	93.3	63.0	82.2
06	WOOD & PLASTICS	105.1	92.4	98.6	99.4	108.1	103.9	99.2	91.3	95.1	101.1	43.0	71.2	104.8	66.2	85.0	106.9	42.5	73.8
07	THERMAL & MOISTURE PROTECTION	95.5	94.7	95.1	102.5	109.2	105.6	106.7	102.6	104.8	99.6	64.0	82.7	99.3	66.3	83.7	99.1	51.1	76.4
08	DOORS & WINDOWS	95.0	87.3	93.1	97.7	100.0	98.2	98.9	96.3	98.3	95.1	56.5	85.8	96.6	68.9	89.9	95.1	41.4	82.1
09200	PLASTER & GYPSUM BOARD	102.6	92.5	96.1	102.2	108.1	106.0	105.6	90.2	95.7	93.3	42.3	60.4	96.0	66.2	76.7	95.3	41.7	60.6
095,098	CEILINGS & ACOUSTICAL TREATMENT	92.9	92.5	92.6	95.7	108.1	104.0	98.9	90.2	93.1	93.4	42.3	59.1	101.9	66.2	77.9	93.4	41.7	58.6
09600	FLOORING	95.5	90.9	94.4	96.6	106.9	99.2	108.1	104.0	107.1	115.1	60.3	101.6	118.1	60.3	103.9	119.4	48.6	101.9
097,099	WALL FINISHES, PAINTS & COATINGS	102.3	95.9	98.6	99.8	115.4	108.9	105.3	107.0	106.3	95.8	64.2	77.3	95.8	64.2	77.3	95.8	40.8	63.6
09	FINISHES	94.7	92.4	93.5	97.5	108.7	103.3	104.4	96.7	100.4	100.9	48.7	73.7	103.3	62.1	81.9	101.5	42.9	70.9
10 - 14	TOTAL DIV. 10000 - 14000	100.0	90.3	98.0	100.0	97.7	99.5	100.0	99.9	100.0	100.0	73.8	94.5	100.0	76.8	95.2	100.0	38.0	87.1
15	MECHANICAL	100.8	89.6	95.8	100.1	105.1	102.3	100.1	95.7	98.1	100.1	68.2	85.9	100.1	68.3	85.9	100.1	34.2	70.8
16	ELECTRICAL	94.5	89.4	90.9	102.8	106.8	105.6	96.5	92.6	93.8	95.0	72.4	79.3	97.7	63.7	74.1	94.4	40.5	56.9
01 - 16	WEIGHTED AVERAGE	95.2	91.5	93.4	98.5	104.2	101.3	98.9	96.7	97.8	97.5	65.5	82.1	97.6	67.7	83.2	96.7	47.5	72.9

DIVISION		SOUTH CAROLINA												SOUTH DAKOTA					
		COLUMBIA			FLORENCE			GREENVILLE			SPARTANBURG			ABERDEEN			PIERRE		
		MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL
01590	EQUIPMENT RENTAL	.0	99.3	99.3	.0	99.3	99.3	.0	99.3	99.3	.0	99.3	99.3	.0	95.4	95.4	.0	95.4	95.4
02	SITE CONSTRUCTION	95.8	81.8	85.2	107.4	81.8	88.0	102.2	81.4	86.4	102.0	81.4	86.4	82.4	95.0	92.0	80.8	95.0	91.6
03100	CONCRETE FORMS & ACCESSORIES	100.3	46.2	53.3	79.6	46.2	50.6	95.0	46.1	52.5	99.1	46.1	53.0	95.4	43.4	50.3	93.6	45.7	52.6
03200	CONCRETE REINFORCEMENT	93.1	62.3	75.2	92.8	62.6	75.2	92.7	44.1	64.4	92.7	44.1	64.4	107.3	54.6	76.6	106.7	63.5	81.5
03300	CAST-IN-PLACE CONCRETE	78.6	50.5	67.3	70.9	54.5	64.3	70.9	54.4	64.3	70.9	54.4	64.3	99.4	54.9	81.5	96.6	50.8	78.1
03	CONCRETE	88.1	52.7	70.5	90.4	54.1	72.3	89.1	50.6	69.9	89.3	50.6	70.0	96.1	50.8	73.5	93.8	52.1	73.1
04	MASONRY	83.1	36.3	54.5	70.9	41.5	53.0	69.0	41.5	52.2	70.9	41.5	53.0	109.3	56.5	77.0	106.0	47.6	70.3
05	METALS	95.2	83.2	90.8	94.2	83.6	90.3	94.0	77.0	87.8	94.1	77.0	87.8	107.2	71.1	94.0	107.1	74.3	95.1
06	WOOD & PLASTICS	102.3	47.0	73.9	80.3	47.0	63.2	95.8	47.0	70.7	100.1	47.0	72.8	100.3	41.2	69.9	98.5	44.6	70.8
07	THERMAL & MOISTURE PROTECTION	96.1	47.1	72.9	96.5	49.5	74.2	96.5	49.5	74.2	96.5	49.5	74.3	97.9	51.1	75.7	98.1	49.0	74.8
08	DOORS & WINDOWS	95.7	47.5	84.1	91.8	47.5	81.1	91.7	43.0	80.0	91.8	43.0	80.0	96.1	44.4	83.6	99.5	48.9	87.3
09200	PLASTER & GYPSUM BOARD	108.5	45.2	67.6	97.1	45.2	63.6	102.7	45.2	65.5	104.7	45.2	66.2	104.8	39.9	62.9	103.6	43.4	64.7
095,098	CEILINGS & ACOUSTICAL TREATMENT	91.3	45.2	60.3	88.5	45.2	59.4	87.1	45.2	58.9	87.1	45.2	58.9	110.7	39.9	63.1	109.3	43.4	65.0
09600	FLOORING	95.7	46.1	83.4	87.0	46.1	76.9	93.5	47.0	82.0	95.1	47.0	83.2	111.3	66.2	100.2	110.4	47.2	94.6
097,099	WALL FINISHES, PAINTS & COATINGS	105.9	44.4	69.9	105.9	44.4	69.9	105.9	44.4	69.9	105.9	44.4	69.9	102.6	39.5	65.7	102.6	39.5	65.7
09	FINISHES	95.7	45.9	69.8	91.8	45.9	67.9	94.1	46.1	69.1	94.9	46.1	69.5	107.2	47.0	75.8	106.4	45.0	74.6
10 - 14	TOTAL DIV. 10000 - 14000	100.0	71.9	94.1	100.0	71.8	94.1	100.0	71.9	94.1	100.0	71.9	94.1	100.0	65.8	92.9	100.0	66.3	93.0
15	MECHANICAL	100.1	42.6	74.5	100.1	42.6	74.5	100.1	42.6	74.5	100.1	42.6	74.5	100.2	39.9	73.4	100.2	40.0	73.4
16	ELECTRICAL	99.6	40.3	58.4	95.4	23.0	45.1	98.9	36.7	55.7	98.9	36.7	55.7	102.5	46.4	63.6	96.1	55.7	68.1
01 - 16	WEIGHTED AVERAGE	95.7	51.9	74.5	94.1	49.8	72.7	94.3	50.8	73.3	94.6	50.8	73.4	101.0	54.2	78.4	100.4	55.3	78.6

DIVISION		SOUTH DAKOTA						TENNESSEE											
		RAPID CITY			SIOUX FALLS			CHATTANOOGA			JACKSON			JOHNSON CITY			KNOXVILLE		
		MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL
01590	EQUIPMENT RENTAL	.0	95.4	95.4	.0	96.7	96.7	.0	104.7	104.7	.0	105.1	105.1	.0	97.6	97.6	.0	97.6	97.6
02	SITE CONSTRUCTION	81.0	94.7	91.4	82.0	97.0	93.4	104.1	97.4	99.0	103.4	95.4	97.3	113.5	86.1	92.7	91.2	86.1	87.4
03100	CONCRETE FORMS & ACCESSORIES	106.8	42.0	50.5	93.7	44.0	50.6	93.6	52.4	57.8	84.3	37.9	44.0	78.2	54.6	57.7	92.5	54.7	59.7
03200	CONCRETE REINFORCEMENT	100.2	64.3	79.3	100.2	64.5	79.4	94.0	49.2	67.9	99.7	48.6	70.0	98.0	49.4	69.7	94.0	49.4	68.0
03300	CAST-IN-PLACE CONCRETE	95.8	47.9	76.5	99.9	55.1	81.8	103.5	54.1	83.6	101.6	38.4	76.1	83.2	60.4	74.0	97.2	55.4	80.3
03	CONCRETE	93.5	49.7	71.7	94.7	53.1	74.0	94.0	54.3	74.2	93.6	42.4	68.1	98.8	57.5	78.2	91.0	55.8	73.5
04	MASONRY	106.0	56.3	75.7	103.2	65.1	80.0	97.4	51.1	69.1	110.6	30.7	61.8	108.4	50.8	73.2	75.7	50.8	60.5
05	METALS	109.2	75.7	97.0	109.8	76.3	97.5	97.0	82.5	91.7	95.1	79.1	89.3	94.7	82.2	90.1	97.2	82.3	91.8
06	WOOD & PLASTICS	108.3	41.7	74.1	98.5	41.2	69.0	95.7	53.4	74.0	82.3	40.1	60.6	71.8	56.7	64.0	85.1	56.7	70.5
07	THERMAL & MOISTURE PROTECTION	98.6	50.8	76.0	98.0	55.2	77.7	102.0	54.3	79.4	100.0	40.1	71.6	96.5	55.1	76.9	94.1	54.5	75.4
08	DOORS & WINDOWS	100.5	47.3	87.7	100.5	47.1	87.6	99.0	52.5	87.8	99.8	43.9	86.3	95.1	55.8	85.7	91.8	55.8	83.2
09200	PLASTER & GYPSUM BOARD	104.7	40.4	63.2	104.7	39.9	62.9	93.2	52.6	66.9	96.8	38.8	59.3	104.5	55.9	73.1	111.1	55.9	75.4
095,098	CEILINGS & ACOUSTICAL TREATMENT	114.9	40.4	64.8	114.9	39.9	64.5	95.9	52.6	66.8	96.4	38.8	57.7	87.1	55.9	66.1	92.7	55.9	68.0
09600	FLOORING	110.4	75.7	101.9	110.4	81.5	103.3	99.3	58.0	89.1	90.4	28.1	75.0	92.6	59.6	84.4	98.1	59.6	88.6
097,099	WALL FINISHES, PAINTS & COATINGS	102.6	39.5	65.7	102.6	39.5	65.7	105.0	48.9	72.1	94.1	31.9	57.7	102.9	62.5	79.3	102.9	62.5	79.3
09	FINISHES	107.7	47.8	76.5	107.6	50.1	77.7	97.5	53.1	74.4	95.5	36.0	64.5	98.2	56.6	76.5	92.8	56.6	73.9
10 - 14	TOTAL DIV. 10000 - 14000	100.0	63.7	92.4	100.0	65.9	92.9	100.0	64.0	92.5	100.0	57.7	91.2	100.0	69.6	93.7	100.0	69.7	93.7
15	MECHANICAL	100.2	37.1	72.1	100.2	40.1	73.5	100.2	52.9	79.1	100.1	46.9	76.5	99.9	58.6	81.5	99.9	62.5	83.2
16	ELECTRICAL	96.9	55.7	68.3	95.8	69.7	77.6	103.5	62.3	74.9	99.3	35.7	55.1	90.9	38.1	54.2	100.4	61.2	73.1
01 - 16	WEIGHTED AVERAGE	101.1	55.6	79.1	101.0	60.5	81.4	98.7	61.8	80.9	98.5	49.1	74.6	98.1	58.9	79.1	94.8	63.3	79.6

DIVISION		TENNESSEE						TEXAS											
		MEMPHIS			NASHVILLE			ABILENE			AMARILLO			AUSTIN			BEAUMONT		
		MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL
01590	EQUIPMENT RENTAL	.0	102.8	102.8	.0	105.4	105.4	.0	85.8	85.8	.0	85.8	85.8	.0	86.1	86.1	.0	88.0	88.0
02	SITE CONSTRUCTION	97.5	92.0	93.3	95.2	100.1	98.9	103.2	85.0	89.4	103.5	85.9	90.2	86.1	85.7	85.8	94.9	87.2	89.1
03100	CONCRETE FORMS & ACCESSORIES	94.6	62.6	66.8	92.0	68.3	71.4	99.3	49.9	56.4	103.0	59.2	65.0	97.4	64.8	69.0	107.0	62.2	68.1
03200	CONCRETE REINFORCEMENT	92.3	65.6	76.7	95.1	64.5	77.2	95.6	58.1	73.8	95.6	57.8	73.6	94.1	60.3	74.4	94.9	51.4	69.6
03300	CAST-IN-PLACE CONCRETE	91.9	65.9	81.4	96.2	65.0	83.6	95.6	47.8	76.4	100.5	54.9	82.1	91.5	56.7	77.5	87.8	62.8	77.7
03	CONCRETE	87.5	66.2	76.9	91.7	68.0	79.9	89.9	51.8	70.9	92.6	58.2	75.5	82.0	61.6	71.9	86.7	61.1	73.9
04	MASONRY	85.4	61.5	70.8	85.7	64.0	72.4	99.3	53.1	71.1	103.1	46.1	68.3	93.8	52.0	68.2	105.6	64.6	80.6
05	METALS	96.5	94.2	95.7	99.7	92.3	97.0	96.7	69.7	86.8	96.7	69.3	86.7	95.7	69.8	86.2	95.7	69.6	86.2
06	WOOD & PLASTICS	94.3	64.3	78.9	88.4	70.4	79.1	101.8	50.1	75.2	104.8	62.6	83.1	98.3	69.2	83.3	109.9	63.8	86.2
07	THERMAL & MOISTURE PROTECTION	98.0	64.5	82.2	97.7	66.5	82.9	99.2	55.1	78.3	101.8	52.1	78.3	96.5	58.3	78.4	102.4	65.1	84.7
08	DOORS & WINDOWS	98.8	67.3	91.2	96.5	69.9	90.1	92.3	51.8	82.5	92.3	55.9	83.5	94.6	66.5	87.9	95.8	57.6	86.5
09200	PLASTER & GYPSUM BOARD	102.4	63.5	77.3	101.9	70.0	81.3	96.0	49.4	65.9	96.0	62.4	74.3	99.2	69.1	79.7	98.0	63.5	75.7
095,098	CEILINGS & ACOUSTICAL TREATMENT	89.6	63.5	72.1	89.6	70.0	76.4	101.9	49.4	66.6	101.9	62.4	75.3	91.0	69.1	76.3	106.6	63.5	77.6
09600	FLOORING	91.7	52.9	82.1	103.2	72.0	95.5	118.1	62.3	104.4	117.9	50.5	101.3	97.9	58.1	88.1	116.8	76.3	106.9
097,099	WALL FINISHES, PAINTS & COATINGS	93.8	63.4	76.0	109.1	58.9	79.7	94.7	63.8	76.6	94.7	44.2	65.1	95.3	49.6	68.5	91.4	59.6	72.8
09	FINISHES	92.8	60.5	76.0	101.9	68.1	84.3	102.8	53.5	77.1	102.9	56.0	78.5	93.8	62.1	77.3	97.9	64.7	80.6
10 - 14	TOTAL DIV. 10000 - 14000	100.0	76.4	95.1	100.0	71.7	94.1	100.0	72.1	94.2	100.0	73.7	94.5	100.0	74.7	94.7	100.0	77.1	95.2
15	MECHANICAL	100.0	69.7	86.5	100.0	69.3	86.3	100.1	53.3	79.3	100.1	59.1	81.9	99.8	64.9	84.2	100.0	64.7	84.3
16	ELECTRICAL	99.1	72.5	80.7	101.6	69.9	79.6	97.7	57.7	69.9	98.7	65.1	75.3	97.1	73.5	80.7	96.6	75.4	81.9
01 - 16	WEIGHTED AVERAGE	96.0	72.1	84.4	97.7	73.7	86.1	97.6	58.8	78.8	98.3	62.0	80.8	94.8	67.0	81.3	97.1	68.7	83.4

DIVISION		WISCONSIN																	
		GREEN BAY			KENOSHA			LA CROSSE			MADISON			MILWAUKEE			RACINE		
		MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL
01590	EQUIPMENT RENTAL	.0	95.4	95.4	.0	97.7	97.7	.0	97.7	97.7	.0	99.9	99.9	.0	86.1	86.1	.0	99.9	99.9
02	SITE CONSTRUCTION	85.4	98.0	94.9	90.5	101.7	99.0	77.4	102.1	96.1	85.6	104.8	100.2	86.8	93.7	92.0	85.9	105.5	100.8
03100	CONCRETE FORMS & ACCESSORIES	117.3	95.7	98.5	113.4	104.4	105.6	80.5	96.0	93.9	100.6	97.2	97.7	103.6	108.5	107.9	100.3	104.4	103.9
03200	CONCRETE REINFORCEMENT	100.2	90.3	94.4	111.7	99.4	104.5	102.2	89.0	94.5	104.7	89.3	95.7	102.9	99.6	101.0	104.7	99.4	101.6
03300	CAST-IN-PLACE CONCRETE	100.6	98.8	99.9	111.7	101.6	107.6	87.4	95.8	90.8	100.6	98.4	99.7	100.6	107.8	103.5	100.6	101.3	100.9
03	CONCRETE	96.6	95.8	96.2	105.9	102.4	104.2	86.1	94.6	90.3	98.6	96.2	97.4	98.8	105.7	102.3	98.6	102.3	100.4
04	MASONRY	115.3	98.2	104.8	100.4	109.8	106.1	92.9	99.3	96.8	104.2	102.6	103.2	104.2	114.5	110.5	104.2	109.7	107.6
05	METALS	96.4	94.2	95.6	96.5	100.8	98.1	93.8	93.6	93.7	96.8	95.3	96.3	98.4	91.4	95.8	96.8	100.8	98.3
06	WOOD & PLASTICS	124.2	95.8	109.6	120.5	103.1	111.6	94.7	95.8	95.3	113.9	96.5	104.9	116.9	107.4	112.0	114.1	103.1	108.5
07	THERMAL & MOISTURE PROTECTION	100.1	89.3	95.0	97.9	102.4	100.0	96.7	89.9	93.5	96.9	97.6	97.2	96.2	107.3	101.5	97.6	101.8	99.6
08	DOORS & WINDOWS	100.3	88.1	97.3	97.2	103.9	98.8	101.8	85.6	97.9	102.1	96.1	100.6	104.4	106.2	104.8	102.1	103.9	102.5
09200	PLASTER & GYPSUM BOARD	99.1	96.2	97.2	96.4	103.7	101.2	107.6	96.2	100.2	107.7	96.9	100.7	107.7	107.9	107.8	107.7	103.7	105.1
095,098	CEILINGS & ACOUSTICAL TREATMENT	104.5	96.2	98.9	87.8	103.7	98.5	104.1	96.2	98.8	97.1	96.9	97.0	97.1	107.9	104.4	97.1	103.7	101.6
09600	FLOORING	111.5	106.3	110.2	108.7	109.5	108.9	85.5	106.3	90.6	92.2	101.3	94.4	94.9	112.4	99.3	92.2	109.5	96.5
097,099	WALL FINISHES, PAINTS & COATINGS	102.6	69.6	83.3	103.6	92.0	96.8	92.0	77.1	83.3	92.9	92.5	92.7	95.4	104.6	100.8	92.9	97.1	95.4
09	FINISHES	105.9	95.3	100.3	101.4	104.3	102.9	96.8	96.4	96.6	98.3	97.6	97.9	99.4	109.1	104.5	98.3	104.9	101.7
10 - 14	TOTAL DIV. 10000 - 14000	100.0	90.7	98.1	100.0	99.1	99.8	100.0	91.8	98.3	100.0	92.0	98.3	100.0	100.8	100.2	100.0	99.1	99.8
15	MECHANICAL	100.6	89.2	95.5	100.4	97.6	99.1	100.2	87.6	94.6	100.1	94.1	97.4	100.1	99.3	99.7	100.1	97.6	99.0
16	ELECTRICAL	96.1	87.8	90.3	93.3	99.1	97.3	105.4	88.0	93.3	92.1	94.8	94.0	92.9	103.7	100.4	91.0	98.9	96.5
01 - 16	WEIGHTED AVERAGE	100.2	92.8	96.6	99.5	101.6	100.5	96.5	92.9	94.7	98.8	97.0	97.9	99.5	102.9	101.1	98.7	102.0	100.3

DIVISION		WYOMING									CANADA								
		CASPER			CHEYENNE			ROCK SPRINGS			CALGARY, ALBERTA			EDMONTON, ALBERTA			HALIFAX, NOVA SCOTIA		
		MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL
01590	EQUIPMENT RENTAL	.0	100.3	100.3	.0	100.3	100.3	.0	100.3	100.3	.0	98.6	98.6	.0	98.6	98.6	.0	98.6	98.6
02	SITE CONSTRUCTION	83.6	99.0	95.3	83.4	99.0	95.2	87.1	98.6	95.8	108.9	97.2	100.0	110.3	97.2	100.4	97.8	96.6	96.9
03100	CONCRETE FORMS & ACCESSORIES	100.1	49.1	55.8	100.2	49.1	55.8	105.7	34.7	44.0	123.2	78.7	84.6	120.6	78.7	84.2	89.2	75.0	76.8
03200	CONCRETE REINFORCEMENT	107.3	52.5	75.4	100.7	52.6	72.7	109.4	52.2	76.1	161.2	61.5	103.1	161.2	61.5	103.1	147.9	56.1	94.4
03300	CAST-IN-PLACE CONCRETE	105.3	63.8	88.6	105.3	63.8	88.6	105.8	48.0	82.5	162.8	81.8	130.1	163.6	81.8	130.6	178.4	76.8	137.5
03	CONCRETE	107.3	55.6	81.6	106.5	55.7	81.2	108.1	43.9	76.1	146.7	77.1	112.0	146.9	77.1	112.1	152.3	72.7	112.6
04	MASONRY	107.0	44.8	69.0	106.0	47.2	70.1	172.6	36.6	89.5	177.8	80.0	118.1	177.8	80.0	118.1	160.2	79.4	110.8
05	METALS	105.0	65.6	90.6	106.3	65.7	91.5	105.0	64.3	90.2	100.8	81.4	93.7	100.8	81.4	93.7	100.7	78.3	92.5
06	WOOD & PLASTICS	95.4	47.6	70.9	94.6	47.6	70.5	101.5	33.8	66.7	114.8	78.1	95.9	111.1	78.1	94.1	83.9	74.3	78.9
07	THERMAL & MOISTURE PROTECTION	105.1	60.3	83.9	105.1	60.9	84.2	105.8	45.9	77.4	104.6	79.4	92.7	104.5	79.4	92.6	103.4	76.2	90.5
08	DOORS & WINDOWS	92.5	48.7	82.0	93.3	48.7	82.5	99.5	41.3	85.5	90.5	73.5	86.4	90.5	73.5	86.4	81.3	68.8	78.3
09200	PLASTER & GYPSUM BOARD	83.4	45.8	59.1	84.9	45.8	59.6	87.3	31.5	51.3	151.9	77.5	103.8	149.4	77.5	102.9	188.1	73.5	114.1
095,098	CEILINGS & ACOUSTICAL TREATMENT	100.1	45.8	63.6	107.2	45.8	65.9	100.1	31.5	54.0	101.9	77.5	85.5	101.9	77.5	85.5	101.9	73.5	82.8
09600	FLOORING	105.1	48.0	91.0	105.1	73.8	97.4	107.4	47.1	92.5	132.5	80.9	119.8	132.5	80.9	119.8	110.2	70.6	100.5
097,099	WALL FINISHES, PAINTS & COATINGS	108.1	63.4	81.9	108.0	63.4	81.9	108.1	38.5	67.3	109.3	76.4	90.0	109.4	76.4	90.1	109.3	68.1	85.2
09	FINISHES	97.6	49.6	72.6	99.0	54.9	76.0	98.9	36.5	66.4	120.6	79.3	99.1	120.4	79.3	99.0	117.1	73.5	94.4
10 - 14	TOTAL DIV. 10000 - 14000	100.0	77.3	95.3	100.0	77.2	95.3	100.0	57.9	91.2	100.0	86.3	97.1	100.0	82.1	96.3	100.0	71.6	94.1
15	MECHANICAL	100.0	66.6	85.1	100.0	50.4	78.0	100.0	35.6	71.4	99.2	70.6	86.5	99.2	70.6	86.5	98.6	78.6	89.7
16	ELECTRICAL	92.6	65.1	73.5	92.6	60.1	70.0	91.6	51.8	64.0	114.0	77.9	89.0	113.9	77.9	88.9	123.7	81.1	94.2
01 - 16	WEIGHTED AVERAGE	100.0	63.0	82.1	100.3	59.9	80.8	104.9	49.4	78.1	112.6	79.0	96.4	112.6	78.9	96.3	110.7	78.8	95.2

DIVISION		CANADA																	
		HAMILTON, ONTARIO			KITCHENER, ONTARIO			LAVAL, QUEBEC			LONDON, ONTARIO			MONTREAL, QUEBEC			OSHAWA, ONTARIO		
		MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL
01590	EQUIPMENT RENTAL	.0	98.6	98.6	.0	98.6	98.6	.0	98.6	98.6	.0	98.6	98.6	.0	98.6	98.6	.0	98.6	98.6
02	SITE CONSTRUCTION	112.2	97.4	101.0	99.5	97.0	97.6	92.6	97.6	96.4	112.2	97.1	100.8	92.4	97.6	96.3	113.8	97.2	101.2
03100	CONCRETE FORMS & ACCESSORIES	122.6	102.4	105.0	116.4	93.7	96.7	132.3	94.0	99.0	122.4	97.1	100.4	132.3	94.0	99.0	124.2	98.2	101.6
03200	CONCRETE REINFORCEMENT	174.5	100.8	131.6	110.2	100.7	104.6	156.6	92.7	119.4	123.0	99.0	109.0	159.3	92.7	120.5	174.5	101.5	131.9
03300	CAST-IN-PLACE CONCRETE	157.2	104.8	136.1	146.7	84.7	121.7	140.1	100.7	124.2	157.2	102.1	135.0	138.6	100.7	123.3	169.7	90.7	137.8
03	CONCRETE	145.4	102.7	124.1	125.4	91.6	108.6	135.3	96.0	115.7	139.2	99.1	119.2	134.8	96.0	115.5	151.8	96.1	124.1
04	MASONRY	161.8	108.9	129.5	159.9	104.0	125.8	158.8	95.2	119.9	161.8	105.6	127.5	158.7	95.2	119.9	162.7	108.0	129.3
05	METALS	100.9	97.0	99.5	100.7	90.5	96.9	101.0	91.7	97.6	99.2	96.5	98.2	101.0	91.7	97.6	100.7	96.7	99.3
06	WOOD & PLASTICS	115.6	101.6	108.4	109.3	92.4	100.6	128.3	94.3	110.8	115.6	95.7	105.3	128.3	94.3	110.8	116.6	96.7	106.3
07	THERMAL & MOISTURE PROTECTION	104.6	100.6	102.7	103.1	95.6	99.5	104.8	96.7	101.0	104.6	98.5	101.7	104.8	96.7	101.0	104.6	96.2	100.6
08	DOORS & WINDOWS	90.5	99.6	92.7	82.0	88.9	83.7	90.5	82.6	88.6	91.4	95.3	92.3	90.5	82.6	88.6	89.7	96.6	91.3
09200	PLASTER & GYPSUM BOARD	209.7	101.7	139.9	153.2	92.2	113.8	148.3	94.2	113.3	209.7	95.6	136.0	148.3	94.2	113.3	157.1	96.6	118.0
095,098	CEILINGS & ACOUSTICAL TREATMENT	101.9	101.7	101.8	101.9	92.2	95.4	101.9	94.2	96.7	101.9	95.6	97.7	101.9	94.2	96.7	101.9	96.6	98.3
09600	FLOORING	132.5	105.4	125.8	128.2	105.4	122.5	132.5	106.2	126.0	132.5	105.4	125.8	132.5	106.2	126.0	132.5	108.1	126.5
097,099	WALL FINISHES, PAINTS & COATINGS	109.3	113.7	111.9	109.3	104.2	106.3	109.3	99.0	103.3	109.3	113.7	111.9	109.3	99.0	103.3	109.3	119.5	115.3
09	FINISHES	128.0	104.5	115.8	118.2	97.2	107.3	119.1	97.4	107.8	128.0	100.6	113.8	119.1	97.4	107.8	120.9	102.7	111.4
10 - 14	TOTAL DIV. 10000 - 14000	100.0	106.7	101.4	100.0	104.1	100.8	100.0	91.5	98.2	100.0	105.1	101.1	100.0	91.5	98.2	100.0	105.7	101.2
15	MECHANICAL	99.2	98.3	98.8	98.6	93.9	96.5	98.6	85.5	92.8	99.2	94.4	97.0	99.2	85.5	93.1	98.6	96.0	97.4
16	ELECTRICAL	127.1	108.8	114.4	127.1	105.0	111.8	123.7	85.9	97.5	127.2	105.2	111.9	123.7	85.9	97.5	127.2	105.8	112.4
01 - 16	WEIGHTED AVERAGE	113.3	102.6	108.1	108.1	96.9	102.7	110.2	91.5	101.1	112.4	99.5	106.2	110.3	91.5	101.2	113.2	100.1	106.9

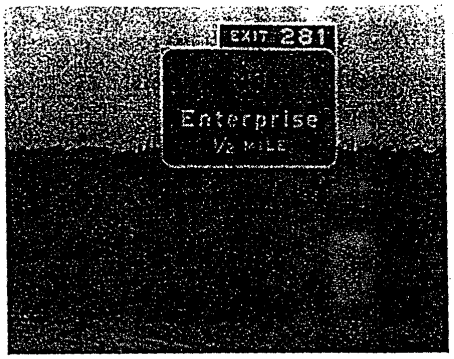
REDACTED

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Microwave Network Costs

REDACTED

Enterprise Program Overview



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Introduction
Goals and Objectives
Program Participants
Program Structure
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Project Management

Summary

ENTERPRISE was established in 1991 through an agreement between four U.S. states with common interests in Intelligent Transportation Systems (ITS). The program's basis is a pool-fund study set up in conjunction with the Federal Highway Administration of the U.S. Department of Transportation.

Its main purpose is to develop and carry out a joint research program to develop, evaluate and deploy ITS technologies. Each year, members contribute funds in support of ITS projects of mutual interest, to develop an annual work plan. These projects typically involve private sector partners working with designated member agencies.

ENTERPRISE has since grown into a multi-national consortium dedicated to the advancement of ITS. Its current partners include active ITS states from across the U.S., as well as Canadian and European agencies. ENTERPRISE provides a focus for coordinating ITS developments and for sharing results within and outside the program.

Introduction

The ENTERPRISE program represents a forum for collaborative ITS research, development, and deployment ventures reflecting the interests of governmental entities and industrial groups. This forum also facilitates the sharing of technological and institutional experiences gained from individual ITS projects conceived and initiated by each participating entity.

ENTERPRISE is a group of states and provinces joined by the mechanism of a pooled fund program. The intent is to use this pooled fund to support jointly-sponsored ITS projects. Such projects form the annual ENTERPRISE workplan.

The scope of ENTERPRISE is primarily intended to promote North American ITS development, reflecting the active involvement of U.S. and Canadian member agencies, as well as interest in Mexico. ENTERPRISE also seeks to take advantage of technologies being developed outside North America. ENTERPRISE's first European member is the Dutch

Ministry of Transport, Rijkswaterstaat. Further, representatives from several Japanese companies have attended meetings and supported program discussions, and European interest has included other public agencies and the private sector.

Goals & Objectives

The goals for ENTERPRISE aim to define areas of benefit which the group intends to pursue. ENTERPRISE goals include the following:

- increase highway safety;
- reduce highway congestion;
- increase highway efficiency;
- reduce environmental impacts of travel;
- increase comfort and convenience of travel; and
- support research and development of promising advanced technologies for use in solving transportation problems.

The ENTERPRISE objectives cite activities or areas of work which will support realization of the above goals. General objectives for ENTERPRISE include:

- support the individual ITS program plans of ENTERPRISE participants;
- provide a mechanism to support multistate and international project cooperation and technical information interchange;
- facilitate the formation of public-private partnerships for appropriate program activities;
- pursue emerging ITS project opportunities in areas of interest to the group;
- provide test beds in a variety of environments and locations for emerging ITS technologies; and
- identify common needs within the group and proceed with appropriate technical activities.

Program Participants

As of 2001 the following transportation agencies are represented on ENTERPRISE's Executive Board with full voting rights:

- Arizona Department of Transportation (ADOT);
- Colorado Department of Transportation (CDOT);
- Dutch Ministry of Transport, Rijkswaterstaat;
- Federal Highway Administration (FHWA);
- Iowa Department of Transportation (IADOT);
- Kansas Department of Transportation (KDOT);
- Ministry of Transportation of Ontario (MTO);
- Minnesota Department of Transportation (Mn/DOT);
- New Mexico State Highway Transportation Department (NMSHTD);
- Transport Canada;
- Virginia Department of Transportation (VDOT); and
- Washington State Department of Transportation (WSDOT).

Maricopa County, Arizona Department of Transportation (MCDOT) is the first local government to participate in ENTERPRISE. MCDOT participates through ADOT and is not a

full voting member. There are other agencies from North America and overseas which continue to follow ENTERPRISE's activities. However, only those organizations listed above are members of the program's Executive Board.

Program Structure

The ENTERPRISE organizational structure is arranged to maximize the group's ability to meet its objectives and to minimize bureaucratic impediments which sometimes result from the management of a large group.

Executive Board

The Executive Board consists of one voting representative from each active member agency. All of ENTERPRISE's operating authority derives from the Executive Board. It is responsible for overall policy direction and budget approval as well as for organizing itself, establishing operating rules and conducting other business. The Board gave voting membership to the two federal agencies in ENTERPRISE: FHWA and Transport Canada. FHWA, however, does not vote on matters involving the expenditure of federal funds over which it has approval authority, such as SP&R funds.

Program Chair and Vice-Chair

The Program Chair is elected by vote of the Executive Board. He serves as head of the Executive Board. The duties of the Chair include developing meeting agendas, chairing meetings, and representing ENTERPRISE in discussions with other organizations.

The Program Vice Chair is elected by vote of the Executive Board. The Vice Chair is responsible for supporting the Chair, including temporarily assuming the duties of the Chair during periods of absence.

The Program Chair is Manny Agah of Arizona DOT.

Program Administrator

The Program Administrator operates under delegated authority from the Executive Board and is responsible for day-to-day management of ENTERPRISE. The administrator is an employee from the lead administrative state which controls expenditures from the program's pooled funds. The Program Administrator is responsible for contracts administration. The Administrator is also responsible for quality control and evaluation, recommendations on contract preparation, change order requests, authorizing payments, and for informing the Executive Board of all contract progress. Finally, the Administrator is responsible for administering the ENTERPRISE management budget and approving all travel authorizations.

As of 2000, IADOT is the lead administrative state and John Whited is the Program Administrator.

Technical committees

ENTERPRISE technical committees are established to study, in detail, those areas of group interest identified by the Executive Board. Potential committee activities include problem

definition, analysis of alternative approaches, RFP development, project selection recommendations, project oversight, and future program planning. Voting authority on the technical committees is limited to Executive Board member agencies. This authority may be given to an agency's full Board member or a designated representative.

