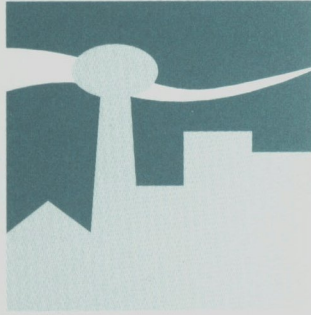


Implementation Plan

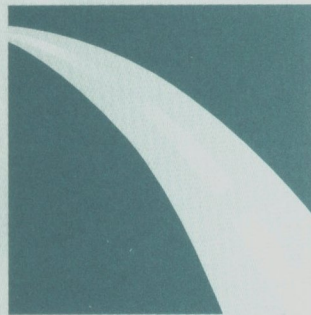


Miller Trunk Highway

Duluth, Minnesota



SEH No. AMNDOT0126.00



December 17, 2002



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Acknowledgement

The project team wishes to extend a sincere Thank You to the residents and business owners who participated in the development of this Plan through your attendance at numerous meetings and by providing your comments. Your participation has helped us produce an important document to guide the future of transportation on the Miller Trunk Highway corridor.

Signature Page

The undersigned public agencies have participated as partners in the development of the Miller Trunk Highway Implementation Plan and each supports the corridor protection and improvement strategies identified through this effort.

Mayor Gary Doty, City of Duluth

Mayor David Allen, City of Hermantown

Ron Chicka, Director, Metropolitan Interstate Commission

Mike Robinson, District Engineer, Minnesota Department of Transportation, District One

St. Louis County

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Access Management Plan – Miller Trunk Highway, October 2002

Miller Trunk Highway Public Survey – Summary, November 2001

Miller Trunk Highway Public Survey – Supporting Data, November 2002

Access Management Awareness Program – Phase II Summary Report, December, 1997

Implementation Plan

Miller Trunk Highway

Prepared for the Minnesota Department of Transportation and the Miller Trunk Highway Implementation Plan Partners.

1.0 Introduction

This document is an implementation plan of transportation strategies for the Miller Trunk Highway corridor in Duluth and Hermantown, Minnesota. The purpose of this effort has been to determine existing and future transportation problems and to develop solutions to address these problems. Technical expertise coupled with local public involvement has provided a prioritized list of actions and projects for short, mid, and long-term implementation. Implementation of solutions will occur as the partners pursue funding so projects can be developed and constructed as quickly as possible.

The Miller Trunk Highway corridor has been identified by the Minnesota Department of Transportation as an Interregional Corridor. The focus of Interregional Corridors is to provide movement of commuters, recreational travel, and goods and services between regional economic centers. This initiative provides funding for studies and construction of routes of statewide significance. Funding for the development of this implementation Plan was provided through this program and additional funding will be sought for the implementation of the improvements identified through this effort. The Miller Trunk Highway Corridor has been selected for further analysis as it is a route of statewide, regional and local importance. This route experiences access, circulation, and traffic problems today and requires the implementation of protection and improvement strategies to provide for safe and efficient movement of people and goods into the future.

This implementation plan has been developed through a joint effort of the public agencies listed below:

- ◆ City of Duluth
- ◆ City of Hermantown
- ◆ Metropolitan Interstate Commission
- ◆ Minnesota Department of Transportation
- ◆ St. Louis County

In recognizing the need for a transportation improvement plan for the Miller Trunk Highway corridor, these agencies have committed to preparing and

supporting this plan for the protection and improvement of the Miller Trunk Highway corridor.

This plan considers improvement strategies needed through 2025. The recommendations in this plan are intended to be incorporated into comprehensive plans, capital improvement programs, and to guide access along the corridor. The recommendations include protection of the corridor through pro-active management, and improvements to the corridor through incremental development of roadway projects.

Protection and integration of neighborhoods, and identification of improvements needed for pedestrian and transit access and circulation throughout the corridor has been an integral part of this process. Many issues were identified through the public involvement process. The solutions identified work to balance the needs of a mobile society with the livability of neighborhoods and the need for alternative modes of transportation. While the improvements identified in this plan focus on improving the movement of local and through-traffic, specific improvements for pedestrian movement, safety, and access to transit have been considered, and will be an important part of the proposed roadway projects.

Efforts have been made to present the process, findings, and recommendations in plain English. Much of the technical information has been incorporated into a separate Technical Appendix and Access Management Plan.

2.0 Corridor Overview

This corridor consists of four unique geographic areas – Central Entrance, Hermantown, Miller Hill Retail, and Trinity Road. The character of the roadway, as well as land use and development, varies greatly from area to area. Unique access goals and improvement strategies have been developed for each of these areas. For purposes of developing this implementation plan, the Miller Trunk Highway corridor includes the following segments:

- ◆ Trinity Road (State Highway 53) from upper Piedmont Avenue to Central Entrance (State Highway 194)
- ◆ Central Entrance (State Highway 194) from upper Mesaba Avenue to Trinity Road
- ◆ Miller Trunk Retail (State Highway 53) from Trinity Road to Haines Road
- ◆ Hermantown (State Highway 53) from Haines Road to Midway Road

These roadway segments total more than 12 miles of state highway. These highways are supported by many county and city roadway connections operating as a system to provide transportation throughout the area. See Figure 1.

Highways 53 and 194 were constructed in 1934. This important route serves high volumes of recreational traffic and goods movement as a gateway to northeastern Minnesota, as well as providing important regional and local access to a major regional commercial center. Current and planned land use along the corridor includes a mix of residential, high and low density commercial, and industry. Recent improvements have included a variety of

transportation solutions including the addition of several traffic signals. Continued growth and development pressure, unless planned for, will tax the existing roadway network as well as nearby environmental resources.

