Request for Proposals

City of Northfield, MN
2025 Reclamation and Overlay Project
February 8, 2024

I. Introduction

The City of Northfield is requesting professional consulting services for the 2025 Reclamation and Overlay Project, below is a brief explanation of the proposed construction for each project segment. (See attached map)

1. Project Areas and Descriptions – 2025 Reclamation and Overlay Project

Mill and Overlay Areas

a. Maple Street –100ft south of Jefferson Parkway to South End
   1. Pavement Mill and Overlay
   2. Spot curb and gutter repair
   3. Spot sidewalk repair
   4. ADA upgrades to all existing pedestrian facilities
   5. Off street trail

b. Lake Drive – Jefferson Parkway to Maple Street
   1. Pavement Mill and Overlay
   2. Spot cub and gutter repair
   3. Spot sidewalk repair
   4. ADA upgrades to all existing pedestrian facilities

c. Superior Drive – Maple Street to Michigan Drive
   1. Pavement Mill and Overlay
   2. Spot curb and gutter repair
   3. Spot sidewalk Repair
   4. ADA upgrades to all existing pedestrian facilities

Pavement Reclamation Areas

a. Laurel Court
   1. Pavement Reclamation
   2. Spot curb and gutter repair
   3. Spot sidewalk repair
   4. Driveway apron repair
   5. ADA upgrades to all existing facilities
   6. Gate valve bolt replacements
   7. Trail connection from TH 19 to Sechler Park (West side)

b. Industrial Drive
    1. Pavement Reclamation
    2. Spot curb and gutter repair
    3. Driveway apron repair
    4. Ada upgrades to all existing facilities
    5. Gate valve bolt replacements

c. Washington Street – Sumner Street to Cul-de-sac
    1. Pavement Reclamation
    2. Spot curb and gutter repair
    3. Sidewalk Installation (west side north of Fremont)
    4. Driveway apron repair
    5. ADA upgrades to all existing pedestrian facilities
    6. Off street shared use trail installation (west side, Sumner to Cul-de-sac)
    7. Trail Installation (Washington to Archibald)
    8. On street bikeway (West side, Woodley to Sumner)
    9. Gate valve bolt replacements

Included in the attachments are existing and proposed sections for Washington St. The section from Sumner St. to Ames St. has three proposed alternatives. The consultant shall analyze the proposed sections and provide a recommendation of one of the provided proposals or a new section created by the consultant.

Pedestrian Crossing Improvements

a. Superior Drive (Mid-block Trail Crossing)
b. Superior Drive & Maple Street
c. Ames Street & Washington Street
d. Woodley Street & Washington Street

Sidewalk and Bikeway Areas

a. Maple Street – New off-street shared use trail from Jefferson to the south end
b. Washington Street – New off-street shared use trail on the west side from Sumner to the south end. New on street bikeway from Woodley to Sumner.
c. Washington Street – New trail connecting the end of Washington Street to an existing trail stub off of Archibald Street.
d. Washington Street – New sidewalk on the west side north of Fremont to fill in approximately 100’ gap.
e. Laurel Court – New trail connecting TH 19 to Sechler Park on the west side
f. Sechler Park Road – Replace existing trail from Laurel Court to the rail crossing. (Contingent on the City getting DNR funding).

II. Scope of Work

The City is requesting proposals for the following engineering services related to the project.

1. **Topographic Survey** – Perform a field control survey and develop horizontal and vertical control points at convenient intervals throughout the project and preform topographic survey of the project boundaries. Additional topographic information should be gathered at all intersections to produce an adequate design that meets all ADA standard design where applicable. This survey shall establish sufficient control to reestablish the street and sidewalk within existing right-of-way. Additionally, topo will need to be obtained at the proposed new sidewalk/trail areas and bikeway areas mentioned above. Finally, the consultant shall survey all curb and sidewalk removal areas, including spot curb and gutter and sidewalk removals to be included in the final design plan set, these areas will be marked in the field by the City. The consultant should assume additional survey for easement acquisition for the new trail from Washington to Archibald.

2. **Arborist Report –** Consultant shall hire a trained forester or arborist to evaluate the R/W trees along the entire project corridor, and make recommendations for the following project considerations:
   2.1. Overall tree condition (0-9; 0 is a dead tree, 9 is a perfect tree)
   2.2. Projection of fate or recommendation of tree health after pavement mill and overlay/reclamation/sidewalk or trail installation (I.E. R = Remove S = Save)

   The Arborist report should include an executive summary with the following information
   - Tree tag number
   - Tree species
   - Tree diameter breast height (DBH)
   - Condition rating
   - Arborist recommended tree fate
   - Any useful notes
   - X, Y Coordinates in the Rice County coordinate system.

   Consultant shall include a deliverable shape file of the tree locations in Rice County coordinate system with the final report with maps detailing the information above.

3. **Design** – The consultants survey shall be adequate to design a set of approved plans for the entire project area.

   The Consultant shall create final approved plans for the following project areas.
   - All reclaim areas.
   - New trail from Washington to Archibald
   - Sechler Park trail (Contingent on DNR funding)
   - Utilities in mill and overlay areas. (If required)
   - Intersection design for all project areas.
   - SWPPP for all project areas
   - Base drawing for all project areas.

The City will design final construction plans for the mill and overlay areas except for any parts mentioned above. The Cities final plans will be combined with the consultants plans to create the final plan set for the project.
The Consultants plans should include the following but not limited to:

3.1. Existing plans - Using topographic and right-of-way survey information, prepare a base drawing for all project areas including mill and overlay areas showing:
  3.1.1. Locations and elevations of all physical features
  3.1.2. Existing right-of-way
3.2. Storm water pollution prevention plan – The consultant shall prepare an approved SWPPP for all project areas including mill and overlay areas.
3.3. Preliminary and final design plans and special provisions – Prepare plans and special provisions for the above-mentioned areas. Special provisions shall supplement City's standard construction documents.
  3.3.1. Alignment – The alignments of the roads are not expected to significantly change, as this is a project in a well-established area. Consultant shall set an alignment for all new trails and sidewalk in reclaim areas.
    3.3.1.1. Consultant shall determine and set the final alignment of the new trail connecting Washington Street to Archibald Street, minimizing tree impacts. An approximate proposed alignment is included in the attachments. This segment of trail will require easement acquisition.
  3.3.2. Profiles – Set the profiles for the new trails and sidewalks in reclaim areas.
  3.3.3. Cross-sections – Develop cross-sections for the project where new trail and sidewalk instillations are proposed.
  3.3.4. Removals – Develop a removals plan for all reclaim areas and the Sechler Park trail.
  3.3.5. Storm Sewer Design – The consultant shall provide a storm sewer plan and profile for any storm sewer replacements or additions required on the entire project area including mill and overlay areas.
  3.3.6. Erosion control plan – The consultant will prepare an erosion control plan.
  3.3.7. Utilities (electric, gas, telephone, cable TV) – All utilities should be coordinated to allow adequate time for relocations if necessary. Working with City staff utilities should be shown based on information provided by utility companies and marked in the field.
  3.3.8. Signing and striping – The consultant will develop a signing and striping plan if required.
  3.3.9. Sidewalk and trail design – The consultant will design proposed sidewalks and trails as indicated. These sidewalks and trails should be designed to meet all ADA requirements.
  3.3.10. Intersection Design – The consultant will develop an intersection design plan for all project intersections on the project. This includes plans for any crossing improvements in the project. This should also include ADA design of all pedestrian facilities to ensure compliancy with current ADA standards. This includes intersections in the mill and overlay areas.
  3.3.11. Traffic control plans – The consultant will prepare a traffic control plan where necessary.

3.3.12. Estimated quantities – The consultant will estimate the quantities for the project for the new tail and sidewalk installations, and all other items associated with the consultant's design scope.

3.4. Permanent and Temporary Easements – The consultant shall provide permanent and temporary construction easement depictions and descriptions for the proposed trail from Washington Street to Archibald Street, and the temporary turnaround at the end of Washington Street.

3.5. Prepare contract documents – The consultant will prepare special provision documents based on the City's standards.

3.6. Submit to City for review and approval:

3.6.1. 50% plan, specification, cost estimate, and meeting with staff

3.6.2. 95% plan, specification, cost estimate, and meeting with staff

3.7. Opinion of probable construction cost – The consultant will prepare an opinion of probable construction costs.

3.8. QA/QC – The consultant shall provide QA/QC review of the City of Northfield design plans.

3.9. Drafting Consultation – The consultant shall assume 50 hours of design assistance for the City of Northfield.

4. Construction Services

4.1. Field staking – The Consultant will provide field staking for all project areas for the following facilities:

4.1.1. Stake limits of construction.

4.1.2. Stake for grading.

4.1.3. Stake alignment and grades for new storm sewer, sanitary sewer and watermain replacement and/or repairs if applicable.

4.1.4. Stake alignment and grades for new curb and gutter.

4.1.5. Stake alignment and grades for new medians.

4.1.6. Stake alignment and grades for new sidewalk.

4.1.7. Stake alignment and grades for new retaining walls.

4.1.8. Stake locations for signage.

4.1.9. Stake locations for striping.

4.1.10. Stake other facilities as necessary.

5. Testing Services

5.1. Testing services – The consultant shall submit a fee for testing services for all phases of the project. Services include, but not limited to:

5.1.1. Soil borings on all project areas

5.1.2. Field testing services for all facets of construction the meets MnDOT schedule for materials control

5.1.3. Pavement design based on R-values (where applicable).

6. **Project Schedule**
    6.1. Proposals Due – February 29, 2024
    6.2. City Council Proposal Award – March 12, 2024
    6.3. 1st Neighborhood Meeting – May 1, 2024
    6.4. Council Discussion on Draft Feasibility Report – June 11, 2024
    6.5. City Council Accept Feasibility Report and Authorize Preparation of Plans and Specifications – July 9, 2024
    6.6. 2nd Neighborhood Meeting – January 29, 2025
    6.7. Council Discussion on Final Plans – February 11, 2025
    6.8. City Council Approve Plans and Specifications and Order Advertisement for Bids – February 18, 2025
    6.9. Bid Opening – March 20, 2025
    6.10. Accept Bids and Award Contract – April 1, 2025
    6.11. Construction – May – October, 2025

III. Goals and Objectives

The project shall provide the City of Northfield with streets listed being brought up to a condition with a service life of 25 years for all pavement reclamation areas and 15 years for all mill and overlay areas.

IV. Department Contacts

Prospective responders who may have questions regarding this Request for Proposals may call, email, or write:

Sean Simonson
Engineering Manager
801 Washington Street
Northfield, MN 55057
507-645-3049
Sean.Simonson@northfieldmn.gov

Or

Jacob Ives
Graduate Engineer
801 Washington Street
Northfield, MN 55057
507-650-4775
Jacob.Ives@northfieldmn.gov

Proposals shall be submitted no later than 2 PM, CST, on February 29, 2024

V. Proposal Contents

The following must be considered minimal contents of the proposal:

1. A restatement of the goals and objectives and the project tasks to demonstrate the responder's view and understanding of the project.
2. A detailed work plan identifying the work tasks to be accomplished within each phase, and the budget hours to be expended on each task.
3. Project team and experience of members proposed to be involved in the project.
4. A proposed schedule of the project.

VI. Evaluation

All proposals received by the deadline will be evaluated by representatives of the City. Factors upon which proposals will be judged include, but are not limited to, the following:

1. An understanding of the project.
2. The firm's background in completing similar projects.
3. The qualifications of staff proposed to be involved with the project.
4. The ability to preform the work in the proposed schedule.
5. Proposed cost of engineering services.

VII. Selection

Selection of a consultant for this project will be based on the criteria noted above. Staff will review the proposals and identify the best-qualified consultant to preform the work. Staff will bring forward a recommendation to City Council for entering into a contract to perform the work.

