MAYER

DRAFT
Appendix A - Transportation Plan

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City of Mayer – Comprehensive Transportation Plan

TABLE OF CONTENTS **Page**

LIST OF TABLES Page

LIST OF FIGURES

1.0 Purpose of the Transportation Plan

This Transportation Plan is an appendix of the City of Mayer 2006 Comprehensive Plan (Comprehensive Plan). The purpose of this Transportation Plan is to provide guidance to the City of Mayer, as well as existing and future landowners in preparing for future growth and development. As such, whether an existing roadway is proposed for upgrading or a land use change is proposed on a property, this Plan provides the framework for decisions regarding the nature of roadway infrastructure improvements necessary to achieve safety, adequate access, mobility, and performance of the existing and future roadway system. The primary goal of this Plan is to establish local policies, standards, and guidelines to implement the future roadway network vision that is coordinated with respect to county, regional, and state plans in such a way that the transportation system enhances quality economic and residential development within the City of Mayer. To accomplish these objectives, the Transportation Plan provides information about:

- The functional hierarchy of streets and roads related to access and capacity requirements.
- Identification of existing and potential deficiencies of the existing arterial-collector street system.
- Recommended alternatives to alleviate roadway deficiencies including a future arterial-collector street system capable of accommodating traffic volumes to 2030 and beyond.
- Access management policies and intersection controls.

2.0 Transportation System Principles and Standards

The transportation system principles and standards included in this Plan create the foundation for developing the transportation system, evaluating its effectiveness, determining future system needs, and implementing strategies to fulfill the goals and objectives identified.

2.1 Functional Classification

It is recognized that individual roads and streets do not operate independently in any major way. Most travel involves movement through a network of roadways. It becomes necessary to determine how this travel can be channelized within the network in a logical and efficient manner. Functional classification defines the nature of this channelization process by defining the part that any particular road or street should play in serving the flow of trips through a roadway network. Functional classification is the process by which streets and highways are grouped into classes according to the character of service they are intended to provide. Functional classification involves determining what functions each roadway should perform prior to determining its design features, such as street widths, speed, and intersection control.

The functional classification system typically consists of four major classes of roadways: Principal Arterials, Minor Arterials, Major Collectors, and Minor Collectors. The existing roadways are described below and illustrated in Figure 2.1 – Existing Roadway Functional Classification.

2.1.1 Principal Arterials

Roadways of this classification typically connect large urban areas to other large urban areas or they connect metro centers to regional business concentrations via a continuous roadway without stub connections. They are designed to accommodate the longest trips. Their emphasis is focused on mobility rather than access. They connect only with other Principal Arterials, interstate freeways, and select Minor Arterials and Collector Streets. Principal Arterials are responsible for accommodating thru-trips, as well as trips beginning or ending outside of the Mayer area.

Trunk Highway (TH) 7 is the only Principal Arterial in the Mayer area. It connects the Twin Cities Metropolitan Area with western Minnesota.

2.1.2 Minor Arterials

Roadways of this classification typically link urban areas and rural Principal Arterials to larger towns and other major traffic generators capable of attracting trips over similarly long distances. Minor Arterials service medium length trips, and their emphasis is on mobility as opposed to access in urban areas. They connect with Principal Arterials, other Minor Arterials, and Collector Streets. Connections to Local Streets should be avoided if possible. Minor Arterials are responsible for accommodating thru-trips, as well as trips beginning or ending outside the Mayer area. Minor Arterial roadways are typically spaced approximately 1 – 2 miles apart in developing communities similar to Mayer. TH 25 and CSAH 30 within Mayer are identified as "A" Minor Arterials.

In the Twin Cities Metropolitan Area, there is a further breakdown of Minor Arterial roadways to establish federal funding priorities, "A Minor" and "B Minor." The classifications include Relievers, Expanders, Connectors, and Augmenters. As defined by the Twin Cities Metropolitan Council, Relievers provide open up capacity for traffic on Metropolitan Highway Principal Arterials. Augmenters supplement the Principal Arterials within the Beltway. Expanders provide connection between developing areas outside the beltway, and connect principal arterials. Connectors provide links between rural town centers in the urban reserve and rural area.

TH 25 is a north/south route that is an A Minor Arterial Connector providing connectivity between TH 10 in Big Lake, I-94 in Monticello, and TH 169 in Belle Plaine. TH 25 currently has an at grade intersection with TH 7. Through the downtown the road is named Ash Street and serves as the main street of Mayer.

CSAH 30 is an east/west route that is an A Minor Arterial Connector that runs from TH 5 east of the City of Waconia and extending northwest through central Carver County to the Mc Leod County line west of New Germany. In Mc Leod County the roadway is CSAH 23 and connects to the City of Lester Prairie.

2.1.3 Major Collectors

Roadways of this classification typically link neighborhoods together within a city or they link neighborhoods to business concentrations. In highly urban areas, they also provide connectivity between major traffic generators. A trip length of less than 5 miles is most common for Major Collector roadways. A balance between mobility and access is desired. Major Collector street connections are predominately to Minor Arterials, but they can be connected to any of the other four roadway functional classes. Local access to Major Collectors should be provided via public streets and individual property access should be avoided. Major Collector streets are predominantly responsible for providing circulation within a city such as Mayer, and are typically spaced approximately ½ to 1 mile apart in urbanizing areas. CSAH 23 is the only roadway functionally classified as a Major Collector roadway in the Mayer area.

2.1.4 Minor Collector Streets

Roadways of this classification typically include city streets and rural township roadways, which facilitate the collection of local traffic and convey it to Major Collectors and Minor Arterials. Minor Collector streets serve short trips at relatively low speeds. Their emphasis is focused on access rather than mobility. Minor Collectors are responsible for providing connections between neighborhoods and the Major Collector/Minor Arterial roadways. These roadways should be designed to discourage short-cut trips through the neighborhood by creating jogs in the roadway (i.e. not direct, through routes). Coldwater Crossing is a good example of an existing street serving as a Minor Collector roadway in Mayer.

2.2 Roadway Capacity

Capacities of roadway systems vary based on the roadway's functional classification. From the Metropolitan Council Local Planning Handbook, roadway capacity per lane for divided arterials is 700 to 1,000 vehicles per hour and 600 to 900 vehicles per hour for undivided arterials. These values tend to be around 10% of the daily physical roadway capacity.

Principal and Minor Arterials

Based on the above figures, a two-lane arterial roadway has a daily capacity of 12,000 to 18,000 vehicles per day, a four-lane divided arterial street has a daily capacity of 28,000 to 40,000 vehicles per day, and a four-lane freeway has a daily capacity of approximately 70,000 vehicles per day. The variability in capacities are directly related to many roadway characteristics including access spacing, traffic control, adjacent land uses, as well as traffic flow characteristics, such as percentage of trucks and number of turning vehicles. Therefore, it is important that the peak hour conditions are reviewed to determine the actual volume-to-capacity on roadway segments with average daily traffic volumes approaching these capacity values.

