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BEFORE THE
SURFACE TRANSPORTATION BOARD

FINANCE DOCKET 33407



DAKOTA, MINNESOTA, EASTERN RAILROAD CORPORATION
CONSTRUCTION INTO THE POWDER RIVER BASIN

COMMENTS OF THE
ROCHESTER-OLMSTED COUNCIL OF GOVERNMENTS
ON THE
DRAFT ENVIRONMENTAL IMPACT STATEMENT

ENTERED
Office of the Secretary

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Part of
Public Record

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Office of the Secretary
Case Control Unit
STB Finance Docket No. 33407
Surface Transportation Board
1925 K Street N.W.
Washington, D.C. 20423-0001

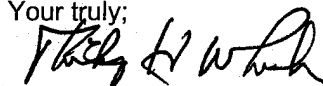
Attention: Victoria Rutson – Environmental Project Director

Dear Ms. Rutson:

The Rochester – Olmsted Council of Governments (ROCOG) is the metropolitan planning agency for the Rochester, Minnesota urbanized area, established pursuant to Federal Highway Administration / Federal Transit Administration planning requirements found in 23 CFR Part 450, for the purpose of providing a cooperative policy forum to deal with matters of regional interest identified in the joint FHWA/FTA planning rules. ROCOG has taken the opportunity to review the DEIS for the Powder River Basin Expansion project which has been submitted for approval by the Dakota, Eastern and Minnesota Railroad with a particular interest in the findings, conclusions and recommended mitigation measures related to the highway and transit system in the Rochester and Olmsted County, Minnesota area.

The focus of ROCOG's review and comments is directed primarily towards errors and omissions in the analysis contained in the DEIS, which lead us to the conclusion that the DEIS has not adequately evaluated the possible environmental impacts of the project and thus cannot conclusively determine where significant impact will occur and what mitigation measures are necessary. We have found a number of areas related to the impact of this project on transportation systems in our area where we feel the analysis included in the DEIS is inadequate. It would be our primary comment at this time that these errors, flaws and omissions need to be addressed before an accurate assessment of mitigation measures and alternatives can be considered.

Your truly;



Philip H. Wheeler
Executive Director

For the purpose of organizing our comments we have broken our response into four categories:

1. Inaccurate or Erroneous Data used in Transportation-related Analysis
2. Transportation Safety
3. Traffic Delay
4. Other Transportation-related Issues

1) Inaccurate or Erroneous Data

A number of instances are found in the DEIS where ROCOG believes erroneous or out-of-date data was used in the transportation analysis, affecting analysis results and the conclusions drawn. In addition, there are instances where data that one would expect to be consistent (such as the volume of vehicular traffic at highway-rail crossings) was found to differ between the traffic delay and traffic accident analysis. The use of flawed datasets can affect analysis in a number of ways, such as overstating existing conditions relative to future conditions, or understating future conditions and thus minimizing the magnitude of change expected as a result of the project. The specific cases of erroneous or flawed data we believe exist in the DEIS in the safety and transportation systems analysis include:

Issue #1: Vehicular Traffic Assumptions at Highway-Rail Crossings

Our initial review of traffic delay and accident prediction analysis raised concerns regarding the currency of the vehicle traffic counts used. On first review there appeared to us to be multiple errors, including traffic counts that were out of date as well as traffic counts at certain low volume crossing that were much higher than expected. An effort was undertaken to verify the year of the counts used in the accident prediction and traffic delay analysis using readily available datasets, including the Minnesota Department of Transportation (MNDOT) State Aid Count Maps and the Federal Railroad Administration (FRA) Grade Crossing Inventory Database. From this assessment it appears that the vehicular traffic counts that were used range from 6 to 12 years old, with the 1994 Minnesota State Aid Count Map

being the source for many of crossing counts used in the analysis. In some cases even older data, dating back to 1988/1989, appears to have been used, though this occurs only on very low volume streets. Our findings as to year of origin of the traffic counts used is included as Exhibit A to this report. We would also note in Exhibit A that at certain rural crossings the assumptions used for vehicular traffic in the traffic delay and traffic accident analysis did not agree.

The use of out-of-date data affects the assessment of accident levels, since use of old traffic levels will understate predicted accidents. Using lower traffic volumes also affects the traffic delay analysis in terms of under-estimating potential queuing impacts and the number of vehicles impacted by train delay.

More current traffic counts are readily available that could have been used to complete various traffic related analysis. MNDOT's State Aid Count program is conducted on a four-year cycle, meaning 1998 data would have been available from MNDOT for every crossing. In fact, The Southern Minnesota Rail Corridor Safety Plan¹ identified traffic counts at every highway-rail crossing in the State of Minnesota using data available through 1998. Another source of current data that could have been utilized were count estimates prepared by the Rochester-Olmsted Council of Governments² for all crossings on the existing DM&E corridor as well as the proposed bypass corridor and submitted as part of the scoping phase of the project. In fact it appears these count estimates were utilized when no other source of data was available, yet older data was used on other crossings.

¹ Southern Minnesota Rail Corridor Safety Plan, February 15, 2000, prepared by Short, Elliot, Hendrickson, Inc for the Minnesota Department of Transportation.

² Rochester-Olmsted Council of Governments (ROCOG) is the federally designated planning agency for carrying out mandated transportation planning activities under Federal Statutes applicable to transportation.

Issue #2: Existing Train Traffic Assumptions

The DEIS traffic and accident analysis assumes that the existing train traffic for the section of the corridor between Lewiston and Owatonna, Minnesota, is 12 – 6400' long trains per day. There seems to be a significant discrepancy between what we believe the baseline, which is approximately three per day, the use of 12 in the traffic safety and accident analysis, and other references in the DEIS, including pages 3.3-20, 3.3-62, 3.3-63 and Table 3.1.-9 on page 3.1.-34 of Volume II, all of which reference that the existing train traffic in Minnesota is 2-3 trains per day. Additionally, in the testimony of Allen Vogel, Director of the Minnesota Department of Transportation's Office of Freight and Waterways, at the Rochester public hearing on the DEIS in November of 2000, he also stated that MnDOT believes that "four trains per day is on the high side of the average traffic" on the line daily.

What are the implications of assuming there are 12 trains per day on the findings of the DEIS?

- Since the SEA states that it is only concerned with the impact of increased train traffic, the assumption that there are 12 existing trains will significantly overstate existing accident rates and traffic delay as a percentage of future accident rates and traffic impact with 37 trains per day.
- It follows that by overstating the baseline conditions, the likelihood that any increased impact will meet the SEA threshold of significance is lowered, especially when the baseline is overstated by 400%.
- Since mitigation in terms of traffic impact relies on there first being a finding of significant impact, the likelihood that the need for mitigation would be identified is significantly lowered.

Issue #3: Future Train Traffic Assumptions

We would note in Appendix G, Traffic and Transportation, the DEIS goes through great detail identifying the amount of traffic delay that would occur at each individual grade crossing under six different scenarios, taking into account three

different levels of annual coal traffic (20, 50 and 100 million tons) and two different train lengths (6400' and 7400'). The analysis assumes, however, that the number of trains per day would be the same under both train lengths. Using information in the DEIS on page 1-22 (Footnote 53) which states that due to limitations on connecting railroads the likely composition of train consists initially will be 115 car trains utilizing 286,000 lb cars, the actual number of 6400' trains will be greater than that indicated in traffic delay tables, as illustrated in Exhibit B. In order to ship 50MT of coal, for example, 20 trains per day would be needed with this type of consist composition, and to ship 100MT of coal 40 trains per day would be needed. If alternative train lengths are to be evaluated, the DEIS should use train numbers that reflect the capacity needed to ship stated levels of product. This point also raises the question of whether the necessary upgrading of other rail carrier's infrastructure needed to accommodate the 315,000 lb cars is a connected action for purposes of environmental review that should have been considered in the DEIS.

The difference in the number of trains will affect the outcome of the accident prediction analysis that was completed as part of the safety assessment and will have a minor effect on the traffic delay assessment that was completed as part of the transportation system assessment.

Issue #4: Inputs to Accident Safety Analysis

There are also errors in some of the some of the basic input data used in the accident safety at various crossings which have been identified in Exhibit C. This includes erroneous inputs as to the number of mainline tracks, whether the highway is paved or gravel, and the number of travel lanes on certain roadways. These errors will in aggregate not likely effect the outcome of the analysis in a significant way.

Issue #5: The Use of only Historic Traffic Data in analysis

The DEIS analysis is flawed in that it fails to take into account reasonably expected future conditions, in conflict with 40 CFR 1508.7, as referenced below:

Sec. 1508.7 Cumulative impact.

"Cumulative impact" is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

The DEIS does not use any traffic projection assumptions in calculating the future impact that would be associated with the increased level of train traffic. The 1988/89 or 1994 traffic data used in the traffic and accident safety evaluation is held constant through the evaluation, thus understating future expected increases in accident numbers and traffic delay impacts. The use of static traffic levels understates the significance associated with future accident rate increases at highway-rail crossings and future traffic delay increases at crossings. As a result, the DEIS does not accurately assess conditions that will exist in the future and thus could miss identifying the need for mitigation to address impacts that the project is contributing to.

