This City Council Workshop meeting is taking place virtually and at Woodbury City Hall in the Ash North and South Conference Room. Members of the public may attend the meeting in person and may also join the meeting using a PC, Mac, iPad, iPhone or Android device.

Public comments will be accepted during the meeting both in person and by using the link to the virtual meeting to join the meeting and then submit your questions via the online Q&A feature within the meeting.

Questions regarding the meeting will be taken between the hours of 8:00 a.m. to 4:30 p.m. at 651-714-3524 or at council@woodburymn.gov. Questions received after 4:30 p.m. will be responded to in the next three to seven business days.

Please note that all agenda times are estimates.

6:00 p.m. Dinner – Birch Conference Room

**Workshop Agenda**

6:40 p.m. 1. Roadway and Trail Policy Project Parameters; Workshop No. 3 22-90

7:25 p.m. 2. Bicycle and Pedestrian Plan No. 2 22-91

8:10 p.m. 3. Break

8:20 p.m. 4. Urban Canopy and Emerald Ash Borer 22-92

9:00 p.m. 5. Administrator Comments and Updates¹

9:05 p.m. 6. Mayor and City Council Comments and Commission Liaison Updates¹

9:10 p.m. 7. Adjournment

¹ Items under comments and updates are intended to be informational or of brief inquiry. More substantial discussion of matters under comments and updates should be scheduled for a future agenda.

The City of Woodbury is subject to Title II of the Americans with Disabilities Act which prohibits discrimination on the basis of disability by public entities. The City is committed to full implementation of the Act to our services, programs, and activities. Information regarding the provision of the Americans with Disabilities Act is available from the City Administrator’s office at (651) 714-3523. Auxiliary aids for disabled persons are available upon request at least 72 hours in advance of an event. Please call the ADA Coordinator, Clinton P. Gridley, at (651) 714-3523 (TDD (651) 714-3568)) to make arrangements.
City of Woodbury, Minnesota
Office of City Administrator

Council Workshop Letter 22-90

March 23, 2022

To: The Honorable Mayor and Members of the City Council
From: Clinton P. Gridley, City Administrator
Subject: Roadway and Trail Policy Project Parameters; Workshop No. 3

Summary

The purpose of this workshop item is to continue roadway and pedestrian policy discussions following the January 19, 2022, and February 16, 2022, workshops. This council workshop agenda item is the final of an anticipated three-part discussion seeking to align our policies with the Council’s intent.

Oftentimes there is tension between property owners or individuals that are impacted by City infrastructure projects with the competing interests and values of the community. For the Royal Oaks Neighborhood, the conflict between the addition of sidewalks and trails to provide multi-modal transportation equity and accessibility for the community is competing against the burden of maintenance for sidewalk and trails, potential loss of tree canopies, reduced parking in driveways, and changes in the character of the neighborhood.

Community engagement can both inform and help communities work towards a shared understanding and acceptance of the project, but it does not solve all of these competing interests to build consensus. Council is ultimately tasked with making these decisions and prioritizing which aspects of a roadway rehabilitation or reconstruction project need to remain as required in policy as they reflect our community values and the good of the whole, and which decisions can be left up to individual neighborhoods.

These revised guidelines will help staff more effectively execute the vision of the Council with each future project. With any roadway rehabilitation or reconstruction project moving forward, there will be a robust community engagement component, beginning early on in the project development, to ensure that the community has had ample time to understand and discuss the project with staff and other community members.

Process

On January 19, 2022, Council directed staff to modify the existing policy guidance language to provide more design flexibility and prioritization within the Roadway Corridor Design Principles. At the February 16, 2022, workshop, staff prepared three policy modification recommendations options for the Council to consider.
Staff heard the Council express support for Option No. 3, which provides guidance to prioritize neighborhood collector roadways and local roadways with connectivity for pedestrian enhancements and seeking better alignment with neighborhood input. For Council consideration, staff has further developed Option No. 3, provided recommended policy revisions, and next steps.

**Recommendations**

Option No. 3 provides flexibility in the existing language through context sensitive solutions. The revised policy direction creates a priority for implementing trails along neighborhood collector roadways to increase connectivity, accessibility and safety. It is desired to implement trails or sidewalks on neighborhood roadways with important connectivity to destinations such as schools, parks, businesses and transit stops. Revised language aspires to implement sidewalks on neighborhood roadways but would not require implementation unless requested by residents with community support and a favorable feasibility determination.

Staff believes that suggested policy recommendations could apply equally to roadway rehabilitation and reconstruction projects, with the distinction being that economic factors will play a stronger role in determining the feasibility of retrofitting trails and sidewalks on roadway rehabilitation projects. This has been a well-established approach implemented on rehabilitation projects since the adoption of the 2009 Roadway Corridor Design Principles Report.

Policy direction based on this option prioritizes trail connections along neighborhood collector roadways and where important connectivity is needed for accessibility and safety. Increased staff efforts during public engagement will be essential to determine the stakeholders, neighborhood context and if community support is there for the addition of neighborhood roadways. While it would be unrealistic to expect 100 percent support for implementing trails and sidewalks under this option, a community engagement process which helps residents understand the benefits of a sidewalk and trail network, along with resident input on design parameters, will be essential during the project planning stages to define context.

**Policy Background**

Existing language within the Roadway Corridor Design Principles sets the highest priority in achieving a residential roadway network that includes a sidewalk on one side of all through residential roadways. Using this prioritization criteria as the starting point for design puts the desired outcome ahead of the shared stakeholder vision that can provide an important basis for decision making.

It is important to not only understand the level of support or opposition toward a desired design alternative, but the reasons for support and opposition in which the planning, design, construction and maintenance alternatives can address. A comprehensive understanding of contexts will be demonstrated, and continued communication and collaboration will position the project process toward increased ability to achieve a shared understanding and acceptance.

---

1 Context sensitive solutions refers to the collaborative manner of advancing projects through the planning process with a focus on community values, needs, and desires. This approach involves all stakeholders in providing transportation facilities that fit its setting and leads to preserving and enhancing qualities such as scenic, aesthetic, historic, community and environmental resources, while improving or maintaining safety, mobility, accessibility and infrastructure conditions.
of the project. Flexibility and creativity early in the planning stages will allow for the creation of effective and equitable transportation solutions while preserving community values and enhancing the neighborhood environment. Consensus is not likely to be achieved on all projects as competing interests will exist from stakeholders on all projects, but the process will identify outcomes that best consider the neighborhood context while meeting transportation equity policies.

Developing a citywide public engagement process will be discussed at a future workshop. Project specific engagement plans will be developed based on the developed engagement process.

Policy Revisions

Based on direction staff received during previous Council Workshop discussions, staff has prepared the following draft language modifications:

Roadway Corridor Design Principles

IV. Roadway Corridor Design Templates (page 9):

The DPTF affirmed that the width for new and replacement residential roadways will be 28 feet. This is also the desired width for reconstructed residential roadways when sidewalks are constructed. Sidewalks, boulevards, and landscaping will be standard elements of all these roadway corridor designs. (“Replacement reconstructed” applies to roadway reconstruction, and not to mill and overlay improvements.) A width of 26 feet is acceptable for roadways that terminate in a cul-de-sac. The 26-foot and 28-foot corridor widths are consistent with the policies of the City’s Surface Water Management Plan.

VI. Corridor Design Process (page 13):

A. Corridor Design Process

The roadway design templates will be used as the starting point for design of new roadways or the desired redesign and reconstruction of existing roadways. While changes to the designs may be incorporated to meet individual site or project needs, these will be viewed as similar to requesting a “variance” from the City’s code, and will require a specific rationale for the change from the adopted templates. A context sensitive solutions approach will help inform the shared stakeholder vision with the Design Principles to provide a basis for design decisions and feasibility of the residential design template application. Prioritization of pedestrian connections will be based on the network Plan as identified in the City’s Bicycle and Pedestrian Plan.

B. Reconstruction of Existing Roadway Corridors

- The roadway design templates and guidelines will be the starting point for the desired design of major reconstruction projects in existing roadway corridors, including roadway width, trail and sidewalk installation, landscaping requirements and other corridor design elements. The prioritization of pedestrian improvements within the existing roadway corridors will generally be as follows:
The City will identify the existing corridors that are priorities for bicycle lanes and bicycle routes, and work to incorporate these into priority corridors, and other corridors as right-of-way allows. Prioritization shall be consistent with the network Plan as identified within the City’s Bicycle and Pedestrian Plan.

Design decisions will be made on a case-by-case basis based on a context sensitive solution approach when adequate right-of-way does not exist to design the corridor to meet the standards in the design templates as shown below:

**Woodbury Bicycle and Pedestrian Plan**

Established Neighborhood Policies (page 70)

1. **Consistent with transportation equity policies in the City’s 2040 Comprehensive Plan, it is desired that** fully reconstructed residential roadways will be constructed designed to the current roadway corridor Design Principles standards, unless, through the project design process and accounting for neighborhood context the standard design is not feasible to construct.

**Governance Mode**

- **Generative** –Identifying key questions, anticipating future challenges, framing of issues, development of options. Problem-framing. What to pay attention to, what it means, and what to do about it. How does it fit with our mission, vision and values?

**Fiscal Implications**

There are no immediate budget impacts or future cost obligations based on the policy review. Any budget impacts or future cost obligations based on considerations for policy revisions will be prepared as appropriate based on Council direction.
Policy

The main policies providing guidance for roadway design for rehabilitation, reconstruction and construction projects are:

<table>
<thead>
<tr>
<th>Main Policies</th>
<th>Roadway and Pedestrian Facilities Guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>2040 Comprehensive Plan</td>
<td>Safety, transportation, equity, health, active living, economic, environmental, safe routes to school goals</td>
</tr>
<tr>
<td>Roadway Corridor Design Principles</td>
<td>Identifies key design aspects and standards</td>
</tr>
<tr>
<td>Bicycle and Pedestrian Plan - Draft</td>
<td>Pedestrian network priorities and retrofit goals</td>
</tr>
</tbody>
</table>

Policy details can be found on the City’s website at:

- 2040 Comprehensive Plan

- Draft Bicycle and Pedestrian Plan

Process Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 19, 2022</td>
<td>Policy focus</td>
</tr>
<tr>
<td>February 16, 2022</td>
<td>Policy language direction</td>
</tr>
<tr>
<td>March 23, 2022</td>
<td>Policy language review</td>
</tr>
<tr>
<td>April 20, 2022</td>
<td>Capital Improvement Plan</td>
</tr>
<tr>
<td>April 2022</td>
<td>Amend existing policies</td>
</tr>
<tr>
<td>May 2022</td>
<td>Council adopts amended policy</td>
</tr>
<tr>
<td>July 2022</td>
<td>Council Workshop - Community Engagement Strategy</td>
</tr>
<tr>
<td>August 2022</td>
<td>Royal Oaks project public engagement</td>
</tr>
<tr>
<td>September 2022</td>
<td>Public Improvement Hearing</td>
</tr>
</tbody>
</table>

The timeline for the 2023 Roadway Rehabilitation Project relies heavily on the development and approval of a comprehensive community engagement strategy that outlines how the public engagement for roadway projects and other public input process can be managed and implemented.

Public Process

Significant public process occurred with the development of each of the City’s existing policies in 2009 and 2015 (Roadway Corridor Design Principles), 2019 (2040 Comprehensive Plan), and most recently 2020 and 2021 (Bicycle and Pedestrian Plan – Draft).
Background

Staff prepared the scope of the 2022 Roadway Rehabilitation Project in the Royal Oaks neighborhood following guidance from existing policies and direction from City Council. Following the Public Improvement Hearing at the City Council meeting on November 10, 2021, Council voted to cancel the project to review existing policies related to residential projects with full reconstruction. Specific concerns from the City Council were related to sidewalk construction and tree impacts. Resident opposition was also heard regarding trail and sidewalk construction during the public engagement and hearing process. Following the Public Improvement Hearing, City Council discussed potential policy modifications at the Workshop on January 19, 2022, and February 16, 2022.