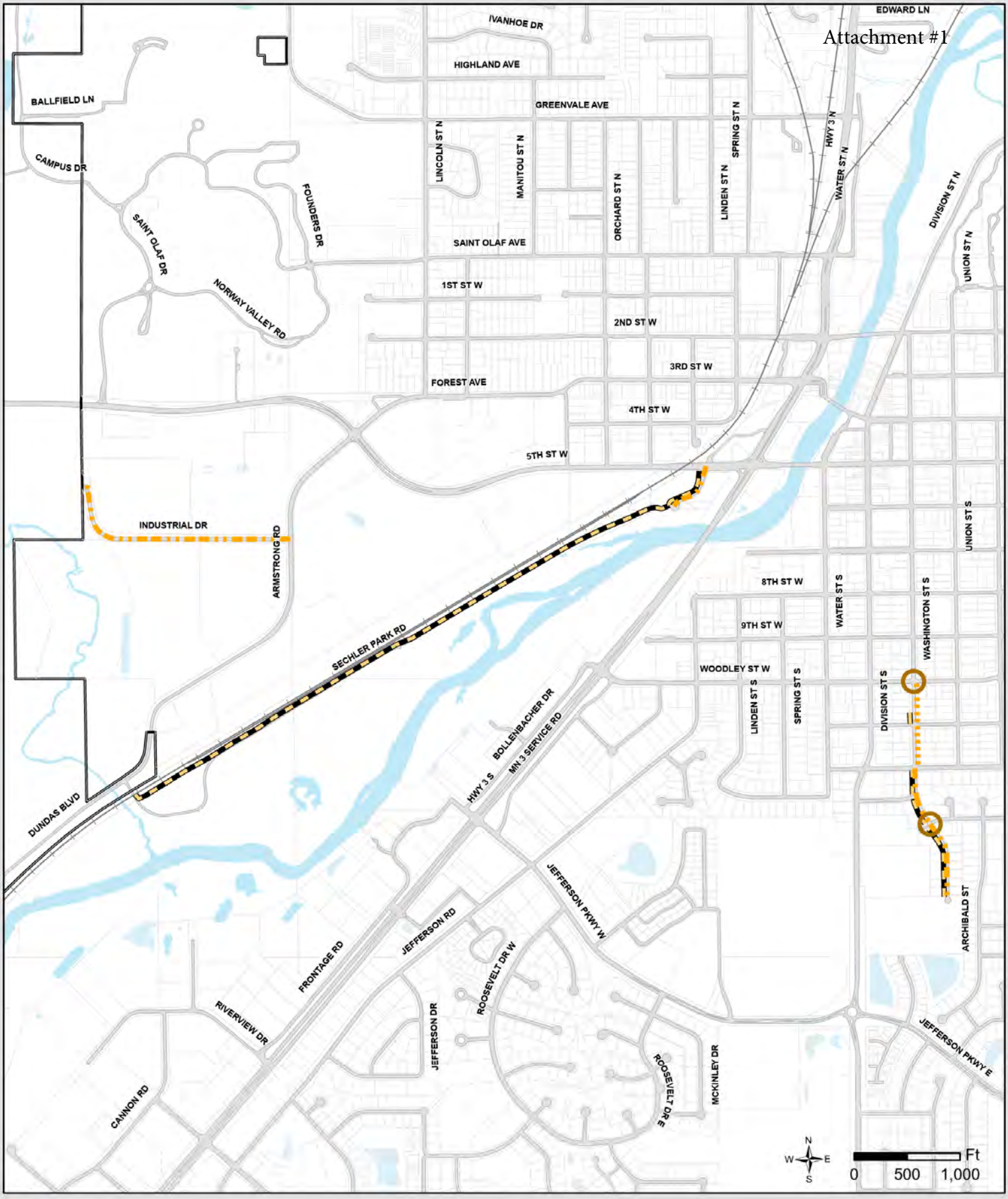
VIII. Contract

Included is attachment 8, which is the City of Northfield's standard professional services contract. Respondents are to thoroughly familiarize themselves with the provisions contained therein, including the insurance requirements and will be required to execute this contract prior to presentation of the same to the Northfield City Council.

IX. Attachments

#1. Reclamation Project Map
#2. Mill & Overlay Project Map
#3. Washington St. Proposed Sections
#4. Intersection Improvements
#5. Pedestrian & Bike Analyzation
#6. Complete Streets Policy
#7. Engineering Design Standards
#8. Consultant Service Contract

Attachment #1



Reclamation
Bikeway
Trail
Sidewalk
Pedestrian Crossing Improvement

2025 Reclamation Project

Date: 2/6/2024

City Of Northfield
Minnesota

Existing Trail
New Trail Construction

2025 Washington St. Trail Extension

Date: 2/8/2024

City Of Northfield
Minnesota

Attachment #2

Mill and Overlay
Shared Use Trail
Pedestrian Crossing Improvement

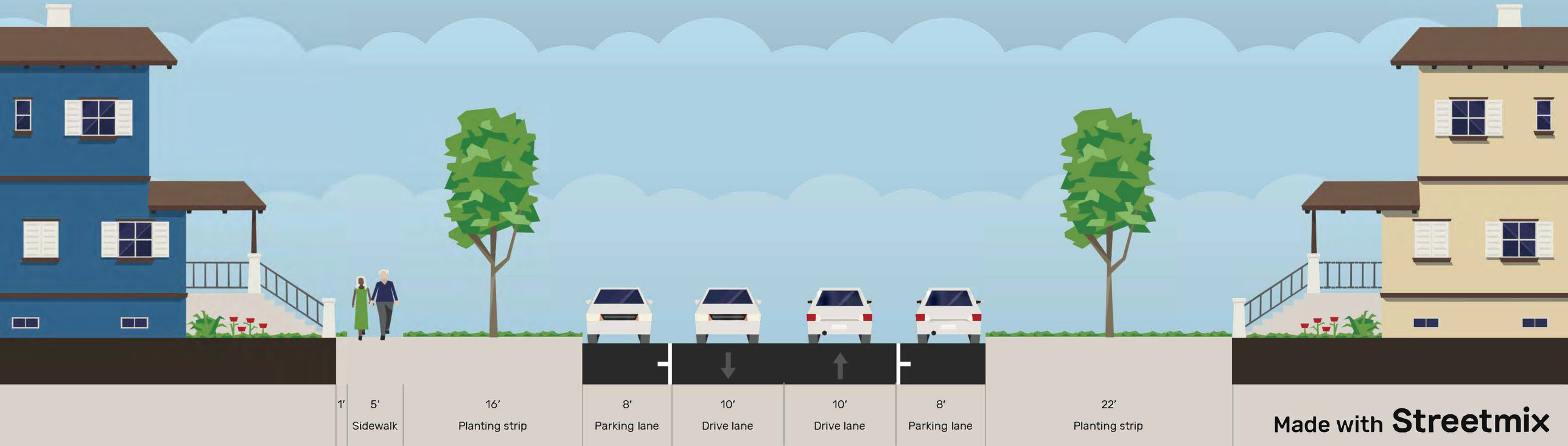
2025 Mill and Overlay Project

Date: 1/4/2024

City Of Northfield Minnesota

Attachment #3

Washington St. Woodley to Fremont (Existing)

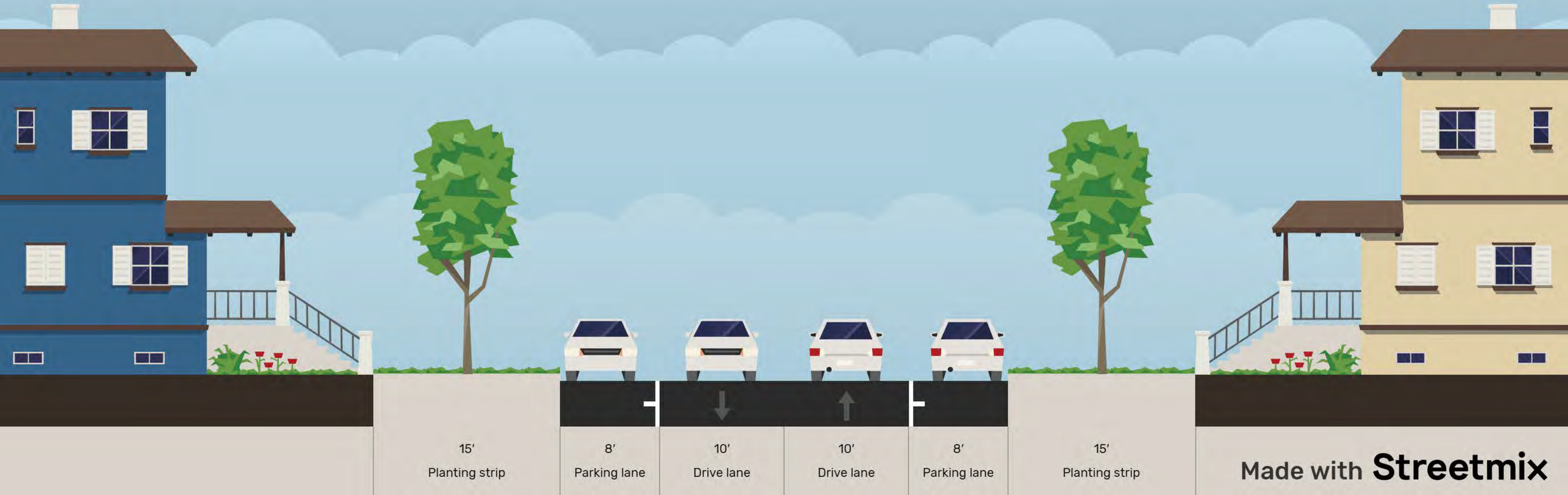


Washington St. Woodley to Fremont (Propose...

Washington St. Fremont to Sumner (Existing)

Washington St. Fremont to Sumner (Proposed...

Washington St. Sumner to Ames (Existi...



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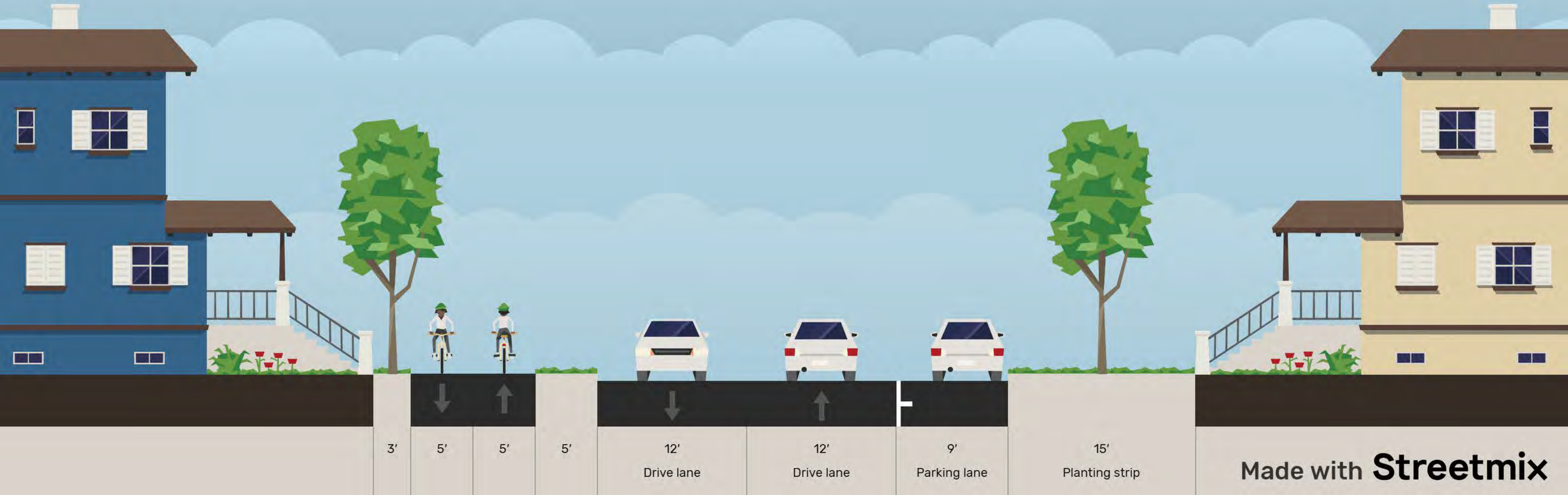