As an illustrative example, assume the following conditions at an at-grade crossing:

Current train traffic – 3 trains per day	Projected train traffic – 37 trains per day
Current vehicular traffic – 10,000 ADT	Projected vehicular traffic – 15,000 ADT

Using exposure (train traffic x ADT) as an illustrative measure to assist in making the point that static traffic assumptions can lead to preparers missing potential future impacts, let's assume for a moment that an exposure threshold of 500,000 is a key measure of impact. Let's now look at how the numbers would work in this case:

- Current exposure
3 trains x 10,000 vehicles = 30,000 exposures
- Future exposure using DEIS method of holding everything static except train traffic-
37 trains x 10,000 vehicles = 370,000 exposures
- Future exposure using expected condition of both train traffic and vehicular traffic growth
37 trains x 15, 000 vehicles = 555,000 exposures

If 500,000 is the key threshold, an evaluation prepared using the DEIS assumption of static traffic conditions would suggest no critical impact is expected, even though the real expected impact of 555,000 exposures suggests that indeed mitigation needs to be considered in response to future conditions. The point of this analogy is to indicate that the DEIS approach of using no community change can miss potentially significant conditions that the increase in train traffic will contribute to, potentially in a major way.

If the decision to forego the use of projected traffic is based on the assumption that it is difficult to develop adequate projected traffic data, this assumption is based on flawed reasoning. Resources exist at the state level to provide a general, consistent assessment of future traffic growth in cities and counties. MNDOT and most other state agencies as part of their system performance monitoring activities establish projection factors for all functionally classified roadways within their jurisdiction that provide a excellent baseline for establishing future traffic levels. In larger communities such additional resources in the form of local community planning agencies exist which can also provide community growth and traffic projections.

2) Transportation Safety

In regards to the transportation safety analysis found in the DEIS the comments of ROCOG relate to our concerns over the criteria of significance that have been identified, the effect of flawed input data on the results of the analysis (data flaws were discussed in Section 1 above) and the lack of a full discussion relative to the absolute impact of derailments that may occur in the future if the project is approved.

Issue #1 – The criteria for assessing the significance of expected increases in highway-rail crossing accidents treats communities in Minnesota much differently than communities in South Dakota and Wyoming, to the detriment of Minnesota communities.

The system the DEIS establishes for assessing accident-related safety risk does not equitably measure the risk of accident to drivers across the three state area and therefore will understate the significance of impact to residents of Minnesota. It would seem that all areas in the 3-state area affected by the project should be treated equally; one set of criteria should apply uniformly across the project area.

For the Safety / Accident Analysis conducted as part of the DEIS, an accident rate threshold was established as a baseline for the purpose of categorizing crossings into one of two groups. For intersections with higher existing accident rates, referred to as "Group A" crossings, a smaller increase in future accidents due to the project is considered to be significant than for crossings in "Group B". The minimum accident rate needed to qualify as a Group A crossing in each state is as follows:

- Minnesota – Frequency of 1 accident every 8 years, or 12.5 every 100 years
- South Dakota – Frequency of 1 accident every 20 years, or 5 every 100 years
- Wyoming – Frequency of 1 accident every 40 years, or 2.5 every 100 years

The significance of the classification into Group A or B is that in Group A a predicted increase of 1 additional accident every 100 years due to the project is considered to be significant, while in Group B an increase of 5 additional accidents every 100 years is needed before it is considered significant.

It appears on its face that this system places residents of Minnesota at a much higher risk for accident without consideration of the need for a higher level of grade crossing protection than it does residents of either South Dakota or Wyoming. A crossing in Wyoming with an existing accident rate of 2.6 accidents every 100 years, if predicted to experience an increase of 1 additional accident, will be considered

significantly impacted. Conversely, in Minnesota, a crossing with an existing accident rate of 12 accidents every 100 years would not be considered to be significantly impacted unless the predicted accident rate after construction equaled or exceeded 17 accidents every 100 years. Thus, the grade crossing accident rate in Minnesota before a potentially significant impact is identified needs to be over four and one-half times higher than the rate in Wyoming.

The criteria established for Minnesota and applied within Olmsted County to Alternative R-2 (existing corridor upgrade) suggest only one crossing, US Trunk Highway 63 (Broadway Ave) would be significantly impacted by the projected increase in accidents due to the project. Stated another way, the DEIS suggests that except for the crossing at TH 63 the existing grade crossing protection currently in place at all other crossings throughout the City of Rochester and Olmsted County is adequate to address the safety impact of the project.

Alternatively, if the South Dakota criteria were applied to Alternative R-2, the number of significantly impacted crossings identified in Olmsted County would increase to 15, and with the Wyoming standards the number of impacted crossings would be 25 out of a total of 34 crossings in Olmsted County.

In my judgment a single rate reflective of the average or 80th percentile accident rate at highway-rail crossings nationally or regionally would have been a more defensible criteria in order to provide a consistent measure of accident rate impact across the project area.

Issue #2: Grade Crossing Protection assumptions used in Bypass Alternatives R-3/R-4

Appendix H of the DEIS looked at existing and predicted rail crossing accident levels to determine where a significant increase in accidents could be expected. The analysis relies on the methodology developed by the Federal Railroad Administration (FRA), which takes into account many factors affecting grade crossing safety,

including factors such as the number of tracks, the number of roadway lanes, the type of roadway surface and historic accident levels.

Tables 3-MN-H191 to H195 in Appendix H list the results of the accident analysis for alternatives R-3 and R-4 (Rochester Bypass Alternatives). This table identifies the assumptions that were used to predict future accident levels. For the purposes of this study, the analysis assumed that passive grade crossing protection (ie Crossbucks and Stop Signs) would be utilized at every crossing and that all of the roadway corridors were paved (this is found in the column entitled "Hwy Paved, Yes=1, No=2).

It is my assessment that the assumption that all crossings would be protected only with passive devices in the R-3/R-4 alternative is flawed. The applicant has proposed in the various community plans they have presented to local jurisdictions a set of criteria that identifies what type of grade crossing protection would be used at crossings with various levels of vehicular traffic. MNDOT also has criteria that they utilize to determine the appropriate level of grade crossing protection, which are published in the Chapter 8830 of the Administrative Rules of the State of Minnesota. The assumptions for Alternatives R-3/R-4 should have reflected these baseline criteria that were used by MNDOT and the applicant throughout the project area. The differences in grade crossing protection suggested by the applicant's and MndOT's criteria are illustrated in Exhibit D.

The minimum grade crossing protection that should be reflected and supported as mitigation on the R-3/R-4 at-grade crossings should be consistent with MNDOT standards.

Issue #3 – Grade Crossing Protection on Alternative R-2 / Existing Corridor

As a result of the use of inadequate safety criteria as discussed in Issue #1 above, the DEIS concludes that except for one crossing (T.H. 63) the in-place grade crossing protection on the existing corridor is adequate. Furthermore, the DEIS does

not acknowledge either the applicant's proposed criteria or the criteria of MNDOT in establishing a baseline level of grade crossing protection, and simply leaves the reconciliation of differences in standards to be worked out the local parties, as noted in the following statement taken for the Executive Summary: "the applicant...shall develop adequate grade crossing safety plans ... and submit these plans to the appropriate state and local transportation agencies for their review and approval."

Exhibit E illustrates the differences in standards that would be applied to the project by the applicant and by the Minnesota Department of Transportation. MnDOT identifies that 50% more of the existing grade crossings should be outfitted with lights and gates than the DM&E proposes in Olmsted County according to the criteria included in the draft community agreements we have seen. As the agency with the ultimate authority in this matter, we feel the STB needs to step forward and show support for the existing standards established by the State of Minnesota for grade crossing protection as the absolute minimum grade crossing protection mitigation if the project is approved.

Issue #4: Evaluation of the Derailment issue

The DEIS discusses train accident rates (ie, derailments) for the DME corridor and nationwide rates for Class I and II railroads. The DEIS emphasizes as a major benefit of the project the great reduction in the train accident rate that is likely to be observed if the project moves forward. What the DEIS fails to mention is that in absolute terms, the actual number of derailments is likely to increase slightly because the drop in the rate is more that offset by the projected growth in traffic. Using the 1998 accident rate comparison in the DEIS, the actual number of train derailments would be projected to increase by 77% at 37 trains over today's rate. In terms of numbers, this would represent a change from one projected derailment every 19.5 months to one every 11 months in Olmsted County.

Another issue related to derailment that is not discussed in the DEIS is the relative change in severity that will likely be associated with derailments in the future once

higher speed, heavier weight train consists become the norm on this rail corridor. While derailments under current conditions are relatively benign events in terms of damage to either rail infrastructure, rail cars or property outside of the right-of-way due to the current low speed operation of the system, future derailment incidents are likely to result in a significantly higher level of damage due to propulsive force of trains bearing almost 16,5000 tons of weight moving at 40 to 50 MPH. Concerns with derailments occurring under these operating conditions include 1) the footprint of any damage associated with a derailment will encompass a much larger area and is likely to extend beyond the right of way onto surrounding private or public property, and 2) the likelihood, particularly in the case where the derailment would include tank cars carrying hazardous materials, that the severity of damage to individual cars will be much greater, leading to a much quicker dispersion of hazmat material at the scene into the environment.

The DEIS limits its recommendations relative to emergency response expectations to requiring the applicant to fund training for local emergency response organizations (recommendation #6 on page ES-80) and to develop internal emergency response plans to allow for timely notification of local, state or federal officials in case of derailment involving hazardous materials. A question that we would raise is whether the applicant should also have a responsibility, where a demonstrated need can be shown, to assist in funding adequate levels of emergency response infrastructure to respond to the level of emergency that can be associated with a rail derailment. While it is true that there are similar materials being hauled on highways throughout the project area now that communities need to be prepared for, the fact that a train can carry quantities of hazmat much larger than found in individual trucks raises the question of whether a higher level of response infrastructure needs to be provided.