Input from the partners, local representatives, and the public highlight the need for action on the Miller Trunk Highway corridor. The public is increasingly frustrated with the corridor, and an increasing number of drivers are either avoiding it, or driving through nearby neighborhoods to avoid the congestion. The corridor experiences safety, mobility and access problems affecting shoppers, travelers, freight movement, businesses, pedestrians, transit and residents. Pedestrian and transit movement is a major problem throughout the corridor. Sidewalks, bus stops, crosswalks, and shelters are limited or non-existent at key locations throughout the corridor. Limited access to bus stops is considered to be one factor in a significant decrease in transit ridership over the past 20 years. As traffic volumes increase, these problems will become more exacerbated and affect more residents and businesses.

3.0 Goals

Early in the development of this implementation plan, several project goals were established to define the intent and measure the success of proposed actions. A summary of these goals is as follows:

- ◆ Improving and simplifying movement, circulation, and access.
- ◆ Providing better planned access points.
- ◆ Supporting business growth.
- ◆ Improving safety and mobility for drivers, pedestrians, and transit.
- ◆ Maintaining or reducing travel time.
- ◆ Reducing neighborhood traffic.
- ◆ Supporting land use planning.
- ◆ Protection of existing environmental resources and enhancement of these resources where possible.

The proposed solutions have been evaluated against these goals along with input from the partners and the public to quantify benefits and impacts. Not all solutions address every goal, and not all of the goals are intended to be weighted equally.

A major goal of the plan is to be proactive in nature, and provide solutions that include both the protection of existing and planned investments, as well as incremental improvement of the corridor through a variety of transportation strategies. The improvements defined through this effort include short, mid, and long-term projects. The proposed projects may be constructed as part of the incremental improvement of the corridor with public funding, and through private funding sources as development occurs along the corridor. Short-term priorities will address existing problems while long-term project needs are based on assumptions in traffic growth over the next 25 years. As early priorities are implemented and their effectiveness determined, it will be important to re-visit long-term priorities to ensure that proposed projects will meet the needs of evolving land use and environmental conditions. More discussion about each of the four segments is found later in this document.

4.0 Access Management

Several of the strategies identified in this Plan include efforts to manage access to and from major roadways. Access management is an important tool in the management of a transportation system. While typically viewed as an effort to restrict business and residential access to roadways, a much broader view of the goals and solutions is necessary to understand how the application of these techniques benefits both roadway users and adjacent landowners. Highways serve through-traffic, local access, and circulation. An increase in access points results in an increase in congestion and crash rates. Figure 2 highlights this relationship.

The goal of access management is to balance access and traffic movement through strategies including entrance consolidation, limiting turn directions, and new access roads. A comprehensive study was completed in 1997 by the Center for Transportation Research at Iowa State University to evaluate the impacts of access management techniques on nearby businesses and residents. Findings show that businesses are not negatively impacted by the application of access management techniques. A copy of this study is available from Mn/DOT for further review. Responses to a public survey developed for this implementation plan indicate that the public is increasingly avoiding the area and seeking alternate routes to meet transportation needs. This indicates that congestion, crashes, and the ability to circulate to and through this area are currently impaired.

5.0 Plan Development Process and Approach

Plan Development Process

This corridor is one of the most heavily traveled routes in the region. As such, it has also been studied several times over the past 20 years. The development of this implementation plan focused on learning from these earlier efforts, applying updated data and enhancing previous recommendations with new actions. Many of the recommendations from previous studies have been implemented, and others were not pursued due to lack of funding or local support. Viable solutions that have not been implemented have been incorporated into this plan. The development process of this plan occurred in two phases with tasks outlined below:

Phase 1 – Identify Problems

- ◆ Public Opinion Survey of 300 licensed drivers
- ◆ Review and quantify previous studies of the corridor
- ◆ Gather existing and projected traffic and land use data
- ◆ Traffic modeling

Phase 2 – Develop, Evaluate and Prioritize Solutions

- ◆ Set access and signal spacing guidelines
- ◆ Develop Access Management guidelines and policies
- ◆ Develop and evaluate projects with community input
- ◆ Set priorities and funding requirements
- ◆ Identify issues to be carried forward into design and construction.

A Technical and a Development Committee guided the implementation plan development. Public involvement occurred through a total of five open houses, two newsletters, a website, and three public working committees meeting for a total of four times each. A review of environmental issues took place during Phase 2 and a continuing effort to prioritize wetlands and develop protection and enhancement strategies will begin at the end of Phase 2.

Approach

The approach to the corridor applies two important strategies. These include protection of current and planned investments in the roadway system, and improvement of the corridor through incremental construction of roadway projects. Both strategies are integral to the successful management of the Miller Trunk Highway corridor, and seek to maintain mobility, circulation, and access while improving pedestrian and transit movement, and decreasing crashes and delays. Safety and maintenance projects such as new signals, turn lanes, and resurfacing are the highest priorities in the operation of a transportation system. These types of improvements will continue to be defined and implemented outside of the implementation plan. As safety and maintenance projects are developed, incorporation of the recommendations in this plan should be considered as funding allows.

5.1 Phase 1 – Identify Problems

A. Public Opinion Survey

A survey of 300 randomly selected households in the Duluth-Hermantown-Superior metropolitan area was completed in October 2001. The survey limited input to licensed drivers familiar with the Miller Trunk Highway corridor. A geographic mix of participants was included. General conclusions were as follows:

- ◆ People are familiar with the corridor, driving an average of 8 times per week.
- ◆ Typical destinations are shopping, recreation, and work.
- ◆ People are avoiding the highway due to congestion.
- ◆ Many people are concerned about congestion and pedestrian safety.
- ◆ Respondents indicated that the best predictors of the conditions on the highway include:
 1. Being able to drive a consistent speed
 2. The ability to make safe turns.
 3. The level of congestion.

The survey results have been used as a measure of success for proposed improvements. Complete results of the survey are available in a separate document.

B. Data Collection

Data collection and research efforts include the compilation of the following information:

- ◆ Access inventory – a tabulation of the total access points to and from the highway. Results can be found in Table 1 – Access Point Summary.
- ◆ Pedestrian and transit elements – an evaluation of pedestrian and transit accommodations along the corridor.

- ◆ Land use – includes maps of existing and planned land use schemes for both Hermantown and Duluth.
- ◆ Previous studies – an evaluation of recommendations from previous studies of the Miller Trunk Highway corridor.

