4.0 FUTURE TRANSPORTATION SYSTEM

The transportation system in the Northfield area has had generally steady growth over the past several decades, and growth is anticipated to continue into the future. As residential and non-residential 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.

4.1 FUTURE CORRIDOR CONNECTIONS AND SERVICE ROUTES

The following provides an overview of the planned future transportation system for all trip types in the City of Northfield.

4.1.1 ROADWAY FUNCTIONAL CLASSIFICATION

The Comprehensive Plan includes future land use designations for areas within the identified urban growth boundary. The supporting future road network vision has been developed in consideration of long-term growth in the area and is illustrated in Figure 4.1.1 – Recommended Future Roadway Functional Classification. This network has been developed in consideration of the proposed land uses, the Transportation System Principles and Standards outlined in Section 2, and regional transportation initiatives.

A suitable arterial-collector system is necessary to accommodate future development and traffic patterns in the growing community of Northfield. A balanced system of Minor Arterials, Major Collectors, and Minor Collector Streets is needed to provide acceptable motorized and non-motorized mobility 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 roadways will be constructed by 2030; rather, these roadways should be constructed as development occurs. In particular, while two new Cannon River crossings are shown on the map, it is anticipated that one crossing will be constructed. This will be determined by the outcome of the environmental review for the corridor and bridge. As the urban growth boundary is amended over time, additional studies will be necessary to determine specific roadway alignments and intersection spacing.

The roadway corridors identified in Figure 4.1-1 are conceptual, based on network needs, and should be used as a guide for development of the County and City roadway systems. In most cases, actual roadway alignments are flexible to meet the needs of future development, at the discretion of the City Engineer. The re-designated roadways necessary to support the land uses identified in the Comprehensive Plan and future traffic growth, as well as meet the demands of emergency and civil service and accommodation of truck routes, are mentioned below.

FUTURE MINOR ARTERIAL CORRIDORS

As stated in Section 3.0, the Northfield area lacks a system of Minor Arterials to serve higher speed, regional motorized travel. TH 3 and TH 19 have limited capacity and expansion potential to handle growing traffic volumes. In urban and urbanizing areas, Minor Arterial corridors are recommended at 1 to 2 mile spacing depending on density of land uses. As a result, several new corridors will be necessary to regain a better balance of travel demand on the roadway system. The intent of these new corridors are to better serve E-E and I-E/E-I trips.

Decker Avenue / Foliage Avenue is a recommended future north-south Minor Arterial corridor on the western edge of the City's growth area. The alignment of this corridor was identified in the Northwest Northfield Corridor Study lead by Dakota County. The purpose of this corridor is to replace the existing Dakota CSAH 23/Rice CSAH 43 corridor on the Cedar Avenue alignment in Northfield, providing a more direct connection to TH 19. The corridor is proposed to extend southerly into Dundas to provide an alternative to TH 3 for north-south travel.

320th Street / County Road 96 is a recommended east-west Minor Arterial corridor on the northern edge of the City's growth area. Dakota County intends to pave existing County Road 96 between CSAH 23 and TH 3 in 2009. Once complete, this direct and convenient connection will provide an alternative to Greenvale Avenue for east-west travel between CSAH 23 and TH 3. In the future, this corridor is recommended to be aligned around the north side of Waterford Village and connect with CSAH 47/Northfield Boulevard at Canada Avenue.

County State Highway 1 / County Road 81 is a recommended east-west Minor Arterial corridor on the southern edge of the City's growth area. Rice County recently completed a Corridor Preservation Study for the existing alignment of CSAH 1 between TH 246 and TH 3, including a proposed new alignment across the Cannon River, west of TH 3. This corridor, once established, would provide the only continuous east-west corridor across the Northfield area. An alternative crossing location is Jefferson Parkway. The City supports the CSAH 1 crossing. If the corridor is selected during the environmental review as the crossing to be pursued, it will not alleviate the need for improvements to TH 19.

Ibson Avenue is a recommended future north-south Minor Arterial corridor located east of the City's eastern growth boundary. The purpose of this corridor would be to establish the next north-south arterial, providing an alternative to TH 246 and TH 3 for north-south travel through Northfield. This corridor is recommended to be aligned around the east side of the Carlton College Arboretum and cross the Cannon River at the existing Canada Avenue bridge. While this corridor is entirely outside the City's anticipated growth boundary, it is important to begin preserving it for long-term transportation needs.

The following existing Minor Arterial corridors are to be managed consistent with state and county standards

- State Highway 3
- State Highway 19
- State Highway 246
- County State Aid Highway 28/Woodley Street

MAJOR COLLECTORS

The City of Northfield has a mix of Major Collector corridors to serve City-wide travel and circulation. Some existing Major Collectors, such as Jefferson Parkway east of TH 246 and Lincoln Parkway, perform their function very well. They have adequate right-of-way to enable applicable design standards and are suitable with the adjacent land uses. Others, such as Greenvale Avenue are not serving their intended function due to inadequate design and conflicts with adjacent land uses. Continued development of the Major Collector corridors is necessary to continue pursuit of balance in the roadway network. In urban and urbanizing areas, Major Collectors are recommended at ½ mile to 1 mile spacing depending on density of land uses. As a result, several new corridors and improvements to existing corridors will be necessary to maintain the corridors as viable Major Collector routes. The intent of the Major Collector corridors is to better serve I-I and I-E/E-I trips. New Major Collector Roadways within the Urban Growth Boundary are identified below and displayed in Figure 4.1-1.

EAST-WEST CORRIDORS

- Thye Parkway – The City of Northfield has constructed a portion of this east-west corridor. Upon its completion, this route will provide important connectivity for local traffic between the future Decker Avenue / Foliage Avenue Minor Arterial and TH 3 at Sheldahl Road.

- North Avenue/80th Street – Similar to the role of Thye Parkway, this corridor will provide connectivity between the future Decker Avenue / Foliage Avenue Minor Arterial and TH 3. It's envisioned that North Avenue would intersect with TH 3 at Fremouw Avenue. Challenges exist in achieving this corridor due to potential property and environmental impacts, and the City will need to lead design and construction of a portion of the corridor.

- Lincoln Parkway – This roadway provides continuity for local traffic between CSAH 43 and Dresden Avenue, and extends past Greenvale Park Elementary School. This corridor has well maintained access spacing and continuity across the Progressive Rail railroad tracks to Dresden Avenue.

- Greenvale Avenue – Greenvale Avenue's western limit begins south of Lashbrook Park and extends east to TH 3. It provides important continuity for land uses in northwest Northfield, including travel to and from the hospital located along North Avenue, out to TH 3 to access other parts of the City. This road has an at-grade crossing of the Progressive Rail railroad tracks and a grade separated crossing of Union Pacific railroad tracks.

  A future Major Collector is envisioned for local traffic in northeast Northfield along the Greenvale Avenue alignment between Spring Creek Road and the future extension of Ibson Avenue.

- 4th Street – For local travel in northeast Northfield, this corridor provides east-west continuity between Division Street and Prairie Street. It also provides connectivity to downtown Northfield.