Written By: Tony Kutzke, City Engineer  
Approved Through: Chris Hartzell, Engineering Director  
Attachment: Roadway Corridor Design Principles Task Force Report
“First we shape our public spaces, and then our public spaces shape us.” - Winston Churchill

City of Woodbury, Minnesota

July 2009
Project No. 13949.000
ACKNOWLEDGMENTS

The contributions of the following to the Task Force are acknowledged and appreciated:

Woodbury Roadway Corridor Design Principles Task Force Members

Clint Gridley, City Administrator
David Jessup, Public Works Director
Klayton Eckles, Deputy Public Works Director
Marc Briese, Transportation Engineer
Jim Triebold, Streets Superintendent
Bob Klatt, Director of Parks and Recreation
Dwight Picha, Community Development Director
Melissa Douglas, City Planner
Janelle Schmitz, Economic Development Manager
Steve Kernik, Environmental Planner
Jennifer McLoughlin, Sustainability Coordinator
Lee Vague, Public Safety Director

Woodbury Transportation Plan

Jack Forslund, WSB
Tony Heppelmann, WSB
David Richardson, MMM Group
Mark Inglis, MMM Group
Loren Polonsky, MMM Group

Task Force Facilitator and Report

Sherri Buss, TKDA
Angela Torres, TKDA
TABLE OF CONTENTS

I. Executive Summary .................................................................................................. E-1
II. Introduction And Initiation of the Task Force ......................................................... 1
III. Task Force Mission and Objectives ....................................................................... 2
IV. Roadway Corridor Design Templates ..................................................................... 6
V. Landscape Design Guidelines For Corridors ............................................................ 10
VI. Corridor Design Process ....................................................................................... 13
VII. Bouldevards and Medians ................................................................................... 15
VIII. Bicycle Lanes, Pedestrian Lanes, and Trails ......................................................... 16
IX. Comparison of Proposed Templates to the City’s Current Standards .................. 18
X. Appendices ........................................................................................................... 21

LIST OF TABLES

Table 1: Roadway Corridor Design Templates ............................................................. 6
Table 2: Plant Schedule for Corridors ......................................................................... 11

APPENDICES

1. Proposed and Current Roadway Corridor Design Templates:
    Design Templates A1, A2, B1, B2, C1, C2, D1, D2, E1, E2, E3, E4, STL-8

2. Table A-1: Decision Matrix for Selecting Corridor Designs with Dedicated Turn Lanes

3. Technical Memorandum 1: Definition of Speed Related to Roadways

4. Pros and Cons of Capping Corridors

5. City-wide Corridor Map

6. Corridor Design Guidelines
I. EXECUTIVE SUMMARY

This Report presents the work and recommendations of Woodbury’s Roadway Corridor Design Principles Task Force (DPTF). Many of the recommendations have been incorporated into the City’s 2030 Transportation Plan and Comprehensive Plan.

In an effort to better align roadway corridor design and construction practices with the City’s values and emphasis on all users and stakeholders, an interdisciplinary task force of City staff from the Community Development, Public Works, Parks, and Public Safety Departments, as well as the City’s Administrator and Sustainability Coordinator was formed. The Roadway Corridor DPTF report was developed as a result of over two years of work by this group.

The Task Force sought to balance four significant goals in roadway corridor design. Traditionally, roadway design has been based on the twin principles of safety and mobility. As Woodbury has continued to mature and seek a leadership role in areas of quality of life, those two principles alone are insufficient to capture all the aspects that today’s roadway design needs to encompass. After extensive discussions with the Design Principles Task Force, it became clear that two more principles besides safety and mobility need to be added - sustainability and livability. Therefore, the City’s more complete list of design principles is as follows:

- Mobility
- Safety
- Sustainability
- Livability

The Task Force’s discussions utilized principles from the Context Sensitive Solutions (CSS) approach that is increasingly utilized by transportation authorities. The CSS approach and guidelines are described in detail in the Transportation Chapter of the City’s Comprehensive Plan.

The Task Force developed twelve design templates for the City’s roadway corridors, and recommendations regarding the elements of the templates and how to use them in corridor design. The Task Force compared the proposed templates to the City’s existing roadway design standards, and found that the proposed templates provide a better balance among the four design principles.
The approach used differed in significant ways from traditional approaches to roadway design, including the following:

- The smallest size corridor necessary to meet functional requirements and to accommodate projected traffic will be the starting point for roadway design on City, County, and State projects;

- As a design feature, four-lane undivided roadways have been replaced with a 3-lane design with center turn lane, which functions as well for mobility but reduces the pavement area. Three lane sections also typically have many fewer crashes when compared to four-lane undivided roadways. The City should study whether or not existing four-lane undivided sections could be converted to 3-lane sections;

- Minimizing the crossing width for pedestrians to the degree possible;

- Including flexibility in the designs to add transit or other alternatives in the future; and

- Including pedestrian and bicycle facilities and landscape elements as integral components of each of the roadway templates, but not necessarily including on-street bicycle lanes. On-street bicycle lanes and bicycle routes will be evaluated on a case by case basis on City roads as part of the preliminary engineering report.

This Report presents the conclusions of the DPTF, the proposed roadway corridor templates, an updated plant schedule for corridors, and a variety of supporting materials that provide detail on the Task Force process and conclusions.
II. INTRODUCTION AND INITIATION OF THE TASK FORCE

The City of Woodbury updated its 2030 Transportation Plan in 2008, with formal approvals expected from the Metropolitan Council in late 2009. As a part of this effort, the City created an interdisciplinary Roadway Corridor Design Principles Task Force (DPTF) to work concurrently with the Technical Advisory Panel (TAP) for the Transportation Plan update. The DPTF included staff from the City’s Engineering and Public Works Department, Community Development Department, Parks and Recreation Department, Public Safety Department, the City Administrator, and Sustainability Coordinator.

The DPTF met numerous times during 2007 and 2008, and completed the following:

- Reviewed engineering, environmental, aesthetic, and other roadway corridor design criteria, and determined that four criteria should be used to develop design templates for roadway corridors in Woodbury - mobility, safety, sustainability, and livability.

- Completed design templates for roadway corridors within the City that would address the City’s goals and criteria. The templates include recommendations for roadway elements, bicycle and pedestrian elements, landscaping, and right-of-way requirements.

- Completed additional recommendations for the design of new roadway corridors or redesign of existing corridors.

The Task Force presented the templates and its recommendations to the City’s Sustainability Committee, the TAP for the Transportation Plan update, Comprehensive Plan Task Force, and the City Council. The final recommendations and templates are referenced in the City’s 2030 Transportation and Comprehensive Plan.
III. TASK FORCE MISSION AND OBJECTIVES

The mission of the Roadway Corridor Design Principles Task Force was to provide design guidance for the City’s roadway corridors - particularly collector and arterial corridors, “neighborhood collectors” and “commercial collectors”. The City recently completed an update of the design template for local streets. Based on early discussions, the Task Force determined that it would focus on the following:

- The Task Force would develop “design templates” for each of the roadway corridor types expected within the community by 2030. Template elements that were considered included:
  - Medians
  - Shoulders
  - Driving lanes
  - Turn lanes
  - Trails and sidewalks
  - Transit lanes
  - Boulevards
  - Utility areas
  - Landscaping

- The corridors would be multi-modal: accommodating travel by auto, bicycles, pedestrians, and transit. The corridors should be designed to maximize landscaping opportunities to soften and mitigate “hardscape” impacts of a roadway system. The corridors may need to accommodate future transportation technologies as well. The corridors would incorporate the City’s proposed Corridor Design Guidelines for landscaping.

- The Task Force’s discussions utilized principles from the Context Sensitive Solutions (CSS) approach that is increasingly utilized by transportation authorities. These principles include an interdisciplinary team approach to planning and design; attention to community values and qualities including environment, scenic, aesthetic, and natural resources as well as safety and mobility; and objective evaluation of a full range of alternatives. The CSS approach and guidelines are described in detail in the Transportation Chapter of the City’s Comprehensive Plan.

- The Task Force would balance several factors in developing the design templates for the corridors:
  - Mobility
  - Safety
  - Sustainability
  - Livability
The Task Force developed informal definitions of each of these factors, which are summarized as follows:

- **Mobility**: the ability to move traffic efficiently, easy route finding, good alternatives available; low congestion.

- **Safety**: avoid crashes and injuries for all corridor users and consider the safety of motorists who inadvertently leave the roadway.

- **Sustainability**: Woodbury’s City Council has identified sustainability as a critical success factor for the community. The City’s Comprehensive Plan states that “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; and
  - Support socially cohesive neighborhoods and an economically vibrant community.

- **Livability**: sensitivity to context; impacts to surrounding land uses; minimize noise; focus on aesthetics, quality design; roadway function as community gateway and experience; roadway function as a connector of neighborhoods for motorists, pedestrians, and bicyclists alike; maximizes opportunities for landscape elements.
The Task Force developed definitions and designs for two new types of roadway corridors within the community - “neighborhood collectors” and “commercial collectors.”

- “Neighborhood collectors” are roadways that normally have a functional classification of “local”, but serve to collect and distribute other residential and road traffic to the collector and arterial system.

- “Commercial collectors” are roadways that may have functional classification of “local” or “collector.” These roadways are in commercial districts and used exclusively to provide access to/from commercial businesses.

The Task Force philosophy is very similar to the philosophy embraced by the National Complete Streets Coalition. More than 50 jurisdictions in the United States, including states to small towns, have adopted the Complete Streets policies. These policies emphasize that a complete street is a roadway designed for multiple users - drivers, bicyclists, transit, and pedestrians of all ages and abilities. The concept focuses on changing the design and decision-making process so that all users are considered during the planning, design, building, and operation of all roadways. Mn/DOT is currently working on a feasibility report for Complete Streets in the State of Minnesota, with delivery expected to the legislature in late 2009. Marc Briese, the City’s Transportation Engineer, sits on the Technical Advisory Panel for the feasibility report.

The Task Force also noted that some issues related to transportation corridors in Woodbury would be addressed by others working on the Transportation Plan. These issues were referred to others:

- Transit - the DPTF included space within some of the templates for potential future transit facilities. Needs and options for transit and potential City roles in providing transit are considered in the Transportation Plan.

- County and State-managed corridors - the DPTF determined that it will develop design templates that best meet the City’s vision for the future. The City will discuss the proposed templates with Washington County and Mn/DOT, and work toward a consensus on solutions for design and management of these corridors.
• Parks and Trails System - the DPTF templates include trails on both sides of the road and bicycle lanes within many of the corridors; however, the City’s Parks and Trails Commission will recommend the overall trail system for the City. Consistent with the City’s Transportation Plan, it is a goal to provide pathways on both sides of all new major roadways. Paths on both sides should be considered as part of rehabilitation or reconstruction projects if adequate right of way is available and the trail would fit into the context of the existing neighborhood. On-street bicycle lanes and bicycle routes will be evaluated on a case by case basis on City roads as part of the preliminary engineering report. Issues such as lighting of bicycle trails were also referred to the Parks and Trails Commission.

Early DPTF discussions noted that current roadway designs seem to be based largely on maintaining optimum automobile speeds and mobility. The Task Force expressed a strong desire to balance sustainability and livability factors with mobility and safety, to consider the needs of all corridor users, and to accommodate and encourage a variety of transportation options, from bicycles to new and future technologies.

Halstead Trail (east-west) and Rosemill Lane (north-south)
IV. ROADWAY CORRIDOR DESIGN TEMPLATES

The Task Force developed twelve design templates for roadway corridors in Woodbury. The templates are listed on Table 1. A citywide map identify the corridors is included as Appendix 5.