There are no specific findings from the data collection effort. This data has been used to establish implementation plan direction and improvement strategies.

Table 1

Miller Trunk Highway Access Point Summary

Segment No.	Segment Description	Segment Length (Miles)	Total Public & Private	Access Density (accesses/mile)
1	Mesaba Ave. to Blackman Ave.	0.8	12	15.1
2	Blackman Ave. to Anderson Rd.	1.0	69	66.2
3	Anderson Rd. to Trinity Rd.	0.6	10	17.4
4	Trinity Rd. to Haines Rd.	1.2	13	10.6
Duluth (1-4)		3.6	104	28.6

5	Haines Rd. to Stebner Rd.	1.3	34	25.4
6	Stebner Rd. to Lavaque Rd.	1.2	31	25.1
7	Lavaque Rd. to Ugstad Rd.	1.0	32	31.7
8	Ugstad Rd. to Lindahl Rd.	1.1	25	21.8
9	Lindahl Rd. to Midway Rd.	1.1	38	33.5
Hermantown (5-9)		5.9	160	27.3

TOTAL (1-9)		9.5	264	27.8
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Trinity Road Access Point Summary

Segment No.	Segment Description	Segment Length (Miles)	Total Public & Private	Access Density (accesses/mile)
10	Miller Trunk Hwy. to Anderson Rd.	0.8	37	46.7
11	Anderson Rd. to Arlington Rd.	1.2	28	23.2
12	Arlington Rd. to Piedmont Ave.	0.7	6	9.0
Duluth (10-12)		2.7	71	26.6

C. Traffic Analysis

Traffic analysis included the review of crashes throughout the corridor, forecasting of traffic volumes for both 2012 and 2025, and modeling of this future traffic on the existing roadway network.

Crashes

Traffic engineers reviewed three years of crash records for the corridor. The purpose was to look for the location of clusters of crashes and severe crashes to determine where problems exist. Further analysis includes a review of the types of crashes to determine what solutions can be applied to reduce crashes.

The findings from this review indicate that the road is generally safe with crash rates below statewide average. Several crash “hot spots” were reviewed, and recommendations are incorporated into the final recommended improvements.

Traffic Forecasting

In order to evaluate future traffic congestion, it is necessary to develop forecasts of projected traffic. The forecast begins with current day traffic volumes that are then increased based on anticipated population growth and land use projections. Population growth rates for the corridor are generally low and increased traffic comes from the generation of more trips per household. Traffic volumes were developed for 2012 and 2025. A map of projected traffic volumes can be found in Figure 3.

Traffic Modeling

Traffic modeling involves developing a computer simulation of the roadway network. Both existing and projected traffic volumes can then be simulated to determine where problems can be anticipated. The traffic volumes that occur in the peak hour periods during the week are used for assessing how well traffic operates on a highway. Typical peak hours are the weekday A.M. and P.M. rush hours, and the weekend peak hour. For the Miller Trunk Highway area, the peak hour traffic occurred on Saturday afternoon. As the Saturday peak hour traffic was slightly higher than the weekday P.M. peak hour, it was used for the traffic analysis. The following summary identifies the condition of the current roadway system based on traffic projections if no improvements are implemented. A “movement” is defined as any leg of an intersection such as a left or right turn or a vehicle continuing through the intersection. The definition of a movement or intersection that is over capacity is based on the delay experienced by a driver.

Time Frame	Movements Over Capacity	Intersections Over Capacity
2001	17	0
2012	34	0
2025	43	6

The findings highlight many existing and anticipated traffic problems. Traffic is projected to grow significantly over the next 25 years. This growth will lead to increases in delay, crashes and decreased mobility. The following descriptions have been developed to explain the general condition of the roadway.

In 2001, findings indicated generally good traffic flow. It is difficult to turn left at some locations. The left turn lanes may back up into through lanes at times preventing through-movement. There is some avoidance of the corridor due to congestion and there is some aggressive behavior when delays occur.

In 2012, we find that traffic movement is becoming impaired. More of the left turn and through lanes are congested. It is difficult to progress through the Mall area. Central Entrance left turns become more difficult. The delays will increase aggressiveness and crashes, and also result in more trips diverted to local streets.

By 2025, traffic flow and turning are very difficult in all areas of the corridor. Most intersections on the system experience major delays and movement on the through lanes is slow throughout corridor. Speeds will be low and delays may be significant. These delays will cause a significant diversion to local streets.

These descriptions are deliberately general in nature. Actual conditions at various locations may vary significantly depending on future development and traffic growth. It is important to note that the definition of “good traffic flow” and the need for an improvement is a matter of opinion. Depending on the tolerance of delays, some people may find the road to be acceptable for travel, while others do not and will avoid the roadway or divert to other routes. In general a roadway that is over capacity will incur delays and crashes.

These findings stress the need for protection and improvement strategies in the short and long-term. Phase 2 defines the solutions needed to address many of these problems.

5.2 Phase 2 – Develop Solutions

Phase 2 involved the identification, evaluation and prioritization of solutions. A wide variety of solutions were considered and evaluated for both technical and non-technical benefits, impacts, and feasibility. This was accomplished with the involvement of three public working committees established for the Mall area, Hermantown, and Central Entrance. Technical factors included traffic modeling, environmental impacts, and right-of-way. Non-technical factors included residential and business impacts, environmental considerations, and local support. All of the potential solutions were evaluated by a Technical Committee, Development Committee, Public Working Committee, and then at public open houses.

As the development and traffic problems vary significantly by area, the potential solutions vary by area as well. The solutions under consideration range from minor improvements to new interchanges and bridges. New interchanges were eliminated due to significant impacts and high cost. The final projects represent a balance of access and mobility for each area.

Phase 2 has lead to clear definition of both major elements of this plan, protection and improvement of the corridor. Each is discussed in detail.

6.0 Protection of the Corridor

Protection of the current and planned roadway system is critical to the success of this implementation plan. Without pro-active management of the corridor, additional accesses and traffic growth will negate the value of the proposed improvement projects. Strategies include focusing development and accesses to desired points along the highway. A system of access roads is intended to support future development.