Major Collectors and Minor Collector Streets

Major Collector and Minor Collector streets have physical capacities similar to those of a two-lane arterial street, however the acceptable level of traffic on a residential street is typically significantly less than the street's physical capacity. The acceptable level of traffic volumes on Major Collectors and Minor Collector streets vary based on housing densities and setbacks, locations of parks and schools, and overall resident perceptions. Typically, traffic levels on Major Collector streets in residential/educational areas are acceptable when they are at or below 50% of the roadway's physical capacity, resulting in an acceptable capacity of 6,000 to 9,000 vehicles per day. Acceptable traffic levels on Minor Collector streets are considerably less. Typically, a daily traffic volume of 1,000 to 1,500 vehicles per day is acceptable on Minor Collector streets in residential areas.

Table 2.1 – Roadway Types and Capacities, identifies various roadway types and the estimated daily capacities that the given roadway can accommodate.

Table 2.1 – Roadway Types and Capacity

Roadway Type	Daily Capacities
Gravel Roadway	Up to 500
Minor Collector Street	Up to 1,000
Urban 2-Lane	7,500 – 12,000
Urban 3-Lane or 2-Lane Divided	12,000 – 18,000
Urban 4-Lane Undivided	Up to 20,000
Urban 4-Lane Divided	28,000 to 40,000
4-Lane Freeway	Up to 70,000

The capacity of a gravel road is physically greater than 500 vehicles per day, but based on studies conducted by Minnesota counties, it has been determined that an ADT over 500 justifies paving the roadway. This is justified due to the maintenance costs of keeping a gravel road in working condition when ADT is over 500, and balancing this against the pavement costs, pavement life, and maintenance costs of a paved roadway with the same volumes.

The capacity of a transportation facility reflects its ability to accommodate a moving stream of people or vehicles. It is a measure of a supply side of transportation facilities. Level of Service (LOS) is a measure of the quality of flow. The concept of LOS uses qualitative measures that characterize operational conditions with a traffic stream and their perception by motorists. Six LOS are defined for roadways. They are LOS A, B, C, D, E, and F. LOS A represents the best operating conditions and LOS F represents the worst. The LOS of a multilane roadway can be dictated by its volume-to-capacity (v/c) ratio. The LOS of a two-lane roadway is defined in terms of both percent time-spent-following and average travel speed. LOS F is determined when v/c ratio is over 1.00. The criteria for LOS and general v/c ratio for multilane highways and speed for two-lane highways are provided in Table 2.2 below:

Table 2.2 – Highway Level of Service		
LOS	**Multilane**	**Two-Lane**
	v/c Ratio	**Avg. Travel Speed (mph)**
A	<0.28	>55
B	>0.28 – 0.45	>50-55
C	>0.45 – 0.65	>45-50
D	>0.65 – 0.86	>40-45
E	>0.86 – 1.00	≤40
F	> 1.00	v/c >1.00

For roadways in urban sections, the urban street class and average travel speed determine the LOS. This is generally similar to the LOS for two-lane highways but takes into account the free flow speed of the facility (average speed achieved with no other vehicles present on roadway) and the addition of traffic control. This criteria is established in Table 2.3 below:

Table 2.3 – Urban Street Level of Service				
Range of Free-Flow Speed	**55 to 45**	**45 to 35**	**35 to 30**	**35 to 25**
LOS	**Average Travel Speed (mph)**			
A	>42	>35	>30	>25
B	>34-42	>28-35	>24-30	>19-25
C	>27-34	>22-28	>18-24	>13-19
D	>21-27	>17-22	>14-18	>9-13
E	>16-21	>13-17	>10-14	>7-9
F	≤16	≤13	≤10	≤7

Generally, the City of Mayer should consider capacity improvements on roadways with a LOS D or worse and volume-to-capacity ratios over 0.75 during the peak hours.

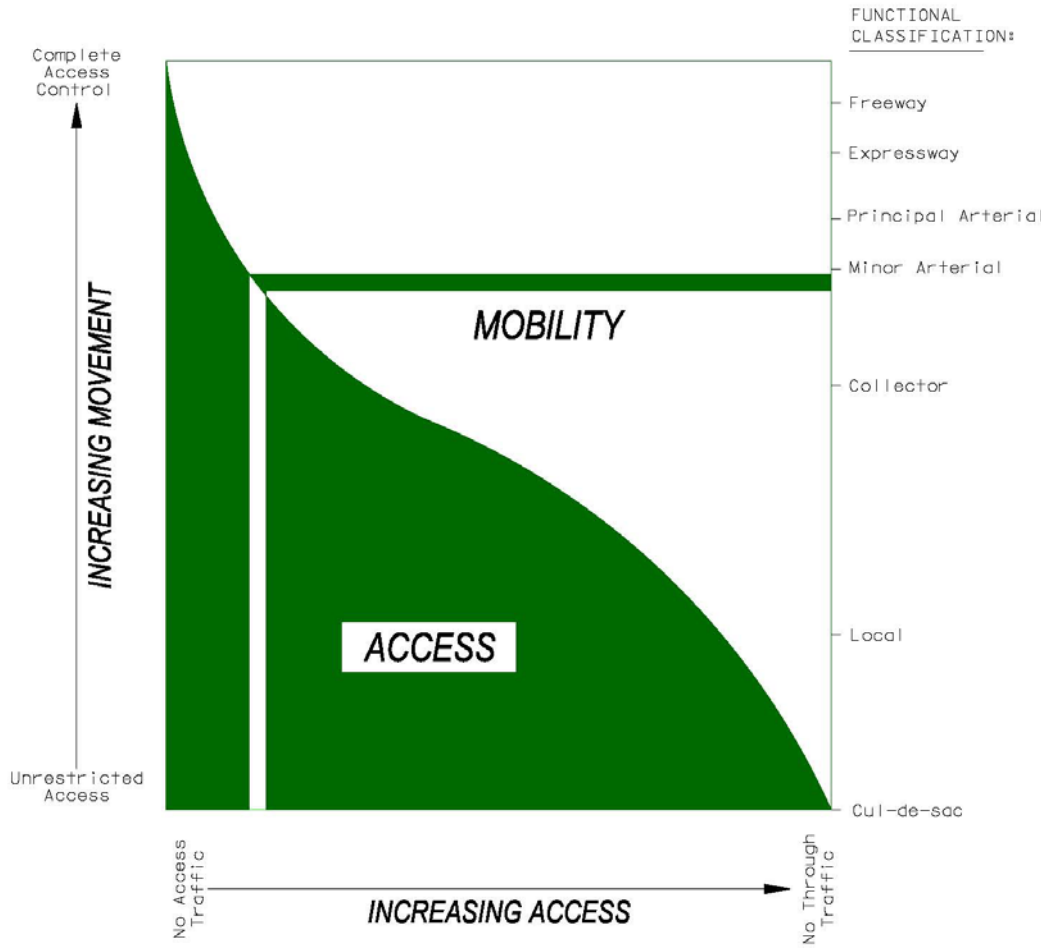
2.3 Access Management Guidelines

Access management guidelines are developed to maintain traffic flow on the network so each roadway can provide its functional duties, while providing adequate access for private properties to the transportation network. This harmonization of access and mobility is the keystone to effective access management.

Mobility, as defined for this Transportation Plan, is the ability to move people, goods, and services via a transportation system component from one place to another. The degree of mobility depends on a number of factors, including the ability of the roadway system to perform its functional duty, the capacity of the roadway, and the operational level of service on the roadway system.