Table 1: Roadway Corridor Design Templates

<table>
<thead>
<tr>
<th>Template</th>
<th>Description</th>
<th>Right-of-way</th>
<th>Number of Lanes</th>
<th>Median Width (feet)</th>
<th>Target Operating Speed (mph)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>Highest traffic volume corridor adjacent to commercial areas near Interstates; dual left turn lanes where warranted.</td>
<td>180</td>
<td>6</td>
<td>6-30</td>
<td>45</td>
</tr>
<tr>
<td>A2</td>
<td>Highest traffic volume corridor adjacent to commercial areas near Interstates; capacity to expand to 6 lanes; dual left turn lanes where warranted</td>
<td>180</td>
<td>4</td>
<td>6-30</td>
<td>45</td>
</tr>
<tr>
<td>B1</td>
<td>High traffic volume corridor</td>
<td>150</td>
<td>4</td>
<td>8-20</td>
<td>40</td>
</tr>
<tr>
<td>B2</td>
<td>High traffic volume corridor; dual left turn lanes where warranted</td>
<td>150</td>
<td>4</td>
<td>6-30</td>
<td>40</td>
</tr>
<tr>
<td>C1</td>
<td>Medium traffic volume corridor with 3 lanes (with center two-way left turn lane) and exclusive right turn lanes at intersections - primary C corridor type</td>
<td>120</td>
<td>3</td>
<td>None</td>
<td>35-40</td>
</tr>
<tr>
<td>C2</td>
<td>Medium traffic volume corridor with 3 lanes (with center two-way left turn lane) and exclusive right turn lanes at intersections - secondary C corridor type</td>
<td>120</td>
<td>3</td>
<td>None</td>
<td>35-40</td>
</tr>
<tr>
<td>D1</td>
<td>Neighborhood collector</td>
<td>88</td>
<td>2</td>
<td>None</td>
<td>30-35</td>
</tr>
<tr>
<td>D2</td>
<td>Neighborhood collector with exclusive right turn lanes</td>
<td>88</td>
<td>2</td>
<td>None</td>
<td>30-35</td>
</tr>
<tr>
<td>E1</td>
<td>Commercial land use corridor - 3 lanes (with center two-way left turn lane)</td>
<td>112</td>
<td>3</td>
<td>None</td>
<td>30</td>
</tr>
<tr>
<td>E2</td>
<td>Commercial land use corridor - 3 lanes (with center two-way left turn lane) and dedicated right turn lanes at intersections</td>
<td>112</td>
<td>3</td>
<td>None</td>
<td>30</td>
</tr>
<tr>
<td>E3</td>
<td>Commercial land use corridor - 5 lanes (with center two-way left turn lane) and dedicated right turn lanes at intersections</td>
<td>136</td>
<td>5</td>
<td>None</td>
<td>30</td>
</tr>
<tr>
<td>E4</td>
<td>Commercial land use corridor - 5 lanes (with center two-way left turn lane) and dedicated right turn lanes at intersections</td>
<td>136</td>
<td>5</td>
<td>None</td>
<td>30</td>
</tr>
<tr>
<td>STL-8</td>
<td>28-foot wide residential road with sidewalk on one or two sides</td>
<td>60</td>
<td>2</td>
<td>None</td>
<td>&lt;30</td>
</tr>
</tbody>
</table>
DPTF recommendations regarding selection of the templates include the following:

- The smallest size corridor needed to meet functional requirements and projected traffic levels will be the starting point for roadway design. The DPTF recommended limiting the width of roadway corridors to those identified in the templates to minimize separation from and impacts to surrounding land uses, and minimize the pavement area that pedestrians need to cross.

- Classification of roadways into various templates will be performed based on roadway functional classification and traffic volumes. Roadways designated “arterials” could be A or B templates. Roadways designated “collectors” could be designed with any of the template types except “A” types, depending on traffic volumes on the roadway itself, and the roadways that it intersects. The D templates are designed as “neighborhood collector” corridors. The E templates were developed for use in corridors dominated by commercial land uses with high driveway density.

- The Task Force developed the design templates specifically for traditional signalized and stop-controlled intersections. However, roundabouts may be appropriate in certain locations and have become an acceptable tool in the engineering community. The City will evaluate appropriate roadway and intersection geometry based on current and projected traffic volumes and patterns, and based on adjacent land uses. Roundabouts have been shown to have many advantages over traditional signalized intersections when designed correctly and applied at appropriate locations. Some benefits include reduced vehicle delay and gas consumption, less pollution and noise impacts, reduced crash severity, and less pavement. In cases where roundabouts are determined to be the best form of intersection traffic control, right-of-way needs and impacts at intersections will need to be re-evaluated. The Series 500 reports from the National Cooperative Highway Research Program (NCHRP) categorize roundabouts as a proven strategy, effective at reducing crashes.

- The City should evaluate options to use roundabouts at intersections at an early stage in the planning and design process, to determine if a roundabout would result in equal or better intersection function and reduce right-of-way requirements. Part of this investigation needs to be consideration of adjacent intersections and how the roundabout(s) fit into the entire corridor.

- Intersection characteristics will influence the need for turn lanes or specific elements of roundabout design.

- The A1 corridor is an alternate form of the A2 corridor, where it may be needed in commercial areas, generally within one mile of Interstates. The additional lane included in template A1 could be utilized as a transit lane or additional driving lane.

- The B2 corridor provides an option for dual left turn lanes where needed on high volume roadways.
• The C1 and D1 corridors will be used most frequently within the Medium and Low Volume classifications, respectively. The C2 and D2 options will only be selected when turn lanes are required to maintain the function of roadways that intersect with these roadway corridors. Table A-1, included in the Appendix, presents the criteria that can be used to determine needs for selection of templates with multiple turn lane configurations for non-roundabout intersections.

• The D corridor is designed to function as a “neighborhood collector”. The DPTF recommended increased use of “neighborhood collector” roadways in the future, to improve interconnectivity between the City’s neighborhoods, and to relieve pressure and congestion on the B and C corridor types. The roles of the D corridor are the following:
  - Serve as a connecting street within neighborhoods.
  - Serve as an inter-neighborhood connector, and an alternative to B or C corridors.
  - Provide inter- and intra-neighborhood connecting routes for bicycles. The D corridors could become a network of bicycle commuting routes within the City.
  - Provide a potential route for local transit services, such as shuttles.
  - The D corridors will likely be designated as State Aid roadways and would therefore be required to meet State Aid minimum design standards.

• The “commercial corridor” E templates are designed to be used in corridors that are dominated by commercial and retail land uses. Important elements of these corridors are as follows:
  - E1 and E2 templates (3-lane sections) will be used for the majority of “commercial collectors”. E3 and E4 will be used where there is a high amount of retail adjacent to the corridor with high volumes of traffic, requiring an additional lane in each direction. E1 and E2 will be the standard, with analysis required to warrant the E3 or E4 design.
  - The use of the E1 or E2 design may impact the design of driveways - specifically the required width and turning radii, when compared to the majority of existing roadway sections in commercial corridors, which are 4-lane sections. Trucks turning right into a driveway would be doing so from a position closer to the curb with the 3-lane section. In a 4-lane section, trucks would make a right turn from the inside through lane, cutting across the outside through lane. Trucks turning right are likely to use the two-way left turn lane on the 3-lane sections as though it were a through lane, and therefore conflicts with opposing traffic are unlikely.
• The ADT’s (Average Daily Traffic) for the proposed corridors are likely to be in the following ranges:

  - Highest Volume corridors (ADT >25,000)
  - High Volume corridors (ADT 15,000-25,000)
  - Medium Volume corridors (ADT between 5,000 and 15,000)
  - Low Volume corridors (ADT <5,000)

• The DPTF affirmed that the width for new and replacement residential roadways will be 28 feet. Sidewalks, boulevards, and landscaping will be standard elements of all these roadway corridor designs. (“Replacement” applies to roadway reconstruction, and not to mill and overlay improvements.) A width of 26 feet is acceptable for roadways that terminate in a cul-de-sac. The 26-foot and 28-foot corridor widths are consistent with the policies of the City’s Surface Water Management Plan.
V. LANDSCAPE DESIGN GUIDELINES FOR CORRIDORS

The City completed a set of Corridor Design Guidelines (Kimley-Horn Associates and HNTB) in 2007 that provide guidance for landscape design along its roadway corridors. Approval of the DPTF report is intended to include approval of the 2007 Corridor Design Guidelines as well. It includes design recommendations for the following:

- Landscaping of medians, boulevards and city entrances
- Median pavements and landscape containment systems
- Retaining walls, special curbs, and median maintenance access methods
- Traffic signals, street lighting, and special pedestrian area lighting

The DPTF discussed the Corridor Design Guidelines in relation to the corridor templates it developed. **The DPTF modified the Guidelines in the following ways:**

- Expanded the plant palette to include additional tree species for planting in the corridors
- Removed ash species from the list of tree species, due to the threat of Emerald Ash Bore to this species
- Modified the planting designs to fit the new corridor templates. The corridor templates A1-E4 included in this report modify the templates on pages 21, 23, 30, 31 and 34 of the Corridor Design Guidelines report.
- Recognized that the issue of irrigating medians on the Primary City Entry Corridors is an area that requires continued discussion. The City will continue to explore the use of seed mixtures that require minimal or no irrigation. References to sod may also include the use of seed mixtures. The City will continue to discuss implementation and appropriate use of irrigation systems in medians.
- Recommended that if discrepancies exist between the DPTF Templates and the Corridor Design Guidelines for street widths or other dimensions, the DPTF Templates will govern.
- Determined that the modified Corridor Design Guidelines would be approved as a part of this Report. A copy is included as Appendix 6.
The planting palette that the City will use as a starting point in the design of its roadway corridors is shown on Table 2 below. The planting designs are illustrated on the corridor templates. Table 2 replaces the Design Palette table on page 7 of the Corridor Design Guidelines report.

- The DPTF discussed the location of landscaping in relation to the utility locations. The group indicated that the proximity of the landscaping to utilities may require landscaping removal for unplanned maintenance activities, such as a watermain break. The group recognized that this may occur, but determined that the benefit of including landscaping throughout the corridor outweighs potential negatives associated with necessary tree removal and replanting if required for utility maintenance.

- It is necessary to place plantings to allow for sanitary sewer jetter trucks to access manholes located in the boulevard areas.