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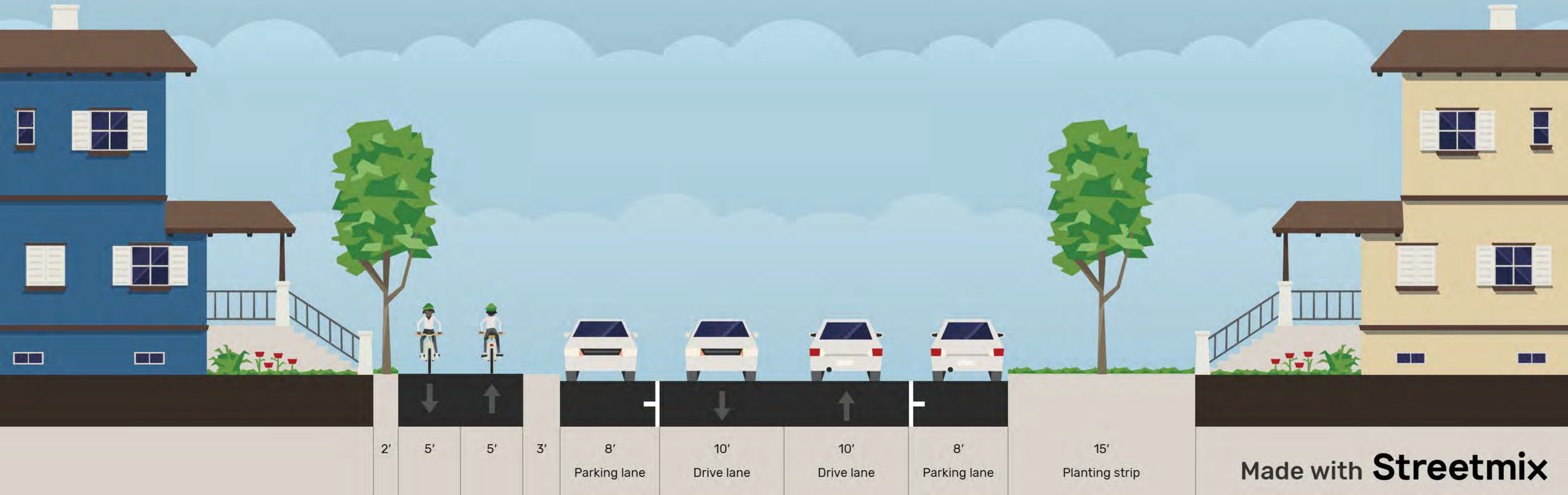

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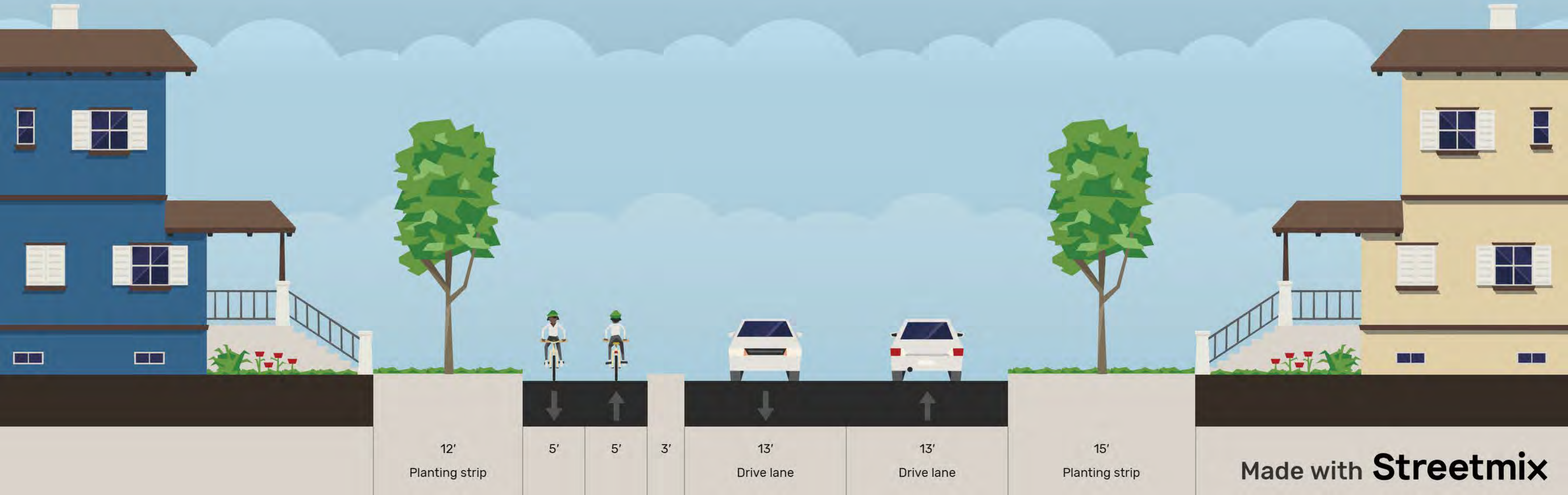
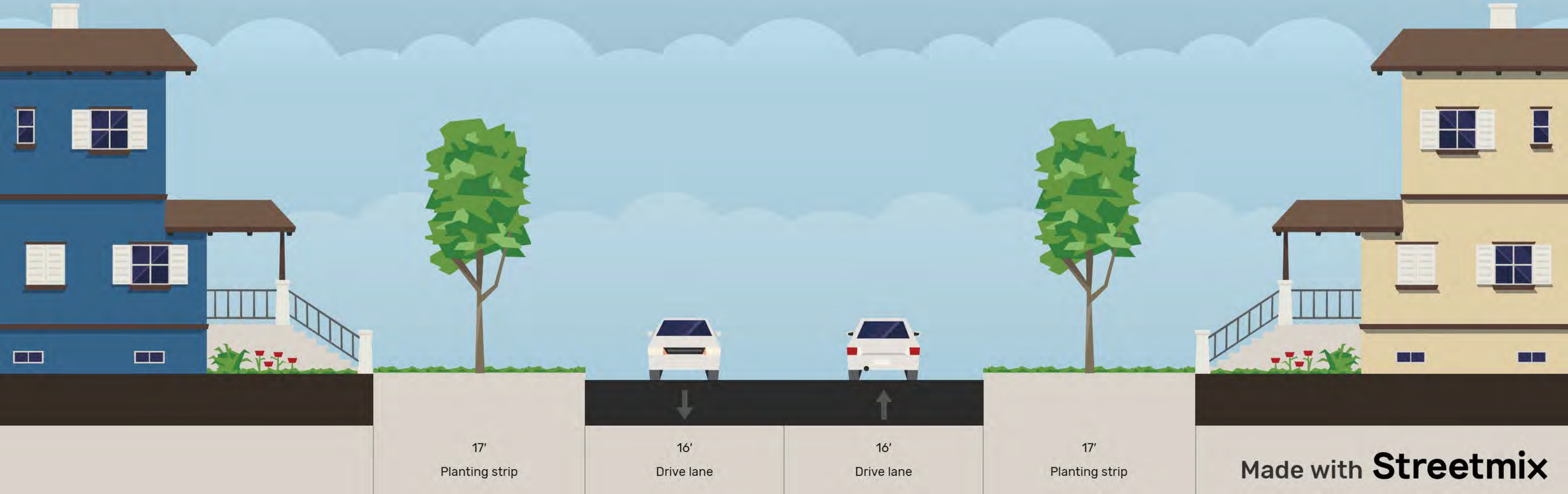
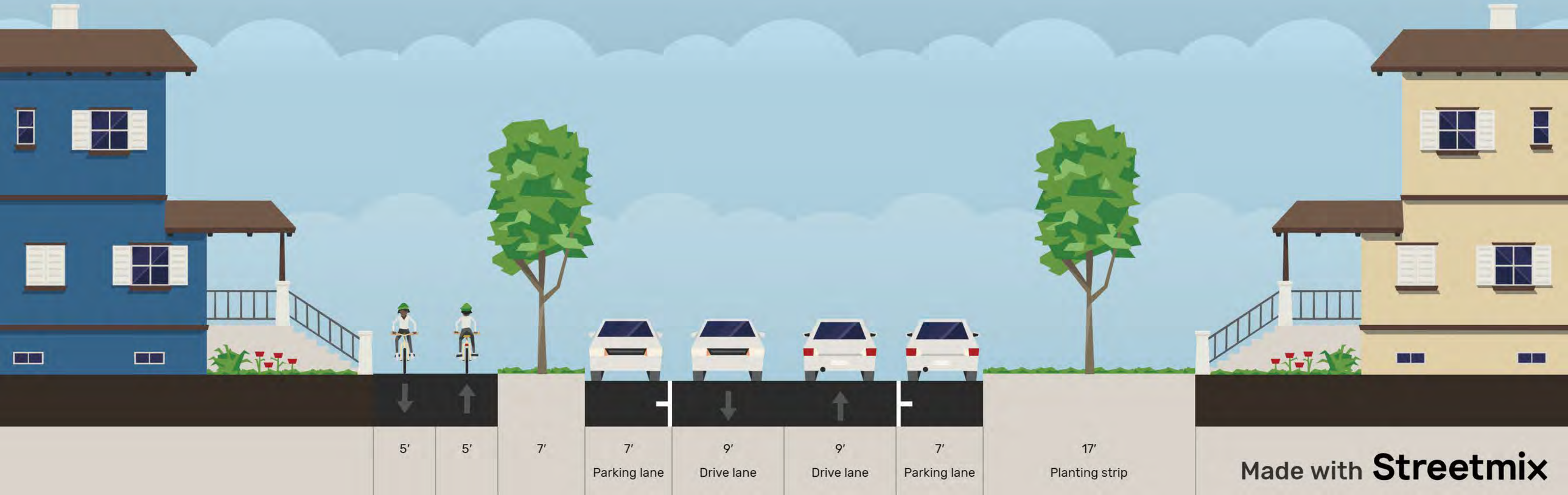


Washington St. Ames to END (Existing)



Washington St. Ames to END (Proposed)



NORTHFIELD, MN INTERSECTION IMPROVEMENTS

28. Superior Dr & Michigan Dr

Context: An existing trail crosses Superior Dr mid-block.

Intersection type: Midblock

Speed limit: 30

On bikeway network? Existing

Considerations: -

Recommendation: Raised crossing, curb extensions, trees; consider green infrastructure in curb extensions

Planning-level cost estimate: $215,000

CIP Year: 2025

CIP project type: Superior Dr: Mill and Overlay

NORTHFIELD, MN INTERSECTION IMPROVEMENTS

29. Superior Dr & Maple St S

Context: Existing trail north of houses on Superior Dr. A two-way bikeway is planned for the west side of Maple north of Jefferson Pkwy.

Intersection type: Stop-controlled T-intersection

Speed limit: 30

On bikeway network? Existing

Considerations: -

Recommendation: Extend the planned two-way street-level bikeway on Maple St south to Ford St; raised crossing connecting trail north of Superior Dr to street-level bikeway and sidewalk on west side of Maple St; mark crosswalk across Maple St on south leg

Planning-level cost estimate: $149,000

CIP Year: 2025

CIP project type: Maple: Sidewalk/Trail/Bike Construction

NORTHFIELD, MN INTERSECTION IMPROVEMENTS

32. Ames St & Washington St S

Context: A two-way bikeway is planned on the west side of Washington St (street-level or sidepath not yet determined). A sidewalk may be installed on the east side of Washington St.

Intersection type: Two-way stop-controlled intersection

Speed limit: 30

On bikeway network? Planned

Considerations: -

Recommendation: Marked crossing on south leg and curb extensions on the northeast and southeast corners in conjunction with bikeway and sidewalk installation; consider green infrastructure in curb extensions

Planning-level cost estimate: $222,000

CIP Year: 2025

CIP project type: Washington: Reclamation and Sidewalk/Trail/Bike Construction

NORTHFIELD, MN INTERSECTION IMPROVEMENTS

33. Woodley St E & Washington St

Context: Existing curb extensions onto Washington St on the north leg. Woodley St is a future bikeway. A two-way street-level bikeway is planned on Washington St south of Woodley.

Intersection type: Two-way stop-controlled intersection

Speed limit: 30

On bikeway network? Existing

Considerations: Coordinate with Rice County.

