Woodbury is connected with a system of trails, sidewalks, bike lanes and transit as well as roadways. These systems encourage an active, healthy lifestyle and promote community interaction and sustainability. Woodbury promotes regional planning and investments in both roadways and transit that allow residents to travel to destinations outside of the community and to encourage others to visit Woodbury.

Woodbury’s roadway system generally has excellent capacity and operates well. As Woodbury continues to develop and the impacts of roadway construction become more fully considered in the City’s planning process, traffic conditions are likely to worsen. To address this, the City will use appropriate methods to help ensure that travel conditions meet the needs of the community.

The information provided in the remainder of this transportation chapter is organized as follows:

- Background
- Sustainable transportation
- Transportation goals/objectives
- Existing transportation system
- Special transportation issues: CSS, health and safety and Transportation Demand Management (TDM)
- 2030 non-motorized transportation planning
- 2030 transit planning
- 2030 roadway network planning
- Overall transportation implementation

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Sustainable Transportation

Woodbury has developed its own definition of transportation sustainability to reflect its perspectives and intentions:

The degree that a transportation system is sustainable is determined by its ability to simultaneously accomplish the following objectives:

- Optimize the transportation system to meet the current and future transportation needs of users of the system in a safe, effective and economically efficient manner.
- Provide and promote alternative modes of travel.
- Minimize the consumption of natural resources.
- Minimize environmental, economic and social impacts.
- Promote active and healthy lifestyles.
- Support socially cohesive neighborhoods and an economically vibrant community.

Core principles associated with transportation sustainability include:

- Promote land use development patterns that accommodate and encourage efficient trip-making. Coordinate land use and transportation planning so that the transportation system efficiently and effectively supports existing and anticipated future development.

- Plan and design roadways using best practices including functional classification, sound transportation engineering practices, access management guidelines and other proven tools to provide transportation facilities which have good operational and safety characteristics while limiting impacts to livability. An important part of roadway design will also be the guidelines developed by the Roadway Corridor Design Principals Task Force; these guidelines provide for roadway landscaping, limit maintenance and resource requirements and support non-motorized travel.

- Strive to reduce traditional single occupancy vehicular travel through increased non-motorized travel, transit, Transportation Demand Management and other approaches.
Encourage practices which limit the consumption of natural resources. These practices include re-use/recycling of roadway materials as part of reconstruction projects, evaluation of alternative fuel vehicles for City fleets and other measures.

Transportation Goals and Objectives
Sustainable transportation provides an important framework for the overall transportation goals and objectives as outlined below.

Goals
1. Provide safe and efficient movement of people and goods in and through the City, using a multi-modal approach.
2. Support alternative modes of travel, including transit, pedestrian and bicycle travel.
3. Support transit service for Woodbury residents accessing jobs outside the City, for non-residents accessing jobs within Woodbury and for more local trips within the City and the area.
4. Plan and design transportation facilities to maintain good operational and safety characteristics for the projected travel demand.
5. Use effective transportation planning to help address livability issues such as social, environmental and economic impacts associated with the transportation system.
6. Coordinate transportation planning and land use planning such that transportation facilities efficiently match land use requirements and vice versa.
7. Perform transportation planning as a collaborative effort between the City of Woodbury, its citizens, businesses and other government organizations.

Objectives
Transportation Demand Management (TDM)
- Support and promote telecommuting, car pooling, employee transit passes, flex time and other TDM measures by coordinating with county, regional and statewide programs. Coordinate also with adjacent communities on these programs.
- Support and promote TDM measures through public education and promotion activities.
- Review the option of providing a TDM program for City employees.
- Review the option of requiring larger employers and/or employment centers to develop TDM plans.

Non-Motorized Transportation (pedestrian, wheelchair, and bicycle)
- Evaluate and implement extensions to the existing trail network to optimize system continuity and coverage.
- Accommodate and promote bicycle travel within the City in the safest and most efficient means practicable, including evaluating a network of on-road bicycle lanes to complement and augment the trail network.
- Require and promote site design which provides good non-motorized access to commercial and employment areas. Provide non-motorized connections to these sites.
- Continue to implement and refine policy standards regarding the provision of sidewalks and trails on a City-wide basis.

Transit
- Promote I-94 as a light rail transit corridor.
- Coordinate with the Metropolitan Council, Washington County, Mn/DOT and adjacent communities to promote and implement enhanced transit in the East Metro area including express service to the primary downtown areas (St. Paul and Minneapolis) as well as local and suburb-to-suburb service.
- Periodically evaluate the adequacy of transit service and facilities, and work with the Metropolitan Council, Washington County, Mn/DOT and neighboring communities to make necessary improvements.
- Promote/require site design that accommodates transit access and facilities.
- Use transit-oriented design principles for future development where appropriate.
• Promote service within the City that adequately meets the needs of those who cannot drive or readily use more conventional transit service.

Roadways
• Keep the roadway functional classification network up-to-date, and use it as a key element in transportation planning and design. Use the current functional classification system to promote efficient movement of traffic and appropriate design for individual facilities, as well as the overall network.
• Implement corridor design guidelines to promote roadways that operate well, are aesthetically pleasing and that limit social and environmental impacts.
• Use access management guidelines to promote the appropriate balance between mobility and access for different categories of roadway facilities. Periodically review and update City access management guidelines as needed.
• Maintain an on-going and systematic program of street maintenance so that individual streets do not deteriorate unacceptably and life-cycle roadway maintenance costs are minimized.
• Refine and expand traffic-generation based strategies to finance the costs of providing new and expanded transportation facilities as necessitated by new development.

Existing Transportation System

Roadways
Roadways are classified on the basis of which level of government owns and has jurisdiction over them. In the case of Woodbury, roadways are under the jurisdiction of Mn/DOT, Washington County or the City. Figure 9-1 depicts the existing roadway jurisdictional classification system in Woodbury.

The functional classification system is a roadway and street network that distributes traffic from neighborhood streets to collector roadways, then to arterials and ultimately the metropolitan highway system. Roads are placed into categories based on the degree to which they provide access to adjacent land versus provide higher-speed mobility for through traffic. Functional classification is a traditional cornerstone of transportation planning. Within this approach, roads are located and designed to perform their designated function. Figure 9-2 presents the current functional classification system for roadways in or adjacent to Woodbury.

The most current documented traffic volumes within the City are presented on Figure 9-3. The number of roadway lanes are depicted on Figure 9-4.

Figure 9-5 presents the locations and frequencies of crashes based on Mn/DOT data for the period from 2002-2006. Problem locations will be monitored and further evaluated as deemed appropriate by City staff. Intersection safety is routinely addressed as part of larger corridor construction or reconstruction projects. The Mn/DOT data files are such that individual intersections, areas or corridors can be analyzed in detail, comparing local crash rates with district-wide and state-side averages. Locations of crashes that resulted in fatalities were verified with Woodbury’s Public Safety Department crash records.

Transit

Paratransit
Woodbury Dial-a-Ride provides flexible, personalized paratransit service to the general public from 7 a.m. to 6
Legend
- Mn/DOT
- Washington County
- City of Woodbury
- Private Street

Transportation Plan
City of Woodbury
Figure 9-1: Existing Roadway Jurisdictional Classification

Source: Met Council and City of Woodbury
Transportation Plan
City of Woodbury
Figure 9-2: Existing Roadway Functional Classification

Legend
- Principal Arterial
- A Minor Augmentor
- A Minor Reliever
- A Minor Expander
- A Minor Connector
- B Minor Arterial
- Collector
- Local Street
- Private Street
- Planned A Minor Expander
- Planned A Minor Reliever
- Planned Collector

Source: Met Council and City of Woodbury

2007 roadway network depicted. Planned/Potential roadways are depicted with dashed lines.
Transportation Plan
City of Woodbury
Figure 9-3: 2006-07 Daily Traffic Volumes

Legend
2006-07 Average Daily Traffic Volume

City Boundary

Source: Mn/DOT and City of Woodbury

2007 roadway network depicted.
Figure 9-4: Existing Number of Roadway Lanes
Transportation Plan
City of Woodbury
Figure 9-5: Crash Location and Frequency Map 2002-2006

Legend
Number of Crash Events
(Indicates locations with 10 or more crashes during evaluation period.)

10 25 50 75

Crash resulting in a fatality

Source: Mn/DOT CMA
p.m. on weekdays. It is operated by First Transit, a private service provider, under contract to the Metropolitan Council. Small, handicap-accessible buses provide rides for medical appointments, shopping and other activities. Service is provided anywhere within Woodbury, as well as to the Sun Ray Shopping Center in St. Paul, where riders can stop to shop or connect with scheduled transit service. Riders need to schedule rides ahead of time, but can do this the same day of the ride. Woodbury Dial-a-Ride is a shared-ride service, so multiple riders with differing origins and destinations may be on-board at any given time. The fare is $2.00 per one-way trip.

**Scheduled Transit Service and Facilities**

Scheduled bus service is available to Woodbury residents primarily in the form of express commuter service accessing downtown Minneapolis and/or downtown St. Paul. Metro Transit, a division of the Metropolitan Council, provides this service. Routes 351, 353 and 355 stop at park-and-ride lots in the northwest portion of the City. Route 375 stops at a park-and-ride lot just north of I-94 and west of Radio Drive in Oakdale. In general, these routes operate with 20-30 minute headways during the a.m. and p.m. peak periods of travel. Additionally, Route 350 runs between downtown St. Paul and the Century Avenue/Lake Road intersection. This service runs with one-hour headways during the a.m. and p.m. peak periods along McKnight Road and I-94, with a stop at the Sun Ray shopping center.

In addition to express service, a small area of Woodbury is served by local bus service. Route 70 operates between Highland Village in St Paul and the Ramsey Correctional Facility in Maplewood (service area includes downtown St. Paul), including a short stretch of Century Avenue (CSAH 25) between the Correctional Facility and Upper Afton Road. Century Avenue forms the border between Maplewood and Woodbury.

Table 9-1 summarizes the major destinations and service areas for the four Metro Transit routes serving Woodbury. Figure 9-6 displays the fixed-route service and associated park-and-ride lots serving Woodbury.

The park-and-ride lots serving Woodbury as depicted on Figure 9-6 are currently operating close to or at capacity. This issue is further discussed in the 2030 Transit Plan section of this transportation chapter.

---

**Table 9-1: Metro Transit Fixed Routes Serving Woodbury**

<table>
<thead>
<tr>
<th>Route</th>
<th>Woodbury Area Stops</th>
<th>Downtown Minneapolis</th>
<th>Downtown St. Paul</th>
</tr>
</thead>
<tbody>
<tr>
<td>350</td>
<td>Century Avenue (CSAH 25)/Lake Road</td>
<td>--</td>
<td>6th Street and 7th Street</td>
</tr>
<tr>
<td></td>
<td>Woodbury Lutheran Church</td>
<td>--</td>
<td>6th St. and Cedar Street</td>
</tr>
<tr>
<td></td>
<td>Christ Episcopal Church</td>
<td>--</td>
<td>Smith Avenue and Kellogg Boulevard</td>
</tr>
<tr>
<td>351</td>
<td>Guardian Angels Church (Oakdale)</td>
<td>--</td>
<td>6th St. and Cedar Street</td>
</tr>
<tr>
<td></td>
<td>Woodbury Mall Theatre</td>
<td>--</td>
<td>7th St. and Hennepin Ave.</td>
</tr>
<tr>
<td>353</td>
<td>Woodbury Lutheran Church</td>
<td>--</td>
<td>Smith Avenue and Kellogg Boulevard</td>
</tr>
<tr>
<td></td>
<td>Christ Episcopal Church</td>
<td>--</td>
<td>7th St. and Hennepin Ave.</td>
</tr>
<tr>
<td>355</td>
<td>Woodbury Lutheran Church</td>
<td>--</td>
<td>7th St. and Hennepin Ave.</td>
</tr>
<tr>
<td>375</td>
<td>Guardian Angels Church (Oakdale)</td>
<td>--</td>
<td>5th St. and Hennepin Avenue</td>
</tr>
<tr>
<td></td>
<td>5th St. Transit Center</td>
<td>--</td>
<td>6th St. and Hennepin Avenue</td>
</tr>
<tr>
<td>70</td>
<td>Century Avenue (CSAH 25) between Upper and Lower Afton Road</td>
<td>--</td>
<td>5th Street</td>
</tr>
<tr>
<td></td>
<td>--</td>
<td>--</td>
<td>6th Street</td>
</tr>
</tbody>
</table>

SOURCE: Metro Transit and WSB & Associates, Inc.
Transportation Plan
City of Woodbury
Figure 9-6: Existing Transit Service and Facilities
Non-Motorized Transportation

For the purposes of this Plan, non-motorized transportation modes consist of bicyclists and pedestrians. Consistent with Minnesota State Statutes, users of wheelchairs and personal assistive mobility devices such as mobility scooters have the rights and responsibilities of a pedestrian and therefore are included in this category. The City of Woodbury has a network of over 100 miles of mixed-use off-street trails. The existing trails network is shown on Figure 9-7. These trails are valuable community assets and are an important transportation mode for recreational and other trip purposes.