### Table 2: Plant Schedule for Corridors

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Botanical Name</th>
<th>Size</th>
<th>Root</th>
<th>Spacing</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Canopy Species Trees - Boulevard or Median</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swamp White Oak</td>
<td>Quercus bicolor</td>
<td>2”</td>
<td>Cont or B-</td>
<td>25-55’</td>
<td>Single Stem</td>
</tr>
<tr>
<td>Imperial Honeylocust</td>
<td>Gleditsia riacanthos inermis</td>
<td>2”</td>
<td>Cont or B-</td>
<td>25’</td>
<td>Single Stem</td>
</tr>
<tr>
<td>Autumn Blaze Maple</td>
<td>Acer x Fremanii ‘Jeffersred’</td>
<td>2”</td>
<td>Cont or B-</td>
<td>25’</td>
<td>Single Stem</td>
</tr>
<tr>
<td>Kentucky Coffeetree</td>
<td>Gymnocladus dioicus</td>
<td>2”</td>
<td>Cont or B-</td>
<td>25’</td>
<td>Single Stem</td>
</tr>
<tr>
<td>White Oak</td>
<td>Quercus alba</td>
<td>2”</td>
<td>Cont or B-</td>
<td>25-55’</td>
<td>Single Stem</td>
</tr>
<tr>
<td>Common Name</td>
<td>Botanical Name</td>
<td>Size</td>
<td>Root</td>
<td>Spacing</td>
<td>Notes</td>
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<tr>
<td>-----------------------------</td>
<td>--------------------------------------------</td>
<td>------</td>
<td>------</td>
<td>---------</td>
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<tr>
<td><strong>Canopy Species Trees - Boulevard (limited Salt Tolerance)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eastern Pin Oak*</td>
<td>Quercus palustris</td>
<td>2&quot;</td>
<td>Cont or B-</td>
<td>25-55’</td>
<td>Single Stem</td>
</tr>
<tr>
<td>Northern Pin Oak*</td>
<td>Quercus ellipsoidalis</td>
<td>2&quot;</td>
<td>Cont or B-</td>
<td>25-55’</td>
<td>Single Stem</td>
</tr>
<tr>
<td>Basswood</td>
<td>Tilia Americana, T. ‘Frontyard’, or T. ‘Redmoond’</td>
<td>2&quot;</td>
<td>Cont or B-</td>
<td>25-55’</td>
<td>Single Stem</td>
</tr>
<tr>
<td>American Elm</td>
<td>Ulmus Americana ‘Accolade’, ‘Cathedral’, Or ‘Discovery’</td>
<td>2&quot;</td>
<td>Cont or B-</td>
<td>25-55’</td>
<td></td>
</tr>
<tr>
<td><strong>Ornamental (Smaller) Trees</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Japanese Tree Lilac</td>
<td>Syringa reticulata ‘Ivory Silk’</td>
<td>2&quot;</td>
<td>Cont or B-</td>
<td>8’ o.c.</td>
<td></td>
</tr>
<tr>
<td><strong>Other materials</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Oat Grass</td>
<td>Helictotrichon sempervirens</td>
<td>#1</td>
<td>Container</td>
<td>18’ o.c.</td>
<td></td>
</tr>
<tr>
<td>Karl Foerster Feather Reed Grass</td>
<td>Calamagrostis acutiflora ‘Karl Foerster’</td>
<td>#1</td>
<td>Container</td>
<td>24’o.c.</td>
<td></td>
</tr>
<tr>
<td>Daylily Mix (50/50 Blend)</td>
<td>Hemerocallis ‘Happy Returns’/’Pardon Me’</td>
<td>#1</td>
<td>Container</td>
<td>15’o.c.</td>
<td></td>
</tr>
<tr>
<td>Viola Klose Salvia</td>
<td>Salvia sp ‘Viola Klose’</td>
<td>#1</td>
<td>Container</td>
<td>15’o.c.</td>
<td></td>
</tr>
<tr>
<td>Big Sky Sunrise Coneflower</td>
<td>Echinacea ‘Big Sky Sunrise’</td>
<td>#1</td>
<td>Container</td>
<td>18’o.c.</td>
<td></td>
</tr>
<tr>
<td>Kippenberg Aster</td>
<td>Aster sp ‘Kippenberg’</td>
<td>#1</td>
<td>Container</td>
<td>24’o.c.</td>
<td></td>
</tr>
</tbody>
</table>
VI. CORRIDOR DESIGN PROCESS

The Task Force discussed a wide range of issues related to the design of the roadway corridor templates. A more complete description of these discussions is included in the Meeting Summaries of the Task Force meetings. A summary of the recommendations includes the following:

A. Corridor Design Process

• The roadway design templates will be used as the starting point for design of new roadways or redesign and reconstruction of existing roadways. While changes to the designs may be incorporated to meet individual site or project needs, these will be viewed as similar to requesting a “variance” from the City’s code, and will require a specific rationale for the change from the adopted templates.

• The City views its templates as the preferred design for all roadway corridors in the community, including County and State as well as City corridors. The City will work with the County and State to discuss differences in design standards for roadway corridors.

• The smallest size roadway needed to meet functional requirements and projected traffic volumes will be the starting point for roadway design to minimize separation between neighborhoods, minimize impacts to surrounding land uses, and minimize the pavement area that pedestrians need to cross.

• The corridor (right-of-way) width will be selected based on the ultimate projected traffic volumes and full build-out of the corridor. The Task Force recommends limiting the width of corridors as discussed in this section.

B. Reconstruction of Existing Roadway Corridors

• The roadway design templates and guidelines will be the starting point for the design of major reconstruction projects in existing roadway corridors, including roadway width, landscaping requirements and other corridor design elements.

• The City will identify the existing corridors that are priorities for bicycle lanes and bicycle routes, and work to incorporate these into priority corridors, and other corridors as right-of-way allows.

• Design decisions will be made on a case-by-case basis when adequate right-of-way does not exist to design the corridor to meet the standards in the design templates.
C. Capping the Corridor Size

- The Task Force recommended capping corridor widths at the right-of-way sizes recommended in this Report. Members recognized this may affect mobility on some roadways in the future, and that historically the City has expanded roadways in response to the high value residents place on mobility and safety. However, Task Force members agreed that roadway widths and driver mobility need to be balanced with other community values and goals. Capping corridor widths may also encourage wider use of transit, bicycles, travel demand management strategies, and other alternative transportation modes that will help to maintain mobility and safety, and reduce demand for additional traffic lanes. The pros and cons that were considered by the DPTF for capping corridor widths are included in the Appendix.

- Dual left turn lanes will be used only in exceptional circumstances when needed to assure adequate roadway function.

D. City-wide Corridor Map

A map is included as Appendix 5 that labels roadway corridors based on the A-E template classifications.
VII. BOULEVARDS AND MEDIANS

- DPTF members agreed that green areas such as boulevards and medians are important components of corridor design. However, they noted that these areas do not provide high-quality green space as parks and other open spaces in the City do. The widths proposed for these green areas in the templates balance needs for aesthetics and function with the need to keep the total width of the corridor as narrow as possible.

- DPTF members noted comments that the proposed boulevard widths near intersections provide limited space for snow storage. The DPTF recommended that boulevards have a minimum width of 13 feet to allow for snow storage. The total right-of-way near intersections on some corridors will need to be expanded in some areas to allow for the snow storage area. Trails will be located outside the snow storage area except near intersections, where the trails will be brought close to the intersection at crossings.

- The majority of corridors will not be designed with irrigated boulevards or medians. These elements will be considered in high priority corridors, as defined in the Corridor Design Guidelines.

- Utilities – the templates include 5’ easement areas for utilities. These are the proposed locations for private utilities. Adequate space is available to place the public utilities outside the roadway.
VIII. BICYCLE LANES, PEDESTRIAN LANES, AND TRAILS

- 7-foot wide “utilitarian” bicycle lanes are recommended on the roadway on some corridor templates. “Utilitarian” lanes are defined here as those used for purposeful trips such as commuting, shopping or serious exercise, to distinguish them from bicycle trails primarily used for recreation. This includes a 5’ bicycle area and 2’ curb. This designated bicycle lane will primarily function as a commuter or purposeful bicycle travel lane. While current commuter bicycling within Woodbury is limited, the DPTF included the lanes to encourage and accommodate future use.

- On-street bicycle lanes and bicycle routes will be evaluated on a case by case basis on City roads as part of the preliminary engineering report.

- The DPTF recommends that the shoulder area required by Washington County on County roadway corridors function as a bicycle lane. The City will work with the County on potential signage or markings for the bicycle lanes.

- The DPTF discussed the pros and cons of adding the utilitarian bicycle lanes within the roadway area at length. Inclusion of bicycle lanes within the roadway does add some pavement area and creates a wider right-of-way. However, the lane will function to encourage trips by bicycle, and allows the City to set roadway speed limits on city-owned roadways (Minn. Statutes 160.263). The lane also provides safety benefits associated with shoulders (a break down area and safe pull-over area for police).

- When bicycle lanes are included within the roadways, the trail widths are reduced to 8’ (templates A and B). When no lanes are included, the trail widths are 10’ (templates C and D). Bicyclists can also use the edge of the street on C and D corridors, where traffic speeds will be lower.

- On new or existing roadways, the need for bicycle lanes on the roadway will be evaluated on a case-by-case basis as part of preliminary engineering activities, considering the space available in the right-of-way and existing or proposed trails in the area. On-road bicycle lanes may be a higher priority near transit facilities. The City will complete a bicycle lane evaluation, (similar to the evaluation completed for roundabouts) using an interdisciplinary staff team, to determine the need for bicycle lanes on the roadway.

- Signs identifying some roadways as “bicycle routes” may be used when space is not available to accommodate full-size bike lanes, but where bicycle trips are encouraged. An interdisciplinary staff group will map the “bicycle route” system for the City. The group will consider specific destinations to be included in the system, and current gaps in the City’s trail system.
• DPTF members recommended that existing “neighborhood collector” streets be marked on both sides with pedestrian areas approximately 5’ wide, where sidewalks are not currently available. This could be done with a strong “edge” line at the edge of drive lanes, striping, or other markings. (Examples of these streets include Eagle Valley Drive and Bailey Ridge Drive.) The City’s Public Safety Department recommends prohibition of parking on the streets that receive white edgeline treatment. The City will determine the specific locations for striping.

• Signage and or striping may also be included on designated bicycle corridors. The signs will alert drivers to “share the road” with bicycles.

• Woodbury staff discussed the guidelines for bicycle lane design with Mn/DOT staff. Mn/DOT provides some general guidelines but no standards for bicycle lane design on State Aid roadways. The City will continue to work with Mn/DOT and others on this issue.

• Break-down lane – the 7-foot bicycle lane included on some of the templates will also function as a “break down” lane for cars and a safe pull-over area for police.
IX. COMPARISON OF PROPOSED TEMPLATES TO THE CITY’S CURRENT STANDARDS

The Task Force compared the new recommended templates to the City’s existing design standards for roadway corridors. The City has existing standards for the B and C corridor types, but not for the A, D, and E types.

Overall, using the new design templates will result in the following:

- Reduced roadway corridor size. The C and D corridors will be the most frequently utilized corridor types in the City. These corridors have a narrower “footprint” than those currently used for roadways with the same function in the City. While corridor templates A or B have the same or larger “footprint”, they will be used less frequently within the City.

- Some corridors have a reduced paved surface area over current corridor designs, others do not. The corridors that are likely to be most frequently used in the City are those with reduced surface area in comparison to current designs.

- Inclusion of more transportation options - utilitarian bicycle lanes, trails, and an optional “transit” lane in the A corridor option.

- Inclusion of an explicit area for utilities in the templates.

Comparisons by corridor type include the following:

Corridor A

The City did not have a template that applies to these roads. These are largely county and state roads, and are designed and managed to meet county and state standards.

Corridor B

- Current design: 150’ right-of-way, no shoulder, 10’ paths both sides, two 13’ lanes, two 14’ lanes. Total paved surface = 74’. At intersections, four lanes of approach (left, thru, thru, right). Total paved surface = 98’

- Proposed: 150’ right-of-way, 7’ bicycle lane each side, 8’ paths each side, two 14’ lanes, two 12’ lanes. Total paved surface = 82’ (could be 80’ using 1’ reaction on inside lanes). At intersections four or five lanes of approach (depending on need for dual left).

- Summary: proposed yields same right-of-way, 6’ or 8’ additional paved surface for proposed. At intersections, 3’ or 15’ additional paved surface, depending on need for dual left turn lane.
Corridor C

- Current design:
  - 4-lane undivided: 130’ right-of-way. Two 14’ lanes, two 12’ lanes, 10’ paths on both sides. Total pavement surface = 72’. At intersections, three lanes of approach (right, thru, thru/left), total paved surface = 84’
  - 3-lane section with center two-way left turn lanes: 120’ right-of-way. Three 14’ lanes, 10’ paths on both sides. Total paved surface = 62’. At intersections three lanes of approach (left, thru, right), total paved surface = 74’ or 76’
- Proposed: 120’ right-of-way. Two 12’ lanes, one 14’ lane, two 7’ bicycle lanes, 8’ paths on each side. Total pavement surface = 68’. At intersections, total paved surface = 68’. When three lanes are required at intersections (left, thru, right), total paved surface = 75’
- Summary: right-of-way the same or 10’ less for proposed, depending on 3- or 4-lane current section. 6’ additional paved surface midblock for proposed. Essentially same paved surface at intersections.