Access, as applied to the roadway system in Mayer, is the relationship between local land use and the transportation system. There is an inverse relationship between the amount of access provided and the ability to move through-traffic on a roadway. As higher levels of access are provided, the ability to move traffic is reduced. The graphic below illustrates the relationship between access and mobility.

Roadway Mobility/Access Relationship



Each access location (i.e. driveway and/or intersection) creates a potential point of conflict between vehicles moving through an area and vehicles entering and exiting the roadway. These conflicts can result from the slowing effects of merging and weaving that takes place as vehicles accelerate from a stop turning onto the roadway, or deceleration to make a turn to leave the roadway. At signalized intersections, the potential for conflicts between vehicles is increased, because through-vehicles are required to stop at the signals. If the amount of traffic moving through an area on the roadway is high and/or the speed of traffic on the roadway is high, the number and nature of vehicle conflicts are also increased.

Accordingly, the safe speed of a road, the ability to move traffic on that road, and safe access to cross streets and properties adjacent to the roadway all diminish as the number of access points increase along a specific segment of roadway. Because of these effects, there must be a balance between the level of access provided and the desired function of the roadway.

In Mayer, access standards and spacing guidelines are recommended as a strategy to effectively manage existing ingress/egress onto City streets and to provide access controls for new development and redevelopment. The proposed access standards (driveway dimensions) are based on Minnesota Department of Transportation (Mn/DOT) State-Aid design standards. Tables 2.4 and 2.5 below present the proposed access standards and access spacing for the Mayer roadway network:

Table 2.4 – Roadway Access Standards

Driveway Dimensions	Residential	Commercial or Industrial
Driveway Access Width	11' – 22', 16' desired	16' – 32' 32' desired
Minimum Distance Between Driveways	20'	20'
Minimum Corner Clearance from a Collector Street	60'	80'(1)

(1) At the discretion of the City Engineer, 80' minimum.

Table 2.5 – Access Spacing Guidelines for Collector Roadways in Mayer (1)

Type of Access	Major Collector (2)	Minor Collector (3)
Private Residential	Not Permitted	As Needed
Private Commercial/Industrial	Not Permitted	As Needed
Minimum Corner Clearance from a Collector Street	660'	300'

(1) These guidelines apply to City streets only. Carver County and Mn/DOT have access authority for roadways under their jurisdiction.

(2) Access to Major Collectors shall be reserved for public street access. Steps should be taken to redirect private accesses on Major Collectors to other local streets. New private access to Major Collectors shall not be permitted unless deemed necessary by the City Engineer.

(3) Private access to Minor Collectors shall be at the discretion of the City Engineer. Whenever possible, residential access should be directed to non-continuous streets rather than Minor Collector roadways. Commercial/Industrial properties shall provide common accesses with adjacent properties when access is located on the Minor Collector system. Cross-traffic between adjacent compatible properties is encouraged whenever feasible.

2.4 Geometric Design Standards

Geometric design standards are directly related to a roadway's functional classification and the amount of traffic that the roadway is designed to carry. For the City of Mayer, geometric design standards were developed based on Mn/DOT State-Aid standards. The proposed geometric design standards for Major and Minor Collector roadways are illustrated in Figures 2.2 and 2.3 respectively.

The Geometric Design Standards illustrated in Figures 2.2 and 2.3 were developed to achieve adequate capacity within the roadway network, as well as a level of acceptance by adjacent land uses. Each component identified in the typical sections is essential to a particular roadway's ability to perform its function in the roadway network.

Roadway Width – Roadway and travel lane widths are directly associated with a roadway's ability to carry vehicular traffic. On Major Collector roadways and Minor Collector streets, a 12' lane is required for each direction of travel. The 24' total travel width is needed to accommodate anticipated two-way traffic volumes without delay. In addition to the travel width, minimum shoulder/parking lane widths are also required to accommodate parked or stalled vehicles. Roadway widths not meeting the Geometric Design Standards will result in decreased performance of the particular roadway and additional travel demand on the adjacent roadway network components. For example, a sub-standard Major Collector roadway may result in additional travel demand on an adjacent Minor Collector street resulting in an overburden for adjacent landowners. Similarly, additional local circulation may result on an adjacent Minor Arterial resulting in reduced mobility for regional trips.

Sidewalk/Trail – Sidewalks and/or trails are recommended to be adjacent to all Minor Collector, Major Collector, and Minor Arterial roadways within Mayer to accommodate pedestrian, bicycle, and other non-motorized travel in a safe and comfortable manner. These roadways are expected to carry a significant amount of vehicular traffic and separation of travel modes is necessary. In commercial and industrial areas, the requirements for trails and sidewalks may vary to accommodate additional pedestrian and bicycle traffic.

Along Minor Arterials, a minimum 8' bituminous trail is recommended on both sides of the roadway. Similar to the type of travel on the adjacent roadway, the trail will accommodate higher volume and longer pedestrian and bicycle trips. A 10' bituminous trail would be more desirable as the 10' width would better accommodate two-way travel safely.

Along Major Collector roadways, an 8' bituminous trail and 6' concrete walk is recommended on either side of the roadway to accommodate local pedestrian and bicycle travel. The pedestrian facilities on both sides of these roadways allow for pedestrian travel within the corridor without introducing excessive crossing demand on Major Collectors. A 6' concrete walk and 8' bituminous trail will accommodate pedestrian travel along the corridor, as well as provide a safe, comfortable link between lower volume residential streets and the other pedestrian facilities within the community.

Along Minor Collector roadways, a 6'concrete sidewalk is recommended on each side of the roadway. With the anticipated vehicular volumes on Minor Collector streets, pedestrians can safely cross the roadway, however, pedestrian travel along the roadway may become uncomfortable.

Medians – Medians are recommended on several Major Collector roadways under the jurisdiction of the City. Medians on Major Collector roadways assist in accommodating significant vehicular volumes at acceptable travel speeds for adjacent land uses. While maintaining the travel lane widths required for traffic, the total pavement width is reduced, creating a more appealing and acceptable travel corridor. Trees and other landscaping can be included within medians on city Major Collector roadways, provided they do not compromise minimum clear zone requirements and do not interfere

with traffic control devices. Medians also allow for more comfortable pedestrian crossings of Major Collector roadways by providing a safe haven for pedestrians to assess crossing opportunities one direction of vehicular travel at a time.

Design Speed – The design speed of a roadway is directly related to the roadway's function in the roadway system. The focus of Minor Arterial roadways is mobility, therefore these roadways should be designed to accommodate higher travel speeds. Likewise, Minor Collector roadways are more focused on accessibility and should be designed to accommodate lower travel speeds. The function of Major Collectors is balanced between mobility and accessibility, therefore these roadways should be designed accordingly. Table 2.6 below presents the recommended design speed for the Mayer roadway network:

Table 2.6 – Roadway Design Speed Guidelines

Functional Classification	Design Speed [(1)]
Minor Collector Street	30 mph
Major Collector Roadway	35 – 40 mph
Minor Arterial Roadway	45 – 55 mph

[(1)] At the discretion of the City Engineer for City roadways, with approval by the City Council.