Protection of the corridor is presented in detail in a companion document titled “Access Management Plan”. The following text comes directly from this document:

“Adopting as official policy, the recommended access spacing guidelines contained in this report is an important step in managing access along the TH 53/194 corridor. Mn/DOT, St. Louis County, Duluth, and Hermantown all must adopt the access spacing guidelines as agency policy in order to have an effective Access Management Plan. However, this is not the only step that should be taken regarding access policy and regulation.

Mn/DOT, St. Louis County, Duluth, and Hermantown should formally adopt a policy that limits access to TH 53/194 for any new development or redevelopment along the TH 53/194 corridor. No direct access to TH 53/194 should be allowed if the development has access to another roadway. If TH 53/194 is the only roadway that can provide access to the development, then access to TH 53/194 should be limited to one driveway except in unusual circumstances.

Mn/DOT, St. Louis County, Duluth, and Hermantown should develop a TH 53/194 Access Review Process that reviews major site plans and access requests for any properties along TH 53/194. These agencies should formally adopt a policy that the TH 53/194 Access Review Process must review and make recommendations regarding access to TH 53/194 before the Cities approve site plans and before Mn/DOT issues access permits. Since site plan approvals and issuance of access permits are independent actions, coordination between the public agencies is critical to the success of the TH 53/194 Implementation Plan. The TH 53/194 Access Review Committee will help to provide a common and consistent message to developers/property owners regarding access to TH 53/194.

Duluth and Hermantown should formally adopt a policy that requires a traffic impact study for developments that are

expected to generate significant traffic volumes. For example, the traffic impact study could be required for any development that is expected to generate an average daily traffic of 1,000 or more vehicles or is expected to generate 100 or more vehicles in the peak traffic hour. Since the TH 53/194 corridor is a likely location for this high traffic-generating type of development, the traffic impact studies for developments along or near the TH 53/194 corridor will not only allow the public agencies to make better decisions regarding access along TH 53/194, but will also allow these agencies to better plan for improvements along the corridor.”

Access goals including the spacing of signals and the number of direct accesses to TH 53/194 have been established for all four areas of the corridor. These goals vary based on existing and future development. The goals do not follow Mn/DOT’s recommended access spacing for a corridor of this type, but they are viewed to be realistic and attainable over time to retrofit a developed roadway.

Integral to the corridor protection strategy is the planned construction of a series of new access roadways, typically frontage and backage roads. These roads will serve existing and planned developments and allow local circulation to occur off of the highway. These connections will also serve to consolidate access points with the overall goal of reducing access directly to the Miller Trunk Highway. Implementation of access improvements will occur through a capital program administered by the partners, and through opportunities as development/redevelopment occurs along the corridor.

7.0 Improvement of the Corridor

This strategy involves incremental improvements to the highway and secondary roadway systems. Projects range from minor improvements to major reconstruction. Projects will be phased to meet future demand and funding. The proposed solutions are presented for each of the four areas on the corridor. Figures 4 – 10 indicate the preferred solution for each of the four areas.

7.1 Hermantown – Haines Road to Midway Road

The City of Hermantown adopted an Access Management Plan in 2000, which provided important recommendations for access management and development along the Miller Trunk Highway corridor. Strategies include new frontage roads and access consolidations. The intention of the Miller Trunk Highway Implementation Plan is to build off of this successful effort. Access spacing through this area is currently 27 accesses per mile. Future access goals have been set at eight per mile, with one-half mile signal spacing. Meeting this goal will require significant changes over time. Recommendations include many new roadway connections, frontage roads, intersection improvements, access consolidation, and new signals. Some improvements such as the reconstruction of the Arrowhead Road intersection are required in the near future due to congestion. The implementation plan will develop priorities for improvements so funding can be directed at high priority locations.

7.2 Miller Hill Retail Area – Anderson Road to Haines Road

This area consists of commercial development with heavy turn volumes at several locations. It also has the fewest accesses with a total of 13 per mile. A variety of problems exist in this segment. There are currently several intersections at or near capacity, and demand will increase, further impairing movement throughout the area. Significant additional development is possible as well. Many potential solutions have been evaluated, including intersection improvements, frontage roads, additional lanes, and new interchanges. Numerous strategies are necessary to provide for future traffic demand. Proposed improvements include:

- ◆ **Additional Lanes on Maple Grove Road** west of Miller Trunk Highway and on Burning Tree Road. Additional lanes should be planned for Miller Trunk Highway, although they may not be needed in the next 25 years if other improvements are successful.
- ◆ **Intersection Improvements** are necessary at Stoneridge Mall and Haines Road intersections with Miller Trunk Highway,
- ◆ **New Intersection near Kohl's** to connect the north and south sides of Miller Trunk Highway.
- ◆ **Intersection Reconstruction at Maple Grove Road** in conjunction with the proposed Kohl's intersection. This proposed improvement will remove the existing access to the north.
- ◆ **Circulator Roads** to provide for traffic movement both south and north of Miller Trunk Highway.
- ◆ **Miller Hill Mall Entrance and Cottonwood Avenue Improvements** are under evaluation.
- ◆ **Local Improvements** including access modifications to the area on north Decker Road, the west Mall entrance, and new connections from Burning Tree Mall to Haines Road. Also planned will be additional access modifications, drainage improvements, and efforts to protect and improve Miller Creek. Those changes clearly impact both businesses and residents. Additional public and environmental review is needed prior to implementation.
- ◆ **Pedestrian/Transit Improvements** to provide enhanced accessibility along and across this corridor segment. (See Section 8.0.)

7.3 Trinity Road – Piedmont Avenue to Central Entrance

Improvements proposed for Trinity Road will provide for a continuous four-lane roadway with turn lanes from Piedmont Avenue to Trinity Road. The intersection of Trinity Road and Highway 53 was recently reconstructed to accommodate this improvement, and reconstruction of Piedmont Avenue is scheduled for the next few years. This expansion will require extensive right-of-way acquisition, public involvement, and environmental review prior to implementation. Expansion of Trinity Road is an integral part of maintaining traffic flow throughout the Miller Trunk Highway corridor.