Another comment on the issue of derailment that the DEIS should address is whether there are technologies that could be considered for attenuating the force of a train during a derailment which should be deployed in strategic locations alongside the corridor where topography and development combine to create a high risk. A

particular example of this in our planning area that exists is in the community of Byron, where we find homes constructed within 65-70 feet of the rail track and the track itself being elevated above the surrounding grade by five or six feet. It would seem that train arrestor technology, similar to that being tested for highway-rail crossings, may be a consideration in locations such as this as an added margin of safety.

3) Traffic Delay

The Final Scoping Document identified that for "Transportation Systems" the EIS would "describe the potential effects of the new rail line construction and operation on the existing transportation network in the project area", and would "propose mitigative measures to minimize or eliminate potential adverse project impacts to transportation systems, as appropriate". The DEIS traffic analysis, however, uses a very narrowly construed measure of impact that is influenced almost exclusively by train speed to analyze the impact to transportation users. In reviewing the results of the analysis the same level of impact is found at every crossing irrespective of what volume of vehicles is at a crossing. For example, the analysis states the impact at the lowest volume crossing in Olmsted County, 110th Ave SE located west of Eyota, with an ADT of 50 vehicles a day, is the same as the highest volume crossing in Olmsted County (TH 63 in Rochester), with 20,000 vehicles a day. In fact, since the analysis methodology does not take into account traffic levels, the conclusion it reaches is that the level of post construction impact is the same at every single crossing in Minnesota, based on assumed levels of constant train traffic and speed.

Furthermore, since the analysis is conducted on a daily basis, not a peak hour basis as most traffic studies do, the effect of delay and traffic is averaged over 24 hours. However, even if the chosen methodology were applied to hourly traffic flows, similar results would occur – the results would say that the traffic impact at 3 AM is the same as the 5-6 PM afternoon peak hour.

An analysis that tells us that the impact of the project is the same at every single crossing in the State of Minnesota (and throughout South Dakota and Wyoming as well) suggests that the criteria utilized are largely meaningless. These criteria tell us nothing about the impact to the transportation system, which was the goal established in the Scoping Document for the DEIS.

The following paragraphs provide more detailed discussion on our assessment of the methodology and criteria used in the DEIS along with our suggestions for a more meaningful analysis.

Issue #1: Traffic Delay Analysis – the use of criteria that assesses relative impact

Appendix G of the DEIS describes the methodology and criteria used for assessing the traffic delay impact that would result from the project. It is key to understand that, as noted on page G-5 of Appendix G, that "LOS (Level of Service) criteria presented in the Highway Capacity Manual (HCM) for two-way stopped control (TWSC) intersections may not be completely representative of the conditions at highway/rail intersections. However, the thresholds can be beneficial if used as a measurement for ranking the crossings in terms of delay severity." The DEIS acknowledges with this statement that the traffic delay data presented is relevant primarily for comparing on a relative basis the various highway-rail crossings and not as a measure of impact.

Issue #2: Traffic Delay Analysis – the criteria provide no meaningful information to for assessing impact

The DEIS uses two criteria to assess impact, one that looks at the possible increase in driver delay due caused by a single train and one which looks at the amount of daily delay created by trains when averaged over all the drivers using a crossing.

The first criteria, increase in absolute delay to motorists stopped by a train, states that an increase of 30 seconds per driver must occur for it to be significant. This

calculation depends on only two factors, the speed of the train and the length of the train. Given the comparative parameters of the existing train traffic and coal train traffic, it is readily evident there will be no finding of impact as train speeds increase from 20 MPH to 47 MPH, even with train lengths increasing from 5450' to 7400'. In fact, the calculations can be reworked taking 30 seconds as a given and assuming existing and proposed train lengths, and find that if train speed increases by as little as 2 mph, the conclusion will be that there is no impact.

The second criteria relates to an adapted Level of Service analysis which states that the delay created by trains at a crossing during the course of a day, when averaged out across all motorists using the crossing, must exceed 20 seconds (in the least restrictive finding). Again, the equations used take into account variables that are directly related to the train traffic, in this case train speed, train length, and the number of trains per day. One can again work backwards taking the critical delay factor (20 seconds) and determine, if train speed and length are given, how many trains per day would be needed to reach 20 seconds of delay per driver at a crossing. Given 47 MPH trains and 7400' trains as proposed in the project, that number is 73 trains per day. Again, the calculations as presented do not take vehicle traffic into account; whether a grade crossing is used by 500 or 50,000 cars a day, the results of the analysis would be the same – 20 seconds of delay is not reached until there are 73 trains per day.

To further assess our conclusion that the traffic delay analysis is really an analysis of train speed, we took the formulas for calculating Level of Service utilized in the DEIS for the Powder River Basin Project as well as the recent Canadian National / Illinois Central merger proposal to evaluate the impact of changes in different factors on the outcome of the analysis. The following tables illustrate the results of this analysis, and provide further proof that traffic levels are a minor consideration and train speed is the major factor in the Level of Service analysis. In these tables we first compare different levels of traffic assuming constant train speed and length; the results of this show no change when using the DEIS formulas and some increase when using the CN/IC formulas. In the second set of calculations in each table we vary the train

length, increasing it by 50%, and the result is a much more significant change than resulted from increasing the ADT from 2,000 to 50,000 (2400%). Finally, in the third part of each table we reduced the speed by approximately 50%, and see increases significantly larger than that created by either the traffic increases or train length increases tested. This conclusively demonstrates that train speed and not traffic is the major consideration in the transportation system analysis completed for the DEIS

Table 1

Traffic Delay Analysis

STB Methodology in DM&E Powder River Basin

Case

	# of Lanes	ADT	Train Speed	Train Length	Trains per		Total Blocked Time/Train (minutes)	Crossing Delay per Stopped Veh (min)	Average Delay for all Vehicles (sec/ veh)	Percentage
					Day	Hour				Change in Delay over Baseline
<i>Baseline</i>	4	2,000	45	6400	37	1.54	2.12	1.4	8.86	
<i>@ various</i>	4	10,000	45	6400	37	1.54	2.12	1.4	8.86	0%
<i>traffic</i>	4	25,000	45	6400	37	1.54	2.12	1.4	8.86	0%
<i>levels</i>	4	50,000	45	6400	37	1.54	2.12	1.4	8.86	0%
<i>Change due to train length</i>	4	2,000	45	9600	37	1.54	2.92	1.8	15.88	79%
	4	10,000	45	9600	37	1.54	2.92	1.8	15.88	79%
	4	25,000	45	9600	37	1.54	2.92	1.8	15.88	79%
	4	50,000	45	9600	37	1.54	2.92	1.8	15.88	79%
<i>Change due to train speed</i>	4	2,000	25	6400	37	1.54	3.41	2.0	21.06	138%
	4	10,000	25	6400	37	1.54	3.41	2.0	21.06	138%
	4	25,000	25	6400	37	1.54	3.41	2.0	21.06	138%
	4	50,000	25	6400	37	1.54	3.41	2.0	21.06	138%

Traffic Delay Analysis

STB Methodology in CN/IC Case

	## of Lanes	ADT	Train Speed	Train Length	Trains per		Total Blocked Time/Train (minutes)	Crossing Delay per Stopped Veh (min)	Average Delay for all Vehicles (sec/ veh)	Percentage
					Day	Hour				Change in Delay over Baseline
<i>Baseline</i>	4	2,000	45	6400	37	1.54	2.12	1.1	7.01	
<i>@ various</i>	4	10,000	45	6400	37	1.54	2.12	1.1	7.46	6%
<i>traffic</i>	4	25,000	45	6400	37	1.54	2.12	1.3	8.48	21%
<i>levels</i>	4	50,000	45	6400	37	1.54	2.12	1.7	11.00	57%
<i>Change</i>	4	2,000	45	9600	37	1.54	2.92	1.5	13.38	191%
<i>due to</i>	4	10,000	45	9600	37	1.54	2.92	1.6	14.24	191%
<i>train</i>	4	25,000	45	9600	37	1.54	2.92	1.8	16.19	191%
<i>length</i>	4	50,000	45	9600	37	1.54	2.92	2.3	21.00	191%
<i>Change</i>	4	2000	25	6400	37	1.54	3.41	1.7	18.18	260%
<i>due to</i>	4	10000	25	6400	37	1.54	3.41	1.8	19.35	260%
<i>train</i>	4	25000	25	6400	37	1.54	3.41	2.1	22.01	260%
<i>speed</i>	4	50,000	25	6400	37	1.54	3.41	2.7	28.54	260%

Issue #3: The application of Level of Service (LOS) criteria is flawed:

The manner in which LOS analysis is utilized in the DEIS raises a number of methodological concerns from the perspective of how it is utilized as a measure of transportation impact . These concerns include:

- First, LOS as established in the Highway Capacity Manual is a qualitative measure of traffic impact based on empirical observation of conditions at street intersections. The necessary empirical observation needed to develop relevant LOS criteria for highway-rail crossings has not been completed by the transportation research community.