- 5th Street (also known as Wall Street Road east of Hall Avenue)/County Road 79 – This corridor's role is similar to 4th Street in that it connects other areas of the City to the downtown. However, it also includes a crossing over the Cannon River and is aligned with TH 19 west of TH 3. This route also provides continuity to areas east of Northfield by means of CR 79.

- Jefferson Parkway/Canada Avenue – These roads provide important options for local travel in eastern Northfield. As described in Section 3.5.4, if the Jefferson Parkway alignment is identified as the next Cannon River crossing, this corridor would extend west of TH 3 and provide connectivity to western Northfield. It's envisioned that the corridor would extend to TH 19 at approximately the CR 59 intersection. For this roadway to function in the role it is intended to provide, careful implementation of the design standards identified in Sections 2.4.1 and 2.4.2 will be necessary.

- Ford Street (West of Hall Avenue) & Heywood Road Easterly Extension - Future Major Collectors are envisioned in southeast Northfield. The extension of Ford Street east of Hall Avenue and the extension of Heywood Road east of Jefferson Parkway will provide important alternatives to CR 79, CSAH 28, and CR 81 for local traffic to reach the future north/south Minor Arterial roadway at Ibson Avenue.

- 90th Street, Future 95th Street, and 100th Street – These corridors are envisioned to provide important local roadway connectivity within southwest Northfield between Decker Avenue, a future Minor Arterial Corridor, and CSAH 78.

NORTH-SOUTH CORRIDORS

- Garrett Avenue – Garrett Avenue will provide an important route for local traffic west of the future Minor Arterial in northwest Northfield. This route will help preserve the future Minor Arterial to better serve E-E and I-E/E-I trips.

- Cedar Avenue/County Road 43/Lincoln Street/Armstrong Boulevard/County Road 78 – The combination of these corridors create a link across western Northfield between the future Minor Arterial roadways of Dakota County CSAH 23/Foliage Avenue and Rice County CSAH 1. These routes will serve local traffic and help preserve mobility on TH 3.

- Dresden Avenue – This route begins at Lincoln Parkway and extends north out of Northfield. This route provides a link for local traffic between CR 96 and Lincoln Parkway or TH 3.

- Jefferson Road/8th Street – This route provides a link for local traffic to access more intensive land uses located in downtown Northfield and on the east side of TH 3. It also helps preserve mobility on TH 3.

- Water Street (between Woodley Street and 5th Street), Division Street & Washington Street (between Woodley Street and 2nd Street) – These routes provide connectivity to downtown Northfield and access across the Cannon River at 5th Street and 2nd Street. Division Street and Water Street tend to serve business directly, while Washington Street provides alternative access to the downtown area which is not complicated by the business activity.

- Maple Street – This road provides a link for local residential traffic to the Minor Arterial roadways of Woodley Street and CSAH 1/CSAH 81. It also provides connectivity to Jefferson Parkway.

- Prairie Street – North of Woodley Street this corridor connects with Wall Street Road/CR 79, allowing residential areas on the east side of town to access east-west corridors linking with downtown and TH 3.

- Spring Creek Road/Hall Avenue – This corridor provides connectivity through future residential areas in eastern Northfield between the Minor Arterial roadways of CSAH 81 and TH 19. Part of the gravel corridor was overlaid with a bituminous surface, but was never reconstructed. It provides the longest north-south route in the City at nearly 3 miles.

- Future Canada Avenue between Jefferson Parkway and 110th Street – This future corridor will provide connectivity for local traffic between CR 81 and Jefferson Parkway.

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 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 should 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.

4.1.2 ON-ROAD BIKEWAYS

The Parks, Open Space, Trail System Plan identifies on-road bikeways as including bike lanes and bike routes. A bike lane is a designated portion of the roadway defined by striping, signing, and pavement markings. A bike route is described as a shared portion of the roadway that provides some separation between motor vehicles and bicyclists. According to this plan, primary users are transportation and fitness users, provided the design standards identified in Section 2.4.2 are met. The purpose of these routes is to serve fitness and transportation bicyclists and in-line skaters, as well as recreationalists with a higher skill and comfort level being around automobiles.

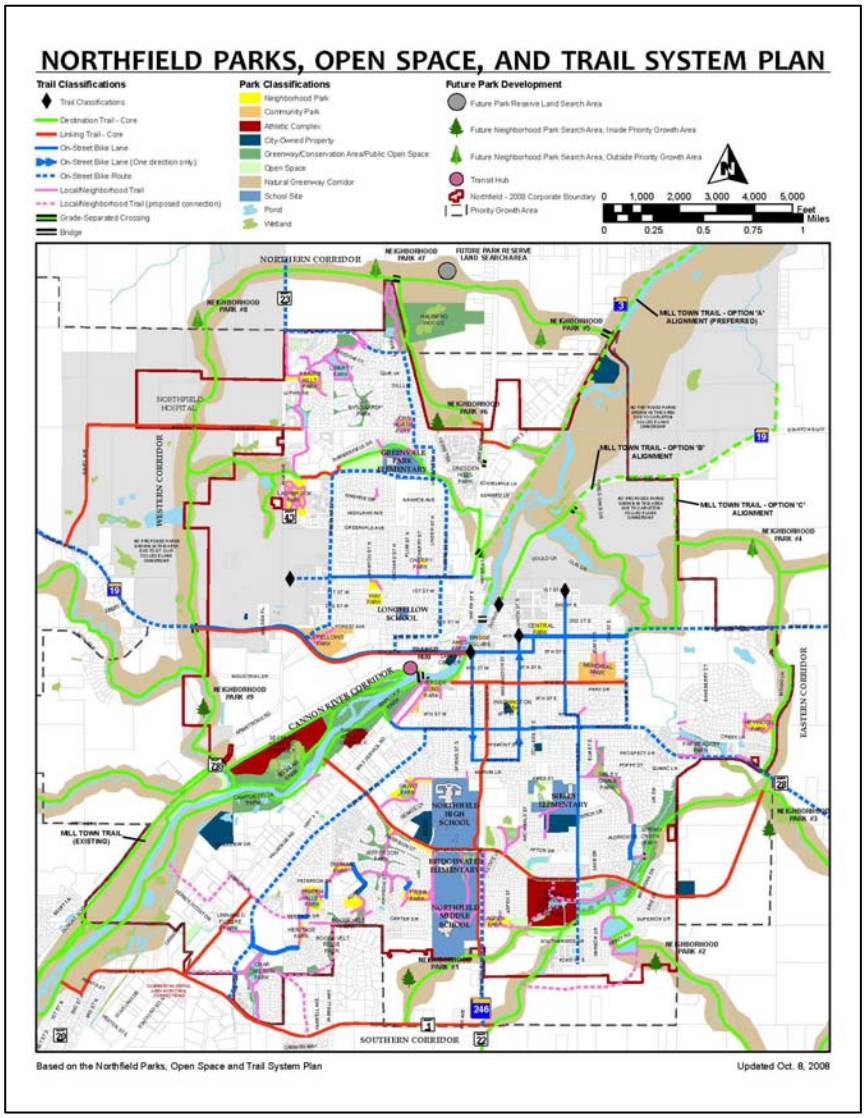
Approximately 7 miles of bike lanes and 10 miles of bike routes are envisioned. Existing and future on-street bike lane routes on several existing and future roadways are identified on the map on the next page. The routes shown on the plan generally follow main arteries through the City, create an on-street loop, and connect with the trail system in multiple locations. The routes were selected to enhance bicycle-based access to local schools, public facilities, and college campuses. The plan further explains that expansion of the on-road bikeway system may be warranted over time, depending on use patterns and public demand.[1]

[1] City of Northfield Parks, Open Space, and Trail System Plan. March 2008.