Right-of-Way Width – Right-of-way width is directly related to the roadway's width and its ability to carry vehicular and pedestrian traffic in a safe and efficient manner. The roadway right-of-way widths identified in Figures 2.2 and 2.3 are the minimum required for Major and Minor Collector streets, respectively. For Minor Collector streets in residential areas, a minimum right-of-way width of 80' is necessary for the added roadway width, as well as to provide added setback distance between the roadway and homes along the roadway. Right-of-way widths greater than 100' will be required on Major Collector roadways within commercial areas to accommodate the potential for higher traffic volumes and the need for additional lanes. All right-of-way requirements may be increased at the discretion of the City Engineer, with approval by the City Council.

2.5 Roadway Jurisdiction

Roadway jurisdiction directly relates to functional classification of roadways. Generally, roadways with higher mobility functions (such as arterials) should fall under the jurisdiction of a regional level of government. In recognizing these roadways serve greater areas resulting in longer trips and higher volumes, jurisdiction of Principal Arterial and Minor Arterial roadways should fall under the jurisdiction of the state and county, respectively. Similarly, roadways with more emphasis on local circulation and access (such as collectors) should fall under the jurisdiction of the local government unit. These roadways serve more localized areas and result in shorter trip lengths and lower volumes. Major Collector and Minor Collector roadways should fall under the jurisdiction of the City of Mayer.

As roadway segments are considered for turn-back to the City, efforts will be taken to evaluate the roadway features for conformance to current standards, structural integrity, and safety. This effort will help the City develop short and long-range programs to assume the responsibilities of jurisdictional authority.

3.0 Existing Transportation System Evaluation

The initial settlement of the City of Mayer occurred in a grid pattern along what are now TH 25 and CSAH 30, and around the Hutchinson line of the Great Northern Railroad. This area is considered the downtown area of the community. Newer development that has occurred since 2000 is in a curvilinear street pattern, and TH 25 and CSAH 30 are still relied upon for the movement of local traffic. As population and business attractions grow, increases in traffic volumes have the potential to negatively impact the downtown area by reducing pedestrian mobility, increasing traffic congestion, and increasing parking problems. The City's ability to develop adequate Major Collector roadways is critical to maintain a satisfactory roadway system in the Mayer area and preserve the downtown area of Mayer as a desirable commercial area.

3.1 Traffic Volumes

The existing traffic volumes within the area were collected from Mn/DOT and are represented in Figure 3.1 – 2000 and 2005 Average Daily Traffic Volumes. Roadway analysis indicates that the system operates well for most roadways within Mayer. There are currently no roadways providing a Level of Service C or less.

3.2 Continuity Deficiencies

There are minimal continuity deficiencies on the local roadway system in the City of Mayer. As development continues in the Coldwater Crossing plat, the extension of a road north of Coldwater Crossing connecting to 7th Street NW will improve local traffic circulation and provide an alternative to CSAH 30 for accessing the area.

CSAH 30's route in the City of Mayer coincides for ½ mile with TH 25. As development occurs and traffic volumes continue to grow, improving the continuity of this corridor will be important to preserve the roadway's function as an A-Minor Arterial and TH 25's function as an A-Minor Arterial.

3.3 Safety Issues

Roadway traffic crashes during 2001 through 2005 occurred primarily on TH 25 through the City with a few crashes occurring on CSAH 30/1st Street, west of TH 25.

The City's identified Urban Growth Boundary anticipates growth areas that include TH 25 north of TH 7 and along TH 7 east to Polk Avenue. This segment of TH 7 has been studied by the State of Minnesota for safety improvements. These improvements include reconstruction of the intersection with TH 25 and the roadway east into Hennepin County.

3.4 Jurisdictional Issues

TH 25 is identified in Carver County's 2020 Transportation Plan as a potential jurisdictional transfer route (turn-back route) from the State of Minnesota to Carver County. If the re-alignment and turn-back are completed, it is anticipated that the current alignment of TH 25 within the Mayer City Limits would be viewed by Carver County as a potential turn-back route to the City of Mayer.

3.5 Relevant Area Transportation Studies

Two studies have been completed in recent years to provide direction relative to the development of the City of Mayer's roadway system. In 1996, a TH 7 Corridor Study from TH 15 in Hutchinson to TH 41 in Excelsior was completed. This study included access management guidelines and a highway improvement and implementation plan. Since the Corridor Study was completed, Mn/DOT has initiated safety and capacity improvements along the corridor. Proposed improvements in the Mayer area that are scheduled for bid letting as early as 2007, and include a roundabout at the TH 7 and TH 25 intersection, and upgrading the roadway to a 3-lane facility. The purpose of the 3-lane roadway is to provide passing lanes for motorists, however, additional capacity will not be provided. As part of this project, Mn/DOT is working with local property owners to purchase access rights. These improvements are supported by the City of Mayer. The City will consider the recommendations of the State of Minnesota regarding access, supporting roadways, and development of intersection areas as development and growth occurs.

An Alternative Urban Areawide Review (AUAR) was completed for the Fieldstone development located in the southeast corner of TH 7 and TH 25. The AUAR mitigation plan recognized that access to TH 7 would be at a single location at the east end of the AUAR area (1/2 mile east of State Highway 25). This access would be approved by MnDOT as a temporary right-in/right-out only access that would be required to be removed at a future date when a future roadway is developed south of State Highway 7 through this area connecting to Quaas Avenue.

The AUAR was approved without specific access determinations to State Highway 25. The AUAR mitigation plan indicated that due to potential jurisdictional transfer of State Highway 25 from the State to Carver County, the City would work with MnDOT and Carver County to develop appropriate access to State Highway 25.

3.6 Multimodal Transportation Opportunities

Chapter 6 and 9 of the Comprehensive Plan provides information about the railroad system that once bisected the community, as well as existing transit service, taxi service, aviation plans and facilities, and bicycle and pedestrian trails.

4.0 Future Transportation System

The transportation system in the Mayer area is in a rural to urban transition in response to the rapid growth experienced in the past 5 years and the anticipated growth for this area. As growth continues to occur, it will be important for the City to develop a roadway system that is efficient and consistent with the transportation system principles and standards outlined in Section 2.0.

4.1 Future Roadway Corridors

Map 4-8 of Chapter 4, Land Use Plan, illustrates the projected future land uses within an urban growth boundary. Map 4-9 represents potential post 2030 urban expansion areas. A supporting future road network has been developed in consideration of long-term growth in the area and is illustrated in Figure 4.1 – Recommended Future Roadway Functional Classification. This network has been developed in consideration of the proposed land uses, the Carver County Transportation Plan, and the various studies outlined in Section 3.5.

A suitable arterial-collector system to accommodate future development and traffic patterns is necessary in the growing community of Mayer. The existing county and state highways have historically provided much of the local circulation and connectivity, however these roadways will not be capable of meeting both the future local and regional travel demands. A city collector system consisting of Major Collector roadways and Minor Collector streets is needed to provide acceptable local circulation and access to developing areas, as well as to enable the Principal Arterial and Minor Arterial roadways to serve longer, regional travel. It is not anticipated that all of the proposed collector streets will be constructed by 2030, rather, collector streets should be constructed as development occurs.