Management consultant

The role of the Management Consultant is to provide general and specific support to the Chair, Program Administrator and program participants on an ongoing basis. These duties may range from preparing meeting agenda and minutes to coordinating complex technical studies and activities.

Project Definition

The following three approaches discuss how ENTERPRISE defines and develops projects:

1. Review of state and provincial plans

On an ongoing basis, the Management Consultant remains apprised of the activities, interests, and state/provincial ITS plans of the ENTERPRISE members. The Consultant identifies common themes among program participants, which can be used as guidelines by others in preparing project outlines. In addition, at the same time other projects are proposed the Management Consultant may use these common themes as the basis for developing further project outlines for group consideration.

2. Proposals by ENTERPRISE members

ENTERPRISE participants propose projects which are developed through discussions with colleagues in the participants' state/provincial transportation agencies. Although, such projects may initially reflect the interests of the proposing state or province, it is in their best interest to suggest activities with broad group appeal. This increases the chances of support by other Executive Board members. To facilitate this, a summary of identified areas of common interest is prepared and distributed to the members by the Management Consultant.

3. FHWA and Transport Canada

ENTERPRISE offers its services to FHWA and Transport Canada for the coordination of appropriate ITS activities which address national and North American interests. These activities could include projects which might otherwise be performed by the agencies themselves, but are more ideally suited for delegation to ENTERPRISE.

Project Selection

In general, ENTERPRISE projects are considered on an annual basis. This supports development of an annual workplan with a consistent schedule. However, if a member identifies a project which offers significant immediate benefits or takes advantage of short-term opportunities, the member may suggest it to the group for early consideration. The group can then choose to accept such projects for fast-tracked initiation, reject them, or delay a decision until the start of the normal workplan development process.

Selection process

Project outlines, no more than two pages long, are submitted to the Program Administrator. The Administrator distributes these outlines to the members who use them to narrow down activities for the coming fiscal year.

ENTERPRISE then convenes a meeting, if necessary, to discuss and select projects. Telephone or facsimile polling is also an option. At this time, the members narrow down the number of projects for further consideration. These projects form the initial basis of the annual workplan.

The projects still under consideration are elaborated into more detailed workscopes. Based on these detailed workscopes, the members select those projects which, based on funding and other considerations, are undertaken by ENTERPRISE.

Following project selection, the workscopes are refined based on previous discussions and are prepared for final vote and approval. Once this has been achieved, the workscopes are included in the annual workplan and submitted to FHWA as an indication of ENTERPRISE's plans for the coming year.

For the projects in the annual workplan, RFPs and other contract documents are developed and mailed to prospective bidders. The Program Administrator reviews proposals and determines compliance. All compliant proposals are mailed to the appropriate ENTERPRISE committee members. Evaluation criteria is used by the members to facilitate the proposal selection process. The evaluation criteria have been developed to match each study and are included in the appropriate RFP. Members use rankings based on these criteria to identify a short-list of preferred proposals. Short-listed teams give presentations, upon which ENTERPRISE members make final selections.

Since ENTERPRISE's legal authority to solicit proposals and award contracts lies with the lead state, the lead state's procurement process takes precedence over ENTERPRISE's Charter and Operating Rules when soliciting for and awarding contracts. ENTERPRISE does not operate as a non-profit corporation. Each American state DOT's procurement procedures are approved by the Federal Highway Administration. Under the procurement rules of the current lead state, Iowa, solicitation lists produced by other American states may be used to award contracts for the state of Iowa provided that the award is within the soliciting state's scope of work.

Selection criteria

The selection process is designed to quantify the relative importance and value of proposed initiatives based on agency's and group's requirements. Each member ranks each proposed project and the most useful projects are chosen for inclusion in the annual workplan.

The six selection criteria used to assess individual projects are as follows:

1. ***Value and sustainability of results and efforts (0 - 25 points).*** This is the most important criteria because it rates the value and usefulness of the project.
2. ***Suitability to ENTERPRISE (0 - 20 points).*** This criteria is meant to determine whether or not this is an appropriate project for ENTERPRISE to pursue based on its

goals and objectives and consistency with group needs.

3. ***Project feasibility (0 - 15 points).*** Is the project, in total, one that can be implemented and seen through to completion?
4. ***Validity of approach (0 - 15 points).*** Is the methodology logical and does it include all of the proper elements for a complete project?
5. ***Cost realism (0 - 15 points).*** Does the anticipated cost for the proposed project seem reasonable and appropriate to ENTERPRISE?
6. ***Timeliness of project (0 - 10 points).*** To what degree is the proposed project timely to the ENTERPRISE consortium? Is it appropriate to be undertaken at this time?

Once the individual agencies rank the proposed projects, the Program Administrator assimilates the information, and identifies the contenders by their rankings.

When the final five or six project descriptions have been expanded into workscopes, they go through a final ranking process by the Board. While five or six projects may be included in the annual workplan they do not necessarily receive full or even partial funding. The Board attempts to fully fund the highest ranked projects. If there are additional funds, the Board allocates them to the remaining projects. This allocation is normally based on a project's ranking and its need for initial seed money to further develop and expand the concept and scope.

Each agency is afforded the opportunity to choose not to participate in a project. This decision means that the nonparticipating agency does not take part or fund an effort with which other agencies may choose to proceed. The lack of allocation of funding by any one agency does not prevent projects from still being undertaken if considered important enough, and sufficiently highly ranked by the other participants.

Project Management

Technical committees serve to manage projects from a technical direction standpoint. The Management Consultant provides technical support to the committees on an as-needed basis. The Program Administrator serves as the contract manager and is responsible for all specific and performance-related contract compliance.

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Exhibit 3.5: ..... Self-supporting and Guyed Towers
Exhibit 3.6: ..... Cellular Tower on ROW
Exhibit 3.7: ..... Typical Illustrative Site Plan
Exhibit 3.8: ..... Maryland SHA Tower Siting Guidelines



Tower Cost & Design Factors

Tower Costs

This section presents typical tower costs for monopoles, self-supporting towers, and guyed towers. Cost estimates presented below represent a general range; actual tower costs will depend upon a number of location-specific variables, as detailed in the following section. Exceptional circumstances for any particular variable may cause costs to far exceed this general range. Costs are illustrated for monopole and self-supporting towers separately.[38] These figures do not include costs associated with the installation of a wireless carrier's technology (antenna, equipment buildings or boxes, etc.).

Monopole

Installation and construction costs for a typical monopole tower usually range between $35,000 and $70,000. The cost of the tower alone (not including installation costs) varies from $180 to $220 per foot. The method of erection (direct embedded versus foundation) will not cause a substantial difference in overall costs.

Self-supporting

Typical installation and construction costs for self-supporting towers will range from $60,000 to $130,000, with the self-supporting tower itself costing between $115 and $150 per foot (this figure only refers to the steel tower and does not include costs associated with installation). Significantly, the cost associated with the construction of a self-supporting steel tower is generally less than that required for a monopole tower, yet the overall cost is often higher because of the costs associated with the tower's foundation and installation labor requirements.

Impact of Location-Specific Variables on Tower Costs[39]

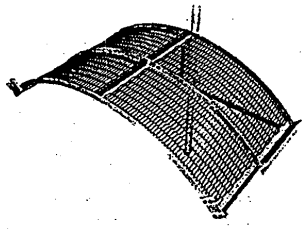
The physical location of towers will significantly impact overall cost. Industry standards and local requirements applicable to tower construction are primary factors. The industry standard most commonly followed when building and installing towers is the ANSI/TIA/EIA – 222 – F industry standard (often referred to as EIA

[38] The data provided here come from interviews with tower manufacturing and installation companies.

[39] The information presented below, with the exception of "local standards," relies heavily on the EIA 222 – F industry standards.

Microwave Antenna Ice Shields P/F

Ice Shields are designed to protect microwave antennas from damage caused by falling ice. Each Ice Shield mounts to the top of a 4-1/2" (114.3mm) OD antenna mounting pipe and additional stability is provided by #7 E.H.S. cable (3/8" (9.5mm) wire rope) anchored to the tower. To facilitate this anchoring, seven 5/8" x 12" (15.9mm x 0.3m) turnbuckles and 200' (61.0m) of E.H.S. #7 cable (3/8" (9.5mm) wire rope) are included. Several versions of Ice Shields are available to accommodate microwave antennas ranging in size from 4' to 12' (1.2m to 3.7m) in diameter.



App.: Antenna Protection
Size: For 4' (1.2m) to 12' (3.7m) - 5 versions
Design: Grated shield for microwave antennas
Feature: Complete kitted solution
Mounts to: 4-1/2" (114.3mm) OD pipe
Material: Hot dip galv. steel
Incl.: Shield, anchor wire, hardware
Order Sep.: 4-1/2" OD (114.3mm) pipe mount

Part #	Description	Price US$ Kit Qty.	Wt. lbs (Wt. kg)
MT-680	Ice Shield for 4' (1.2m) antennas	1875.00 Each	380.0 (172.5)
MT-681	Ice Shield for 6' (1.8m) antennas	2295.00 Each	636.0 (288.7)
MT-682	Ice Shield for 8' (2.4m) antennas	2540.00 Each	831.0 (377.3)
MT-683	Ice Shield for 10' (3.0m) antennas	2755.00 Each	954.0 (433.1)
MT-684	Ice Shield for 12' (3.7m) antennas	2935.00 Each	1370.0 (622.0)

Site Sign Mount

The Site Sign Mount provides a secure mounting solution for site warni signs. The Site Sign Mount accommodates 12" x 18" (0.3m x 0.5m) signs v mounting tabs which are bent back in the field during installation. Tl versatile design of this mount features slots which are used in conjunctic with round member adaptors or banding strap for attachment to suppo members. This unique feature allows the Site Sign Mount to be secured t vertical pipes, horizontal pipes, monopoles, fences, or other structures. Tw round member adaptors are included which accommodate 2" to 1((50.8mm to 254.0mm) round members. The Site Sign Mount is manufa tured from pre-galvanized steel for maximum corrosion protection.



Part #	Description	Price US$ Kit Qty.	Wt. lbs (Wt. kg)
SM-S	Site Sign Mount	45.00 Each	2.0 (0.9)

The Waveguide Bridge Components section of this Buyers Guide contains a wide variety of essential solutions which can be applied to support and protect horizontal runs of coaxial cables in virtually any application.

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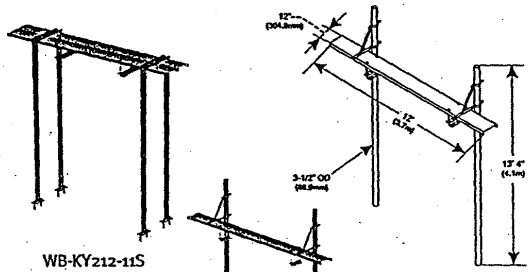
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Waveguide Bridge Components

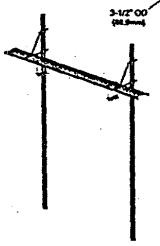
Safety Grated Waveguide Bridge Kits

Safety Grated Waveguide Bridge Kits provide a complete bundled solution which supports horizontal runs of coaxial cable and waveguide while keeping them free from damage. Each kit includes Waveguide Bridge Channel, support brackets, Pipe Columns, Trapeze Kits, and all necessary installation hardware. The Safety Grated Waveguide Bridge Kits incorporate 12' (3.7m) long Safety Grated Waveguide Bridge Channel which features a serrated, open diamond-shaped grating pattern. The kits are offered in either 12"- or 24" (0.3m or 0.6m)-wide versions to suit specific coax capacity requirements. The 12" (0.3m)-wide versions are supported by two 3-1/2" (88.9mm) OD Pipe Columns and pipe leg channel support brackets, while the 24" (0.6m)-wide kits include four 3-1/2" (88.9mm) OD Pipe Columns with Pipe Heads and Double Pipe Support Channel Kits. The Safety Grated Waveguide Bridge Kits are available with either 13'-4" (4.1m)-long direct burial posts for embedment in concrete, or 10'-6" (3.2m) base shoe posts with wedge anchors. Two single-rung Trapeze Kits are included to provide secure support for transmission lines underneath the bridge channel. The unique Z-shaped design of the Trapeze Kits allows easy field expansion, and permits coax to be secured on both the top and bottom of the rung. The 12" (0.3m)-wide Trapeze Kit accommodates seven runs of coax using Snap-In, Butterfly, or Clip Hangers, while the 24" (0.6m)-wide version supports fourteen runs. To form longer runs, multiple Safety Grated Waveguide Bridge Kits can be joined together with splice kits, which must be purchased separately. A complete selection of accessories is available for use with the Safety Grated Waveguide Bridge Kits. All major components are hot-dip galvanized to ensure long-term performance in extreme environmental conditions.



WB-KY212-11S

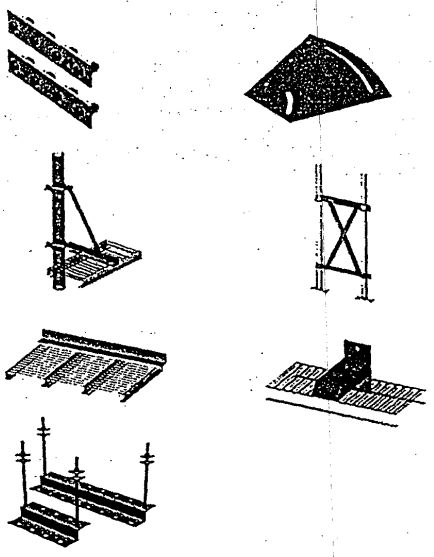
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WB-KY112-13B

Part #	Description	Price US$ Kit Qty.	Wt. lbs (Wt. kg)
WB-KY112-11S	Safety Grated Waveguide Bridge Kit, 12" x 12' (0.3m x 3.7m) w/ two 10'-6" (3.2m) base shoe posts	530.00 Each	230.0 (104.4)
WB-KY112-13B	Safety Grated Waveguide Bridge Kit, 12" x 12' (0.3m x 3.7m) w/ two 13'-4" (4.1m) burial posts	465.00 Each	290.0 (131.7)
WB-KY212-11S	Safety Grated Waveguide Bridge Kit, 24" x 12' (0.6m x 3.7m) w/ four 10'-6" (3.2m) base shoe posts	1090.00 Each	672.0 (305.1)
WB-KY212-13B	Safety Grated Waveguide Bridge Kit, 24" x 12' (0.6m x 3.7m) w/ four 13'-4" (4.1m) burial posts	965.00 Each	680.0 (308.7)

Safety Grated Waveguide Bridge Components



Part #	Description	Price US$ Kit Qty.	Wt. lb (Wt. k
Splices and Transitions for Grated Waveguide Bridge			
WS-K400	Straight Splice for Safety Grated Channel, 24" (0.6m)	24.50 Each	7.0 (3.2)
MT-F504	Adjustable Splice	15.00 Each	5.7 (2.6)
Support Components for Grated Waveguide Bridge			
WB-ULB12-5	Universal Pipe Leg Channel Support, 12" (0.3m) wide, 2-3/8" to 5" OD (60.3mm to 127.0mm OD) legs	60.00 Each	55.0 (25.0)
WB-ULB12-9	Universal Pipe Leg Channel Support, 12" (0.3m) wide, 4" to 9" OD (101.6mm to 228.6mm OD) legs	70.00 Each	55.0 (25.0)
WB-ULB24-5	Universal Pipe Leg Channel Support, 24" (0.6m) wide, 2-3/8" to 5" OD (60.3mm to 127.0mm OD) legs	65.00 Each	56.0 (25.4)
WB-ULB24-9	Universal Pipe Leg Channel Support, 24" (0.6m) wide, 4" to 9" OD (101.6mm to 228.6mm OD) legs	75.00 Each	56.0 (25.4)
MT-353	X-Bracing Kit, 24" (0.6m)	96.00 Each	42.0 (19.1)
MF-511	Wall Support Angle, Single or Double	11.00 Each	11.5 (5.2)
MF-506	Wall Mount Bracket	32.00 Each	7.7 (3.5)
Miscellaneous Components for Grated Waveguide Bridge			
MT-357-12	Trapeze Kit, 12" (0.3m) wide	18.00 Each	3.0 (1.4)
MT-357-24	Trapeze Kit, 24" (0.6m) wide	25.00 Each	6.0 (2.7)

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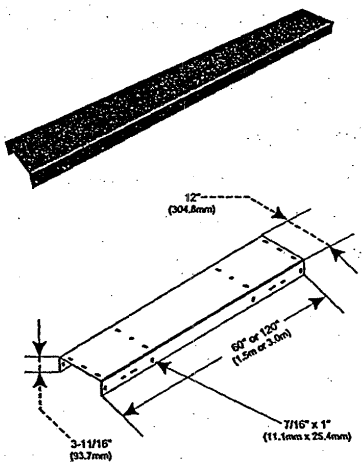
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Waveguide Bridge Components

Solid Waveguide Bridge Channels (P)(F)

Solid Waveguide Bridge Channels support horizontal runs of coaxial cable and waveguide while providing the highest degree of protection from hazards such as falling ice. The channel is slotted at regular intervals to accept standard 3/8" or 10mm hardware, presenting a convenient means to attach coax support hardware such as Cluster Brackets or Coax Support Blocks. Multiple sections of Solid Waveguide Bridge Channel can be spliced together to create longer runs or to accommodate bends. A full selection of support components are available to secure the channel in virtually any application. The Solid Waveguide Bridge Channels are manufactured from hot-dip galvanized 11-gauge (3.0mm) steel to provide long-term performance in environmental extremes. Installation hardware must be purchased separately to accommodate specific application requirements.



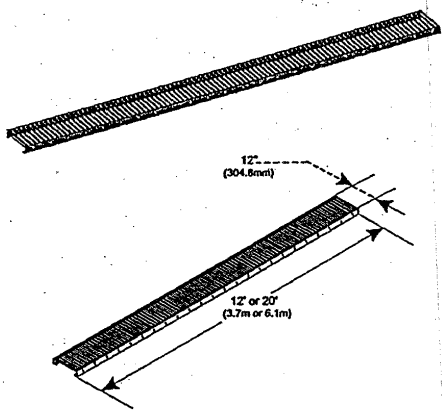
App.: Raw Land
Size: 12" (0.3m) wide
Design: Solid 11-gauge (3.0mm) bridge
Feature: Robust protection

Mounts to: —
Material: Hot dip galv. steel
Incl.: Bridge
Order Sep.: Posts and accessories

Part #	Description	Price US$ Kit Qty.	Wt. lbs (Wt. kg)
MT-F502	Solid Waveguide Bridge Channel, 12" x 5' (0.3m x 1.5m)	46.00 Each	41.0 (18.6)
MT-F501	Solid Waveguide Bridge Channel, 12" x 10' (0.3m x 3.0m)	82.00 Each	82.0 (38.6)

Grated Waveguide Bridge Channels (F)

Grated Waveguide Bridge Channels provide support for horizontal runs of coaxial cable and waveguide, while keeping it free from damage caused by hazards such as falling ice. The grated design presents a convenient means to attach coax support hardware, such as Cluster Brackets or Coax Support Blocks. Multiple sections of Grated Waveguide Bridge Channel can be spliced together to create longer runs or to accommodate bends. A full selection of support components are available to secure the channel in virtually any application. The Grated Waveguide Bridge Channels are manufactured from hot-dip galvanized 14-gauge (1.9mm) steel to provide long-term performance even in environmental extremes. Installation hardware must be purchased separately to accommodate specific application requirements.



App.: Raw Land
Size: 12" (0.3m) wide
Design: Slot-grated 14-gauge (1.9mm)
Feature: Versatile solution

Mounts to: —
Material: Hot dip galv. steel
Incl.: Bridge
Order Sep.: Posts and accessories

Part #	Description	Price US$ Kit Qty.	Wt. lbs (Wt. kg)
MT-351	Grated Waveguide Bridge Channel, 12" x 12' (0.3m x 3.7m)	110.00 Each	79.0 (35.9)
MT-350	Grated Waveguide Bridge Channel, 12" x 20' (0.3m x 6.1m)	185.00 Each	132.0 (60.0)

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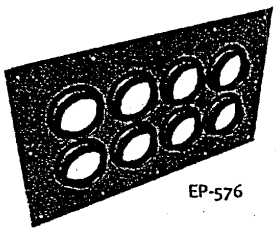
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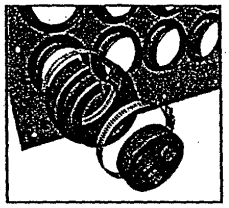
Coax Support Components

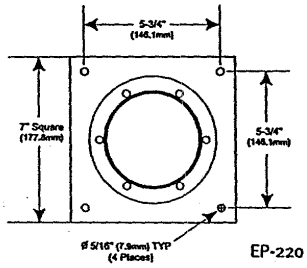
4" (101.6mm) Feed-thru Entry Panels

Aluminum Feed-thru Entry Panels enable multiple coax runs to enter buildings and shelters. These rugged panels support the coax at the entry point and prevent moisture from entering the building. Each panel features 4" (101.6mm) openings to accept boot assemblies. Each boot assembly must be fitted with a cushion to hold the coax in place. Feed-thru Entry Panels are offered with a broad selection of hole patterns and plate sizes to match your exact application. These entries can be used in both interior and exterior wall applications to create a neat and clean installation. Each Feed-thru Entry Panel includes a set of wall attachment hardware, including #14 x 1-1/2" (6.1mm x 38.1mm) stainless steel screws, finishing washers, and plastic anchors and is powder coated to ensure long term integrity and provide appealing aesthetics. Sealing caps for all openings are also included. Boots and cushions, or boot assembly kits must be purchased separately to accommodate specific coax requirements.



EP-576





EP-220

Part #	Description	Price US$ Kit Qty.	Wt. lbs (Wt. kg)
EP-220	Entry Panel, 1 port, 1 x 1, Standard	21.00	1.0
		Each	(0.5)
EP-574	Entry Panel, 1 port, 1 x 1, Compact	21.00	0.6
		Each	(0.3)
EP-1448	Entry Panel, 2 port, 1 x 2	41.00	2.3
		Each	(1.0)
EP-1635	Entry Panel, 3 port, 1 x 3	58.00	2.9
		Each	(1.3)
EP-575	Entry Panel, 4 port, 1 x 4	74.00	3.5
		Each	(1.6)
EP-1199	Entry Panel, 4 port, 2 x 2, Standard	74.00	4.2
		Each	(1.9)
EP-1650	Entry Panel, 4 port, 2 x 2, Compact	74.00	4.0
		Each	(1.8)
EP-1449	Entry Panel, 6 port, 2 x 3	96.00	6.1
		Each	(2.8)
EP-1477	Entry Panel, 6 port, 1 x 6	96.00	6.0
		Each	(2.7)
EP-576	Entry Panel, 8 port, 2 x 4, Standard	128.00	6.1
		Each	(2.8)
Ep-1338	Entry Panel, 8 port, 2 x 4, Large	128.00	6.0
		Each	(2.7)
EP-1033	Entry Panel, 9 port, 3 x 3	140.00	7.1
		Each	(3.2)
EP-1297	Entry Panel, 10 port, 2 x 5	159.00	7.4
		Each	(3.4)
EP-1118	Entry Panel, 12 port, 3 x 4, Standard	184.00	8.5
		Each	(3.9)
EP-1334	Entry Panel, 12 port, 3 x 4, Large	184.00	7.0
		Each	(3.2)
EP-1336	Entry Panel, 12 port, 2 x 6	184.00	9.2
		Each	(4.2)
EP-1447	Entry Panel, 16 port, 4 x 4	233.00	9.1
		Each	(4.1)
EP-1333	Entry Panel, 18 port, 3 x 6	257.00	13.0
		Each	(5.9)
EP-1861	Entry Panel, 20 port, 4 x 5	281.00	11.0
		Each	(5.0)
EP-1340	Entry Panel, 24 port, 4 x 6	328.00	15.8
		Each	(7.2)

App.: Entry Solutions
Size: 19 sizes
Design: Entry plates with round ports
Feature: Easy to install solution

Mounts to: Walls
Material: Aluminum
Incl.: Port, caps, wall hardware
Order Sep.: 4" (101.6mm) Boot Assemblies

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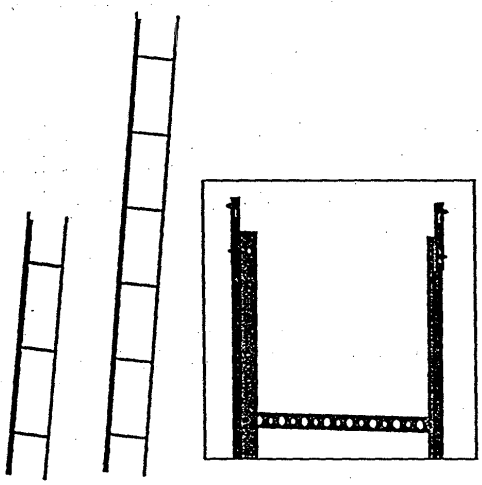
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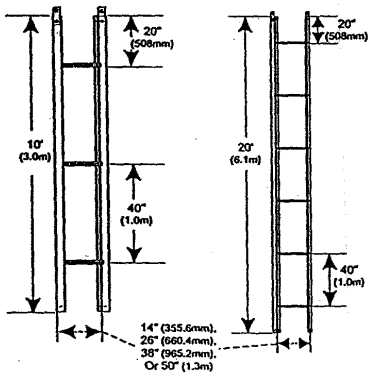
Coax Support Components

Cable Ladders

Cable Ladders provide secure support for multiple runs of coaxial cable along the face of a tower or other support structure. The ladder is available in 10' (3.0m) and 20' (6.1m) lengths to suit your exact site requirements. Each ladder consists of 2" (50.8mm) hot dip galvanized steel angle rails with interconnecting splice plates to allow multiple sections to be joined together. The Cable Ladder is available in four rung widths, each pre-punched with 7/16" (11.1mm) and 3/4" (19.1mm) holes to accommodate any available hanger style. Each rung incorporates a unique step-edge to interlock with the side rails, simplifying assembly and installation by preventing parallel shifting. The 10' (3.0m) - long Cable Ladder includes three ladder rungs, while the 20' (6.2m) - long version includes six rungs. Hardware kits for attachment to round or angle members must be purchased separately. Universal Cable Ladder Kits are also available which include the ladder and tower attachment hardware in one convenient package.

Part #	Description	Price US$ Kit Qty.	Wt. lbs (Wt. kg)
10' (3.0m) Cable Ladder			
CL-0410-NH	Cable Ladder, 14" wide x 10' long (355.6mm x 3.0m). 4-hole rung. Attachment hardware not included.	76.00 Each	57.0 (25.9)
CL-0810-NH	Cable Ladder, 26" wide x 10' long (660.4mm x 3.0m). 8-hole rung. Attachment hardware not included.	82.00 Each	60.0 (27.2)
CL-1210-NH	Cable Ladder, 38" wide x 10' long (1.0m x 3.0m). 12-hole rung. Attachment hardware not included.	88.00 Each	65.0 (29.5)
CL-1610-NH	Cable Ladder, 50" wide x 10' long (1.3m x 3.0m). 16-hole rung. Attachment hardware not included.	94.00 Each	68.0 (30.8)
20' (6.0m) Cable Ladder			
CL-0420-NH	Cable Ladder, 14" wide x 20' long (355.6mm x 6.0m). 4-hole rung. Attachment hardware not included.	114.00 Each	108.0 (48.9)
CL-0820-NH	Cable Ladder, 26" wide x 20' long (660.4mm x 6.0m). 8-hole rung. Attachment hardware not included.	126.00 Each	115.0 (52.2)
CL-1220-NH	Cable Ladder, 38" wide x 20' long (1.0m x 6.0m). 12-hole rung. Attachment hardware not included.	138.00 Each	120.0 (54.5)
CL-1620-NH	Cable Ladder, 50" wide x 20' long (1.3m x 6.0m). 16-hole rung. Attachment hardware not included.	150.00 Each	127.0 (57.6)





App.: Lattice towers
Size: 10' (3.0m) and 20' (6.0m) in 4 widths
Design: Angle rails w/ bolt-on channel rungs
Feature: Accepts any hanger style

Mounts to: —
Material: Hot dip galv. steel
Incl.: Ladder and splice plates
Order Sep.: Attachment kits

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Leesburg, VA 20175

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March 14, 2003

SOIL ANALYSIS

Mr. Robin Riviere
L. E. Peabody & Associates
1501 Duke Street
Alexandria, Virginia 22314

Project: **Telecommunications Towers, Various Sites in the Mid-West, Northern New Mexico, and Southern Colorado (Our P3122028)**

Dear Robin:

Schnabel Engineering North, LLC (Schnabel) is pleased to submit this preliminary cost estimate for professional geotechnical and environmental engineering services for the above referenced project. This cost estimate has been prepared in response to your request and is based on our understanding of the project as discussed on March 13, 2003.

Project Description

We understand that self-supported towers and associated support buildings are planned for various sites in the Mid-West, Northern New Mexico, and Southern Colorado. The self-supported three- or four-leg towers may extend to a height of up to 200 feet.

Scope of Services and Project Fees

A geotechnical engineering analysis and report will be required for each tower site to present findings and recommendations for support of the tower and associated support building. To complete the subsurface investigation, with rock coring if necessary, 3-point resistivity testing, and prepare the geotechnical engineering report we recommend a cost estimate of **$3,000**.

An environmental site assessment (ESA) may also be prepared for each tower site. These studies should be performed in accordance with ASTM E-1527, "Standard Practice for Environmental Site Assessment: Phase I Environmental Site Assessment Process". To complete the records review, site reconnaissance, interviews, and findings report we recommend a cost estimate of **$3,000**.

Please note that the lump sum fees presented herein are preliminary and may be subject to change depending on the actual number and location of the towers. We would be pleased to provide a revised cost estimate and formal proposal once specific site details are known.

4684

We appreciate the opportunity to submit this cost estimate and look forward to working with you on this project. Please call us if clarification of this cost estimate is required.

Sincerely,

SCHNABEL ENGINEERING NORTH, LLC

Jeremy L. Mydlinski, P.E.
Senior Engineer

JLM/WJR/jlm/sam
G:\Proposal\Geo\Seapro.3\P3122028-Tag Way.doc

Loudoun County, Virginia
Department of Building and Development
1 Harrison Street, SE, P.O. Box 7000
Leesburg, VA 20177-7000
Administration: (703) 777-0397 Metro 478-8432 Fax (703) 771-5215
Inspections Information Only: (703) 777-0220 Metro 478-8414 Fax: (703) 771-5522

Revised July 1, 2002

LAND DEVELOPMENT APPLICATION FEE SCHEDULE

APPLICATION TYPE	FEE SCHEDULE	NOTES
Appeal (APPL)	$350.00	
As-Built Submissions	$300.00	Received for CPAP and STPL applications
Boundary Line Adjustment (BLAD)	$435.00	
Certificate of Appropriateness (CAAP)	$45.00	
Commission Permit (CMPT)	$770.00	
Hardship Petition (HSHP)	$100.00	
Comprehensive Plan Amendment (CPAM)	$1,600.00 for the first 200 acres + $7.50 per acre for each acre over 200	Calculated to the nearest one-hundredth of an acre (e.g., 100.15 acres).
Rezoning (ZMAP) Rezoning to Planned Development – Rural Village (PDRV) Zoning District	$15,730.00 for the first 200 acres + $80.00 per acre for each acre over 200 $15,730.00 for the first 200 acres + $80.00 per acre for each acre over 200 contained in the village center (total acreage minus the acreage contained in conservancy lots)	Calculated to the nearest one-hundredth of an acre (e.g., 100.15 acres).
Zoning Concept Plan Amendment (ZCPA) or Proffer Amendment (ZCPA)	$7,865.00	
Zoning Conversion (ZCON)	$2,530.00	
Zoning Ordinance Modification (ZMOD)	$7,865.00	
Special Exception (SPEX)	Category 1: $460.00 Category 2: $2,530.00 Category 3: $4,830.00 Category 4: $7,360.00	See "Special Exception Fee Schedule" for appropriate category.
Construction Plans and Profiles (CPAP) 1st submission: Additional submissions:	 $1,725.00 + .00075 x Public Improvements Cost $850.00 (flat fee)	***NOTE** **1st and 2nd submission fee to be paid concurrent with the ESI submission.**

APPLICATION TYPE	FEE SCHEDULE	NOTES
Abbreviated Floodplain Alteration (Type I) (FPAL)	$173.00	Normally a driveway crossing the floodplain.
Floodplain Alteration (Type II) (FPAL)	$2,600.00+ $100.00 per cross-section over eight	
Floodplain Study 0-8 cross sections:	$1,600.00 + $100.00 per cross section for each cross section over 8	
FSM Waiver Requests	$250.00	
Grading Permits: Residential Subdivisions Ifrastructure Applications (Commercial)	 $450.00 + $75.00 per acre + $20.00 per lot $450.00 + $75.00 per acre	
Overlot Grading Plans	$150.00 per lot	
Site Plans (STPL):	$4,800.00 + $95.00 per acre for 1st and 2cnd submission. $900.00 per submission thereafter.	Calculated to the nearest one-hundredth of an acre (e.g., 100.15 acres). Use *disturbed* acreage to calculate fee, but include total acreage and disturbed acreage on the application form.
Site Plan Amendment (SPAM)	$1,200.00	
Site Plan Revision	$2,300.00	
Rural Site Plan	$2,300.00	
Soil Map Review/Mapping	$850.00 for first 30 acres and $25.00 per acre thereafter	
Subdivision Exception (SBEX)	$900.00	
Family Subdivision (SBFM)	$1,730.00 + $150.00 per each new lot created	
Preliminary Subdivision (SBPL) Non-Residential Rural Residential (septic and well) Urban Residential (public sewer and water Subdivision Extension	 $4,158.00 + $120.00 per lot for each of the first 10 lots + $30.00 per lot for each lot over 10 $2,158.00 + $120.00 per lot for each of the first 20 lots + $30.00 per lot for each lot over 20 $2,458.00 + $120.00 per lot for each of the first 20 lots + $30.00 per lot for each lot over 20 $200.00	

APPLICATION TYPE	FEE SCHEDULE	NOTES
Record Subdivision (SBRD) Non-Residential	$3,844.00 + $280.00 per lot for each of the first 10 lots + $30.00 for each lot over 10	
Rural Residential (septic and well)	$1,764.00 + $110.00 per lot for each of the first 20 lots + $30.00 per lot for each lot over 20	
Urban Residential (public sewer and water)	$1,764.00 + $110.00 per lot for each of the first 20 lots + $30.00 per lot for each lot over 20	
Preliminary/Record Subdivisions (SBPR)		
Non-Residential	$5,168.00 + $350.00 per lot	
Rural Residential (septic and well)	$1,638.00 + $350.00 per lot	A preliminary/record subdivision is not an option in an A-3, A-10, or R-1 Zoning District.
Urban Residential (public sewer and water)	$1,638.00 + $350.00 per lot	
Subdivision Waiver (SBWV)	$2,180.00	
Low-Density Subdivision Waiver (SBLD)	$2,180.00	
Variance	$350.00	
Sign Permits	$25.00	
Zoning Permits	$50.00	

Approved by the Board of Supervisors June 17, 2002

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CTC Costs

REDACTED

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EB

SERVICE DATE – May 12, 2000

This decision will be printed in the bound volumes of
the STB printed reports at a later date.