- Second, the assumption that TWSC operations are similar in nature to the judgment that a motorist needs to exercise at a highway-rail crossing seems to mischaracterize what happens at a highway-rail crossing. Operations at a TWSC intersection rely on motorist judgment regarding the adequacy of gaps in the through traffic flow of the crossing street, while at a highway-rail crossing the judgment exercised by a motorist is limited to only a small proportion of drivers during the period of time when a train is approaching a crossing with non-gated control.

The judgment that is required of motorists at a highway-rail crossing seems more similar to that exercised at a signalized intersection, where decisions during the amber phase of the signal cycle require motorists to judge whether to proceed or stop. Furthermore, as with signalized intersections, traffic flow characteristics at a highway-rail crossing are highlighted by zero flow rates when the crossing is interrupted by a passing train, just as signalized intersections are highlighted by zero flow rates during the red phase of the signal. Common transportation references that draw the analogy between signalized intersections and highway-rail crossings include Traffic Flow Fundamentals³ and Transportation Research Board Special Report 165⁴.

- Third, the use of LOS in the DEIS takes a procedure that is designed for peak hour analysis and applies it to a 24 hour period. The standard application of LOS uses the peak hour as the critical time of the day during which to measure traffic impact. The methodology used in the DEIS will effectively mask critical conditions observed during the higher volume hours of the day by averaging out traffic and thus average delay over 24 hours.

³ May, Adolf D., Traffic Flow Fundamentals, University of California, Prentice-Hall Inc., 1990, Chapter 12, Queuing Analysis, Section 12.2.3

⁴ Gerlough, Daniel L. and Huber, Matthew J., Traffic Flow Theory, Transportation Research Board Special Report 165, National Academy of Sciences, Washington D.C., 1975, Section 8.6.1

Even adapting the analysis utilized in the DEIS to the peak hour would suggest that the impact would be the same in the middle of the night as during the afternoon rush hour, as shown in the following calculations using the formulas found in Appendix G and project information from the DEIS. For the purposes of this comparison, I am using data from Table 3-MN-G38 in Appendix G, FRA Crossing ID 193282A, which is 11th Ave NW in Rochester. I have used traffic data collected by the City of Rochester to determine the hourly traffic % for the PM Peak Hour and Nighttime Low Hour values that are reported in the table. As can be seen the resultant "Average Delay for All Vehicles" is the same for the peak hour and the low hour and 24 hours based on the methodology used.

Table 2

	Traffic	# of Trains (N)	Blocked Crossing Time per Train (TB)	Average Vehicular Delay (TD)	Average Delay for All Vehicles
Formula from DEIS for Daily Computation			$L/(V \times 88) + 0.5$ (page G-2 of App G)	$0.5 \times TB + 0.3$ (page G-2 of App G)	$TB \times N \times TD \times (24/1440) \times 0.0833$ (page G-4 of App G)
Formula Adapted to Hourly Calculation			Same	Same	$TB \times N \times TD \times (24/60) \times 0.0833$ (page G-4 of App G)
Daily Value	12400	37	2.37 Min (45 MPH / 7400')	1.5 Min ($0.5 \times 2.37 + 0.3$)	10.84 seconds $2.37 \times 37 \times 1.5 \times (24/1440) \times 0.0833$ 3
PM Peak Hour Value (4-5 PM – 9.34% of ADT)	1158	1.54	2.37 Min (45 MPH / 7400')	1.5 Min ($0.5 \times 2.37 + 0.3$)	10.84 seconds $2.37 \times 1.54 \times 1.5 \times (24/60) \times 0.0833$
Nighttime Low Hour Value (2-3 AM – 0.22% of ADT)	27	1.54	2.37 Min (45 MPH / 7400')	1.5 Min ($0.5 \times 2.37 + 0.3$)	10.84 seconds $2.37 \times 1.54 \times 1.5 \times (24/60) \times 0.0833$

Issue #4: The use of simplified equations that understate impact:

The DEIS makes a number of simplifying assumptions in the equations utilized for estimating traffic delay in order to simplify the analysis process. I have tested the results of these equations against the more rigorous original equations found in technical references and found that the DEIS equations understate the actual traffic delay on higher volume roadways, in some cases quite substantially. The deviation starts to occur once roadway volumes begin to exceed 500 vehicles in the peak hour or about 10,000 cars a day. The importance of this is that the results are being understated on those corridors where delay and its impact is most significant, such as TH 63, East Circle Drive, or 11th Ave East or West. On 11th Ave NE, for example, the equations in the DEIS understate the expected delay by about 30-35% and on Broadway by approximately 20%.

Conclusion: The Methodology does not address the Scoping Issue

The conclusion to be drawn from the results in the DEIS and the previous discussion is that the methodology used, being influenced primarily by train speed, will always find there is NO IMPACT when train speeds are increased unless there is a dramatic increase in train traffic, much higher than that even proposed in this application.

The analysis contained in the DEIS is not a "system" analysis but an analysis of impacts to individual motorists at individual crossings. As shown in the following chart, transportation system impact can occur at multiple levels in a transportation system, yet the DEIS reports only on impact to individual motorists and only at the level of individual highway-rail crossings.

Table 3

	Number of Trains Considered	Number of Motorists Considered	Number of Crossings Considered	Time Period Considered
This is what the DEIS Considers ➡	One Train	One Motorist	One Crossing	Closure due to one train
<i>This is not ➡ considered by DEIS</i>	Peak Hour Trains	Peak Hour Motorists	All or a Subset of Crossings	Closure due to peak hour trains

<i>This is not considered by DEIS</i>	Daily Trains	Daily Motorists	All or a subset of Crossings	Closure due to daily trains
<i>This is not considered by DEIS</i>	Annual Trains	Annual Motorists	All or subset of crossings	Closure due to annual trains

Attempting to use a single measure to capture the complexity of factors that will impact transportation system performance results, particularly for periodic events that significantly impede the operation of the system, is very difficult at best. An adequate analysis to fully assess the impact to the transportation system should, we believe, include the following characteristics

1. It should assess crossing level impacts
2. It should assess corridor level impacts
3. It should assess system level impacts

Out of necessity such an analysis would need to include a mix of analysis and screening steps, focusing more effort on locations of critical concern rather than treating all crossings to one simple level of analysis. The analysis in the DEIS does not really provide any useful information except to inform us that each individual train will create less delay as it passes by a grade crossing.

While the analysis identified the 10% increase in average delay that would occur to a single motorist, it missed the over 700% increase in the number of motorists who would be stopped by a train on a daily basis and the \$1.1 million dollars in indirect cost due to traffic delay that would be created in Olmsted County alone on an annual basis. It also missed the 140% increase in accidents that we project will occur and the associated \$1 million dollars in costs associated with those accidents on an annual basis. The DEIS focuses simply on effects at the level of the individual driver and not on the system impacts.

The DEIS fails to assess the balance between the economic costs and benefits of the project to the transportation system. There are significant "indirect" costs associated with the project which have not been addressed, including the costs associated with

the value of the time people will be delayed by trains, societal costs incurred by a higher number of accidents, and the costs of increased levels of air pollution created by increasing train traffic and idling vehicles. If the DEIS analysis had been more thorough and considered the benefits and costs of different types of improvements, even at the level of individual crossings, it may have found, for example, as we believe, that construction of grade separation at East Circle Drive (CSAH 22) or TH 63 in Rochester makes economic sense from a societal standpoint, as the direct and indirect benefits of this type of improvement outweigh the costs of the project. However, with no effort put into the process except to assess the length of delay caused by the train traffic associated with the project, it misses most of the important factors that would lead to consideration of this alternative.

Other Traffic Analysis Issues

In the traffic analysis of Alternatives R-3/R-4 the traffic delay and traffic analysis did not evaluate the crossings of the bypass on TH 52, TH 63 and TH 14. While ROCOG recognizes that the initial and latest bypass proposals of the City of Rochester propose to include grade separation at these three locations, for purposes of information the DEIS should include analysis of these three locations in order to be consistent in terms of reporting on all possible crossing locations on the bypass.

4) Other Transportation-related issues

Issue #1 – The lack of cumulative impact analysis

At every highway–rail crossing affected by the project there are multiple traffic and transportation-related effects that occur. These include traffic delay, highway-rail accidents, emergency response delay, and potential pedestrian and bicyclist concerns. The approach utilized in the DEIS is to look at each issue individually, with no effort made to look at the combined effect of multiple impacts at a single location to determine if the cumulative impact is potentially significant at a given location.

This lack of cumulative impact analysis is inconsistent with the guidance provided in 40 CFR 1508.

The DEIS is also required to assess the cumulative impact of the proposed project and any other federal actions that may be occurring within the project area, such as other federally funded highway projects. The assessment contained in the DEIS is woefully inadequate, missing such major projects as the TH 52 Reconstruction, which would be underway the same time the rail reconstruction would be happening. Only a limited number of projects were identified and these are almost exclusively rural projects with no urban area projects identified.

Issue #2: Frequency vs. Rate of Impact– The issue of Queuing

The DEIS assessed the length of queues that would be created as a result of the project but provides no comment or recommendation as to any potential impacts relative to this matter. It appears the lack of any identified impact is due to the fact that since the DEIS finds queues will be shorter due to the faster train speeds, any existing problems will actually be improved. What the DEIS fails to acknowledge is that disruptions may still occur even with shorter queues and may happen much more frequently as a result of the project.