The roadway corridors identified are conceptual, based on network needs, and should be used as a guide for development of the City's roadway system. In most cases, the actual roadway alignments are flexible to meet the needs of future development, at the discretion of the City Engineer. New or re-designated roadways necessary to support the land uses identified in Map 4-8 of the Land Use Plan and future traffic growth are mentioned below.

4.1.1 Minor Arterials

As indicated in Section 3.4, Jurisdictional Issues, TH 25 is identified as a jurisdictional transfer candidate from the state to Carver County. To improve the mobility of this roadway, consideration has been given to route this road approximately ¼ mile east around the downtown area.

Carver County is considering development of a continuous CSAH 30 roadway. Currently, CSAH 30's alignment at TH 25 is along 70th/9th Street, however west of TH 25 to CSAH 33 in New Germany the alignment is ½ mile north at 66th Street. West of CSAH 33 the alignment drops ½ mile south to coincide again with 70th Street. Figure 4.1 conceptually identifies a corridor alignment utilizing the 70th Street alignment and new Crow River Crossing or a new continuous alignment using the existing river crossing. If either realignment option is completed, it is anticipated that the current alignment of CSAH 30 west of TH 25 would be viewed by Carver County as a turn-back route to the City of Mayer.

4.1.2 Major Collectors

As stated in Section 3.0, there is lack of Major Collector roadways in the Mayer area, resulting in an over reliance on the Minor Arterials for local circulation and connectivity. The long-term roadway network vision in the Mayer area addresses these deficiencies. The following describes the recommended Major Collector roadway corridors within the urban growth boundary:

East-West Roadways Within the Urban Growth Boundary

Old Farm Road and 58th Street – this roadway alignment generally parallels TH 7 to the south and will provide an option for local traffic circulation. It will also offer access to commercially guided land at the intersection of TH 7 and TH 25 and TH 7 and Polk Avenue. West of TH 25 this roadway is envisioned to provide a crossing to the Crow River post 2030.

7th Street and 62nd Street – This roadway's alignment is 1 mile south of TH 7. As the area urbanizes it is envisioned that this roadway's continuous alignment will distribute traffic to Ash Avenue (existing TH 25), the future Minor Arterial located east of TH 25, and Quartz Avenue. While the intersection is currently planned for closure, it is anticipated that the corridor study for the north/south Minor Arterial roadway east of TH 25, along with planned intersection studies on TH 25, will evaluate the long-term need and associated improvements for the intersection.

1st Street East Extension – As development or redevelopment is proposed at the east extension of 1st Street (CSAH 30), this roadway should be planned to provide a continuous route for eastbound traffic, rather than the current dead end at Ash Street. This connection will collect traffic north of the old railway corridor and provide the opportunity to bypass downtown Mayer and access the future Minor Arterial located east of TH 25.

East-West Roadways Outside of the Urban Growth Boundary

50th Street – This roadway provides the opportunity for a frontage road parallel to and north of TH 7. In this long-term roadway vision, continuity is planned from CSAH 21 on the west to Polk Avenue to the east, connecting potential future residential and commercial areas and providing local traffic circulation options.

78th Street – This corridor is envisioned to provide local circulation between CSAH 32, TH 25, and Quaas Avenue.

North-South Roadways Within the Urban Growth Boundary

Tacoma Avenue – In the Urban Growth Boundary, this roadway will provide connectivity to residentially guided areas from CSAH 30 to 70th Street. Post 2030 growth in the Tacoma Avenue area will provide an alternative route to TH 25 for traffic to efficiently access CSAH 32 to Waconia. North of the Crow River this corridor will provide post 2030 local roadway connectivity across TH 7 to 50th Street.

Ash Street – Upon the completion of the Minor Arterial roadway east of Ash Street/TH 25, it is anticipated that Ash Street though the City would be designated a Major Collector. The roadway will continue to provide important connectivity to the downtown commercial land uses and residential areas, and industrial uses on the south part of town.

Quartz Avenue – This roadway is proposed for extension north to connect with Old Farm Road and temporarily to TH 7. As congestion on TH 7 grows, this roadway will provide an important connection to CSAH 30 and southeastern Carver County destinations such as Waconia and Chaska.

Polk Avenue – While only a portion of this roadway is within the urban growth boundary it is intended by Mn/DOT to be the only permanent access to TH 7 between TH 25 and CSAH 10. This roadway will establish local connectivity between future residential and commercial areas on both sides of TH 7, without reliance on the Principal Arterial of TH 7. To the north and south it is

envisioned that this roadway will connect with Quaas Avenue. Quaas north of TH 7 provides an alternate access to the City of Watertown, and to the south to it is envisioned to connect with the east extension of 1st Street.

North-South Roadways Outside of the Urban Growth Boundary

Union Avenue extension to CSAH 21 – This roadway will provide the opportunity post 2030 to convey local traffic between residential neighborhoods on the west side of the City to TH 7, CSAH 21, and 58th Street.

4.1.3 Minor Collectors

Astute land use planning and subdivision plat review are key to ensuring an adequate local roadway network is developed and future local street traffic issues are avoided. Minor Collector streets are designed to carry traffic to higher-level roadways. They typically do not carry trips through an area; rather they connect non-continuous local streets and provide individual property access.

One of the primary issues facing developing communities around the Twin Cities Metropolitan area is a perception of excess traffic on "local" streets. The physical ability of these streets to carry traffic typically far exceeds the acceptable traffic levels for those property owners along the street. Minor Collector streets in residential areas must be identified during the preliminary platting process and design measures taken to provide acceptable conditions for the future owners of the adjacent lots. As a rule of thumb, one Minor Collector street connection to a Major Collector roadway is needed for each 100 housing units. For example, a developing area with a capacity of 400 homes should have at least four Minor Collector connections to the Major Collector network. If evenly distributed, these connections will ensure the Minor Collector streets will not be required to carry an unacceptable level of traffic. These Minor Collector streets should be continuous through multiple developments, but not necessarily continuous between Major Collectors. Direct, continuous Minor Collectors that connect between Major Collectors should be discouraged, as they are often used as short cuts for travelers and tend to result in traffic volume levels unacceptable to the affected neighborhoods.

4.2 Forecasted Traffic Volumes

Average annual daily traffic volumes were forecasted for Major Collector, Minor Arterial, and Principal Arterial roadways based on the future land use vision within the urban growth boundary identified in the Land Use Plan (Map 4-8 of Chapter 4). These future traffic volumes are illustrated in Figure 4.2 – 2030 Forecasted Average Daily Traffic Volumes. Existing traffic volumes were obtained from Mn/DOT, and assumed traffic growth rates were also factored.

Household, population, and employment projections were developed for the geographic area identified as within the urban growth boundary and were based on the land use assumptions (i.e. dwelling units, persons per household, and employees per net acre) provided for in Tables 4-10 and 4-11 of the Comprehensive Plan.

Forecasted traffic volumes that have been developed are based on the full build-out of the urban growth boundary identified in the Comprehensive Plan. It should be noted that this yield is greater than the Twin Cities Metropolitan Council 2030 forecasts for households, population, and employment. Due to the uncertainty of where development will actually occur, it is not possible to remove the resulting "overages" from specific segments of roadway and is an important consideration to be aware of when reviewing the forecasted traffic volumes.