Currently there are no designated bicycle lanes located on roadways. However, bicyclists still can and do use the roadways for travel. Because the roadways under the jurisdiction of Washington County as depicted on Figure 9-1 often have wide-paved shoulders, bicyclists tend to use these facilities. However, many of these County roadways also carry considerable volumes of vehicular traffic, which reduces their compatibility for bicycle usage.

Planning for future bicycle and pedestrian facilities is addressed in the 2030 Non-Motorized Planning section of this chapter.

Goods Movement

Manufacturing/warehouse facilities in Woodbury are generally concentrated in the western portion of the City along Wooddale Drive and Woodlane Drive between Valley Creek Road and Courtly Road/Lake Road. The most notable manufacturing and/or processing operations are EcoWater Systems, located at 1890 Woodlane Drive, and Dean Foods/Land O’Lakes, located at 1930 Wooddale Drive. In addition, there is a significant amount of distribution trucking associated with Llewellyn Books at 2143 Wooddale Drive. There is good access to I-494 from this part of the City, with nearby interchanges at Valley Creek Road and Lake Road. Once on I-494, there is good access to other elements of the regional transportation network including I-94 directly to the north and TH 61 directly to the south and west.

The other primary type of goods movement is delivery of products to retail outlets within the City. The primary retail areas have good access to the interstate system for goods delivery. The primary retail areas and their respective access points to the interstate system are summarized below.

- Woodbury Village – access to I-494 via Valley Creek Road and Bielenberg Drive/Tamarack Road
- Tamarack Village – access to I-94 via Radio Drive
- Woodbury Lakes – access to I-94 via Hudson Road/Radio Drive or Hudson Road/Woodbury Drive
- Woodbury Marketplace – access to I-94 via Hudson Road/Woodbury Drive
- Woodbury Commons – access to I-94 via Hudson Road/Woodbury Drive

There is also significant retail development along Radio Drive and Woodbury Drive. These outlets also have good access to the regional roadway network using those arterial roadways.

The Target Stores Distribution Center located on Hudson Road at Rivertown Drive generates a significant amount of truck traffic. This traffic has relatively direct access to I-94 via Hudson Road and Woodbury Drive or Radio Drive.

Major commercial development may be included in the land use plan for the northeast portion of the City between Woodbury Drive and Manning Avenue, south of I-94. The City has performed extensive traffic analysis to ensure that the roadway system that is developed will accommodate the traffic associated with this development.

Special Transportation Issues

The City of Woodbury defined a series of special transportation issues to be addressed in the transportation planning process. The information provided in this section is a summary of the broader analysis performed by WSB. The issues addressed in this section are:

- Context Sensitive Solutions (CSS)
Transportation Plan
City of Woodbury
Figure 9-7: Existing Trails Map

Legend
- Board Walk 0.3 Miles
- Natural 6.7 Miles
- Paved 112.8 Miles

Source: City of Woodbury

2007 roadway network depicted.
Health and Safety
Transportation Demand Management

Context Sensitive Solutions

Transportation authorities are increasingly implementing a CSS approach, sometimes referred to as Context Sensitive Design, to project development and design. As summarized by the Institute for Transportation Engineers, the core elements of this approach are as follows:

- A common understanding of the purpose and need for the transportation project
- Stakeholder involvement at critical points in the project
- Interdisciplinary team approach to planning and design
- Attention to community values and qualities including environment, scenic, aesthetic, historic and natural resources, as well as safety and mobility
- Objective evaluation of a full range of alternatives

The CSS approach does not employ radically new methods. Rather, it is a change in the prioritization process for the design and construction of transportation projects. In the past, facility functionality was the key consideration in preparing the “best” design. With the CSS approach, functionality remains a very important goal, but other goals are elevated in relative terms. These other goals are defined by the desire to limit social, aesthetic and ecological impacts to the greatest degree feasible and to make the design fit into its context.

There is substantial overlap between the concepts of Transportation Sustainability and CSS. However, Transportation Sustainability includes global resource issues, such as reducing fossil fuels consumption. CSS, on the other hand, is focused on designing individual projects to limit local social and environmental impacts to the greatest degree feasible. CSS can be viewed as a local implementation tool for the broader Sustainable Transportation paradigm.

Roadway Corridor Design Principles Task Force (CDPTF)
As part of the Comprehensive Plan Update process, the City established the DPTF. This group had multi-disciplinary representation, with staff from the Public Works, Engineering, Community Development and Public Safety Departments, as well as the City Administrator and the City’s Sustainability Coordinator. It also included a multi-disciplinary team of consultants. Meeting ten times during the fall and winter of 2007-08, the DPTF accomplished the following tasks:

- Reviewed engineering, environmental, aesthetic and other roadway design criteria, and determined that four criteria would be used to develop design templates for roadway corridors in Woodbury. The four criteria include mobility, safety, sustainability and livability. The definition of sustainable transportation was discussed earlier in this chapter. “Livability” was defined as sensitivity to context; limiting impacts to surrounding land uses; minimizing noise impacts; enhancing aesthetics; providing quality design; providing gateways; connecting neighborhoods for motorists, pedestrians and bicyclists.
- Completed eight design templates for roadway corridors within the City that provide an improved balance of transportation functionality and sustainability/livability goals.

The roadway design templates were for eight different categories of roadways based on functional classification, traffic volumes and adjacent land use. The design criteria cover pavement widths, on-street bicycle lanes, off-street trails and sidewalks, boulevard widths, landscaping and other factors.

Context Sensitive Solutions Guidelines

The following CSS guidelines are recommended to be used on individual transportation projects.

1. Define a clear purpose and need of what the project is to accomplish. This approach guards against facilities getting over-built or improperly designed.

---

1 Context Sensitive Design Solutions in Designing Major Urban Thoroughfares for Walkable Communities, Institute of Transportation Engineers, 2006 (includes authorship and oversight from a broad range of individuals and backgrounds including Reid Ewing of University of Maryland, Peter Calthorpe of Calthorpe Associates, numerous others).
with unnecessary impacts based on an unclear understanding of the purpose of the project.

2. Assemble a multi-disciplinary City staff team early in the project planning and design phase to discuss and establish baseline design parameters. This team would address factors such as transportation functionality objectives, aesthetic considerations, environmental impacts, noise, neighborhood impacts and other social factors. This team would meet periodically as needed through the course of the project to review development of the design concept.

3. Define and implement a public involvement process appropriate to the scope and sensitivity of the project. These programs will be structured and will affirm the City’s ultimate decision-making authority, but will allow citizens to have meaningful input to the project planning and design process. They will also allow citizens to be informed regarding the City’s decision-making process and considerations.

4. For all transportation projects, reference and use the DPTF guidelines described above. If conditions dictate that these guidelines cannot be followed, justification needs to be provided.

Health and Safety

Younger Driver Safety

In the United States, motor vehicle crashes are the leading cause of death for young persons, and young drivers are greatly overrepresented in motor vehicle crashes. Moreover, the late teen years involve continuing developmental changes that characterize the transition from childhood to adulthood. These changes result in a variety of behaviors that can create elevated risk when they occur in a motor vehicle.

In 2008, the State Legislature imposed a curfew and passenger limits on newly licensed teen drivers. This Graduated Driver Licensing (GDL) system provides the foundation for protecting young drivers, their passengers and other road users. This program, which sets restrictions of driving, has been very successful in the United States. In the neighboring state of Wisconsin, which implemented a GDL system that includes nighttime driving restrictions and passenger limits for 16- and 17-year-olds, the number of teen drivers involved in crashes has decreased by approximately 30 percent.

Safe/Healthy Aging

An issue that will be of increasing concern from a transportation perspective for communities throughout the country is the percentage of residents who are elderly. Projections show that the number of Americans over 65 will double in the next 30 years. As people age, their cognitive perceptions and physical reactions decline in a manner that can affect transportation safety. In addition, they become more physically vulnerable and susceptible to injury if they are in an accident as a motorist or pedestrian.

Elders will continue driving because it is often an important symbol of independence, and it provides convenience. Given this fact, design considerations need to increasingly address older drivers and their needs. However, an important goal is to minimize the degree to which elders need or perhaps feel they need to drive. The following sections discuss elders as motorists and providing transportation alternatives.

Elders as Motorists

Reflecting concern on this issue at a national level, two comprehensive guidance documents have been published in recent years:


These reports identify a broad range of roadway design implementation measures based on the types of driving conditions that pose difficulties for older drivers. In general, they fall within the following categories:

- Signage
Intersections
Lighting
Interchanges
Roadway curvature and passing zones
Construction work zones
Highway/railroad crossings

One of the key messages of the 2004 Transportation Research Board document is that working with this issue is not a matter simply of roadway design. There should be coordination amongst various agencies and disciplines involved to address the needs of older drivers, who will become an increasingly larger percentage of Woodbury drivers.

The City of Woodbury will use these reports as references to determine an overall approach for considering the needs of elderly drivers in terms of roadway design. Elderly-specific measures and design treatments will not be warranted in all cases but should be considered on a systematic basis.

Providing Transportation Alternatives

One of the key goals of promoting transportation safety for elders is to provide options so that they do not need to drive or drive as much. Areas of focus include:

- Land use
- Pedestrian access
- Transit

Pedestrian Access and Safety

A key goal for reducing the need for elders to drive is to provide effective and safe pedestrian access between residential areas and destinations that are important to them. Access includes continuous sidewalks and/or multi-use trails that provide direct links, rather than discontinuous facilities and/or circuitous routes. This issue is of most importance in areas around developments or general residential areas where there may be relatively high concentrations of elders. Important destinations could include drug stores and other shopping outlets, local restaurants, medical facilities and parks.

Pedestrian safety is a very important goal in terms of elder mobility. The primary concern is pedestrian crossings at roadway intersections. As people age, their ability to interpret and respond to traffic conditions quickly and accurately can decrease. As elders focus on one aspect of traffic flow, they may miss another dangerous situation. In addition, elders are often more physically vulnerable than younger pedestrians, so vehicle/pedestrian accidents are more likely to result in serious injury or even death.

Key measures to improve intersection safety for elder pedestrians are identified below. These measures need to be considered in all intersection settings, but particularly in areas where there may be a concentration of elder residents and/or destinations. Many of these measures are general good practices to promote pedestrian safety.