A good example of this is on CR 104 west of the City of Rochester. Whereas today expected traffic spillback into the TH 14 intersection with CR 104 occurs on average twice a day when trains pass, in the future we estimate that this impact would occur 15-16 times out of the 37 train events at that crossing. While the total amount of congestion at the intersection will be less at any single event, it nonetheless will be a much more frequent occurrence than currently experienced.

Issue #3: Fencing

The DEIS contains no recommendations as to what if any trespass restraint should be provided, such as chain link fencing in urban areas, to minimize access to the

tracks. National statistics show that more trespassers are killed or seriously injured on railroads annually than motorists involved in rail crossing accidents. Particularly for urbanized areas the DEIS should provide some guidance as to expected level of corridor protection.

Issue #4: The lack of any Emergency Response Evaluation

The DEIS emphasizes that due to the random and unpredictable nature of emergencies the level of possible impact to these services cannot be predicted. While the randomness of individual events is certainly true, when looked at over a period of time patterns do emerge and lend themselves to similar analysis as that done from traffic delay. For example, analysis indicated that the Gold Cross Ambulance Service, which serves a regional area centered on Rochester, was required to cross the tracks 2500 times in 1998 either responding to an emergency or transporting a patient to the ER with sirens and lights on. Using the hourly distribution of calls and the amount of traffic delay that would be created due to the trains, we can estimate that ambulances would have been delayed once every 32 hours. Obviously there is no standard of what is significant, and it is a qualitative judgment as to whether mitigation measures need to be taken, but the conclusion that emergency response services cannot be evaluated we feel is in error.

ROCOG would further note that the DEIS errs in its omission of any discussion implementation of Alternatives R-3 and R-4 in the Rochester area would have on emergency services in areas located along the bypass corridor. Due to the distance from emergency dispatch centers to areas located along the bypass corridor, there are concerns that additional delay created by blocked crossings will impact the timely delivery of emergency services to these areas.

The DEIS addresses one possible enhancement for emergency service responders, the installation of a real-time train detection and monitoring system, with its "consultation" clause, ie, the applicant shall consult with the communities of Rochester, Mankato, etc., on the possible installation of such systems. While these

systems are obviously of benefit to the community, there is a need to insure that the applicant will fully participate in the development of such systems. When the communities of Fargo, ND & Moorhead, MN attempted to develop monitoring capabilities the railroad (BNSF in that case) would not grant them access to their property to install detection equipment. This forced the cities to make alternative arrangement in both the type of equipment chosen and location of installation outside of the corridor in order to implement the system. To facilitate the implementation of such systems the STB should order the DM&E to provide access for the installation of such systems if any community should decide to go forward with this improvement.

Issue #5: School Bus Safety

ROCOG would note that the DEIS errs in its omission of any discussion as to the impact Alternatives R-3 and R-4 in the Rochester area would have on the provision of school bus services along the bypass corridor. While the DEIS has identified the number of affected vehicles in terms of school districts serving areas along the existing corridor, it does not do so for school districts along the proposed bypass route. This includes the additional school districts of Hayfield and Stewartville in addition to changes in impacts to the districts of Byron, Kasson-Mantorville and Dover-Eyota. This lack of analysis of the impact to other school districts not currently affected by the existing rail corridor is further evidenced in the 15th page of Table 5.1.10 in Chapter 5, where under the summary of safety impacts for Alternatives R-3 and R-4 the DEIS notes only five new grade crossings would be used by school buses. ROCOG believes that with Alternative R-3/R-4 most of the new crossings would be used by school buses due to the distribution of households throughout the project area that would be crossed by the bypass route.

The DEIS includes no discussion as to the special hazards faced by school bus drivers. A study done by the National Transportation Safety Board identified the fact that interior noise levels in buses, particularly with windows closed and fans running, are such that drivers run the risk of not hearing train horns. Minnesota has been one

of the leaders in looking at ways of addressing this issue with the use of In-Vehicle Warning Systems, which were tested by the school bus service in the City of Glencoe. (ref also NTSB report p 80) It would seem an appropriate time to direct consultation and participation of the implementation of such systems if local school districts decide to invest in such safety devices. Again, as with the real-time train monitoring system, the railroads need to provide access to their property in order to permit installation of necessary infrastructure for this type of system.

Issue #6: No evaluation of alternative Siding Plans

The DEIS describes the use of sidings and lays out three alternative plans for siding locations on the existing corridor in Olmsted County as illustrated in Exhibits F through H. The DEIS contains no analysis of the impact these would cause, particularly when located in or near the edge of a city, which happens in both Alternative B (Exhibit F) and Alternative D (Exhibit H). Additionally, the DEIS should evaluate the possible revision in siding locations that would accompany the implementation of either R-3 or R-4, the bypass alternatives for the Rochester area.

Impacts of concern that can be expected in areas near sidings include:

- Increased noise generated by the simultaneous passage of trains
- Localized areas of increased vibration due to the presence of traffic across switches
- Traffic delay if in fact train speed cannot be maintained, which is highly likely on the shorter siding lengths proposed in the eastern part of the State of Minnesota and concerns regarding how switching would be managed without the use of power switches.

Given the lack of information regarding the operation of sidings, the FEIS should provide clarification as to the criteria for siding locations and ROCOG would suggest that consideration be given to the establishment of no-build zones in areas where the operation of sidings could have detrimental environmental impacts on

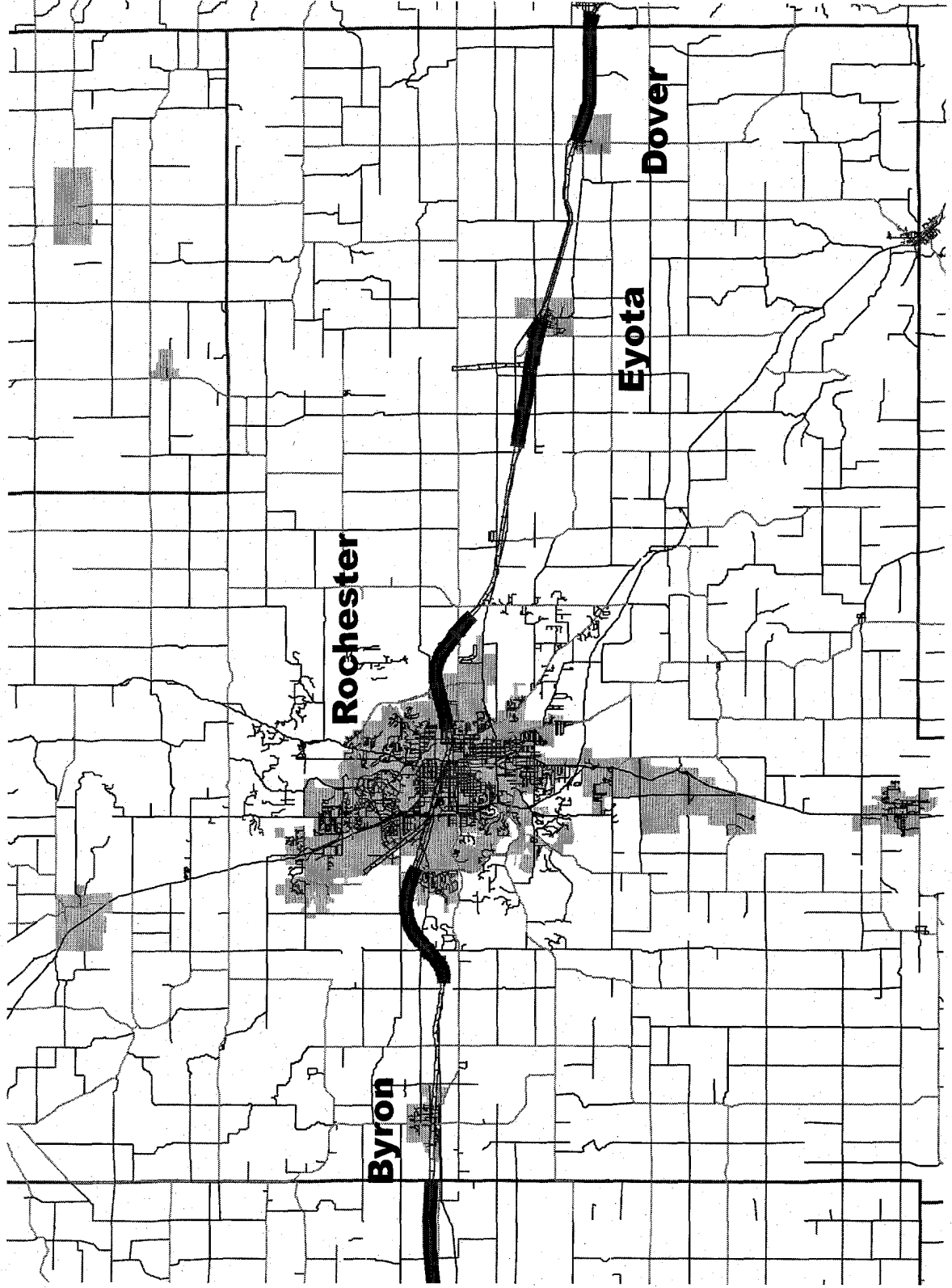
communities. As described in the DEIS the theory was to have sidings 3 to 7 miles in length equally spaced at 12 to 25 miles. However, there is not strong evidence of these criteria being used in the establishment of siding placement, particularly east of Owatonna, Minnesota. From analyzing the information in Tables 2-6 through 2-8, it appears that many of the sidings in the eastern 100 miles of Minnesota along the corridor are significantly shorter than 3 miles in length, and are located at very divergent spacings.