7.4 Central Entrance – Mesaba Avenue to Anderson Road

This area of the corridor contains a mix of commercial and residential development. The primary business area from Blackman Avenue to Anderson Road currently has more than 66 accesses per mile. Problems include pedestrian and transit access, crashes, and congestion. Over the next

25 years, traffic will increase, and these problems will become more severe. Access to existing businesses may become difficult. The goal is to reduce the accesses by one-half to 32 per mile with signals spaced at one-quarter mile. The following alternatives were considered:

1. Do nothing.
2. Widen existing roadway and construct a median (Figure 10).
3. Develop a one-way road system using Central Entrance and Palm Street (Figure 11).
4. Moderate changes including signals, raised medians, and access management (Figure 12).

The alternatives have been evaluated on the basis of traffic flow, access, neighborhood impacts, pedestrian and transit movements, environmental issues, and cost. The “Do Nothing” alternative is reactionary in nature and runs contrary to good land use planning and transportation system operation. Given the anticipated traffic growth and significant number of turning vehicles, implementation of Alternative 2 or 3 is necessary to maintain traffic flow, circulation, and safe roadway operation. Modeling shows that either alternative will function well into the future. The Public Committee recommendation is to plan for Alternative 2. In the interim, Alternative 4 involves phased construction of several elements over time. It is important to upgrade the existing signals and intersections, and to plan for a future signal at Blackman Avenue, as well as possibly one or more locations within the corridor segment. In addition, the pedestrian and transit accessibility needs of this corridor segment due to its mix of commercial and residential development should be considered in individual project development and design, with likely improvements to include improved transit stops, medians, and pedestrian crosswalks.

7.5 Future Roadway Expansion

Traffic modeling indicates the potential need for an additional lane on the Miller Trunk Highway from Anderson Road to the Stebner Road to maintain current mobility. The recommended strategy is to proceed with the construction of all other corridor protection and improvement action in this Plan and to evaluate the need for these lanes when forecasts and actual traffic counts indicate that they are needed.

The short to mid-term strategy should focus on protection of an expanded corridor through opportunity purchases of right-of-way, building setback requirements, and by purchasing additional right-of-way when necessary for other improvements.

Complete descriptions and summaries of the recommended improvements can be found in the Appendix.

8.0 Pedestrian and Transit Improvements

Pedestrian and transit movement along the corridor is difficult due to high traffic volumes and the lack of adequate facilities. A criticism of the public survey is that it did not query non-drivers who must use the corridor for work, shopping, and recreation. An amended survey was considered but not pursued. The Duluth Transit Authority has significant information about transit riders.

Needed improvements include new and more frequent sidewalk connections along and near the corridor, medians and crosswalks for safe crossing of wide roadways, and bus pullouts and shelters. These improvements will support mobility for those using alternate modes of transportation from nearby residential neighborhoods, and proposed new high-density residential developments planned for several locations along the corridor. It is difficult to pursue the construction of pedestrian and transit elements as stand-alone projects, although some projects have been completed to provide new sidewalks. To maximize the value of the pedestrian and transit improvements, they are best pursued in conjunction with roadway and intersection construction projects. Specific emphasis has been placed on identifying locations for these improvements and placing a priority on their inclusion in proposed projects. A network of pedestrian walkways and bus pullouts has been identified. See Figures 13 and 14 – Proposed Walkways and Crossings. The proposed roadways, crossings and transit facilities should be located and designed to encourage pedestrian usage.

The lack of facilities is not limited to public roadways. Many businesses along the corridor do not have accommodations for sidewalks or buses. Pedestrians are forced to walk in roadways, and buses cannot access some of the properties with narrow lanes. The development review process should encourage, if not require, the accommodation of these elements as a system of pedestrian and transit support is constructed through improvements to the Miller Trunk Highway.

9.0 Priorities, Phasing, and Cost Estimates

Several roadway improvements are recommended to address current and future congestion and safety problems along the Miller Trunk Highway corridor. Table 4 represents proposed corridor protection strategies, and Table 5 represents proposed improvement strategies. Recommended timing for construction of individual improvements is shown in one of three categories: short-term, mid-term, and long-term. All projects are considered high priorities with variations in timing and staging.

Short-term improvements (0 to 7 years) are improvements that will have a significant impact on existing traffic problems and should be considered for implementation as soon as possible.

Mid-term improvements (8 to 15 years) are improvements that will address traffic congestion or safety problems anticipated after the short-term improvements are implemented.

Long-term improvements (16 years and beyond) are long-range improvements that will address traffic congestion and safety problems that are anticipated to occur beyond 2018. Traffic conditions and trends should be monitored on a regular basis to determine when these improvements may be needed. The design and right-of-way needs for these improvements should be considered when implementing short-term and mid-term improvements.

Phasing

Disruption of traffic to the many businesses along the Miller Trunk Highway corridor is a critical consideration in the phasing of projects along the

corridor, and was carefully considered in the development of the proposed improvements list. If funding allows, it may be feasible to combine some of the proposed improvements into larger projects. If these larger projects are created, special emphasis must be placed on a project staging plan that minimizes the traffic impacts to nearby businesses.

It is also vitally important that the design and right-of-way acquisition for each project consider what will be needed for subsequent projects. For example, several short-term projects include adding turn lanes at intersections along Miller Trunk Highway/Central Entrance. The design of each of these projects should consider that a future project calls for the addition of a third through lane in each direction on Miller Trunk Highway/Central Entrance. Ideally, the projects that add turn lanes at the intersections should be designed so that the third through lane can be added to the outside of the roadway with a minimum amount of reconstruction.