- Minimize the required pedestrian crossing distances at intersections through roadway design, curb bump-outs or general reduction of the radius of curbs to minimize crossing distances. These types of measures would need to be reviewed from the perspective of traffic safety and maintenance requirements.
- Provide raised center medians of adequate width (minimum six feet) where appropriate to act as pedestrian refuges with automated crossing signals that allow pedestrians to reactivate the crossing cycle from the center refuge.
- Use countdown and audible crossing signals. These signals provide clear information to the pedestrian about how much time they have to cross safely.

Land Use

One important means to minimize the need for elders to drive is to promote mixed use development which includes elder housing. These mixed use developments would ideally have a variety of retail and service outlets and would be designed to promote walking. Existing elder housing in City Center meets this goal. Additional high density housing areas that may include elder housing with a mix of uses within walking distance are the proposed Urban Village at the southwest corner of Radio Drive and Bailey Road and the Northeast Area. See Chapter 4, Land Use, of this Plan for further discussion.
Consider adjusting signal and pedestrian crossing timing to account for elders. The pedestrian component of traffic signal timing generally assumes a walking speed of four feet per second. This assumed speed could be lowered at locations with a relatively high percentage of elder pedestrians.

Consider the prohibition of right turns on red for motorists at problem locations for elder pedestrians.

Promote direct and straight (perpendicular to roadway) pedestrian crossings at intersections.

Ensure all Americans with Disabilities Act (ADA) design guidelines are met for curb ramps and other measures.

**Transit**

Transit can provide an effective alternative to driving for elders to meet shopping and other needs. As discussed previously, existing transit service in Woodbury is provided by Metro Transit, a division of the Metropolitan Council. This service is primarily oriented toward peak travel time commuter service into the two regional downtown areas. There is currently no fixed-route or circulator services within Woodbury for elders to use (except for limited service in the western portion of the City as depicted on Figure 9-6). However, paratransit services are provided as Woodbury Dial-a-Ride under contract to the Metropolitan Council.

Metro Transit at one time provided circulator service in Woodbury but discontinued this service in 2005 due to funding constraints and low ridership. As part of the 2030 transportation planning process, the City evaluated the option of re-establishing some form of small-bus/van circulator service for City residents. As is discussed in more detail in the 2030 Transit Plan, this approach is not be viable at this time due to significant costs and the history of low ridership for the previous circulator service. However, the City will continue to review this issue periodically.

A general inconvenience associated with the existing paratransit service is that riders must schedule rides ahead of time. In addition, Woodbury Dial-a-Ride only provides trips within Woodbury, with some exceptions.

The City intends to work with the Metropolitan Council to review this service, including a survey of elder and other users, to see if service improvements are needed. As Woodbury’s elder population increases, it will be important to ensure that local paratransit services keep pace with needs. If the review of existing service indicates that service improvements or perhaps fare subsidies are warranted, the City may wish to evaluate the option of providing local funds to the Met Council to bolster dial-a-ride service provided in Woodbury or to reduce fares. Other communities in the metro region have used this approach. The City would have to receive assurance that existing Metropolitan Council funding levels would not decrease with the addition of local funds.

**Transportation Demand Management (TDM)**

The primary emphasis of TDM is to reduce the number of vehicular trips on congested roadways during peak travel times. Since many or most of these trips are commuter (work) trips, TDM strategies primarily involve the workplace context and associated travel behavior.

Primary TDM methods or strategies are:

- transit
- car/van-pooling
- telecommuting
- flex-time
- non-motorized commuting

Policies or incentives to promote TDM activities are typically provided through employers. For example, employers can provide monthly discounts or passes to employees to use transit. They can provide coordination services to match up individuals for car/van pooling activities. They can allow or promote telecommuting, particularly in industries where face-to-face contact is not important for task performance. Similarly, employers can allow or promote flex time, which enables employees to travel to/from work at non-peak travel times. Provision of shower and changing facilities is often helpful to promote bicycle commuting.

Cities can increase TDM activities through promotional activities and by coordinating with key employers to
identify and implement TDM plans. Cities may require TDM plans for new developments if they are large enough to have significant traffic impacts. Cities can also form Transportation Management Organizations (TMOs). These organizations are typically made up of businesses located in the same general area and can pool resources and strategies to maximize cost effectiveness for reducing traffic levels in a given area.

It is difficult to project the quantitative benefits of TDM activities with confidence. However, as fuel prices and congestion on major roadways in the region increase, the demand for and potential benefit of this approach will increase accordingly.

The City of Woodbury currently does not require businesses to prepare and implement TDM plans. Given the City’s emphasis on sustainable transportation, it will review the option of requiring proposers of new development projects over given traffic generation thresholds to submit a TDM plan as part of the approval process. It will also review the option of providing a TDM program for City employees and working with existing large employers to promote and facilitate TDM activities on a voluntary basis.

### 2030 Non-Motorized Transportation Plan

The primary non-motorized transportation modes addressed in this section are walking and bicycling. Consistent with Minnesota State Statutes, users of wheelchairs and personal assistive mobility devices such as mobility scooters have the rights and responsibilities of a pedestrian, and therefore are included in this category. Enhancing the non-motorized elements of Woodbury’s transportation system is a key goal in terms of improving transportation sustainability. This approach gives residents an alternative to driving and encourages healthy activities and lifestyles.

The primary issues addressed in this section are as follows:

- Woodbury context
- Land use planning
- Non-motorized connections

### Woodbury Context

Woodbury has developed over the last 20-30 years with an overall suburban land form including an auto-oriented focus. With its commitment to transportation sustainability, the City has embraced the challenge of enhancing its transportation system to more fully meet non-motorized transportation needs.

Examples of programs and projects in Woodbury that have been positive in terms of non-motorized transportation are identified below.

- Extensive trail system. There currently are over 100 miles of off-street, paved trails throughout Woodbury. Most arterial and collector roadways have trails adjacent to them. These facilities provide relatively comprehensive connectivity of different portions of the City.

- Pedestrian-friendly commercial development. A good example of the City’s desire to promote walkable commercial environments is the Woodbury Lakes center. It is designed with the buildings along sidewalks on a walkable scale with a “Main Street” feel (see photograph below).
Higher density residential developments with sidewalk and trail connections to a broad range of retail, civic, transit and recreational uses such as:

- City Center
- CityWalk
- Woodbury Village/Classic at the Preserve
- Eagle Valley

The City wishes to build on these successes as discussed in the following sections.

**Land Use Planning**

An important way to promote walking and biking is to provide a mixture of land uses within a walkable geographic area. This goal can be achieved by providing for concentrations of housing in close proximity to jobs and services (Places to Work and Places to Shop as defined in Chapter 4 of this Plan). In Woodbury, a good example of this clustering of land uses is the Woodbury Village area generally north of Valley Creek Road and east of I-494 and south of the Tamarack Nature Preserve. Uses in this area include high-density housing; transit; retail areas including a grocery store; offices and a post office east of Bielenberg Drive along Currell Boulevard; and park and trail uses in the nature preserve.

The Northeast Area also provides an opportunity for a mixture of adjacent land uses including Mixed Use, Places to Work, Places to Shop and Open Space. I-94 has been identified as a potential transitway corridor. Plans also include a major park and ride facility in this area.

Another alternative is to integrate uses within one development, either through mixed use designations or through the Planned Unit Development (PUD) process. The City has a Mixed Use category including the following goals and policies:

- **Promote a walkable, sustainable development pattern that supports alternative forms of transportation (walking, biking and mass transit) while still accommodating the automobile.**
- **Provide safe and comfortable walkway and trail linkages from Mixed Use areas to other public facilities, major employment and shopping centers, residential neighborhoods and green space.**

CityWalk at the southeast corner of Hudson Road and Woodbury Drive is an example of a Mixed Use development. CityWalk includes apartments with commercial areas on the first floor, several small freestanding commercial buildings, townhomes, live-work units and passive and active recreation areas. The development is pedestrian-oriented with sidewalks along all internal streets, pedestrian-scale lighting and landscaping.

In addition, City Center and, on a smaller scale the proposed Urban Village, are intended to be a mix of community-scale retail, service, office, residential and public development land uses. Relevant goals and policies include:

- **Strive to achieve a pedestrian friendly social and business environment inviting to residents, businesspersons and visitors.**
- **Provide life-cycle housing integrated with places to work, shop and play.**
- **Require future redevelopment within City Center to provide a pedestrian movement plan that shows how the walking pedestrian gets into the City Center area and moves from place to place within City Center.**
- **Create an environment that provides safe and convenient movement for both vehicles and pedestrians.**
- **Encourage higher density residential development surrounding retail and service areas to provide housing in a walkable environment with convenient access to goods and services.**

The City has also used the PUD process to facilitate the location of neighborhood commercial centers in conjunction with significant residential development. As discussed in Chapter 4 of this 2030 Comprehensive Plan, such centers are intended to accommodate the basic needs of the adjacent neighborhood. Their design is intended to focus on pedestrian connections to the adjacent neighborhood and within the given center.

The City will continue to promote mixed use development as a way to encourage walking and biking. The City will also continue to encourage relatively dense
residential development in proximity to commercial and/or employment areas with good non-motorized access between the land uses.

**Non-Motorized Connections**

This section is organized according to the three primary types of trail or sidewalk connections within Woodbury. These categories are depicted conceptually on Figure 9-8 and are summarized as:

- Connections within neighborhoods – for example, children walking to play with friends.
- Connections between neighborhoods, other neighborhoods and activity centers – including areas of shopping, employment and recreation as well as schools.
- Connections within activity centers – site access design.

**Connections within Neighborhoods**

For connections within neighborhoods, the City requires sidewalks on at least one side of the street for all through streets (those that are not cul-de-sacs). This practice results in the development of neighborhoods with much improved pedestrian and bicycle connections.

Pedestrian and bicycle links should ideally be provided even where the road does not connect, as is the case in many cul-de-sac type developments. While there are several examples in Woodbury where cul-de-sac connec-
tors link subdivisions to the trail network, there are also situations where connectivity could be improved.

For areas planned for urban residential development, pedestrian and bicycle accommodations will be provided in accordance with the following goals and policies in the Land Use Plan:

- **Low Density Residential.** Use pedestrian and open space connections to achieve a relationship with the larger community rather than as a stand-alone or buffer element.
- **Medium Density Residential.** Provide sidewalks and trails that allow safe and convenient movement consistent with smaller lots and narrower streets.
- **High Density Residential.** Improve pedestrian and bicycle connections between High Density Residential and community destinations including jobs, shopping, parks and civic facilities.

**Connections between Neighborhoods and Activity Centers**

The City’s Park, Trail and Recreation Plan was recently updated. This Plan identifies a long term vision for expanding the existing multi-use trail network serving the City. It is the City’s objective to provide multi-use pathways on both sides of all major roadways. Proposed new trails are depicted on Figure 9-9. The basic approach to the planned expansion of the trail network is twofold:

- Expand network coverage along all arterials, collectors and certain local streets into newly developing areas.
- Close gaps in the existing network.

As discussed in the Special Transportation Issues section of this chapter, the City has initiated the DPTF to identify roadway design guidelines that will address transportation functionality needs while limiting local impacts to livability. One of the key aspects of the DPTF guidelines is the accommodation of bicyclists and pedestrians. For all major roadway construction and reconstruction projects, DPTF guidelines call for the provision of off-street multi-use trails and the evaluation of on-street bicycle lanes. Projects incorporating trail improvements consistent with the DPTF guidelines referenced above will be implemented within the context of the overall planning vision established in the Woodbury Park, Trail and Recreation Plan.