Corridor D

- Current design: 106’ minimum right-of-way, plus 20’ drainage and utility easement. Two 14’ or 16’ lanes, 10’ paths on both sides. Total pavement surface = 48’ – 52’. At intersections, two lanes of approach (left and thru/right or left/thru and right), paved surface = 60’ - 62’.
- Proposed: 88’ right-of-way. Two 13’ lanes, 10’ path on one side and 5’ sidewalk on opposite side. Total paved surface = 36’.
- Summary: proposed requires 18’ less right-of-way, only one path on proposed, 5’9’ less paved surface.

Corridor E

- The “commercial corridor” E templates are designed to be used in corridors that are dominated by commercial and retail land uses. Important elements of these corridors are as follows:
  - E1 and E2 templates (3-lane sections) will be used for the majority of “commercial collectors”. E3 and E4 will be used where there is a high amount of retail adjacent to the corridor with high volumes of traffic, requiring an additional lane in each direction. E1 and E2 will be the standard, with analysis required to warrant the E3 or E4 design.
The use of the E1 or E2 design may impact the design of driveways - specifically the required width and turning radii, when compared to the majority of existing roadway sections in commercial corridors, which are 4-lane sections. Trucks turning right into a driveway would be doing so from a position closer to the curb with the 3-lane section. In a 4-lane section, trucks would make a right turn from the inside through lane, cutting across the outside through lane. Trucks turning right are likely to use the two-way left turn lane on the 3-lane sections as though it were a through lane, and therefore conflicts with opposing traffic are unlikely.

The Task Force concluded that the proposed designs provide a better balance among mobility, safety, sustainability, and livability than the current design standards.
X. APPENDICES

1. Proposed and Current Roadway Corridor Design Templates:
   Design Templates A1, A2, B1, B2, C1, C2, D1, D2, E1, E2, E3, E4, STL-8

2. Table A-1: Decision Matrix for Selecting Corridor Designs with Dedicated Turn Lanes

3. Technical Memorandum 1: Definition of Speed Related to Roadways

4. Pros and Cons of Capping Corridors

5. City-wide Corridor Map

6. Corridor Design Guidelines
APPENDIX 1

Proposed and Current Roadway Corridor Design Templates:
Design Templates A1, A2, B1, B2, C1, C2, D1, D2, E1, E2, E3, E4, STL-8
Private utilities under trails and into 5" utilities area.

Storm sewer: along curb line
Pathway
Sanitary sewer: under roadside edge of other
Water: under roadside edge of pathway

Note: Public utilities generally to be installed as follows:

BI Corridor - High Volume
C1 Corridor - Medium Volume

- 120 feet right-of-way
- On-street bicycle lanes to be evaluated in preliminary engineering
- Dedicated right-lane
- Dedicated left-lane if access spacing allows, generally no
- Includes two-way left-lane, may be raised median with

Typical template for medium volume corridor

Private utilities under streets and into s. utilities area:
- Storm sewer: along curb line
- Sanitary sewer: under roadside edge of other
- Water: under roadside edge of pathway

Note: Public utilities generally to be installed as follows:
D1 Corridor – Neighborhood Collector

- 68 feet right-of-way
- Will be designed to control travel speed
- Curvilinear when possible
- Landscaped boulevards to calm traffic
- Bicycles on street or trail
- No parking
- Street or curbed access
- Provides connections within and among neighborhoods

Private utilities under rails and into 5' utility area
- Storm sewer: along curb line
- Pathway
- Sanitary sewer under roadway edge of other
- Water: under roadway edge of pathway

Note: Public utilities generally to be installed as follows:
Private utilities under trails and into 5' utilities area.

- Storm sewer: alone curb line
- Sanitary sewer: under roadside edge of other
- Water: under roadside edge of pathway
- Pathway
- 1.5' Reel right-of-way
- Bicycles on street or use trail
- Driveaway density

Use in majority of commercial land use corridors with high

E1 Corridor - Commercial Collector
Note: Public utilities generally to be installed as follows:

- Storm sewer: Along curb line
- Private utilities: Under trails and into 5' utilities area
- Sanitary sewer: Under roadside edge of other
- Water: Under roadside edge of pathway
- Pathway

1/2 foot right-of-way

Use in majority of commercial land use corridors, with high density

5' Utilities
10' Trail
2.0' Bridge/Ap
1/2 Lane
1/2 Lane
1/2 Lane
1/2 Lane
1/2 Lane
8.0' Drainage
10' Trail
5' Utilities

E2 Corridor - Commercial Collector
Private utilities under roads and into 5" utilities area.

Storm sewer: along curb line
Pathway
Sanitary sewer: under roadside edge of other
Water: under roadside edge of pathway

Note: Public utilities generally to be installed as follows:

E3 Corridor - Commercial Collector

1.36 feet high-of-way

Bicycles on street or use trail
Each direction

Driveway density and volumes that warrant additional thru lane in use in majority of commercial land use corridors with high
E4 Corridor – Commercial Collector

Note: Public utilities generally to be installed as follows:
- Water: under roadside edge of pathway
- Sanitary sewer: under roadside edge of other pathway
- Storm sewer: along curb line

Private utilities under trails and into 5’ utilities area.

- Use in majority of commercial land use corridors, with high driveway density and volumes that warrant additional thru lane in each direction.
- Bicycles on street or use trail. Used when exclusive left and right turn lanes are needed.
- 136 feet right-of-way.
DESIGN C GRADE

NOTES:
1. WHERE PATHWAYS ARE PROVIDED, INSTEAD OF SIDEWALKS, ADDITIONAL WIDTH MUST BE ADDED TO ACCOMODATE THE PATH AND ALLOW 5' TO THE ROW FOR SNOW STORAGE.
2. IF SIDEWALK IS TO BE ON BOTH SIDES, SIDEWALK SIDE X-SECTION WILL BE SYMETRICAL ABOUT C/L.
3. SEE STANDARD CITY DETAIL PLATE FOR STREET TYPICAL SECTIONS.
4. 2% BOULEVARD CROSS-SLOPE WITHOUT SIDEWALK 5% BOULEVARD CROSS-SLOPE WITH SIDEWALK.
5. SIGNS, HYDRANTS, AND STREET LIGHTS AT 6' BEHIND FACE OF CURB.
6. ALL DIMENSIONS ARE FROM FACE OF CURB.

RESIDENTIAL STREET
PARKING BOTH SIDES
SIDEWALK BOTH SIDES

WOODBURY

LAST REVISION: Sept. 2004
PLATE NO. STL-8
APPENDIX 2

Table A-1: Decision Matrix for Selecting Corridor Designs with Dedicated Turn Lanes
**Table A-1:**
Decision Matrix for Selecting Corridor Designs with Dedicated Turn Lanes

<table>
<thead>
<tr>
<th>Corridor Type</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>A1 or A2</td>
<td>A1 or A2</td>
<td>A1 or A2</td>
<td>A1 or A2</td>
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<td></td>
<td>B1 or B2</td>
<td>C1 or C2</td>
<td>D1, D2 or D3</td>
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<tr>
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<td>-</td>
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<td>B1 or B2</td>
<td>B1</td>
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<tr>
<td>D</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>D1 or D2</td>
</tr>
</tbody>
</table>

Notes: Where multiple designs are listed, traffic volumes will dictate choice.
APPENDIX 3

Technical Memorandum 1: Definition of Speed Related to Roadways
The purpose of this memorandum is to provide clarification on the various definitions of the word “speed” as used by transportation professionals in our everyday work practices.

Speed is used both as a design criterion to ensure safe design and as a measure to evaluate highway and street performance. When we refer to speed there are several different terms that are used and it is important to understand the definitions of the terms used and the relationship between them. Defined below are three key terms of speed that we use in the transportation profession.

**Speed Definitions:**

**Posted Speed:** The posted speed is the speed limit that is posted on signs adjacent to the roadway. In order to be legally enforceable it must comply with statutory requirements.

**Design Speed:** The design speed is the speed that was selected to design the various geometric features (i.e., horizontal and vertical alignment) of the roadway.

**Operating Speed:** The operating speed is the speed that drivers operate their vehicles during free-flow conditions. The 85th percentile speed (the measured speed that 85 percent of the drivers are traveling at or below) is frequently used as the measure of the operating speed associated with a particular location.

**General Driver Speed Considerations**

Ideally, the speed that people drive the road under free-flow conditions (operating speed) is consistent with the posted speed for the road and the speed that was used as the basis for design (design speed). Typically, five general conditions will affect the driver’s speed on a roadway or highway according to American Association of State Highway Transportation Officials AASHTO’s) “A Policy on Geometric Design of Highways and Streets, 2004’’). These five conditions are identified and defined below:

1. Physical characteristics of the roadway (determined by design speed),
   - curves
   - roadway width
   - profiles
   - distance to obstructions and/or roadside elements
(2) Amount of roadside interference,
  - surrounding land use density
  - access density
  - pedestrian and/or bicycle activity

(3) Weather conditions,

(4) Presence of other vehicles,
  - congested/not congested
  - safety

(5) Speed limitations.
  - posted or unposted speed limits
  - traffic control devices (signals, roundabouts, stop signs)

**Speed limits** are set by Minnesota Statute. Cities do not have the authority to set speed limits other than on selected residential roadways. The following are the statutory speed limits.

- 10 mph on alleys
- 25 mph on residential roadways if adopted by the local road authority
- 30 mph on streets in urban districts or on town roads in a rural residential district
- 65 mph on expressways
- 65 mph on urban interstate highways
- 70 mph on rural interstate highways
- 55 mph on other roads

An “urban district” is defined as the territory contiguous to, and including, any street which is built up with structures devoted to business, industry, or dwelling houses situated at intervals of less than 100 feet for a distance of a quarter of a mile or more.

A “rural residential district” is defined as the territory contiguous to, and including, any town road within a subdivision or plat of land that is built up with dwelling houses at intervals of less than 300 feet for a distance of one-quarter mile or more.

The Commissioner of Transportation has the authority to set regulatory speed limits if the values above are not appropriate for the highway based on an engineering study and traffic investigation. Many factors are considered in the study, which are defined under the General Driver Speed Considerations (previously described) below.

**Physical roadway characteristics** (*AASHTO General Driver Speed Consideration 1*)

- road type and condition
- sufficient length of roadway (1/4 mile minimum)
- sight distances (curve, hill, etc.)
- test drive results

**Amount of roadway interference** (*AASHTO General Driver Speed Consideration 2*)

- location and type of access points
Presence of other vehicles *(AASHTO General Driver Speed Consideration 4)*

- crash history
- traffic volume

Speed limitations *(AASHTO General Driver Speed Consideration 5)*

- existing traffic control devices

While the above factors are important in setting regulatory speed limits, the **most important factor is a speed study**, which determines actual vehicle operating speed (defined earlier) on the roadway.

Statutory Speed-limits in Other States (Wisconsin)

The legal speed limits and the authority for setting speed limits are different in each state. For example, in Wisconsin the statutory speed limits are the following:

- 25 mph on any highway or service road within the corporate limits of a city or village, other than on highways in outlying districts.
- 35 mph in any outlying district, or any highway in a semi-urban district outside the corporate limits of a city or village.
- 65 mph on freeways and expressways
- 55 mph on other roads

Also in Wisconsin, the authority for setting speed limits that are different than those defined in the statute rests with the local road jurisdiction rather than the state as in Minnesota. The statute still requires an engineering study be completed to determine the appropriate speed and also defines the amount the speed limit can vary from the statute.