Table 3					
Recommended Access Spacing Guidelines for TH 53/194 Corridor					
Area	Segment	Intersection Spacing	Signal Spacing	Private Access	Access Density Goal (accesses/mile)
Central Entrance	Mesaba Avenue to Anderson Road	300 to 660 feet dependent upon block length	1/4 mile	<ul style="list-style-type: none"> Permitted subject to conditions. Promote reduction in existing access through consolidation and sharing of driveways when land use/site changes occur. 	32 access/mile or less
Miller Mall Retail Area	Anderson Road to Stebner Road	1/4 mile full access 1/8 mile partial access ¹	1/4 mile	<ul style="list-style-type: none"> New access points discouraged; allowed only after extensive review. Promote reduction in existing access when roadway improvements or land use/site changes occur. 	16 access/mile or less
Hermantown	Stebner Road to Midway Road	1/4 mile full or partial access ²	1/2 mile	<ul style="list-style-type: none"> New access points discouraged; allowed only after extensive review Promote reduction in existing access when roadway improvements or land use/site changes occur. 	8 access/mile or less
Trinity Road	Miller Trunk Highway to Piedmont Avenue	1/4 mile full access 1/8 mile partial access ¹	1/2 mile	<ul style="list-style-type: none"> New access points discouraged; allowed only after extensive review. Promote reduction in existing access when roadway improvements or land use/site changes occur. 	16 access/mile or less

¹ Partial access limited to right-in/right-out only.

² Partial access can be right-in/right-out only or 3/4 access.

Table 4

**Miller Trunk Highway Implementation Plan
Corridor Protection and Management**

#	Project	Priority	Predecessor	Cost	Area	Lead	Funding
	Allocate \$350,000 annually for frontage/backage roads and access consolidation (25 years)	S	None	\$350,000/yr*	All	All	
1	Airport Road Phase 2	S	None	\$1,473,600	Hermantown	Duluth	
2	Miller Trunk Highway at Arrowhead Road (North Access Road @ Menard's)	S	None	\$842,400	Hermantown	SLC	
3	Access Road from Miller Trunk Highway to Mall Drive (Southwest of Haines Road and Miller Trunk Highway intersection)	S	None	\$265,200	Hermantown	Hermantown	
4	Miller Trunk Highway at Stebner Road (Southwest Access Road)	S	None	\$717,600	Hermantown	Hermantown	
5	Miller Trunk Highway at Stebner Road (Northeast Access Road)	M	None	\$968,760	Hermantown	Hermantown	
6	Central Entrance - Palm Street Improvements	M	None	\$1,642,680	Central Entrance	Duluth	
7	Westberg Road Extension (route to be determined)	Dev-S	None	\$3,042,000	Hermantown	Hermantown	Development
8	Access Road from Miller Trunk Highway to Arrowhead Road (Mall Drive extension)	Dev-S	None	\$421,200	Hermantown	Hermantown	Development
9	Miller Trunk Highway from Abrahamson Road to Ugstad Road (North Access Road)	Dev-S	None	\$748,800	Hermantown	Hermantown	Development
10	Miller Trunk Highway from Stebner Road to Arrowhead Road (South Access Road)	Dev-M	None	\$1,092,000	Hermantown	Hermantown	Development
11	Trinity Road from Arlington Avenue to Anderson Road	Dev-L	None	\$312,000	Trinity Road	Duluth	Development
12	Trinity Road from Anderson Road to Central Entrance	Dev-L	None	\$312,000	Trinity Road	Duluth	Development
13	Miller Trunk Highway from Midway Road to Lindahl Road (South Access Road)	Dev-L	None	\$1,092,000	Hermantown	Hermantown	Development
14	Miller Trunk Highway from Midway Road to Lindahl Road (North Access Road)	Dev-L	None	\$1,179,360	Hermantown	Hermantown	Development
15	Miller Trunk Highway from Lindahl Road to Abrahamson Road (South Access Road)	Dev-L	None	\$546,000	Hermantown	Hermantown	Development
16	Miller Trunk Highway from Lindahl Road to Abrahamson Road (North Access Road)	Dev-L	None	\$546,000	Hermantown	Hermantown	Development
17	Miller Trunk Highway from Abrahamson Road to Ugstad Road (South Access Road)	Dev-L	None	\$589,680	Hermantown	Hermantown	Development
18	Miller Trunk Highway from Ugstad Road to Lavaque Road (South Access Road)	Dev-L	None	\$1,070,160	Hermantown	Hermantown	Development
19	Miller Trunk Highway from Ugstad Road to Lavaque Road (North Access Road)	Dev-L	None	\$1,070,160	Hermantown	Hermantown	Development
20	Miller Trunk Highway from Lavaque Road to Airport Road (South Access Road)	Dev-L	None	\$546,000	Hermantown	Hermantown	Development
21	Miller Trunk Highway from Lavaque Road to Airport Road (North Access Road)	Dev-L	None	\$655,200	Hermantown	Hermantown	Development
22	Access Road from Miller Trunk Highway to Haines Road (Sundby Road extension)	Dev-L	None	\$1,516,320	Hermantown	Hermantown	Development
Total				\$29,399,120			

* Not included in totals.