On-street bicycle lanes are an important way to accommodate relatively advanced riders that typically make longer and higher speed trips. These trips may be recreational or commutes to work. The commuter trips have the potential of reducing vehicular trips on roadways. Being able to accommodate advanced riders separately from pedestrians, slower riders and other trail users improves overall safety conditions and makes for a more
Transportation Plan
City of Woodbury
Figure 9-9: Proposed 2030 Trail Network
comfortable environment for trail users. In addition, on-street bicycle lanes may bridge gaps in the off-street trail network. Further, on-street bicycle lanes can also be used by vehicular traffic, functioning as a shoulder for stalled vehicles or a refuge for police officers to pull over vehicles.

A number of minor arterials in the City are under the jurisdiction of Washington County, and one, Manning Avenue, is under the jurisdiction of Mn/DOT. Through the TAP, the City discussed the DPTF guidelines with Washington County and Mn/DOT staff. Washington County staff has expressed support for the general intent and initiative shown by the City but has raised concerns with some details and issues. The City will continue to work with Washington County and Mn/DOT to move the process forward.

**Site Access Design**

Site design can be an important component for accommodation of non-motorized access at commercial/retail centers and office concentrations, particularly when areas are not well served by transit.

Within Woodbury there are several examples of developments that were designed for easy access by motor vehicles but not necessarily for pedestrians and bicyclists. These developments are often characterized by large discount retailers where it is important for patrons to have easy access to their vehicles to carry large, bulky purchases.

Using a different site design, it is possible to serve both vehicular and non-vehicular traffic by improving connections to the external transportation system. Buildings with frontages closer to the street create a streetscape that is comfortable and accommodating to pedestrians and help keep traffic moving at slower speeds. Parking to the side or the rear of buildings allows easy access for pedestrians from adjacent sidewalks and minimizes automobile/pedestrian conflicts. Bicycle parking should be provided in visible and convenient locations. Cyclists are reluctant to lock their bicycles in unfrequented areas because of the greater likelihood of theft, leading to situations where bicycles are locked to anything available, such as signposts or trees.

The site plan review process allows the City to influence site design and include pedestrian and bicycle accommodations early in site planning. Best practices for sustainable transportation site plan design have been developed for the following categories:

- Safety and security
- Building entrances
- Internal transportation network
- Pedestrian and cyclist routes
- Vehicle parking configuration and treatment
- Bicycle parking
- Passenger pick-up and drop-off areas
- Pedestrian facilities

These Best Practices are included in Appendix 9-1.

**2030 Transit Plan**

A key goal in achieving transportation sustainability is to maximize transit ridership to limit single-occupancy vehicle trips, reducing the need to expand roadways and limiting fuel consumption and air pollution. However, scheduled transit service for Woodbury’s residents is provided by Metro Transit, a division of the Metropolitan Council. Transit and transit planning are subject to the constraints of existing funding levels and the uncertainties associated with future funding. Funding levels are determined to a large extent on decisions made at the State Legislature, well beyond the City’s direct authority.

The Metropolitan Council has established a series of Transit Market Areas throughout the metropolitan area as a guide for the provision of appropriate transit service. There are four market areas, I through IV, based on the propensity to use transit or the likelihood of high transit ridership. The ranking is based primarily on four factors:

- Population density
- Employment concentration and job density
- Trip volumes and patterns
Transit dependent segments of the population

With higher population, job density, high trip volumes and relatively high percentages of transit-dependent individuals, more ridership is anticipated and higher levels of transit service are thus justified. Market Area I has the highest transit potential for transit ridership and associated justification for extensive service, and Market Area IV has the lowest potential for transit ridership.

Woodbury is in Market Area III. As identified in the Metropolitan Council’s System Statement for the City of Woodbury, service options for Market Area III areas include peak-only express, local circulators, special needs paratransit and ridesharing. Express and local circulator service are discussed in the following sections. Paratransit service is currently provided as Woodbury Dial-a-Ride contracted by the Metropolitan Council and this service is expected to be continued, at a minimum, in its current form.

I-94 Corridor Study

The I-94 Corridor from Downtown St. Paul to Hudson, Wisconsin is one of the highest interstate traffic carrying corridors in the Twin Cities Metropolitan area and also serves as a gateway. This corridor frequently experiences congestion during peak travel periods. In addition to wasting many person hours, increasing pollution and needlessly wasting fuel, this congestion is a deterrent to the continued future development and economic viability of the east metro area. Currently, Mn/DOT does not identify any improvements to this corridor in its 20 Year Transportation Plan.

As part of the 2030 Transit Master Study process, the Metropolitan Council conducted an extensive evaluation of the potential for enhanced transit service in a number of corridors throughout the region. One of these corridors was I-94 in the eastern metro area. The study projected a high enough ridership potential to warrant future corridor study for I-94 East to evaluate transit improvements.

In 2009, a group of state, county, Regional Railroad Authority, city, Chamber of Commerce and businesses formed a coalition to provide greater attention to and encourage studies of the I-94 Corridor through a Joint Powers Agreement and an I-94 Corridor Commission.

One of the initial studies and activities of the Commission will be to conduct a transit alternatives analysis for the corridor. With the adoption of the 0.25 percent transit improvement and sales and use tax, funding is now available for this study through the Washington and Ramsey County Regional Railroad Authorities. In addition, Mn/DOT has set aside funding for a roadway analysis to determine the long-term roadway deficiencies in the I-94 Corridor. This study will occur either in parallel with or as part of the transit alternative analysis.

The I-94 Corridor plays a major role in Woodbury’s transportation system and economic development. Woodbury’s location, density, retail centers and job concentrations make it an ideal candidate for a light rail corridor with possible bus rapid transit serving areas to the east. As part of the Alternative Urban Area-wide Review (AUAR) for the Northeast Area, the City examined one possible intensive land use for this area (see Appendix 9-3) that would include a level of development supportive of light rail or other transit service.

Through its participation in the Corridor Commission, the City will continue to advocate for the long-term improvements necessary to keep the I-94 Corridor viable.

Express Service and Park-and-Ride Facilities

As discussed previously in this chapter, Metro Transit currently provides express transit service between Woodbury and the two regional downtown areas, Minneapolis and St. Paul. This service is supported by three park-and-ride locations within Woodbury and one accessible to Woodbury residents just north of I-94 in Oakdale. These park-and-ride facilities currently are at or near capacity. Demand for express transit service in Woodbury has increased steadily over the years, and this demand is anticipated to continue with increasing gas prices, population growth and congestion along I-94. Recognizing this trend, Metro Transit is planning substantial expansions to park-and-ride capacity in the Woodbury area.
These expansions include a planned new park-and-ride facility west of Manning Avenue and south of I-94 and expansion of capacity at the Woodbury Theatre location, possibly with structured parking. The additional park-and-ride capacity would accommodate additional express service along I-94. Metro Transit has indicated that these expansions represent two of its top three priorities in the east metro. The City of Woodbury understands that demand for commuter express service and facilities will continue to see significant growth. Accordingly, it will continue to coordinate with Metro Transit, Washington County and adjacent communities to support the expansion of park-and-ride capacity and the provision of new and enhanced transit service in the I-94 corridor.

**Local Service and Reverse Commuting**

**Local Service**

In a desire to explore options to improve transportation sustainability, the City of Woodbury assessed the provision of local circulator service as part of preparing the Transportation Plan.

Metro Transit once provided circulator service in Woodbury: Routes 301, 302 and 303. These routes generally had eight daily runs, four during the morning rush period and four during the afternoon rush period. They used vans with approximately 12-passenger capacity and brought commuters to and from the express transit stops located in the City. In 2005, Metro Transit discontinued these circulator routes due to regional funding reductions and low ridership. Metro Transit’s required minimum threshold to maintain service is 14 riders per hour. The documented average ridership for the Woodbury circulator routes at the time of evaluation and discontinuation was as follows:

- 301 – four riders per hour
- 302 – eight riders per hour
- 303 – seven riders per hour

As part of the 2030 transportation planning process, a preliminary evaluation of the costs of reintroducing circulator service in Woodbury was performed. This evaluation was performed to help evaluate the option of the City funding all or a portion of the costs associated with such service. The evaluation considered two basic service options:

**Scenario A: Express Commuter Service Support** – Essentially replacing the discontinued Metro Transit Service three 12-passenger vans operating simultaneously in different areas of the City to take people to and from express transit service during the a.m. and p.m. peak travel periods.

**Scenario B: Comprehensive Community Service** – All-day service using three 12-passenger vans operating simultaneously to link areas of housing, shopping, employment, civic activities and other land uses.

The planning level analysis conducted for the City indicated that both options would require initial capital costs of approximately $200,000 for the vans. Scenarios A and B would result in annual operating costs of approximately $180,000 and $440,000, respectively. Given the costs, the viability of this service is in question given historic ridership associated with past circulator service. Total ridership for Scenario B may be higher than the historic ridership information (although the ridership per hour would likely be lower), but this is not known, and operating costs would be more than doubled relative to Scenario A.

As has been discussed previously, paratransit service is currently provided as Woodbury Dial-a-Ride by First Transit under contract to the Metropolitan Council. Service levels are generally consistent with similar paratransit operations contracted by the Metropolitan Council throughout the metro region. An inconvenience with paratransit services is that rides must be reserved in advance, although in Woodbury these reservations can be made the same day as the ride. In addition, service is only provided within Woodbury, with some exceptions.

Based on information provided by Metropolitan Council staff, general cost and ridership information for Woodbury Dial-a-Ride service is summarized in Table 9-2.

The City will work with the Metropolitan Council to assess the current Woodbury Dial-a-Ride service. This assessment will include a survey of users and a comparison of service and fare levels in the region and
elsewhere in the country. If this assessment suggests that service improvements and/or increased fare subsidies are warranted, the City will further review the option of providing local funding to the Metropolitan Council accomplish one or both of these goals. The City would have to receive assurance that existing Metropolitan Council funding levels would not decrease with the addition of local funds.

**Reverse Commuting**

In the interests of improving transportation sustainability, the City also considered the option of promoting or coordinating reverse commute services. The basic premise of reverse commute service is to use the empty or (“deadhead”) capacity of buses returning to Woodbury during the morning rush period and of the buses returning to Minneapolis/St. Paul during the afternoon rush period. This service would help lower-income, transit-dependent individuals access jobs in Woodbury.

Transit riders currently can travel from the two primary downtown areas to Woodbury in the morning, and back in the late afternoon, on existing express routes. However, there is currently little usage of this option. Reverse commute riders would have to be aware of a concentration of available jobs in the Woodbury area to be attracted to the reverse commute option. In addition, there would likely have to be some type of circulator service to get the riders to and from their Woodbury jobs from the park-and-ride lot.

As has been discussed with Metro Transit staff, a key for successful reverse commute operations is for businesses to become involved to promote the availability of jobs in the suburban community and to work with the transit provider regarding appropriate service options to maximize ridership. In the late 1990s, the City of Woodbury formed and coordinated a business transit group to discuss transit initiatives to help connect workers with jobs in Woodbury. Over the years, participation by businesses declined to the point that the transit group was discontinued.

At the most general level, the ability to promote effective reverse commute transit ridership depends on an unmet local need for a pool of workers. It appears that businesses in Woodbury are not having difficulty staffing entry level and/or service type jobs under current conditions, so such need does not exist to a substantial degree. However, the City will continue to monitor this issue.

### 2030 Roadway Network Planning

This section addresses future roadway improvement needs and associated coordination, jurisdictional and functional revisions, access management and roadway design guidelines.