Recommendation: Curb extensions onto Woodley at all corners; marked crossings on all legs; consider green infrastructure in curb extensions

Planning-level cost estimate: $276,000

CIP Year: Not programmed

CIP project type: N/A

ATTACHMENT #5

CITY OF NORTHFIELD

Pedestrian + Bikeway Analyzation

FINAL REPORT: OCTOBER 2022

PREPARED FOR:
CITY OF NORTHFIELD, MN

PREPARED BY:
ALTA PLANNING + DESIGN

alta

City Of Northfield Minnesota

TABLE OF CONTENTS

INTRODUCTION

Overview, Purpose, and Organization

Overview

The City of Northfield (City) adopted a Pedestrian, Bike, and Trail System Plan in 2019. The plan included strategies to help the City develop a more comfortable, safe, and connected network of trails, bikeways, and walkways throughout the city. The City is now in a position to implement a vision of attracting more people to walk and bike in Northfield and to pursue the following key goals:

- Bicycling: Provide a facility that helps people of all ages and abilities (AAA) feel comfortable and safe.
- Walking: In addition to sidewalks or paths to walk on with buffers from the street, have safe and comfortable places to cross the street.

This report explores what types of bikeway and pedestrian crossing improvements are possible and desirable in Northfield with a goal of expanding bike usage for people of all ages and abilities. This report explores bicycle facility options to move toward that goal.

The City installed several bikeway projects several bikeway projects since the adoption of the 2019 plan (see Figures 1 and 2 on the following page). Two-way buffered bikeways on one side of the street were a popular installation. This type of bikeway has several benefits in Northfield:

The City is now in a position to implement a vision of attracting more people to walk and bike in Northfield

- They provide a dedicated space for people to bike.
- The traffic volume on most streets owned by the City of Northfield is relatively low, but high enough that separation from motor vehicles will help people feel comfortable bicycling.
- Parking is retained on one side of the street.

Opportunities exist to improve the comfort level of these bikeways. This report explores opportunities to provide physical separation between moving motor vehicles and people biking.

Figure 1. Eighth Street W at Water Street S - facing west

Figure 2. Nevada Street and Fourth Street E - facing east

Purpose of This Report

The purpose of this report is to identify how projects identified in the 2022-2026 Capital Improvement Projects (CIP) can be organized to provide the most benefit to people walking and bicycling in Northfield. Construction projects are often the best opportunity to make a measurable impact on safety and comfort for people walking and biking. The CIP includes a variety of street project types, including: mill and overlays, reconstruction and reclamation, and sidewalk/trail improvements. Each of these project types has different implementation opportunities and challenges.

Organization

This document is organized into four sections:

Section 1: Review of Existing Plans and Conditions

This section includes a review of policies, plans, and documents that provide guidance to inform bikeway and pedestrian infrastructure improvements.

Section 2: Bikeway Design Concepts and Report

This section includes an analysis of seven proposed bikeway corridors–with an existing cross section and proposed cross sections.

Section 3: Pedestrian Design Concepts and Report

This section includes a map and analysis of pedestrian origins and destinations–with a list of locations to consider for pedestrian crossing improvements.

Section 4: CIP Analysis and Recommendations

This section provides recommendations to move forward with implementing pedestrian and bicycle projects in coordination with the CIP.

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REVIEW OF EXISTING PLANS AND CONDITIONS

To understand prior work relevant to the ongoing project, including how adopted design and policy guidance can support and guide bicycle and pedestrian facility design, Alta Planning + Design completed a high-level review of previous plans adopted by the City of Northfield. While older plans such as the 2006 Greenway Corridor Plan were noted in this section, they didn't have as much of direct impact on the report. Others, including the 2012 Complete Streets Policy and the 2019 Pedestrian, Bike, and Trail System Plan, provided relevant technical guidance or offered insights into the City's vision for surface transportation systems.

Key Findings

- **Facilities should safely accommodate users of all ages and abilities (AAA):** The 2012 Complete Streets Policy clearly states that facilities should be "planned, funded, designed, constructed, operated and maintained to safely accommodate users of all ages and abilities." The 2019 Pedestrian, Bike, and Trail System Plan also specifies that facilities should serve "all ages and abilities."
- **Facility design should rely on the "latest and best" standards, principles, policies, and guidelines:** The 2012 Complete Streets Policy, rather than adopting explicit design guidelines, recognizes that best practices evolve over time and instead refers to contemporary best practices for complete streets design. The 2019 Pedestrian, Bike, and Trail System Plan provides some specific guidance; the Complete Streets Policy also provides flexibility for the City to leverage other state-of-the-art design guidelines, such as the National Association of City Transportation Officials (NACTO) Urban Street Design Guide, NACTO Don't Give Up at the Intersection guide, Federal Highway Administration (FHWA) Separated Bike Lane Planning and Design Guide, and the Minnesota Department of Transportation (MnDOT) Bicycle Facility Design Manual.
- **The City's updated street type table provides high-level facility guidance for different street segments:** The 2019 Pedestrian, Bike, and Trail System Plan updated the City's prior street type table to shift away from functional classifications and toward a framework focused on land use context. This process also incorporated the City's 2012 Complete Streets Policy into the street type table. While the street type table does not provide comprehensive guidance about facility selection and layouts applicable to all the corridors under analysis as part of this project, it does provide an important typology and example cross sections that can form the bases for more individualized design recommendations. A strategy listed in the plan clarifies that the City should develop a bicycle facility selection matrix to guide more specific decision making.
- **Separated bicycle facilities–including those with vertical separation (concrete curbs, flex posts, planter boxes), off-street facilities, and protected**

intersections–are recommended where there is high bicycle or vehicle traffic or where the City wants to expand the AAA network to increase bicycle usage: The *2019 Pedestrian, Bike, and Trail System Plan* lists as Strategy 2 "Implement Separated Bicycle Lanes in Select Locations." This includes the guidance that "Separated bicycle lanes should only be implemented… where there is a high demand for bicycle infrastructure [or] where the current facility does not provide a comfortable bicycling environment for people of all ages and abilities." Cross sections provided in the plan illustrate some of the situations and types of separated facilities that would be appropriate.

- **Improved water quality and stormwater management–by reducing impervious surfaces, narrowing streets, planting street trees, and leveraging green infrastructure–are key outcomes and design strategies for street projects:** The 2012 Complete Streets Policy identifies improved water quality and management outcomes as core goals of street design projects, and also establishes as a goal an "attractive surface transportation network." Accordingly, street design projects should seek to do the following:
  - Maintain existing green infrastructure (e.g., street trees)
  - Convert impermeable surfaces to new features (e.g., rain gardens, bioswales, planters) that achieve multiple City objectives:
    - Water purification
    - Water infiltration
    - User comfort (e.g., by reducing street-level temperatures, by mitigating vehicle noise and air pollution, and by enhancing the visual appeal of streetscapes)
    - User safety (e.g., by installing green elements as separation between vehicles and other road users)

Plan Reviews

2022–2026 Capital Improvement Projects

The current CIP provides details on programmed capital projects through 2026. Projects are broken down by department and by funding source, with programmed funding listed by year for each project. All pedestrian- and bicycle-related projects fall under the purview of the Engineering Division and have project codes of the format E-YEAR-PROJECT NUMBER. The CIP was reviewed at a high level, including the project-specific details for each engineering project in the CIP to identify relevant aspects of the City's current planning, funding, and implementation process for pedestrian- and bicycle-related capital projects. Engineering projects sum to $34,725,479 across the five years and account for 39% of the City's total capital expenditures ($90,069,517) over the five years. Each project sheet has a set of standard fields, including project name, project number, department, contact, type, useful life, category, priority, total project cost, description, justification, and tables of expenditures and funding sources. Most projects also include a supplementary image.

2019 Pedestrian, Bike, and Trail System Plan

This plan was complete in March 2019 and included an existing plan and policy review, community engagement, updates to the City's street type table, development of planned sidewalk and walking and bicycling networks, and other area- and route-specific multimodal planning tasks (e.g., Safe Routes to School recommendations). The review of existing plans and policies included six documents: the *Comprehensive Plan, Complete Streets Policy, Comprehensive Transportation Plan Update, Land Development Code and Street Type Table, Safe Routes to School Plan,* and Minnesota Department of Natural Resources *Trail Planning, Design, and Development Guidelines*.

For each reviewed document, the plan provides recommended revisions. Key recommended revisions include the following:

- Prioritize accessibility for people with disabilities (*Comprehensive Plan*)
- Clarify the importance of separated bicycle facilities for both comfort and safety (*Comprehensive Plan*)
- Where separated facilities are not present, implement traffic calming treatments to achieve speeds of 25 miles per hour (mph) or less (*Complete Streets Policy*)
- Design on-street bicycle routes to be comfortable for people with less experience bicycling (*Comprehensive Transportation Plan Update*)
- Emphasize connections and wayfinding between on- and off-street bicycle facilities, including regional trails (*Comprehensive Transportation Plan Update, Safe Routes to School Plan*)
- Require trails to be at least 10 feet in width, with a minimum of three-foot shoulders on each side (*Safe Routes to School Plan, Minnesota Department of Natural Resources Trail Planning, Design, and Development Guidelines*)

Key strategies building from the plan review included the following:

- Design streets based on land use context
- Implement separated bicycle lanes in select locations
- Improve accessibility for people with disabilities[1]
- Develop a bicycle facility selection matrix

Findings from community engagement highlight that:

- Downtown, schools, and local trails are major walking and biking origins/destinations.
- Bicycle and pedestrian infrastructure at dangerous intersections is limited or absent.
- Physical linkages and wayfinding to connect the street network to off-street facilities are needed.
- Gaps in the sidewalk network are problematic.

The plan's street type table updates also reflect a number of City goals around multimodal street design. Perhaps most significantly, the updates establish target

1 *At the time of the plan review, only a draft version of the City's Americans with Disabilities Act Transition Plan was available. A final version of the plan has since been published*

speeds for each street type and recognize that these speeds are not merely a function of posted speed limits; rather, "**Achieving target speeds depends on the selected *design speed*.**" (Italics added.) Design elements included in the cross sections include the following:

- No more than two travel lanes on most street types, and no more than two travel lanes plus a shared center turn lane on all streets with 15,000 annual average daily traffic (AADT) or less
- Travel lanes of no more than 12 feet on any street type, and travel lanes of 10 feet on almost any street type
- Traffic calming and crossing treatments such as curb extensions, protected intersections, pedestrian refuge islands, mini traffic circles, and speed humps

2019 Americans with Disabilities Act (ADA) Transition Plan

The City completed a self-evaluation in 2018 of its efforts to address the needs of people with disabilities and subsequently produced a final *ADA Transition Plan*. The plan specifies a number of relevant policies regarding accessibility in infrastructure projects, namely that all new construction projects, as well as all reconstruction projects–including mill and overlays–and all curb replacement projects, will be built to current Americans with Disabilities Act (ADA) standards *to the extent feasible*. The plan further establishes a schedule for updates, such that: by 2023, areas in the CIP would be ADA-compliant; by 2028, 50% of accessibility features within the City's jurisdictions would ADA-compliant; and by 2038, 80% of accessibility features within the City's jurisdictions would be ADA-compliant.

Although approximately 26% of adults in the US live with a disability[2]–and all children and adults benefit from accessible infrastructure design–the City's *ADA Transition Plan* only received one public comment. As the City continues to implement the plan, it should collaborate with the community, in particular with people with disabilities, to learn about their experiences accessing places in Northfield, and their needs for more accessible infrastructure and related policies. Findings should be used to inform updates to the plan and to other City policies relating to the built and natural environments and accessibility.

As it pertains to this project, the plan is clear that **all CIP projects will be designed to meet current ADA standards**. However, in many scenarios, there will be significant opportunities to exceed these standards to provide safer, more comfortable, and more convenient bicycle and pedestrian facilities for users of all ages and abilities.

2 *https://www.cdc.gov/ncbddd/disabilityandhealth/infographic-disability-impacts-all.html*

2012 Complete Streets Policy

The City's 2012 *Complete Streets Policy* establishes high-level "directives" for all surface transportation projects and also specifies the City's motivations, vision, and goals for its surface transportation network. These include the following:

- "Long-term cost savings in improved public health, better environmental stewardship, reduced fuel consumption, and reduced demand for motor vehicle infrastructure"
- A preference for separated facilities for bicyclists and pedestrians and, when separated facilities are not possible, road designs that calm traffic to achieve a "safe, reliable, integrated, and interconnected" multimodal network
- Improved water quality and stormwater management by reducing impervious surfaces, narrowing streets, planting street trees, and leveraging green infrastructure design approaches
- Public transportation infrastructure that is designed to limit maintenance needs, and that is "maintained so that all users can travel safely, reliably, and independently"

The policy establishes a clear set of desired outcomes–and general approaches for achieving these outcomes–for which this project should design. Particularly relevant are the policy's emphases on reducing street widths and impervious surfaces, designing environmentally and fiscally sustainable transportation projects, and opting for separated bicycle and pedestrian facilities or traffic calming improvements.