Priority S = 0 to 7 years

M = 8 to 15 years

L = 16+ years

Dev-S = short-term priority, development driven

Dev-M = mid-term priority, development driven

Dev-L = long-term priority, development driven

Safety = safety priorities will determine timing of project

Table 5
Miller Trunk Highway Implementation Plan
Corridor Improvements

#	Project	Priority	Predecessor	Cost	Area	Lead	Funding
1	Interconnect signals from Pecan Avenue to Anderson Road	S	None	\$24,000.00	Central Entrance	Duluth	
2	Mall Area Improvements - Phased						
2a	Replace Kohl's/Super One Access/ Miller Trunk Highway Intersection	S	None	\$3,656,400	Mall Area	Mn/DOT	
2b	North Circulator Road from Joshua Avenue to Burning Tree Road	S	2a	\$1,894,800	Mall Area	Duluth	
2c	Maple Grove Road Reconstruction from Miller Trunk Highway to Westberg Road	S	2a	\$3,308,400	Mall Area	SLC	
3	Miller Trunk Highway/Miller Hill Mall Access Revisions	S	2a-c	\$2,148,000	Mall Area	Mn/DOT	
4	Home Depot/Stone Ridge Access/Miller Trunk Highway Intersection Revisions	S	2a-c	\$600,000	Mall Area	Mn/DOT	
5	South Circulator Road Construction from Central Entrance/Home Depot Intersection to Burning Tree Road/Maple Grove Road Intersection	M	2a-c, 3, 4, 8	\$6,163,680	Mall Area	Duluth	
6	Trinity Road Improvements - Phased						
6a	Trinity Road Reconstruction from Piedmont Avenue to Arlington Avenue	M	None	\$2,550,000	Trinity Road	Mn/DOT	
6b	Trinity Road Reconstruction from Arlington Avenue to Miller Trunk Highway	M	7a	\$7,698,000	Trinity Road	Mn/DOT	
	Hermantown Improvements						
7	Haines Road Reconstruction from Arrowhead Road to Maple Grove Road	S	None	\$3,265,440	Hermantown	SLC	
8	Arrowhead Road Reconstruction from Haines Road to Miller Trunk Highway	S	None	\$2,816,160	Hermantown	SLC	
9	Miller Trunk Highway/Mall Drive Intersection Revision	L	None	\$364,200	Hermantown	Mn/DOT	
10	Miller Trunk Highway/Stebner Road Intersection Revision (Airport Road Phase I)	S	None	\$1,746,000	Duluth	Mn/DOT	
11	Miller Trunk Highway/TH 194 Intersection Reconstruction	Safety	None	\$1,122,000	Hermantown	Mn/DOT	Safety
12	Miller Trunk Highway/LaVaque Road Intersection Signalization	Safety	None	\$498,000	Hermantown	Mn/DOT	Safety
13	Central Entrance Improvements - Phased						
13a	Blackman Avenue intersection and median	Safety	None	\$1,669,200	Central Entrance	Mn/DOT	Safety
13b	Arlington Avenue and Basswood Avenue intersections and median	L	None	\$1,842,720	Central Entrance	Mn/DOT	
13c	Anderson Road intersection and median	L	None	\$980,640	Central Entrance	Mn/DOT	
13d	Local street improvements	L	None	\$1,404,000	Central Entrance	Duluth	
14	Miller Trunk Highway/Central Entrance Reconstruction to six-lane section from Anderson Road to Stebner Road	L	2-4, 8-10, 14	\$14,889,600	Central Entrance, Mall, Hermantown	Mn/DOT	
Total				\$58,641,240			

10.0 Environmental Issues and Wetlands

The Miller Trunk Highway corridor runs through the Miller Creek watershed, and parallels and crosses Miller Creek in several locations. Initial actions in considering improvement projects include identification of environmental mitigation and improvement opportunities for the entire corridor. This effort will be completed as Part 2 of the implementation plan development process. The intention of Part 2 will be to develop a prioritized list of enhancement and mitigation techniques for Miller Creek for approval by a multi-agency Task Force, with the intention of addressing environmental and wetland issues prior to initiating construction activities.

11.0 Funding

This implementation plan has been developed in part to allow the partners to obtain funding from a variety of sources to implement projects that will protect and improve mobility throughout the corridor. Funding sources may include:

- ◆ Interregional Corridor Funding from the Minnesota Legislature
- ◆ State Transportation Improvement Program
- ◆ Enhancement Funds for pedestrian and transit facilities
- ◆ Capital Improvement Programs – State, County, and City
- ◆ Private sources coupled with development

Funding for some improvements, specifically the environmental enhancement efforts, may be available from a variety of state and federal sources.

The highest priority funding should be applied to protection of the corridor. A recommended level of funding includes a \$350,000 allocation annually. These funds can be applied to stand-alone projects, or coupled with private development opportunities that assist in meeting the access goals for the corridor.

Funding requirements for improvement projects varies significantly. Proposed improvements have been placed into short, mid, and long-term priorities. It is deliberate that the projects are not placed in numerical priority order, as funding will likely come from a variety of sources. Projects identified as short-term should be pursued in the manner that funding sources and agency requirements would allow. Some projects can be constructed individually, while others; such as the Mall Area improvements require specific staging.

As the short-term projects are constructed over time and as changes occur throughout the corridor, it is recommended that the priorities and projects identified through this effort be validated before mid-term, and ultimately long-term solutions are pursued. This plan is intended to evolve and learn from in-place solutions. This validation will ensure that the proposed solutions remain valid.

Figures

- Figure 1 – Map of Corridor
- Figure 2 – Relationship between Crash Rates and Access Points
 - Figure 3 – Current and Projected Traffic Volumes
 - Figure 4 – Hermantown [Midway Road to Lindahl Road]
 - Figure 5 – Hermantown [Lindahl Road to Lavaque Road]
 - Figure 6 – Hermantown [Lavaque Road to Stebner Road]
 - Figure 7 – Hermantown [Stebner Road to Haines Road]
 - Figure 8 – Mall Area [Haines Road to Anderson Road]
- Figure 9 – Trinity Road [Upper Piedmont Avenue to Central Entrance]
 - Figure 10 – Central Entrance [Full Median Alternative]
 - Figure 11 – Central Entrance [One-Way Pairs Alternative]
 - Figure 12 – Central Avenue [Interim Improvements]
 - Figure 13 – Pedestrian Routes [Central Entrance]
 - Figure 14 – Pedestrian Routes [Mall Area and Trinity Road]

Appendix

DETAILED PROJECT DESCRIPTIONS

The following list indicates the recommended improvements for the Miller Trunk highway corridor. Timing and estimated costs can be found in Table 5.