**Traffic Forecasting and Roadway Improvement Needs**

**Limitations of the Model**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Time Period</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Daily</td>
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<tr>
<td>Cost per Hour (paid by Met Council)</td>
<td>$56</td>
</tr>
<tr>
<td>Operating Hours (two vans combined)</td>
<td>16</td>
</tr>
<tr>
<td>Total Cost of Service</td>
<td>$900</td>
</tr>
<tr>
<td>Riders</td>
<td>60</td>
</tr>
<tr>
<td>Fare Recovery ($2/ride)</td>
<td>$120</td>
</tr>
<tr>
<td>Net Cost</td>
<td>$780</td>
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<tr>
<td>Net Cost per Rider (approximate)</td>
<td>$13</td>
</tr>
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</table>

**Table 9-2: Current Woodbury Dial-a-Ride Information**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Time Period</th>
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</thead>
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<tr>
<td></td>
<td>Daily</td>
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<tr>
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<td>60</td>
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<tr>
<td>Fare Recovery ($2/ride)</td>
<td>$120</td>
</tr>
<tr>
<td>Net Cost</td>
<td>$780</td>
</tr>
<tr>
<td>Net Cost per Rider (approximate)</td>
<td>$13</td>
</tr>
</tbody>
</table>

NOTE: This table includes rounding and is to be used for general information purposes only.

SOURCE: Metro Transit and WSB & Associates, Inc.
While the travel demand model is a valuable tool for identifying future traffic based on the proposed land use impacts, it is not meant for use in detailed traffic operations studies. For a more accurate representation of the transportation impacts from specific developments, detailed traffic studies should be conducted to determine the operational impacts on adjacent roadways and intersections.

**Northeast AUAR**

Concurrent with the Transportation Plan and 2030 Comprehensive Plan, the City completed an AUAR for the Northeast Area. This area includes approximately 580 acres of undeveloped land generally south of I-94, west of Manning Avenue, north of extended Eastview Road and both east and west of Settlers Ridge Parkway. With its large contiguous land holdings, natural features, freeway access and visibility, the AUAR area offers a unique opportunity for the City of Woodbury.

The 2030 roadway analysis completed for this Plan is based on the future land use plan from the 2000 Comprehensive Plan (see Scenario 1 in Appendix 9-3). The traffic impact analysis in the AUAR analyzed a more intensive land use scenario (Scenario 2 in Appendix 9-3) to determine the impact of the proposed development on the traffic network in the AUAR area. The findings of this analysis include:

- By the year 2020, the background traffic forecast even without development in the Northeast Area will necessitate roadway improvements. In particular, the capacity on Woodbury Drive is expected to be insufficient given projected traffic increases and substantial improvements at the I-94/Woodbury Drive interchange are anticipated to be necessary.

- The level of development assumed for the AUAR area for 2020 was capped at a level of development sustainable by improvements on local, county and state roadways such that minimal or no improvements would be necessary to the freeway or freeway ramps.

- By the year 2030, the growth in background traffic forecasted will again warrant additional local and freeway improvements. The analysis indicates that I-94 will need a minimum of one additional through lane in each direction.

- Full development of the AUAR area by 2030 showed the need for major roadway improvements. Mitigation strategies were developed that minimized necessary improvements to the interstate system but, while theoretically possible, these improvement scenarios were not reasonable (eight lanes on Manning Avenue, triple left turns, etc.). Therefore, additional freeway access is necessary to distribute the I-94 bound forecast traffic to the various existing and proposed arterial and collector streets. Suggested improvements may include a new interchange at I-94 and Settler’s Ridge Parkway. Alternative I-94 access and interchange improvements were considered and are shown in Appendix 9-3.

Although the AUAR showed the need for improvements to the City’s collector and arterial street system as well as the interstate system, these improvements cannot be fully defined at this time. Mn/DOT, Washington County and the City of Woodbury agree that a long-range plan for I-94 is needed to address overall corridor needs from I-494 to the Wisconsin border. Specific I-94 interchange configurations at or between Woodbury Drive and Manning Avenue will require detailed operations and analysis in coordination with the I-94 Corridor Study to best determine the ultimate interchange configurations and access locations. It is anticipated that Mn/DOT will lead this study in the near future – see I-94 Corridor Study section above. The City has phased development in the Northeast Area (see Chapter 4, Land Use) consistent with the findings of the AUAR to avoid immediate impacts on the interstate system. Completion of the corridor study will prompt an update of the AUAR and potential amendments to this Plan to identify improvements necessary to facilitate full development of the Northeast Area.

**2030 Deficiency Analysis**

To determine future roadway capacity needs, year 2030 traffic forecasts were made using the Washington County travel demand forecast model. The model was refined for application specifically for 2030 Woodbury projections. The 2030 projections are compared against the assumed
2030 roadway network to see where roadway segment capacity deficiencies may result.

The 2030 roadway network assumed for this analysis includes the existing network plus committed and planned improvement projects. For the purposes of this Plan, committed projects are improvements identified in either the City’s or the County’s current Capital Improvement Plan (CIP). These projects are summarized in Table 9.3 and identified on Figure 9-10.

Planned projects assumed for this chapter are transportation improvements that have been identified and discussed by the City of Woodbury and/or Washington County but do not have secured funding at this time. Planned projects are summarized in Table 9-4 and also identified on Figure 9-10.

A central concept of travel demand forecasting is the use of Transportation Analysis Zones (TAZs). Each forecast study area, in this case the City of Woodbury, is divided into a series of TAZs. Each TAZ has land use data which dictates trip generation and trip attraction including population, household and employment data. Figure 9-11 displays the various TAZs within Woodbury. The TAZ information is then loaded into the forecast model (in this case the Washington County travel demand model) which generates and distributes the 2030 trips and associated traffic volumes. The TAZ information for Woodbury is based on the projected 2030 land use as discussed in Chapter 4 of this Comprehensive Plan and is presented in Table 9-5.

The results of the Woodbury modeling process are summarized on Figure 9-12, 2030 projected average daily traffic volumes. To identify the need for potential future improvements, planning level congestion analysis was performed. This analysis compares the projected volumes against the capacity of the roadways serving Woodbury. The degree of congestion is measured in terms of Level of Service (LOS). LOS can range from

### Table 9-3: Committed Roadway Improvement Projects

<table>
<thead>
<tr>
<th>Map ID</th>
<th>Project</th>
<th>Responsible Agency</th>
<th>From Location</th>
<th>To Location</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-1</td>
<td>I-94 Frontage Road (one-way)</td>
<td>City of Woodbury</td>
<td>Radio Drive (CSAH 13)</td>
<td>Woodbury Lakes development</td>
<td>New Facility (2-lanes)</td>
</tr>
<tr>
<td>C-2</td>
<td>Valley Creek Road</td>
<td>City of Woodbury</td>
<td>Woodcrest Drive</td>
<td>Settlers Ridge Parkway</td>
<td>Improve / Widen to 4-Lanes</td>
</tr>
<tr>
<td>C-3</td>
<td>Lake Road</td>
<td>City of Woodbury</td>
<td>Cottage Grove Drive</td>
<td>Settlers Ridge Parkway</td>
<td>Improve / Widen to 4-Lanes</td>
</tr>
<tr>
<td>C-4</td>
<td>Pioneer Road Extension</td>
<td>City of Woodbury</td>
<td>Bailey Road (CSAH 18)</td>
<td>Hargis Parkway</td>
<td>New/Improved Facility (2-lanes)</td>
</tr>
<tr>
<td>C-5</td>
<td>Radio Drive (CSAH 13)</td>
<td>Washington County</td>
<td>Bailey Road (CSAH 18)</td>
<td>Glen Road</td>
<td>Improve / Widen to 4-Lanes</td>
</tr>
<tr>
<td>C-6</td>
<td>Radio Drive (CSAH 13)</td>
<td>Washington County</td>
<td>Freeway ramps north of I-94</td>
<td>Freeway ramps south of I-94</td>
<td>Add northbound lane</td>
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<tr>
<td>C-7</td>
<td>Century Avenue (CSAH 25)</td>
<td>Washington County</td>
<td>Woodbine Avenue</td>
<td>Lake Road</td>
<td>Improve / Widen to 4-Lanes</td>
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<tr>
<td>C-8</td>
<td>Woodbury Drive (CSAH 19)</td>
<td>Washington County</td>
<td>Park Crossing</td>
<td>1/2 mile south of Bailey Road</td>
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<tr>
<td>C-9</td>
<td>I-94</td>
<td>Mn/DOT</td>
<td>West City Limits</td>
<td>I-94</td>
<td>Improve / Widen to 6-Lanes</td>
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### Table 9-4: Planned Roadway Improvement Projects

<table>
<thead>
<tr>
<th>Map ID</th>
<th>Project</th>
<th>Responsible Agency</th>
<th>From Location</th>
<th>To Location</th>
<th>Length (miles)</th>
<th>Activity</th>
<th>Estimated Cost 1</th>
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<tr>
<td>P-1</td>
<td>Eastview Road Extension</td>
<td>City of Woodbury</td>
<td>Cottage Grove Drive</td>
<td>Manning Avenue</td>
<td>1.0</td>
<td>New Facility (3-lanes)</td>
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<td>P-2</td>
<td>Weir Drive I-94 Overpass</td>
<td>City of Woodbury</td>
<td>North of I-94</td>
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<td>0.1</td>
<td>New Facility (2-lanes)</td>
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<td>P-3</td>
<td>Bieselberg Drive I-94 Overpass</td>
<td>City of Woodbury</td>
<td>North of I-94</td>
<td>South of I-94</td>
<td>0.2</td>
<td>New Facility (2-lanes)</td>
<td>$ 2,388,000</td>
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<td>P-4</td>
<td>Century Avenue (CSAH 25)</td>
<td>Washington County</td>
<td>Current southern terminus</td>
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<td>P-5</td>
<td>Pioneer Road Extension</td>
<td>City of Woodbury</td>
<td>Hargis Parkway</td>
<td>Jamaica Drive</td>
<td>1.6</td>
<td>New Facility (2-lanes)</td>
<td>$ 7,000,000</td>
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</table>

1 Cost Estimate assumptions (2008):
Right-of-Way is not included in the estimated cost of the improvement.
Construction of new bridge is assumed to be $100 per square foot (assumed span for cost calculation is 600 feet).
Construction of new 2 or 3 lane arterial is assumed to be $800 per lineal foot, which includes traffic signals at 1/4 mile spacing.

Transportation Plan
City of Woodbury
Figure 9-10: Committed and Planned 2030 Roadway Improvement Projects
Transportation Plan
City of Woodbury
Figure 9-11: Transportation Analysis Zones
A (free flow, no delay) to F (excessive congestion and delay).

The illustration in Table 9-6 displays the level of service categories, approximate volume-to-capacity (V/C) ratio, and a general description of the traffic operations. In accordance with Mn/DOT guidelines, the traffic level analysis uses the LOS D/E boundary as the indicator of acceptable traffic operations and congestion. LOS D ( approached capacity) is generally considered an acceptable operating condition during peak hours in urban areas such as the Twin Cities.

The analysis of future conditions revealed that the level of traffic and congestion on the roadways in Woodbury will continue to increase. This result is expected as the community continues to develop while opportunities for new or expanded roadways may decrease. The roadways

### Table 9-5: Woodbury Transportation Analysis Zone Information

<table>
<thead>
<tr>
<th>TAZ</th>
<th>Population</th>
<th>Change</th>
<th>Total Employment</th>
<th>Change</th>
<th>Retail Employment</th>
<th>Change</th>
<th>Non-Retail Employment</th>
<th>Change</th>
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<td>50,084</td>
<td>84,528</td>
<td>34,444</td>
<td>20,382</td>
<td>28,311</td>
<td>27,929</td>
<td>6,566</td>
<td>13,816</td>
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</table>

SOURCE: Metropolitan Council, City of Woodbury, WSB & Associates, Inc.