Design Speed

Roadway geometric criteria (condition (1)) are based on the **design speed**. The design speed is chosen by the designer based on three general conditions mentioned before and provided below. The designer considers these factors in order to provide a roadway or street design that meets the driver’s expectations. In general, driver expectations are to travel at higher speeds on arterials than on collectors, and higher speeds on collectors compared to residential streets. The consideration of driver expectations ideally results in operating speeds that are consistent with the design speed. AASHTO also explains: “except for local streets where speed controls are frequently included intentionally, every effort should be made to use as high a design speed as practical to attain a desired degree of safety, mobility, and efficiency within the constraints of environmental quality, economics, aesthetics, and social or political impacts.”

Therefore when selecting the design speed the designer considers the following:

Amount of roadside interference *(AASHTO General Driver Speed Consideration 2)*,

- surrounding land use density
- pedestrian and/or bicycle activity
- proposed or existing access density
Presence of other vehicles (AASHTO General Driver Speed Consideration 4)

- existing and forecasted ADT
- existing and desired LOS
- functional classification (arterial vs. local road)
- safety – existing crashes and/or anticipated crash frequency

Speed limitations (AASHTO General Driver Speed Consideration 5)

- posted speed (existing and/or future)
- existing and/or proposed traffic control devices (signals, roundabouts, stop signs)

New Construction vs. Reconstruction

When reconstructing existing roadways there are often significant limitations in the application of design restrictions to reduce travel speed. This is particularly true if the existing roadway is relatively flat and straight. Even if the roadway were redesigned for lower speeds (i.e., 30 mph), it still would be likely to operate at much higher travel speeds given the core alignment. With new roads in undeveloped areas, on the other hand, it is generally easier to incorporate design elements that could reduce travel speed.

Federal Guidelines

When a roadway project receives Federal funding for construction/reconstruction it must conform to State Aid Standards. It is not a requirement that the design speed is the same as the posted speed.

Summary

In summary, the purpose of this memo was to provide clarification on the various definitions of “speed” as used by transportation professionals. While the roadway designer selects the appropriate speed to use for design, which in turn determines the physical characteristics of the roadway, the design speed is chosen based on many factors that are outside the control of the designer. Examples may include the project setting and adjacent land use, as well as speed limits that are set by statute. The goal is to select a design speed that will be consistent with the future operating speeds on the roadway and the speed limit.
APPENDIX 4

Pros and Cons of Capping Corridors
Pros and Cons on Capping Roadway Corridor Size
Woodbury Roadway Corridor Design Principles Task Force
October 5, 2007

The following is a compilation of comments pro and con received from Task Force members and identified at the Sept. 10 meeting:

**Pros for Capping the Size of Roadway Corridors**

*Flexibility/Mobility issues (from the Pro’s viewpoint people and roadway designers provide the flexibility)*

- “If you build it, they will come. When we increase capacity, we draw traffic away from more congested routes. It then becomes a never-ending cycle of construction, congestion, construction, congestions, etc. Without a cap, there is no end to it—the roads just keep getting wider.
- Limited roadway corridors can encourage people to drive less, combine trips, walk or bike more, utilize transit if available. Necessity is the mother of invention.
- There are roadways all over the metro that carry more traffic than our roads, but aren’t as big as Woodbury’s. Development occurred around these corridors before the traffic demand got heavy. Yet they still function. Drivers adapt when they have to.
- If the cap results in unacceptable congestion, then the City needs to build more, smaller roads that can serve as relievers at peak hours. Need some “in between” roads that serve as both neighborhood accesses and a collector function.
- Limitation forces greater creativity

*Livability/Sustainability*

- We owe it to pedestrians and cyclists to make it 1) not difficult and 2) not dangerous. If we are serious about supporting sustainability there has be to be a cap on the roadway size so that the system retains a human scale that can support pedestrian use.
- Limit concrete jungle effect, making Community more livable from a pedestrian perspective
- Congestion can mean lower speeds, less noise, and a more pedestrian-friendly environment.
- Assures that process to balance safety, mobility, livability and sustainability is implemented
  - There are additional capital and maintenance costs associated with maintaining wider roadway corridors and medians. These costs may be even less supportable if the increased width is only needed at peak hours.
  - There are additional environmental impacts from wider corridors (storm water impacts).
Places city desires and practices ahead of default traffic engineering standards

- Narrower corridors are more context-sensitive (designed with surrounding area in mind). Should plan corridors in the context of the full city plan instead of localized traffic needs.

**Other**

- Assures current and future adjacent property owners on the extent of improvements

**Cons for Capping the Size of Roadway Corridors**

**Flexibility/Mobility (from the Con’s view, the flexibility is in the corridor design)**

- Lose flexibility
  - Makes it more expensive and difficult to expand in the future (Super Target example)
  - Limits ability to adjust to changes in standards
  - Need to accommodate future population growth
  - Does not leave future designs and decisions to future decision-makers
  - May not correctly predict or accommodate future technologies (roundabouts, transit). More transportation alternatives require additional infrastructure and potentially more space
  - More difficult to respond to future zoning/land use changes in the surrounding area
  - Limits space for future utilities and landscaping

**Livability/Sustainability**

- When a property develops, it is the only time City has developers on the hook for costs of obtaining right of way
- Ignoring or deciding now not to address potential future needs will ensure degraded level of services, delays, additional pollution. This will affect livability for those living adjacent to the roadways and wasted dollars in additional fuel
- Reduction in safety due to congestion and speed differential
- Increased noise due to more frequent starting and stopping
- Negative impact to business due to congestion and disincentive for people to visit area
- Loss of people’s time due to increased delay
- Negative impact on local streets – increased traffic, noise, reduced safety – due to diverted traffic
Other

- Difficult to get buy in from Washington County and MnDOT. Many roads under consideration are under the jurisdiction of other agencies.
- The individual motor vehicle is likely to remain a major form of transportation for a long time.
- Cost to retrofit, or purchase additional ROW in the future will be much more costly than planning for it now.
- City residents expect the City to solve or prevent congestion problems.
- May not meet design criteria required by other regulatory agencies.
- May impact ability to receive outside funding from Washington County, Mn/DOT, Federal Highway Administration.
- Impact to adjacent properties after they have developed if additional right of way must be acquired in the future.
APPENDIX 5

City-wide Corridor Map
Roadway Corridor Design Principles
Corridors A, B, and C
APPENDIX 6

Corridor Design Guidelines

NOTE: Corridor Design Guidelines are not included in the printed or electronic version of the report for file and report size considerations. The Corridor Design Guidelines are saved in the electronic file as Appendix 6 at:

J:\PROJECT\140 Admin - Studies (Traffic) 101 thru 107\107 - Roadway Corridor Design Principles Task Force\Report\Final
Summary

The Woodbury Bicycle and Pedestrian Plan is to help advance the 2040 Comprehensive Plan’s vision for pedestrians and bicyclists by providing policy guidance related to bicycle and pedestrian infrastructure implementation. The development of the Plan is guided by existing policies within the 2040 Comprehensive Plan, Roadway Corridor Design Principles, Capital Improvement Plan, Neighborhood Traffic Calming Policy, City Ordinances, Metropolitan Council Regional Bicycle Transportation Network (RBTN), the Washington County MOVE plan, and the Snow and Ice Control Policy as the backbone for this plan’s implementation.

This workshop item will provide a summary of the draft Plan components following the May 19, 2021 Council Workshop feedback, public engagement efforts which closed in December, 2021, and any correlations with the Roadway and Trail Policy Project Parameters policy discussion.

Recommendations

Staff recommends Council provide direction related to the adoption of the Bicycle and Pedestrian Plan as a consent item at a future City Council meeting and incorporate the roadway and trail policy project parameters discussion.

Governance Mode

The Woodbury Bicycle and Pedestrian Plan uses existing policy guidance and considers fiduciary, strategic and generative governance modes when providing policy guidance in the development of the Plan.

- **Fiduciary guidance** is provided through operational and efficient application of resources and a fiscal accountability approach to policy guidance.

- **Strategic modes** within the Plan set strategic priorities in developing a bicycle and pedestrian network that accomplishes 2040 Comprehensive Plan goals.

A review of future challenges and issues and developing guidance within the implementation portion of the Plan ensures the City’s values are prioritized within the Plan.
Fiscal Implications

Fiscal impact of plan implementation will be considered with preparation of draft Capital Improvement Plans.

Policy

This Plan aligns with previously drafted and adopted policies within the 2040 Comprehensive Plan, Roadway Corridor Design Principles, Capital Improvement Plan, Neighborhood Traffic Calming Policy, Gold Line Master Plan (drafted, not adopted), City Ordinances, Metropolitan Council Regional Bicycle Transportation Network (RBTN), and the Washington County MOVE. The Plan provides policy guidance on prioritization of the implementation of these policies.

The Draft Bicycle and Pedestrian Plan can be viewed at: https://www.woodburymn.gov/233/Bicycle-and-Pedestrian-Plan

Process Schedule

The following table outlines the project process and schedule:

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>April, 2020</td>
<td>Project began</td>
</tr>
<tr>
<td>May, 2020</td>
<td>Public engagement began</td>
</tr>
<tr>
<td>October, 2020</td>
<td>Draft plan developed</td>
</tr>
<tr>
<td>May, 2021</td>
<td>Council Workshop discussion</td>
</tr>
<tr>
<td>October, 2021</td>
<td>Public engagement on draft plan received</td>
</tr>
<tr>
<td>December 2021</td>
<td>Final plan developed</td>
</tr>
<tr>
<td>March 23, 2022</td>
<td>Council Workshop – Final Plan presentation</td>
</tr>
<tr>
<td>April, 2022</td>
<td>Final Plan approval</td>
</tr>
</tbody>
</table>

Public Process

The initial phase of public engagement prior to drafting the Plan was focused on receiving input related to the existing bicycle and pedestrian network within the community. Public engagement included an online meeting providing information related to the plan’s goals. A Social Pinpoint community survey was prepared to allow public input on an interactive map of the existing network. A Council Workshop was held to obtain policy direction related to plan components. After the draft plan was prepared, public input was solicited through an online viewer that allowed comments directly in the Plan document. This Workshop will be the second meeting with the Council and 4th public engagement effort to receive feedback on the plan.

Background

Successfully implementing bicycle and pedestrian infrastructure can offer economic, health and wellness, active living, safety and environmental benefits among others. The overall purpose of the Plan is to create a livable community offering non-motorized transportation options that are convenient, reliable, safe and efficient while enhancing our community identity. Successful implementation will enable safe and comfortable travel to the places where users live, work and play without the use of motor vehicles.
Woodbury’s Bicycle and Pedestrian Plan will contain five chapters identifying the plan and process, system existing conditions, system maintenance and preservation practices, network policy and implementation. The purpose of the plan is to:

1. Establish policies and recommendations for implementing and enhancing the City’s trail and sidewalk network
2. Prioritize bicycle and pedestrian investments over the next ten to twenty years
3. Identify best practices and guide the City in future facility and network investments
4. Better understand the public’s needs and concerns when walking and biking in the community
5. Identify financial impacts to system preservation strategies for maintaining the existing system
6. Plan a sustainable network to provide transportation equity to meet community members’ needs and abilities

Written By: Tony Kutzke, City Engineer
Approved Through: Chris Hartzell, Engineering Director
Attachment: 1. Bicycle and Pedestrian Plan Flyer
2. Planned Bicycle and Pedestrian Network Plan
3. Bicycle and Pedestrian Network Classification Details
Implementation

The Bicycle and Pedestrian Plan will inform the City’s annual budgets and capital improvement program. Project priorities identified in this Plan will be used as a framework to help guide those decisions. The process for selecting and programming projects will consider the following:

- Projects that align with the City’s Parks and Trails Replacement Fund capital investment and maintenance plan.
- Projects that encourage active living and align with Safe Routes to Schools (SRTS) or Regional Bicycle Transportation Network (RBTN) initiatives.
- Projects that close gaps in the existing sidewalk and trail network and improve the user’s comfort level. Comfort levels are determined based on vehicle traffic volumes, vehicle speed, and ability to connect to other trails.
- Projects that coincide with roadway rehabilitation and construction projects.