4.2.1 Roadway Safety & Capacity Needs

The forecasted average annual daily travel demands approach or exceed daily capacities on portions of TH 7, TH 25, and CSAH 30, as well as some gravel roads located on the periphery of the urban growth boundary. The recommended Geometric Design Standards and associated right-of-way width requirements illustrated in Section 2.4 – Geometric Design Standards will provide sufficient capacity to accommodate the forecasted traffic volumes on the City's roadways. Table 2.1 – Roadway Types and Capacities identifies various roadway types and the daily capacities that the given roadway can accommodate.

Figure 4.5 – 2030 Maximum Peak Hour Volume to Capacity Ratios identifies the existing roadway segments where capacity improvements will be needed to accommodate the future traffic volumes identified in Figure 4.4. Table 6.2 – Traffic Volumes and Capacity Analysis further describes historical and 2030 traffic volumes and capacities. Capacity improvements are recommended on any roadway with a future level of service of D, E, or F, as defined in Section 2.2. The development of the future roadway network illustrated in Figure 4.3 is necessary to provide alternatives to the routes recommended for capacity improvements. Corridors and associated strategies recommended for capacity improvements are summarized for each deficient roadway below:

State Roadways:
Based on current travel trends, congestion on TH 7 is anticipated to increase. Without the expansion of TH 7 to the east, the highway is expected to become congested east of Mayer. As a result the highway east of Polk Avenue is anticipated to be at or near congested level. With this congestion, the traffic south of TH 7 that would want to travel on TH 7 will likely look for alternate routes. TH 7 west of Polk Avenue is anticipated to be periodically congested even with some traffic diversion.

TH 25 north of Old Farm Road to 50th Street is forecasted to be near congested. From 62nd Street to Old Farm Road and north of 50th Street the corridor is anticipated to be periodically congested.

The City should initiate discussions and partner with Mn/DOT and Carver County to determine and implement the appropriate capacity improvements and the potential for rerouting TH 25, including the appropriate intersection location with TH 25 and corridor alignment.

County Roadways:
Traffic volumes on CSAH 30 are expected to increase significantly from 2,650 in 2005 to 10,250 in 2030 near Goose Lake. This is due to forecasted congestion levels on TH 7, traffic generated by development in the City of Mayer, and destinations in Waconia, Chaska, and other areas to the south and east. During the peak travel hours, portions of the corridor east of Ash Avenue are likely to be periodically congested. The City will work with Carver County to obtain additional right-of-way, as well as assess improvement strategies that will become necessary as development occurs.

Local Roadways:
Old Farm Road and Polk Avenue north of Old Farm Road are forecasted to be periodically and near congested respectively. This is partially due to congestion levels on TH 7 and primarily due to commercial destinations along the corridor. The intersections along Old Farm Road should be designed to properly handle the anticipated traffic through the use of turn lanes or alternate traffic control (e.g. roundabout) at all intersections and limiting Minor Collector access along the roadway as consistent with the standards above. Direct driveway access should not be allowed. Access management, as outlined in Section 2.3, will be an important tool in maintaining mobility on these roadways. Right-of-way should be acquired as properties in the area develop or redevelop.

Several gravel roadway corridors located outside of the City's urban growth boundary are projected to have high traffic volumes. Although the roads could handle the traffic, consistent maintenance would be required to keep them in working condition. Studies indicate that as volumes exceed 500ADT, it becomes cost effective to pave the roadway. Since these corridors are not anticipated to be within the City's jurisdiction, it is recommended that during annexation discussions or prior to preliminary plat approval that the City work with the township and developer to upgrade and improve the corridor through a joint agreement with the developer, township, and City. The horizontal and vertical alignments of each corridor should be reviewed prior to paving, as motorists drive paved roadways more aggressively than gravel roadways and higher travel speeds should be accounted for in the design. Tight, horizontal curves and limited sight distance over hills, which may have not been a problem with a gravel surface, can often result in immediate crash problems when the roadway is paved. Roadways identified for potential surfacing include Quartz Avenue (62nd Street to CSAH 30, 62nd Street (east urban growth boundary to Polk Avenue), Quaas Avenue (52nd Street to 50th Street), 50th Street (TH 25 to Quaas Avenue, and 70th Street (west urban growth boundary to TH 25/Ash Avenue).

Intersections:
Existing and proposed intersection locations may have inadequate intersection sight distances. Sight lines at these locations are obstructed due to horizontal and/or vertical curvature of the roadways, as well as other roadside obstructions. As future intersections are established or new land use developments route additional traffic to existing intersections, an engineering study will be required to determine the appropriate measures needed to achieve adequate intersection sight distances. These may include reconstruction of a portion of the existing through roadway, relocating the intersection, or other means to remove the sight obstruction. To accommodate necessary turn lanes, additional right-of-way may be required at the intersection.

4.3 Multimodal

Multimodal transportation activities, including aviation and transit service area, are discussed in detail in Chapters 6 and 9 of the Comprehensive Plan. In addition to those recommendations, it is important for the community to plan for the ability to accommodate multimodal activities (i.e. transit, pedestrian, and bicycle) on all non-Local roadways to provide other opportunities to move about the city and beyond. The typical sections for Minor and Major Collectors listed in Section 2.4 – Geometric Design Standards and Figures 2.2 and 2.3 includes construction requirements for these off-street opportunities. Since the existing park and ride facility located in the northeast corner of TH 7 and TH 25 is planned to be removed with the TH 7 reconstruction project, it is recommended that the City explore opportunities for a new facility within the Fieldstone plat.

It is recommended that any future roadway crossing of the regional trail corridor (previous railway corridor) be grade-separated and limited to roadways functionally classified as a Major Collector or higher.

The City should consider reviewing pedestrian facilities and school routings to determine their adequacy as traffic conditions change. Sidewalks and trails, providing pedestrians a route to future controlled intersections, should be incorporated into road projects and land developments to safely accommodate pedestrian and traffic growth in the City.

5.0 Goals & Implementation

The following goals and strategies outline the City of Mayer's plan for ensuring adequate infrastructure is available to support the growth anticipated within the urban growth boundary.

5.1 Goals

The transportation goals and implementation strategies identified have been developed to meet the needs of the land uses associated with the build-out of the urban growth boundary.

1. Transportation System – Create/provide a safe, cost effective, and efficient transportation system that is adequate for vehicular, pedestrian, bicycle, and truck transportation for the movement of people and goods and services in the community.

2. Maintain Existing Infrastructure – Preserve and maintain the existing transportation infrastructure to protect the significant investment, to increase its efficiency, and delay the need for improvement or expansion by use of a Capital Improvement Plan.

3. Transportation Improvement & Expansion – Improve and expand the existing transportation system as necessary to meet current and future transportation needs.

4. Alternative Modes of Transportation – Along with regional partners, explore alternative modes of transportation and technological alternatives to transportation (telecommuting) in order to reduce traffic demands in the area. As the population ages and diversifies bus service will become an important amenity in the community and should be promoted. Special attention should be given to improving pedestrian access, movement, and crossings to provide both convenience and safety.

5. Regional Transportation Planning – Cooperate on a regional level in planning and development of a transportation system, including coordination among multiple jurisdictions, public and private transit providers and agencies at all government levels, while serving the functional needs of all.