2006 Greater Northfield Area Greenway System Action Plan

The City's 2006 *Greater Northfield Area Greenway System Action Plan* developed a proposed map of regional greenway corridors, which were defined as "a connected system of protected natural areas and cultural resources that is accessible for human use." These corridors are intended to "protect, preserve, and enhance natural areas and open spaces" and to balance the multiple functions of these areas (e.g., recreational and educational, as well as routes for active transportation) while connecting neighborhoods and communities within the region.

Given the vintage of this plan and the focus of the current project, the primary relevant consideration is to **ensure that design of projects facilitates connections to existing and planned segments of the regional greenway system**. This is reiterated in the 2019 *Pedestrian, Bike, and Trail System Plan* (described previously), which has a recommendation to "develop connections to existing and planned facilities in the regional trails system (as well existing and planned on-street facilities)."

02

BIKEWAY DESIGN CONCEPTS AND REPORT

Approach

Alta developed existing cross sections and recommended cross sections for the following City of Northfield proposed bikeway corridors (see map on the following page), each based on existing curb-to-curb, potential new curb-to-curb, and right-of-way (ROW) dimensions:

- Prairie Street
- Nevada Street/Maple Street
- Heritage Drive/Adams Street/Roosevelt Drive
- Lincoln Street N/Lincoln Parkway/Spring Street
- Armstrong Road
- Washington Street
- Eighth Street E

The goal of this effort was to identify how bikeways can fit into the existing curb-to-curb dimensions for each street, and to note options that may include a modified street section. There are notes for each corridor that identify technical challenges, trade-offs, and other applicable observations related to feasibility of installing bike lanes. Each proposed bikeway corridor has a context map, existing cross section or sections, and proposed cross section or sections.

There may be opportunities to enhance key intersections along the proposed bikeway corridors with pedestrian crossing improvements. Locations for these improvements should be based on the pedestrian origin and destination map in Section 3, and are contingent on identifying funding in the CIP.

Selecting a Preferred Bikeway Type in Northfield

A key goal of this report was to determine how to enhance bikeways for AAA to reduce barriers and increase bicycle usage:

- Policy guidance: including City of Northfield policies and plans, Minnesota State Aid Rules, the MnDOT Bicycle Facility Design Manual, and national guidance such as NACTO Urban Street Design Guide, NACTO Don't Give Up at the Intersection guide, and the FHWA Separated Bike Lane Planning and Design Guide
- Clear policy direction to safely accommodate users of all ages and abilities
- Street and ROW widths of proposed bikeway corridors
- Recent bikeway implementation

One of the key parts of the analysis came from "Contextual Guidance for Selecting All Ages & Abilities Bikeways" in the Urban Bikeway Design Guide. In June 2022, two-day traffic counts were conducted at 17 locations in the city, which largely overlapped with the proposed bikeway corridors in this report. A majority of the corridors were in the 1,000 to 3,000 range for AADT for the two-day sample.

The NACTO guidance that applies to the City of Northfield streets reviewed as a part of this report is shown in Table 1.

Table 1: NACTO guidance applicable to City of Northfield streets

Roadway Context	All Ages and Abilities Bicycle Facility
Speed Limit	Greater than 26 mph
Target Motor Vehicle Volume (AADT)	Less than or equal to 6,000 AADT
Motor Vehicle Lanes	Single lane in each direction
Key Operational Considerations	Low curbside activity, or low congestion pressure
All Ages & Abilities (AAA) Facility (based on above features)	Separated bike lane, or reduce speed

One Way Versus Two Way Separated Bikeways

Another element of the bikeway analysis was to consider how well one way and two way separated bikeways could fit in Northfield streets. Both options are both considered safe and comfortable for people of all ages and abilities. They both provide dedicated space for bicyclists with physical separation from motor vehicles. Intersection design is important in either option, particularly where complex movements, transitions, or connections to other bikeways are present.

This part of the analysis is particularly relevant for the mill & overlay projects and the stand-alone bikeway projects. The range of existing curb to curb street widths include 32', 36', 38', 40', and 44'. It's also important to note the volumes on the streets identified for this report are relatively low volume. The considerations identified below were developed based on NACTO guidance and the existing street and bikeway context in Northfield.

One way separated bikeway example with concrete bike buffer in Minneapolis

One way considerations

One way separated bikeways can be attractive to bicyclists because they operate in the same direction as motor vehicles, which can feel more predictable. Based on the range of existing street widths for the proposed bikeway corridors, there are limited options to implement one way separated bikeways that have enough buffer width to install a raised curb buffer. This would mean that a majority of potential one way bike lanes could only have a painted buffer without a raised component. This would not meet the definition of a AAA bikeway or provide the level of comfort for people that desire physical separation from moving motor vehicles.

Two way considerations

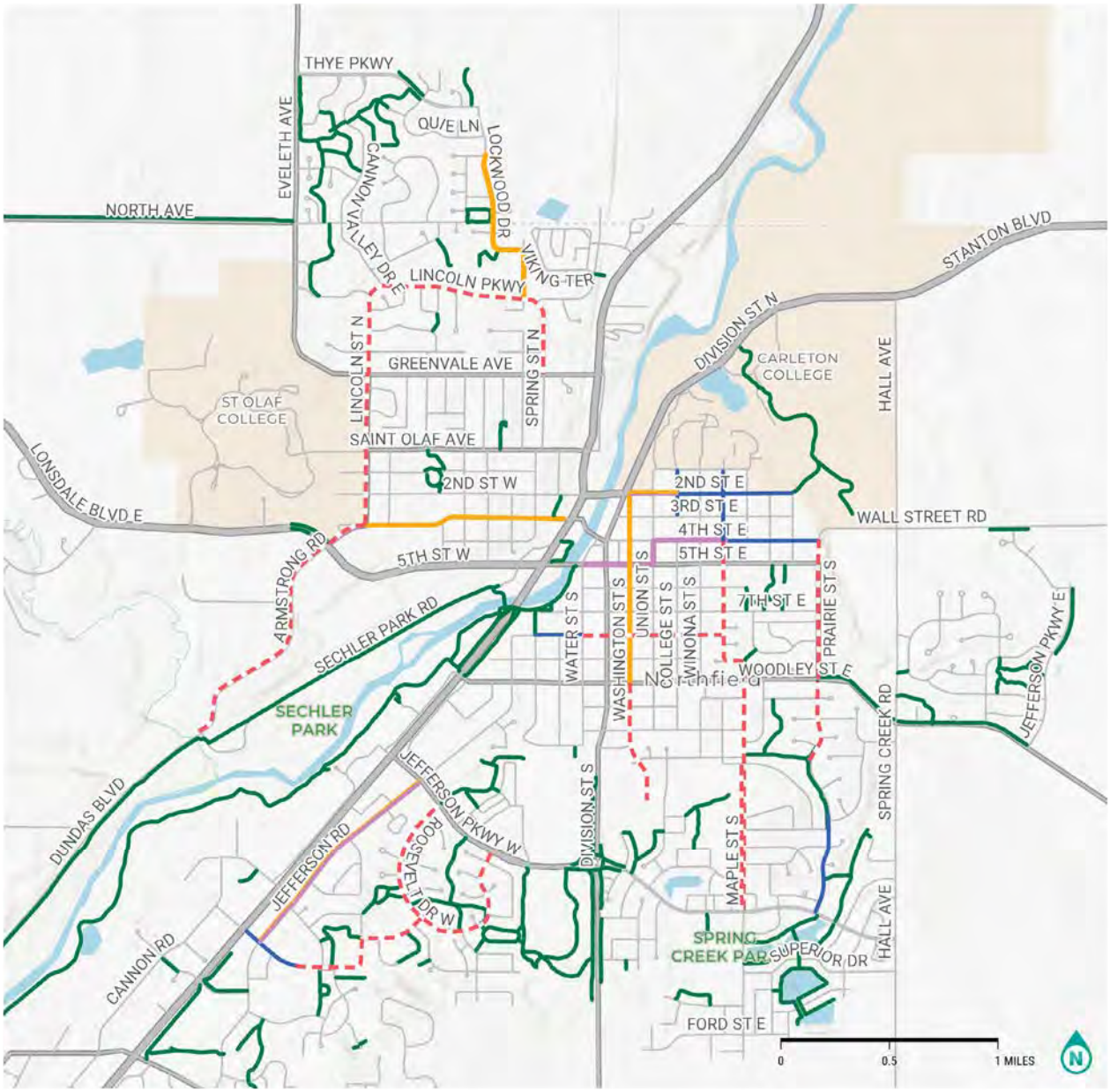
Two way separated bikeways can offer a trail-like feel within the street. Based on the range of existing street widths for the proposed bikeway corridors, there are significantly more opportunities to implement a raised concrete buffer with two way bikeways versus one way bikeways. They generally fit well as retrofit projects by removing parking on one side of the street and narrowing travel lanes. The two way installations also build on the existing bikeway network and can provide continuity across the system. This may help biking be more predictable in Northfield because people will know what to expect as they make connections between bikeways. There are also opportunities to revisit the existing two way buffered bikeways to install a raised concrete barrier.

Two way separated bikeway example with concrete bike buffer in Minneapolis

Based on the analysis, Alta recommends the following preferred bikeway types based on project types identified in the CIP:

- For reconstruction and reclamation projects:
  - **The preferred bikeway in most contexts is a raised (sidewalk height, behind the curb), two-way separated bikeway that separates pedestrians and bicyclists where feasible.** Also consider other important pedestrian and bicycle features, including green boulevards, green stormwater infrastructure, trees, and intersection treatments.
- For mill and overlay projects and stand-alone bikeway projects (no underlying street maintenance project):
  - **The preferred bikeway in most contexts is an in-street, two-way separated bikeway, with a two-foot concrete bike buffer as a form of physical separation between the travel lanes and the bike lanes.** In cases where the concrete bike buffer is not feasible, a hatched buffer should be included (see Figure 2). This often includes retaining a travel lane in each direction and one side of street parking.
- In some contexts, a bike boulevard is a preferred option. This includes striping bike boulevard symbols in the street and including traffic calming features such as bumpouts, traffic circles, and raised crossings.