4.1.3 Off-Street Trails and Sidewalks

In addition to the on-road bikeways described in Section 4.1.2, the Parks, Open Space, Trail System Plan describes four other types of trails, destination trails, linking trails, sidewalks, and natural trails. Planned off-street trails are illustrated on the map below. The function of these trails are as follows.

- Destination Trails – Destination trails are paved trails for walking, jogging, bicycling, and in-line skating located within a greenway, open space, park, parkway, or designated trail corridor. In Northfield, these trails will be the backbone of the greenway-based trail system that loops the City and connects to adjoin communities and college campuses. These types of trails are of moderate to high value to families, recreational, and fitness users. Transportation users also receive value, but to a lesser extent.



For a larger version of this map, please refer to the Parks, Open Space, and Trails Plan.

- Linking Trails – Linking trails emphasize safe travel for walking, jogging, bicycling, and in-line skating to/from parks and around the community. Linking trails are most often located within road rights-of-way or utility easements. In Northfield, linking trails will be primarily used as a means to connect neighborhoods and developed areas to the destination trail system, and provide safe routes to schools. They provide safe and often convenient travel for families, but recreational value diminishes as separation from traffic decreases and traffic volumes increase. If continuity is provided, they still have value to fitness and transportation users getting from one place to the next.

- Sidewalks – Sidewalks emphasize safe travel for walking and jogging within residential areas and business districts and to/from parks and around the community. Although biking and in-line skating are allowed on sidewalks, the narrower width and concrete surface limit their use for this purpose. Sidewalks are most often located within road rights-of-way of a Local Street. In Northfield, sidewalks work in concert with linking trails and are primarily used as a means to connect neighborhoods and developed areas together and to the destination trail system, as well as provide safe routes to schools. Families will use them to get to a park, a trail, or around the neighborhood, as is the case with recreational walkers. Sidewalks are generally less friendly to family bikers. Recreational bicyclists and in-line skaters will use streets to avoid sidewalks. Fitness and transportation users will use whichever is most convenient.

- Natural Trails – Nature trails are commonly used in areas where natural tread is desired and harmony with the natural environment is emphasized. Use is limited to hikers and joggers in Northfield. Natural trails will be primarily used in nature areas and as secondary connections to the destination trail system, especially within a preserved natural area or conservation easement.[2]

4.1.4 Transit Services

Northfield Transit has developed a proposed concept for a transit hub/multimodal facility through the use of grant funds received from the Federal Transit Administration and a 20% local funding match provided by the City of Northfield. This hub is proposed to serve as a transit hub/transfer station, park & ride location, intercity hub, and trailhead. As of the development of this Transportation Plan, the project is proposed to be located in Laurel Court. This location is near the intersection of TH 3 and TH 19 in Northfield. The location provides connections to the Mill Towns State Trail, bike paths, and sidewalks providing interconnectivity throughout the community.[3] The location is also adjacent to the railroad line in Northfield, which may provide an opportunity for passenger rail service in the future. Existing and future planned transit services in Northfield are illustrated in Figure 4.1-2.

Section 3.5.8 – Rice County Transit and Section 3.5.9 – Dakota County Transit Plan Study describe study findings and potential opportunities that may be explored to enhance transit service within Northfield, as well as linking Northfield to areas outside of the City through internal to external and external to internal trips.

Building on Objective 9 – Improve Transportation Choices and Efficiency of the Land Use Section of the Draft Comprehensive Plan, the Transportation Plan recognizes that opportunities exist to improve the viability of transit service through land use planning and roadway planning initiatives. Strategies as described in the Dakota County Transit Plan to improve the ability to provide transit service may include

[2] See also City of Northfield Parks, Open Space, and Trail System Plan.
[3] City of Northfield. 2007. Northfield City Council Resolution 2007–130, December 17, 2007.

- Road-grid networks that allow for barrier-free transit access to, within, and through the development to ultimately enable the local transit agency to provide more efficient service

- Allow compact, vibrant, mixed-use development where transit and walking, rather than the automobile, are accommodated as primary modes of transportation

- Require development, through zoning, to be the most design and density intensive near transit stops or along established transit priority corridors. Such developments should include interconnected pedestrian/bikeway pathways that lead to interesting and varied first-floor uses. Specifically addressing residential developments, the Federal Transit Administration calls for density to be at least seven units per acre to support bus service every thirty minutes. At about thirty units per acre, bus service at every ten minutes becomes sustainable.

- Residential development should include pedestrian/bikeway pathways that are maintained year-round, are illuminated at night and visible from commercial and residential areas for safety and security

In the case of commercial, office, and governmental projects, the City of Northfield may require developments to support existing and future transit service by

- Ensuring that all roadway geometrics, such as turning radii, pavement depths, and road widths, accommodate the range of transit vehicles in operating service

- Locating transit stops/shelters or waiting areas near facility entrances that shelter transit users from heat, cold, and precipitation

- Providing passenger amenities such as lighting, benches, bicycle facilities, and attractive landscaping that buffer pedestrians from fast-moving traffic

- Linking developments from "door to door" with pedestrian/bikeway pathways

- Requiring automobile parking to be located in rear or side yards [4]

[4] Draft Dakota County Transit Plan, http://www.co.dakota.mn.us/EnvironmentRoads/Transit/PublicTransportation/Welcome.htm. Retrieved on June 9, 2008.

4.2 FORECASTED TRAFFIC VOLUMES

Average annual daily traffic volumes were forecasted for Major Collector and Minor Arterial roadways for the year 2030 using industry accepted modeling methodology. As growth continues in the Northfield area, these travel demand forecasts serve as a basis to understand anticipated capacity and safety challenges, as well as pavement management needs.

4.2.1 TRAFFIC MODELING APPROACH

Travel Demand Forecasting is a process of estimating the future use of a transportation facility based on existing use and anticipated changes. The transportation modes that utilize the system may include passenger vehicles, trucks, transit, rail, and/or non-motorized transportation including, biking and walking. The anticipated changes that may impact the transportation system include changes in land use, transit service, transit or parking costs, roadway connections, and/or roadway capacity.

For the City of Northfield, the forecasts were developed using a forecasting model. The model used was based on the Collar-County Travel Demand Model developed by Mn/DOT. This Collar County model is based off the Metropolitan Council Travel Demand Model for the seven-county metropolitan area.