SURFACE TRANSPORTATION BOARD

DECISION

STB Docket No. 42022

FMC WYOMING CORPORATION AND FMC CORPORATION
v.
UNION PACIFIC RAILROAD COMPANY

STB Ex Parte No. 346 (Sub-No. 29A)

RAIL GENERAL EXEMPTION AUTHORITY—PETITION OF AAR
TO EXEMPT RAIL TRANSPORTATION OF SELECTED COMMODITY GROUPS

PETITION FOR PARTIAL REVOCATION OF EXEMPTION FOR COKE

Decided: May 10, 2000

The Board addresses a complaint challenging the reasonableness of 16 rates. The Board finds that the defendant railroad has market dominance over the transportation involved with respect to 15 of the rates, but not with respect to the rate applicable to the transportation of coke. The Board further finds that the 15 rates that are subject to maximum rate regulation are unreasonably high. Maximum reasonable rates are prescribed and reparations are ordered.

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4. Snow Fences

Snow fences protect hundreds of miles of UP's ROW in the high country of Wyoming, western Nebraska, and eastern Idaho from blowing and drifting snow. UP included a total of $16,948,800 (at a unit cost of $10.70 per linear foot) for snow fencing for the ORR. FMC questions UP's cost estimate, which was based upon the recollections of a UP employee. However, rather than offering any evidence of its own, FMC merely arbitrarily reduced UP's cost estimate by two-thirds. In the absence of any support for FMC's reduction or any independent evidence on the cost of snow fencing, we use UP's evidence.

5. Signs

The parties agree on the total cost of signs that would be needed by the ORR.

H. Signal and Communication Systems

Table C-5

Signals and Communication ($ millions)			
	UP	**FMC**	**STB**
1. Centralized Traffic Control	$312.1	$307.7	$312.1
2. Power for Signals	7.1	1.7	2.4
3. Electric Locks	13.8	1.0	1.7
4. Dispatching Center	3.9	3.7	3.7
5. Electrode Regenerative Repeaters	15.3	15.3	15.3
6. Future CTC Needs	29.2	0.0	0.0
7. Defect Detectors	14.7	14.6	14.7
8. Slide Fences	28.9	0.0	28.9
9. Wind Detectors	0.3	0.0	0.3
10. Microwave System	104.4	78.5	78.5
11. AEI System	6.4	0.8	5.4
12. Railroad Crossings	2.0	2.0	2.0
13. Switch Heaters	24.5	26.0	24.5
Totals	**$562.7**	**$451.3**	**$489.5**

1. Centralized Traffic Control

With the exception of costs for the line serving the Powder River Basin coal field, the parties agree on the cost for a centralized traffic control (CTC) system. UP estimated that the cost for the Powder River Basin CTC would be $53.3 million. FMC estimated that the cost would be $48.8 million, but FMC failed to provide any support for its reduced estimate.[180] Because the burden of proof for initially supporting its estimate is on FMC, we use UP's cost for this segment of line.

2. Electric Power for Signals

The parties disagree on the number and unit cost of electrical connections that would be needed for signals. UP claims that the average installation cost would be $3,000 per location and that these costs would need to be incurred at 2,380 locations. FMC argues that UP's estimate is unsupported and conflicts with the connection cost of $1,000 per signal contained in UP's workpapers.[181] FMC also claims that many of the signals included by UP do not require power.

It is true that UP did not specify or document its source for a connection cost of $3,000 per signal, and included a cost of $1,000 per connection in its workpapers. However, FMC fails to document how it developed its lower count of signals needing power. Thus, we use the number of connections proposed by UP and the $1,000 per connection average cost figure, for a total cost of $2,380,000.

3. Electric Locks

Electric locks are safety devices used on hand-thrown main line switches to prevent trains from accidentally being switched from the main line. UP would have the ORR install electric locks to prevent local operations from interfering with main line trains. UP contends that 206 switches would need locks, at a cost of $65,728 per lock. FMC agrees that electric locks would be needed, but only at 125 locations. Moreover, FMC states that UP's cost figures contradict the $8,000 per lock figure that UP furnished during discovery.

We use FMC's switch lock costs, which were developed from UP information provided in discovery. However, we find no justification on the record for FMC's claim that only 125 locks .

[180] FMC Reply Pattison Workpaper 4831 indicates that a spreadsheet was developed with this cost, but we are unable to find the data.

[181] UP Workpaper RG/AS 392.

would be needed. In the absence of support for FMC's evidence, we use UP's number of required locks.

4. Dispatching Center

The parties agree that the ORR would need a dispatching center. UP included unit costs of $686.75 per track mile, based on its experience installing a dispatching system at UP's Harriman dispatching center. Applying this unit cost to the ORR's signaled track miles, UP developed a total cost of $3.9 million.

FMC accepted UP's unit costs, but deducted mileage for track sections and industrial leads that do not interface electronically with the dispatch center. FMC estimated that the dispatching center would cost $3,710,500.

We use FMC's evidence. Tracks that are not connected to the dispatch center should not be included in the development of costs for this item.

5. Electrode Regenerative Repeaters

The parties agree on the cost of the circuitry and repeaters, totaling $15.3 million.

6. Future CTC Requirements

UP maintains that the ORR's CTC system should be built to accommodate all future traffic. FMC asserts that the CTC system it proposes for the ORR could handle anticipated traffic levels over the 20-year SAC analysis period.

The parties configured the ORR to handle the traffic levels which the ORR would encounter during the 20-year analysis period. Because the ORR has sufficient track capacity to provide service during the 20-year period, and UP has not shown why additions are needed, we will not include additional costs for CTC to accommodate future traffic levels.

7. Defect Detectors

UP states that it agrees with the unit cost and number of hot box detectors proposed by FMC. However, UP's cost estimate is slightly higher ($14,734,000 compared to $14,623,800). In light of the indicated agreement, we accept the lower cost estimate.

III - F - 7

Building and Facilities

RSMeans®

Square Foot Costs

23rd Annual Edition

- Residential
- Commercial
- Industrial
- Institutional

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2002

4697



Costs per square foot of floor area

Exterior Wall	S.F. Area	2000	4000	6000	8000	10000	12000	14000	16000	18000
	L.F. Perimeter	180	260	340	420	500	580	586	600	610
Concrete Block	Wood Joists	108.15	92.90	87.80	85.30	83.80	82.75	80.20	78.45	77.05
	Steel Joists	107.75	92.95	88.00	85.55	84.10	83.10	80.55	78.85	77.45
Poured Concrete	Wood Joists	118.35	100.45	94.50	91.55	89.75	88.55	85.20	82.95	81.10
	Steel Joists	118.75	100.85	94.90	91.90	90.15	88.95	85.60	83.35	81.50
Stucco	Wood Frame	117.30	99.70	93.85	90.95	89.20	88.00	84.75	82.50	80.75
Insulated Metal Panels	Steel Frame	105.30	91.85	87.40	85.15	83.85	82.95	80.75	79.25	78.05
Perimeter Adj., Add or Deduct	Per 100 L.F.	17.10	8.60	5.70	4.25	3.40	2.85	2.45	2.15	1.90
Story Hgt. Adj., Add or Deduct	Per 1 Ft.	1.25	.95	.80	.75	.70	.70	.60	.55	.45
For Basement, add $20.70 per square foot of basement area										

The above costs were calculated using the basic specifications shown on the facing page. These costs should be adjusted where necessary for design alternatives and owner's requirements. Reported completed project costs, for this type of structure, range from $43.90 to $131.80 per S.F.

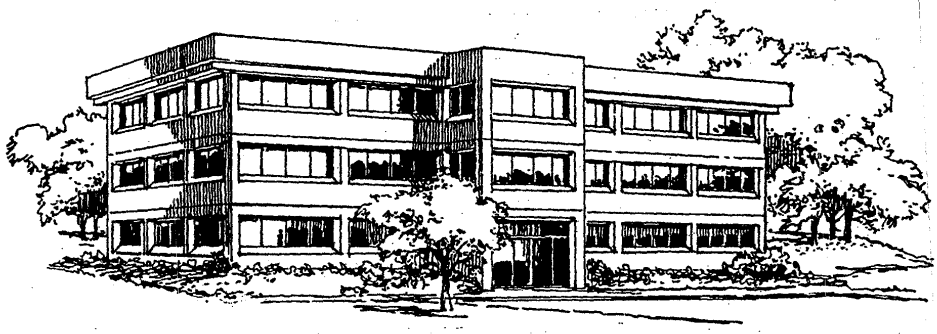
Common additives

Description	Unit	$ Cost
Air Compressors		
Electric 1-1/2 H.P., standard controls	Each	1050
Dual controls	Each	1225
5 H.P. 115/230 Volt, standard controls	Each	2750
Dual controls	Each	2850
Product Dispenser		
with vapor recovery for 6 nozzles	Each	16,500
Hoists, Single post		
8000# cap., swivel arm	Each	6500
Two post, adjustable frames, 11,000# cap.	Each	9175
24,000# cap.	Each	13,700
7500# Frame support	Each	7625
Four post, roll on ramp	Each	7075
Lockers, Steel, single tier, 60" or 72"	Opening	131 - 227
2 tier, 60" or 72" total	Opening	74 - 125
5 tier, box lockers	Opening	42 - 62
Locker bench, lam. maple top only	L.F.	19.50
Pedestals, steel pipe	Each	63
Lube Equipment		
3 reel type, with pumps, no piping	Each	8725
Spray Painting Booth, 26' long, complete	Each	16,300

Model costs calculated for a 1 story building with 14' story height and 10,000 square feet of floor area

Garage, Repair

				Unit	Unit Cost	Cost Per S.F.	% Of Sub-Total
A. SUBSTRUCTURE							
1010	Standard Foundations	Poured concrete; strip and spread footings		S.F. Ground	1.47	1.47	16.7%
1030	Slab on Grade	6" reinforced concrete with vapor barrier and granular base		S.F. Slab	5.09	5.09	
2010	Basement Excavation	Site preparation for slab and trench for foundation wall and footing		S.F. Ground	1.18	1.18	
2020	Basement Walls	4' foundation wall		L.F. Wall	52	2.64	
B. SHELL							
	B10 Superstructure						
1010	Floor Construction	N/A		–	–	–	5.1%
1020	Roof Construction	Metal deck on open web steel joists		S.F. Roof	3.19	3.19	
	B20 Exterior Enclosure						
2010	Exterior Walls	Concrete block	*80% of wall*	S.F. Wall	8.05	4.51	10.4%
2020	Exterior Windows	Hopper type commercial steel	*5% of wall*	Each	314	.73	
2030	Exterior Doors	Steel overhead and hollow metal	*15% of wall*	Each	12.00	1.26	
	B30 Roofing						
3010	Roof Coverings	Built-up tar and gravel; perlite/EPS composite insulation		S.F. Roof	4.22	4.22	6.8%
3020	Roof Openings	Skylight		S.F. Roof	.01	.01	
C. INTERIORS							
1010	Partitions	Concrete block	*50 S.F. Floor/L.F. Partition*	S.F. Partition	5.05	1.01	7.1%
1020	Interior Doors	Single leaf hollow metal	*3000 S.F. Floor/Door*	Each	537	.18	
1030	Fittings	Toilet partitions		S.F. Floor	.13	.13	
2010	Stair Construction	N/A		–	–	–	
3010	Wall Finishes	Paint		S.F. Surface	10.45	2.09	
3020	Floor Finishes	90% metallic floor hardener, 10% vinyl composition tile		S.F. Floor	.80	.80	
3030	Ceiling Finishes	Gypsum board on wood joists in office and washrooms	*10% of area*	S.F. Ceiling	2.37	.24	
D. SERVICES							
	D10 Conveying						
1010	Elevators & Lifts	N/A		–	–	–	0.0%
1020	Escalators & Moving Walks	N/A		–	–	–	
	D20 Plumbing						
2010	Plumbing Fixtures	Toilet and service fixtures, supply and drainage	*1 Fixture/500 S.F. Floor*	Each	755	1.51	4.1%
2020	Domestic Water Distribution	Gas fired water heater		S.F. Floor	.24	.24	
2040	Rain Water Drainage	Roof drains		S.F. Roof	.80	.80	
	D30 HVAC						
3010	Energy Supply	Oil fired hot water, unit heaters		S.F. Floor	5.22	5.22	21.9%
3020	Heat Generating Systems	N/A		–	–	–	
3030	Cooling Generating Systems	Split systems with air cooled condensing units		S.F. Floor	8.07	8.07	
3050	Terminal & Package Units	N/A		–	–	–	
3090	Other HVAC Sys. & Equipment	Garage exhaust system		S.F. Floor	.34	.34	
	D40 Fire Protection						
4010	Sprinklers	Sprinklers, ordinary hazard		S.F. Floor	2.54	2.54	4.1%
4020	Standpipes	N/A		–	–	–	
	D50 Electrical						
5010	Electrical Service/Distribution	200 ampere service, panel board and feeders		S.F. Floor	.34	.34	8.2%
5020	Lighting & Branch Wiring	Fluorescent fixtures, receptacles, switches, A.C. and misc. power		S.F. Floor	4.58	4.58	
5030	Communications & Security	Alarm systems and emergency lighting		S.F. Floor	.11	.11	
5090	Other Electrical Systems	Emergency generator, 15 kW		S.F. Floor	.06	.06	
E. EQUIPMENT & FURNISHINGS							
1010	Commercial Equipment	N/A		–	–	–	15.6%
1020	Institutional Equipment	N/A		–	–	–	
1030	Vehicular Equipment	Hoists		S.F. Floor	9.75	9.75	
1090	Other Equipment	N/A		–	–	–	
F. SPECIAL CONSTRUCTION & DEMOLITION							
1020	Integrated Construction	N/A		–	–	–	0.0%
1040	Special Facilities	N/A		–	–	–	
G. BUILDING SITEWORK		N/A					
					Sub-Total	62.31	100%
	CONTRACTOR FEES (General Requirements: 10%, Overhead: 5%, Profit: 10%)				*25%*	15.58	
	ARCHITECT FEES				*8%*	6.21	
					Total Building Cost	84.10	



Costs per square foot of floor area

Exterior Wall	L.F. Perimeter	4000	8000	12000	16000	20000	35000	50000	65000	80000
		220	240	310	330	360	440	490	548	580
Face Brick with Concrete Block Back-up	Wood Joists	156.00	133.05	120.00	111.00	106.30	96.95	92.50	90.20	88.40
	Steel Joists	156.40	133.45	120.35	111.40	106.65	97.30	92.85	90.55	88.75
Glass and Metal Curtain Wall	Steel Frame	152.40	131.25	119.25	111.10	106.80	98.30	94.30	92.25	90.60
	R/Conc. Frame	156.40	135.30	123.25	115.15	110.80	102.35	98.30	96.25	94.65
Wood Siding	Wood Frame	128.75	110.85	100.65	94.00	90.40	83.45	80.20	78.55	77.25
Brick Veneer	Wood Frame	140.45	119.45	107.50	99.45	95.20	86.80	82.80	80.75	79.15
Perimeter Adj., Add or Deduct	Per 100 L.F.	25.70	16.05	10.70	8.05	6.40	3.70	2.55	2.00	1.60
Story Hgt. Adj., Add or Deduct	Per 1 Ft.	4.20	3.10	2.45	1.95	1.70	1.20	.90	.80	.65
For Basement, add $22.10 per square foot of basement area										

The above costs were calculated using the basic specifications shown on the facing page. These costs should be adjusted where necessary for design alternatives and owner's requirements. Reported completed project costs, for this type of structure, range from $43.55 to $168.50 per S.F.

Common additives

Description	Unit	$ Cost
Clock System		
20 room	Each	13,000
50 room	Each	31,500
Closed Circuit Surveillance, One station		
Camera and monitor	Each	1375
For additional camera stations, add	Each	750
Directory Boards, Plastic, glass covered		
30" x 20"	Each	575
36" x 48"	Each	1075
Aluminum, 24" x 18"	Each	440
36" x 24"	Each	555
48" x 32"	Each	780
48" x 60"	Each	1675
Elevators, Hydraulic passenger, 2 stops		
1500# capacity	Each	43,425
2500# capacity	Each	44,625
3500# capacity	Each	48,525
Additional stop, add	Each	3800
Emergency Lighting, 25 watt, battery operated		
Lead battery	Each	227
Nickel cadmium	Each	660

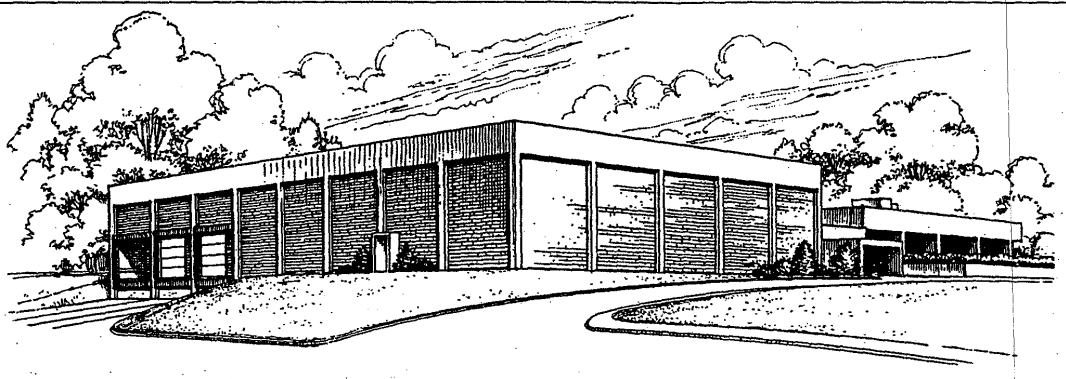
Description	Unit	$ Cost
Smoke Detectors		
Ceiling type	Each	151
Duct type	Each	405
Sound System		
Amplifier, 250 watts	Each	1675
Speaker, ceiling or wall	Each	147
Trumpet	Each	275
TV Antenna, Master system, 12 outlet	Outlet	238
30 outlet	Outlet	153
100 outlet	Outlet	145

Model costs calculated for a 3 story building with 12' story height and 20,000 square feet of floor area

Office, 2-4 Story

				Unit	Unit Cost	Cost Per S.F.	% Of Sub-Total
A. SUBSTRUCTURE							
1010	Standard Foundations	Poured concrete; strip and spread footings		S.F. Ground	5.04	1.68	5.4%
1030	Slab on Grade	4" reinforced concrete with vapor barrier and granular base		S.F. Slab	3.42	1.14	
2010	Basement Excavation	Site preparation for slab and trench for foundation wall and footing		S.F. Ground	1.09	.36	
2020	Basement Walls	4' foundation wall		L.F. Wall	49	1.11	
B. SHELL							
	B10 Superstructure						
1010	Floor Construction	Open web steel joists, slab form, concrete, columns		S.F. Floor	11.41	7.61	11.2%
1020	Roof Construction	Metal deck, open web steel joists, columns		S.F. Roof	3.96	1.32	
	B20 Exterior Enclosure						
2010	Exterior Walls	Face brick with concrete block backup	*80% of wall*	S.F. Wall	21	10.94	18.1%
2020	Exterior Windows	Aluminum outward projecting	*20% of wall*	Each	509	2.87	
2030	Exterior Doors	Aluminum and glass, hollow metal		Each	2088	.64	
	B30 Roofing						
3010	Roof Coverings	Built-up tar and gravel with flashing; perlite/EPS composite		S.F. Roof	4.53	1.51	1.9%
3020	Roof Openings	N/A		–	–	–	
C. INTERIORS							
1010	Partitions	Gypsum board on metal studs	*20 S.F. Floor/L.F. Partition*	S.F. Partition	6.78	2.71	22.6%
1020	Interior Doors	Single leaf hollow metal	*200 S.F. Floor/Door*	Each	537	2.69	
1030	Fittings	Toilet partitions		S.F. Floor	.93	.93	
2010	Stair Construction	Concrete filled metal pan		Flight	5075	1.78	
3010	Wall Finishes	60% vinyl wall covering, 40% paint		S.F. Surface	2.20	.88	
3020	Floor Finishes	60% carpet, 30% vinyl composition tile, 10% ceramic tile		S.F. Floor	5.29	5.29	
3030	Ceiling Finishes	Mineral fiber tile on concealed zee bars		S.F. Ceiling	3.71	3.71	
D. SERVICES							
	D10 Conveying						
1010	Elevators & Lifts	Two hydraulic passenger elevators		Each	69,600	6.96	8.7%
1020	Escalators & Moving Walks	N/A		–	–	–	
	D20 Plumbing						
2010	Plumbing Fixtures	Toilet and service fixtures, supply and drainage	*1 Fixture/1320 S.F. Floor*	Each	1716	1.30	2.1%
2020	Domestic Water Distribution	Gas fired water heater		S.F. Floor	.15	.15	
2040	Rain Water Drainage	Roof drains		S.F. Roof	.72	.24	
	D30 HVAC						
3010	Energy Supply	N/A		–	–	–	14.8%
3020	Heat Generating Systems	Included in D3030		–	–	–	
3030	Cooling Generating Systems	Multizone unit gas heating, electric cooling		S.F. Floor	11.80	11.80	
3050	Terminal & Package Units	N/A		–	–	–	
3090	Other HVAC Sys. & Equipment	N/A		–	–	–	
	D40 Fire Protection						
4010	Sprinklers	N/A		–	–	–	0.8%
4020	Standpipes	Standpipes and hose systems		S.F. Floor	.61	.61	
	D50 Electrical						
5010	Electrical Service/Distribution	1000 ampere service, panel board and feeders		S.F. Floor	2.89	2.89	14.4%
5020	Lighting & Branch Wiring	Fluorescent fixtures, receptacles, switches, A.C. and misc. power		S.F. Floor	7.99	7.99	
5030	Communications & Security	Alarm systems and emergency lighting		S.F. Floor	.57	.57	
5090	Other Electrical Systems	Emergency generator, 7.5 kW		S.F. Floor	.05	.05	
E. EQUIPMENT & FURNISHINGS							
1010	Commercial Equipment	N/A		–	–	–	0.0%
1020	Institutional Equipment	N/A		–	–	–	
1030	Vehicular Equipment	N/A		–	–	–	
1090	Other Equipment	N/A		–	–	–	
F. SPECIAL CONSTRUCTION & DEMOLITION							
1020	Integrated Construction	N/A		–	–	–	0.0%
1040	Special Facilities	N/A		–	–	–	
G. BUILDING SITEWORK		N/A					
					Sub-Total	79.73	100%
	CONTRACTOR FEES (General Requirements: 10%, Overhead: 5%, Profit: 10%)				25%	19.93	
	ARCHITECT FEES				7%	6.99	
					Total Building Cost	106.65	

M.690 Warehouse



Costs per square foot of floor area

Exterior Wall	S.F. Area	10000	15000	20000	25000	30000	35000	40000	50000	60000
	L.F. Perimeter	410	500	600	700	700	766	833	966	1000
Brick with Concrete Block Back-up	Steel Frame	87.30	78.50	74.55	72.15	67.70	66.10	65.00	63.35	60.80
	Bearing Walls	85.80	76.85	72.75	70.30	65.75	64.15	63.00	61.30	58.75
Concrete Block	Steel Frame	71.40	65.50	62.80	61.20	58.55	57.50	56.75	55.75	54.25
	Bearing Walls	69.60	63.65	60.90	59.25	56.55	55.55	54.75	53.70	52.20
Galvanized Steel Siding	Steel Frame	75.00	68.95	66.20	64.55	61.80	60.80	60.00	58.95	57.40
Metal Sandwich Panels	Steel Frame	75.85	69.15	66.05	64.25	61.10	59.90	59.05	57.85	56.05
Perimeter Adj., Add or Deduct	Per 100 L.F.	8.70	5.75	4.35	3.45	2.90	2.45	2.15	1.75	1.45
Story Hgt. Adj., Add or Deduct	Per 1 Ft.	1.20	.95	.90	.80	.70	.65	.60	.60	.50
For Basement, add $17.65 per square foot of basement area										

The above costs were calculated using the basic specifications shown on the facing page. These costs should be adjusted where necessary for design alternatives and owner's requirements. Reported completed project costs, for this type of structure, range from $22.60 to $90.00 per S.F.

Common additives

Description	Unit	$ Cost
Dock Leveler, 10 ton cap.		
6' x 8'	Each	5300
7' x 8'	Each	5000
Emergency Lighting, 25 watt, battery operated		
Lead battery	Each	227
Nickel cadmium	Each	660
Fence, Chain link, 6' high		
9 ga. wire	L.F.	16.40
6 ga. wire	L.F.	21
Gate	Each	297
Flagpoles, Complete		
Aluminum, 20' high	Each	1100
40' high	Each	2700
70' high	Each	8350
Fiberglass, 23' high	Each	1425
39'-5" high	Each	3000
59' high	Each	7425
Paving, Bituminous		
Wearing course plus base course	S.Y.	4.24
Sidewalks, Concrete 4" thick	S.F.	2.95

Description	Unit	$ Cost
Sound System		
Amplifier, 250 watts	Each	1675
Speaker, ceiling or wall	Each	147
Trumpet	Each	275
Yard Lighting, 20' aluminum pole with 400 watt high pressure sodium fixture.	Each	2195

4702

Important: See the Reference Section for Location Factors

Model costs calculated for a 1 story building with 24′ story height and 30,000 square feet of floor area

Warehouse

				Unit	Unit Cost	Cost Per S.F.	% Of Sub-Total
A. SUBSTRUCTURE							
1010	Standard Foundations	Poured concrete; strip and spread footings		S.F. Ground	.95	.95	25.1%
1030	Slab on Grade	5" reinforced concrete with vapor barrier and granular base		S.F. Slab	6.96	6.96	
2010	Basement Excavation	Site preparation for slab and trench for foundation wall and footing		S.F. Ground	1.09	1.09	
2020	Basement Walls	4′ foundation wall		L.F. Wall	52	1.60	
B. SHELL							
	B10 Superstructure						
1010	Floor Construction	Mezzanine: open web steel joists, slab form, concrete beams, columns	*10% of area*	S.F. Floor	12.60	1.26	12.3%
1020	Roof Construction	Metal deck, open web steel joists, beams, columns		S.F. Roof	3.95	3.95	
	B20 Exterior Enclosure						
2010	Exterior Walls	Concrete block	*95% of wall*	S.F. Wall	8.05	4.28	11.7%
2020	Exterior Windows	N/A		–	–	–	
2030	Exterior Doors	Steel overhead, hollow metal	*5% of wall*	Each	1784	.65	
	B30 Roofing						
3010	Roof Coverings	Built-up tar and gravel with flashing; perlite/EPS composite insulation		S.F. Roof	3.58	3.58	8.9%
3020	Roof Openings	Roof hatches and skylight		S.F. Roof	.19	.19	
C. INTERIORS							
1010	Partitions	Concrete block (office and washrooms)	*100 S.F. Floor/L.F. Partition*	S.F. Partition	6.00	.48	9.4%
1020	Interior Doors	Single leaf hollow metal	*5000 S.F. Floor/Door*	Each	537	.11	
1030	Fittings	N/A		–	–	–	
2010	Stair Construction	Steel gate with rails		Flight	4825	.32	
3010	Wall Finishes	Paint		S.F. Surface	18.75	1.50	
3020	Floor Finishes	90% hardener, 10% vinyl composition tile		S.F. Floor	1.18	1.18	
3030	Ceiling Finishes	Suspended mineral tile on zee channels in office area	*10% of area*	S.F. Ceiling	3.71	.37	
D. SERVICES							
	D10 Conveying						
1010	Elevators & Lifts	N/A		–	–	–	0.0%
1020	Escalators & Moving Walks	N/A		–	–	–	
	D20 Plumbing						
2010	Plumbing Fixtures	Toilet and service fixtures, supply and drainage	*1 Fixture/2500 S.F. Floor*	Each	1700	.68	3.7%
2020	Domestic Water Distribution	Gas fired water heater		S.F. Floor	.16	.16	
2040	Rain Water Drainage	Roof drains		S.F. Roof	.71	.71	
	D30 HVAC						
3010	Energy Supply	Oil fired hot water, unit heaters	*90% of area*	S.F. Floor	3.36	3.36	9.9%
3020	Heat Generating Systems	N/A		–	–	–	
3030	Cooling Generating Systems	Single zone unit gas, heating, electric cooling	*10% of area*	S.F. Floor	.83	.83	
3050	Terminal & Package Units	N/A		–	–	–	
3090	Other HVAC Sys. & Equipment	N/A		–	–	–	
	D40 Fire Protection						
4010	Sprinklers	Sprinklers, ordinary hazard		S.F. Floor	2.02	2.02	4.8%
4020	Standpipes	N/A		–	–	–	
	D50 Electrical						
5010	Electrical Service/Distribution	200 ampere service, panel board and feeders		S.F. Floor	.34	.34	9.3%
5020	Lighting & Branch Wiring	Fluorescent fixtures, receptacles, switches, A.C. and misc. power		S.F. Floor	3.34	3.34	
5030	Communications & Security	Alarm systems		S.F. Floor	.31	.31	
5090	Other Electrical Systems	N/A		–	–	–	
E. EQUIPMENT & FURNISHINGS							
1010	Commercial Equipment	N/A		–	–	–	4.9%
1020	Institutional Equipment	N/A		–	–	–	
1030	Vehicular Equipment	Dock boards, dock levelers		S.F. Floor	2.06	2.06	
1090	Other Equipment	N/A		–	–	–	
F. SPECIAL CONSTRUCTION & DEMOLITION							
1020	Integrated Construction	N/A		–	–	–	0.0%
1040	Special Facilities	N/A		–	–	–	
G. BUILDING SITEWORK		**N/A**					
					Sub-Total	42.28	100%
	CONTRACTOR FEES (General Requirements: 10%, Overhead: 5%, Profit: 10%)				25%	10.57	
	ARCHITECT FEES				7%	3.70	
					Total Building Cost	**56.55**	

Location Factors

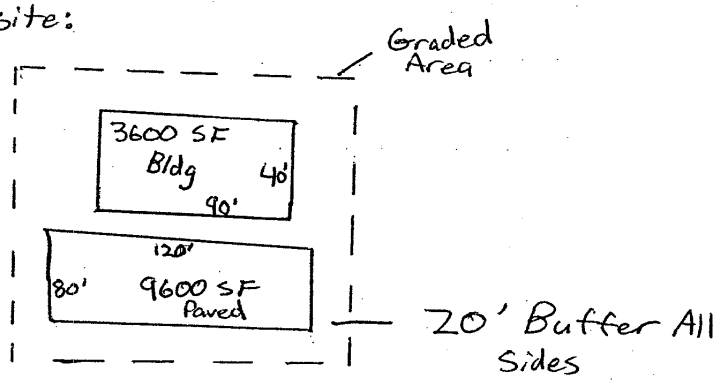
STATE/ZIP	CITY	Residential	Commercial
UTAH(CONT'D)			
843	Logan	.91	.89
845	Price	.81	.80
846-847	Provo	.90	.89
VERMONT			
050	White River Jct.	.73	.72
051	Bellows Falls	.73	.73
052	Bennington	.72	.71
053	Brattleboro	.74	.73
054	Burlington	.85	.86
056	Montpelier	.84	.85
057	Rutland	.87	.86
058	St. Johnsbury	.74	.75
059	Guildhall	.73	.74
VIRGINIA			
220-221	Fairfax	.89	.90
222	Arlington	.89	.90
223	Alexandria	.89	.90
224-225	Fredericksburg	.83	.84
226	Winchester	.78	.79
227	Culpeper	.78	.79
228	Harrisonburg	.75	.75
229	Charlottesville	.83	.82
230-232	Richmond	.86	.84
233-235	Norfolk	.82	.82
236	Newport News	.82	.81
237	Portsmouth	.81	.81
238	Petersburg	.86	.84
239	Farmville	.74	.72
240-241	Roanoke	.76	.76
242	Bristol	.79	.74
243	Pulaski	.73	.72
244	Staunton	.76	.74
245	Lynchburg	.80	.76
246	Grundy	.72	.72
WASHINGTON			
980-981,987	Seattle	1.00	1.05
982	Everett	.97	1.03
983-984	Tacoma	1.05	1.03
985	Olympia	1.05	1.03
986	Vancouver	1.11	1.04
988	Wenatchee	.94	.97
989	Yakima	1.02	1.00
990-992	Spokane	.99	.98
993	Richland	1.00	.99
994	Clarkston	.99	.98
WEST VIRGINIA			
247-248	Bluefield	.89	.89
249	Lewisburg	.90	.90
250-253	Charleston	.93	.93
254	Martinsburg	.75	.76
255-257	Huntington	.93	.95
258-259	Beckley	.90	.90
260	Wheeling	.93	.95
261	Parkersburg	.92	.94
262	Buckhannon	.97	.94
263-264	Clarksburg	.97	.94
265	Morgantown	.97	.94
266	Gassaway	.93	.93
267	Romney	.90	.90
268	Petersburg	.95	.92
WISCONSIN			
530,532	Milwaukee	1.02	1.01
531	Kenosha	1.02	1.01
534	Racine	1.06	1.00
535	Beloit	1.00	.98
537	Madison	1.00	.98
538	Lancaster	.91	.89
539	Portage	.98	.96
540	New Richmond	1.03	.95
541-543	Green Bay	1.00	.97
544	Wausau	.98	.94
545	Rhinelander	.98	.94
546	La Crosse	.98	.95
547	Eau Claire	1.04	.96
548	Superior	1.03	.97
549	Oshkosh	.97	.94

STATE/ZIP	CITY	Residential	Commercial
WYOMING			
820	Cheyenne	.86	.81
821	Yellowstone Nat. Pk.	.80	.77
822	Wheatland	.83	.78
823	Rawlins	.81	.77
824	Worland	.78	.76
825	Riverton	.81	.78
826	Casper	.86	.82
827	Newcastle	.79	.75
828	Sheridan	.83	.80
829-831	Rock Springs	.83	.78
CANADIAN FACTORS (reflect Canadian currency)			
ALBERTA			
	Calgary	.99	.96
	Edmonton	.99	.96
	Fort McMurray	.98	.95
	Lethbridge	.98	.95
	Lloydminster	.98	.95
	Medicine Hat	.98	.95
	Red Deer	.98	.95
BRITISH COLUMBIA			
	Kamloops	1.02	1.03
	Prince George	1.04	1.05
	Vancouver	1.05	1.06
	Victoria	1.04	1.05
MANITOBA			
	Brandon	.97	.96
	Portage la Prairie	.97	.96
	Winnipeg	.97	.96
NEW BRUNSWICK			
	Bathurst	.93	.91
	Dalhousie	.93	.91
	Fredericton	.95	.93
	Moncton	.92	.90
	Newcastle	.93	.91
	Saint John	.96	.94
NEWFOUNDLAND			
	Corner Brook	.95	.94
	St. John's	.94	.93
NORTHWEST TERRITORIES			
	Yellowknife	.91	.90
NOVA SCOTIA			
	Dartmouth	.96	.95
	Halifax	.96	.95
	New Glasgow	.96	.95
	Sydney	.94	.93
	Yarmouth	.96	.95
ONTARIO			
	Barrie	1.08	1.07
	Brantford	1.10	1.08
	Cornwall	1.08	1.06
	Hamilton	1.12	1.08
	Kingston	1.08	1.07
	Kitchener	1.05	1.03
	London	1.08	1.06
	North Bay	1.07	1.05
	Oshawa	1.09	1.07
	Ottawa	1.09	1.07
	Owen Sound	1.08	1.07
	Peterborough	1.07	1.06
	Sarnia	1.10	1.08
	St. Catharines	1.04	1.02
	Sudbury	1.04	1.02
	Thunder Bay	1.05	1.03
	Toronto	1.12	1.11
	Windsor	1.06	1.04
PRINCE EDWARD ISLAND			
	Charlottetown	.92	.90
	Summerside	.92	.90

Site Improvement

1. 3' Average cut/fill on site
2. Site will balance earthwork on site (no borrow required)
3. Minimal site drainage improvements, perimeter fencing, minimal lighting
4. paving is costed separately

Typical site:



Total Graded Area = 140' x 160' = 22,400 SF

Total Improved Area = 3600 + 9600 = 13,200 SF

Ratio Graded to improved = $\frac{13,200}{22,400} = .59$

Grading:

Assume 3' over entire graded area.