Figure 3. Bicycle Network Map



BICYCLE NETWORK

NORTHFIELD, MN
Citywide

PROPOSED BIKEWAY CORRIDORS

- Proposed Bikeway Corridors

EXISTING BICYCLE NETWORK

- On-Street Bike Lane May use full lane
- On-Street Bike Lane One direction
- On-Street Bike Lane Two direction
- Trail

Prairie Street
From Fourth Street E to Just South of Pleasant View Court

Overview

Length: 0.7 miles

Existing Curb-to-Curb: 32 feet

Total Right-of-Way: 65 feet

Traffic Volumes (AADT, based on two full-day counts):

- Prairie Street north of Woodley Street E: 1,729
- Prairie Street south of Woodley Street E: 1,244

Connection to the CIP:

- Prairie Street from Fourth Street E to Woodley Street E: sidewalk/trail improvements (2023); mill and overlay (2023)

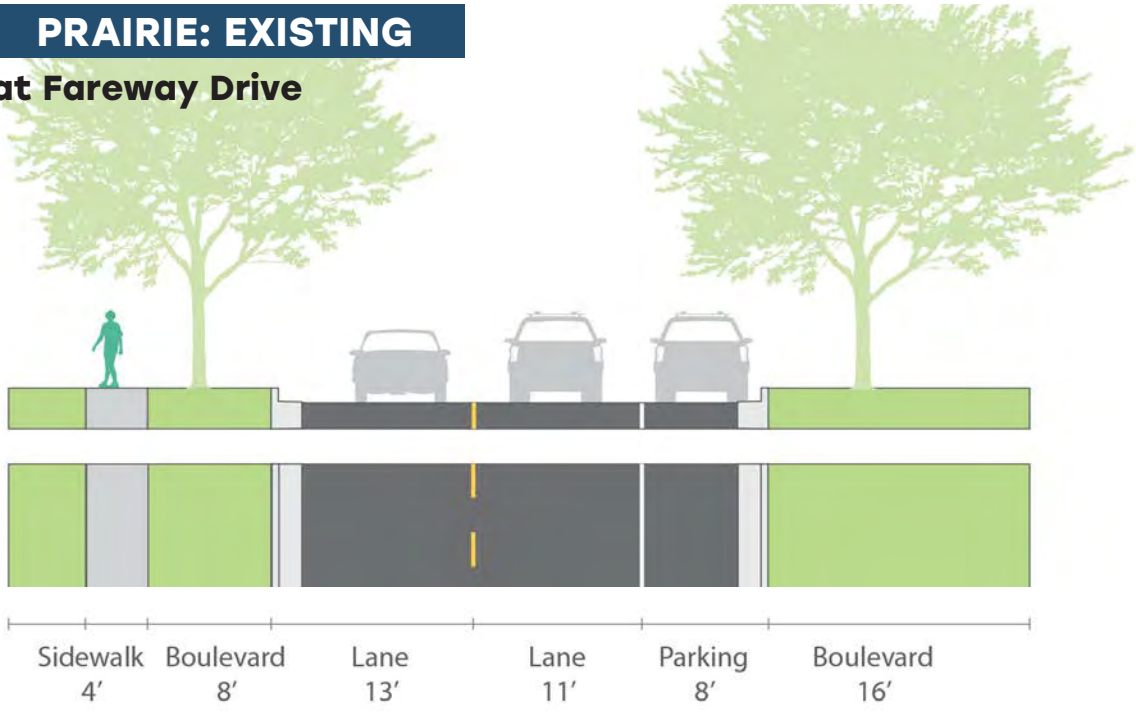
Notes on the Proposed Cross Sections

- Challenging corridor due to limited ROW and existing tree canopy on the west side–limited opportunities on the east side.
- Opportunity to implement a bicycle boulevard with the 2023 mill and overlay project and use the sidewalk/trail improvements CIP project to implement traffic calming elements that optimize pedestrian and bicycle comfort. Assumption for the bicycle boulevard is a stamped bike symbol with “BLVD” below it–one in each direction at the entrance of each block.
- Proposed cross sections focus on the section from Fourth Street E to Woodley Street E because there is an existing two-way buffered bikeway on Prairie Street south of Woodley Street E.
- Connections to the bikeway network: Prairie Street S connects to a two-way in-street bikeway on the south side of Fourth Street and then to an existing two-way bikeway south of Woodley Street E.

- As an alternative to a bicycle boulevard option, consider expanding the scope of the 2023 mill and overlay project to install a separated bikeway on the west side of the street. This could be accomplished by widening the street from 32 feet to 36 feet, which would include taking out the curb on the west side of the street and reducing the width of the boulevard. This option would helps with continuity of the bikeway network by keeping the two way bikeway traffic on the west side of the street between Woodley St E and Fourth Street E. It would also impact existing trees within the boulevard on the west side of the street.

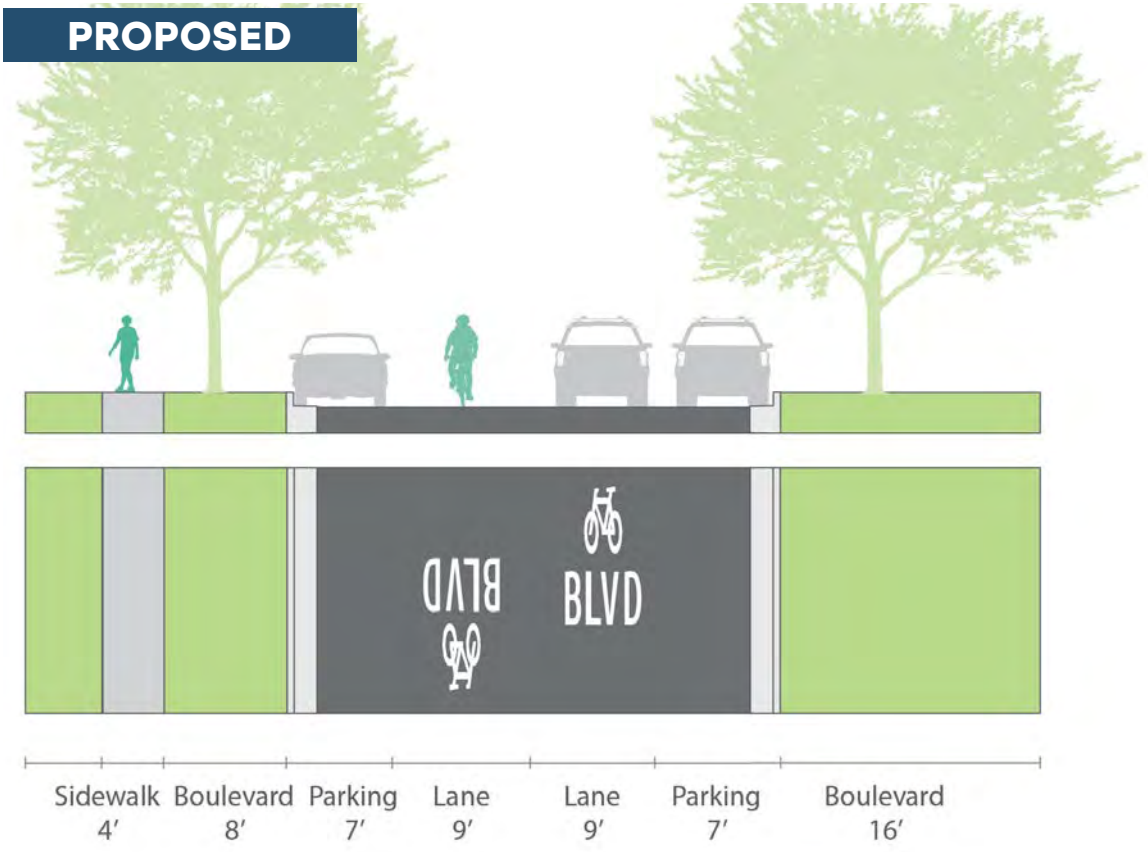
PRAIRIE: EXISTING

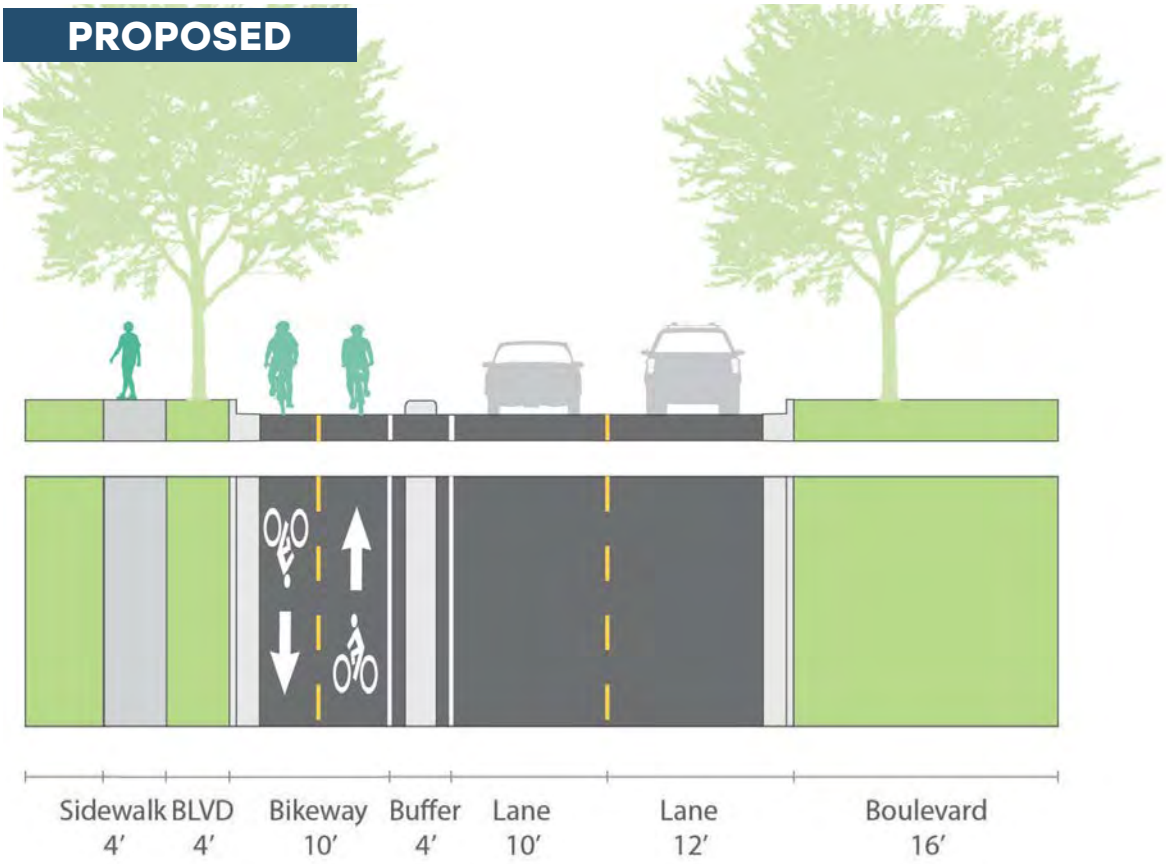
at Fareway Drive



Looking North

PROPOSED




PROPOSED
Sidewalk 4′
BLVD 4′
Bikeway 10′
Buffer 4′
Lane 10′
Lane 12′
Boulevard 16′

Nevada Street/Maple Street
From Fourth Street E to Jefferson Parkway

Overview

Length: 1.4 miles

Existing Curb-to-Curb: 32 feet on Nevada Street and ranges from 36 to 44 feet on Maple Street

Total Right-of-Way: ranges from 76 to 80 feet

Traffic Volumes (AADT, based on two full-day counts):

- Maple Street north of Sibley Street: 1,763
- Maple Street south of Sibley Street: 1,551

Connection to the CIP:

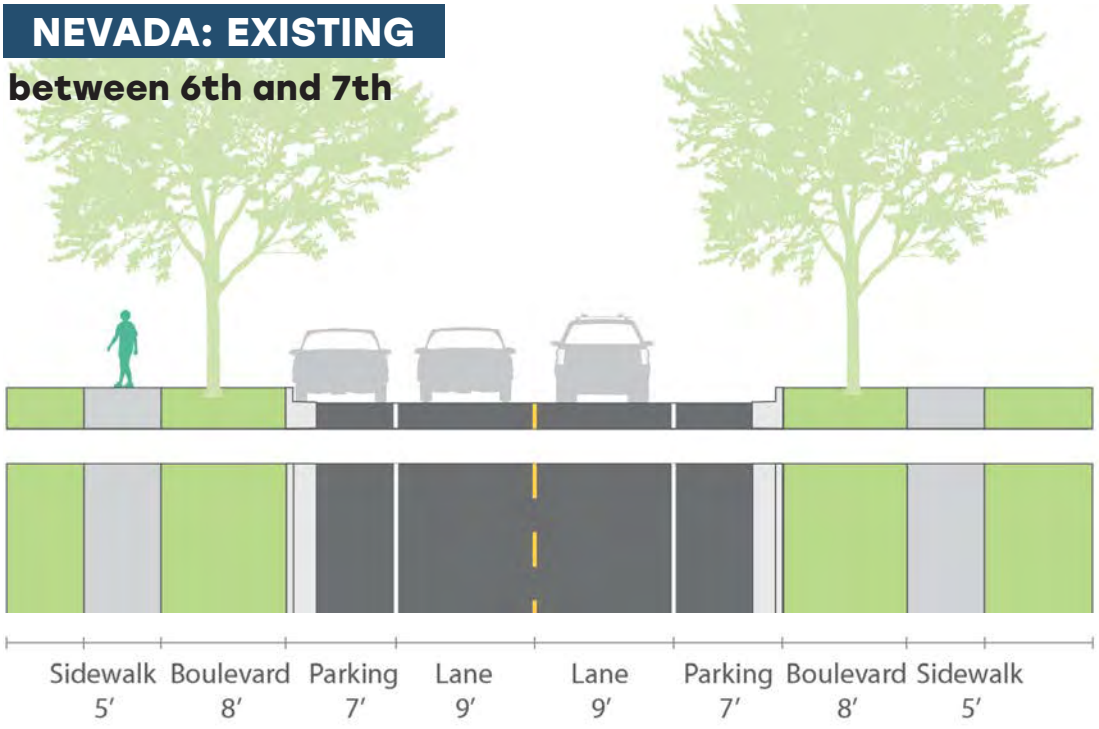
- Maple Street from Ames Street to Jefferson Parkway: sidewalk/trail improvements (2023); mill and overlay (2026)
- Maple Street from Elm Street to Woodley Street E: sidewalk/trail improvements (2023)
- Maple Street north of Woodley Street E to the intersection of Nevada Street and 4th Street E: No project identified