### Table 9-6: Level of Service Definitions

<table>
<thead>
<tr>
<th>Level of Service</th>
<th>Volume/Capacity (V/C) Ratio</th>
<th>Traffic Flow</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0.00 to 0.39</td>
<td>Free Flow</td>
<td>Low volumes and no delays</td>
</tr>
<tr>
<td>B</td>
<td>0.40 to 0.59</td>
<td>Single Flow</td>
<td>Low volumes and speeds dictated by travel conditions</td>
</tr>
<tr>
<td>C</td>
<td>0.60 to 0.79</td>
<td>Stable Flow</td>
<td>Stable Flow, speeds and maneuverability controlled due to higher volumes</td>
</tr>
<tr>
<td>D</td>
<td>0.80 to 0.99</td>
<td>Restricted Flow</td>
<td>Higher density traffic restricts maneuverability and volumes approaching capacity</td>
</tr>
<tr>
<td>E</td>
<td>1.00 to 1.19</td>
<td>Unstable Flow</td>
<td>Very low speeds, volumes exceed capacity, and long delays with stop and go traffic</td>
</tr>
<tr>
<td>F</td>
<td>1.20 and above</td>
<td>Forced Flow</td>
<td>Very low speeds, volumes exceed capacity, and long delays with stop and go traffic</td>
</tr>
</tbody>
</table>

TABLE 9-5: Woodbury Transportation Analysis Zone Information

The illustration in Table 9-6 displays the level of service categories, approximate volume-to-capacity (V/C) ratio, and a general description of the traffic operations. In accordance with Mn/DOT guidelines, the traffic level analysis uses the LOS D/E boundary as the indicator of acceptable traffic operations and congestion. LOS D (approaching capacity) is generally considered an acceptable operating condition during peak hours in urban areas such as the Twin Cities.

The analysis of future conditions revealed that the level of traffic and congestion on the roadways in Woodbury will continue to increase. This result is expected as the community continues to develop while opportunities for new or expanded roadways may decrease. The roadways
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City of Woodbury
Figure 9-12: Projected Daily Traffic Volumes - 2030 Land Use Plan

that will be most affected by increased traffic levels are the interstate freeways and Manning Avenue (TH 95), both under State jurisdiction. The majority of County and City roadways are projected to operate at acceptable levels in 2030 although traffic levels will continue to increase.

Figure 9-13 summarizes the volume-to-capacity LOS evaluation of roadways in Woodbury assuming projected 2030 traffic levels. All roadway segments identified as LOS E or F will require improvements except as noted.

2030 Future Roadway Capacity Improvement Needs

Based on the roadway segment capacity deficiency analysis the roadway improvements identified in Table 9-7 will be required to meet projected 2030 traffic volumes and maintain LOS D conditions at a minimum. These improvements are depicted graphically on Figure 9-14.

Also depicted in Table 9-7 are areas to monitor volumes and operations:

- Radio Drive between Tamarack Road and Valley Creek Road
- Woodbury Drive between ½ mile south of Bailey Road and Dale Road

Since projected volumes for these areas are only slightly over the LOS E threshold capacity, improvements are not recommended. However these segments will be monitored for potential future action.

With the exception of Hudson Road, all roadways projected to require capacity improvements are under the jurisdiction of government agencies other than the City. The City will coordinate with Mn/DOT and Washington County to advance and facilitate necessary improvements.

The LOS deficiency and needs analysis performed for this 2030 transportation planning process is for roadway segments, and it is based purely on volume-to-capacity ratios. A related but different type of LOS analysis is done for intersections, but this analysis is beyond the scope of a long-range transportation plan. Thus, the roadway improvements addressed in the full Transportation Plan and summarized in this chapter identify a general need to add lanes on various roadway segments.

More localized improvement needs, such as safety-related improvements, intersection expansion projects and/or the construction/modification of high volume commercial access locations will need to be further studied as conditions dictate. The City will continue to require site- and area-specific traffic studies to better deter-

**Table 9-7: Future Roadway Segment Capacity Improvement Needs**

<table>
<thead>
<tr>
<th>Project</th>
<th>Primary Agency</th>
<th>Coordinating Agency</th>
<th>Location</th>
<th>Length (miles)</th>
<th>Activity</th>
<th>Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I-94</td>
<td>Mn/DOT</td>
<td>Washington County</td>
<td>I-494 Manning</td>
<td>4.7</td>
<td>Widen to 8-Lanes</td>
<td>$18,700,000</td>
</tr>
<tr>
<td>2. I-494</td>
<td>Mn/DOT</td>
<td>Washington County</td>
<td>West of City I-94</td>
<td>5.3</td>
<td>Widen to 6-Lanes</td>
<td>$21,000,000</td>
</tr>
<tr>
<td>3. Manning Avenue</td>
<td>Mn/DOT</td>
<td>Washington County</td>
<td>I-94 Hudson Road</td>
<td>0.2</td>
<td>Widen to 6-Lanes</td>
<td>$1,320,000</td>
</tr>
<tr>
<td>4. Manning Avenue</td>
<td>Mn/DOT</td>
<td>Washington County</td>
<td>Hudson Road Valley Creek Road</td>
<td>1.8</td>
<td>Widen to 4-Lanes</td>
<td>$8,840,000</td>
</tr>
<tr>
<td>5. Woodbury Drive</td>
<td>Washington County</td>
<td>City of Woodbury</td>
<td>I-94 Tamarack Road</td>
<td>0.7</td>
<td>Widen to 6-Lanes</td>
<td>$3,300,000</td>
</tr>
<tr>
<td>6. Bailey Road</td>
<td>Washington County</td>
<td>City of Woodbury</td>
<td>Radio Drive Settlers Ridge Pkwy</td>
<td>3.0</td>
<td>Widen to 4-Lanes</td>
<td>$15,000,000</td>
</tr>
<tr>
<td>7. Hudson Road</td>
<td>City of Woodbury</td>
<td>Washington County</td>
<td>Lakeview Drive Manning</td>
<td>1.6</td>
<td>Widen to 4-Lanes</td>
<td>$8,300,000</td>
</tr>
</tbody>
</table>

1 Based strictly on Figure 9-18 information (2030 Congestion Levels), the segment between Pioneer Drive and Woodbury Drive would not need to be upgraded from 2-lane. However it may not be desirable to have this segment be 2-lane between two other segments (Radio/Pioneer and Woodbury/Settlers Ridge) requiring expansion to 4-lane.

2 Cost Estimate assumptions (2008):

- Right-of-Way is not included in the estimated cost of the improvement.
- Expansion of freeway from 6 to 8 lanes, or from 4 to 6 lanes is $750 per lineal foot.
- Expansion of arterial from 2 to 6 lanes is $1,100 per lineal foot, which includes traffic signals at 1/4 mile spacing.
- Expansion of arterial from 2 to 6 lanes is $595 per lineal foot, which includes traffic signals at 1/4 mile spacing.

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City of Woodbury
Figure 9-13: Projected Roadway Congestion Levels - 2030 Land Use Plan

Legend
- Not In Traffic Model
- Under Capacity (LOS A-C)
- Approaching Capacity (LOS D)
- At Capacity (LOS E)
- Over Capacity (LOS F)
- Committed Improvements
- Planned Improvements

Roadway capacities reflect committed and planned improvements.

Legend
- Upgrade to 8 - lane freeway section (pending transit improvements)
- Upgrade to 6 - lane section
- Upgrade to 4 - lane section
- Monitor volumes and operations
- Committed Improvements
- Planned Improvements

0 0.5 1 2 Miles

Note: This figure does not include intersection improvements, paving dirt roads, or other types of roadway improvements that will be required in the future.

Transportation Plan
City of Woodbury
Figure 9-14: Proposed Roadway Capacity Improvement Needs - 2030 Land Use Plan

Source: City of Woodbury, Washington County, Mn/DOT, WSB & Associates, Inc.
mine the expected impacts of particular developments. The City will also continue to monitor and study existing roadway segments and intersections for potential safety needs and improvements.

Roadway improvements not specifically pertaining to operating and lane capacity are not addressed in this section. For the most part, these improvements involve upgrading roadways from rural to urban sections settings as Woodbury continues to develop. For example, roadways in the southern portion of the City will need to be reconstructed with pavement, curbs and turn lanes to accommodate additional traffic. The City will evaluate the need to upgrade these roadways as development occurs in accordance with the Phasing Plan (see Chapter 4 of this plan).

**Roadway Jurisdictional Transfer**

Jurisdictional transfers convey ownership and responsibility for a roadway from one level of government to another. The following roadways have been identified for jurisdictional transfers during the life of this Plan:

1. **Valley Creek Road between Woodbury Drive and Manning Avenue** – This segment is currently owned, operated and maintained by the City. The proposed jurisdictional transfer would be to Washington County. The City and County have conceptually agreed that transferring this segment from City to County jurisdiction is an appropriate action, but the specifics of this agreement have not been finalized.

2. **Lake Road / I-494 interchange** – After construction of the I-494 interchange at Lake Road, it was the City’s expectation that the interchange would be transferred to Mn/DOT; however, this has not yet occurred. Mn/DOT and the City have agreed in principle to the transfer of this interchange to the State.

3. **Tamarack Road / I-494 interchange** – After construction of the I-494 interchange at Tamarack Road, it was the city’s expectation that the interchange would be transferred to Mn/DOT; however, this has not yet occurred. Mn/DOT and the City have agreed in principle to the transfer of this interchange to the State.

In its 2015 Transportation Plan, Washington County identified transferring Century Avenue (CSAH 25) south of Lake Road from the County to the City. However, more recent discussions with the County have indicated that this segment should remain a County roadway assuming an extension is to be built between Century Avenue and Bailey Road as depicted on Figure 9-10.

**Roadway Functional Classification Changes**

The importance of functional classification in roadway planning and design was discussed in the Existing Transportation System section of this chapter, and the existing roadway functional classification system was presented on Figure 9-2. The function of given roadways or roadway segments can change over time as surrounding land uses evolve and/or as new roadways are constructed. For B minor arterials and above, the Metropolitan Council determines functional classification for individual roadways. Local authorities may request changes (either from arterial to collector or from collector to arterial) but must provide sound justification for the request. The Metropolitan Council makes the final determination.

For revisions in functional classification not involving arterial roadways, the unit of government that has jurisdiction over the facility has the authority to determine the functional classification. Thus, Woodbury has the authority to designate a municipal street as a collector or to change a roadway from collector to local street classification.

The City proposes to make three changes to the current functional classification network. These revisions are depicted on Figure 9-15 and are summarized in Table 9-8.

With these changes, the resulting 2030 functional classification of the roadways in Woodbury will be as shown on Figure 9-16.
In addition to these revisions, Settlers Ridge Parkway south of I-94 to Valley Creek Road should be monitored for potential upgrade from collector to minor arterial status. As part of the Northeast Area development, an interchange may be needed or desired at Settlers Ridge Parkway for access and to relieve the existing interchanges at Woodbury Drive and Manning Avenue. Under these circumstances, the use and importance of Settlers Ridge Parkway would be elevated, as it would provide direct access from the south to I-94.

**Access Management**

The purpose of access management is to provide adequate access to adjacent land development while maintaining acceptable traffic flow on higher level roadways. Management consists of carefully controlling the spacing and design of public street intersections and private access points to the public roadway system. Arterials, being designed for higher speed, longer distance trips generally have restricted access, while local streets can accommodate much greater access. Collector roadways fall in between arterials and local roadways regarding the amount of access that is permitted.

The government agency that has jurisdiction over a given roadway defines the applicable access management guidelines. Thus, Mn/DOT defines the access management guidelines for Manning Avenue, which is a state Trunk Highway. Mn/DOT’s access management guidelines are presented in Appendix 9-2. Washington County has adopted Mn/DOT’s access management guidelines, with some minor changes. Generally, the County allows ¼ mile spacing of full movement intersections on their Minor Arterial roadways. The County has jurisdiction over a number of major roadways within the City as shown in Figure 9-1. The City and Washington County have adopted a Memorandum of Understanding (MOU) that identifies planned access locations for Bailey Road, Radio Drive and Woodbury Drive.