The Metropolitan Area Model is primarily used to develop transportation forecasts within the seven-county metropolitan area on roadways that had over 1,000 vehicles per day in the year 2000. While the Metropolitan Area Model provides accurate forecasts for the seven-county metropolitan area, it does not provide as much accuracy for adjacent counties.

The Collar County Model is primarily used to develop traffic projections on state highways for the 13 collar counties located outside of the seven-county metropolitan area. The Collar County Model expands the seven-county Metropolitan Area Model to include more accurate traffic and travel forecasts for the surrounding counties, including Rice County, while sacrificing accuracy within the seven-county metropolitan area.

The models provide a systematic procedure for forecasting volumes and take into account the projected changes in regional land use, socioeconomic data, and the regional transportation network. Both of the models reflect the regional pull of traffic to the Twin Cities Metropolitan Area. The transportation network in the models is composed of roadways, transitways, and passenger railways. Since Northfield is at the border of both the Metropolitan Area and Collar-County Models, the Collar-County Model was adapted and calibrated for Northfield itself, while ensuring accuracy into Dakota County to reflect travel patterns by traffic to and from Northfield and Rice County.

4.2.1.1 FORECASTING PROCESS

Development of the models followed the standard four-step Urban Transportation Planning (UTP) modeling procedure. This procedure includes trip generation, trip distribution, mode choice, and route assignment.

Trip Generation is the process to develop the number of trips that will be coming into and out of a zone. The process uses income, household size, household location, vehicle availability, employment type, employment location, number of employees, travel times, and travel distance to develop the productions and attractions for use in trip distribution. These productions and attractions are also referred to as person trip ends. A person trip is a one-way journey between two addresses by one person. A trip end is the start point (production) and end point (attraction) of each trip. Consequently, one trip results in at least two trip ends.

Trip Distribution is the process to determine where a trip starts and where it ends. The process uses person trip productions, person trip attractions, travel times, travel costs, and scales of development activity to develop the trips and estimate where the trips will start and where trips will end. Where there is a higher activity of employment, more trips will be destined there. This is readily evident within the Twin Cities by looking at such examples as downtown Minneapolis or the I-494 corridor. This is also true when looking at residential development. There is a higher activity of trip productions in highly residential areas.

Mode Choice is the process of determining which mode of travel will be used to get from one point to another. The process uses distributed person trips, travel times, travel costs, income, auto ownership, and parking costs to develop estimates of which trips will use which mode. The modes include single occupant vehicle (SOV), high occupancy vehicle (HOV), transit, walk, and bike.

Route Assignment is the process of determining which routes people will use to get from one point to another. The process uses travel times and travel costs to develop assignments of SOV and HOV trips to road segments and transit trips to transit route segments. Walk and bike trips are assigned from one zone to another, but are not assigned to actual routes.

4.2.1.2 BASE MODEL

The year 2000 model is the base model for traffic forecasting and evaluation. The Collar County and Metropolitan Area models are based off of collected data from the year 2000 Census, the 2000 Travel Behavior Inventory (TBI), and year 2000 employment information. This data was collected by Mn/DOT and the Metropolitan Council to develop the parameters used in the models.

CENSUS INFORMATION

The year 2000 Census information is available from the U.S. Census Bureau. The year 2000 Census provides a collection of data for all areas of the country based on

smaller zones (traffic analysis zones - TAZs). Within each zone are the number of households, the population, and the average income for the people living in the zone, in addition to ethnicity and many other factors. Further detailed data was also collected by the Census Bureau on a more limited basis such as income, place of work, journey to work, and vehicle availability.

TRAVEL BEHAVIOR INVENTORY

The year 2000 TBI was completed by the Metropolitan Council and is the most recent travel survey of the region. It included a home interview survey (HIS), external station traffic counts, an external station origin/destination survey, and a highway speed survey. The HIS collected information to measure person trips by motorized and non-motorized means (e.g. walking and bicycling) within the seven-county metropolitan area and within the 13 counties in Minnesota and Wisconsin that surround the seven-county area. The scope of the HIS involved the collection of 24-hour weekday travel characteristics and socioeconomic data from a sample of households in the study area. The data is primarily used for validation and/or recalibration of regional trip-generation, trip-distribution, and mode-choice models and the trip-assignment process. Data from the HIS are specifically used to describe the relationships between demographics and travel behavior. [5]

The 2000 TBI collected data from multiple surveys sent to individuals. It helped to determine traffic behavior and helped determine how people tend to travel within this area of Minnesota and where they do their shopping or where they work based on travel length and travel time. As traffic increases and travel times increase, people may find alternate routes, alternate modes of travel, or alternate locations to work or shop. Additionally, data on travel modes was collected including transit use, walking use and distances traveled, and other non-motorized travel uses and distances traveled.

Additional data was collected by Bolton & Menk to verify and expand the model for use by the City of Northfield. Traffic counts and roadway attributes (including roadway connections, traffic control, capacity, speed, and functional classification) were collected in the study area for the purpose of developing and validating the model.

Historical and current year traffic count data in the study area was collected from Mn/DOT and available traffic counts from Rice and Dakota Counties. This information included peak hour, as well as average daily traffic volumes. The model highway network was reviewed in detail for conformity to current conditions. This included a check of current roadway functional classification, speed limits, number of through lanes, and roadway capacity. This check was completed for Northfield and the area influencing the City of Northfield.

[5] 2000 Travel Behavior Inventory, Metropolitan Council. August 2003.

4.2.1.3 SOCIOECONOMIC DATA

The socioeconomic data outlines the existing and forecasted population, households, and employees within the City. This information helps to determine where people will travel to work or shopping based on the density of those uses within and outside of the City of Northfield.

BASE YEAR DATA

The year 2000 Census data was collected from the U.S. Census Bureau, while employment information for year 2000 was estimated by City staff to identify the trip attractions within the City. For areas outside of Northfield, the base socioeconomic data in the 2000 Collar-County Model was used.

FUTURE YEAR DATA

Land use data for year 2030 was received from the City of Northfield based on the future land use vision within the urban growth boundary identified in Map 4.5 – Framework and Pattern Map of the Land Use Section of the Draft Land Use Plan. The projected population, households, and employment data was aggregated into the TAZs as illustrated in Figure 4.2-1 for the 2030 traffic modeling scenario. For areas outside of Northfield, the base socioeconomic data in the 2030 Collar-County Model was used. Year 2000 and 2030 socioeconomic information by TAZ is displayed in Appendix E – Transportation Analysis Zone Forecasts.

4.2.1.4 TRANSPORTATION ANALYSIS ZONES (TAZS)

The land area within the model is broken up into smaller zones, much like the Census data. These zones are designated TAZs in the model, but they provide the same information as the U.S. Census Traffic Analysis Zones. The collected socioeconomic information including population, households, and employment is assigned to these individual TAZs. The TAZs provide the trip ends that are used in the model process. The boundary of a TAZ is primarily based on the different land features that are located within the model study area. These features include roadways, land use data, and land features such as wetlands, waterways, bluffs, or railroads. The TAZ boundaries are illustrated in Figure 4.2-1. The original TAZs within the Collar County model were split into smaller zones for the Northfield model. This allows for forecasting traffic projections onto additional roadways other than those that are included within the Collar County model.