Total Earthwork - $\frac{22{,}400 \times 3'}{27} = 2489$ cy

No borrow, all excavation and may 300' haul

Excavating, bulk dozer, open site, 460' HP, 300' haul, common earth — 3.54/cy

Add for compaction

riding, vibrating roller, 12" lifts, 2 passes — .16/cy

$3.70/cy

Clear & Grub brush incl. stumps — $3,300/acre

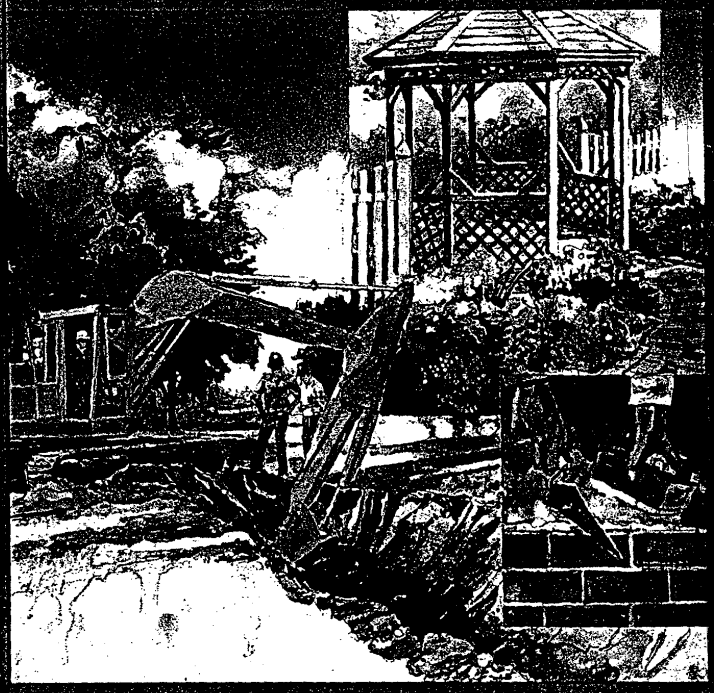
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2002



4707

02315 | Excavation and Fill

			CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P	
410	5530	150' haul, sand & gravel	B-10X	1,290	.009	C.Y.		.27	1.06	1.33	1.58	410
	5540	Common earth		1,120	.011			.31	1.23	1.54	1.82	
	5550	Clay		700	.017			.49	1.96	2.45	2.91	
	5560	300' haul, sand & gravel		660	.018			.52	2.08	2.60	3.08	
	5570	Common earth		575	.021			.60	2.39	2.99	3.54	
	5580	Clay		350	.034			.98	3.93	4.91	5.80	
	6000	700 H.P., 50' haul, sand & gravel	B-10V	3,500	.003			.10	.84	.94	1.07	
	6010	Common earth		3,035	.004			.11	.96	1.07	1.23	
	6020	Clay		1,925	.006			.18	1.52	1.70	1.94	
	6030	150' haul, sand & gravel		2,025	.006			.17	1.45	1.62	1.85	
	6040	Common earth		1,750	.007			.20	1.67	1.87	2.14	
	6050	Clay		1,100	.011			.31	2.66	2.97	3.40	
	6060	300' haul, sand & gravel		1,030	.012			.33	2.84	3.17	3.63	
	6070	Common earth		900	.013			.38	3.25	3.63	4.15	
	6080	Clay		550	.022			.62	5.30	5.92	6.80	
	6090	For dozer with ripper, see div. 02315-800										
420	0010	**EXCAVATION, BULK, DRAG LINE**										420
	0011	Excavate and load on truck, bank measure										
	0012	Bucket drag line, 3/4 C.Y., sand/gravel	B-12I	440	.036	C.Y.		1.07	1.18	2.25	2.92	
	0100	Light clay		310	.052			1.52	1.68	3.20	4.15	
	0110	Heavy clay		250	.064			1.89	2.08	3.97	5.15	
	0120	Unclassified soil		280	.057			1.69	1.86	3.55	4.59	
	0200	1-1/2 C.Y. bucket, sand/gravel	B-12P	575	.028			.82	1.46	2.28	2.85	
	0210	Light clay		440	.036			1.07	1.91	2.98	3.72	
	0220	Heavy clay		352	.045			1.34	2.38	3.72	4.65	
	0230	Unclassified soil		300	.053			1.57	2.80	4.37	5.45	
	0300	3 C.Y., sand/gravel	B-12V	720	.022			.66	1.62	2.28	2.77	
	0310	Light clay		700	.023			.67	1.67	2.34	2.86	
	0320	Heavy clay		600	.027			.79	1.95	2.74	3.33	
	0330	Unclassified soil		550	.029			.86	2.12	2.98	3.64	
430	0010	**EXCAVATION, BULK, SCRAPERS** R02315-400										430
	0100	Elevating scraper 11 C.Y., sand & gravel 1500' haul	B-33F	690	.020	C.Y.		.59	1.45	2.04	2.50	
	0150	3000' haul R02315-450		610	.023			.67	1.64	2.31	2.82	
	0200	5000' haul		505	.028			.80	1.99	2.79	3.41	
	0300	Common earth, 1500' haul		600	.023			.68	1.67	2.35	2.87	
	0350	3000' haul		530	.026			.77	1.89	2.66	3.25	
	0400	5000' haul		440	.032			.92	2.28	3.20	3.91	
	0500	Clay, 1500' haul		375	.037			1.08	2.68	3.76	4.59	
	0550	3000' haul		330	.042			1.23	3.04	4.27	5.20	
	0600	5000' haul		275	.051			1.48	3.65	5.13	6.25	
	1000	Self propelled scraper, 14 C.Y. 1/4 push dozer, sand										
	1050	and gravel, 1500' haul	B-33D	920	.015	C.Y.		.44	1.82	2.26	2.68	
	1100	3000' haul		805	.017			.50	2.08	2.58	3.06	
	1200	5000' haul		645	.022			.63	2.60	3.23	3.82	
	1300	Common earth, 1500' haul		800	.017			.51	2.10	2.61	3.08	
	1350	3000' haul		700	.020			.58	2.40	2.98	3.52	
	1400	5000' haul		560	.025			.72	3	3.72	4.40	
	1500	Clay, 1500' haul		500	.028			.81	3.36	4.17	4.93	
	1550	3000' haul		440	.032			.92	3.81	4.73	5.60	
	1600	5000' haul		350	.040			1.16	4.79	5.95	7	
	2000	21 C.Y., 1/4 push dozer, sand & gravel, 1500' haul	B-33E	1,180	.012			.34	2.06	2.40	2.79	
	2100	3000' haul		910	.015			.45	2.67	3.12	3.62	
	2200	5000' haul		750	.019			.54	3.24	3.78	4.39	
	2300	Common earth, 1500' haul		1,030	.014			.39	2.36	2.75	3.20	
	2350	3000' haul		790	.018			.51	3.08	3.59	4.17	
	2400	5000' haul		650	.022			.62	3.74	4.36	5.05	

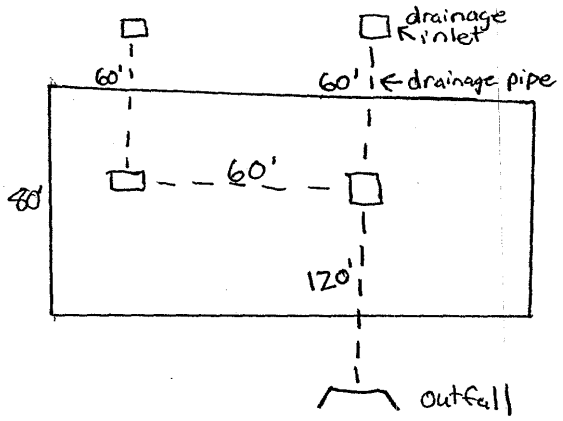
02315 | Excavation and Fill

			CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P
120	6000	For compaction, see div. 02315-300									
	6010	For trench backfill, see div. 02315-900 & 02315-940									
130	0010	**BEDDING** For pipe and conduit, not incl. compaction									
	0050	Crushed or screened bank run gravel	B-6	150	.160	C.Y.	18	4.09	1.19	23.28	27.50
	0100	Crushed stone 3/4" to 1/2"		150	.160		14.15	4.09	1.19	19.43	23
	0200	Sand, dead or bank		150	.160		3.88	4.09	1.19	9.16	11.90
	0500	Compacting bedding in trench	A-1	90	.089			2.08	.67	2.75	3.98
200	0010	**BORROW, LOADING AND/OR SPREADING**									
	4000	Common earth, shovel, 1 C.Y. bucket	B-12N	840	.019	C.Y.	6.85	.56	.82	8.23	9.30
	4010	1-1/2 C.Y. bucket	B-12O	1,135	.014		6.85	.42	.81	8.08	9.05
	4020	3 C.Y. bucket	B-12T	1,800	.009		6.85	.26	.72	7.83	8.75
	4030	Front end loader, wheel mounted									
	4050	3/4 C.Y. bucket	B-10R	550	.022	C.Y.	6.85	.62	.39	7.86	8.95
	4060	1-1/2 C.Y. bucket	B-10S	970	.012		6.85	.35	.28	7.48	8.40
	4070	3 C.Y. bucket	B-10T	1,575	.008		6.85	.22	.24	7.31	8.15
	4080	5 C.Y. bucket	B-10U	2,600	.005		6.85	.13	.30	7.28	8.10
	5000	Select granular fill, shovel, 1 C.Y. bucket	B-12N	925	.017		7.90	.51	.75	9.16	10.30
	5010	1-1/2 C.Y. bucket	B-12O	1,250	.013		7.90	.38	.74	9.02	10.10
	5020	3 C.Y. bucket	B-12T	1,980	.008		7.90	.24	.65	8.79	9.80
	5030	Front end loader, wheel mounted									
	5050	3/4 C.Y. bucket	B-10R	800	.015	C.Y.	7.90	.43	.27	8.60	9.65
	5060	1-1/2 C.Y. bucket	B-10S	1,065	.011		7.90	.32	.26	8.48	9.50
	5070	3 C.Y. bucket	B-10T	1,735	.007		7.90	.20	.21	8.31	9.25
	5080	5 C.Y. bucket	B-10U	2,850	.004		7.90	.12	.27	8.29	9.20
	6000	Clay, till, or blasted rock, shovel, 1 C.Y. bucket	B-12N	715	.022		5.10	.66	.97	6.73	7.65
	6010	1-1/2 C.Y. bucket	B-12O	965	.017		5.10	.49	.95	6.54	7.40
	6020	3 C.Y. bucket	B-12T	1,530	.010		5.10	.31	.85	6.26	7
	6030	Front end loader, wheel mounted									
	6035	3/4 C.Y. bucket	B-10R	465	.026	C.Y.	5.10	.74	.46	6.30	7.25
	6040	1-1/2 C.Y. bucket	B-10S	825	.015		5.10	.42	.34	5.86	6.60
	6045	3 C.Y. bucket	B-10T	1,340	.009		5.10	.26	.28	5.64	6.30
	6050	5 C.Y. bucket	B-10U	2,200	.005		5.10	.16	.35	5.61	6.25
	6060	Front end loader, track mounted									
	6065	1-1/2 C.Y. bucket	B-10N	715	.017	C.Y.	5.10	.48	.37	5.95	6.75
	6070	3 C.Y. bucket	B-10P	1,190	.010		5.10	.29	.58	5.97	6.70
	6075	5 C.Y. bucket	B-10Q	1,835	.007		5.10	.19	.53	5.82	6.45
	7000	Topsoil or loam from stockpile, shovel, 1 C.Y. bucket	B-12N	840	.019		11.20	.56	.82	12.58	14.05
	7010	1-1/2 C.Y. bucket	B-12O	1,135	.014		11.20	.42	.81	12.43	13.80
	7020	3 C.Y. bucket	B-12T	1,800	.009		11.20	.26	.72	12.18	13.50
	7030	Front end loader, wheel mounted									
	7050	3/4 C.Y. bucket	B-10R	550	.022	C.Y.	11.20	.62	.39	12.21	13.70
	7060	1-1/2 C.Y. bucket	B-10S	970	.012		11.20	.35	.28	11.83	13.15
	7070	3 C.Y. bucket	B-10T	1,575	.008		11.20	.22	.24	11.66	12.90
	7080	5 C.Y. bucket	B-10U	2,600	.005		11.20	.13	.30	11.63	12.85
	8900	For larger hauling units, deduct from above								30%	
	9200	For flowable fill, see section 03310-220									
300	0010	**COMPACTION** R02315-300									
	5000	Riding, vibrating roller, 6" lifts, 2 passes	B-10Y	3,000	.004	C.Y.		.11	.10	.21	.28
	5020	3 passes		2,300	.005			.15	.13	.28	.38
	5040	4 passes		1,900	.006			.18	.16	.34	.46
	5060	12" lifts, 2 passes		5,200	.002			.07	.06	.13	.16
	5080	3 passes		3,500	.003			.10	.09	.19	.25
	5100	4 passes		2,600	.005			.13	.12	.25	.33
	5600	Sheepsfoot or wobbly wheel roller, 6" lifts, 2 passes	B-10G	2,400	.005			.14	.32	.46	.57

		02230 | Site Clearing	CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P	
200	0010	**CLEAR AND GRUB** Cut & chip light, trees to 6" diam.	B-7	1	48	Acre		1,200	950	2,150	2,900	200
	0150	Grub stumps and remove	B-30	2	12			325	825	1,150	1,400	
	0160	Clear & grub brush including stumps	"	.58	41.379			1,125	2,850	3,975	4,825	
	0200	Cut & chip medium, trees to 12" diam.	B-7	.70	68.571			1,725	1,350	3,075	4,150	
	0250	Grub stumps and remove	B-30	1	24			650	1,650	2,300	2,775	
	0260	Clear & grub dense brush including stumps	"	.47	51.064			1,375	3,500	4,875	5,950	
	0300	Cut & chip heavy, trees to 24" diam.	B-7	.30	160			4,025	3,175	7,200	9,700	
	0350	Grub stumps and remove	B-30	.50	48			1,300	3,300	4,600	5,600	
	0400	If burning is allowed, reduce cut & chip				▼					40%	
	3000	Chipping stumps, to 18" deep, 12" diam.	B-86	20	.400	Ea.		12.50	6.80	19.30	26.50	
	3040	18" diameter		16	.500			15.60	8.50	24.10	33	
	3080	24" diameter		14	.571			17.85	9.70	27.55	37.50	
	3100	30" diameter		12	.667			21	11.30	32.30	44	
	3120	36" diameter		10	.800			25	13.55	38.55	52.50	
	3160	48" diameter	▼	8	1	▼		31	16.95	47.95	65.50	
	5000	Tree thinning, feller buncher, conifer										
	5080	Up to 8" diameter	B-93	240	.033	Ea.		1.04	1.68	2.72	3.42	
	5120	12" diameter		160	.050			1.56	2.52	4.08	5.15	
	5240	Hardwood, up to 4" diameter		240	.033			1.04	1.68	2.72	3.42	
	5280	8" diameter		180	.044			1.39	2.24	3.63	4.56	
	5320	12" diameter	▼	120	.067	▼		2.08	3.36	5.44	6.85	
	7000	Tree removal, congested area, aerial lift truck										
	7040	8" diameter	B-85	7	5.714	Ea.		145	99	244	330	
	7080	12" diameter		6	6.667			169	116	285	385	
	7120	18" diameter		5	8			202	139	341	465	
	7160	24" diameter		4	10			253	174	427	580	
	7240	36" diameter		3	13.333			335	231	566	775	
	7280	48" diameter	▼	2	20	▼		505	345	850	1,150	
220	0010	**CLEARING** Brush with brush saw	A-1	.25	32	Acre		750	243	993	1,450	220
	0100	By hand	"	.12	66.667			1,575	505	2,080	2,975	
	0300	With dozer, ball and chain, light clearing	B-11A	2	8			219	410	629	790	
	0400	Medium clearing		1.50	10.667			292	550	842	1,050	
	0500	With dozer and brush rake, light		10	1.600			43.50	82.50	126	158	
	0550	Medium brush to 4" diameter		8	2			54.50	103	157.50	197	
	0600	Heavy brush to 4" diameter	▼	6.40	2.500	▼		68.50	129	197.50	247	
	1000	Brush mowing, tractor w/rotary mower, no removal										
	1020	Light density	B-84	2	4	Acre		125	99.50	224.50	299	
	1040	Medium density		1.50	5.333			166	133	299	395	
	1080	Heavy density	▼	1	8	▼		250	199	449	595	
250	0010	**FELLING TREES & PILING** With tractor, large tract, firm										250
	0020	level terrain, no boulders, less than 12" diam. trees										
	0300	300 HP dozer, up to 400 trees/acre, 0 to 25% hardwoods	B-10M	.75	16	Acre		460	1,375	1,835	2,225	
	0340	25% to 50% hardwoods		.60	20			570	1,725	2,295	2,775	
	0370	75% to 100% hardwoods		.45	26.667			765	2,300	3,065	3,700	
	0400	500 trees/acre, 0% to 25% hardwoods		.60	20			570	1,725	2,295	2,775	
	0440	25% to 50% hardwoods		.48	25			715	2,150	2,865	3,475	
	0470	75% to 100% hardwoods		.36	33.333			955	2,875	3,830	4,600	
	0500	More than 600 trees/acre, 0 to 25% hardwoods		.52	23.077			660	2,000	2,660	3,175	
	0540	25% to 50% hardwoods		.42	28.571			820	2,450	3,270	3,950	
	0570	75% to 100% hardwoods	▼	.31	38.710	▼		1,100	3,325	4,425	5,375	
	0900	Large tract clearing per tree										
	1500	300 HP dozer, to 12" diameter, softwood	B-10M	320	.037	Ea.		1.07	3.23	4.30	5.25	
	1550	Hardwood		100	.120			3.43	10.35	13.78	16.65	
	1600	12" to 24" diameter, softwood		200	.060			1.72	5.15	6.87	8.30	
	1650	Hardwood	▼	80	.150	▼		4.29	12.95	17.24	21	

4710

Drainage



Inlet sizing/spacing

Assume max inlet capacity will be 1cfs.
Using rational method and with 5 min. time, 10 yr storm results in a i of 7.56 in/hr.

Assuming the worst case .9 cfactor

$Q = CIA$

$A = \frac{1}{(0.9)(7.56)} = 0.147$ acres or an 80'x20' area

Say 60' x 60' area

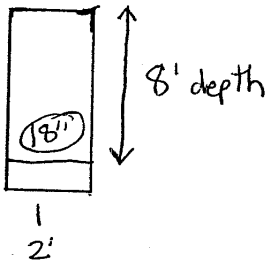
use 4 per site
connect w/ 18" RCP

4 catch basins
300 LF pipe
1 End wall

Pipe class 4, 18" diameter reinforced concrete
28.5/LF

add trench

Excavate trench 6-8' deep with 1-1½ cy
hydraulic backhoe $3.33/cy ✓



(8 x 2 x 1) − 1.767 = 14.23 CF/LF of pipe = .527 cy/LF pipe

.527 cy/LF x $3.33/cy = $1.75/LF

add Backfill

Backfill w/ 2¼ cy bucket 100' haul $3.10/cy ✓
Compaction walk behind 18" wide $1.79/cy ✓
$4.89/cy

.527 cy/LF * $4.89/cy = $2.58/LF

Total $28.50 ✓ + $1.75 + $2.58 = $32.83/LF

Endwall - flared 6'2", 18" diameter $63.00/LF ✓

($63.00 * 6.17) = $388.71

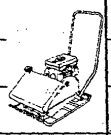
Catch Basins

Assume 8' deep (either concrete or precast)

Concrete (8' avg)	$3100/ea ✓	
	$1475/ea ✓	
Avg	$2287.50	/ea
grate	100	/ea
	$2387.50	/ea

02315 | Excavation and Fill

			CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P	
300	5620	3 passes (R02315 -300)	B-10G	1,735	.007	C.Y.		.20	.44	.64	.78	
	5640	4 passes		1,300	.009			.26	.59	.85	1.05	
	5680	12" lifts, 2 passes		5,200	.002			.07	.15	.22	.26	
	5700	3 passes		3,500	.003			.10	.22	.32	.39	
	5720	4 passes		2,600	.005			.13	.29	.42	.52	
	6000	Towed sheepsfoot or wobbly wheel roller, 6" lifts, 2 passes	B-10D	10,000	.001			.03	.09	.12	.15	
	6020	3 passes		2,000	.006			.17	.45	.62	.75	
	6030	4 passes		1,500	.008			.23	.60	.83	1.01	
	6050	12" lifts, 2 passes		6,000	.002			.06	.15	.21	.25	
	6060	3 passes		4,000	.003			.09	.22	.31	.38	
	6070	4 passes		3,000	.004			.11	.30	.41	.50	
	6200	Vibrating roller, 6" lifts, 2 passes	B-10C	2,600	.005			.13	.38	.51	.62	
	6210	3 passes		1,735	.007			.20	.58	.78	.93	
	6220	4 passes		1,300	.009			.26	.77	1.03	1.24	
	6250	12" lifts, 2 passes		5,200	.002			.07	.19	.26	.31	
	6260	3 passes		3,465	.003			.10	.29	.39	.47	
	6270	4 passes		2,600	.005			.13	.38	.51	.62	
	7000	Walk behind, vibrating plate 18" wide, 6" lifts, 2 passes	A-1	200	.040			.94	.30	1.24	1.79	
	7020	3 passes		185	.043			1.01	.33	1.34	1.94	
	7040	4 passes		140	.057			1.34	.43	1.77	2.57	
	7200	12" lifts, 2 passes		560	.014			.34	.11	.45	.64	
	7220	3 passes		375	.021			.50	.16	.66	.96	
	7240	4 passes		280	.029			.67	.22	.89	1.28	
	7500	Vibrating roller 24" wide, 6" lifts, 2 passes	B-10A	420	.029			.82	.29	1.11	1.57	
	7520	3 passes		280	.043			1.23	.44	1.67	2.35	
	7540	4 passes		210	.057			1.64	.59	2.23	3.14	
	7600	12" lifts, 2 passes		840	.014			.41	.15	.56	.78	
	7620	3 passes		560	.021			.61	.22	.83	1.17	
	7640	4 passes		420	.029			.82	.29	1.11	1.57	
	8000	Rammer tamper, 6" to 11", 4" lifts, 2 passes	A-1	130	.062			1.44	.47	1.91	2.76	
	8050	3 passes		97	.082			1.93	.63	2.56	3.70	
	8100	4 passes		65	.123			2.89	.93	3.82	5.50	
	8200	8" lifts, 2 passes		260	.031			.72	.23	.95	1.38	
	8250	3 passes		195	.041			.96	.31	1.27	1.84	
	8300	4 passes		130	.062			1.44	.47	1.91	2.76	
	8400	13" to 18", 4" lifts, 2 passes		390	.021			.48	.16	.64	.92	
	8450	3 passes		290	.028			.65	.21	.86	1.24	
	8500	4 passes		195	.041			.96	.31	1.27	1.84	
	8600	8" lifts, 2 passes		780	.010			.24	.08	.32	.46	
	8650	3 passes		585	.014			.32	.10	.42	.61	
	8700	4 passes		390	.021			.48	.16	.64	.92	
	9000	Water, 3000 gal. truck, 3 mile haul	B-45	1,888	.008		.20	.24	.35	.79	.97	
	9010	6 mile haul		1,444	.011		.20	.31	.46	.97	1.20	
	9020	12 mile haul		1,000	.016		.20	.45	.67	1.32	1.63	
	9030	6000 gal. wagon, 3 mile haul	B-59	2,000	.004		.20	.10	.23	.53	.52	
	9040	6 mile haul		1,600	.005		.20	.13	.28	.61	.72	
340	0010	**DRILLING AND BLASTING** Only, rock, open face, under 1500 C.Y.	B-47	225	.107	C.Y.	1.80	2.80	3.69	8.29	10.35	340
	0100	Over 1500 C.Y.		300	.080		1.80	2.10	2.76	6.66	8.25	
	0200	Areas where blasting mats are required, under 1500 C.Y.		175	.137		1.80	3.60	4.74	10.14	12.75	
	0250	Over 1500 C.Y.		250	.096		1.80	2.52	3.32	7.64	9.50	
	0300	Bulk drilling and blasting, can vary greatly, average									5	
	0500	Pits, average									20	
	1300	Deep hole method, up to 1500 C.Y.	B-47	50	.480		1.80	12.60	16.60	31	39.50	
	1400	Over 1500 C.Y.		66	.364		1.80	9.55	12.55	23.90	30.50	
	1900	Restricted areas, up to 1500 C.Y.		13	1.846		1.80	48.50	64	114.30	146	
	2000	Over 1500 C.Y.		20	1.200		1.80	31.50	41.50	74.80	96	



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02315 | Excavation and Fill

			CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P
900	0010	**EXCAVATING, TRENCH** or continuous footing, common earth R02315-400									
	0020	No sheeting or dewatering included									
	0050	1' to 4' deep, 3/8 C.Y. tractor loader/backhoe	B-11C	150	.107	C.Y.		2.92	1.19	4.11	5.75
	0060	1/2 C.Y. tractor loader/backhoe	B-11M	200	.080			2.19	1.08	3.27	4.54
	0062	3/4 C.Y. hydraulic backhoe	B-12F	270	.059			1.75	1.69	3.44	4.50
	0090	4' to 6' deep, 1/2 C.Y. tractor loader/backhoe	B-11M	200	.080			2.19	1.08	3.27	4.54
	0100	5/8 C.Y. hydraulic backhoe	B-12Q	250	.064			1.89	1.57	3.46	4.58
	0110	3/4 C.Y. hydraulic backhoe	B-12F	300	.053			1.57	1.52	3.09	4.06
	0120	1 C.Y. hydraulic backhoe	B-12A	400	.040			1.18	1.41	2.59	3.33
	0130	1-1/2 C.Y. hydraulic backhoe	B-12B	540	.030			.87	1.31	2.18	2.76
	0300	1/2 C.Y. hydraulic excavator, truck mounted	B-12J	200	.080			2.36	3.68	6.04	7.60
	0500	6' to 10' deep, 3/4 C.Y. hydraulic backhoe, 6' to 10' deep	B-12F	225	.071			2.10	2.03	4.13	5.40
	0510	1 C.Y. hydraulic backhoe	B-12A	400	.040			1.18	1.41	2.59	3.33
	0600	1 C.Y. hydraulic excavator, truck mounted	B-12K	400	.040			1.18	2.17	3.35	4.17
	0610	1-1/2 C.Y. hydraulic backhoe	B-12B	600	.027			.79	1.18	1.97	2.48
	0620	2-1/2 C.Y. hydraulic backhoe	B-12S	1,000	.016			.47	1.70	2.17	2.58
	0900	10' to 14' deep, 3/4 C.Y. hydraulic backhoe	B-12F	200	.080			2.36	2.28	4.64	6.10
	0910	1 C.Y. hydraulic backhoe	B-12A	360	.044			1.31	1.56	2.87	3.70
	1000	1-1/2 C.Y. hydraulic backhoe	B-12B	540	.030			.87	1.31	2.18	2.76
	1020	2-1/2 C.Y. hydraulic backhoe	B-12S	1,000	.016			.47	1.70	2.17	2.58
	1030	3 C.Y. hydraulic backhoe	B-12D	1,400	.011			.34	1.50	1.84	2.16
	1300	14' to 20' deep, 1 C.Y. hydraulic backhoe	B-12A	320	.050			1.48	1.76	3.24	4.17
	1310	1-1/2 C.Y. hydraulic backhoe	B-12B	480	.033			.98	1.47	2.45	3.11
	1320	2-1/2 C.Y. hydraulic backhoe	B-12S	850	.019			.56	2	2.56	3.04
	1330	3 C.Y. hydraulic backhoe	B-12D	1,000	.016			.47	2.09	2.56	3.01
	1400	By hand with pick and shovel 2' to 6' deep, light soil	1 Clab	8	1			23.50		23.50	36.50
	1500	Heavy soil	"	4	2			47		47	73
	1700	For tamping backfilled trenches, air tamp, add	A-1	100	.080			1.88	.61	2.49	3.59
	1900	Vibrating plate, add	B-18	230	.104	▼		2.52	.24	2.76	4.19
	2100	Trim sides and bottom for concrete pours, common earth		1,500	.016	S.F.		.39	.04	.43	.64
	2300	Hardpan	▼	600	.040	"		.96	.09	1.05	1.60
	2400	Pier and spread footing excavation, add to above				C.Y.				30%	30%
	3000	Backfill trench, F.E. loader, wheel mtd., 1 C.Y. bucket									
	3020	Minimal haul	B-10R	400	.030	C.Y.		.86	.54	1.40	1.90
	3040	100' haul		200	.060			1.72	1.07	2.79	3.80
	3060	200' haul		100	.120			3.43	2.14	5.57	7.60
	3080	2-1/4 C.Y. bucket, minimum haul	B-10T	600	.020			.57	.62	1.19	1.55
	3090	100' haul		300	.040			1.14	1.23	2.37	3.10
	3100	200' haul	▼	150	.080	▼		2.29	2.47	4.76	6.20
	4000	For backfill with dozer, see div. 02315-120									
	4010	For compaction of backfill, see div. 02315-300									
940	0010	**EXCAVATING, UTILITY TRENCH** Common earth									
	0050	Trenching with chain trencher, 12 H.P., operator walking									
	0100	4" wide trench, 12" deep	B-53	800	.010	L.F.		.30	.11	.41	.57
	0150	18" deep		750	.011			.32	.11	.43	.61
	0200	24" deep		700	.011			.34	.12	.46	.65
	0300	6" wide trench, 12" deep		650	.012			.37	.13	.50	.70
	0350	18" deep		600	.013			.40	.14	.54	.76
	0400	24" deep		550	.015			.43	.16	.59	.83
	0450	36" deep		450	.018			.53	.19	.72	1.01
	0600	8" wide trench, 12" deep		475	.017			.50	.18	.68	.96
	0650	18" deep		400	.020			.60	.22	.82	1.14
	0700	24" deep		350	.023			.68	.25	.93	1.30
	0750	36" deep		300	.027			.79	.29	1.08	1.52
	0830	Fly wheel trencher, 18" wide trench, 6' deep, light soil	B-54A	1,992	.005	C.Y.		.14	.25	.39	.49

4715

02530 | Sanitary Sewerage

			CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P
730	0150	6' x 7' R02510 -810	B-69	125	.384	L.F.	243	9.90	10.85	263.75	294
	0200	8' x 3'		133	.361		179	9.30	10.20	198.50	223
	0250	8' x 8'		100	.480		296	12.40	13.55	321.95	360
	0300	10' x 3'		110	.436		385	11.25	12.35	408.60	450
	0350	10' x 8'		80	.600		370	15.50	16.95	402.45	450
	0400	12' x 3'		100	.480		305	12.40	13.55	330.95	370
	0401	Piping, precast concrete, box culvert, 8' long, 12' x 3'		100	.480			12.40	13.55	25.95	34
	0450	12' x 8'		67	.716		530	18.50	20	568.50	635
	0500	Set up charge at plant, add to base price				Job	2,800			2,800	3,100
	0510	Inserts and keyway, add				Ea.	247			247	272
	0520	Sloped or skewed end, add				"	395			395	435
	1000	Non-reinforced pipe, extra strength, B&S or T&G joints									
	1010	6" diameter	B-14	265.04	.181	L.F.	3.50	4.50	.67	8.67	11.55
	1020	8" diameter		224	.214		3.85	5.30	.80	9.95	13.35
	1030	10" diameter		216	.222		4.27	5.50	.83	10.60	14.15
	1040	12" diameter		200	.240		5.25	5.95	.89	12.09	16.05
	1050	15" diameter		180	.267		6.15	6.60	.99	13.74	18.10
	1060	18" diameter		144	.333		7.55	8.30	1.24	17.09	22.50
	1070	21" diameter		112	.429		9.30	10.65	1.59	21.54	28.50
	1080	24" diameter		100	.480		11.40	11.90	1.79	25.09	33
	1560	Reinforced culvert, class 2, no gaskets									
	1590	27" diameter	B-21	88	.318	L.F.	20.50	8.75	1.79	31.04	38
	1592	30" diameter	B-13	80	.700		23.50	17.80	9.05	50.35	63.50
	1594	36" diameter	"	72	.778		27.50	19.80	10.05	57.35	72
	2000	Reinforced culvert, class 3, no gaskets									
	2010	12" diameter	B-14	210	.229	L.F.	10.25	5.70	.85	16.80	21
	2020	15" diameter		175	.274		12.65	6.80	1.02	20.47	25.50
	2030	18" diameter		130	.369		12.75	9.15	1.37	23.27	30
	2035	21" diameter		120	.400		15.55	9.95	1.49	26.99	34
	2040	24" diameter		100	.480		18.65	11.90	1.79	32.34	41
	2045	27" diameter	B-13	92	.609		22.50	15.50	7.90	45.90	57.50
	2050	30" diameter		88	.636		26	16.20	8.25	50.45	62.50
	2060	36" diameter		72	.778		36.50	19.80	10.05	66.35	82
	2070	42" diameter	B-13B	72	.778		50	19.80	13.50	83.30	100
	2080	48" diameter		64	.875		62	22.50	15.20	99.70	120
	2090	60" diameter		48	1.167		99.50	29.50	20.50	149.50	179
	2100	72" diameter		40	1.400		141	35.50	24.50	201	237
	2120	84" diameter		32	1.750		257	44.50	30.50	332	385
	2140	96" diameter		24	2.333		310	59.50	40.50	410	475
	2200	With gaskets, class 3, 12" diameter	B-21	168	.167		11.30	4.57	.94	16.81	20.50
	2220	15" diameter		160	.175		13.55	4.80	.99	19.34	23.50
	2230	18" diameter		152	.184		16.95	5.05	1.04	23.04	27.50
	2240	24" diameter		136	.206		25.50	5.65	1.16	32.31	38
	2260	30" diameter	B-13	88	.636		34	16.20	8.25	58.45	71.50
	2270	36" diameter	"	72	.778		51	19.80	10.05	80.85	97.50
	2290	48" diameter	B-13B	64	.875		83	22.50	15.20	120.70	143
	2310	72" diameter	"	40	1.400		215	35.50	24.50	275	320
	2330	Flared ends, 6'-1" long, 12" diameter	B-21	190	.147		38.50	4.04	.83	43.37	49
	2340	15" diameter		155	.181		44.50	4.96	1.02	50.48	58
	2400	6'-2" long, 18" diameter		122	.230		47	6.30	1.29	54.59	63
	2420	24" diameter		88	.318		57	8.75	1.79	67.54	78
	2440	36" diameter	B-13	60	.933		87.50	24	12.10	123.60	146
	2500	Class 4									
	2510	12" diameter	B-21	168	.167	L.F.	12.80	4.57	.94	18.31	22
	2512	15" diameter		160	.175		14.90	4.80	.99	20.69	25
	2514	18" diameter		152	.184		17.75	5.05	1.04	23.84	28.50