6. Regional Traffic Management – Work on a local, state, and regional level to reduce traffic congestion and safety concerns on transportation corridors.

7. Transportation & Economic Development – Create or encourage a transportation system that contributes to the economic vitality of the community by connecting people to work, shopping, and other activity generators/attractions and supports growth of commercial and industrial uses.

8. Comprehensive Transportation Planning – Approach transportation in a comprehensive manner by giving attention to all modes and related facilities through linking transit and land use and by combining or concentrating various land use activities to reduce the need for transportation facilities.

9. Regional Transportation Funding – Pursue a balanced approach to financing transportation and other community needs at the local level based on current availability of services and facilities and maintenance of existing infrastructure.

10. Roadway Project Coordination – Continue to coordinate future road construction and reconstruction projects with all utility service providers and Carver County to ensure efficient repair/replacement and avoid duplicate costs.

11. Capital Improvement Plan – Develop a Capital Improvement Plan that contains elements for new construction and reconstruction of the roadway system, with scheduled maintenance included in annual budgets. Street maintenance should include routine patching, crack filling, and storm sewer cleaning. Implement a schedule for roadway maintenance and reconstruction (e.g. seal coating every 4 to 5 years, complete reconstruction or mill/overlay every 15 to 20 years), street widening/realignment, etc.

12. Zoning and Subdivision Ordinance Update – Update the Zoning and Subdivision Ordinances consistent with the Transportation Plan.

13. Right-of-Way Dedication – Require right-of-way dedication along state, county, and local roads to meet future capacity needs.

14. Minor Collector Review – review concept plans for plat and development proposals to evaluate the distribution of Minor Collector roadways so as to not overburden local streets.

15. Development Driven Improvements – Work with developers to construct needed improvements prior to development.

16. Non-Development Driven Improvements – Non-development driven improvements should be prioritized and programmed in the Capital Improvement Program.

17. Assessment Policy – Develop an assessment policy for Major Collector and Minor Arterial roadways to establish expectations and ensure consistent application.

18. Developer Agreements – Utilize developer agreements as a tool to ensure improvements are constructed as agreed upon in the platting or development process.

19. Traffic Impact Study Policy – Establish a policy outlining when a traffic impact study should be conducted, including acceptable information to be contained within the study.

20. Gravel Roadway Improvements – When traffic from a proposed urban development may exceed 500 ADT will work with the developer and township to identify a strategy to upgrade and improve the gravel corridor through a joint agreement with the developer, township, and City.

5.2 Strategies

Various strategies can be utilized to ensure proper transportation improvements are made to provide and protect the infrastructure investment. Astute land use planning and subdivision plat review are key to ensuring the long-term roadway network vision is developed and future traffic issues are avoided. To accomplish this, each development proposal (e.g. redevelopment of a single parcel, plat review, change of use, expansion of a business or operation, etc.) should be evaluated for consistency with the following policies/standards:

1. Work with property owners / developers to remove / relocate existing driveway and field approaches off non-local roads.

2. Provide road and trail connectivity between adjacent parcels.

3. Review/require access spacing that is consistent with the transportation plan.

4. Connect residential and non-residential areas.

5. Require turn and bypass lanes on non-local roads impacted by new development, including those that are not immediately adjacent.

6. Require off-site improvements, including those in other jurisdictions, where the existing transportation network will be directly impacted by new development, including where the development is not immediately adjacent. This could include but is not limited to paving roads, repairing surfaces, fixing sub-standard drainage, improving sight distances, etc.

7. Require the dedication of rights-of-way for all required future transportation improvements identified in the transportation plan including trails, roads, bridges, transit facilities, drainage, utilities, and any other related improvement requiring use of a corridor/location.

8. Require the equitable participation in the construction of collector and arterial roads.

9. Review probable neighborhood traffic patterns, areas where excessive speed is possible, and the potential for pedestrian conflicts.

10. Require all local roads to be constructed to property lines, or the corresponding amounts of money be escrowed, where stub streets are proposed to adjacent properties, but are not immediately warranted.

11. Require fees, construction participation, and/or cost participation proportionately to future required infrastructure such as overpasses, interchanges, and other Local/County responsibilities as afforded by law and justifiable.

12. Require traffic impact studies, including the analysis of intersections to determine the need for and contribution to intersection improvements.

In addition to the review of specific development driven improvements, short-term and mid to long-term improvements have been identified for capital improvement planning purposes as follows:

Short-Term Improvements (2007 – 2012 years):
It is recommended that the City of Mayer, together with Mn/DOT and Carver County, initiate a corridor preservation study to determine an alignment option for further planning, preservation, and environmental analysis for the Minor Arterial roadway east of TH 25. The corridor preservation study area should extend from approximately 58th Street to CSAH 30. A planning level cost estimate in 2006 dollars for a study of this magnitude may cost in the range of $50,000 to $100,000, with potential funding partnerships between the developers, city, county and state.

It is further recommended that the City of Mayer, together with Mn/DOT and Carver County, initiate an intersection needs study for both TH 25 and CSAH 30 within the City's urban growth boundary to determine safety, capacity, and traffic control needs at major intersections with those roadways. A planning level cost estimate in 2006 dollars for a study to evaluate the needs of up to eight (8) intersections, done concurrently for TH 25 and CSAH 30 is estimated at $25,000 to $40,000.

As discussed in the Local Roadway discussion of Section 4.2.1, the City should work with Waconia Township to monitor traffic volumes on Quartz Avenue annually and develop a strategy for the upgrading of the roadway when necessary. A planning level cost estimate in 2006 dollars for collecting and reviewing the traffic counts is estimated at $500 annually.

Mid to Long-Term Improvements (2013 – 2030):
It is recommended that the City of Mayer partner with Carver County to initiate a corridor preservation study to determine an alignment option for further planning, preservation, and environmental analysis for a continuous roadway alignment between CSAH 30 east of TH 25 and across the Crow River. The corridor preservation study area should include intersection improvements at TH 25 (Ash Avenue) and CSAH 30. A planning level cost estimate in 2006 dollars for a study of this magnitude may cost in the range of $50,00 to $100,000, with potential funding partnerships between the developer, city, and county.

As development approaches gravel roadways adjacent to the urban growth boundary, the City of Mayer should work with the adjacent townships to measure traffic volumes and develop a strategy for the upgrading of the roadway when necessary. A planning level cost estimate in 2006 dollars for collecting and reviewing the traffic counts on each corridor is estimated at $500 annually.

6.0 Traffic Forecast Modeling

The following describes the general approach to traffic forecasting efforts and resulting outputs for this Transportation Plan.

Met-Council Requirements:
Minimum of Four Traffic Analysis Zones
Traffic Forecasts on State Highway System

Model Types:
Existing Model provides the basis of the roadway connections and existing capacity, speed, and functional class.

Future Model uses the existing model parameters to set-up a no-build scenario. New roadways are added to provide additional connections throughout the city. Planned improvements are also included for existing roadways. These improvements and new roadways provide for the anticipated future roadway network to handle the citywide growth.

Additional Zones:
Provides traffic forecasts on additional roadways, including county roads and major collectors and local roads.

Provides for a more accurate traffic distribution by controlling where traffic enters and exits the roadway network.