The TAZs for the City of Northfield are based on the Census blocks, land use, existing and future roadway network, and land features, including railroads and waterways. The zones identify how and where trips enter and exit from the roadway network. The center of a zone is defined as a centroid and how the zone connects to the roadway network is defined as a centroid connector. The zones include both the productions (households) and the attractions (employment).

4.2.1.5 MODEL ADJUSTMENTS

Changes to the Collar County model were completed to provide specific transportation forecasts for the City of Northfield. County and other major local roadways were added to the roadway network. These include roads designated as Major Collectors and above within the City of Northfield (and some important Minor Collectors and Local roadways) and other important County Highways located outside of Northfield that traffic from the City uses to travel from one destination to another. The roadways were populated with the appropriate attributes based on regional model documentation to be consistent with the regional model parameters.

Because of the "regional" nature of the model, the roadways are categorized into a select number of functional classifications. Thus, roadways that have minor differences may have the same functional classification within the model. Some roadways in the study area were refined to reflect these minor differences. Specifically, Local and Minor Collector roadways were defined as collectors, but were adjusted with a lower capacity and speed than a typical Major Collector.

The Collar County Model was originally built with larger TAZs around Northfield. In total there were five zones for the area that included Northfield, Dundas, Northfield Township, and Bridgewater Township. These areas were broken down into approximately 100 smaller zones for the Northfield Model to provide more detailed output of the model at the city level. The socioeconomic information was distributed to each new TAZ based on information from the U.S. Census blocks, aerial photos, ground observations, and City staff input.

Model parameters were initially adjusted to take into account the non-motorized vehicle mode use in the City of Northfield. Non-Motorized mode data was collected for the City of Northfield and other cities within the Collar County and Metropolitan Area models. The differences in use of modes and percentage of users utilizing bike or walking was taken into consideration by adjusting model parameters to account for the larger percentage of non-motorized use in Northfield, as compared to the rest of the regional and collar county area.

The following table illustrates the increased use of non-motorized transportation modes within the City of Northfield compared to other cities in the region and the country for work based trips.

TABLE 4.2.1-1 – COMPARISON OF NON-MOTORIZED TRANSPORTATION MODES BY CITY

City/Area	Walk	Bike	Drive Alone	Carpool	Transit
Northfield, MN	28.5%	1.6%	58.6%	11.3%	0.0%
Faribault, MN	2.1%	1.1%	81.6%	15.3%	0.0%
Minneapolis, MN	6.3%	2.6%	64.9%	11.5%	14.7%
Saint Peter, MN	22.9%	0.0%	68.2%	8.9%	0.0%
Mankato, MN	8.9%	0.0%	78.1%	10.9%	2.1%
Winona, MN	11.0%	2.1%	78.5%	8.4%	0.0%
Hopkins, MN	3.1%	0.0%	79.6%	11.5%	5.8%
Saint Cloud, MN	5.2%	0.0%	81.2%	11.0%	2.6%
Red Wing, MN	4.1%	0.0%	83.9%	10.4%	1.6%
Belle Plaine, MN	3.7%	0.0%	85.3%	11.1%	0.0%
Hastings, MN	2.6%	0.0%	86.5%	10.9%	0.0%
Lakeville, MN	0.0%	0.0%	87.8%	10.6%	1.6%
Eden Prairie, MN	1.1%	0.0%	88.9%	7.4%	2.6%
Madison, WI	11.2%	1.6%	70.2%	10.1%	6.9%
Davis, CA	4.2%	15.8%	63.7%	9.5%	6.8%
Boulder, CO	9.7%	7.5%	64.0%	9.7%	9.1%
Portland, OR	5.9%	1.6%	67.6%	12.8%	12.2%

Source: City-Data.com. The percentages given depend of the number of respondents and may not be 100% accurate.

To account for the large percentage of non-motorized travel modes within Northfield for work trips (28.5% walk, 1.5% bike, 70% drive), the initial model parameters for the use of the transportation modes was adjusted from the default values within the Collar-County Model (0.5% walk, 0.5% bike, 99% drive).

4.2.1.6 BASE MODEL VALIDATION

The Northfield model was applied for the base year to validate its projections against the observed traffic count information. The assigned volumes, peak hour factors, and distribution factors from the 2000 model were compared to the collected 2000 traffic counts. The model was also validated using the 2001 to 2006 traffic count data, aerial photos, and field observations. Adjustments were made to regional model parameters, centroid locations, and additional centroid connectors were added to help smooth volumes along individual roadways and more closely match ground counts. The parameters were adjusted multiple times to more accurately reflect the real-world traffic conditions in Northfield for year 2000. These parameters were then carried through to the 2030 Model.

4.2.1.7 FUTURE YEAR MODEL

The future year model used the adjusted base model parameters to establish a no-build scenario. New roadways were added to provide additional connections throughout the City and planned improvements to existing roadways were included. Additionally, functional classifications, speeds, and capacities were adjusted based on the expected future roadway attributes. These improvements and new roadways provided the anticipated future roadway network to handle anticipated City growth. Anticipated improvements to the existing roadway system included the widening of TH 19 to a four-lane divided facility and the addition of the northwest corridor.

The model for the forecast year (2030) was run, taking into account the anticipated regional network changes, changes in socioeconomic data, and the adjustments made to the 2000 model run, to generate the projected volumes.

4.2.1.8 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 the model output. A series of selected link assignments were performed and the model estimated volumes were adjusted to more accurately reflect the existing and future traffic patterns within the study area. The checks for reasonableness on 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 – 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 – 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 Metropolitan Council and Mn/DOT

- Daily Traffic Growth Factors – daily traffic forecasts from the model on the state roadways were compared with the historical daily volumes and with the regional model results from Metropolitan Council and Mn/DOT

4.2.1.9 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 10 if less than 1,000 or to the nearest 100 if more than 1,000

- 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"

4.2.1.10 Future Model Adjustments

The travel demand model and post processing within the Northfield Transportation Plan provides an accurate level of forecasting to 2030. As the model is further refined in the future, model modifications are advised. The Northfield model is similar to the regional model in that the number of college students is allocated to the TAZs along with any Census population. While this may be accurate for colleges where a large number of students live off campus, St. Olaf and Carleton Colleges behave similarly to the University of Minnesota in relationship to determination of trips. This was accounted for during post processing of the model. Future modeling efforts should refine the socioeconomic data within the college TAZs. This would provide more consistent modeling results with how students actually travel to and from campus.