4716

02630 | Storm Drainage

			CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P	
150	1080	30" diameter	B-21	200	.140	L.F.	22.50	3.84	.79	27.13	31.50	150
	1090	36" diameter		180	.156		28.50	4.27	.88	33.65	38.50	
	1100	42" diameter		175	.160		39.50	4.39	.90	44.79	51.50	
	1110	48" diameter		170	.165		51.50	4.52	.93	56.95	64.50	
	1120	54" diameter		160	.175		79.50	4.80	.99	85.29	96	
	1130	60" diameter		150	.187		92.50	5.10	1.05	98.65	111	
200	0010	**CATCH BASINS OR MANHOLES** not including footing, excavation,										200
	0020	backfill, frame and cover										
	0050	Brick, 4' inside diameter, 4' deep	D-1	1	16	Ea.	285	430		715	980	
	0100	6' deep		.70	22.857		400	615		1,015	1,375	
	0150	8' deep		.50	32		510	865		1,375	1,875	
	0200	For depths over 8', add		4	4	V.L.F.	105	108		213	282	
	0400	Concrete blocks (radial), 4' I.D., 4' deep		1.50	10.667	Ea.	233	288		521	695	
	0500	6' deep		1	16		310	430		740	1,000	
	0600	8' deep		.70	22.857		385	615		1,000	1,375	
	0700	For depths over 8', add		5.50	2.909	V.L.F.	39	78.50		117.50	163	
	0800	Concrete, cast in place, 4' x 4', 8" thick, 4' deep	C-14H	2	24	Ea.	355	715	17.75	1,087.75	1,525	
	0900	6' deep		1.50	32		515	950	23.50	1,488.50	2,100	
	1000	8' deep		1	48		735	1,425	35.50	2,195.50	3,100	←
	1100	For depths over 8', add		8	6	V.L.F.	85.50	178	4.44	267.94	380	
	1110	Precast, 4' I.D., 4' deep	B-22	4.10	7.317	Ea.	420	203	57.50	680.50	840	
	1120	6' deep		3	10		540	278	79	897	1,100	
	1130	8' deep		2	15		625	415	118	1,158	1,475	←
	1140	For depths over 8', add		16	1.875	V.L.F.	89	52	14.80	155.80	195	
	1150	5' I.D., 4' deep	B-6	3	8	Ea.	445	205	59.50	709.50	870	
	1160	6' deep		2	12		605	305	89.50	999.50	1,225	
	1170	8' deep		1.50	16		760	410	119	1,289	1,600	
	1180	For depths over 8', add		12	2	V.L.F.	99	51	14.90	164.90	204	
	1190	6' I.D., 4' deep		2	12	Ea.	730	305	89.50	1,124.50	1,375	
	1200	6' deep		1.50	16		950	410	119	1,479	1,800	
	1210	8' deep		1	24		1,175	615	179	1,969	2,425	
	1220	For depths over 8', add		8	3	V.L.F.	153	76.50	22.50	252	310	
	1250	Slab tops, precast, 8" thick										
	1300	4' diameter manhole	B-6	8	3	Ea.	156	76.50	22.50	255	315	
	1400	5' diameter manhole		7.50	3.200		297	82	24	403	475	
	1500	6' diameter manhole		7	3.429		355	87.50	25.50	468	555	
	1510	Grates only, for pipe bells, plastic, 4" diameter pipe	1 Clab	50	.160		4.23	3.75		7.98	10.50	
	1514	6" diameter pipe		50	.160		5.10	3.75		8.85	11.45	
	1516	8" diameter pipe		50	.160		5.85	3.75		9.60	12.30	
	1520	For beehive type grate, add					50%					
	1550	Gray iron, 4" dia. pipe, light duty	1 Clab	50	.160		14.30	3.75		18.05	21.50	
	1551	Heavy duty		50	.160		22	3.75		25.75	30	
	1552	6" diameter, pipe, light duty		50	.160		16	3.75		19.75	23.50	
	1553	Heavy duty		50	.160		13	3.75		16.75	20	
	1554	8" diamter pipe, light duty		50	.160		25	3.75		28.75	33.50	
	1555	Heavy duty		50	.160		21	3.75		24.75	29	
	1556	10" diameter pipe, light duty		40	.200		37	4.69		41.69	48	
	1557	Heavy duty		40	.200		23	4.69		27.69	33	
	1558	12" diamter pipe, light duty		40	.200		52	4.69		56.69	64.50	
	1559	Heavy duty		40	.200		48	4.69		52.69	60.50	
	1560	15" diamter pipe, light duty		32	.250		61	5.85		66.85	76	
	1561	Heavy duty		32	.250		62	5.85		67.85	77	
	1562	18" diameter pipe, light duty		32	.250		71	5.85		76.85	87	
	1563	Heavy duty		32	.250		82	5.85		87.85	99	
	1568	For beehive type grate, add					50%					
	1570	Covers only for pipe bells, gray iron, med. duty										

Fencing

Assume perimeter fencing 560 LF

5' high fence, 9 ga., no barbed wire

2" line post, 10. O.C. galvanized steel $13.40/LF

Lighting

Assume minimal lighting

4 20' poles w/ 250 watt mercury vapor

Fiberglass poles 20' for 2 fixtures $690 ea

Mercury vapor 250 watt $395 ea

02820 | Fences & Gates

			CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P
500	0200	Galv. steel, 12 ga., 2" x 4" mesh, posts 5' O.C., 3' high	B-80	300	.107	L.F.	1.62	2.75	1.87	6.24	8.05
	0300	5' high		300	.107		2.16	2.75	1.87	6.78	8.65
	0400	14 ga., 1" x 2" mesh, 3' high		300	.107		1.73	2.75	1.87	6.35	8.15
	0500	5' high		300	.107		2.38	2.75	1.87	7	8.90
	1000	Kennel fencing, 1-1/2" mesh, 6' long, 3'-6" wide, 6'-2" high	2 Clab	4	4	Ea.	270	94		364	445
	1050	12' long		4	4		325	94		419	500
	1200	Top covers, 1-1/2" mesh, 6' long		15	1.067		55	25		80	99.50
	1250	12' long		12	1.333		88	31.50		119.50	145
	1300	For kennel doors, see division 08344-350									
	4500	Security fence, prison grade, set in concrete, 12' high	B-80	25	1.280	L.F.	22	33	22.50	77.50	99.50
	4600	16' high		20	1.600		26.50	41	28	95.50	124
	5300	Tubular picket, steel, 6' sections, 1-9/16" posts, 4' high		300	.107		16.80	2.75	1.87	21.42	24.50
	5400	2" posts, 5' high		240	.133		23.50	3.43	2.33	29.26	33.50
	5600	2" posts, 6' high		200	.160		26.50	4.12	2.80	33.42	38.50
	5700	Staggered picket 1-9/16" posts, 4' high		300	.107		15.15	2.75	1.87	19.77	23
	5800	2" posts, 5' high		240	.133		25	3.43	2.33	30.76	35.50
	5900	2" posts, 6' high		200	.160		26	4.12	2.80	32.92	38
	6200	Gates, 4' high, 3' wide	B-1	10	2.400	Ea.	146	58		204	251
	6300	5' high, 3' wide		10	2.400		189	58		247	298
	6400	6' high, 3' wide		10	2.400		195	58		253	305
	6500	4' wide		10	2.400		227	58		285	340
528	0010	**FENCE, CHAIN LINK INDUSTRIAL**, schedule 40									
	0020	3 strands barb wire, 2" post @ 10' O.C., set in concrete, 6' H									
	0200	9 ga. wire, galv. steel	B-80	240	.133	L.F.	7.80	3.43	2.33	13.56	16.40
	0300	Aluminized steel		240	.133		10.05	3.43	2.33	15.81	18.85
	0500	6 ga. wire, galv. steel		240	.133		12.65	3.43	2.33	18.41	21.50
	0600	Aluminized steel		240	.133		14.50	3.43	2.33	20.26	24
	0800	6 ga. wire, 6' high but omit barbed wire, galv. steel		250	.128		12.25	3.30	2.24	17.79	21
	0900	Aluminized steel		250	.128		17.15	3.30	2.24	22.69	26.50
	0920	8' H, 6 ga. wire, 2-1/2" line post, galv. steel		180	.178		19.95	4.58	3.11	27.64	32.50
	0940	Aluminized steel		180	.178		24.50	4.58	3.11	32.19	37.50
	1400	Gate for 6' high fence, 1-5/8" frame, 3' wide, galv. steel		10	3.200	Ea.	98.50	82.50	56	237	297
	1500	Aluminized steel		10	3.200	"	120	82.50	56	258.50	320
	2000	5'-0" high fence, 9 ga., no barbed wire, 2" line post,									
	2010	10' O.C., 1-5/8" top rail									
	2100	Galvanized steel	B-80	300	.107	L.F.	6.50	2.75	1.87	11.12	13.40
	2200	Aluminized steel		300	.107	"	7.85	2.75	1.87	12.47	14.85
	2400	Gate, 4' wide, 5' high, 2" frame, galv. steel		10	3.200	Ea.	108	82.50	56	246.50	310
	2500	Aluminized steel		10	3.200	"	119	82.50	56	257.50	320
	3100	Overhead slide gate, chain link, 6' high, to 18' wide		38	.842	L.F.	97	21.50	14.75	133.25	157
	3105	8' high		30	1.067		97	27.50	18.70	143.20	170
	3108	10' high		24	1.333		81	34.50	23.50	139	167
	3110	Cantilever type		48	.667		41	17.15	11.65	69.80	84.50
	3120	8' high		24	1.333		59.50	34.50	23.50	117.50	144
	3130	10' high		18	1.778		70.50	46	31	147.50	182
	5000	Double swing gates, incl. posts & hardware									
	5010	5' high, 12' opening	B-80	3.40	9.412	Opng.	290	242	165	697	870
	5020	20' opening		2.80	11.429		395	294	200	889	1,100
	5060	6' high, 12' opening		3.20	10		490	258	175	923	1,125
	5070	20' opening		2.60	12.308		675	315	216	1,206	1,475
	5080	8' high, 12' opening		2.13	15.002		760	385	263	1,408	1,725
	5090	20' opening		1.45	22.069		1,000	570	385	1,955	2,400
	5100	10' high, 12' opening		1.31	24.427		865	630	430	1,925	2,375
	5110	20' opening		1.03	31.068		1,300	800	545	2,645	3,250
	5120	12' high, 12' opening		1.05	30.476		1,275	785	535	2,595	3,175

4719

16520 | Exterior Luminaires

			CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P
300	2880	16' high	1 Elec	3	2.667	Ea.	590	94.50		684.50	785
	3000	20' high	R-3	2.90	6.897		615	242	54.50	911.50	1,100
	3200	30' high		2.60	7.692		1,200	269	60.50	1,529.50	1,800
	3400	35' high		2.30	8.696		1,300	305	68.50	1,673.50	1,950
	3600	40' high		2	10		1,475	350	79	1,904	2,225
	3800	Bracket arms, 1 arm	1 Elec	8	1		80.50	35.50		116	142
	4000	2 arms		8	1		162	35.50		197.50	231
	4200	3 arms		5.30	1.509		243	53.50		296.50	345
	4400	4 arms		5.30	1.509		325	53.50		378.50	435
	4500	Steel pole, galvanized, 8' high		3.80	2.105		420	74.50		494.50	570
	4510	10' high		3.70	2.162		440	76.50		516.50	600
	4520	12' high		3.40	2.353		475	83.50		558.50	650
	4530	14' high		3.10	2.581		505	91.50		596.50	690
	4540	16' high		2.90	2.759		535	98		633	735
	4550	18' high		2.70	2.963		565	105		670	775
	4600	20' high	R-3	2.60	7.692		745	269	60.50	1,074.50	1,300
	4800	30' high		2.30	8.696		875	305	68.50	1,248.50	1,500
	5000	35' high		2.20	9.091		960	320	71.50	1,351.50	1,600
	5200	40' high		1.70	11.765		1,175	410	93	1,678	2,025
	5400	Bracket arms, 1 arm	1 Elec	8	1		122	35.50		157.50	187
	5600	2 arms		8	1		189	35.50		224.50	261
	5800	3 arms		5.30	1.509		205	53.50		258.50	305
	6000	4 arms		5.30	1.509		285	53.50		338.50	395
	6100	Fiberglass pole, 1 or 2 fixtures, 20' high	R-3	4	5		350	175	39.50	564.50	690
	6200	30' high		3.60	5.556		550	195	44	789	945
	6300	35' high		3.20	6.250		690	219	49.50	958.50	1,150
	6400	40' high		2.80	7.143		840	250	56.50	1,146.50	1,350
	6420	Wood pole, 4-1/2" x 5-1/8", 8' high	1 Elec	6	1.333		230	47.50		277.50	325
	6430	10' high		6	1.333		260	47.50		307.50	355
	6440	12' high		5.70	1.404		330	50		380	440
	6450	15' high		5	1.600		385	56.50		441.50	510
	6460	20' high		4	2		465	71		536	615
	6500	Bollard light, lamp & ballast, 42" high with polycarbonate lens									
	6700	Mercury vapor, 175 watt	1 Elec	3	2.667	Ea.	555	94.50		649.50	750
	6800	Metal halide, 175 watt		3	2.667		595	94.50		689.50	795
	6900	High pressure sodium, 70 watt		3	2.667		610	94.50		704.50	810
	7000	100 watt		3	2.667		610	94.50		704.50	810
	7100	150 watt		3	2.667		595	94.50		689.50	795
	7200	Incandescent, 150 watt		3	2.667		430	94.50		524.50	615
	7300	Transformer bases, not including concrete bases									
	7320	Maximum pole size, steel, 40' high	1 Elec	2	4	Ea.	1,025	142		1,167	1,325
	7340	Cast aluminum, 30' high		3	2.667		555	94.50		649.50	755
	7350	40' high		2.50	3.200		840	113		953	1,100
	7380	Landscape recessed uplight, incl. housing, ballast, transformer									
	7390	& reflector									
	7400	Mercury vapor, 100 watt	1 Elec	5	1.600	Ea.	630	56.50		686.50	780
	7420	Incandescent, 250 watt		5	1.600		420	56.50		476.50	545
	7440	Quartz, 250 watt		5	1.600		400	56.50		456.50	525
	7460	500 watt		4	2		410	71		481	555
	7500	Replacement (H.I.D.) ballasts,									
	7510	Multi-tap 120/208/240/277 volt									
	7550	High pressure sodium, 70 watt	1 Elec	10	.800	Ea.	115	28.50		143.50	170
	7560	100 watt		9.40	.851		120	30		150	177
	7570	150 watt		9	.889		130	31.50		161.50	190
	7580	250 watt		8.50	.941		194	33.50		227.50	263
	7590	400 watt		7	1.143		218	40.50		258.50	300

4720

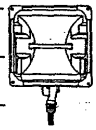
ELECTRICAL 16

16510 | Interior Luminaires

			CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P
800	0010	RESIDENTIAL FIXTURES									
	2000	Incandescent, exterior lantern, wall mounted, 60 watt	1 Elec	16	.500	Ea.	31	17.75		48.75	60.50
	2100	Post light, 150W, with 7' post		4	2		110	71		181	227
	2500	Lamp holder, weatherproof with 150W PAR		16	.500		16.90	17.75		34.65	45
	2550	With reflector and guard	↓	12	.667	↓	52	23.50		75.50	92.50

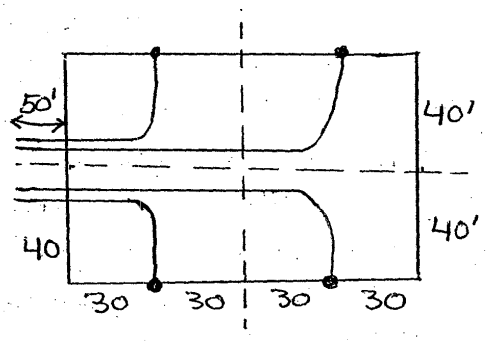
16520 | Exterior Luminaires

300	0010	EXTERIOR FIXTURES With lamps									
	0200	Wall mounted, incandescent, 100 watt	1 Elec	8	1	Ea.	28	35.50		63.50	84
	0400	Quartz, 500 watt		5.30	1.509		53.50	53.50		107	139
	0420	1500 watt		4.20	1.905		97	67.50		164.50	208
	0600	Mercury vapor, 100 watt		5.30	1.509		258	53.50		311.50	365
	0800	Wall pack, mercury vapor, 175 watt		4	2		221	71		292	350
	1000	250 watt		4	2		224	71		295	350
	1100	Low pressure sodium, 35 watt		4	2		208	71		279	335
	1150	55 watt		4	2		280	71		351	415
	1160	High pressure sodium, 70 watt		4	2		185	71		256	310
	1170	150 watt		4	2		228	71		299	355
	1180	Metal Halide, 175 watt		4	2		255	71		326	385
	1190	250 watt	↓	4	2	↓	260	71		331	390
	1200	Floodlights with ballast and lamp,									
	1400	pole mounted, pole not included									
	1500	Mercury vapor, 250 watt	1 Elec	2.40	3.333	Ea.	200	118		318	395
	1600	400 watt	2 Elec	4.40	3.636		278	129		407	495
	1800	1000 watt	"	4	4		365	142		507	610
	1950	Metal halide, 175 watt	1 Elec	2.70	2.963		300	105		405	485
	2000	400 watt	2 Elec	4.40	3.636		350	129		479	575
	2200	1000 watt		4	4		470	142		612	725
	2210	1500 watt	↓	3.70	4.324		500	153		653	780
	2250	Low pressure sodium, 55 watt	1 Elec	2.70	2.963		485	105		590	690
	2270	90 watt		2	4		535	142		677	800
	2290	180 watt		2	4		680	142		822	960
	2340	High pressure sodium, 70 watt		2.70	2.963		193	105		298	370
	2360	100 watt		2.70	2.963		198	105		303	375
	2380	150 watt	↓	2.70	2.963		220	105		325	400
	2400	400 watt	2 Elec	4.40	3.636		340	129		469	560
	2600	1000 watt	"	4	4		500	142		642	760
	2610	Incandescent, 300 watt	1 Elec	4	2		85	71		156	200
	2620	500 watt	"	4	2		128	71		199	247
	2630	1000 watt	2 Elec	6	2.667		138	94.50		232.50	293
	2640	1500 watt	"	6	2.667		151	94.50		245.50	305
	2650	Roadway area luminaire, low pressure sodium, 135 watt	1 Elec	2	4		535	142		677	800
	2700	180 watt	"	2	4		565	142		707	830
	2720	Mercury vapor, 400 watt	2 Elec	4.40	3.636		340	129		469	565
	2730	1000 watt		4	4		425	142		567	680
	2750	Metal halide, 400 watt		4.40	3.636		445	129		574	675
	2760	1000 watt		4	4		530	142		672	790
	2780	High pressure sodium, 400 watt		4.40	3.636		500	129		629	740
	2790	1000 watt	↓	4	4	↓	555	142		697	820
	2800	Light poles, anchor base									
	2820	not including concrete bases									
	2840	Aluminum pole, 8' high	1 Elec	4	2	Ea.	470	71		541	625
	2850	10' high		4	2		495	71		566	645
	2860	12' high		3.80	2.105		515	74.50		589.50	675
	2870	14' high	↓	3.40	2.353	↓	535	83.50		618.50	715



4721

Lighting



Area - 60 x 40 = 8,400 SF

250 watt

Lamp watts / SF =
250 / 2400 = .104

Average Maint illum = 2.5

Conduit and Cable

2 - #10, 2 conductor copper — $229 / 100 LF

1 - #8 stranded bare copper ground — $51.50 / 100 LF

1" PVC schedule 40 w/ coupling — $ 2.25 / 100 LF

Trench 8" wide, 36" deep — $ 1.52 / 100 LF

Conduit 2.25
Install 1.52
Wires 229 x 2 = 5.10/LF
+51.5 / 100

= $8.87 / LF

Total length (4 x 50) + (2 x 70) + (2 x 130) +
(4 x 10) = 640 LF

16120 | Conductors & Cables

		CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P
0010	**FIBER OPTICS**									
0020	Fiber optics cable only. Added costs depend on the type of fiber									
0030	special connectors, optical modems, and networking parts.									
0040	Specialized tools & techniques cause installation costs to vary.									
0070	Cable, minimum, bulk simplex	1 Elec	8	1	C.L.F.	24	35.50		59.50	79.50
0080	Cable, maximum, bulk plenum quad	"	2.29	3.493	"	117	124		241	315
0150	Fiber optic jumper				Ea.	55.50			55.50	61
0200	Fiber optic pigtail					30			30	33
0300	Fiber optic connector	1 Elec	24	.333		16.90	11.80		28.70	36.50
0350	Fiber optic finger splice		32	.250		32	8.85		40.85	48.50
0400	Transceiver (low cost bi-directional)		8	1		425	35.50		460.50	525
0450	Multi-channel rack enclosure (10 modules)		2	4		475	142		617	735
0500	Fiber optic patch panel (12 ports)		6	1.333		178	47.50		225.50	267
0010	**NON-METALLIC SHEATHED CABLE** 600 volt R16132-210									
0100	Copper with ground wire, (Romex)									
0150	#14, 2 conductor	1 Elec	2.70	2.963	C.L.F.	12.50	105		117.50	171
0200	3 conductor		2.40	3.333		22	118		140	201
0220	4 conductor		2.20	3.636		37	129		166	233
0250	#12, 2 conductor		2.50	3.200		18.30	113		131.30	189
0300	3 conductor		2.20	3.636		32	129		161	227
0320	4 conductor		2	4		65	142		207	284
0350	#10, 2 conductor		2.20	3.636		34	129		163	229
0400	3 conductor		1.80	4.444		49	158		207	289
0420	4 conductor		1.60	5		86	177		263	360
0450	#8, 3 conductor		1.50	5.333		92.50	189		281.50	385
0480	4 conductor		1.40	5.714		158	203		361	475
0500	#6, 3 conductor		1.40	5.714		145	203		348	460
0520	#4, 3 conductor	2 Elec	2.40	6.667		229	236		465	605
0540	#2, 3 conductor	"	2.20	7.273		340	258		598	760
0550	SE type SER aluminum cable, 3 RHW and									
0600	1 bare neutral, 3 #8 & 1 #8	1 Elec	1.60	5	C.L.F.	111	177		288	385
0650	3 #6 & 1 #6	"	1.40	5.714		125	203		328	440
0700	3 #4 & 1 #6	2 Elec	2.40	6.667		140	236		376	510
0750	3 #2 & 1 #4		2.20	7.273		207	258		465	610
0800	3 #1/0 & 1 #2		2	8		315	284		599	770
0850	3 #2/0 & 1 #1		1.80	8.889		370	315		685	875
0900	3 #4/0 & 1 #2/0		1.60	10		525	355		880	1,100
1450	UF underground feeder cable, copper with ground, #14, 2 conductor	1 Elec	4	2		14.15	71		85.15	122
1500	#12, 2 conductor		3.50	2.286		19.95	81		100.95	143
1550	#10, 2 conductor		3	2.667		32	94.50		126.50	176
1600	#14, 3 conductor		3.50	2.286		21.50	81		102.50	145
1650	#12, 3 conductor		3	2.667		30.50	94.50		125	175
1700	#10, 3 conductor		2.50	3.200		46.50	113		159.50	220
1710	#8, 3 conductor		2	4		123	142		265	350
1720	#6, 3 conductor		1.80	4.444		190	158		348	445
1750	#14, 1 conductor		7.15	1.119		5	39.50		44.50	64.50
1800	#12, 1 conductor		6.05	1.322		7.80	47		54.80	78.50
1850	#10, 1 conductor		5.50	1.455		11.80	51.50		63.30	90
1900	#8, 1 conductor		4.40	1.818		16.30	64.50		80.80	114
1950	#6, 1 conductor		3.55	2.254		21	80		101	142
2000	#4, 1 conductor	2 Elec	5.90	2.712		36	96		132	183
2100	#2, 1 conductor	"	4.90	3.265		47.50	116		163.50	225
2400	SEU service entrance cable, copper 2 conductors, #8 + #8 neut.	1 Elec	1.50	5.333		74	189		263	365
2600	#6 + #8 neutral		1.30	6.154		111	218		329	445
2800	#6 + #6 neutral		1.30	6.154		123	218		341	460

16055 | Selective Demolition

			CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P
300	0010	ELECTRICAL DEMOLITION									
	0020	Conduit to 15' high, including fittings & hangers									
	0100	Rigid galvanized steel, 1/2" to 1" diameter	1 Elec	242	.033	L.F.		1.17		1.17	1.75
	0120	1-1/4" to 2"		200	.040			1.42		1.42	2.12
	0140	2" to 4"		151	.053			1.88		1.88	2.80
	0160	4" to 6"		80	.100			3.55		3.55	5.30
	0200	Electric metallic tubing (EMT) 1/2" to 1"		394	.020			.72		.72	1.07
	0220	1-1/4" to 1-1/2"		326	.025			.87		.87	1.30
	0240	2" to 3"		236	.034			1.20		1.20	1.79
	0260	3-1/2" to 4"		155	.052			1.83		1.83	2.73
	1300	Transformer, dry type, 1 ph, incl. removal of									
	1320	supports, wire & pipe terminations									
	1340	1 kVA	1 Elec	7.70	1.039	Ea.		37		37	55
	1420	75 kVA	"	1.25	6.400	"		227		227	340
	1440	3 Phase to 600V, primary									
	1460	3 kVA	1 Elec	3.85	2.078	Ea.		73.50		73.50	110
	1520	75 kVA	"	1.35	5.926			210		210	315
	1550	300 kVA	R-3	1.80	11.111			390	87.50	477.50	675
	1570	750 kVA	"	1.10	18.182			635	143	778	1,125

16060 | Grounding & Bonding

800	0010	GROUNDING									
	0030	Rod, copper clad, 8' long, 1/2" diameter	1 Elec	5.50	1.455	Ea.	16.40	51.50		67.90	95
	0040	5/8" diameter		5.50	1.455		17.55	51.50		69.05	96.50
	0050	3/4" diameter		5.30	1.509		33.50	53.50		87	117
	0080	10' long, 1/2" diameter		4.80	1.667		17.50	59		76.50	107
	0090	5/8" diameter		4.60	1.739		18.20	61.50		79.70	112
	0100	3/4" diameter		4.40	1.818		29.50	64.50		94	129
	0130	15' long, 3/4" diameter		4	2		79	71		150	193
	0150	Coupling, bronze, 1/2" diameter					7.50			7.50	8.25
	0160	5/8" diameter					9.10			9.10	10
	0170	3/4" diameter					13.50			13.50	14.85
	0190	Drive studs, 1/2" diameter					5.85			5.85	6.45
	0210	5/8" diameter					5.10			5.10	5.60
	0220	3/4" diameter					5.75			5.75	6.35
	0230	Clamp, bronze, 1/2" diameter	1 Elec	32	.250		4.23	8.85		13.08	17.90
	0240	5/8" diameter		32	.250		4.58	8.85		13.43	18.30
	0250	3/4" diameter		32	.250		5.70	8.85		14.55	19.50
	0260	Wire ground bare armored, #8-1 conductor		2	4	C.L.F.	65.50	142		207.50	285
	0270	#6-1 conductor		1.80	4.444		83	158		241	325
	0280	#4-1 conductor		1.60	5		122	177		299	400
	0320	Bare copper wire, #14 solid		14	.571		3.40	20.50		23.90	33.50
	0330	#12		13	.615		4.60	22		26.60	37.50
	0340	#10		12	.667		7.45	23.50		30.95	43.50
	0350	#8		11	.727		11.75	26		37.75	51.50
	0360	#6		10	.800		21	28.50		49.50	66.50
	0370	#4		8	1		31.50	35.50		67	88
	0380	#2		5	1.600		50.50	56.50		107	140
	0390	Bare copper wire, #8 stranded		11	.727		12.45	26		38.45	52
	0400	#6		10	.800		21	28.50		49.50	66
	0450	#4	2 Elec	16	1		33	35.50		68.50	89
	0600	#2		10	1.600		53	56.50		109.50	143
	0650	#1		9	1.778		59	63		122	159
	0700	1/0		8	2		75	71		146	189
	0750	2/0		7.20	2.222		96	79		175	223

4724

02550 | Piped Energy Distribution

			CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P
550	5610	5" diameter pipe size	Q-17	18	.889	L.F.	39.50	29	4.44	72.94	92
	5620	6" diameter pipe size	Q-18	23	1.043		43	35.50	3.47	81.97	104
	6000	Black steel service pipe, std. wt., 1-1/2" thick insul.									
	6010	3/4" diameter pipe size	Q-17	54	.296	L.F.	13.70	9.65	1.48	24.83	31
	6040	1" diameter pipe size		50	.320		15.30	10.45	1.60	27.35	34.50
	6050	1-1/4" diameter pipe size		47	.340		17.15	11.10	1.70	29.95	37.50
	6060	1-1/2" diameter pipe size		45	.356		18.70	11.60	1.78	32.08	40
	6070	2" diameter pipe size		42	.381		20.50	12.40	1.90	34.80	43.50
	6080	2-1/2" diameter pipe size		34	.471		21.50	15.35	2.35	39.20	49.50
	6090	3" diameter pipe size		28	.571		24.50	18.60	2.86	45.96	57.50
	6100	4" diameter pipe size		22	.727		31	23.50	3.64	58.14	73.50
	6110	5" diameter pipe size		18	.889		39.50	29	4.44	72.94	92
	6120	6" diameter pipe size	Q-18	23	1.043		45	35.50	3.47	83.97	106
	6130	8" diameter pipe size		19	1.263		65	42.50	4.21	111.71	140
	6140	10" diameter pipe size		16	1.500		84.50	50.50	5	140	175
	6150	12" diameter pipe size		13	1.846		101	62.50	6.15	169.65	212
	6190	For 2" thick insulation, add					15%				
	6220	For 2-1/2" thick insulation, add					25%				
	6260	For 3" thick insulation, add					30%				
	6800	Black steel service pipe, ex. hvy. wt., 1" thick insul.									
	6820	3/4" diameter pipe size	Q-17	50	.320	L.F.	14.20	10.45	1.60	26.25	33
	6840	1" diameter pipe size		47	.340		15.10	11.10	1.70	27.90	35
	6850	1-1/4" diameter pipe size		44	.364		17.45	11.85	1.82	31.12	39
	6860	1-1/2" diameter pipe size		42	.381		18.55	12.40	1.90	32.85	41.50
	6870	2" diameter pipe size		40	.400		19.60	13.05	2	34.65	43.50
	6880	2-1/2" diameter pipe size		31	.516		24.50	16.80	2.58	43.88	55
	6890	3" diameter pipe size		27	.593		27.50	19.30	2.96	49.76	62.50
	6900	4" diameter pipe size		21	.762		36	25	3.81	64.81	81
	6910	5" diameter pipe size		17	.941		50.50	30.50	4.71	85.71	107
	6920	6" diameter pipe size	Q-18	22	1.091		56	37	3.63	96.63	121
	7400	Black steel service pipe, ex. hvy. wt., 1-1/2" thick insul.									
	7420	3/4" diameter pipe size	Q-17	50	.320	L.F.	14.20	10.45	1.60	26.25	33
	7440	1" diameter pipe size		47	.340		16.20	11.10	1.70	29	36.50
	7450	1-1/4" diameter pipe size		44	.364		18.80	11.85	1.82	32.47	40.50
	7460	1-1/2" diameter pipe size		42	.381		20.50	12.40	1.90	34.80	43.50
	7470	2" diameter pipe size		40	.400		21	13.05	2	36.05	45
	7480	2-1/2" diameter pipe size		31	.516		24.50	16.80	2.58	43.88	55.50
	7490	3" diameter pipe size		27	.593		29	19.30	2.96	51.26	64.50
	7500	4" diameter pipe size		21	.762		38	25	3.81	66.81	83
	7510	5" diameter pipe size		17	.941		52	30.50	4.71	87.21	109
	7520	6" diameter pipe size	Q-18	22	1.091		57.50	37	3.63	98.13	123
	7530	8" diameter pipe size		18	1.333		86.50	45	4.44	135.94	168
	7540	10" diameter pipe size		15	1.600		103	54	5.35	162.35	200
	7550	12" diameter pipe size		13	1.846		126	62.50	6.15	194.65	239
	7590	For 2" thick insulation, add					13%				
	7640	For 2-1/2" thick insulation, add					18%				
	7680	For 3" thick insulation, add					24%				

02580 | Elec/Communication Structures

4725

50	0010	CONDUIT INSTALLED BY DIRECT BURIAL In slab or duct bank									250
	0011	Not including excavation, backfill and cast in place concrete									
	1000	Direct burial									
	1010	PVC, schedule 40, w/coupling, 1/2" diameter	1 Elec	340	.024	L.F.	.29	.83		1.12	1.56
	1020	3/4" diameter		290	.028		.38	.98		1.36	1.88
	1030	1" diameter		260	.031		.56	1.09		1.65	2.25