Contact Information

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City Engineer
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tony.kutzke@woodburymn.gov

Woodbury is committed to enhancing its already well-established bicycle and pedestrian system that includes more than 170 miles of facilities, such as paved and natural surface trails, along with several boardwalks, bridges, and six grade-separated crossings. This network also links to more than 50 miles of sidewalks serving residential and commercial areas.
Study Purpose & Goals

The Woodbury Bicycle and Pedestrian Plan was created to help advance the vision set forth in the City’s 2040 Comprehensive Plan for pedestrians and bicyclists. The following goals were developed to holistically address the following issues surrounding:

**Bicycle and Pedestrian Facilities**
Provide bicycle and pedestrian facilities that allow for safe and convenient movement throughout the city and to the regional network.

**Active Living**
Make changes to the built environment to support active living.

**Safety**
Provide safe connections between neighborhoods, business centers, parks and recreation facilities and schools, and consider the needs of all residents, especially those who do not have access to private vehicles.

**Transportation and Land Use**
Consider adjacent land uses and their potential to generate walking and biking travel when determining where connectivity improvements are most needed at the local and regional level.

**Sustainability & Resiliency**
Use the bicycle and pedestrian system as a means to implement the City’s sustainability and resiliency goals (e.g., reduction in emissions and creating greenways for natural habit) as expressed throughout the City’s 2040 Comprehensive Plan and other planning documents.

**Maintenance and Operations**
Ensure that biking and walking facilities are kept in good condition on an annual basis.

**Partnerships**
Build partnerships between businesses, residents, the City and community organizations to support and encourage biking and walking.

**Equity**
Provide the best public trail system possible to people of all backgrounds and abilities (see sidebar for more information).

**Planning Process**
The planning process, led by City staff and consultant HKGi, began in early 2020 and concluded in August 2021. The Project Team primarily used online tools to ensure people could stay involved during the pandemic, while social distancing. Most of the engagement was done in collaboration with the Woodbury Gold Line Station Area Planning project, which was a planning project concurrent with the Bicycle and Pedestrian Plan for Woodbury.

More information about these studies can be found on the City’s website: https://www.woodburymn.gov/departments/engineering/bicycle_and_pedestrian_plan.php

**Future Network**
The map above depicts the planned trail routes adopted as part of the City’s 2040 Comprehensive Plan. As part of the planning process for this Bicycle and Pedestrian Plan, a number of additional future trail segments were added as proposed future trails. Planned and proposed trails generally align with new roadways.

Future improvements and additions to the bicycle and pedestrian network aim to close sidewalk and trail gaps, link pedestrians and bicyclists to key community destinations, and expand biking and walking as a viable means of recreation and transportation throughout the city. The future network is organized by facility type to help determine a hierarchy of routes. A brief summary of this network is listed below.

- **Primary Routes** are paved trails that are intended to serve as longer, continuous routes within the City.
- **Washington County Routes** are trails located on both sides of the roadway along county roads. The county-wide network plays an important role in supporting the City of Woodbury’s trail network.
- **Neighborhood Collector Routes** are paved trails that are intended to provide pedestrian and bicycle connections through existing and future residential neighborhoods, to connect users to the larger Primary Route Network, as well as to provide direct connections to parks and schools within residential areas.
- **Park Destination Routes** are paved trails, natural surface trails, and sidewalks that provide circulation routes and recreation within Woodbury’s parks.
- **Internal School Connections** provide necessary pedestrian and bicycle connections within school campuses.
- **Residential Connections** are sidewalks and multi-use trails located within residential neighborhoods, with the purpose of providing separated facilities for Woodbury residents to connect to parks and schools, while also providing a path for walking and exercise.
Figure 3.2 Network Classification Plan
### NETWORK CLASSIFICATION GUIDANCE TABLES

Additional guidance is provided for the Network Classification in Tables 3.1 through 3.4. The tables outline general guidance for design, intent, purpose, facilities, amenities, and crosswalks guidance for each of the route types identified.

Where applicable, references to existing City of Woodbury policy or standards are noted.

### INTENDED USE

Table 3.1 provides a summary of intended use (purpose and likely users) for each route type in the Network Classification.

**Table 3.1 Network Classification: Route Purpose and Users**

<table>
<thead>
<tr>
<th>NETWORK CLASSIFICATION</th>
<th>PRIMARY PURPOSE</th>
<th>LIKELY USERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRIMARY ROUTES</td>
<td>Longer routes, recreational rides, tourism, commuter routes</td>
<td>Commuters, longer-distance riders, families, visitors, park users</td>
</tr>
<tr>
<td>WASHINGTON COUNTY CORRIDORS</td>
<td>Longer regional connections through County, recreational rides, commuter routes</td>
<td>Commuters, longer-distance riders, families, visitors, park users</td>
</tr>
<tr>
<td>NEIGHBORHOOD COLLECTORS</td>
<td>Local connections and through streets in neighborhoods, connect to Primary Routes</td>
<td>Woodbury residents (in-town)</td>
</tr>
<tr>
<td>PARK DESTINATION TRAILS</td>
<td>Recreation destinations for biking, hiking, special interest, wildlife/nature viewing</td>
<td>Park users (in-town and visitors)</td>
</tr>
<tr>
<td>INTERNAL SCHOOL CONNECTIONS</td>
<td>Connections within primary, middle, and high school campuses</td>
<td>Students, teachers, caregivers</td>
</tr>
<tr>
<td>RESIDENTIAL CONNECTIONS</td>
<td>Connections within residential neighborhoods, walking routes, connections to schools and parks</td>
<td>Woodbury residents (within in-neighborhood)</td>
</tr>
</tbody>
</table>
ROUTE FACILITIES
Table 3.2 provides a summary of the type of facility and general design components for each route type in the Network Classification.

<table>
<thead>
<tr>
<th>NETWORK CLASSIFICATION</th>
<th>TRAIL (Separated, bituminous, 10’ width preferred)</th>
<th>SIDEWALK (Separated, concrete, 5’ min. width preferred)</th>
<th>ON-STREET BIKEWAY (Paved shoulder, unsigned bike route)</th>
<th>NATURAL SURFACE TRAIL (Gravel, aggregate, cleared)</th>
<th>SIDEWALK / TRAIL on both sides of roadway</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRIMARY ROUTES</td>
<td>Present or Planned</td>
<td>Where existing today; potential future upgrade to paved multi-use trail</td>
<td>Not recommended</td>
<td>Not applicable</td>
<td>Option - generally yes when aligned with a major arterial or collector road</td>
</tr>
<tr>
<td>WASHINGTON COUNTY CORRIDORS</td>
<td>Present or Planned</td>
<td>None existing today</td>
<td>Existing paved shoulder along Military Road; potential trail connection</td>
<td>None existing today</td>
<td>Option - generally yes as planned by Washington County</td>
</tr>
<tr>
<td>NEIGHBORHOOD COLLECTORS</td>
<td>Present, Planned, Likely 8’ in width</td>
<td>Where existing (primarily in Established Neighborhoods, near schools)</td>
<td>Not recommended</td>
<td>Not applicable</td>
<td>Option - generally no when aligned with a neighborhood collector road</td>
</tr>
<tr>
<td>PARK DESTINATION TRAILS</td>
<td>Option</td>
<td>Option</td>
<td>Not applicable</td>
<td>Option</td>
<td>Not applicable</td>
</tr>
<tr>
<td>INTERNAL SCHOOL CONNECTIONS</td>
<td>Option</td>
<td>Option</td>
<td>Not recommended</td>
<td>Option</td>
<td>Not applicable</td>
</tr>
<tr>
<td>RESIDENTIAL CONNECTIONS</td>
<td>Option</td>
<td>Option</td>
<td>Option - in combination with sidewalk where trail does not exist</td>
<td>Option</td>
<td>Option with Sidewalk/Trail Combination</td>
</tr>
</tbody>
</table>

References: Roadway Corridor Design Principles (2009), Roadway Design Principles (March 2015 Amendment)
ROUTE AMENITIES

Table 3.3 provides a summary of additional route amenities appropriate for each route type in the Network Classification.

<table>
<thead>
<tr>
<th>NETWORK CLASSIFICATION</th>
<th>ENHANCED WAYFINDING (Maps, directional signage, etc.)</th>
<th>TRAILHEAD AMENITIES (Parking, Fix-it Stations, etc.)</th>
<th>SEATING / INTERPRETATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRIMARY ROUTES</td>
<td>Yes, recommended at locations such as Gold Line Station Area, City Hall, community destinations</td>
<td>Yes, recommended at locations such as Gold Line Station Area, City Hall</td>
<td>Yes, recommended</td>
</tr>
<tr>
<td>WASHINGTON COUNTY CORRIDORS</td>
<td>Per Washington County</td>
<td>Per Washington County Wayfinding Plan</td>
<td>Per Washington County</td>
</tr>
<tr>
<td>NEIGHBORHOOD COLLECTORS</td>
<td>Where necessary (to direct users to Primary Route Network, for example)</td>
<td>Not likely</td>
<td>Yes, per Neighborhood Association / Developer</td>
</tr>
<tr>
<td>PARK DESTINATION TRAIL</td>
<td>Yes, recommended</td>
<td>Yes, especially near Destination Trail locations</td>
<td>Yes / Option</td>
</tr>
<tr>
<td>INTERNAL SCHOOL CONNECTION</td>
<td>Where necessary</td>
<td>Yes, potentially where schools are connected to trail facilities, can use existing school parking lots</td>
<td>Yes / Option</td>
</tr>
<tr>
<td>RESIDENTIAL CONNECTION</td>
<td>Not likely</td>
<td>Not likely</td>
<td>Yes, per Neighborhood Association / Developer</td>
</tr>
</tbody>
</table>

Wayfinding examples
Trailhead example
Seating + Interpretation examples
**CROSSING TREATMENTS**

Table 3.4 provides a summary of appropriate crosswalk treatments to use in combination with each route type in the Network Classification.

Table 3.4  Network Classification: Crossing Treatments


<table>
<thead>
<tr>
<th>NETWORK CLASSIFICATION</th>
<th>CROSSWALK MARKINGS</th>
<th>MID-BLOCK CROSSING SIGNAL</th>
<th>TRAFFIC CALMING</th>
<th>GRADE SEPARATED CROSSING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PRIMARY ROUTES</strong></td>
<td>Generally Yes - See Crosswalk Guidelines</td>
<td>Yes, where applicable</td>
<td>Option: See Neighborhood Traffic Calming Policy</td>
<td>Option - verify potential future locations; existing locations throughout Woodbury</td>
</tr>
<tr>
<td><strong>WASHINGTON COUNTY CORRIDORS</strong></td>
<td>Per Washington County / Crosswalk Guidelines</td>
<td>None planned in Woodbury</td>
<td>Not applicable</td>
<td>None planned in Woodbury</td>
</tr>
<tr>
<td><strong>NEIGHBORHOOD COLLECTORS</strong></td>
<td>Generally Yes - See Crosswalk Guidelines</td>
<td>Option where necessary</td>
<td>Option: See Neighborhood Traffic Calming Policy</td>
<td>Not likely</td>
</tr>
<tr>
<td><strong>PARK DESTINATION TRAIL</strong></td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Existing boardwalks / bridges in Woodbury Parks</td>
</tr>
<tr>
<td><strong>INTERNAL SCHOOL CONNECTION</strong></td>
<td>Generally Yes - See Crosswalk Guidelines</td>
<td>Not applicable</td>
<td>Option</td>
<td>Not likely</td>
</tr>
<tr>
<td><strong>RESIDENTIAL CONNECTION</strong></td>
<td>Option - See Crosswalk Guidelines</td>
<td>Option where necessary</td>
<td>Option: See Neighborhood Traffic Calming Policy</td>
<td>Not likely</td>
</tr>
</tbody>
</table>

Crosswalk Markings  Mid-block Crossing Signal example  Traffic Calming example  Grade Separated Crossing
Council Workshop Letter 22-92
March 23, 2022

To:             The Honorable Mayor and Members of the City Council
From:           Clinton P. Gridley, City Administrator
Subject:        Urban Canopy and Emerald Ash Borer

Summary

The Urban Forest has always been a critical component to the City of Woodbury. In 2009, the City completed its first Urban Canopy Assessment followed by compilation of the 2011 Urban Forestry Plan. These documents were further formalized through inclusion in the 2040 Comprehensive Plan, along with the recommendation to update the documents on the industry-standard ten-year cycle. This update began in 2021 and conclude with this presentation to Council. The update process utilizes 2019 light detection and ranging (LIDAR) satellite imagery. The overall conclusion from this report is that the tree canopy has increased, even in the face of rapid development. The timing of the 2019 LIDAR data confirms that City policies and practices promote an urban forest prior to the impact of EAB. Analysis following future LIDAR flights will be critical to monitor and respond to the effects of EAB.