4.2.2 FORECASTED TRAFFIC VOLUME RESULTS

Based on the travel demand modeling approach described in Section 4.2.1., average annual daily traffic volumes were forecasted for Major Collector, Minor Arterial, and Principal Arterial roadways. The three travel demand scenarios evaluated and the figures displaying the 2030 forecasted traffic volumes results are as follows

- No new Cannon River bridge – Figure 4.2-2
- A new bridge at Jefferson Parkway – Figure 4.2-3
- A new bridge at a realigned CSAH 1 – Figure 4.2-4

The purpose of analyzing these three scenarios was to understand the differences in accommodating the motorized vehicle needs of northeast Rice County between the two bridge options identified in the CSAH 1 Corridor Preservation Study (see also Section 3.5.4), as well as the traffic implications of doing nothing. The figures display the differences in traffic volumes with each option and display how traffic disperses through the City based on preferred route, congestion, the new routes, and areas of development. The forecasted traffic volumes will serve as the basis for the City of Northfield to make decisions on roadway design features to accommodate long-term planned growth. Following is an overview of the findings overall and relating to differences between the scenarios

- There are minimal differences in forecasted 2030 traffic volumes between the CSAH 1 and Jefferson Parkway bridge options.
- The preferred route to/from the west, including I-35, is TH 19. Congestion on TH 19, even with the planned expansion of 19 to 4-lanes, shows the need for alternate routes from downtown Northfield to/from the west.
- The Northwest Corridor diverts traffic from CSAH 23/43, west of Lincoln Street and Greenvale Avenue.
- The extension of North Avenue to TH 3 provides an important alternate route for east-west traffic on the north side of the City.
- The three east-west routes of North Avenue, Lincoln Parkway, and Greenvale Avenue carry approximately the same volume of traffic. This is because they serve primarily local traffic, eliminating the need for traffic to be funneled to fewer Major Collector roadways. Thye Parkway carries less due to its location further north, closer to the fringe of planned growth in 2030. Without multiple east-west routes providing mobility consistent with the Major Collector design standards outlined in Section 2.4, the other routes will be fully congested.

- To avoid congestion on TH 3, including the intersection of TH 19 and 5th Street, traffic is forecasted to use the route of Greenvale Avenue to Lincoln Street to Forest Avenue to Armstrong Road to move between TH 3 and TH 19 and the southwest area of the City.

- Jefferson Parkway is forecasted to become very congested between TH 3 and TH 246 (Division Street) under all scenarios. If a bridge is constructed across the Cannon River at Jefferson Parkway, this segment is anticipated to have even higher congestion levels. With no mobility improvements to Jefferson Parkway, traffic is forecasted to divert along Division Street to Woodley Street and CSAH 1.

4.2.3 Roadway Safety & Capacity Needs

The forecasted peak hour travel demands approach or exceed daily capacities on several corridors. Generally, the recommended Geometric Design Standards and associated right-of-way width requirements illustrated in Section 2.4 will provide sufficient capacity to accommodate the forecasted traffic volumes on the City's roadways; however, in certain locations a 4-lane corridor will be necessary. Table 2.4.4-1 – Roadway Types and Capacities identifies various roadway types and the daily capacities that the given roadway can accommodate. This information is a helpful guide to understand how much traffic a given roadway can accommodate on a daily basis. It does not, however, give a good indication as to how much traffic a given roadway can accommodate during the busiest travel periods of the day. Generally, the peak hours of travel are from 7:00-8:00 during the AM and from 5:30-6:30 during the PM. Detailed corridor and intersection analysis is needed to identify the roadway or intersection improvements necessary to provide reasonable mobility during the busiest travel periods of the day.

Figures 4.2-2, 4.2-3, and 4.2-4 identify the existing roadway segments where capacity improvements will be needed to accommodate the future traffic volumes forecasted during the peak hours. The tables found in Appendix D further describe historical and 2030 traffic volumes and capacities for each of the scenarios. Capacity improvements are recommended on any roadway with a future level of service of D, E, or F, as defined in Section 2.4.4. Roadways identified as near congested (having a volume to capacity ratio between 0.75 and 1) or congested (having a volume to capacity ratio greater than 1) are recommended to be monitored and programmed for capacity improvements when necessary. Roadways that are periodically congested (having a volume to capacity ratio between 0.5 and 0.75) are generally identified as providing an acceptable level of service. The development of the future roadway network illustrated in Figure 4.1-1 is necessary to provide alternatives to the routes recommended for capacity improvements. Corridors within the no bridge scenario recommended for capacity improvements and associated improvement strategies are summarized for several roadways with a volume to capacity ratio over 0.5.

STATE ROADWAYS

TH 3 north of CSAH 1 to Jefferson Parkway is forecasted to be periodically congested. The rest of TH 3 in Northfield to north of CR 96 is forecasted to include segments that vary between near congested and congested levels. Challenges exist for making significant improvements to TH 3 between Jefferson Parkway and 2nd Street due to the proximity of the Cannon River and adjacent land uses. Additional difficulties with expanding capacity along the corridor relate to the ability to improve the capacity of intersections along the corridor.

The proximity of the Cannon River and adjacent land uses present challenges for improving mobility along TH 3.

Together, these challenges on TH 3 contribute to congestion on roadways that intersect with TH 3, such as Greenvale Avenue. While Greenvale Avenue could be improved to provide additional capacity between Spring Street and TH 3, the value added to Greenvale Avenue may be minimal if capacity isn't improved on TH 3. A comprehensive, detailed operational analysis study would be necessary between Jefferson Parkway and 2nd Street to evaluate improvement operations to TH 3. North of 2nd Street to Fremouw Avenue, it may be possible to expand TH 3 to a 4-lane divided roadway. This study would need to consider how these improvements would impact the corridor south of 2nd Street.

Evaluating improvements to the TH 3/TH 19/5th Street intersection to include additional turn lanes and an additional through lane on TH 19/5th Street would help improve mobility on TH 3. The 5th Street bridge would need to be reviewed to determine if a solution could be implemented without replacing the bridge.

TH 19 West of TH 3 is forecasted to be congested from TH 3 west to CSAH 78/Armstrong Road, and near congested west to I-35 with the future 4-lane divided highway improvements planned to occur after 2015. The intersection improvement noted above in the TH 3 discussion would also help improve mobility of TH 19. Construction of an additional Cannon River crossing would also improve congestion on this corridor.

TH 19 East of TH 3 is forecasted to be near congested from TH 3 to Spring Creek Road. On the 2nd Street alignment, contributors to congestion include the intersection with TH 3, width of the bridge across the Cannon River, and proximity of the Division Street and Washington Street intersections. A new configuration of the 2nd Street, Division Street, and Washington Street intersection may help mobility on the corridor.

TH 246 north of Jefferson Parkway along Division Street and west on Woodley Street to TH 3 is forecasted to be congested. South of Jefferson Parkway, the corridor is forecasted to be periodically congested to CSAH 1. It provides access to destinations in downtown Northfield. TH 246 and CSAH 1 are being used to avoid congestion on Jefferson Parkway west of Division Street. There is limited expansion potential north of Jefferson Parkway and on Woodley Street west of Division Street without significant impacts to adjacent land uses due to limited right-of-way and the proximity of structures to the street. Expansion and improved capacity of Jefferson Parkway would reduce congestion on TH 246.