The use of each individual siding, based on relatively even traffic flow throughout the system, would average out to be approximately 7-8 passing movements per siding per day. To minimize the probability of detrimental impacts, ROCOG recommends the following locational parameters should be considered:

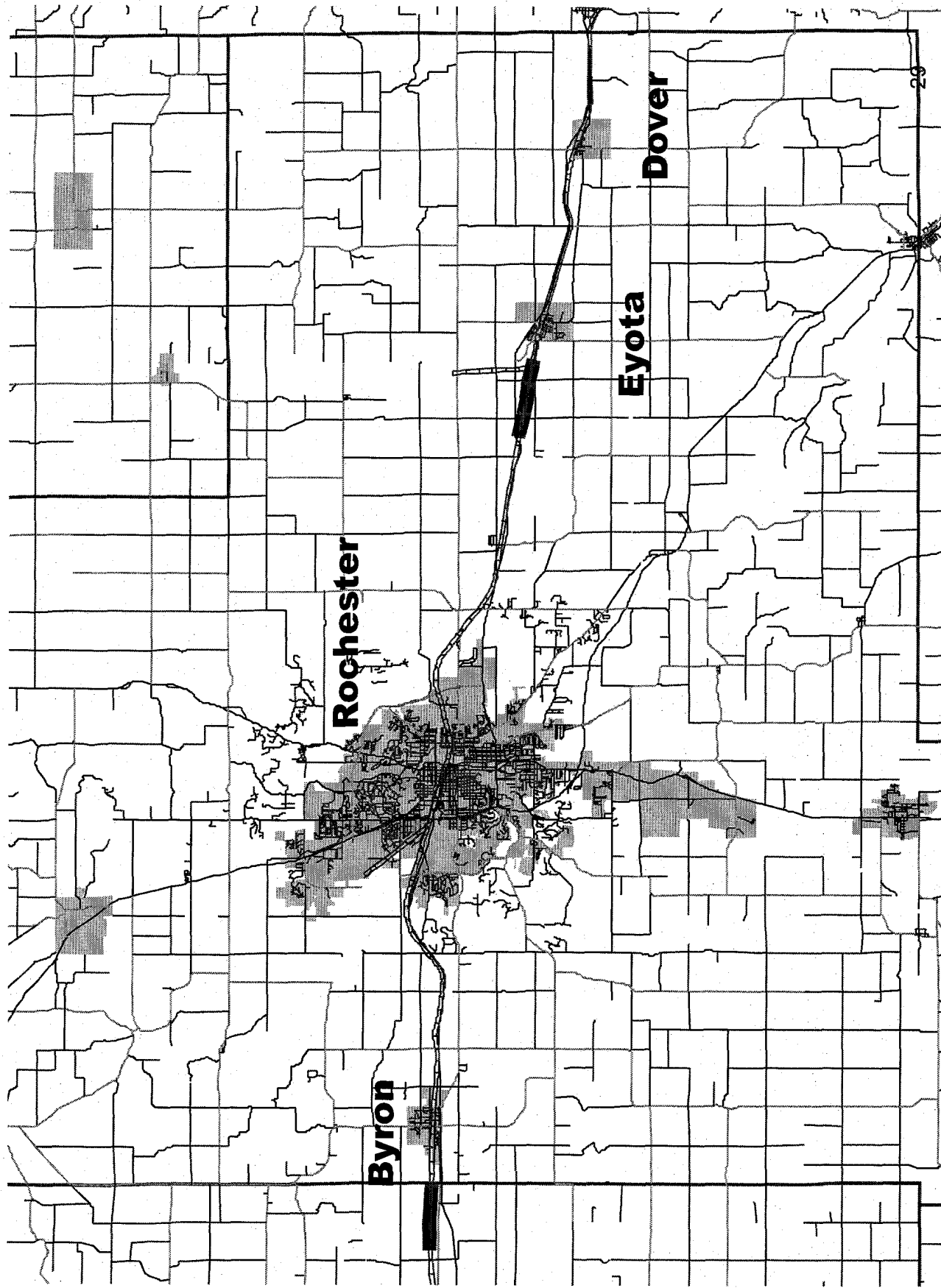
- To minimize noise and vibration impact no sidings should be established within 1260 feet of any existing residential area;
- Siding locations should be located so as not to impact any crossing with over 1000 ADT;
- Sidings located to the east of communities should be located far enough from major Principal Arterial streets to allow westbound trains that must stop or slow to under 10 MPH in a siding enough distance to regain adequate speed (above 35 MPH) before reaching a major crossing in order to minimize traffic delay. Generally this will require about 1.5 miles of distance for empty westbound trains (loaded trains, by comparison, would need about 4 miles to achieve speed).

EXHIBIT F

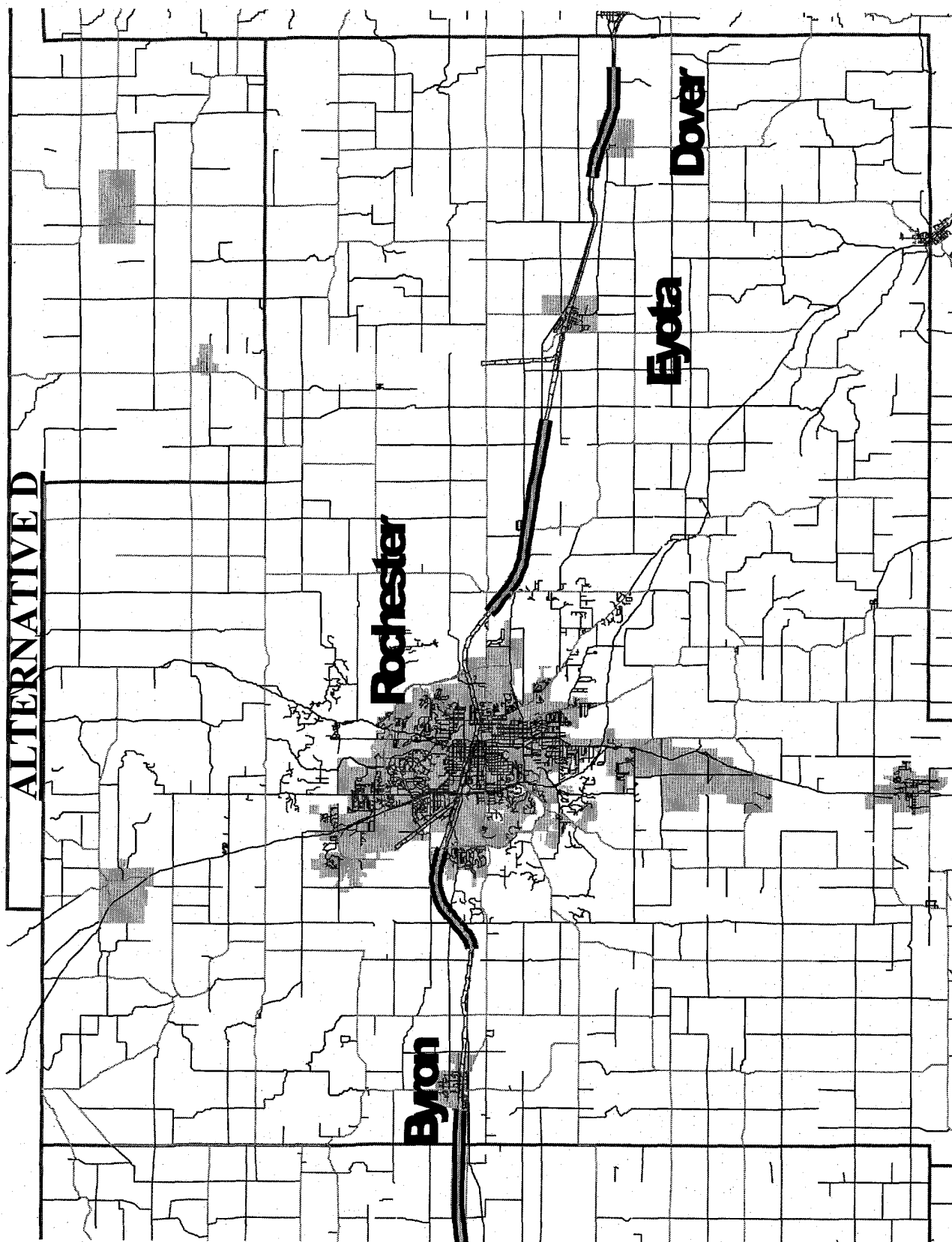
LOCATION OF SIDINGS AS LISTED IN DEIS
ALTERNATIVE B