02315 | Excavation and Fill

			CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P	
900	0010	**EXCAVATING, TRENCH** or continuous footing, common earth R02315-400										900
	0020	No sheeting or dewatering included										
	0050	1' to 4' deep, 3/8 C.Y. tractor loader/backhoe	B-11C	150	.107	C.Y.		2.92	1.19	4.11	5.75	
	0060	1/2 C.Y. tractor loader/backhoe	B-11M	200	.080			2.19	1.08	3.27	4.54	
	0062	3/4 C.Y. hydraulic backhoe	B-12F	270	.059			1.75	1.69	3.44	4.50	
	0090	4' to 6' deep, 1/2 C.Y. tractor loader/backhoe	B-11M	200	.080			2.19	1.08	3.27	4.54	
	0100	5/8 C.Y. hydraulic backhoe	B-12Q	250	.064			1.89	1.57	3.46	4.58	
	0110	3/4 C.Y. hydraulic backhoe	B-12F	300	.053			1.57	1.52	3.09	4.06	
	0120	1 C.Y. hydraulic backhoe	B-12A	400	.040			1.18	1.41	2.59	3.33	
	0130	1-1/2 C.Y. hydraulic backhoe	B-12B	540	.030			.87	1.31	2.18	2.76	
	0300	1/2 C.Y. hydraulic excavator, truck mounted	B-12J	200	.080			2.36	3.68	6.04	7.60	
	0500	6' to 10' deep, 3/4 C.Y. hydraulic backhoe, 6' to 10' deep	B-12F	225	.071			2.10	2.03	4.13	5.40	
	0510	1 C.Y. hydraulic backhoe	B-12A	400	.040			1.18	1.41	2.59	3.33	
	0600	1 C.Y. hydraulic excavator, truck mounted	B-12K	400	.040			1.18	2.17	3.35	4.17	
	0610	1-1/2 C.Y. hydraulic backhoe	B-12B	600	.027			.79	1.18	1.97	2.48	
	0620	2-1/2 C.Y. hydraulic backhoe	B-12S	1,000	.016			.47	1.70	2.17	2.58	
	0900	10' to 14' deep, 3/4 C.Y. hydraulic backhoe	B-12F	200	.080			2.36	2.28	4.64	6.10	
	0910	1 C.Y. hydraulic backhoe	B-12A	360	.044			1.31	1.56	2.87	3.70	
	1000	1-1/2 C.Y. hydraulic backhoe	B-12B	540	.030			.87	1.31	2.18	2.76	
	1020	2-1/2 C.Y. hydraulic backhoe	B-12S	1,000	.016			.47	1.70	2.17	2.58	
	1030	3 C.Y. hydraulic backhoe	B-12D	1,400	.011			.34	1.50	1.84	2.16	
	1300	14' to 20' deep, 1 C.Y. hydraulic backhoe	B-12A	320	.050			1.48	1.76	3.24	4.17	
	1310	1-1/2 C.Y. hydraulic backhoe	B-12B	480	.033			.98	1.47	2.45	3.11	
	1320	2-1/2 C.Y. hydraulic backhoe	B-12S	850	.019			.56	2	2.56	3.04	
	1330	3 C.Y. hydraulic backhoe	B-12D	1,000	.016			.47	2.09	2.56	3.01	
	1400	By hand with pick and shovel 2' to 6' deep, light soil	1 Clab	8	1			23.50		23.50	36.50	
	1500	Heavy soil	"	4	2			47		47	73	
	1700	For tamping backfilled trenches, air tamp, add	A-1	100	.080			1.88	.61	2.49	3.59	
	1900	Vibrating plate, add	B-18	230	.104	▼		2.52	.24	2.76	4.19	
	2100	Trim sides and bottom for concrete pours, common earth		1,500	.016	S.F.		.39	.04	.43	.64	
	2300	Hardpan	▼	600	.040	"		.96	.09	1.05	1.60	
	2400	Pier and spread footing excavation, add to above				C.Y.				30%	30%	
	3000	Backfill trench, F.E. loader, wheel mtd., 1 C.Y. bucket										
	3020	Minimal haul	B-10R	400	.030	C.Y.		.86	.54	1.40	1.90	
	3040	100' haul		200	.060			1.72	1.07	2.79	3.80	
	3060	200' haul	▼	100	.120			3.43	2.14	5.57	7.60	
	3080	2-1/4 C.Y. bucket, minimum haul	B-10T	600	.020			.57	.62	1.19	1.55	
	3090	100' haul		300	.040			1.14	1.23	2.37	3.10	
	3100	200' haul	▼	150	.080	▼		2.29	2.47	4.76	6.20	
	4000	For backfill with dozer, see div. 02315-120										
	4010	For compaction of backfill, see div. 02315-300										
		4726										
940	0010	**EXCAVATING, UTILITY TRENCH** Common earth										940
	0050	Trenching with chain trencher, 12 H.P., operator walking										
	0100	4" wide trench, 12" deep	B-53	800	.010	L.F.		.30	.11	.41	.57	
	0150	18" deep		750	.011			.32	.11	.43	.61	
	0200	24" deep		700	.011			.34	.12	.46	.65	
	0300	6" wide trench, 12" deep		650	.012			.37	.13	.50	.70	
	0350	18" deep		600	.013			.40	.14	.54	.76	
	0400	24" deep		550	.015			.43	.16	.59	.83	
	0450	36" deep		450	.018			.53	.19	.72	1.01	
	0600	8" wide trench, 12" deep		475	.017			.50	.18	.68	.96	
	0650	18" deep		400	.020			.60	.22	.82	1.14	
	0700	24" deep		350	.023			.68	.25	.93	1.30	
	0750	36" deep	▼	300	.027	▼		.79	.29	1.08	1.52	←
	0830	Fly wheel trencher, 18" wide trench, 6' deep, light soil	B-54A	1,992	.005	C.Y.		.14	.25	.39	.49	

Important: See the Reference Section for critical supporting data • Reference Nos. Cover 2, Flap, Front Endsheet

02740 | Flexible Pavement

			CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P
300	0010	**ASPHALTIC CONCRETE PAVEMENT** for highways	R02065-300								
	0020	and large paved areas									
	0080	Binder course, 1-1/2" thick	B-25	7,725	.011	S.Y.	2.07	.29	.22	2.58	2.96
	0120	2" thick		6,345	.014		2.75	.36	.27	3.38	3.87
	0160	3" thick		4,905	.018		4.09	.46	.35	4.90	5.60
	0200	4" thick		4,140	.021		5.45	.55	.41	6.41	7.30
	0300	Wearing course, 1" thick	B-25B	10,575	.009		1.52	.24	.18	1.94	2.24
	0340	1-1/2" thick		7,725	.012		2.32	.33	.24	2.89	3.32
	0380	2" thick		6,345	.015		3.12	.40	.29	3.81	4.36
	0420	2-1/2" thick		5,480	.018		3.84	.46	.34	4.64	5.30
	0460	3" thick		4,900	.020		4.58	.51	.38	5.47	6.25
	0800	Alternate method of figuring paving costs									
	0810	Binder course, 1-1/2" thick	B-25	630	.140	Ton	27	3.60	2.69	33.29	38.50
	0811	2" thick		690	.128		27	3.28	2.46	32.74	38
	0812	3" thick		800	.110		27	2.83	2.12	31.95	36.50
	0813	4" thick		850	.104		27	2.67	2	31.67	36.50
	0850	Wearing course, 1" thick	B-25B	575	.167		28.50	4.37	3.24	36.11	41.50
	0851	1-1/2" thick		630	.152		28.50	3.99	2.96	35.45	40.50
	0852	2" thick		690	.139		28.50	3.65	2.70	34.85	39.50
	0853	2-1/2" thick		745	.129		28.50	3.38	2.50	34.38	39
	0854	3" thick		800	.120		28.50	3.14	2.33	33.97	38.50
	1000	Pavement replacement over trench, 2" thick	B-37	90	.533	S.Y.	3.17	13.25	1.30	17.72	25.50
	1050	4" thick		70	.686		6.30	17.05	1.67	25.02	35
	1080	6" thick		55	.873		10	21.50	2.13	33.63	47
315	0011	**PAVING** Asphaltic concrete, parking lots & driveways									
	0020	6" stone base, 2" binder course, 1" topping	B-25C	9,000	.005	S.F.	1.21	.14	.16	1.51	1.73
	0300	Binder course, 1-1/2" thick		35,000	.001		.32	.04	.04	.40	.46
	0400	2" thick		25,000	.002		.41	.05	.06	.52	.59
	0500	3" thick		15,000	.003		.64	.08	.10	.82	.94
	0600	4" thick		10,800	.004		.83	.12	.13	1.08	1.25
	0800	Sand finish course, 3/4" thick		41,000	.001		.18	.03	.04	.25	.29
	0900	1" thick		34,000	.001		.22	.04	.04	.30	.35
	1000	Fill pot holes, hot mix, 2" thick	B-16	4,200	.008		.42	.19	.11	.72	.87
	1100	4" thick		3,500	.009		.61	.22	.13	.96	1.17
	1120	6" thick		3,100	.010		.83	.25	.15	1.23	1.47
	1140	Cold patch, 2" thick	B-51	3,000	.016		.48	.38	.05	.91	1.17
	1160	4" thick		2,700	.018		.90	.43	.06	1.39	1.72
	1180	6" thick		1,900	.025		1.41	.60	.08	2.09	2.58
400	0010	**COLD LAID ASPHALT PAVEMENT** 0.5 gal. asphalt/S.Y. per in. depth									
	0020	Well graded granular aggregate									
	0100	Blade mixed in windrows, spread & compacted 4" course	B-90A	1,600	.035	S.Y.	4.35	.99	.79	6.13	7.15
	0200	Traveling plant mixed in windrows, compacted 4" course	B-90B	3,000	.016		4.35	.44	.57	5.36	6.10
	0300	Rotary plant mixed in place, compacted 4" course	"	3,500	.014		4.35	.38	.49	5.22	5.90
	0400	Central stationary plant, mixed, compacted 4" course	B-36	7,200	.006		8.70	.15	.15	9	9.95

02750 | Rigid Pavement

100	0010	**CONCRETE PAVEMENT** Including joints, finishing, and curing									
	0020	Fixed form, 12' pass, unreinforced, 6" thick	B-26	3,000	.029	S.Y.	17.35	.78	.63	18.76	21
	0030	7" thick		2,850	.031		22	.82	.66	23.48	26
	0100	8" thick		2,750	.032		24	.85	.68	25.53	28.50
	0200	9" thick		2,500	.035		28	.93	.75	29.68	33
	0300	10" thick		2,100	.042		30	1.11	.90	32.01	35.50
	0400	12" thick		1,800	.049		32.50	1.30	1.05	34.85	38.50
	0500	15" thick		1,500	.059		36	1.55	1.26	38.81	44
	0510	For small irregular areas, add						100%			
	0600	For continuous welded steel reinforcement over 10' wide, add				S.Y.				3.60	4.25

4727

02720 | Unbound Base Courses & Ballasts

		CREW	DAILY OUTPUT	LABOR-HOURS	UNIT	2002 BARE COSTS MAT.	LABOR	EQUIP.	TOTAL	TOTAL INCL O&P
0010	**BASE COURSE** For roadways and large paved areas									
0050	Crushed 3/4" stone base, compacted, 3" deep	B-36C	5,200	.008	S.Y.	1.52	.22	.48	2.22	2.54
0100	6" deep		5,000	.008		3.04	.23	.50	3.77	4.24
0200	9" deep		4,600	.009		4.55	.25	.55	5.35	6
0300	12" deep	▼	4,200	.010		6.05	.27	.60	6.92	7.80
0301	Crushed 1-1/2" stone base, compacted to 4" deep	B-36B	6,000	.011		4.34	.30	.47	5.11	5.75
0302	6" deep		5,400	.012		6.50	.33	.53	7.36	8.25
0303	8" deep		4,500	.014		8.65	.39	.63	9.67	10.85
0304	12" deep	▼	3,800	.017	▼	13	.47	.75	14.22	15.85
0350	Bank run gravel, spread and compacted									
0370	6" deep	B-32	6,000	.005	S.Y.	7.70	.16	.24	8.10	9
0390	9" deep		4,900	.007		11.55	.19	.29	12.03	13.35
0400	12" deep	▼	4,200	.008		15.45	.22	.34	16.01	17.65
0500	Bituminous concrete, 4" thick	B-25	4,545	.019		6.10	.50	.37	6.97	7.90
0550	6" thick		3,700	.024		8.95	.61	.46	10.02	11.30
0560	8" thick		3,000	.029		11.90	.76	.57	13.23	14.90
0570	10" thick	▼	2,545	.035	▼	14.75	.89	.67	16.31	18.35
0600	Cold laid asphalt pavement, see div. 02740-400									
0700	Liquid application to gravel base, asphalt emulsion	B-45	6,000	.003	Gal.	2.65	.08	.11	2.84	3.15
0800	Prime and seal, cut back asphalt		6,000	.003	"	3.13	.08	.11	3.32	3.67
1000	Macadam penetration crushed stone, 2 gal. per S.Y., 4" thick		6,000	.003	S.Y.	5.30	.08	.11	5.49	6.10
1100	6" thick, 3 gal. per S.Y.		4,000	.004		7.95	.11	.17	8.23	9.10
1200	8" thick, 4 gal. per S.Y.	▼	3,000	.005	▼	10.60	.15	.22	10.97	12.10
1500	Alternate method to figure base course									
1510	Crushed stone, 3/4", compacted, 3" deep	B-36C	435	.092	C.Y.	18.30	2.65	5.80	26.75	30.50
1511	6" deep	B-36B	835	.077		18.30	2.13	3.40	23.83	27
1512	9" deep		1,150	.056		18.30	1.55	2.47	22.32	25
1513	12" deep		1,400	.046		18.30	1.27	2.03	21.60	24
1520	Crushed stone, 1-1/2", compacted 4" deep		665	.096		18.80	2.67	4.27	25.74	29.50
1521	6" deep		900	.071		18.80	1.97	3.16	23.93	27
1522	8" deep		1,000	.064		18.80	1.78	2.84	23.42	26.50
1523	12" deep	▼	1,265	.051		18.80	1.40	2.25	22.45	25
1530	Gravel, bank run, compacted, 6" deep	B-36C	835	.048		18.70	1.38	3.02	23.10	26
1531	9" deep		1,150	.035		18.70	1	2.19	21.89	24.50
1532	12" deep	▼	1,400	.029	▼	18.70	.82	1.80	21.32	23.50
2000	Alternate method to figure base course									
2005	Bituminous concrete, 4" thick	B-25	1,000	.088	Ton	27	2.27	1.70	30.97	35.50
2006	6" thick		1,220	.072		27	1.86	1.39	30.25	34.50
2007	8" thick		1,320	.067		27	1.72	1.29	30.01	34
2008	10" thick	▼	1,400	.063		27	1.62	1.21	29.83	34
2010	Crushed stone, 3/4" maximum size, 3" deep	B-36	540	.074		13.60	2	1.95	17.55	20
2011	6" deep		1,625	.025		13.60	.66	.65	14.91	16.70
2012	9" deep		1,785	.022		13.60	.60	.59	14.79	16.55
2013	12" deep		1,950	.021		13.60	.55	.54	14.69	16.40
2020	Crushed stone, 1-1/2" maximum size, 4" deep		720	.056		14	1.50	1.46	16.96	19.30
2021	6" deep		815	.049		14	1.32	1.29	16.61	18.85
2022	8" deep		835	.048		14	1.29	1.26	16.55	18.75
2023	12" deep	▼	975	.041		14	1.11	1.08	16.19	18.30
2030	Bank run gravel, 6" deep	B-32A	875	.027		36	.79	.99	37.78	42
2031	9" deep		970	.025		36	.71	.89	37.60	41.50
2032	12" deep	▼	1,060	.023	▼	36	.65	.82	37.47	41.50
5000	Stabilization fabric, polypropylene, 6 oz./S.Y.	B-6	10,000	.002	S.Y.	.84	.06	.02	.92	1.03
8900	For small and irregular areas, add						50%	50%		
0010	**BASE** Prepare and roll sub-base, small areas to 2500 S.Y.	B-32A	1,500	.016	S.Y.		.46	.58	1.04	1.34
0100	Large areas over 2500 S.Y.	B-32	3,700	.009	"		.25	.38	.63	.80

Location Factors

STATE/ZIP	CITY	MAT.	INST.	TOTAL
MICHIGAN (CONT'D)				
496	Traverse City	94.7	73.3	84.4
497	Gaylord	96.2	79.3	88.1
498-499	Iron Mountain	98.2	92.1	95.3
MINNESOTA				
550-551	Saint Paul	99.2	114.9	106.8
553-555	Minneapolis	100.0	116.5	108.0
556-558	Duluth	99.3	110.4	104.6
559	Rochester	99.0	99.9	99.4
560	Mankato	97.2	100.1	98.6
561	Windom	96.0	81.7	89.1
562	Willmar	95.2	89.4	92.4
563	St. Cloud	96.3	110.6	103.2
564	Brainerd	97.0	101.0	98.9
565	Detroit Lakes	99.3	89.9	94.8
566	Bemidji	98.5	98.1	98.4
567	Thief River Falls	97.6	89.9	93.9
MISSISSIPPI				
386	Clarksdale	96.5	33.8	66.2
387	Greenville	100.2	51.4	76.6
388	Tupelo	98.0	43.0	71.4
389	Greenwood	97.9	36.3	68.1
390-392	Jackson	98.3	53.1	76.5
393	Meridian	96.4	52.9	75.4
394	Laurel	97.9	37.5	68.7
395	Biloxi	98.4	60.9	80.3
396	McComb	96.3	41.9	70.0
397	Columbus	97.9	42.5	71.1
MISSOURI				
630-631	St. Louis	96.1	110.4	103.0
633	Bowling Green	95.8	93.0	94.4
634	Hannibal	94.5	91.0	92.8
635	Kirksville	97.0	82.4	89.9
636	Flat River	96.8	97.5	97.1
637	Cape Girardeau	96.1	95.6	95.9
638	Sikeston	94.6	89.9	92.3
639	Poplar Bluff	94.1	88.8	91.5
640-641	Kansas City	98.8	102.7	100.7
644-645	St. Joseph	98.6	88.7	93.8
646	Chillicothe	95.8	74.6	85.5
647	Harrisonville	95.3	97.6	96.4
648	Joplin	97.6	73.0	85.7
650-651	Jefferson City	95.0	88.4	91.8
652	Columbia	96.5	88.6	92.7
653	Sedalia	95.8	87.7	91.9
654-655	Rolla	94.5	83.6	89.2
656-658	Springfield	97.7	76.8	87.6
MONTANA				
590-591	Billings	101.5	80.0	91.1
592	Wolf Point	101.9	76.6	89.7
593	Miles City	99.8	77.2	88.9
594	Great Falls	102.7	78.0	90.8
595	Havre	100.6	76.8	89.1
596	Helena	102.6	77.4	90.4
597	Butte	101.2	76.0	89.0
598	Missoula	99.4	75.8	88.0
599	Kalispell	98.5	75.5	87.4
NEBRASKA				
680-681	Omaha	100.4	80.8	90.9
683-685	Lincoln	97.8	66.5	82.7
686	Columbus	96.5	47.2	72.7
687	Norfolk	98.9	65.1	82.6
688	Grand Island	97.6	68.2	83.4
689	Hastings	97.2	56.9	77.7
690	Mccook	96.9	52.2	75.3
691	North Platte	97.0	65.4	81.8
692	Valentine	100.5	44.7	73.5
693	Alliance	99.8	40.7	71.2
NEVADA				
889-891	Las Vegas	101.0	107.5	104.2
893	Ely	102.0	85.6	94.1
894-895	Reno	101.9	96.9	99.5
897	Carson City	101.7	96.7	99.3
898	Elko	100.5	85.3	93.2
NEW HAMPSHIRE				
030	Nashua	101.0	88.9	95.2
031	Manchester	101.4	88.9	95.4

STATE/ZIP	CITY	MAT.	INST.	TOTAL
NEW HAMPSHIRE (CONT'D)				
032-033	Concord	98.9	88.9	94.1
034	Keene	98.0	59.3	79.3
035	Littleton	98.0	66.3	82.7
036	Charleston	97.4	55.9	77.3
037	Claremont	96.5	55.9	76.9
038	Portsmouth	98.2	85.0	91.8
NEW JERSEY				
070-071	Newark	102.5	121.6	111.7
072	Elizabeth	101.5	114.0	107.6
073	Jersey City	100.0	121.2	110.3
074-075	Paterson	102.9	120.8	111.5
076	Hackensack	100.0	119.8	109.6
077	Long Branch	99.5	117.1	108.0
078	Dover	100.3	118.5	109.1
079	Summit	100.4	112.7	106.3
080,083	Vineland	97.9	117.8	107.5
081	Camden	99.9	116.3	107.8
082,084	Atlantic City	98.8	117.2	107.7
085-086	Trenton	100.7	119.4	109.7
087	Point Pleasant	100.2	117.2	108.4
088-089	New Brunswick	100.6	119.3	109.7
NEW MEXICO				
870-872	Albuquerque	100.3	78.6	89.8
873	Gallup	101.6	78.6	90.5
874	Farmington	101.7	78.6	90.5
875	Santa Fe	99.9	78.6	89.6
877	Las Vegas	99.8	78.6	89.6
878	Socorro	99.3	78.6	89.3
879	Truth/Consequences	99.2	73.9	86.9
880	Las Cruces	97.4	70.5	84.4
881	Clovis	100.0	78.0	89.4
882	Roswell	101.6	78.1	90.2
883	Carrizozo	102.3	78.6	90.9
884	Tucumcari	101.0	78.1	89.9
NEW YORK				
100-102	New York	107.7	163.3	134.6
103	Staten Island	103.9	159.6	130.8
104	Bronx	101.2	159.8	129.5
105	Mount Vernon	101.9	139.0	119.8
106	White Plains	101.8	136.6	118.6
107	Yonkers	106.6	137.5	121.5
108	New Rochelle	102.5	139.0	120.2
109	Suffern	102.5	126.8	114.2
110	Queens	102.4	160.0	130.2
111	Long Island City	104.3	160.0	131.2
112	Brooklyn	104.5	159.4	131.0
113	Flushing	104.9	160.0	131.5
114	Jamaica	102.9	160.0	130.5
115,117,118	Hicksville	102.2	151.2	125.9
116	Far Rockaway	105.1	159.8	131.6
119	Riverhead	102.7	152.4	126.7
120-122	Albany	97.7	97.0	97.4
123	Schenectady	98.3	97.6	98.0
124	Kingston	102.6	116.1	109.1
125-126	Poughkeepsie	101.7	121.3	111.2
127	Monticello	100.9	113.3	106.9
128	Glens Falls	92.7	92.8	92.8
129	Plattsburgh	98.3	88.0	93.4
130-132	Syracuse	99.2	94.0	96.7
133-135	Utica	97.5	89.8	93.8
136	Watertown	99.0	90.3	94.8
137-139	Binghamton	98.5	90.0	94.4
140-142	Buffalo	99.5	103.7	101.5
143	Niagara Falls	97.6	108.2	102.8
144-146	Rochester	100.5	99.4	100.0
147	Jamestown	96.8	91.8	94.4
148-149	Elmira	96.2	89.9	93.1
NORTH CAROLINA				
270,272-274	Greensboro	96.4	53.9	75.9
271	Winston-Salem	96.6	52.8	75.4
275-276	Raleigh	96.8	54.1	76.2
277	Durham	96.3	54.1	75.9
278	Rocky Mount	94.9	39.8	68.3
279	Elizabeth City	95.5	42.2	69.8
280	Gastonia	96.5	51.0	74.5
281-282	Charlotte	96.7	51.3	74.8
283	Fayetteville	94.9	54.1	75.2
284	Wilmington	95.1	53.1	74.8
285	Kinston	93.4	39.4	67.3

Location Factors

STATE/ZIP	CITY	MAT.	INST.	TOTAL
TEXAS (CONT'D)				
788	Del Rio	97.6	35.8	67.8
789	Giddings	94.6	46.3	71.3
790-791	Amarillo	98.3	62.0	80.8
792	Childress	97.6	57.2	78.0
793-794	Lubbock	100.0	58.4	79.9
795-796	Abilene	97.6	58.8	78.8
797	Midland	100.7	55.0	78.6
798-799,885	El Paso	97.5	57.2	78.1
UTAH				
840-841	Salt Lake City	100.7	76.9	89.2
842,844	Ogden	99.2	76.0	88.0
843	Logan	101.4	76.0	89.1
845	Price	101.9	56.2	79.8
846-847	Provo	101.7	76.0	89.3
VERMONT				
050	White River Jct.	99.5	42.0	71.7
051	Bellows Falls	97.9	45.6	72.6
052	Bennington	98.2	41.7	70.9
053	Brattleboro	98.7	45.8	73.2
054	Burlington	100.9	71.0	86.4
056	Montpelier	97.9	71.0	84.9
057	Rutland	100.0	71.0	86.0
058	St. Johnsbury	99.7	48.5	75.0
059	Guildhall	98.1	48.0	73.9
VIRGINIA				
220-221	Fairfax	97.4	81.3	89.6
222	Arlington	98.3	80.9	89.9
223	Alexandria	97.1	82.9	90.2
224-225	Fredericksburg	95.8	71.4	84.0
226	Winchester	96.7	59.5	78.7
227	Culpeper	96.4	60.3	79.0
228	Harrisonburg	96.8	52.6	75.5
229	Charlottesville	97.0	65.0	81.5
230-232	Richmond	97.3	70.7	84.4
233-235	Norfolk	97.6	64.8	81.8
236	Newport News	97.0	64.6	81.4
237	Portsmouth	96.2	64.5	80.9
238	Petersburg	96.8	70.7	84.2
239	Farmville	96.2	47.0	72.4
240-241	Roanoke	97.7	51.9	75.6
242	Bristol	95.9	51.1	74.2
243	Pulaski	95.6	46.3	71.8
244	Staunton	96.4	51.0	74.4
245	Lynchburg	96.4	55.2	76.5
246	Grundy	95.8	46.3	71.9
WASHINGTON				
980-981,987	Seattle	104.0	106.8	105.4
982	Everett	103.9	101.9	102.9
983-984	Tacoma	103.6	102.5	103.1
985	Olympia	103.5	102.4	103.0
986	Vancouver	106.0	102.6	104.3
988	Wenatchee	104.6	89.9	97.5
989	Yakima	104.1	95.7	100.0
990-992	Spokane	107.8	87.4	98.0
993	Richland	107.9	90.2	99.3
994	Clarkston	106.9	88.3	97.9
WEST VIRGINIA				
247-248	Bluefield	94.7	82.0	88.5
249	Lewisburg	96.2	82.9	89.8
250-253	Charleston	97.0	88.2	92.7
254	Martinsburg	96.2	54.1	75.8
255-257	Huntington	97.3	92.6	95.0
258-259	Beckley	94.5	85.9	90.3
260	Wheeling	97.4	93.2	95.4
261	Parkersburg	96.3	91.9	94.2
262	Buckhannon	96.1	91.1	93.7
263-264	Clarksburg	96.6	91.4	94.1
265	Morgantown	96.6	91.4	94.1
266	Gassaway	95.9	89.9	93.0
267	Romney	95.9	84.6	90.4
268	Petersburg	95.9	87.9	92.0
WISCONSIN				
530,532	Milwaukee	99.5	102.9	101.1
531	Kenosha	99.5	101.6	100.5
534	Racine	98.7	102.0	100.3
535	Beloit	98.7	97.6	98.1
537	Madison	98.8	97.0	97.9

STATE/ZIP	CITY	MAT.	INST.	TOTAL
WISCONSIN (CONT'D)				
538	Lancaster	96.9	80.3	88.9
539	Portage	95.2	97.0	96.1
540	New Richmond	96.8	93.8	95.3
541-543	Green Bay	100.2	92.8	96.6
544	Wausau	95.8	92.8	94.3
545	Rhinelander	99.3	89.0	94.3
546	La Crosse	96.5	92.9	94.7
547	Eau Claire	98.4	93.6	96.1
548	Superior	96.6	98.0	97.3
549	Oshkosh	96.4	90.7	93.6
WYOMING				
820	Cheyenne	100.3	59.9	80.8
821	Yellowstone Nat'l Park	99.6	53.6	77.4
822	Wheatland	101.4	52.9	77.9
823	Rawlins	102.8	49.0	76.8
824	Worland	100.4	49.3	75.7
825	Riverton	101.6	52.4	77.8
826	Casper	100.0	63.0	82.1
827	Newcastle	100.2	49.0	75.4
828	Sheridan	101.3	57.7	80.2
829-831	Rock Springs	104.9	49.4	78.1
CANADIAN FACTORS (reflect Canadian currency)				
ALBERTA				
	Calgary	112.6	79.0	96.4
	Edmonton	112.6	78.9	96.3
	Fort McMurray	110.5	78.9	95.2
	Lethbridge	110.6	79.0	95.3
	Lloydminster	110.5	78.9	95.2
	Medicine Hat	110.6	79.0	95.3
	Red Deer	110.3	79.0	95.2
BRITISH COLUMBIA				
	Kamloops	110.6	94.7	102.9
	Prince George	114.2	94.7	104.7
	Vancouver	114.2	97.8	106.3
	Victoria	114.6	94.7	105.0
MANITOBA				
	Brandon	112.0	79.2	96.2
	Portage la Prairie	111.2	79.2	95.7
	Winnipeg	111.2	79.2	95.8
NEW BRUNSWICK				
	Bathurst	109.8	70.1	90.6
	Dalhousie	109.8	70.1	90.6
	Fredericton	110.4	75.1	93.4
	Moncton	109.5	70.1	90.4
	Newcastle	109.8	70.1	90.6
	Saint John	111.9	75.1	94.1
NEWFOUNDLAND				
	Corner Brook	115.8	69.8	93.6
	St. John's	115.4	69.8	93.4
NORTHWEST TERRITORIES				
	Yellowknife	108.3	71.3	90.4
NOVA SCOTIA				
	Dartmouth	111.1	77.4	94.8
	Halifax	110.7	78.8	95.2
	New Glasgow	111.1	77.4	94.8
	Sydney	108.2	77.4	93.3
	Yarmouth	110.8	77.4	94.7
ONTARIO				
	Barrie	115.6	96.8	106.5
	Brantford	113.5	101.6	107.8
	Cornwall	113.7	97.1	105.7
	Hamilton	113.3	102.6	108.1
	Kingston	113.7	98.8	106.5
	Kitchener	108.1	96.9	102.7
	London	112.4	99.5	106.2
	North Bay	113.5	96.7	105.4
	Oshawa	113.2	100.1	106.9
	Ottawa	113.9	99.7	107.1
	Owen Sound	115.7	96.7	106.5
	Peterborough	113.5	96.9	105.5
	Sarnia	112.6	103.1	108.0
	St. Catharines	107.0	96.7	102.0
	Sudbury	107.2	97.0	102.4

c. Pit and Embedded Track

TMPA included $616,210 for the materials and installation associated with pit and embedded track,[242] while BNSF would include only $200,531. BNSF has thus conceded that this track would cost less than TMPA's estimate. We therefore use BNSF's estimate, as the purpose of the SAC test is to determine the least cost at which the SARR could construct and operate its system.

d. Site Development

TMPA included a site development cost of $90,966, based on a 47,000 SF building. BNSF would include a site development cost of $132,687, based on a 100,800 SF building. Because we use TMPA's building size, we use its site development cost evidence, which is supported.

2. Fueling Facilities

Fueling facilities would be located at Guernsey, Lincoln, and Madill. TMPA would install two fueling platforms at Guernsey, four at Lincoln, and one at Madill. BNSF would install two platforms at Guernsey, eight at Lincoln, and none at Madill. Because we use TMPA's yard track configurations for the Guernsey, Lincoln, and Madill sites, we use TMPA's number of platforms.

BNSF would use a cost per platform (including costs for fuel containment and fueling equipment) of $3,750,000. TMPA agrees with this cost estimate for the initial platform at each facility, but notes that BNSF's workpapers indicate that any additional platform at the same location would only cost $2 million.[243] Based on that evidence, we use a cost of $3,750,000 for the initial platform and $2,000,000 for any additional platforms at the same location.

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[242] Pit tracks span a pit from which maintenance employees can make repairs to the underside of rolling stock. Embedded track is placed in the floor of a repair building to permit rolling stock to be moved into the building for servicing.

[243] BNSF Reply W.P. at 5759 (study of the costs of installing fueling platforms).

31522 SERVICE DATE – LATE RELEASE March 24, 2003

This decision will be printed in the bound volumes of the STB printed reports at a later date.

SURFACE TRANSPORTATION BOARD

DECISION

STB Docket No. 42056

TEXAS MUNICIPAL POWER AGENCY
v.
THE BURLINGTON NORTHERN AND SANTA FE RAILWAY COMPANY

Decided: March 21, 2003

The Board finds that the defendant railroad has market dominance over the transportation at issue and that the challenged rate is unreasonably high. A maximum reasonable rate is prescribed and reparations are ordered.

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Table D-12
Building and Facilities

	TMPA	BNSF	STB
Locomotive Repair Shop	$2,402,829	$15,051,476	$8,983,497
Fueling Facility	19,250,000	37,800,000	19,250,000
Car Repair Shop	1,452,347	5,721,862	4,276,571
Roadway Buildings	2,660,570	9,691,620	7,128,680
Headquarters Facility	2,477,341	3,466,550	2,568,091
Wastewater Treatment Plant	458,474	7,438,582	7,438,582
Yard Site Development Cost	3,588,959	3,522,814	3,522,814
TOTAL	**$32,290,520**	**$82,692,904**	**$53,168,235**

1. Locomotive Repair Shop

A locomotive repair shop would be located at Guernsey. A variety of costs associated with that facility are in dispute.

Table D-13
Locomotive Repair Shop

	TMPA	BNSF	STB
Building	$990,844	$9,081,258	$3,055,000
Repair Equipment	704,717	5,637,000	5,637,000
Track (Embedded and Pit)	616,210	200,531	200,531
Site Development	90,966	132,687	90,966
TOTAL	**$2,402,829**	**$15,051,476**	**$8,983,497**

a. Building

TMPA would provide for a 47,000 SF locomotive repair shop capable of repairing 16 locomotives at one time. BNSF maintains that the GCRR would need a 100,800 SF locomotive

repair shop that could repair 32 locomotives at any one time. As discussed in **Appendix C**, we find that the GCRR would need 261 locomotives with 5% of those locomotives out-of-service at any time. Hence, the locomotive repair shop would only need the capacity to repair 13 locomotives simultaneously (261 x .05). Therefore, we use TMPA's assumptions regarding the size and capacity of the building.

BNSF does not contest the unit cost used by TMPA in its opening evidence for construction of the locomotive repair shop ($65.00/SF).[237] However, BNSF would add a "Specialities" unit cost of $25.09/SF, for a total construction cost of $90.09/SF.[238] TMPA argues that there is no basis for a "Specialities" cost, and we agree that BNSF has not supported the need for such an additional cost. Based on the agreed-upon $65.00/SF unit cost and TMPA's square footage requirement, we find that a locomotive repair shop would cost $3,055,000.

b. Equipment

TMPA did not include any costs for equipment for the repair shops in its opening evidence. BNSF would include $5,637,000 for equipment.[239] On rebuttal, TMPA presented an equipment cost estimate of $704,717, based on a different combination of equipment types and costs than what BNSF had used in developing its estimate.[240] And even for the same types of locomotive repair equipment, TMPA reduced the unit costs without explanation.[241]

We reject TMPA's evidence on repair equipment costs because it is unsupported and should have been submitted in TMPA's opening evidence, so that BNSF would have an opportunity to respond to it. Accordingly, we use BNSF's locomotive repair equipment cost estimate of $5,637,000.

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[237] See TMPA Reb. Narr. at 584. On rebuttal, TMPA nevertheless attempted to substitute a new cost of $21.08/SF, based on the average of five independent bids for constructing a 45,800 SF building. However, it is improper for TMPA to seek to revise an uncontested cost estimate on rebuttal. We note that the five bids on which TMPA bases its cost figure are dated August 28, 2001, almost 2 months before it filed its opening evidence. TMPA could have included the evidence in its opening statement.

[238] BNSF does not explain, and there is no evidence in the record defining, what it means by "Specialities."

[239] See BNSF Reply e-W.P. Buildings.xls & W.P. at 05789.

[240] For example, TMPA's estimate relies upon 3-ton jib cranes, as opposed to the 5- and 25-ton cranes used in BNSF's estimate. TMPA has made no attempt to explain why different equipment should be used.

[241] Compare TMPA Reb. W.P. at 10474 with BNSF Reply W.P. at 05789.