COUNTY ROADWAYS

Most County roadways in the Northfield area are forecasted to be periodically congested or near congested during the peak travel hours as development increases and travelers seek alternative routes to access downtown Northfield or avoid TH 3 and TH 19. The City will need to work with Rice and Dakota Counties to preserve right-of-way, review and monitor traffic volumes and intersection operations, obtain additional right-of-way, as well as stage and fund improvement strategies that will become necessary as development occurs. Following is an overview of the levels of congestion forecasted for County roadways.

- The *Northwest Corridor* between TH 19 and 80th Street and north of CR 96 is anticipated to be periodically congested if designed with a two-lane roadway. The segment between 80th Street and the extension of Thye Parkway is forecasted to be near congested approaching 10,000 vehicles per day. When this corridor is designed and ultimately constructed, it will be necessary to consider an urban 3-lane or 2-lane divided corridor design.

- *CSAH 43* is anticipated to experience congestion levels in 2030 similar to those experienced today and be periodically congested. This is due to the new Northwest Corridor's ability to more efficiently accommodate trips to future development in northwest Northfield.

- *CSAH 78* is forecasted to be near congested south of the future Major Collector roadway following the 95th Street alignment. North of this alignment, the corridor is anticipated to be periodically congested. This congestion is due to travelers seeking options to traveling on TH 3 and new growth in southwest Northfield and western Dundas. New Major Collector roadways west of CSAH 78 help provide options for travelers to access TH 19.

- *CSAH 1* is anticipated to be near congested through downtown Dundas and periodically congested west of Decker Avenue and east of TH 3. Congestion east of TH 3 relates in part to congestion on Jefferson Parkway west of TH 246. West of Decker Avenue, congestion on CSAH 1 is due to travelers seeking access to I-35.

- *CSAH 47* is forecasted to be periodically congested. This is result of overall growth in the region and a desire for traffic to access northeast Dakota County and the TH 61 Mississippi River crossing located in the City of Hastings.

- *CSAH 28* is forecasted to be periodically congested from Hall Avenue to TH 246/Division Street. Between Hall Avenue and Jefferson Parkway and between Washington Street and Division Street, the corridor is anticipated to be near congested with volumes increasing from 3,100 in 2005 to 10,000 vehicles per day in 2030. These increases are a result of additional residential development anticipated in eastern Northfield and improved mobility provided on Jefferson Parkway between CSAH 28 and TH 246. Improvement options to Woodley Street west of Hall Avenue are limited, as noted above in the TH 246 discussion, due to anticipated right-of-way impacts.

LOCAL ROADWAYS

Several roadways are anticipated to be periodically congested in Northfield, and some segments of these roadways are forecasted to be near congested. Following is an overview

- *Lincoln Parkway, and Greenvale Avenue* are forecasted to be periodically congested west of Spring Street and near congested between Spring Street and TH 3. *North Avenue* is forecasted to be periodically congested west of Dresden Avenue and near congested between Dresden Avenue and TH 3. As noted in Section 4.2.2, these three east-west routes carry approximately the same volume of traffic. Thye Parkway carries less due to its location further north. Without multiple east-west routes providing mobility consistent with the Major Collector design standards outlined in Section 2.4, the other routes will be fully congested. *Dresden Avenue* is anticipated to be periodically congested between Thye Parkway and North Avenue due to new development's desire to access TH 3. Congestion on TH 3 and TH 19 contribute to increased traffic volumes on these roadways due to travelers' desire to seek alternatives to those routes. As noted in the TH 3 discussion, benefits to improve near congested segments may be limited due to congestion along TH 3.

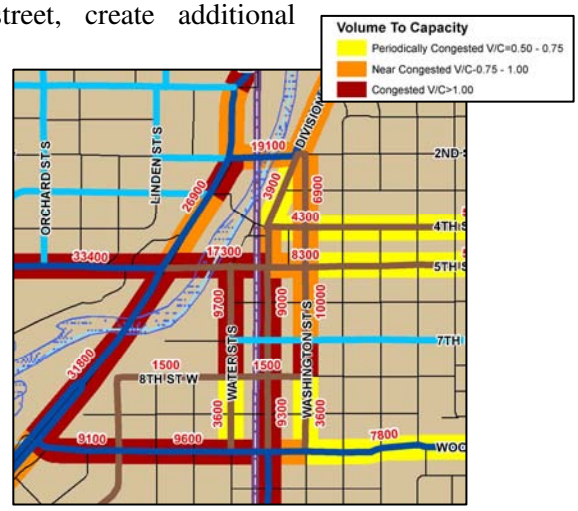
- A segment of a *new Major Collector corridor west of CSAH 78* is forecasted to be periodically congested. This is a result of future residential areas in southwest Northfield seeking alternatives to access TH 19 to reach I-35.

- *Jefferson Road* is forecasted to be periodically congested. This is due to congestion on TH 3 and travelers' desire to access land uses along the corridor.

- *4th Street* from Division Street to Prairie Street is anticipated to be periodically congested. This is a result of developing areas desire to access downtown Northfield, TH 3, and TH 19. Improvement options may result in right-of-way impacts to adjacent properties. Although 7th Street was not modeled, it is anticipated that congestion on the roadway would be similar to that on 4th Street, since it serves much the same trip purposes.

- *5th Street* from TH 3 to Prairie Street is forecasted to range from congested on the west to periodically congested on the east. Similar to 4th Street, this is a result of developing areas desire to access downtown Northfield, TH 3, and TH 19. Improvement options may result in right-of-way impacts to adjacent properties.

- *Water Street, Division Street, and Washington Street* are anticipated to have congestion levels ranging from periodically congested to congested between Woodley Street and 2nd Street as illustrated in the adjacent graphic. This is primarily a result of downtown Northfield being an important destination due to its commercial, retail, and civic land uses. Pedestrian and bicycle activity, along with truck deliveries in the street, create additional challenges. A study to consider the merits of one-way directional traffic may conclude that additional capacity can be provided without significant right-of-way impacts. An option to improve mobility may include converting the on-street angle parking to parallel parking to improve safety and avoid delays with vehicles backing up into the travel lane. This would also improve the safety of bicycle traffic. As properties redevelop, orientation of delivery access to the rear of the property may also assist in improving mobility.



Forecasted traffic volumes and levels of congestion anticipated in 2030 based on planned land uses.

- *Prairie Street* between Woodley Street and 7th Street is forecasted to be congested and periodically congested between 4th and 7th Streets. This is a result of traffic avoiding congestion on other busy streets in downtown Northfield. Improving the mobility on Woodley Street and Washington Street would likely decrease congestion levels on Prairie Street.

SAFETY

As traffic volumes increase on roadways, safety is consequently decreased if necessary improvements are not made. As roadway improvements are made to increase capacity, it is important that they also increase safety for motorized and non-motorized traffic. Crashes throughout the City should be monitored for patterns. A safety study should be completed for those areas to comprehensively look into issues, possible needs, and correctable solutions.

INTERSECTIONS

Existing and proposed intersection locations may have inadequate sight distances. Sight lines at these locations may be 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.