Following Council direction in 2011 and re-affirmed in 2016 and 2018, Forestry staff has implemented a proactive removal response to Ash trees, containing Emerald Ash Borer (EAB). Since 2011, 1,505 Ash trees have been removed, concentrating on City owned and maintained boulevards, park property and along trails. 865 inventoried public owned and maintained ash trees remain. With the current strategy, all City maintained inventoried ash trees will be removed by the end of 2022, fully accomplishing the Council direction. The team can move at a quicker removal pace than in past years for three reasons: the 2021 purchase of a clam truck allows for increased efficiency, the majority of the remaining trees are smaller than those removed previously, and the remaining trees are not on boulevards where staff face additional concerns about property liability when removing large trees.

In addition to City owned and maintained ash trees detailed above, many remain in forested areas (which will mostly be left), and of the 8,515 HOA and privately maintained boulevard trees, approximately 1,100 are ash. Lastly, there are still many remaining Ash trees on private property.

Staff is requesting discussion and direction on three urban forestry topics:

- Continue approach to EAB management of City owned and maintained Ash trees
- Direction on Boulevard Ash tree and general boulevard tree management
- Next steps for resident and HOA owned ash tree management
Recommendation

Staff recommends Council provide policy direction on the following options:

1. **Treatment of City-owned ash trees:**
   a. Continued treatment of approximately 200 City owned ash trees at the bi-annual expense of $25,000 every two years (recommended)
   b. Evaluate all remaining City-owned trees and treat any eligible trees, at the expense of $100 - $150 every two years
   c. Continued Ash tree removal

2. **Boulevard tree policy:**
   a. Remove and/or treat boulevard ash trees at City expense (recommended)
   b. Remove boulevard ash trees and assess residents
   c. Take on the responsibility for all boulevard tree maintenance

3. **Private Ash trees:**
   a. Continued resident education through City communication channels
   b. Direct staff to develop and propose a budget for a cost share program for residents to manage expense of removal

**City Owned and Maintained Inventoried Ash Trees**
The City’s current inventory of City owned and maintained ash trees is approximately 865. Parks trees in general wooded areas are not inventoried, as they pose the least risk. The remaining inventoried City-maintained ash trees can be found in the following areas:

- **Maintained areas:** 384; 203 of which are currently being treated.
- **Trail corridors:** 455 (only includes ash trees that could impact the trail if they fail)
- **Boulevard ash trees in city maintained areas:** 26; all of which are currently being treated by residents.

The City of Woodbury forestry team estimates that 95% of all City ash trees are infested with Emerald Ash Borer. Many of these trees appear to have been infested for more than three years, and are nearing the ‘downward death curve’ which occurs four to seven years after infestation. This makes them poor candidates for treatment. Forestry staff recommends treatment only to prolong the safe window of time for removal, as trees continue to decline.

At recent meetings, Council members have expressed interest in saving as many remaining ash trees as possible; in addition to the trees we’re currently treating: City Hall (7), EVGC (89) and the Temporary Water Treatment Plant (7). Staff could continue to treat the 100 trees currently being studied by the University of Minnesota in Odawa, Potawatomi, Ojibway North and Chippewa parks, when the study concludes. Continuing to treat these 203 ash trees into the future will cost approximately $25,000 every two years. Council could direct staff to evaluate each of the City owned trees remaining, treating a certain number of eligible trees. Keep in mind each tree would cost approximately $100-150 per tree to treat every two years. Therefore, if Council directed staff to treat approximately 100 of the trees in the best condition (in addition to the 203 listed above), the cost would be approximately $10,000 - $15,000 every two years.

All City owned and maintained inventoried ash trees which are not treated, will be removed by the end of 2022, completing the past direction of Council.
Boulevard Trees
The City’s approach to trees on City right-of-way has varied over the years. In many of the older neighborhoods such as Park Hills, the City allowed trees to be planted in the right-of-way, close to the curb line. Problems with curb cracking and heaving caused by root pressures resulted in the City adopting a 'no trees in the right-of-way' policy. This policy was applied to neighborhoods constructed in the 1990’s and early 2000’s, such as Colby Lake and Pendryn Hill. In 2004, the City adopted new street standards reducing the widths of streets, from 32 feet to 28 feet, with sidewalks and trees in the right-of-way. The trees can be no closer than eight (8) feet from the curb. Through developer’s agreements, the trees in the right-of-way, although on City property, assigned responsibility for tree maintenance to homeowner’s associations, if present. The intent of this HOA agreement assumed general maintenance activities and did not contemplate the scale of oversight needed due to EAB.

Approximately 1,100 of the 8,515 boulevard trees are ash. Although, property owners or HOAs own and maintain most boulevard trees through agreements with the City, the City retains legal liability for damage or injury caused by any boulevard trees. Due to this liability and the hazard created by EAB infested dying ash trees, staff recommends a proactive management approach and has provided policy options for Council’s consideration.

Boulevard Tree Policy Options
The following policy options represent three different approaches to addressing Emerald Ash Borer in boulevard trees.

A. Remove and/or treat boulevard ash trees at City expense (Recommendation)

City forestry staff have already removed 364 boulevard trees, which have historically been maintained by the City. In these areas, the residents were given the option to treat the tree at their own expense; 26 residents chose to treat and will have to prove continued treatment every three years to prevent future removal. To continue with removal through the City would avoid the risk of disparate services outcomes in different areas of the City. This approach would also allow for City staff to control the timeline, ensuring trees are removed before becoming more hazardous, which is important because of the City’s liability. Another benefit is we could ensure one for one replacement with correct varieties for optimal future canopy. Additionally, some staff time would be gained administratively, as there is significant complexity to managing and coordinating through dozens of HOAs; it can be both time intensive and inefficient as HOA contacts and boards are consistently changing. Due to the City’s liability, orderly and efficient removal of Ash trees is critical and streamlined effort is likely the best path forward.

Removing all of the boulevard ash trees would likely cost approximately $200,000 - $300,000 annually over the next five (5) years. This cost includes removal, stump grinding and replacement. Where we land on the range depends on how many removals are contracted out vs. completed in house. Parks and Forestry has applied and been awarded a $149,600 grant to be used for removals during the winter of 2022/2023 to aid in this effort.

B. Remove boulevard ash trees and assess residents

With an adjustment to the City ordinances, the City would have the option to assess residents and HOA’s for the removal of boulevard ash trees. This option would allow the City to manage liability by ensuring the trees are removed and recover the costs of removal. There could be perceived inequitable service outcomes with this option. The
City has already removed many ash trees on the west side of the City, where boulevard trees are owned and maintained by the City, at no cost to the residents. Also, many residents will be shouldering the burden of removing or treating their privately owned ash trees on personal property, which can be costly.

C. **Take on responsibility for all boulevard trees**

Now may be the right time to address the inconsistent service level for boulevard trees, across the City. In many communities in the metro, boulevard trees are fully owned and maintained by municipalities. This option would add approximately 10,000 trees to the City’s workload, increasing City forestry workload by about 60% and budget impact would need to be further analysis if Council supports this approach. The benefits of this approach include:

- Consistency of service across different areas of the City.
- By maintaining all boulevard trees, City forestry staff could ensure tree health.
- The City can ensure removal of diseased or dying trees.

**Resident and HOA Owned and Maintained Ash Trees**

In addition to the trees listed above, many privately owned ash trees remain throughout the City. The City has been communicating across all available channels about EAB for approximately 5 years, including a 3-year partnership with Rainbow Tree Care for a discounted rate for treatment and community education. Staff recommends continuing to educate residents about the risks and encouraging them to treat or remove the trees.

**Private Ash Trees Treated by Rainbow**

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<tr>
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<td>822</td>
<td>1013</td>
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*Some in 2021 are repeats from 2019, being treated on a two-year cycle.*

Removal of a mature tree near a home or power line can exceed several thousand dollars. In order to counteract the burden of a removal assessment, the City could establish a loan or cost share program for residents. If Council would like this idea explored, staff recommends the following and would add funds into the 2023 budget and develop program criteria before Jan 1, 2023. It is recommended to be a grant submittal, cost share program that sunsets after 2 years to emphasize the urgency of the EAB issue.

**Governance Mode**

- Fiduciary - Stewardship of tangible assets, oversees operations and ensures efficient and appropriate use of resources, legal compliance and fiscal accountability.

- Generative - Identifying key questions, anticipating future challenges, framing of issues, development of options. Problem-framing. What to pay attention to, what it means, and what to do about it. How does it fit with our mission, vision and values?

**Fiscal Implications**

The policy options outlined include a significant range of fiscal implications depending on the desired approach. The least impactful fiscal approach would be to complete removal of City ash trees, remove boulevard ash trees and assess residents, and to not support residents in removing
their private ash trees. The most impactful would be to continue to treat the 203 ash trees currently being treated on City property, take full responsibility for ongoing maintenance of all boulevard trees, and develop a cost share or loan program for removal of private ash trees.

Policy

Critical Success Factor – Environmental Stewardship

Public Process

- April 20, 2016 Council Workshop: Update on Forestry Practices Involving EAB
- June 27, 2018 Council Memo
- June 7, 2019 Council Memo
- February 14, 2020 Council Memo
- March 12, 2021 Council Memo

Background

In August 2017, positive identification of Emerald Ash Borer (EAB) was made in Woodbury. EAB is an invasive forest insect from Asia responsible for the death of millions of ash trees throughout the United States. EAB feeds on the tissue of ash trees between the bark and sapwood, disrupting the nutrient and water flow of the tree, eventually killing the tree after several years of feeding in the trees.

Ash trees typically die within 4-5 years after positive identification of EAB infestation. When the tree canopy shows 30 percent dieback, the tree will die within 2-3 years. Research has shown that if the ash tree is treated before 30 percent dieback and is otherwise healthy, the tree can recover. Treatment must be performed every 2-3 years for the remainder of the life of the tree to remain pest free.

For public safety reasons, staff has been removing all ash trees in City maintained boulevards and park/trail areas where people recreate. If an ash tree dies from EAB infestation, the tree becomes brittle and hazardous. Traditional removal methods are not possible for these trees which can make it more difficult to protect private property and public safety during the removal process. For these reasons, infested ash trees should be removed before the tree dies.

Written By: Mary Hurliman, Public Works Director
Approved Through: Clinton P. Gridley, City Administrator
Attachments:
1. Map of treated City owned ash trees
2. Map of total remaining City owned ash trees
3. Map of inventoried boulevard ash trees