**LOCATION OF SIDINGS AS LISTED IN DEIS
ALTERNATIVE C**



LOCATION OF SIDINGS AS LISTED IN DEIS



**EXHIBIT A: Source of Vehicular Traffic Estimates used in DEIS
ALTERNATIVE R-2**

FRA ID	Jurisdiction	CROSS STREET	DESIGNATION	ROCOG 1998 ESTIMATE	STB TRAFFIC ANALYSIS	STB ACCIDENT ANALYSIS	MNDOT REPORT (existing) Source: Table 4	IDENTIFIED SOURCE OF DATA
193288R	Section 31 Kalmr Twp	TWN 202	TWN 202	120	100	100	120	FRA National Highway-Rail Crossing Inventory / 1989
911209L	BYRON	9TH AVE NW	MUN 9999	360	250	250	360	FRA National Highway-Rail Crossing Inventory
193287J	BYRON	2ND AVE NW	CSAH 5	4,820	4,400	4,400	4,820	MNDOT 1994 State Aid Count
193286C	BYRON	BYRON AVE N	MUN 14	4,710	3,064	3,064	4,710	FRA National Highway-Rail Crossing Inventory / 1993
193236Y	BYRON	10TH AVE NE	MUN 72	475	100	100	475	FRA National Highway-Rail Crossing Inventory / 1988
193285V	Section 34 Kalmr Twp	CSAH 3	CSAH 3	1,010	750	750	1,010	MNDOT 1994 State Aid Count
193235S	Sec36 Kalmr / 31 Cascade	COUNTY 104	COUNTY 104	3,560	2,250	2,250	3,560	MNDOT 1994 State Aid Count
193232W	ROCHESTER	7TH ST NW	MSAS 124	7,500	6,900	6,900	7,500	MNDOT 1994 State Aid Count
193282A	ROCHESTER	11TH AVE NW	MSAS 113	13,125	12,400	12,400	13,125	MNDOT 1994 State Aid Count
193281T	ROCHESTER	6TH AVE NE	MSAS 116	3800	3,800	3,800	3,800	MNDOT 1994 State Aid Count
193280L	ROCHESTER	4TH AVE NW	MSAS 107	7,950	7,200	7,200	7,950	MNDOT 1994 State Aid Count
193278K	ROCHESTER	1ST AVE NW	MUN 470	1,750	4,726	4,726	1,750	Minnesota Highway-Rail Crossing Inventory / 1988
193277D	ROCHESTER	BROADWAY	USTH 63	25,020	19,200	19,200	18,000	MNDOT 1994 State Aid Count
193276W	ROCHESTER	2ND AVE NE	MSAS 109	10,900	8,850	8,850	10,900	MNDOT 1994 State Aid Count
193275P	ROCHESTER	7TH AVE NE	MUN 481	436	436	870	436	(436) Rochester Planning Dept 1998 (870) Unidentified
193274H	ROCHESTER	9TH AVE NE	MUN 482	780	820	820	780	FRA PCAPS Accident History Database (Year Unknown)
193273B	ROCHESTER	11TH AVE NE	MSAS 110	10,080	10,800	10,800	10,080	MNDOT 1994 State Aid Count
193272U	ROCHESTER	15TH AVE NE	MUN 274	870	955	955	870	Source of data unidentified
911202N	ROCHESTER	E. CIRCLE DRIVE	CSAH 22	7,820	7,500	7,500	7,820	MNDOT 1994 State Aid Count
193270F	Sec 4 Marion Twp	COLLEGEVIEW ROAD	CSAH 9	3,330	3,200	3,200	3,330	MNDOT 1994 State Aid Count
193269L	Sections 3/4 Marion Twp	50TH AVE SE	CSAH 11	1,250	1,200	1,200	1,250	MNDOT 1994 State Aid Count
193267X	SEC 11 TWP 106 RGE 13	60TH AVE SE	TWN 211	90	86	86	90	FRA PCAPS Accident History Database (Year Unknown)
193266R	CHESTER	CHESTER AVE	COUNTY 119	460	440	440	460	MNDOT 1994 State Aid Count
193220C	SEC 08 TWP 106 RGE 12	3 MI W. OF EYOTA	COUNTY 102	100	100	100	100	Rochester-Olmsted Planning Dept (1998)
193219H	SEC 09 TWP 194 RGE 12	COUNTY 102	COUNTY 102	30	50	30	30	(50) Unidentified Source
193216M	SEC 10 TWP 106 RGE 12	TWN 1123	TWN 112	50	2,600	50	50	MNDOT 1994 State Aid Count (2,600)
193264C	EYOTA	CSAH 7	CSAH 7	3,160	2,300	2,600	3,160	MNDOT 1994 State Aid Count (2600)
193263V	EYOTA	CENTER ST	CSAH 7	2,520	3,515	2,300	2,520	MNDOT 1994 State Aid Count (2300)
193262N	SEC 18 TWP 106 RGE 11	TWN 90	TWN 90	50	1,500	50	50	FRA PCAPS Accident History Database (Year Unknown)
193261G	SEC 17 TWP 106 RGE 11	CSAH 32	CSAH 32	250	155	200	250	Source of data unidentified
193260A	DOVER	CHATFIELD ST	CSAH 10	1,380	55	1,300	1,380	MNDOT 1994 State Aid Count (1,300)
193195W	SEC 23 TWP 106 RGE 11	TWN 667	TWN 667	35	365	25	35	FRA PCAPS Accident History Database (Year Unknown)
193259F	SEC 23 TWP 106 RGE 11	TWN 591	TWN 591	25	4,700	25	25	FRA PCAPS Accident History Database (Year Unknown)
193258Y	SEC 24 TWP 106 RGE 11	TWN 668	TWN 668	25	80	25	25	FRA PCAPS Accident History Database (Year Unknown)

**EXHIBIT A: Source of Vehicular Traffic Estimates used in DEIS
ALTERNATIVE R-3/4**

Crossing #	Jurisdiction	CROSS STREET	ROCOG 1998 ESTIMATE	STB TRAFFIC ANALYSIS	STB ACCIDENT ANALYSIS	NOTES
1	Byron	North Frontage Road / TH 14	2340			Assumed Grade Separation
2	MnDOT	TH 14	11870			Assumed Grade Separation
3	Kalmar Township	19th Ave NW	170	350	350	
4	Kalmar / Salem Twp's	Frontier Rd	85	85	85	
5	Salem Township	10th St SW	100	100	100	
6	Salem Township	15th St SW	25	25	25	
7	Olmsted County	CSAH 25	385	385	385	
8	Olmsted County	CSAH 17	365	365	365	
9	Salem/Rock Dell Twp's	60th St SW	50	50	50	
10	Olmsted County	CSAH 26	360	360	360	
11	Rock Dell Township	80th St	65	65	65	
12	Rock Dell Township	110th Ave SW	45	45	45	
13	Olmsted County	CSAH 3	630	630	630	
14	Rock Dell Township	90th Ave SW	55	55	55	
15	Rock Dell Township	80th Ave SW	75	75	75	
16	Olmsted County	CSAH 15	250	250	250	
17	Rock Dell / High Forest	60th Ave SW	110	110	110	
18	Olmsted County	CSAH 8	1780	1780	1780	
19	MnDOT	MN 30	1740	1740	1740	
20	High Forest Township	31st Ave SW	10	10	10	
21	MnDOT	TH 63	18900			Assumed Grade Separation
22	High Forest Township	2nd Ave SE	1	630	630	
23	High Forest Township	80th St SE	0	630	630	
24	Olmsted County	CSAH 20	700	930	930	
25	High Forest Township	20th Ave SE / 60th St SE	40	630	10	
26	Olmsted County	CSAH 1	1885	1885	1885	
27	Marion/ Pleasant Grove	60th St SE east of CSAH 1	5	10		
28	Marion Township	55th St SE	20	20	20	
29	MnDOT	TH 52	18300			Assumed Grade Separation
30	Olmsted County	CR 123 (Old Marion Rd)	680	680	680	
31	Olmsted County	CR 123 (North of Grove's End)	240	240	240	
32	Marion Township	70th Ave SE	1			
33	Marion Township	77th Ave SE	0			
34	Olmsted County	CSAH 19	210	210	210	
35	Olmsted County	CSAH 23	310	310	310	
36	Olmsted County	CR 102	50	50	50	
37	Eyota Township	30th St SE	80	80	80	
38	Eyota Township	110th Ave SE	70	70	70	
39	Eyota Township	19th St SE	60	60	60	

EXHIBIT A

EXHIBIT B

VERIFICATION OF NUMBER OF TRAINS NEEDED TO SHIP 100,000,000 TONS ANNUALLY

TOTAL ANNUAL TONNAGE 100,000,000	<u>Estimate of Number of Trains / 6400'</u>		<u>Verification of Length</u>	
	286,000	lbs per loaded gondola	115	6106.5
TOTAL DAILY TONNAGE 273,972.60	43,000	lbs per empty gondola	CAR	
	243,000	lbs coal per gondola	TRAINS	
	122	tons coal per gondola	(53.1 ft long)	
	13,973	tons/115 gondola train	3	219.6
	20	loaded coal trains needed	Locomotives	
	40	total coal trains	(73.2 ft long)	
	43	total trains with manifest		6326.1
				Total length

VERIFICATION OF NUMBER OF TRAINS NEEDED TO SHIP 50,000,000 TONS ANNUALLY

TOTAL ANNUAL TONNAGE 50,000,000	<u>Estimate of Number of Trains / 6400'</u>	
	286,000	lbs per loaded gondola
TOTAL DAILY TONNAGE 136,986.30	43,000	lbs per empty gondola
	243,000	lbs coal per gondola
	122	tons coal per gondola
	13,973	tons/115 gondola train
	10	loaded coal trains needed
	20	total coal trains
	23	total trains with manifest