The City has adopted access management guidelines that establish intersection spacing requirements for roadways under the City’s jurisdiction (see appendix 9-2). These guidelines are intended to reduce the negative effect of incremental, uncoordinated access decisions by providing a consistent policy for the installation of roadway access points. The application of these guidelines during the transportation planning and design stage should produce a fully integrated roadway system that supports the travel needs associated with both regional and local travel.

The City may allow deviations from the above guidelines on a case-by-case basis. Mitigating circumstances may include, but are not limited to, low traffic volumes, geographic and topographic constraints and factors associated with reconstruction of existing roadways. The City will review its access management guidelines periodically.

**Table 9-8: Recommended Functional Classification Revisions**

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<th>Segment</th>
<th>Revision - Discussion</th>
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<td>Hudson Road</td>
<td>Radio Drive to Manning Avenue</td>
<td>Convert from Collector to A Minor Arterial (Reliever).</td>
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<td></td>
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<td>This 4-mile stretch would carry relatively high volumes and provide controlled access to adjacent land uses. It would also serve as a reliever for I-94. The eastern portion will support anticipated major new development.</td>
</tr>
<tr>
<td>Cottage Grove Drive</td>
<td>Valley Creek Road to Lake Road</td>
<td>Convert from collector to local road.</td>
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<tr>
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<td></td>
<td>With the development of Settlers Ridge Parkway and its designation as a collector, this segment does not need to have the collector designation.</td>
</tr>
<tr>
<td>Weir Drive/Woodwinds Drive</td>
<td>Valley Creek Road to Lake Road</td>
<td>Convert from Collector to A Minor Arterial (Reliever).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Weir Drive, north of Valley Creek Road is currently classified as A Minor Arterial. The proposed reclassification would provide continuity. Woodwinds Drive completes the connection of Weir Drive to Lake Road.</td>
</tr>
</tbody>
</table>

Legend
- Principal Arterial
- A Minor Augmentor
- A Minor Reliever
- A Minor Expander
- A Minor Connector
- Collector
- Local Street
- Private Street
- Convert From Collector to A Minor Reliever
- Convert From Collector to Local Street

Transportation Plan
City of Woodbury
Figure 9-15: Proposed Functional Classification Revisions
Roadway Design

As discussed earlier in this transportation chapter, the City plans to use a CSS approach to roadway design. This approach will allow vehicular transportation needs to be met in a manner which limits impacts to the greatest degree feasible and effectively addresses livability factors as defined by the DPTF. The CSS guidelines are outlined under the Context Sensitive Solutions – Design Principles Task Force heading in the Special Transportation Issues section of this chapter.

Aviation Plan

There currently are no existing or planned aviation facilities within the City of Woodbury. However each community has a responsibility to include airspace protection in its comprehensive plan.

The closest airports to Woodbury are:

- Downtown St. Paul Airport (Holman Field), approximately 3.3 miles to the west
- South St. Paul Municipal Airport, approximately 2.4 miles to the west
- Lake Elmo Airport, approximately 3.1 miles to the north-northeast

Any person or organization who intends to sponsor the construction or alteration of a structure affecting navigable airspace as defined in Federal Regulation Title 14; Part 77 needs to inform the Federal Aviation Agency (FAA) of the project. This notification is accomplished through the completion and submittal to FAA of Form 7460. In the case of Woodbury, this requirement applies to the following circumstances:

- any construction or alteration exceeding 200 feet above ground level
- any construction or alteration of greater height than an imaginary surface extending outward and upward at a slope of 100 to 1 from a) Holman Field, and b) South St. Paul Municipal Airport.

Woodbury is not within the Influence Area of any of the airports identified above, and therefore is not subject to the associated land use restrictions.

Woodbury is home to a non-directional radio beacon/tower that is used for navigational purposes by aircraft flying to nearby airports. The Terminal Doppler Weather Radar (TDWR) system building and 109 foot tower are under the jurisdiction of the Federal Aviation Administration (FAA) and are located between Dale Road and Military Road approximately a quarter mile east of Radio Drive. The City of Woodbury has identified a future water tower site approximately 1/8 mile east of the TDWR tower. The City will coordinate with the FAA regarding future construction of a water tower and/or potential future residential development in the area to ensure that these projects do not interfere with the operations of the TDWR.

Woodbury is also home to an outer marker beacon for Holman Field in St. Paul. This beacon is located just east of Radio Drive and south of Dale Road.

There currently are no heliports in Woodbury or any known plans to construct one. The only likely location for a heliport in Woodbury is at Woodwinds Hospital west of I-494 at Lake Road.

Implementation and Funding Plan

Implementation Actions

The purpose of this section is to summarize implementation information from the previous sections of this chapter. This information, organized according to the different components of the overall transportation system is summarized in Table 9-9. The implementation timeframes are broken into the following categories:

- Short Term: 0-2 years
- Mid Term: 2-5 years
- Long Term: 5-15 years

Funding Sources

The City of Woodbury will have varying degrees of financial participation in future roadway related projects,
### Table 9-9: Implementation of Improvements

<table>
<thead>
<tr>
<th>Improvement Type</th>
<th>short-term (0 - 2 years)</th>
<th>mid-term (2 - 5 years)</th>
<th>long-term (5 - 15 years)</th>
<th>ongoing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Transportation Demand Management (TDM)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Review options of: a) a TDM program for City employees, and b) encouraging developers of new projects and existing larger employers to implement TDM plans</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Non-Motorized Transportation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Evaluate and implement bike lanes on applicable City roadways</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) Work with Washington County to evaluate and implement bike lanes on applicable County roadways</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3) Work with developers of new residential areas to accommodate bicycle and pedestrian access/facilities as discussed in 2030 Non-Motorized section</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4) Work with developers of new commercial areas to accommodate bicycle and pedestrian access/facilities as discussed in 2030 Non-Motorized section</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Transit</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Periodically track demand for circulator service and/or enhanced dial-a-ride service</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>2) Coordinate with Met Council/Metro Transit regarding expanded park-and-ride capacity</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>3) Work with Met Council/Metro Transit to promote and study enhanced express service in I-94 corridor</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><strong>Roadway/Traffic</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Periodically monitor crash locations and do analysis as appropriate</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>2) Formalize context sensitive design process and procedures</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>3) Prepare program to review and implement (where appropriate) design considerations for aging drivers</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>4) Track legislation concerning initiatives that will promote roadway safety including red light running camera programs and municipal use of administrative fines for traffic violations</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>5) Monitor roadway segments slightly over D/E threshold (e.g.: Radio Drive between Tamarack and Lake; Woodbury Drive between Dale and ½ mile south of Bailey)</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>6) NE Area analysis – continue to coordinate with Mn/DOT and Washington County to perform necessary traffic analysis</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>7) Periodically review City access management guidelines to update as needed</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>8) Periodically meet with Washington County staff to discuss access management issues</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>9) Support and participate in I-94 East corridor analysis</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>10) Apply to Metropolitan Council for roadway functional classification revisions summarized in Figure 9-15</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>11) Coordinate with Washington County regarding transferring the jurisdiction over Valley Creek Road between Woodbury Drive and Manning Avenue from the City to the County</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>12) Perform/review site-specific traffic studies</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>13) Construct Committed and Planned Improvements per Figures 9-3 and 9-4</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>14) Plan and construct non-capacity upgrades to roadways</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>15) Coordinate with Mn/DOT and Washington County to plan and construct capacity upgrades to roadways (Figure 9-7’) as they become necessary</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

SOURCE: WSB & Associates

K:\1996-06\Admin\Doc\Report\Tables\20V Woodbury Tables\Implementation Table
whether they are local, county or state projects. The City can obtain funding for transportation improvements and programs from a variety of sources, some of which are summarized below.

**General Ad Valorem (Property) Taxes** – Transportation projects can be funded with the general pool of municipal revenues raised through property taxes.

**Municipal State Aid** – Cities with populations of greater than 5,000 are eligible for funding assistance from the Highway User Tax Distribution Fund (funded with the state gas tax and vehicle taxes, as well as federal transportation funds through Mn/DOT). These funds are allocated to a network of Municipal State Aid (MSA) streets. Currently, the City of Woodbury receives an apportionment per year for improvements to its MSA streets, which are generally collector roadways.

**Federal Transportation Funds** – The guidelines for direct federal funding for transportation projects are established under the Safe, Accountable, Flexible, Efficient Transportation Equity Act (SAFETEA-LU). These funds are allocated by the Metropolitan Council which serves as the Metropolitan Planning Organization for the Twin Cities metropolitan area. Roadway, transit, non-motorized and other transportation-related projects are selected on a competitive basis based on evaluation, prioritization and recommendation by the Metropolitan Council’s Transportation Advisory Board (TAB). The process of solicitation for project proposals and resulting allocation of federal funding to selected projects occurs every two years. The next round of solicitation for proposals will take place in 2009.

**Cooperative Agreements with Mn/DOT and/or Washington County** – Different levels of government can cooperate on planning, implementing and financing transportation projects which provide benefits to all the concerned agencies. The financial terms and obligations are generally established at the front end of the projects.

**Tax Increment Financing (TIF)** – This method of funding uses the additional tax revenue anticipated to be generated because of the given project’s benefits in future years. The difference between current tax revenues from the targeted district and the increased future tax revenues resulting from the improvements is dedicated to retiring the municipal bonds used to finance the initial improvement(s). The City of Woodbury has an adopted policy guiding the use of TIF.

**Property Tax Abatement** – A city may grant an abatement of some or all of the taxes or the increase in taxes it imposes on a parcel of property if the city accepts the benefits of the proposed abatement are at least equal to the costs. The city must also determine that the agreement is in the public interest because it will increase or preserve tax base, provide employment opportunities, provide or help acquire or construct public facilities, help redevelop or renew blighted areas or help provide access to services for residents of the city.

**Developer Contributions** – Under this approach, the impact of the additional traffic from a proposed development on the local roadway system is projected, using standard traffic engineering procedures. Costs associated with improving the roadway system to handle the additional traffic at an acceptable level of service are funded by the developer. This approach generally involves some level of negotiation between the local government and the developer to work out a cost-sharing agreement that allows the development to move forward.

**Assessments** – Properties that benefit from a roadway scheduled for improvement may be assessed for the cost of construction. In order to assess the owner, it must be demonstrated that the value of their property will increase by at least the amount of the assessment.

**Grants** – Many grant programs exist that generally can provide for partial or full payment for specific project components. For example, Mn/DOT has operated a Safe Routes to School grant program.
Appendix 9-1: Non Motorized Site Access Design - Best Practices

Safety & Security:

- Minimize conflict points between vehicles, pedestrians and cyclists.
- Consider sight distances overall site design and in the placement of entry signs and landscaping.
- Consider personal security for pedestrians, cyclists and transit users.
- Given topography, scale and context, locate buildings close to the street but provide adequate clearance for pedestrian activities along street frontage.
- Where appropriate, animate the street frontage with retail, restaurants and other pedestrian oriented uses.

Building Entrances:

- Where appropriate, locate building entrances close to the street, with direct pedestrian access.
- Minimize potential conflict points between users arriving by different modes.

Internal Transportation Network:

- Match roads and paths with surrounding networks, and ensure direct connections through the site for cyclists and pedestrians.
- Limit block lengths and provide crosswalks where appropriate.
- Apply appropriate traffic-calming principles. (Proper site design should avoid the need to apply extensive traffic calming.)
- Accommodate transit use (i.e., park and ride transit lots).