III - F - 8

Fencing

REDACTED

WYOMING DEPARTMENT OF TRANSPORTATION
AVERAGE UNIT BID PRICES FOR 2001 ENGLISH

ITEM	ITEM DESCRIPTION	UNIT	N	TOTAL QUANTITY	AVERAGE PRICE
606.06700	UPGRADE BOX BEAM GUARDRAIL	LF	2	1,345	9.53
607.10900	FENCE TYPE W	LF	3	48,242	2.63
607.10910	FENCE TYPE X	LF	8	77,035	6.38
607.10920	FENCE TYPE Y	LF	2	16,373	1.05
607.10930	FENCE TYPE Z	LF	1	1,360	3.78
607.20100	FENCE TYPE A (WOOD POSTS)	LF	6	390,313	1.64
607.20200	FENCE TYPE B (WOOD POSTS)	LF	16	577,119	1.20
607.20300	FENCE TYPE C (WOOD POSTS)	LF	5	106,197	1.97
607.20400	FENCE TYPE D (WOOD POSTS)	LF	2	52,710	2.30
607.20500	FENCE TYPE E (WOOD POSTS)	LF	4	226,793	1.30
607.20600	FENCE TYPE F (WOOD POSTS)	LF	14	423,590	1.34
607.20700	FENCE TYPE G (WOOD POSTS)	LF	13	318,954	1.21
607.20800	FENCE TYPE H (WOOD POSTS)	LF	9	56,547	1.41
607.30100	FENCE TYPE A (METAL POSTS)	LF	1	4,265	1.62
607.30200	FENCE TYPE B (METAL POSTS)	LF	2	47,533	1.19
607.30300	FENCE TYPE C (METAL POSTS)	LF	1	49	1.25
607.30500	FENCE TYPE E (METAL POSTS)	LF	3	17,131	1.80
607.30600	FENCE TYPE F (METAL POSTS)	LF	7	108,335	1.20
607.30700	FENCE TYPE G (METAL POSTS)	LF	5	24,229	1.21
607.30800	FENCE TYPE H (METAL POSTS)	LF	1	2,001	1.15
607.40300	FENCE 60" INDUSTRIAL	LF	1	515	8.63
607.40400	FENCE 72" INDUSTRIAL	LF	3	1,682	13.64
607.40600	FENCE 96" INDUSTRIAL	LF	1	200	21.78
607.40700	FENCE 72" INDUSTRIAL (BW TOP)	LF	1	138	17.09
607.50100	FENCE DEER	LF	2	54,082	4.10
607.50900	FENCE WING (WOOD POSTS)	LF	21	48,473	1.84
607.51000	FENCE WING (METAL POSTS)	LF	2	666	1.95
607.51100	TEMPORARY FENCE	LF	30	320,036	1.38
607.51200	RESETTING FENCE	LF	9	2,766	6.24
607.51500	FENCE REMOVAL	LF	24	666,442	0.40
607.51510	FENCE POST	EA	1	400	21.36
607.51515	ROCKFALL MESH	SY	1	18,789	7.59
607.51520	CABLE MESH	SY	1	359	65.55
607.60100	GATES INDUSTRIAL- SINGLE SWING 4 FT	EA	1	1	442.23
607.60500	GATES INDUSTRIAL- SINGLE SWING 12 FT	EA	2	4	681.76
607.61700	GATES INDUSTRIAL-ROLLING 20 FT	EA	1	1	1,254.42
607.70000	RESETTING GATES	EA	11	59	208.20
607.70100	GATES GALV STL 4 FT	EA	4	15	257.03
607.70900	GATES RAIL 8 FT	EA	1	4	385.00
607.71000	GATES RAIL 10 FT	EA	3	35	149.57
607.71100	GATES RAIL 12 FT	EA	8	30	214.46
607.71200	GATES RAIL 14 FT	EA	5	29	218.28
607.71300	GATES RAIL 16 FT	EA	8	63	234.83
607.72100	GATES SPECIAL	EA	2	8	1,980.57
607.72200	DEER RAMPS	EA	2	4	8,604.92
607.80100	BRACE PANELS	EA	41	2,248	103.51
607.80400	BRACE PANELS (INDUSTRIAL)	EA	1	2	313.61
607.80500	BRACE PANELS (DEER)	EA	2	93	164.53
607.90100	END PANELS	EA	44	6,950	146.08
607.90400	END PANELS (INDUSTRIAL)	EA	6	37	277.50
607.90500	END PANELS (DEER)	EA	2	141	239.99

* N = NUMBER OF CONTRACTS ON WHICH THIS ITEM WAS BID.
** LS HAS BEEN REPLACED WITH THE COMMON UNIT FOR THIS LUMP SUM ITEM.

WYOMING DEPARTMENT OF TRANSPORTATION
AVERAGE UNIT BID PRICES FOR 2001 ENGLISH

ITEM	ITEM DESCRIPTION	UNIT	N	TOTAL QUANTITY	AVERAGE PRICE
608.10100	CONCRETE	SY	2	104	87.63
608.10200	CONCRETE SIDEWALK	SY	21	32,018	45.98
608.10300	CONCRETE BIKE PATH	SY	1	940	34.62
608.10400	CONCRETE MEDIAN PAVING	SY	3	699	44.85
608.10500	CONCRETE DITCH PAVING	SY	4	2,218	67.82
608.10700	DECORATIVE CONCRETE	SY	3	1,337	76.65
609.10110	SPECIAL CURB TYPE D	LF	4	4,067	12.14
609.10120	SPECIAL CURB TYPE X	LF	3	385	31.55
609.10200	CURB AND GUTTER TYPE A	LF	25	76,520	20.47
609.10400	CURB AND GUTTER TYPE C	LF	4	1,143	19.31
609.10700	DOUBLE GUTTER	SY	15	12,559	42.32
610.10100	METAL DRAIN INLET	EA	2	22	491.87
610.10200	CURB DRAIN CONDUIT	LF	2	545	25.11
611.10100	HIGHWAY MONUMENTS	EA	8	566	130.48
612.09100	STRUCTURAL STEEL (OVERHEAD SIGN SUPPORT)	**LB	2	5,952	2.75
612.09300	STRUCTURAL STEEL (BREAK-AWAY SIGN SUPPORTS) W6X12	LF	9	1,615	61.56
612.09400	STRUCTURAL STEEL (BREAK-AWAY SIGN SUPPORTS) W6X15	LF	9	940	80.38
612.09500	STRUCTURAL STEEL (BREAK-AWAY SIGN SUPPORTS) W8X21	LF	7	782	105.97
612.09600	STRUCTURAL STEEL (BREAK-AWAY SIGN SUPPORTS) W10X26	LF	3	293	94.94
612.09700	STRUCTURAL STEEL (BREAK-AWAY SIGN SUPPORTS) W14X30	LF	1	78	137.00
612.10210	IMPACT ATTENUATOR	**EA	1	1	22,976.03
612.20100	MILE POSTS	EA	1	20	25.80
612.30100	SIGN POSTS, WOOD	MBM	42	116	4,510.75
612.30300	SIGN POSTS, SQUARE TUBULAR STEEL	EA	10	162	153.87
612.30400	PLYWOOD SIGN PANELS	SF	19	20,008	21.37
612.30500	ALUMINUM SIGN PANELS	SF	47	11,316	22.13
612.30600	REMOVE AND RESET SIGNS	LS	30	30	2,338.07
612.50100	DELINEATORS, TYPE I	EA	10	4,922	16.71
612.50200	DELINEATORS, TYPE II	EA	39	2,469	18.12
612.50300	DELINEATORS, TYPE III	EA	42	6,733	18.53
612.50600	DELINEATORS, TYPE VI	EA	2	220	45.13
612.50700	REMOVE AND RESET DELINEATORS	EA	2	518	27.46
612.70800	PREFORMED PAVEMENT LINE 8"	LF	1	7,150	7.64
612.71810	EPOXY PAVEMENT LINE 4"	LF	1	540,000	0.38
612.71815	EPOXY PAVEMENT LINE 8"	LF	1	18,800	0.79
612.71900	SOLID LINE STRIPING	MI	1	1	1,700.00
614.01000	EROSION CONTROL CONCRETE	CY	30	1,586	271.71
615.01012	CATTLEGUARD (HEAVY DUTY) 12 FT	EA	2	10	3,723.14
615.01018	CATTLEGUARD (HEAVY DUTY) 18 FT	EA	5	16	4,403.34
615.01024	CATTLEGUARD (HEAVY DUTY) 24 FT	EA	18	55	5,921.51
615.01030	CATTLEGUARD (HEAVY DUTY) 30 FT	EA	3	4	7,708.13
615.01036	CATTLEGUARD (HEAVY DUTY) 36 FT	EA	2	3	10,268.88
615.01042	CATTLEGUARD (HEAVY DUTY) 42 FT	EA	1	1	9,333.30
615.02012	CATTLEGUARD (MEDIUM DUTY) 12 FT	EA	1	8	3,772.02
615.02018	CATTLEGUARD (MEDIUM DUTY) 18 FT	EA	7	18	4,610.29
615.02024	CATTLEGUARD (MEDIUM DUTY) 24 FT	EA	2	3	6,141.70
615.06012	RESETTING CATTLEGUARD (HEAVY DUTY) 12 FT	EA	1	1	1,516.67
615.06036	RESETTING CATTLEGUARD (HEAVY DUTY) 36 FT	EA	1	1	3,225.32
615.07030	RESETTING CATTLEGUARD (MEDIUM DUTY) 30 FT	EA	1	1	1,952.85
615.07050	RESETTING CATTLEGUARDS	EA	1	1	1,421.20
616.09010	WOOD SNOW FENCE 10 FOOT	LF	1	7,087	10.45

* N = NUMBER OF CONTRACTS ON WHICH THIS ITEM WAS BID.
** LS HAS BEEN REPLACED WITH THE COMMON UNIT FOR THIS LUMP SUM ITEM.

R06100-010 Thirty City Lumber Prices

Prices for boards are for #2 or better or sterling, whichever is in best supply. Dimension lumber is "Standard or Better" either Southern Yellow Pine (S.Y.P.), Spruce-Pine-Fir (S.P.F.), Hem-Fir (H.F.) or Douglas Fir (D.F.) The species of lumber used in a geographic area is listed by city. Plyform is 3/4" BB oil sealed fir or S.Y.P. whichever prevails locally, 3/4" CDX is S.Y.P. or Fir.

These are prices at the time of publication and should be checked against the current market price. Relative differences between cities will stay approximately constant.

City	Species	Contractor Purchases per M.B.F. $4S Dimensions 2"x4"	2"x6"	2"x8"	2"x10"	2"x12"	4"x4"	Boards 1"x8"	1"x12"	Contractor Purchases per M.S.F. 3/4" Ext. Plyform	3/4" Thick CDX T&G
Atlanta	S.P.F.	$613	$577	$644	$819	$915	$ 824	$ 757	$1,289	$ 500	$ 804
Baltimore	S.P.J.	606	528	642	703	681	943	1000	1500	746	789
Boston	S.P.J.	610	568	630	790	830	1042	1920	1950	1032	831
Buffalo	H.F.	522	553	579	642	650	755	1280	1610	635	515
Chicago	S.P.F.	618	586	614	748	685	690	936	1543	779	774
Cincinnati	S.P.J.	609	683	691	795	882	863	1200	1446	824	904
Cleveland	S.P.J.	684	631	650	892	893	787	984	1910	1030	837
Columbus	S.P.J.	576	722	696	894	908	744	1419	1947	1186	775
Dallas	S.P.J.	784	656	609	690	731	668	728	1029	718	718
Denver	H.F.	642	631	646	766	658	958	771	1131	1196	900
Detroit	S.P.J.	559	589	614	851	886	594	1147	1859	804	889
Houston	S.Y.P.	537	536	536	592	641	802	707	855	985	703
Indianapolis	S.Y.F.	644	615	705	795	835	888	917	1177	825	840
Kansas City	D.F.	600	570	570	645	670	864	1050	1300	785	830
Los Angeles	D.F.	534	536	625	642	654	696	671	1385	690	790
Memphis	S.P.F.	710	654	693	834	770	1068	909	1314	954	1045
Milwaukee	S.P.J.	798	750	862	900	995	842	850	1237	828	859
Minneapolis	S.P.F.	569	545	536	675	754	674	1197	1409	1138	753
Nashville	S.P.F.	619	625	642	804	753	864	831	1543	910	754
New Orleans	S.Y.P.	587	577	561	612	570	732	591	1547	870	717
New York City	S.P.J.	548	522	605	666	577	1044	800	1101	1064	796
Philadelphia	H.F.	586	561	599	704	676	804	1223	1468	749	796
Phoenix	D.F.	624	658	715	838	768	1134	1178	1455	1308	924
Pittsburgh	H.F.	594	624	679	748	780	799	1300	1490	780	830
St. Louis	S.P.F.	496	470	412	438	506	858	910	654	742	691
San Antonio	S.Y.P.	536	531	618	662	737	616	743	712	753	802
San Diego	D.F.	531	522	550	618	588	768	1059	1178	1284	904
San Francisco	D.F.	498	490	487	630	625	840	760	1355	906	937
Seattle	S.P.F.	649	627	673	794	801	817	666	910	800	792
Washington, DC	S.P.F.	577	548	586	752	716	908	819	1210	1126	820
Average		$602	$590	$622	$731	$738	$ 830	$ 977	$1,337	$ 912	$ 811

To convert square feet of surface to board feet, 4% waste included.

$4S Size	Multiply S.F. by	T & G Size	Multiply S.F. by	Flooring Size	Multiply S.F. by
1 x 4	1.18	1 x 4	1.27	25/32" x 2-1/4"	1.37
1 x 6	1.13	1 x 6	1.18	25/32" x 3-1/4"	1.29
1 x 8	1.11	1 x 8	1.14	15/32" x 1-1/2"	1.54
1 x 10	1.09	2 x 6	2.36	1" x 3"	1.28
				1" x 4"	1.24

Highway Crossing Costs

REDACTED

28578
EB

SERVICE DATE – May 12, 2000

This decision will be printed in the bound volumes of the STB printed reports at a later date.

SURFACE TRANSPORTATION BOARD

DECISION

STB Docket No. 42022

FMC WYOMING CORPORATION AND FMC CORPORATION
v.
UNION PACIFIC RAILROAD COMPANY

STB Ex Parte No. 346 (Sub-No. 29A)

RAIL GENERAL EXEMPTION AUTHORITY—PETITION OF AAR
TO EXEMPT RAIL TRANSPORTATION OF SELECTED COMMODITY GROUPS

PETITION FOR PARTIAL REVOCATION OF EXEMPTION FOR COKE

Decided: May 10, 2000

The Board addresses a complaint challenging the reasonableness of 16 rates. The Board finds that the defendant railroad has market dominance over the transportation involved with respect to 15 of the rates, but not with respect to the rate applicable to the transportation of coke. The Board further finds that the 15 rates that are subject to maximum rate regulation are unreasonably high. Maximum reasonable rates are prescribed and reparations are ordered.

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Soda Ash 6
Sodium Bicarbonate and Sodium Sesquicarbonate 7
Phosphorus 8
Phosphate Rock 8
Coke 8
Traffic Summary 8

MARKET DOMINANCE INQUIRY 10

1. Highway Crossings and Warning Devices

UP included the cost of highway crossings and warning devices for all road crossings along the ORR ROW. FMC claims that these costs should be excluded as barriers to entry except on segments where UP paid for such investment.

In West Texas, 1 S.T.B. at 672, we determined that the costs associated with grade crossings would constitute a barrier to entry if the defendant railroad had not incurred those costs itself. Thus, FMC included only the amount ($7.9 million to construct grade crossings and overpasses and $1.5 million for highway warning devices) that would be needed on the Orin line. Because there is no evidence that the railroad incurred crossing costs on other segments, we use FMC's evidence.

2. Railroad Crossings

The parties agree on the cost of constructing railroad crossings.

3. Right-of-Way Fences

UP states that urban/suburban and cultivated land would comprise approximately 66% of the ORR's ROW and would require fencing. An additional 24% of the ORR ROW would pass through rangeland and UP suggests that fencing could be justified to prevent livestock from straying onto the tracks.

FMC would have the ORR fence 25% of the ROW, claiming that only Kansas and Oregon have fencing requirements. According to FMC, in other jurisdictions, while the railroad would be liable for damages, the question of fencing is a business decision requiring the balancing of the risk of damages versus fencing costs.

FMC provided no evidence to support its assertion that only 25% of the ROW requires fencing. UP's workpapers, on the other hand, show that six of the States traversed by the ORR have fencing requirements.[179] Thus, we find that FMC's proposed fencing would not be sufficient to meet the legal requirements faced by the ORR as well as the existing railroad, and we use UP's fencing estimate.

[179] UP Reply Workpaper GM/HW 483.

Public - Redacted

BEFORE THE
SURFACE TRANSPORTATION BOARD

FMC CORPORATION and FMC WYOMING CORPORATION, Complainants, v. UNION PACIFIC RAILROAD COMPANY, Defendant.	)	Docket No. 42022

UNION PACIFIC'S REPLY EVIDENCE

VOLUME 5 OF 18: STAND ALONE NETWORK

JAMES V. DOLAN
LOUISE A. RINN
Union Pacific Railroad Company
1416 Dodge Street
Omaha, Nebraska 68179
(402) 271- 4227

ARVID E. ROACH II
S. WILLIAM LIVINGSTON, JR.
J. MICHAEL HEMMER
Covington & Burling
1201 Pennsylvania Avenue, N.W.
P. O. Box 7566
Washington, D.C. 20044-7566
(202) 662- 5380

Attorneys for Union Pacific Railroad Company

March 31, 1999

VERIFIED STATEMENT

OF

GEORGE WILLIAM MCDONALD AND HERBERT G. WEBB

March 29, 1999

REDACTED

Detailed Comparison of ORR Investment

Item	Unit	GM/HW Quantity	GM/HW Unit Cost	GM/HW Total	Pattison/Andrew Quantity	Pattison/Andrew Unit Cost	Pattison/Andrew Total	Difference Quantity	Difference Unit Cost	Difference Total
Right-of-Way										
Right-of-Way	LS			$562,423,100			$207,491,792.00			$354,931,308
Grading										
Earthwork				2,080,714,584			1,330,968,533			$749,746,051
Other Earthwork										
Clearing	Acre	14,917	$1,856.00	27,685,852	10,467	$1,856.00	19,426,752	4,450	0	$8,259,100
Grubbing	Acre	814	$2,575.00	2,096,161	671	$2,575.00	1,727,825	143	0	$368,336
Rip Rap	CY	1,266,720	$19.35	24,549,741	1,266,720	$19.35	24,649,741	0	0	$0
Retaining Walls	CY	264,592	$89.85	23,773,631	203,249	$89.85	18,261,923	61,343	0	$5,511,708
Lateral Drainage	LF	329,294	$7.40	2,436,776	291,419	$7.40	2,156,501	37,875	0	$280,277
Seeding	Acre	13,916	$2,025.54	28,187,452	0	0	0	13,916	2,026	$28,187,452
Water for Compaction	Mile	1,616	$13,400.39	21,655,037	0	0	0	1,616	13,400	$21,655,037
Road Surfacing	Mile	3,047	$11,214.98	34,167,780	0	0	0	3,047	11,215	$34,167,780
Relocation of Utilities	Mile	3,047	$5,010.31	15,264,506	0	0	0	3,047	5,010	$15,264,506
Placing Topsoil	CY	1,733,507	$16.10	27,913,106	0	0	0	1,733,507	16	$27,913,106
Environmental Mitigation	Mile	210	7000	1,471,820	0	0	0	210	7,000	$1,471,820
Geotextile Fabric -Track	SY	8,374,080	$2.25	18,841,680	0	0	0	8,374,080	2	$18,841,680
Geotextile Fabric -Turnouts	SY	284,550	$2.25	640,238	0	0	0	284,550	2	$640,238
Geotextile Fabric -Crossings	SY	277,738	$2.25	624,911	0	0	0	277,738	2	$624,911
Bridges										
Bridge Class I	LF	50,878			6,749	$5,820.00	39,279,180			
Bridge Class II	LF	61,681			56,599	$2,600.00	147,157,400			
Bridge Class III	LF	71,897			17,199	$2,000.00	34,398,000			
Bridge Class IV	LF	18,269			73,150	$5,600.00	409,640,000			
Total for all Bridges Class I to Class IV				1,263,023,554			630,474,580			$632,548,974
Highway Grade Separations - Powder River 8		16		17,598,000				16	0	$17,598,000
Drainage - Culverts										
Drainage	Total			93,434,632			$53,295,948.00			$40,138,684
Tunnels										
Tunnels - single track	TF	8,400	$3,116.81	26,197,990	1,766	$5,200.00	9,183,200	6,634	(2,081)	$17,014,790
Track										
Subballast	CY			468,615,583			133,370,060			$335,245,523
Ballast	CY			479,044,339			235,263,680			$243,780,659
Timber Ties (7"x9"x9'-0")	ea.			615,950,036			576,966,850			$38,983,186
Timber Ties (6"x8"x8'-6")	ea.			52,212,440			15,664,800			$36,547,640
115 RE Rail (new)	Tons			41,933,079			113,390,520			($71,457,441
115 RE Rail Premium (new)				121,982,082			0			$121,982,082
115 RE Rail (relay)	Tons			74,688,932			22,401,800			$52,287,132
133 RE Rail (new)	Tons			29,100,994			637,209,300			($608,108,306
133 RE Rail Premium (new)				695,496,466			0			$695,496,466
Plant Welds	ea.			58,562,476			37,503,400			$21,059,076
Field Welds	ea.			29,355,670			14,031,900			$15,323,770
AREA 14 inch tie plate	ea.			235,193,352			208,610,892			$26,582,460
AREA Pandrol Plates	ea.			14,268,721			3,489,408			$10,777,313
6-inch spikes	ea.			35,156,760			57,947,470			($22,790,710
Elastic Fasteners (Pandrol clips)	ea.			6,173,101			1,509,840			$4,663,261
Rail anchors	ea.			28,705,156			7,640,416			$21,064,740

4749

III-G
DISCOUNTED CASH FLOW ANALYSIS

2002 AAR Cost of Capital Comments

ASSOCIATION OF
AMERICAN RAILROADS

Type Department Name Here
Dennis J. Starks
Senior Commerce Counsel*

RECEIVED
MAR 28 2003
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207475

March 28, 2003

BY HAND DELIVERY

ENTERED
Office of Proceedings
MAR 28 2003
Part of
Public Record

The Honorable Vernon A. Williams
Secretary
Surface Transportation Board
1925 K. Street, N.W.
Washington, D.C. 20423

Re: Ex Parte No. 558 (Sub-No. 6), Railroad Cost of Capital - - 2002

Dear Secretary Williams:

Please find enclosed an original and ten (10) copies of the Comments of the Association of American Railroads and Its Member Railroads in the proceeding referenced above. A copy of the same on a 3.5inch diskette, in Word Perfect 9.0, is also provided for the Board's convenience.

Please date-stamp the extra copy of the Comments and this Letter, provided for that purpose, and return the same to the undersigned, via the individual hand delivering them.

Sincerely yours,

Dennis J. Starks

Enclosures

* Admitted to West Virginia, only. Practice limited to matters and proceedings before federal courts and agencies.
50 F Street, NW | Washington, DC 20001 | P (202) 639-2504 | F (202) 639-2868 | dstarks@aar.org

BEFORE THE
SURFACE TRANSPORTATION BOARD

207475

RAILROAD COST OF CAPITAL--2002	)	EX PARTE NO. 558 (Sub- No. 6)

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COMMENTS OF THE ASSOCIATION OF AMERICAN RAILROADS AND ITS MEMBER RAILROADS

George P. Aspatore
Jon Broder
Paul R. Hitchcock
Theodore K. Kalick
Robert T. Opal
Louise Anne Rinn
Michael E. Roper
Peter J. Shudtz
Greg E. Summy
Marcella M. Szel
Bill Tuttle
Richard E. Weicher
William J. Wochner

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Louis P. Warchot
Dennis J. Starks
Association of American Railroads
50 F Street, N.W.
Washington, D.C. 20001
(202) 639-2504

Counsel for the Association of American Railroads
and Member Railroads

March 28, 2003

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II. THE COST OF EQUITY 2

III. THE COST OF PREFERRED STOCK 4

IV. THE COST OF DEBT 5

V. THE 2002 CAPITAL STRUCTURE OF THE RAILROAD INDUSTRY AND THE OVERALL COST OF CAPITAL 6

CONCLUSION 7

VERIFIED STATEMENTS

TAB	WITNESS*	SUBJECT
1	Craig F. Rockey	The railroads' cost of equity and overall cost of capital.
2	David F. Miller	Bond yields for 2002; yields on equipment trust certificates and conditional sales agreements; railroads' cost of debt and preferred stock; the market value capital structure.

*Verified statements are referenced in these comments by witness name -- viz., V.S. Rockey at

BEFORE THE
SURFACE TRANSPORTATION BOARD

RAILROAD COST OF CAPITAL--2002	)	EX PARTE NO. 558 (Sub- No. 6)

COMMENTS OF THE ASSOCIATION OF AMERICAN RAILROADS AND ITS MEMBER RAILROADS

By order served December 12, 2002, the Surface Transportation Board (STB/Board) instituted this proceeding to determine the railroads' cost of capital for the year 2002. That determination, as the Board noted, will enable it to make the statutorily required (49 U.S.C. 10701 (d)(2), 10704(a)(2)) annual individual railroad revenue adequacy determination for 2002. The Board noted further that the cost of capital determination may also be used in various other STB railroad proceedings. See Ex Parte No. 558 (Sub-No. 6) *Railroad Cost of Capital* – 2002 (Served December 12, 2002) (Slip Op. 1).

The railroads, through the Association of American Railroads (AAR) are submitting herewith their calculation of (1) the railroads' current 2002 cost of debt capital; (2) the railroads' 2002 current cost of preferred equity capital; (3) the railroads' 2002 cost of common equity capital and (4) the 2002 capital structure mix of the railroad industry on a market value basis.

AAR, through the attached verified statements of Craig F. Rockey, Vice President, Policy and Economics Department of the Association of American Railroads, and David F. Miller, Director - Accounting and Finance, AAR Policy and Economics Department. These statements establish the following:

1. The 2002 cost of debt capital is 6.00 (VS. Miller pp. 2, 14; Rockey pp. 2, 17).

2. The 2002 cost of preferred equity capital is 6.26 (VS. Miller p.18; Rockey p. 2).

3. The 2002 cost of common equity capital is 12.60 (VS. Rockey pp. 2, 17).

4. The capital structure of the railroad industry is 40.9% debt, 2.1% preferred equity and 57.0% common equity. (VS. Miller p. 19; VS. Rockey p. 2). From these data Mr. Rockey concludes that the overall railroad industry cost of capital for 2002 is 9.76% (V. S. Rockey pp. 2, 17).

I. INTRODUCTION

The sole purpose of this proceeding is to determine the cost of capital for 2002. Thus, while the revenue adequacy standards are not at issue in this proceeding, it has been held that the current cost of capital will continue to be the sole standard of revenue adequacy, and that the cost of capital will be computed using the current cost of debt and market value weights. See Ex Parte No. 393 (Sub-No. 1), *Standards for Railroad Revenue Adequacy*, 3 I.C.C. 2d 261 (1986), *aff'd sub. nom., Consolidated Rail Corporation v. United States*, 855 F.2d 78 (3rd Cir. 1988).

II. THE COST OF EQUITY

The Discounted Cash Flow (DCF) methodology has been used in all previous cost of capital proceedings to determine the cost of equity. The validity of the DCF approach is recognized by nearly every rate of return analyst in the United States, and among federal and state regulatory

agencies, the DCF model is the most widely used method for determining the cost of equity.[1] Mr. Rockey has established the DCF methodology in his calculation of the cost of common equity in this proceeding.

Under the DCF methodology, the cost of common equity is determined by adding together the dividend yield (the expected dividend for the next period divided by the common stock price) and the expected growth rate. The dividend yield is computed using publicly available data from the stock market. In all cost of capital proceedings since 1982, the Board has determined the expected growth rate by using a truncated average of published long-term earnings growth forecasts by a large number of security analysts to obtain an estimate of the investors' consensus of earnings growth expectations. The use of analysts' forecasts to estimate the composite growth rate is the most accurate approach available. As the Board has properly recognized, this part of the DCF formula measures investors' expectations, and a consensus of analysts' forecasts is the best evidence of those expectations. V.S. Rockey at pp. 9-13.

In cost of capital proceedings prior to Ex Parte No. 473, *Railroad Cost of Capital--1987*, 4 I.C.C. 2d 621 (1988), the expected growth rate has been calculated based on the consensus forecasts made by a group of prominent investment analysts who follow the rail industry. Commencing with Ex Parte No. 473, however, the Board has expressed a preference for use of consensus analyst five-year earnings per share growth rate forecasts published in Institutional

[1] V.S. Rockey at 8-9; National Association of Regulatory Utility Commissioners, *Utility Regulatory Policy in United States and Canada 1994-1995*, at pp. 520, 588, 615 (August 23, 1995).

Brokers Estimate System (IBES) reports.[2] AAR has accordingly used IBES data in determining the expected growth rate in this proceeding. Rockey at p. 9-10.

Based on a four-railroad composite and the identical DCF procedures used in the last nine cost of capital proceedings, Mr. Rockey estimates that the cost of equity for 2002 is 12.60 percent. V.S. Rockey at pp. 15.

III. THE COST OF PREFERRED STOCK

Preferred stock is a hybrid security which has some characteristics of debt and some characteristics of equity. Its cost depends in large part on its specific features. David F. Miller, the AAR's Director - Accounting and Finance, has determined the cost of railroad preferred stock based on the methodology used by the Board in the last eleven proceedings. That methodology is based upon the following criteria:

(a) Where the preferred is not convertible into common stock, and where the corporation is not required to redeem the preferred at specific times, the cost of preferred is equal to its current dividend yield.

(b) Where the preferred is not convertible but is subject to mandatory redemption providing holders of the instrument with a premium, the cost is equal to the current dividend yield, plus the present value of the premium.

[2] These reports are available from Lynch, Jones & Ryan, 325 Hudson Street, New York, N.Y. 10013.

(c) Where the preferred is convertible at the option of the holder, and the market values of the preferred and common indicate that conversion is likely to occur or that the conversion right controls the price of the preferred, the preferred has the same cost as equity.

Based on these criteria, the railroads' 2002 cost of preferred stock is 6.26 percent. V.S. Miller at p.18.

IV. THE COST OF DEBT

To determine the cost of debt, Mr. Miller has computed the average current bond yield for all bonds of the sample railroads that were publicly traded in 2002 (comprising 61 bonds). This methodology is identical to that used in the last twelve cost of capital proceedings. See *Ex Parte No. 558 (Sub 4) Railroad Cost of Capital - 2000*, __ S.T.B. ___ (Served June 12, 2001); see also V.S. Miller at 5-6. Under this approach, the bond yield is effectively based on a sample representing 73.1 percent of the total market value of the bonds issued by the railroads in the sample. As the Board has recognized, equipment trust certificates (ETCs) and conditional sales agreements (CSAs) are not actively traded in secondary markets. Their costs were therefore estimated by comparing them to the yields on other debt securities that are actively traded.[3] This is the same methodology used by the Board in the last fifteen proceedings.

[3] V.S. Miller at 8-12.

Using the Board's established methodology, the railroads' 2002 cost of debt is 6.01 percent. V.S. Miller at p. 14.

V. THE 2001 CAPITAL STRUCTURE OF THE RAILROAD INDUSTRY AND THE OVERALL COST OF CAPITAL

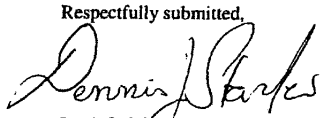
Pursuant to the Board's December 12, 2002 decision, the market values of debt, preferred equity, and common equity were compiled to compute the 2002 capital structure mix of the railroad industry. The railroads' market value capital structure is 40.9 percent debt, 2.1 percent preferred equity, and 57.0 percent common equity. V.S. Miller at p. 19. Based upon this capital structure, the overall 2002 cost of capital is 9.76 percent. V.S. Rockey at 17.

The cost of capital for 2002 is lower than the cost of capital for 2001, which was found to be 10.2 percent.

CONCLUSION

The Board should determine that the railroads' cost of capital for 2002 is 9.76 percent.

Respectfully submitted,



Louis P. Warchot
Dennis J. Starks
Association of American Railroads
50 F Street, N.W.
Washington, D.C. 20001
(202) 639-2504

George P. Aspatore
Jon Broder
Paul R. Hitchcock
Theodore K. Kalick
Robert T. Opal
Louise Anne Rinn
Michael E. Roper
Peter J. Shudtz
Greg E. Summy
Marcella M. Szel
Bill Tuttle
Richard E. Weicher
William J. Wochner

Counsel for the Association of American Railroads
and Member Railroads

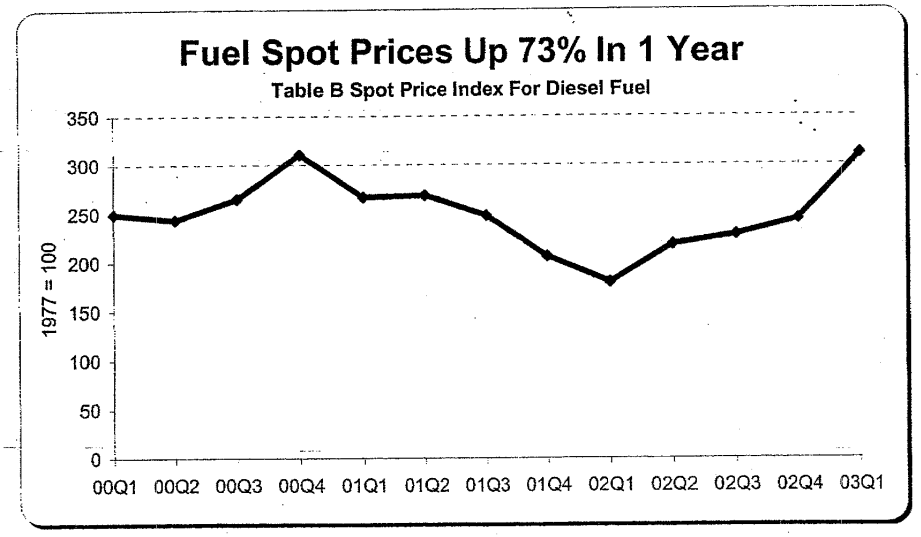
March 28, 2003

1Q02 - 2Q03
Actual Indices

March 2003

ASSOCIATION
OF AMERICAN
RAILROADS

AAR RAILROAD COST INDEXES



Including Series RCR,
The All-Inclusive Index,
and The Rail Cost Adjustment Factor

INDEX WEIGHTS

The weights used to calculate the indexes are based on freight operating expenses plus fixed charges for all Class I railroads. RCR weights are changed at five year intervals (unless there is a major shift in weights prior to that time which would necessitate an earlier change), while the STB requires that the AII weights be updated annually. Beginning in the fourth quarter 2002, the AII used 2001 weights. The 1998 weights were employed in the RCR for the first time in the first quarter 2000. The RCR utilized 1993 weights from 1995 through 1999. Whenever weights are updated, a linking procedure is used so that the weight changes, by themselves, do not cause the index levels to change. The tables below detail the external weighting scheme for the two indexes:

TABLE 1 - RCR
External Weighting Factors (1998)

	U.S.	East	West
Wages	29.9 %	31.8 %	28.6 %
Wage Supplements	9.9	10.4	9.6
Fuel	7.0	4.9	8.5
Materials & Supplies	5.5	5.8	5.3
Equipment Rents	10.8	8.6	12.3
Purchased Services	10.6	12.7	9.1
Depreciation	10.6	10.5	10.7
Interest	4.8	3.7	5.5
Taxes	2.1	2.2	2.0
All Other Expenses	8.8	9.4	8.4

TABLE 2 - RCAF
All-Inclusive Index (AII)
Weighting Factors (2001)

Labor	37.8 %
Fuel	10.5
Materials & Supplies	4.6
Equipment Rents	10.5
Depreciation	10.6
Interest	3.8
All Other Expenses	22.2

Table A

ANNUAL INDEXES OF CHARGEOUT PRICES AND WAGE RATES (1977=100)

WEST

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Wage rates	232.1	251.3	250.9	251.0	264.8	273.6	274.2	281.6	282.3	304.6	314.1	316.7
Wage supplements	366.0	377.7	369.1	366.4	373.8	366.2	395.3	367.6	372.4	391.2	441.0	490.0
Fuel	190.4	184.4	185.6	175.0	175.8	205.8	200.1	161.0	164.7	261.9	255.5	220.1
Materials and supplies	183.0	208.9	217.1	223.9	224.1	225.0	231.5	232.3	230.8	228.3	234.0	228.1
Equipment rents	215.6	218.9	222.8	225.7	235.4	239.4	236.6	240.0	239.9	240.3	243.4	242.8
Purchased services	246.9	266.8	267.0	268.2	278.8	283.4	289.9	289.9	290.9	309.1	325.0	334.4
Depreciation	226.4	229.3	240.4	248.3	286.4	300.9	321.8	363.9	369.8	386.9	408.8	427.5
Interest	327.5	291.3	260.6	270.7	291.0	330.4	353.7	420.6	414.7	422.0	396.1	367.6
Taxes (other than income and payroll)	170.6	170.7	176.6	221.7	239.6	244.0	218.3	240.9	202.7	230.0	251.7	265.8
All other operating expenses	179.5	180.4	183.1	185.5	192.0	196.5	196.6	191.6	193.3	204.3	206.6	202.1
Wage rates and supplements	261.5	279.3	277.2	276.7	290.2	295.6	302.1	302.0	303.6	325.8	343.7	355.9
All materials (incl. fuel)	179.0	189.1	193.8	192.2	191.9	208.7	208.4	185.8	187.4	255.3	252.4	225.5
Matl. prices & wage rates combined (excl. fuel)	221.0	242.1	244.1	246.0	256.3	263.5	265.2	271.2	271.4	288.8	297.5	298.6
Matl. prices & wage rates combined (incl. fuel)	216.5	232.3	234.1	233.5	241.5	253.7	253.8	248.5	249.6	295.2	299.6	289.3
Materials prices, wage rates and supplements combined (excl. fuel)	246.9	266.8	267.0	268.2	278.8	283.4	289.9	289.9	290.9	309.1	325.0	334.4
Materials prices, wage rates and supplements combined (incl. fuel) - QMPW	241.0	256.6	257.1	256.1	264.9	274.4	278.7	270.1	271.7	315.4	326.1	323.7
Taxes, purchased serv. and other expenses	202.4	210.5	212.6	219.3	226.7	231.1	230.1	230.4	227.1	240.4	249.4	251.9
Equip. rents, deprec. and interest	243.0	239.3	240.0	246.2	269.0	282.3	290.8	317.7	319.1	327.1	332.2	333.9
Equip. rents, taxes, deprec., purch. serv., interest & other expenses	224.8	227.2	228.7	235.3	250.7	259.7	263.9	278.1	277.2	287.8	295.0	297.1
Total excl. fuel	238.3	250.2	251.0	254.7	268.1	275.0	280.6	288.1	288.2	302.6	314.0	319.6
Total excl. interest	232.5	244.3	246.4	248.3	260.2	268.6	272.3	272.0	272.7	301.5	312.0	312.8
Total excl. interest and depreciation	231.2	243.8	245.0	246.3	255.3	262.9	264.9	260.2	260.4	289.8	299.1	298.3
Railroad Cost Recovery Index	235.9	246.1	246.9	249.1	261.4	270.8	275.1	277.2	277.7	306.4	315.5	315.2

Note: The final annual wage rates and wage supplements are derived from the Annual Wage Statistics and the Annual Report Form R-1, consequently the final annual values may not equal the average of the four quarterly figures. The preliminary annual indexes, which appear in the December publication each year (indicated by a "p"), are averages of the four quarters.