VERIFICATION OF NUMBER OF TRAINS NEEDED TO SHIP 20,000,000 TONS ANNUALLY

TOTAL ANNUAL TONNAGE 20,000,000	<u>Estimate of Number of Trains / 6400'</u>	
	286,000	lbs per loaded gondola
TOTAL DAILY TONNAGE 54,794.52	43,000	lbs per empty gondola
	243,000	lbs coal per gondola
	122	tons coal per gondola
	13,973	tons/115 gondola train
	4	loaded coal trains needed
	8	total coal trains
	11	total trains with manifest

EXHIBIT C

DM&E POWDER RIVER BASIN EXPANSION PROJECT

BASELINE ASSUMPTIONS FOR ACCIDENT AND TRAFFIC ANALYSIS

NUMBER OF LANES					FUNCTIONAL CLASSIFICATION			NUMBER MAIN TRACKS				
CROSSING	MILEPOST	HIGHWAY	STREET	DEIS/TRAFF			DEIS/ACC			ACTUAL		
				DEIS/TRAFF	DEIS/ACC	ACTUAL	URB/RURAL (FRA)	ACTUAL	DEIS/ACC	ACTUAL		
193288R	006030	TWP 202	COUNTY LINE RD	2	2		RURAL LOCAL			1		
911209L		MUN999	9TH AVE NW	2	2			RURAL LOCAL		1		
193287J	005890	CSAH 5	SECOND AVE. N.W.	4	4	2	RURAL MAJOR COLLECTOR			1		
193286C	005870	M-14	BYRON AVE. N.	4	4	2	RURAL LOCAL			1		
193236Y	005780	TWP 224	10TH AVE NE	2	2		RURAL LOCAL			1		
193285V	005680	CSAH 3		2	2		RURAL MAJOR COLLECTOR			1		
193235S	005420	CR 104		2	2		URBAN LOCAL	URBAN COLLECTOR		1		
193232W	005130	MSAS104	7TH ST. N.W.	2	2		URBAN LOCAL	URBAN MINOR ARTERIAL		1		
193282A	005000	MSAS113	11TH AVE. N.W.	4	4		URBAN MINOR ARTERIAL			2	1	
193281T	004960	MSAS116	6TH AVE. N.W.	4	4	2	URBAN COLLECTOR			1		
193280L	004940	MSAS107	4TH AVE. N.W.	4	4	3	URBAN COLLECTOR	URBAN MINOR ARTERIAL		2	1	
193278K	004920	M-470	1ST AVE N.W.	4	4	2	URBAN LOCAL			2	1	
193277D	004910	U.S. 63	BROADWAY NO.	4	4		PRINCIPAL ARTERIAL			1		
193276W	004900	MSAS109	2ND AVE NE	4	2	4	URBAN MINOR ARTERIAL			2	1	
193275P	004870		7TH AVE. N.E.	2	2		URBAN LOCAL			1		
193274H	004980	M-482	9TH AVE NE	2	2		URBAN LOCAL			1		
193273B	004850	MSAS110	11TH AVE N.E.	2	2		URBAN MINOR ARTERIAL			1		
193272U	004820	CSAH 22	15TH AVE. N.E.	2	2		URBAN LOCAL			1		
911202N	004710	CSAH 22		2	2	4	PRINCIPAL ARTERIAL			1		
193270F	004540	CSAH 9	COLLEGE VIEW RD E	2	2		RURAL MAJOR COLLECTOR			1		
193269L	004450	CSAH 11	50TH AV. S.E.	2	2		RURAL MINOR COLLECTOR	RURAL MAJOR COLLECTOR		1		
193267X	004340	TWP RD.		2	2		RURAL LOCAL			1		
193266R	004270	OLCO119	CHESTER AVE SE	2	2		RURAL LOCAL			1		
193220C	004030	CORD102		2	2		RURAL MINOR COLLECTOR	RURAL LOCAL		1		
193219H	003940	CORD102		2	2		RURAL LOCAL			2	1	
193216M	003860	TWNSPRD		2	2		RURAL LOCAL			2	1	
193264C	003740	CSAH 7		4	2	2	RURAL MAJOR COLLECTOR			1		
193263V	003680	CSAH 7		2	4	2	RURAL LOCAL			3	1	
193262N	003530	TWP. RD		2	2		RURAL LOCAL			1		
193261G	003420	CSAH 32		2	2		RURAL LOCAL			1		
193260A	003220	CSAH 10		2	2		RURAL MINOR COLLECTOR	RURAL MAJOR COLLECTOR		1		
193195W	003090	TWP. RD		2	1		RURAL LOCAL			1		
193259F	003040	TWP RD		4	2	2	RURAL LOCAL			1		
193258Y	003010	TWP. RD		2	2		RURAL LOCAL			1		

EXHIBIT C

EXHIBIT D

BYPASS CORRIDOR DATA FOR ACCIDENT PREDICTION

ORDER	ROADWAY	DEIS TRAFFIC	ROCOG BASE	DEIS Device	DEIS Surface	Actual Surface	DME DEVICE	MINDOT DEVICE	Grade Separation	Candidate
1	North Frontage Road / TH 14		2,340		paved	Paved	Gate	Lights & Gates		
2	TH 14		11,870				Gate	Lights & Gates	Yes	
3	19th Ave NW	350	170	PASSIVE	paved	Gravel	Flashing Lights	Lights & Gates		
4	Frontier Rd	85	85	PASSIVE	paved	Gravel	Passive	Passive		
5	10th St SW	100	100	PASSIVE	paved	Gravel	Passive	Passive		
6	15th St SW	25	25	PASSIVE	paved	Gravel	Passive	Passive		
7	CSAH 25	385	385	PASSIVE	paved	Paved	Flashing Lights	Lights & Gates		
8	CSAH 17	365	365	PASSIVE	paved	Paved	Flashing Lights	Lights & Gates		
9	60th St SW	50	50	PASSIVE	paved	Gravel	Passive	Passive		
10	CSAH 26	360	360	PASSIVE	paved	Paved	Flashing Lights	Lights & Gates		
11	80th St	65	65	PASSIVE	paved	Gravel	Passive	Passive		
12	110th Ave SW	45	45	PASSIVE	paved	Gravel	Passive	Passive		
13	CSAH 3	630	630	PASSIVE	paved	Paved	Flashing Lights	Lights & Gates		
14	90th Ave SW	55	55	PASSIVE	paved	Gravel	Passive	Passive		
15	80th Ave SW	75	75	PASSIVE	paved	Gravel	Passive	Passive		
16	CSAH 15	250	250	PASSIVE	paved	Paved	Flashing Lights	Lights & Gates		
17	60th Ave SW	110	110	PASSIVE	paved	Gravel	Passive	Passive		
18	CSAH 8	1780	1,780	PASSIVE	paved	Paved	Flashing Lights	Lights & Gates		
19	MN 30	1740	1,740	PASSIVE	paved	Paved	Flashing Lights	Lights & Gates		
20	31st Ave SW	10	10	PASSIVE	paved	Gravel	Passive	Passive		
21	TH 63		18,900		Grade Separation		Gate	Lights & Gates	Yes	
22	90th St SE	50		PASSIVE	paved	Gravel	Passive	Passive		
23	2nd Ave SE	630	1	PASSIVE	paved	Gravel	Passive	Passive		
24	80th St SE	630	-	PASSIVE	paved	Gravel	Passive	Passive		
25	20th Ave SE / 60th St SE	930	700	PASSIVE	paved	Paved	Flashing Lights	Lights & Gates		
26	CSAH 1	1885	40	PASSIVE	paved	Gravel	Passive	Passive		
27	60th St SE east of CSAH 1	10	5	PASSIVE	paved	Paved	Flashing Lights	Lights & Gates		
28	55th St SE	20	20	PASSIVE	paved	Gravel	Passive	Passive		
29	TH 52		18,300		Grade Separation		Gate	Lights & Gates	Yes	
30	CR 123 (Old Marion Rd)	680	680	PASSIVE	paved	Paved	Flashing Lights	Lights & Gates		
31	CR 123 (North of Grove's End)	240	240	PASSIVE	paved	Gravel	Flashing Lights	Lights & Gates		
32	70th Ave SE		1		paved	Gravel	Passive	Passive		
33	77th Ave SE		-		paved	Gravel	Passive	Passive		
34	CSAH 19	210	210	PASSIVE	paved	Paved	Flashing Lights	Lights & Gates		
35	CSAH 23	310	310	PASSIVE	paved	Paved	Flashing Lights	Lights & Gates		
36	CR 102	50	50	PASSIVE	paved	Gravel	Passive	Passive		
37	30th St SE	80	80	PASSIVE	paved	Gravel	Passive	Passive		
38	110th Ave SE	70	70	PASSIVE	paved	Gravel	Passive	Passive		
39	19th St SE	60	60	PASSIVE	paved	Gravel	Passive	Passive		

EXHIBIT D

EXHIBIT E

COMPARISON OF DM&E GRADE CROSSING PROTECTION CRITERIA & MINNESOTA DEPARTMENT OF TRANSPORTATION CRITERIA FOR EXISTING CORRIDOR

	DME CRITERIA				MNDOT CRITERIA			
	CROSSBUCKS & STOP SIGNS	FLASHING WARNING LIGHTS	SIGNALS & GATES	CROSSBUCKS & STOP SIGNS	FLASHING WARNING LIGHTS	SIGNALS & GATES		
EXISTING	12	15	7	12	15	7		
20MT 8 TRAINS	11	6	17	10	0	24		
50MT 21 TRAINS	10	7	17	9	0	25		
100MT 37 TRAINS	9	8	17	8	0	26		