1. Interconnect signals from Pecan Avenue to Anderson Road.
- 2a. Replace Kohl's/Super One Access/Miller Trunk Highway Intersection. This project includes the following:
 - ◆ Eliminate existing Kohl's and Super One access to Miller Trunk Highway and replace with full-access signalized intersection. Provide right and left turn lanes on the Miller Trunk Highway approaches.
 - ◆ Upgrade/extend Burning Tree Road to a four-lane divided roadway with left turn lanes from Sundby Road to south of Maple Grove Road.
 - ◆ Realign Mall Drive near Burning Tree Road.
- 2b. North Circulator Road construction from Joshua Avenue/Maple Grove intersection to Sundby Road/Burning Tree Road (extension) intersection. The exact alignment of this three-lane roadway is not yet determined. This project includes the following:
 - ◆ Extend Joshua Avenue from the existing dead end to Maple Grove Road and reconfigure access to Joshua Avenue between Miller Trunk Highway and Maple Grove road.
 - ◆ Eliminate the north connection of Maple Grove Road to Miller Trunk Highway.
- 2c. Maple Grove Road Reconstruction from Miller Trunk Highway to Westberg Road. This project includes the following:
 - ◆ Reconstruct Maple Grove Road to a five-lane section from Miller Trunk Highway to Westberg Road.
 - ◆ Reconfigure the Maple Grove Road/Miller Trunk Highway intersection to allow only $\frac{3}{4}$ access (left turn from Maple Grove Road to Miller Trunk Highway would not be allowed). Provide double left turn lanes on northwesterly Miller Trunk Highway and double right turn lanes on Maple Grove Road.
 - ◆ Reconstruct Mall Drive near Maple Grove Road to provide a five-lane section on Mall Drive north and south of Maple Grove Road.
3. Miller Trunk Highway/Miller Hill Mall Access Revisions. This project includes the following:
 - ◆ Revise Miller Hill Mall access to Miller Trunk Highway between Trinity Road and Maple Grove Road. Provide double left turn lanes on Miller Trunk Highway approaches to access points.
 - ◆ Add double left turn lanes on eastbound Miller Trunk Highway approach to Trinity Road.
 - ◆ Possible elimination of Cottonwood Avenue connection to Miller Trunk Highway.

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- ◆ Possible revisions to internal roadways within Miller Hill Mall area.
4. Home Depot/Stone Ridge access/Miller Trunk Highway Intersection Revisions. This project includes the following:
 - ◆ Reconstruct Stone Ridge access to Miller Trunk Highway to provide three outbound and two inbound lanes.
 - ◆ Add double left turn lanes on EB Miller Trunk Highway.
 - ◆ Revise internal roadways on Stone Ridge Access.
 5. South Circulator Road construction from Central Entrance/Home Depot intersection to Burning Tree Road/Maple Grove Road intersection. The exact alignment of this roadway is not yet determined. This will be a new five-lane roadway.
 - 6a-b. Trinity Road reconstruction from Miller Trunk Highway to Piedmont Avenue. This project provides for the reconstruction of Trinity Road to a five-lane section from south of Miller Trunk Highway to north of Piedmont Avenue/Skyline Parkway. It is anticipated that this improvement will be constructed in two phases.
 7. Haines Road reconstruction from Arrowhead Road to Maple Grove Road. This project includes the following:
 - ◆ Reconstruct Haines Road to a five-lane section from Arrowhead Road to Maple Grove Road.
 - ◆ Upgrade Miller Trunk Highway/Haines Road intersection to provide double left turn lanes on northbound and southbound Haines Road and on northwesterly Miller Trunk Highway.
 8. Arrowhead Road reconstruction from Haines Road to Miller Trunk Highway. This project includes the following:
 - ◆ Reconstruct Arrowhead Road to a five-lane section from Haines Road to west of Miller Trunk Highway.
 - ◆ Upgrade Miller Trunk Highway/Arrowhead Road intersection to provide double left turn lanes on southeasterly Miller Trunk Highway and on westbound Arrowhead Road.
 - ◆ Possible revisions to Menard's access/frontage road.
 - ◆ Frontage road at Menard's.
 9. Miller Trunk Highway/Mall Drive intersection revision. This project provides for the addition of double left turn lanes on northwesterly Miller Trunk Highway at Mall Drive.
 10. Miller Trunk Highway/Stebner Road intersection revision. This project provides for the lengthening of the northwesterly left turn lane on Miller Trunk Highway at Stebner Road. This improvement will be constructed when the Airport Road Phase 1 project is completed in 2003.
 11. Miller Trunk Highway/Lindahl Road/TH 194 intersection reconstruction. This safety project includes the following:

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- ◆ Realign/consolidate the Lindahl Road and TH 194 approaches to Miller Trunk Highway.
 - ◆ Add signal to new Miller Trunk Highway/Lindahl Road/TH 194 intersection.
 - ◆ Possible addition of frontage roads along Miller Trunk Highway.
12. Miller Trunk Highway/LaVaque Road intersection signalization. This safety project provides a traffic signal at the Miller Trunk Highway/LaVaque Road intersection.
- 13a-d. Central Entrance reconstruction from Pecan Avenue to Anderson Road. This phased project includes the following modifications to be constructed in phases:
- ◆ Reconstruct Central Entrance from west of Pecan Avenue to west of Anderson Road. There are two alternatives for this reconstruction. One alternative would provide a raised median along this segment of Central Entrance. The other alternative would provide a one-way pair using Central Entrance and Palm Street.
 - ◆ Add signal at Central Entrance/Blackman Avenue intersection(s).
 - ◆ Increase left turn lane length on westbound Central Entrance approach to Anderson Road.
 - ◆ Local street improvements.
14. Miller Trunk Highway/Central Entrance reconstruction to six-lane section from Anderson Road to Stebner Road. This project provides for the addition of a third through lane in each direction on Miller Trunk Highway/Central Entrance from west of Anderson Road to east of Stebner Road.

Other Recommendations

SEH made several recommendations to improve current signal operation along the corridor. The main recommendations are:

- ◆ Change cycle length from 120 seconds to 95 seconds.
- ◆ Reduce maximum green times to “optimum” green times.
- ◆ Replace three Honeywell controllers at the east end of the corridor and provide coordination for the four signals from Pecan Avenue to Anderson Road.
- ◆ Implement a system to regularly review and update signal timing plans.

In discussions with Mn/DOT and the City of Duluth, it was indicated that all of these recommendations are already being implemented, and should be considered “committed” rather than “proposed” improvements.