Notes on the Proposed Cross Sections

- Nevada Street recommendation: implement a bicycle boulevard from Fourth Street E to Ninth Street E. Nevada Street is 32 feet wide in this section, and a separated bikeway would be tight and require full parking removal.
- There is no CIP project associated with Nevada Street at this time. Assumption for the bicycle boulevard is a stamped bike symbol with “BLVD” below it–one in each directions at the entrance of each block.
- Maple Street recommendation: install a two-way separated bikeway from Ninth Street to Jefferson Parkway on the west side of the street and retain parking on the east side of the street. The separated bikeway would require striping and signage, and is an opportunity to install concrete bike buffers as a form of separation within a four-foot buffer.
- The street narrows from Maple Court to Jefferson Parkway, and parking would need to be removed from both sides of the street in this section.
- In the stretch between Sibley Street and Meadow View Drive, the recommendation is to bring the bikeway off street and provide a shared use path adjacent to Spring Creek Elementary.
- Consider an off-street shared-use path the full stretch of Maple Street if the budget could support it.
- The west side was chosen to connect to Spring Creek Elementary School.
- This project will connect to the existing bikeway on Fourth Street E and farther north on Nevada Street, as well as Eighth Street E planned and existing bikeways.

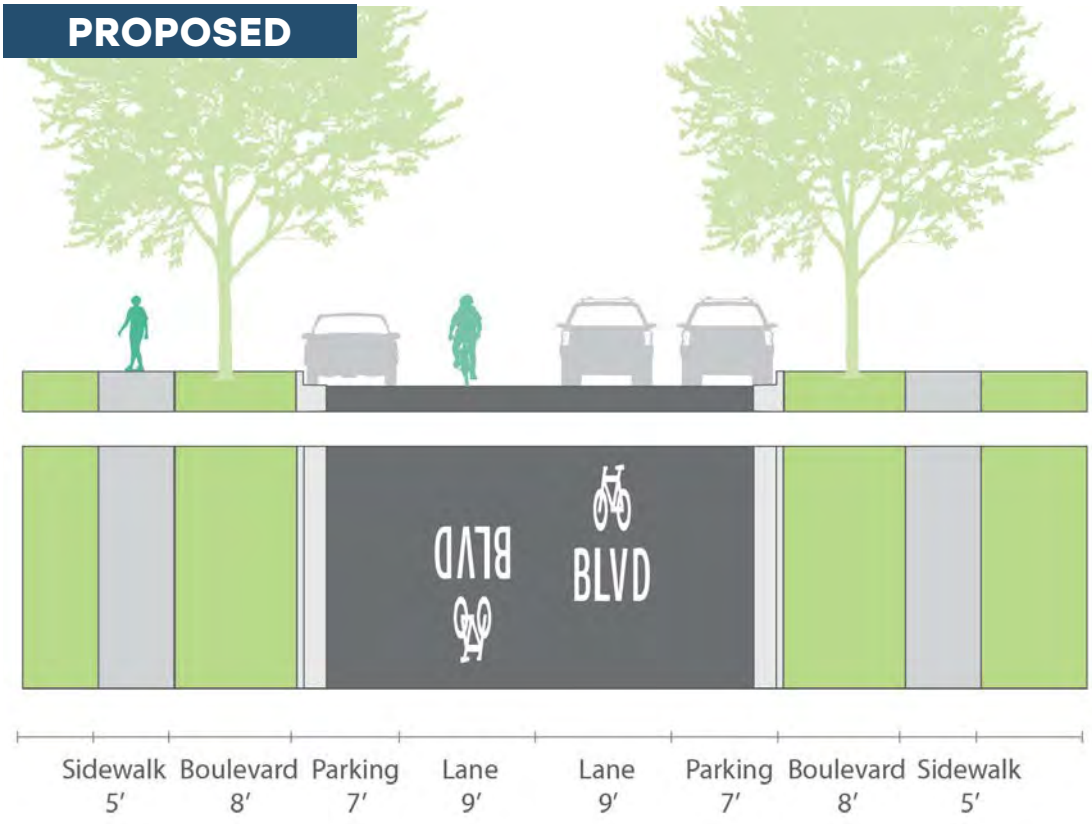
NEVADA: EXISTING

between 6th and 7th



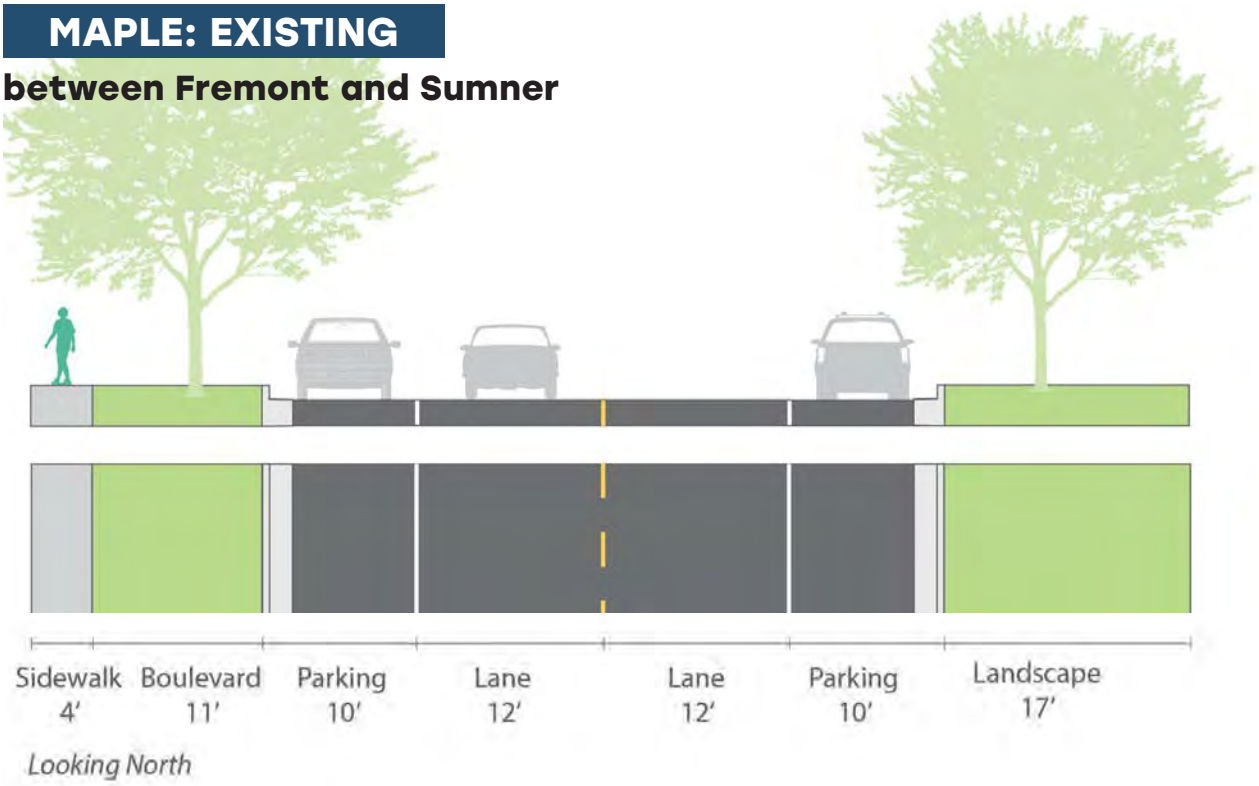
Looking North

PROPOSED



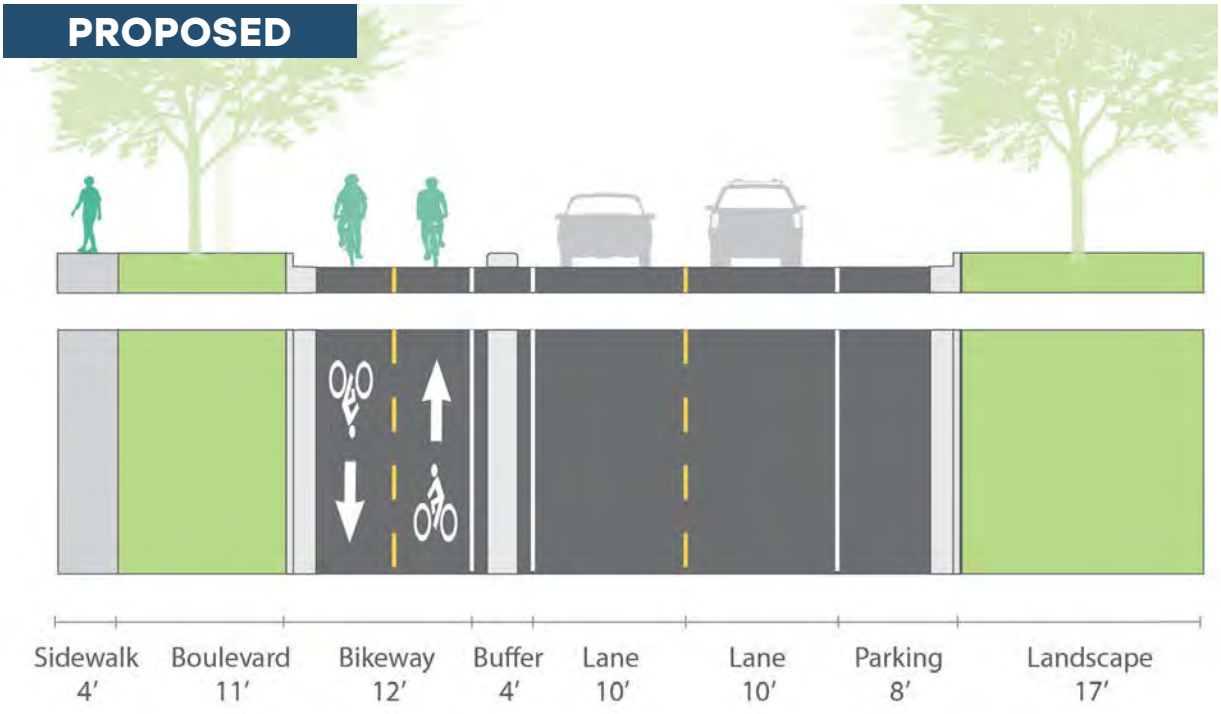
MAPLE: EXISTING

between Fremont and Sumner



Looking North

PROPOSED



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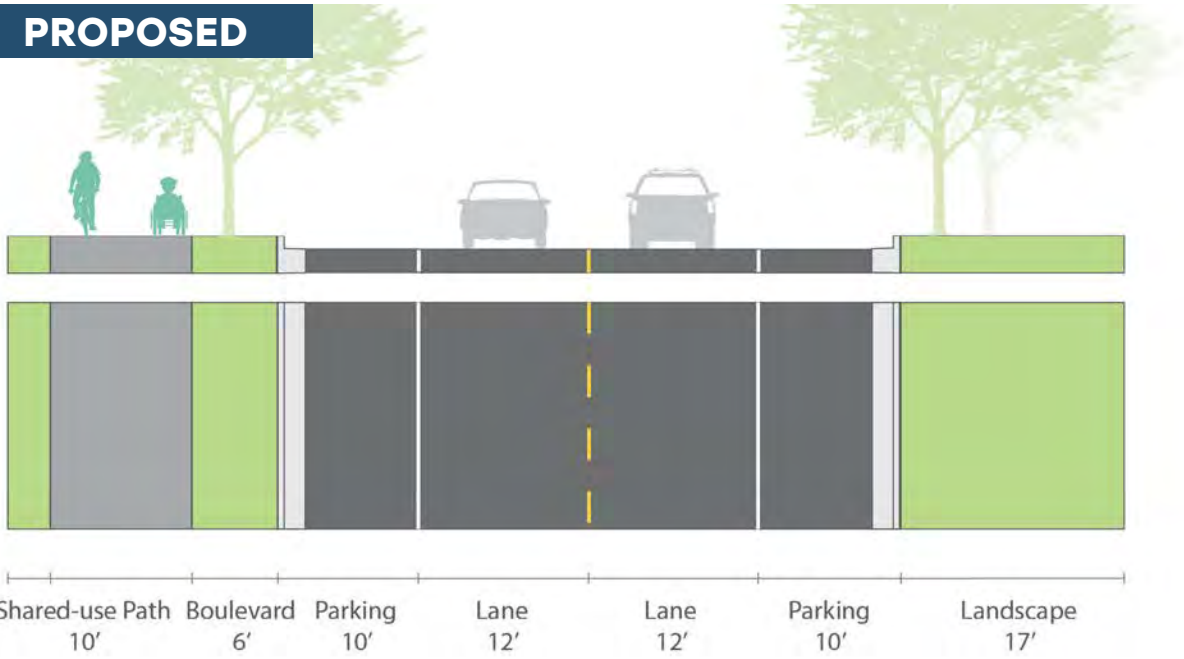