Figure 4.3-1 identifies several potential locations that may require an intersection control evaluation. These intersections are prioritized as to which studies should be initiated in the short, mid, and long-term. The intersection control evaluation will identify the traffic control option (e.g. all way stop, roundabout, possible signalization) and capacity improvements (e.g. turn lanes) necessary to accommodate the traffic volumes in a safe and efficient manner. Intersections should be designed to properly handle the anticipated motorized and non-motorized traffic through the use of turn lanes, pedestrian crossings, and/or alternate traffic control (e.g. all way stop, roundabout, possible signalization) at intersections. Access management, as outlined in Section 2.4.4, 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.

4.3 PAVEMENT MANAGEMENT NEEDS

The City of Northfield's pavement management software is a tool that the City uses to establish a pavement condition index (PCI) rating goal. The information from this software is used to develop optimum maintenance and repair strategies during the annual capital improvement planning process to cost effectively maintain the City road system. The City's target PCI rating goal is 70. Factors other than PCI identified by the City of Northfield that will be considered when determining roadway candidates for reconstruction or renovation are outlined in Section 2.8. This strategy provides the City with a systematic approach to plan for and prioritize pavement management that is consistent over time. Developing and preserving a consistent funding source will be imperative to effectively manage future overall pavement maintenance costs, because inconsistent funding levels can result in increased costs and declining pavement conditions.

4.4 ROADWAY JURISDICTION

The future roadway network and functional classification identified in Section 4.1, together with the guidelines for jurisdictional designation identified in Section 2.2, were used to identify roadways candidates for jurisdictional transfer. While this Plan recommends a number of potential transfers, it is understood that not every candidate will actually be transferred as proposed in this Plan and that some revisions in the Plan may be made in the future based on changing needs and situations.

As identified in Rice County's Transportation Plan, the Northwest Corridor, including Decker Avenue from CSAH 1 to CSAH 23 in Dakota County, is identified as a transfer candidate to the County. The corridor would serve regional travel and as a Minor Arterial roadway will be designed to provide regional mobility through northeast Dakota County. Upon completion of this corridor, CSAH 43 and CSAH 78 are identified as being candidates for transfer from Rice County to the Cities of Northfield in Dundas since they will primarily serve local travel between the cities. While not identified in the Dakota County Transportation Plan, it would be reasonable for Dakota County CSAH 23 to transfer to the City of Northfield and Greenvale Township upon completion of the Northwest Corridor.

CR 79 is identified for turnback from Rice County to the City of Northfield and Northfield Township in the County's Transportation Plan. Traffic using this route is local and does not extend beyond the immediate properties it serves. CSAH 28 provides for regional travel in this area of the County.

Ibson Avenue/Canada Avenue is identified in the County's Plan as being part of a future continuity corridor through eastern Rice County. Discussions will be necessary with the County to determine when a transfer of jurisdiction would be appropriate

TH 246 north of CSAH 1 is identified as a corridor study necessary with Mn/DOT and Rice County to discuss a potential jurisdictional transfer from the state to the City, or possibly the County. Despite the challenges of expanding this corridor to provide more mobility, transferring the corridor to the City could allow the City to prioritize and complete necessary improvements in a timeline that would likely occur sooner than Mn/DOT would prioritize the corridor for improvements. The study may need to consider how a potential jurisdictional transfer would impact CSAH 28. County state aid eligibility requirements state that designated corridors need to begin or end at either a state highway or other county state aid route.

Mn/DOT has a turnback fund for improvements to corridors being transferred to another jurisdiction, however, like most transportation funding, the turnback account is limited as well. In Mn/DOT District 6, much of the turnback funding has been or is being used for realignment/new alignment associated with high priority interregional corridors. Following is Mn/DOT's guidance relative to turnbacks[6]

[6] Mn/DOT. http://www.dot.state.mn.us/stateaid/manual/sam07/chapter4/4-4.html . Accessed July 23, 2008.

1. A county, city, or Mn/DOT may initiate turnback discussions. The Mn/DOT contact person is typically the District State Aid Engineer. A common reason a county or city may initiate a trunk highway turnback is that the city or county is interested in improving the roadway. A route on the trunk highway system may play a significant local role, but may be a minor regional or inter-regional transportation route. Turning the road over to the appropriate jurisdiction allows the city or county to control improvements. In some cases, Mn/DOT may initiate an exchange of minor trunk highway segments for higher functioning segments of a city or county system.

2. Eligibility for Turnback Funds: Turnback funds may only be used on released trunk highway routes that have been added to a county's or municipality's State Aid system. After the route has been released from the Trunk Highway system, it is no longer eligible for Trunk Highway funding. Turnback funds may pay for any costs that are eligible for regular state aid funding, such as road or bridge construction, right of way, engineering, utility relocation, railroad adjustment, and locally furnished materials or labor.

3. Eligibility Time Frame: State Aid Operations Rules Chapter 8820.2900 states "approval of plans for the construction of a turnback project is limited to a period of 15 years from the date of reversion. Each approved project must be advanced to construction status within one year after notification to the county or urban municipality that sufficient funds are available for constructing the project. Payment for repair and restoration or reconstruction and improvement of a section terminates eligibility for repair and restoration or reconstruction and improvement of that section with turnback funds."

4. Lump Sum Payment: State Aid Operations Rules Chapter 8820.2300; Subp. 6a states "In lieu of contracting work or force account work, the commissioner, with concurrence of the receiving agency, may enter into an agreement to pay a lump sum payment from the turnback account to the receiving agency's road and bridge account equal to the net value of eligible turnback costs for a project to be constructed within 20 years of the release date".

   This allows the receiving agency the option to use the additional funds to construct some other state aid route that may be in greater need than the route turned back. This way the receiving agencies road system reconstruction priorities may be managed in the best possible way regardless of which account gas tax funds come from.

5. Turnback Maintenance Funds: Counties and cities that include a trunk highway turnback receive annual maintenance funds until turnback funds are expended on the route. The annual maintenance payments may continue up to a maximum of 15 years if no turnback construction project is started. The turnback maintenance payment is made each January.

For counties, maintenance is based on average daily traffic (ADT) and lane miles as follows:

Existing ADT	Turnback Maintenance/Lane Mile/Lane
0 – 999	Current lane mileage apportionment/lane ($1,592)
1,000 – 4,999	2 X current lane mileage apportionment/lane
for each add'l 5,000	Add current lane mileage apportionment/lane

(for example: 6,000 ADT would get 3 times the current lane mileage apportionment/lane)

For cities, maintenance is based on a fixed amount of $7,200 per mile.

6. Drawing Needs in Lieu of a Construction Project: State Aid Operations Rules require that turnback projects begin within 15 years of the date of release of the roadway to the city or county. In cases where a road will not need a major repair within the 15 year limit, the city or county may simply add it to their system as a normal State Aid road instead of receiving turnback funds for a construction project. In these cases, no turnback maintenance funds would be included in their apportionment.

7. Long Term Maintenance: The city or county is responsible for the ongoing maintenance of the routes.