Pedestrian & Cyclist Routes:

- Provide safe, continuous and clearly defined routes for pedestrians and cyclists along desired lines including links to surrounding residential areas.
- Provide weather protection and amenities such as trees.
- Designate pedestrian and cyclist crossings at intersections.

Motor Vehicle Parking Configuration & Treatment:

- Locate off-street parking away from the street, preferably behind buildings.
- Separate vehicle access from pedestrian access, and design access and egress controls so vehicles do not block pedestrian ways.
- Provide protected pedestrian walkways through parking lots.

Bicycle Parking:

- Locate bicycle parking near entrances in high visibility locations.
- Encourage provision of secure, weather-protected bicycle parking and gear storage for longer term users.
- Encourage provision of showers, changing rooms and lockers within employment centers.

Passenger Pick-up & Drop-off Areas:

- Locate passenger pick-up and drop-off areas to the side or rear of buildings, downstream from the entrance, but no more than 100 feet away from it.

Pedestrian Facilities:

- Provide sidewalks provided along all roads, and follow pedestrian desired lines where possible.
- Properly sign crossings wherever a path or sidewalk crosses a road.
- Clearly define and delineate pathways and provide sufficient unobstructed width.

This list was adapted from The Canadian Guide to Promoting Sustainable Transportation through Site Design by the Canadian Institute of Traffic Engineers.
Appendix 9-2

Access Management Policy

PURPOSE
The purpose of this policy is to establish intersection spacing guidelines for roadways under the City’s jurisdiction. These guidelines are intended to reduce the negative effect of incremental, uncoordinated access decisions by providing a consistent policy for the installation of roadway access points. The application of these guidelines during the transportation planning and design stage should produce a fully integrated roadway system that supports the travel needs associated with both regional and local travel.

POLICY
Access management is a technique or process of providing adequate access to adjacent land development while maintaining a flow of traffic on a roadway consistent with the function of the roadway. Management consists of carefully controlling the number, location, design, and operation of all public street intersections and private access to the public roadway system to provide safety and mobility of the traveling public while accommodating the access and accessibility needs of property owners.

The Minnesota Department of Transportation (Mn/DOT) has established a set of access management guidelines to be effective for all trunk highways in Minnesota. In order to have a uniform set of access guidelines throughout Minnesota, Mn/DOT has been working with cities and counties to adopt similar guidelines for roads under their jurisdiction. Washington County has adopted Mn/DOT’s guidelines. Recognizing the need for consistency, the City of Woodbury has developed an access management policy that is similar to both Mn/DOT’s and Washington County’s.

ACCESS SPACING GUIDELINES
The City of Woodbury has a system of roadways, which vary widely in purpose, and access needs. In order to promote a safe and reasonable access between public roadways and adjacent land; improve the convenience and ease of movement of travelers on public and private roads; and permit reasonable speeds and economy of travel while maintaining the capacity of the roadway, the location and design of access points shall be in accordance with the following access spacing guidelines. These guidelines should apply to all existing, planned, or proposed roadways under the jurisdiction of the City of Woodbury. The following table provides the typical spacing requirements for different types of access. The spacing guidelines are similar, but slightly less restrictive, to those adopted by both Mn/DOT and Washington County. Because the City does not have jurisdiction of any principal arterials, they are not included in the City’s spacing guidelines. The City’s access management policy should only apply to minor arterial, collector, and local roads under the City’s jurisdiction, and private access onto those roadways.

EXCEPTIONS PROCESS
Due to any number of extraordinary circumstances, the Council may choose to deviate from the above guidelines on a case-by-case basis. These circumstances may include, but are not limited to, roadways having low traffic volumes, geographic and topographic constraints, and factors associated with reconstruction of existing roadways.

Effective Date: January 14, 2004
## ACCESS SPACING GUIDELINES

<table>
<thead>
<tr>
<th>TYPE OF ACCESS</th>
<th>MINIMUM SPACING ALLOWED BETWEEN EACH TYPE OF ACCESS ON DIFFERENT ROADWAY FUNCTIONAL CLASSIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Minor Arterial (1)</td>
</tr>
<tr>
<td></td>
<td>Collector (1) &amp; Commercial</td>
</tr>
<tr>
<td></td>
<td>Residential (1)</td>
</tr>
<tr>
<td>&gt;7,500 ADT</td>
<td></td>
</tr>
<tr>
<td>&lt;7,500 ADT</td>
<td></td>
</tr>
<tr>
<td>A. Private residential driveways</td>
<td>No direct access</td>
</tr>
<tr>
<td></td>
<td>(3)</td>
</tr>
<tr>
<td>B. Commercial driveways &amp; Commercial streets</td>
<td>No direct access</td>
</tr>
<tr>
<td></td>
<td>1/8 mile (660')</td>
</tr>
<tr>
<td>C. Non-continuous residential streets</td>
<td>1/8 mile with no median opening (660')</td>
</tr>
<tr>
<td></td>
<td>1/8 mile (660')</td>
</tr>
<tr>
<td>D. Continuous residential streets</td>
<td>1/4 mile (1,320')</td>
</tr>
<tr>
<td></td>
<td>1/4 mile (1,320')</td>
</tr>
<tr>
<td>E. Collector streets</td>
<td>1/4 mile (1,320')</td>
</tr>
<tr>
<td></td>
<td>1/4 mile (1,320')</td>
</tr>
<tr>
<td>F. Minor arterials</td>
<td>1/2 mile (2,640')</td>
</tr>
<tr>
<td></td>
<td>1/2 mile (2,640')</td>
</tr>
<tr>
<td></td>
<td>1/4 mile (1,320')</td>
</tr>
<tr>
<td></td>
<td>1/4 mile (1,320')</td>
</tr>
</tbody>
</table>

(1) See Functional Classification Map for classification of each roadway.
(2) Traffic volumes refer to 20-year forecasts.
(3) Determination based on other criteria (sight distance, speed, traffic volume, lot size, etc.)
(4) Distances shown are minimums.
(5) “Non-continuous” streets refer to cul-de-sacs or short length streets, typically less than ½ mile in length, which do not cross the roadway providing access (three-legged intersections).
(6) The City reserves the right to increase the minimums based on other criteria (sight distances, speed, traffic volume, etc.)
## Appendix 9-2: MnDOT Access Management Guidelines

<table>
<thead>
<tr>
<th>Category</th>
<th>Land-Use or Facility Type</th>
<th>Typical Functional Classification</th>
<th>Typical Posted Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>High-Priority Interregional Corridors (IRC)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1F</td>
<td>Interstate Freeway</td>
<td>Interstate Highways</td>
<td>55 – 75 mph</td>
</tr>
<tr>
<td>1A</td>
<td>Non-Interstate Freeway</td>
<td>Principal Arterials</td>
<td>55 – 65 mph</td>
</tr>
<tr>
<td>1B</td>
<td>Rural</td>
<td>Principal Arterials</td>
<td>55 – 65 mph</td>
</tr>
<tr>
<td>1C</td>
<td>Urban / Urbanizing</td>
<td>Principal Arterials</td>
<td>40 – 55 mph</td>
</tr>
<tr>
<td>1D</td>
<td>Urban Core</td>
<td>Principal Arterials</td>
<td>30 – 40 mph</td>
</tr>
<tr>
<td>2</td>
<td>Medium-Priority Interregional Corridors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2A</td>
<td>Non-Interstate Freeway</td>
<td>Principal Arterials</td>
<td>55 – 65 mph</td>
</tr>
<tr>
<td>2B</td>
<td>Rural</td>
<td>Principal Arterials</td>
<td>55 – 65 mph</td>
</tr>
<tr>
<td>2C</td>
<td>Urban / Urbanizing</td>
<td>Principal Arterials</td>
<td>40 – 55 mph</td>
</tr>
<tr>
<td>2D</td>
<td>Urban Core</td>
<td>Principal Arterials</td>
<td>30 – 40 mph</td>
</tr>
<tr>
<td>3</td>
<td>Regional Corridors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3A</td>
<td>Non-Interstate Freeway</td>
<td>Principal Arterials</td>
<td>55 – 65 mph</td>
</tr>
<tr>
<td>3B</td>
<td>Rural</td>
<td>Principal Arterials / Minor Arterials</td>
<td>45 – 65 mph</td>
</tr>
<tr>
<td>3C</td>
<td>Urban / Urbanizing</td>
<td>Principal Arterials / Minor Arterials</td>
<td>40 – 45 mph</td>
</tr>
<tr>
<td>3D</td>
<td>Urban Core</td>
<td>Principal Arterials / Minor Arterials</td>
<td>30 – 40 mph</td>
</tr>
<tr>
<td>4</td>
<td>Principal Arterials in the Twin Cities Metropolitan Area and Primary Regional Trade Centers (Non-IRCs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4A</td>
<td>Non-Interstate Freeway</td>
<td>Principal Arterials</td>
<td>55 – 65 mph</td>
</tr>
<tr>
<td>4B</td>
<td>Rural</td>
<td>Principal Arterials</td>
<td>45 – 55 mph</td>
</tr>
<tr>
<td>4C</td>
<td>Urban / Urbanizing</td>
<td>Principal Arterials</td>
<td>40 – 45 mph</td>
</tr>
<tr>
<td>4D</td>
<td>Urban Core</td>
<td>Principal Arterials</td>
<td>30 – 40 mph</td>
</tr>
<tr>
<td>5</td>
<td>Minor Arterials</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5A</td>
<td>Rural</td>
<td>Minor Arterials</td>
<td>45 – 55 mph</td>
</tr>
<tr>
<td>5B</td>
<td>Urban / Urbanizing</td>
<td>Minor Arterials</td>
<td>40 – 45 mph</td>
</tr>
<tr>
<td>5C</td>
<td>Urban Core</td>
<td>Minor Arterials</td>
<td>30 – 40 mph</td>
</tr>
<tr>
<td>6</td>
<td>Collectors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6A</td>
<td>Rural</td>
<td>Collectors</td>
<td>45 – 55 mph</td>
</tr>
<tr>
<td>6B</td>
<td>Urban / Urbanizing</td>
<td>Collectors</td>
<td>40 – 45 mph</td>
</tr>
<tr>
<td>6C</td>
<td>Urban Core</td>
<td>Collectors</td>
<td>30 – 40 mph</td>
</tr>
<tr>
<td>7</td>
<td>Specific Area Access Management Plans</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>All</td>
<td>All</td>
<td>All</td>
</tr>
</tbody>
</table>

---

1. Mn/DOT Office of Investment Management (OIM), 2008
### Appendix 9-2: MnDOT Access Management Guidelines

<table>
<thead>
<tr>
<th>Category</th>
<th>Area or Facility Type</th>
<th>Typical Functional Class</th>
<th>Public Street Spacing</th>
<th>Signal Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>High-Priority Interregional Corridors &amp; Interstate System (IRCs)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1F</td>
<td>Interstate Freeway</td>
<td>Principal Arterials</td>
<td>Interchange Access Only</td>
<td></td>
</tr>
<tr>
<td>1AF</td>
<td>Non-Interstate Freeway</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1A</td>
<td>Rural</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1B</td>
<td>Urban/Urbanizing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1C</td>
<td>Urban Core</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Medium-Priority Interregional Corridors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2AF</td>
<td>Non-Interstate Freeway</td>
<td>Principal Arterials</td>
<td>Interchange Access Only</td>
<td>See Section 3.2.5 for Signalization on Interregional Corridors</td>
</tr>
<tr>
<td>2A</td>
<td>Rural</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2B</td>
<td>Urban/Urbanizing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2C</td>
<td>Urban Core</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Regional Corridors</td>
<td></td>
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1 Mn/DOT Office of Investment Management (OIM), 2008
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