Table J

RAIL COST ADJUSTMENT FACTOR (4Q/97=100)

Quarter	Prelim-inary RCAF[1]	Forecast Error Adjustment[2]	RCAF (Unad-justed)[3]	Productivity Adjustment Factor	RCAF (Adjusted)[4]	PAF-5[5]	RCAF-5[5]
4Q 1997	1.000	0.000	1.000	1.4965	0.668	1.5378	0.650
1Q 1998	0.997	-0.001	0.996	1.5149	0.657	1.5567	0.640
2Q 1998	0.990	0.006	0.996	1.5503	0.642	1.5758	0.632
3Q 1998	1.001	-0.003	0.998	1.5866	0.629	1.5952	0.626
4Q 1998	1.001	0.002	1.003	1.6237	0.618	1.6148	0.621
1Q 1999	0.999	-0.003	0.996	1.6617	0.599	1.6526	0.603
2Q 1999	0.994	-0.001	0.993	1.6850	0.589	1.6913	0.587
3Q 1999	1.006	-0.004	1.002	1.7086	0.586	1.7309	0.579
4Q 1999	1.005	0.006	1.011	1.7325	0.584	1.7714	0.571
1Q 2000	1.036	0.007	1.043	1.7568	0.594	1.7962	0.581
2Q 2000	1.041	0.009	1.050	1.7719	0.593	1.8213	0.577
3Q 2000	1.048	0.002	1.050	1.7871	0.588	1.8468	0.569
4Q 2000	1.059	0.003	1.062	1.8025	0.589	1.8727	0.567
1Q 2001	1.079	0.006	1.085	1.8180	0.597	1.8888	0.574
2Q 2001	1.072	0.004	1.076	1.8305	0.588	1.9050	0.565
3Q 2001	1.079	0.000	1.079	1.8431	0.585	1.9214	0.562
4Q 2001	1.074	0.004	1.078	1.8558	0.581	1.9379	0.556
1Q 2002	1.076	0.000	1.076	1.8686	0.576	1.9513	0.551
2Q 2002	1.064	-0.002	1.062	1.8878	0.563	1.9648	0.541
3Q 2002	1.072	-0.010	1.062	1.9072	0.557	1.9784	0.537
4Q 2002	1.096	0.012	1.108	1.9268	0.575	1.9921	0.556

(Beginning with Q103, the STB used 4Q02 as the RCAF base period. See Table K.)

[1] "Preliminary RCAF" is the All-Inclusive Index (Table D), divided by 100.

[2] The "Forecast Error Adjustment" is the difference between the forecast and actual index levels from two quarters prior (Table E), divided by 100.

[3] The Unadjusted RCAF is the sum of the Preliminary RCAF plus the Forecast Error Adjustment.

[4] The Adjusted RCAF is the Unadjusted RCAF adjusted by the Productivity Adjustment Factor.

[5] The Surface Transportation Board in its Ex Parte No. 290 (Sub-No. 7) decision served October 3, 1996 created an additional RCAF series (RCAF-5) which reflects productivity-adjusted values as if the agency had used a 5-year rolling average productivity adjustment factor since the second quarter 1989 inception of a productivity-adjusted RCAF. The productivity adjustment factor used in this calculation is called the PAF-5.

Land Inflation

USDA

United States
Department of
Agriculture

National
Agricultural
Statistics
Service

Agricultural Land Values

August 2002

Sp Sy 3 (02)



Farm Real Estate: Average Value per Acre, by Region and State, January 1, 1998-2002

State	1998	1999	2000	2001	2002	Change 01-02
	Dollars	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Percent*
Northeast:	2,280	2,370	2,520	*2,650	2,810	6.0
CT	5,950	6,300	6,600	6,900	7,300	5.8
DE	2,660	2,750	2,800	*2,950	2,950	0.0
ME	1,190	1,200	1,250	1,300	1,400	7.7
MD	3,180	3,300	3,600	3,800	4,000	5.3
MA	5,210	5,500	5,900	*6,500	7,200	10.8
NH	2,250	2,250	2,300	2,400	2,600	8.3
NJ	7,000	7,000	7,100	7,400	8,000	8.1
NY	1,280	1,340	1,410	1,500	1,600	6.7
PA	2,390	2,500	2,720	2,840	2,950	3.9
RI	6,500	6,500	6,600	*6,900	7,300	5.8
VT	1,520	1,570	1,650	1,750	1,900	8.6
Lake States:	1,280	1,390	1,570	*1,720	1,870	8.7
MI	1,670	1,850	2,150	*2,300	2,500	8.7
MN	1,160	1,230	1,280	*1,360	1,450	6.6
WI	1,240	1,370	1,700	2,000	2,200	10.0
Corn Belt:	1,730	1,830	1,930	*2,060	2,180	5.8
IL	2,130	2,250	2,380	*2,530	2,640	4.3
IN	2,060	2,220	2,350	*2,500	2,590	3.6
IA	1,700	1,770	1,820	*1,900	1,980	4.2
MO	1,070	1,130	1,250	1,380	1,520	10.1
OH	2,040	2,220	2,300	*2,480	2,700	8.9
Northern Plains:	499	510	526	*549	571	4.0
KS	577	580	590	*610	620	1.6
NE	645	670	695	*730	755	3.4
ND	401	406	415	425	440	3.5
SD	348	360	380	405	440	8.6
Appalachian:	1,720	1,840	1,990	*2,160	2,250	4.2
KY	1,450	1,530	1,600	1,770	1,850	4.5
NC	2,080	2,250	2,500	2,800	2,900	3.6
TN	1,810	1,950	2,150	2,240	2,310	3.1
VA	1,920	2,040	2,200	*2,350	2,490	6.0
WV	1,090	1,070	1,150	*1,280	1,370	7.0
Southeast:	1,700	1,770	1,940	*2,110	2,260	7.1
AL	1,440	1,520	1,680	1,800	1,900	5.6
FL	2,240	2,260	2,400	*2,600	2,800	7.7
GA	1,510	1,630	1,880	2,100	2,300	9.5
SC	1,480	1,520	1,600	1,650	1,700	3.0
Delta States:	1,130	1,180	1,230	*1,280	1,330	3.9
AR	1,150	1,220	1,250	1,300	1,370	5.4
LA	1,210	1,210	1,250	1,270	1,310	3.1
MS	1,050	1,100	1,180	*1,250	1,300	4.0
Southern Plains:	596	613	631	*678	718	5.9
OK	610	625	634	*670	710	6.0
TX	593	610	630	*680	720	5.9
Mountain:	415	426	462	*487	507	4.1
AZ [1]	987	1,070	1,180	*1,360	1,520	11.8
CO	618	630	670	695	710	2.2
ID	1,020	1,090	1,170	*1,200	1,250	4.2
MT	294	296	350	375	384	2.4
NV [1]	392	420	440	460	460	0.0
NM [1]	217	217	217	*220	220	0.0
UT [1]	807	855	900	975	1,050	7.7
WY	222	220	240	260	285	9.6
Pacific:	1,780	1,870	1,900	*1,980	2,040	3.0
CA	2,610	2,770	2,850	*3,000	3,100	3.3
OR	960	1,000	1,020	1,050	1,100	4.8
WA	1,190	1,190	1,200	1,190	1,190	0.0
48 States [2]	974	1,020	1,080	*1,150	1,210	5.2

* Revised.
[1] Excludes Native American Reservation Land.
[2] Excludes Alaska and Hawaii.

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Data extracted on: May 30, 2003 (5:25:52 PM)

Consumer Price Index - All Urban Consumers

Series Id: CUURX400SA0,CUUSX400SA0
Not Seasonally Adjusted
Area: West - Size Class B/C
Item: All items
Base Period: DECEMBER 1996=100

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	HA
1996												100.0		
1997	100.4	100.8	101.2	101.4	101.5	101.3	101.3	101.5	101.8	102.1	102.4	102.0	101.5	10
1998	102.3	102.3	102.3	102.2	102.4	102.3	102.3	102.5	102.7	103.0	103.5	103.4	102.6	10
1999	103.6	103.8	104.1	105.1	104.8	104.5	104.9	105.2	105.2	105.5	105.5	105.7	104.8	10
2000	105.7	106.2	107.1	107.2	107.3	107.7	108.1	108.3	108.8	109.0	109.2	108.9	107.8	10
2001	109.8	110.1	110.7	110.6	111.1	111.2	111.4	111.2	111.7	112.1	112.0	111.6	111.1	11
2002	111.9	112.4	112.8	113.7	112.5	112.2	112.5	113.0	113.1	113.3	113.1	113.1	112.8	11
2003	113.8	114.5	115.4	114.9										

U.S. Bureau of Labor Statistics
Postal Square Building
2 Massachusetts Ave., NE
Washington, DC 20212-0001

Phone: (202) 691-5200
Fax-on-demand: (202) 691-6325
Data questions: blsdata_staff@bls.gov
Technical (web) questions: webmaster@bls.gov
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Data extracted on: May 30, 2003 (5:27:05 PM)

Consumer Price Index - All Urban Consumers

Series Id: CUURD200SA0,CUUSD200SA0
Not Seasonally Adjusted
Area: Midwest - Size Class D
Item: All items
Base Period: 1982-84=100

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	HA
1993	133.0	133.6	134.7	134.8	134.4	134.9	134.9	135.3	136.3	137.2	137.1	136.8	135.3	13
1994	136.7	137.2	137.8	137.9	138.8	139.8	140.2	140.8	141.5	140.9	141.3	141.2	139.5	13
1995	141.5	142.3	142.7	143.9	144.6	145.4	146.0	145.7	146.3	146.0	146.0	145.8	144.7	14
1996	146.5	146.9	147.7	149.0	149.2	149.8	150.4	150.4	151.0	151.1	151.9	151.9	149.7	14
1997	152.2	152.1	152.1	152.1	152.2	152.6	152.6	152.6	153.4	153.2	153.7	153.0	152.7	15
1998	152.9	152.7	152.9	153.2	153.4	153.3	153.5	153.3	154.0	154.3	154.7	155.0	153.6	15
1999	155.5	155.6	155.7	156.4	156.5	156.9	157.2	157.7	158.6	158.7	159.3	158.9	157.3	15
2000	159.1	159.9	161.5	161.4	161.4	163.1	163.2	162.5	164.5	164.9	165.0	164.9	162.6	16
2001	167.2	166.3	165.9	166.7	167.9	167.5	166.1	166.8	168.8	166.9	166.3	165.5	166.8	16
2002	166.2	166.6	167.1	168.1	168.2	168.9	169.4	169.7	170.0	170.2	170.4	169.5	168.7	16
2003	170.7	172.5	173.0	171.7										

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Postal Square Building
2 Massachusetts Ave., NE
Washington, DC 20212-0001

Phone: (202) 691-5200
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Data extracted on: May 30, 2003 (5:27:32 PM)

Consumer Price Index - All Urban Consumers

Series Id: CUURX200SA0,CUUSX200SA0
Not Seasonally Adjusted
Area: Midwest - Size Class B/C
Item: All items
Base Period: DECEMBER 1996=100

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	HA
1996												100.0		
1997	100.0	100.2	100.2	100.3	100.5	100.7	100.6	100.9	101.2	101.3	101.3	101.0	100.7	10
1998	101.2	101.6	101.6	101.9	102.3	102.2	102.2	102.0	102.2	102.4	102.4	102.3	102.0	10
1999	102.6	102.6	103.0	103.7	103.7	103.7	103.9	104.2	105.1	105.0	105.6	105.3	104.0	10
2000	105.6	106.1	106.9	106.9	107.0	108.4	107.7	107.1	108.6	108.8	108.9	108.7	107.6	10
2001	109.6	109.8	109.7	110.4	111.6	111.2	110.0	110.3	111.6	110.0	110.0	109.6	110.3	11
2002	109.5	109.6	110.2	110.7	110.8	111.2	111.3	111.4	111.5	111.9	111.7	111.4	110.9	11
2003	112.0	112.8	113.6	113.2										

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2 Massachusetts Ave., NE
Washington, DC 20212-0001

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State Income Tax Rates



State Corporate Income Tax Rates

As of December 31, 2002 ***(2002's noteworthy changes in bold italics)***

STATE	TAX RATES AND BRACKETS	SPECIAL RATES OR NOTES
Alabama	***5.0%***	***6.5% on financial insitutions.***
Alaska	***1.0% > $0*** ***2.0 > 10K*** ***3.0 > 20K*** ***4.0 > 30K*** ***5.0 > 40K*** ***6.0 > 50K*** ***7.0 > 60K*** ***8.0 > 70K*** ***9.0 > 80K*** ***9.4 > 90K***	
Arizona	6.97%	Minimum tax is $50.
Arkansas	***1.0% > $0*** ***2.0 > 3K*** ***3.0 > 6K*** ***5.0 > 11K*** ***6.0 > 25K*** ***6.5 > 100K***	Corporations with net incomes exceeding $100,000, 6.5% of entire net income.
California	8.84%	10.84% on financial institutions.6.65% alternative minimum tax rate (2% for financial institutions).Minimum tax is $800.
Colorado	4.63%	
Connecticut	7.50%	
Delaware	8.70%	
Florida	5.50%	3.3% alternative minimum rate.
Georgia	6.0%	
Hawaii	4.4%> $0 5.4 . 25K 6.4 > 100K	4% capital gains rate, 7.92% on financial institutions.
Idaho	7.60%	Minimum tax is $20.
Illinois	7.30%	Includes 2.5% income replacement tax.
Indiana	3.40%	4.5% on supplemental income. ***Rate increases to 8.5% in 2003.***
Iowa	6.0% > $0 8.0 > 25K 10.0 > 100K 12.0 > 250K	5% on financial institutions; 7.2% alternative minimum rate; 50% federal deductability.
Kansas	***4% > $0*** ***7.35 > 50K***	3.35% surtax over $50,000; Banks 2.25% plus 2.125% surtax over $25,000.
Kentucky	4.% > $0 5.0 > 25K 6.0 > 50K 7.0 > 100K 8.25 > 250K	
Louisiana	4.0 > $0 5.0 > 25K 6.0 > 50K 7.0 > 100K 8.0 > 200K	Federal deductibility.

4774

Maine	3.5% > $0 7.93 > 25K 8.33 > 75K 8.93 > 250K	27% of federal alternative minimum tax liability.
Maryland	7.0%	
Massachusetts	9.50%	Franchise tax built into rate (.26% per $1,000 of income); 10.5% on financial institutions;10.91% on savings and loan associations. Minimum tax is $456.
Michigan	***1.9%>$45K***	Modified VAT applies to gross receipts. Must file if gross receipts over $250K. $45K deductible. Tax rate reduction by 0.1 percent was legislated in 1998 when rate was 2.3 percent, with intent to phase tax out over 23 years. If state's Budget Stabilization Fund balance falls below $250 million for a fiscal year, the next calendar year's reduction is canceled.
Minnesota	9.8%	5.8% alternative minimum tax rate. A minimum tax is levied based on Minnesota property, payroll and sales.
Mississippi	3.0% > $0 4.0 > 5K 5.0 >10K	Franchise tax of $2.50 per $1,000 with minimum tax of $25.
Missouri	6.25%	7% on financial instituitions; 50% of federal tax deductible.
Montana	6.75%	7% for corporations filing under a water's edge election. Minimum tax is $50. Minimum tax for small business corporations is $10.
Nebraska	5.58% > $0 7.81 > 50K	
Nevada	None	
New Hampshire	8.5% > $50K 9.25% > 150K	Its two corporate taxes – the Business Profits Tax (BPT) and the Business Enterprise Tax (BET) – have different rates and bases. The BPT rate is 8.5% on gross income over $50K. The BET rate is either 0.75% on gross income over $150K, or 0.75% on total compensation paid out, including dividends and interest, over $75K, making 9.25% the top rate a corporation may face.
New Jersey	***9.0%***	Corporations with entire net income of less than $100,000 pay 7.5%. Minimum tax is $200.
New Mexico	4.8% > $0 6.4% > 500K 7.6 %> 1K	
New York	7.5%	The rate fell to 7.5% after June 30, 2001. 2.5% surtax rate.
North Carolina	6.9%	
North Dakota	3.0% > $0 4.5 > 3K 6.0 > 8K 7.5 > 20K 9.0 > 30K 10.5 > 50K	5% for financial institutions plus 2% surtax rate; Federal deductability. Minimum tax is $50.
Ohio	5.1% > $0 8.5 > 50K	For financial institutions, 0.015 times value of stock. Minimum tax is $50.
Oklahoma	6.0%	
Oregon	6.6%	Minimum tax is $10.
Pennsylvania	9.99%	Imposes a capital stock and franchise tax of 0.724% on taxable incoem over $ 150K.
Rhode Island	9.0%	Minimum tax is $250.
South Carolina	5.0%	4.5% for banks; 6% for savings and loans.
South Dakota	None	6%-0.25% on a bank's net income. Minimum tax is $200 per location (banks).
Tennessee	6.0%	
Texas	None	
Utah	5.0%	Minimum tax is $100.
Vermont	7.0% > $0 8.1 > 10K 9.2 > 25K 9.75 > 250K	Minimum tax is $250. **4775**
Virginia	6.0%	
Washington	None	Gross receipts tax. The 20 different rates range from 0.011%-5.029% depending on the type of business activity.

West Virginia	9.0%	"Business franchise tax" of $0.70 per $100 of taxable capital, or a minimum of $50.
Wisconsin	7.9%	
Wyoming	None	
District of Columbia	***9.5%***	Includes 5% surtax. Minimum tax is $100.

View Rates as of Dec. 31, 2001

View Rates as of Dec. 31, 2000

View Rates as of Dec. 31, 1999

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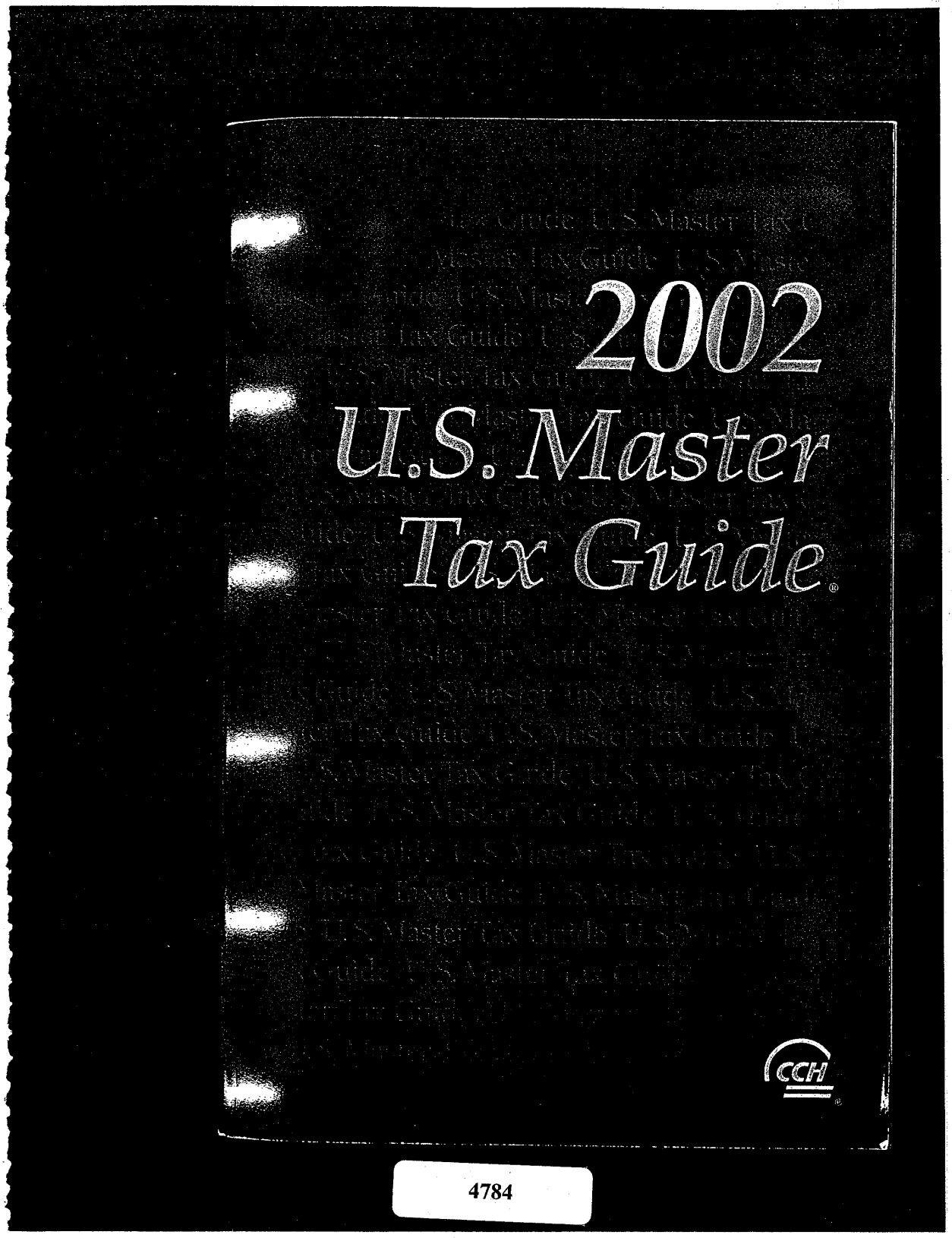
III-H
RESULTS OF SAC ANALYSIS

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Report #5 Salvage Rates

REDACTED

2002 MACRS Rates



4784

Table 1. General Depreciation System
Applicable Depreciation Method: 200 or 150 Percent Declining Balance Switching to Straight Line
Applicable Recovery Periods: 3, 5, 7, 10, 15, 20 years
Applicable Convention: Half-year

If the Recovery Year is:	and the Recovery Period is: 3-year	5-year	7-year	10-year	15-year	20-year
	the Depreciation Rate is:					
1	33.33	20.00	14.29	10.00	5.00	3.750
2	44.45	32.00	24.49	18.00	9.50	7.219
3	14.81	19.20	17.49	14.40	8.55	6.677
4	7.41	11.52	12.49	11.52	7.70	6.177
5		11.52	8.93	9.22	6.93	5.713
6		5.76	8.92	7.37	6.23	5.285
7			8.93	6.55	5.90	4.888
8			4.46	6.55	5.90	4.522
9				6.56	5.91	4.462
10				6.55	5.90	4.461
11				3.28	5.91	4.462
12					5.90	4.461
13					5.91	4.462
14					5.90	4.461
15					5.91	4.462
16					2.95	4.461
17						4.462
18						4.461
19						4.462
20						4.461
21						2.231

Table 2. General Depreciation System
Applicable Depreciation Method: 200 or 150 Percent Declining Balance Switching to Straight Line
Applicable Recovery Periods: 3, 5, 7, 10, 15, 20 years
Applicable Convention: Mid-quarter (property placed in service in first quarter)

If the Recovery Year is:	and the Recovery Period is: 3-year	5-year	7-year	10-year	15-year	20-year
	the Depreciation Rate is:					
1	58.33	35.00	25.00	17.50	8.75	6.563
2	27.78	26.00	21.43	16.50	9.13	7.000
3	12.35	15.60	15.31	13.20	8.21	6.482
4	1.54	11.01	10.93	10.56	7.39	5.996
5		11.01	8.75	8.45	6.65	5.546
6		1.38	8.74	6.76	5.99	5.130
7			8.75	6.55	5.90	4.746
8			1.09	6.55	5.91	4.459
9				6.56	5.90	4.459
10				6.55	5.91	4.459
11				0.82	5.90	4.459
12					5.91	4.460
13					5.90	4.459
14					5.91	4.460
15					5.90	4.459
16					0.74	4.460
17						4.459
18						4.460
19						4.459
20						4.460
21						0.557

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T-BILL RATES

and express traffic (including baggage) on the one hand, and all other services on the other. Finally, an additional separation of the expenses for regular route service between interstate and intrastate traffic is necessary.

In connection with the first step, i.e., allocation of expenses among services, although a number of the various categories of expense incurred by the bus lines may be directly allocated to various services, there are additional items of expense which are jointly incurred in connection with two or more services and can only be separated among services on the basis of appropriate allocation factors. The same problems arise in the second and third steps, to an even greater extent, in determining the extent to which expenses assigned to a particular service must be allocated among the various types of traffic handled in that service and in making the further separation between interstate and intrastate traffic. These separations should be made by means of cost allocation factors which are functionally related to the fullest extent possible to each item of expense. This calls for the development of additional allocation factors which are not presently maintained by the bus lines.

At the present time, the carriers can accurately determine from their regularly maintained accounting records the amount of revenue accruing from regular route operations, separately for passenger and express service, and from operations in connection with charter and special service. By means of established probability sampling procedures, Greyhound and Continental Trailways can further separate passenger revenue in intercity service between interstate and intrastate traffic. Other carriers are able to make the latter separation of revenue on various bases consistent with the size of their operations. It is possible that the probability sampling procedure and other bases employed by the smaller carriers may be expanded to include statistical data as well as revenue information. The bus lines currently maintain records, for the purpose of their annual reports to the Surface Transportation Board, of the number of bus miles operated separately for intercity service, local service and special services. Such data will undoubtedly come into use in allocating expenses among services. Similarly, records of the number of passengers carried in various services, maintained by the bus lines, may be used in some of the expense allocations. However, no continuing records are maintained showing the number of passengers carried separately in interstate and intrastate commerce nor are any separations made of the number of passenger miles in each category. Such statistical separations are required regardless of the methodology followed in the cost study, that is, whether the separations of expenses between interstate and intrastate traffic are made within the framework of a cost allocation formula or whether the expenses in each category are developed on the basis of average mileage-related and non-mileage unit costs developed from a cost formula and applied to traffic service units developed for interstate and intrastate traffic, i.e., number of passengers and number of passenger miles.

As noted above, expenses for each type of traffic must be separated between those which are related to mileage operated and those which are not related to mileage. This brings in the problem of segregating the terminal activities of the carriers among services and types of traffic. Segregation of such expenses will probably require time and motion analyses, calculation of space utilization factors at various representative terminals and other special studies.

The formulation of a cost allocation system and the gathering of input data for the system will require an extensive amount of work and expense on the part of the bus lines. If the amount of time required in developing acceptable cost allocation procedures for general freight motor carriers is any indication, several years may be required before a cost system for the bus lines can be formulated, applied and tested. The bus industry recognizes that, because of its workload and limited staff, the Cost Finding Section of the Board cannot take on the task of developing a cost allocation system for the bus lines as it did in connection with general freight motor carriers; however, it is hoped that the efforts of the bus lines in this regard will receive the full support and guidance of the Board's staff so that the best possible results may be achieved in the shortest possible time.

H. G. HOMME,
Secretary.

[42 FR 32541, June 27, 1977. Redesignated at 47 FR 49571, Nov. 1, 1982 and amended at 64 FR 53268, Oct. 1, 1999]

PART 1141—PROCEDURES TO CALCULATE INTEREST RATES

AUTHORITY: 49 U.S.C. 721.

§1141.1 Procedures to calculate interest rates.

(a) For purposes of complying with a Board decision in a complaint or investigation proceeding, interest rates to be computed shall be the coupon equivalent yield (investment rate) of marketable securities of the United States Government having a duration of 91

days (3 months). The rate levels will be determined as follows:

(1) For investigation proceedings, the interest rate shall be the coupon equivalent yield in effect on the date the statement is filed accounting for all amounts received under the new rates (See 49 U.S.C. 10707(d)(1)).

(2) For complaint proceedings, the interest rate shall be the coupon equivalent yield in effect on the first day of the calendar quarter in which an unlawful charge is paid. The interest rate in complaint proceedings shall be updated as of the first day of all subsequent calendar quarters, at the coupon equivalent yields in effect on those days. Updating will continue until the required reparation payments are made.

(3) For purposes of this section, coupon equivalent yields shall be considered "in effect" on the date the securities are issued, not on the date they are auctioned. If the date the statement is filed (for investigation proceedings) or if the first day of the calendar quarter (for complaint proceedings) is the same as the issue date, then the yield on that date shall be used.

(b) Interest in a complaint or investigation proceeding shall be compounded quarterly, as follows:

(1) For investigation proceedings, the reparations period shall begin on the date the investigation is started. Thus, unless by coincidence, the quarterly compounding periods in investigation proceedings will not coincide with the calendar quarters.

(2) For complaint proceedings, the reparations period shall begin on the date the unlawful charge is paid. However, in order for the quarterly compounding periods in complaint cases to coincide with the calendar quarters (so that only one interest rate is in effect during each compounding period), the first compounding period shall run from the date the unlawful charge is paid to the last day of the current calendar quarter, and all subsequent compounding periods shall coincide with the calendar quarters.

(3) For both investigation and complaint proceedings, the annual effective interest rate shall be the same as the annual nominal (or stated) rate. Thus, the nominal rate must be factored exponentially to the power representing the portion of the year covered by the interest rate. A simple multiplication of the nominal rate by the portion of the year covered by the interest rate would not be appropriate because it would result in an effective rate in excess of the nominal rate. Under this "exponential" approach, the total cumulative reparations payment (including interest) is calculated by multiplying the interest factor for each quarterly period (or part thereof) by the principal amount for that period plus any accumulated interest from previous periods. The "interest factor" for each period is 1.0 plus the interest rate for that period to the power representing the portion of the year covered by the interest rate. As an example, if the annual interest rate for the quarter is 5.6 percent, then the interest factor would be 1.01368, or 1.056 to the power of 91/365.

[58 FR 19360, Apr. 14, 1993]

PART 1144—INTRAMODAL RAIL COMPETITION

Sec.

1144.1 Negotiation.
1144.2 Prescription.
1144.3 General.

AUTHORITY: 49 U.S.C. 721, 10703, 10705, and 11102.

SOURCE: 67 FR 61290, Sept. 30, 2002, unless otherwise noted.

§ 1144.1 Negotiation.

(a) *Timing.* At least 5 days prior to seeking the prescription of a through route, joint rate, or reciprocal switching, the party intending to initiate such action must first seek to engage in negotiations to resolve its dispute with the prospective defendants.

(b) *Participation.* Participation or failure to participate in negotiations does not waive a party's right to file a timely request for prescription.

(c) *Arbitration.* The parties may use arbitration as part of the negotiation process, or in lieu of litigation before the Board.

Historical Securities Search Results

Instructions

Auction Dates **From:** *Jan 1, 2003* **To:** *May 1, 2003*

Security Terms *13-WEEK*

Sorted By *Auction Date* **in** Descending **order**

Treasury Bills

Security Term	Auction Date	Issue Date	Maturity Date	Discount Rate %	Investment Yield %	Price Per $100	CUSIP
13-WEEK	04-28-2003	05-01-2003	07-31-2003	1.120	1.141	99.717	912795NF4
13-WEEK	04-21-2003	04-24-2003	07-24-2003	1.160	1.182	99.707	912795NE7
13-WEEK	04-14-2003	04-17-2003	07-17-2003	1.165	1.186	99.706	912795ND9
13-WEEK	04-07-2003	04-10-2003	07-10-2003	1.135	1.158	99.713	912795NC1
13-WEEK	03-31-2003	04-03-2003	07-03-2003	1.100	1.121	99.722	912795NB3
13-WEEK	03-24-2003	03-27-2003	06-26-2003	1.150	1.174	99.709	912795MT5
13-WEEK	03-17-2003	03-20-2003	06-19-2003	1.115	1.137	99.718	912795MS7
13-WEEK	03-10-2003	03-13-2003	06-12-2003	1.055	1.077	99.733	912795MR9
13-WEEK	03-03-2003	03-06-2003	06-05-2003	1.175	1.198	99.703	912795MQ1
13-WEEK	02-24-2003	02-27-2003	05-29-2003	1.175	1.195	99.703	912795MP3
13-WEEK	02-18-2003	02-20-2003	05-22-2003	1.160	1.179	99.707	912795MN8
13-WEEK	02-10-2003	02-13-2003	05-15-2003	1.150	1.171	99.709	912795MM0
13-WEEK	02-03-2003	02-06-2003	05-08-2003	1.155	1.175	99.708	912795ML2
13-WEEK	01-27-2003	01-30-2003	05-01-2003	1.140	1.159	99.712	912795MK4
13-WEEK	01-21-2003	01-23-2003	04-24-2003	1.160	1.179	99.707	912795MJ7
13-WEEK	01-13-2003	01-16-2003	04-17-2003	1.180	1.199	99.702	912795MH1
13-WEEK	01-06-2003	01-09-2003	04-10-2003	1.185	1.207	99.700	912795MG3

Effective with the 11/2/98 auction, all bills are auctioned using the single-priced method.

- **Click column headings to resort by that column. Click column headings again to reverse the sort order.**
- **Click CUSIP number to obtain more specific info.**

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