Takes into account natural features which traffic cannot cross, including railroad right-of-way, waterways, and wetlands.

Developers will use the traffic volume forecast data to include in their individual development's traffic study. The TAZ projections on smaller zones let a Developer know if their plan conflicts or is consistent with the City's projections identified in the Transportation Plan and assists in determining traffic improvements necessitated by their Development.

Model Used:

- Twin Cities Regional Model
- Consistent with Current Regional Transportation Policy Plan Adopted by the Metropolitan Council
  - Demographics
  - Metropolitan Highway System
  - Metropolitan Transit System

<u>Model Methodology:</u>
The general approach to forecasting the traffic volumes consisted of the following:

- Utilize the Twin Cities' regional travel demand model and model parameters, maintained by Metropolitan Council, as the primary instrument for forecasting the volumes.

- Collect year 2000 and current year traffic count data and basic roadway attribute information in the study area for the purpose of validating the regional model, run for the base year (2000).
- Collect year 2000 census data from the U.S. Census Bureau.
- Determine Traffic Analysis Zones based on roadways, land use data, and land features.
- Split regional model Traffic Analysis Zones into smaller zones for basis of projections.
- Add additional county and other major local roadways to the roadway network in the regional model.
- Apply the regional model for the base year and validate its projections against the observed traffic count information; make appropriate adjustments as necessary to reach an acceptable validation.
- Apply the regional model for the forecast year (2030), taking into account the adjustments made to the 2000 model run, to generate the projected volumes.
- Analyze traffic patterns that ultimately comprise the elements themselves, through a series of special selected link analyses; use this information as a basis for adjusting the forecasted volumes if determined to be necessary.
- Prepare the final set of forecast volumes.

Details:
Additional details concerning the methodology follow:

Regional Model – The regional model provides a systematic procedure for forecasting volumes, taking into account projected changes in regional land use/socioeconomic data and the regional transportation network. The regional model was obtained from Metropolitan Council for 2000 and 2030 conditions.

Historical and Current Year Traffic Count Data – Traffic count data in the study area was collected from the Minnesota Department of Transportation (Mn/DOT) and recent traffic studies in the area. This included A.M. and P.M. peak hour, as well as average daily traffic volumes.

Current Roadway Attribute Information – The regional model highway network was reviewed in detail for conformity to current conditions. A thorough check of roadway functional classification, speed, number of through lanes, and roadway capacity was completed. Several roadways were added to the network to assist in the future network analysis. These roadways were populated with the appropriate attributes based on regional model documentation, so as to be consistent with the regional model parameters.

Census Data – Year 2000 census data was collected from the U.S. Census Bureau. This data includes population and households by census block.

Employment Data – Employment figures were obtained from the City of Mayer to identify trip attractions within the City.

Traffic Analysis Zones (TAZs) – Based on the census blocks, land use, roadway network, and land features (including railroads, waterways, and bluffs), zones were identified for traffic to enter and exit from the roadway network and are illustrated in Figure 6.1 – Traffic Analysis Zones. These zones include both traffic productions and attractions. These zones were split from the regional model traffic analysis zones, which cover a much larger area and were broken apart to allow for additional roadway traffic volume projections, which would not have been available in the base regional model. These zones and their relevant information were added to the regional model.

Socioeconomic Data – Land Use data for build out of the urban growth boundary was received from the land use consultant and illustrated in Table 6.1 – City of Mayer Traffic Analysis Zone Forecasts. The projected population, households, and employment data was aggregated into the TAZs. It is recognized that these numbers are higher than the 2030 Met Council household, population, and employment estimates. These "overages' are reflected in the 2030 traffic forecasts.

Base Model Validation – The 2000 model was validated using many resources, including: 2000 traffic count data, Carver County Transportation Plan, aerial photos, and field observations. The assigned volumes from the 2000 regional model were then compared to the 2000 traffic counts. Adjustments to centroid locations and additional centroid connectors were added to help smooth volumes along individual roadways and more closely match ground counts. Additionally, because of the "regional" nature of the regional model, roadways are categorized into a select number of functional classifications. Thus, roadways that have minor differences may have the same functional classification. Some roadways in the study area were refined to reflect these minor differences. Specifically, local gravel roadways were defined as minor collectors but were adjusted with a lower capacity and speed than a typical paved minor collector.

Future Model Forecasts – The 2030 model was updated to include the existing roadways and additional TAZ's as used in the 2000 model. Future roadways within the urban growth boundary were added and centroid connectors were adjusted as required to connect with the newly proposed roadways. Additionally, functional classifications, speed, and capacities were adjusted based on the expected future roadway attributes.

Review of Forecasts – The traffic forecasts were reviewed for reasonableness. As with any travel demand model, it would be inappropriate to rely solely on direct model output for design volumes. The modeled volumes were reviewed and adjusted based on existing and historic travel patterns and also through some additional selected link analysis of model output. A series of selected link assignments were performed and the model estimated volumes were adjusted to more accurately reflect future traffic patterns within the study area. The checks for reasonableness of the projected volumes follow the procedures as outlined in the Mn/DOT Metro: Model Output Checks for Reasonableness and Post Processing Adjustments (Revised 5 January, 2006). These include:

- Peak Hour Percentage of Daily Traffic: The peak hour percentages of daily traffic produced by the model for the forecast year were compared to existing/observed peak hour percentages within the project limits and on other routes nearby with the same functional classification.

- Directional Split of Peak Hour Traffic: The directional splits of peak hour traffic forecasts produced by the model for the forecast year were compared to existing/observed directional splits within the project limits and on other routes nearby with the same functional classification.

- Capacity of Road Segments Beyond Limits of Project: Peak hour traffic forecast volumes assigned to road segments beyond the limits of the study area were studied to determine if the projected growth from the area affects the capacities of those road segments. On roadways outside of the study area with volume to capacity ratios over 1.00, the model results were compared to the regional model results from Met Council and Mn/DOT. The capacities of feeder roadways were not exceeded near the study area. Further east from the study area, TH 7 does experience high volumes, which are not directly attributable to the City of Mayer projected traffic.

- Daily Traffic Growth Factors: The daily traffic forecasts from the model on the state roadways were compared with the last 20 years record of daily volumes and with the regional model results from Met Council and Mn/DOT. The projections are consistent with the general expectation that the model should yield forecast values which are lower than those based on an extrapolation of the last 20 years of increases in daily traffic.

Post Processing – The post-processing of the projected volumes follow some of the procedures as outlined in the Mn/DOT Metro: Model Output Checks for Reasonableness and Post Processing Adjustments (Revised 5 January, 2006). The post processing includes:

- Traffic forecast volumes were rounded to the closest 50.

- All products depicting the forecast numbers (maps, tables, layouts, etc.) contain a very visible caution that the forecast numbers depicted have a likely confidence range of plus or minus 15 percent.

- Traffic smoothing and corridor diversion adjustments were accomplished using the procedures described in Chapter 9 of NCHRP Report 365, "Travel Estimation Techniques for Urban Planning".

- Historical and 2030 traffic volumes and capacities for Major Collector, Minor Arterial, and Principal Arterial, and some local roadways within and adjacent to the urban growth boundary are illustrated in Table 6.2 – Traffic Volumes and Capacity Analysis.