Shared-use Path 10′
Boulevard 6′
Parking 10′
Lane 12′
Lane 12′
Parking 10′
Landscape 17′


4th Street
Nevada Street
Woodley Street E
Maple Street
Jefferson Parkway
N
Proposed bikeway extents
Location of cross section

Heritage Drive/Adams Street/Roosevelt Drive:
From Just West of Hidden Valley Road on Heritage Drive to Jefferson Parkway

Overview

Length: 1.5 miles

Existing Curb-to-Curb: 40 feet on Heritage Drive, 36 feet on Adams Street, and 44 feet on Roosevelt Drive W

Total Right-of-Way: ranges from 70 to 80 feet

Traffic Volumes (AADT, based on two full-day counts):

- Heritage Drive east of Valley Drive: 1,192
- Roosevelt Drive between Jefferson Parkway and Humphrey Court/Jackson Court: 1,372
- Roosevelt Drive between Tyler Court and Van Buren Court: 889

Connection to the CIP:

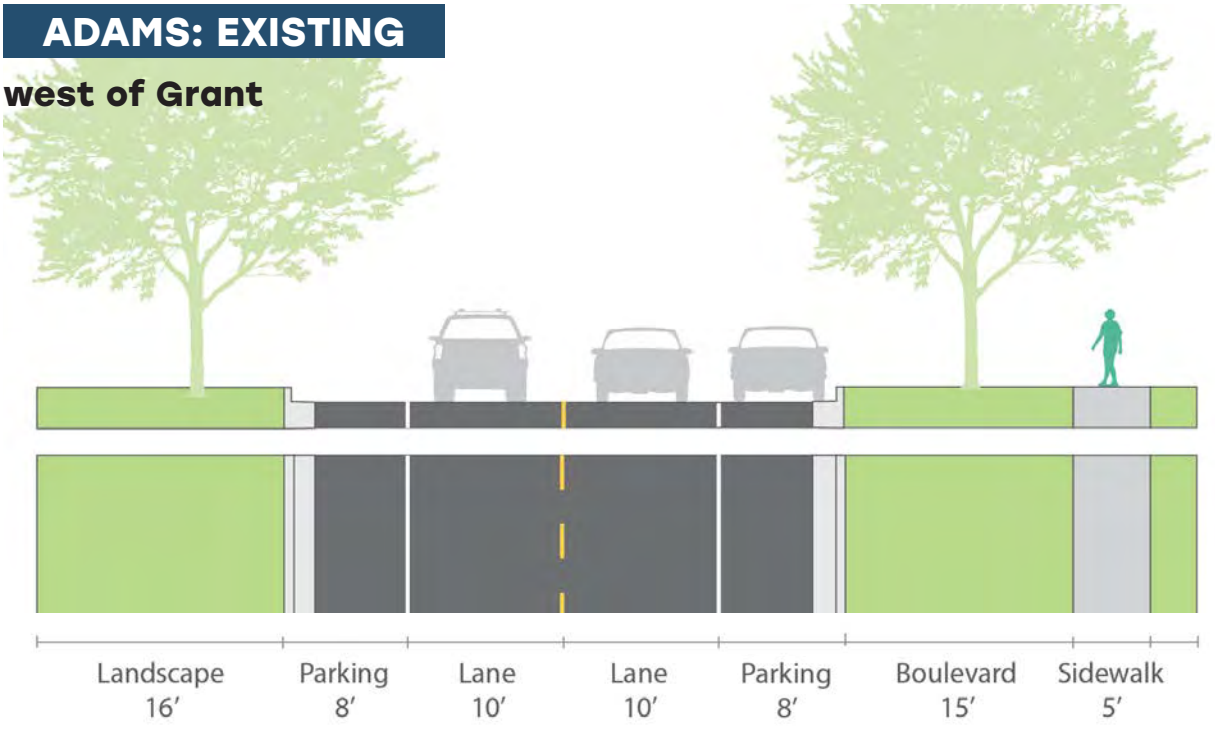
- Heritage Drive, Lincoln Street S, and Adams Street: Reclamation (2023)
- Roosevelt Drive: No project identified

Notes on the Proposed Cross Sections

- Heritage Drive, Lincoln Street S, and Adams Street recommendation: shift the street as a part of a reclamation project and construct a two-way, off-street separated bikeway on the north/west side of the street.
- Roosevelt Drive recommendation: implement a retrofit two-way, in-street separated bikeway on the outside of the loop. There is no CIP project associated with Roosevelt Drive at this time. The project would include striping, signage, and concrete bike buffers as a form of separation within a four-foot buffer.
- The proposed bikeway on Heritage Drive, Lincoln Street, and Adams Street is located on the north side of Heritage Drive in order to connect with the existing two-way bikeway to the west. This route will connect bicyclists to Jefferson Parkway, which is a planned bikeway and connects people to destinations and other bikeways to the east.

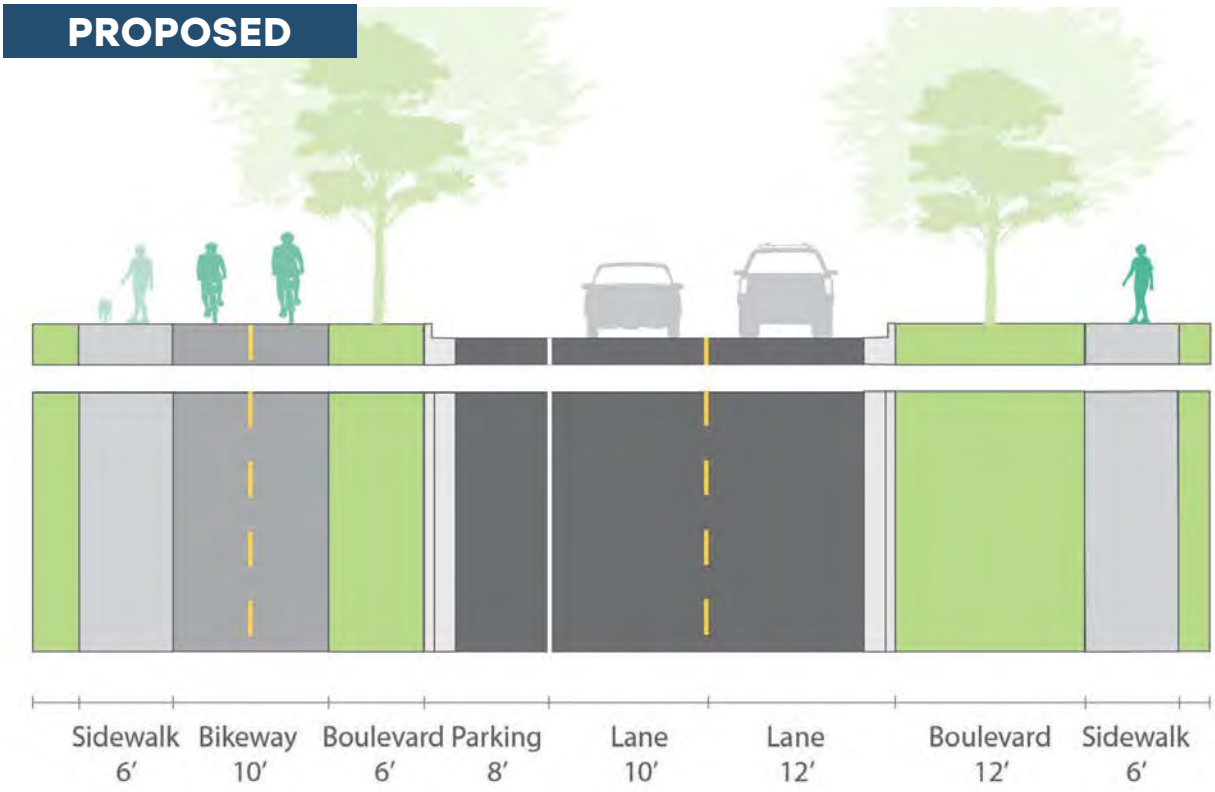
ADAMS: EXISTING

west of Grant



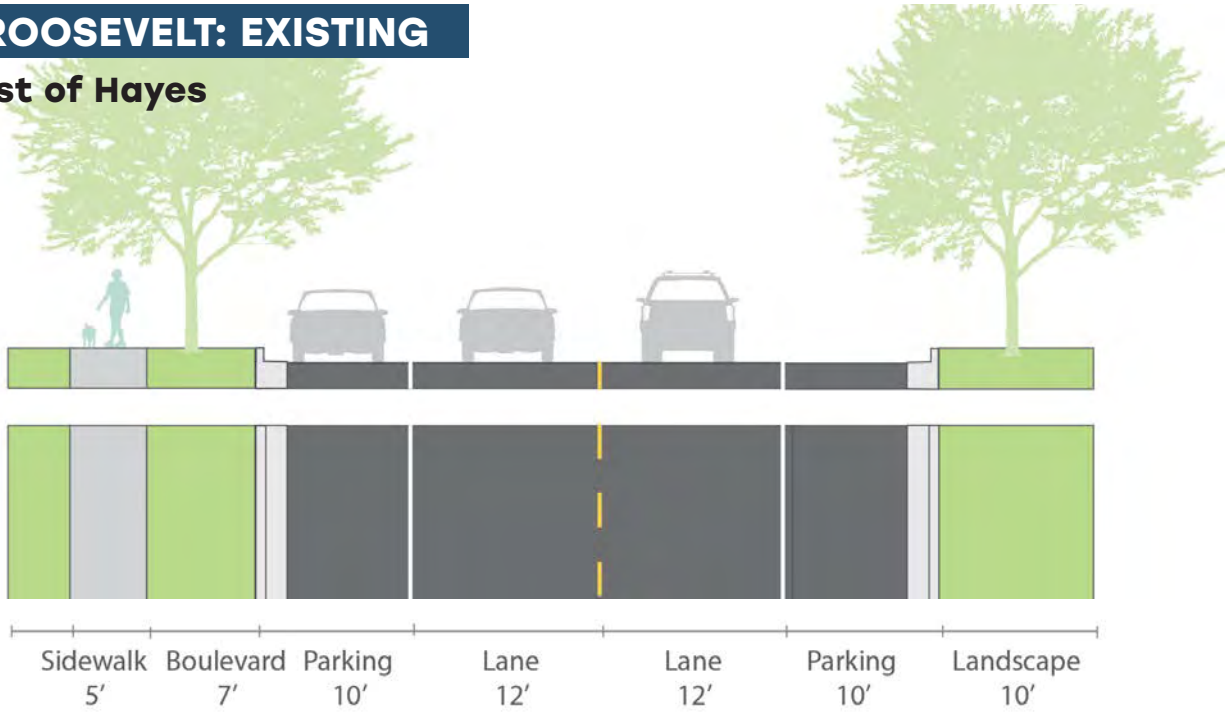
Looking East

PROPOSED



ROOSEVELT: EXISTING

west of Hayes



Looking East

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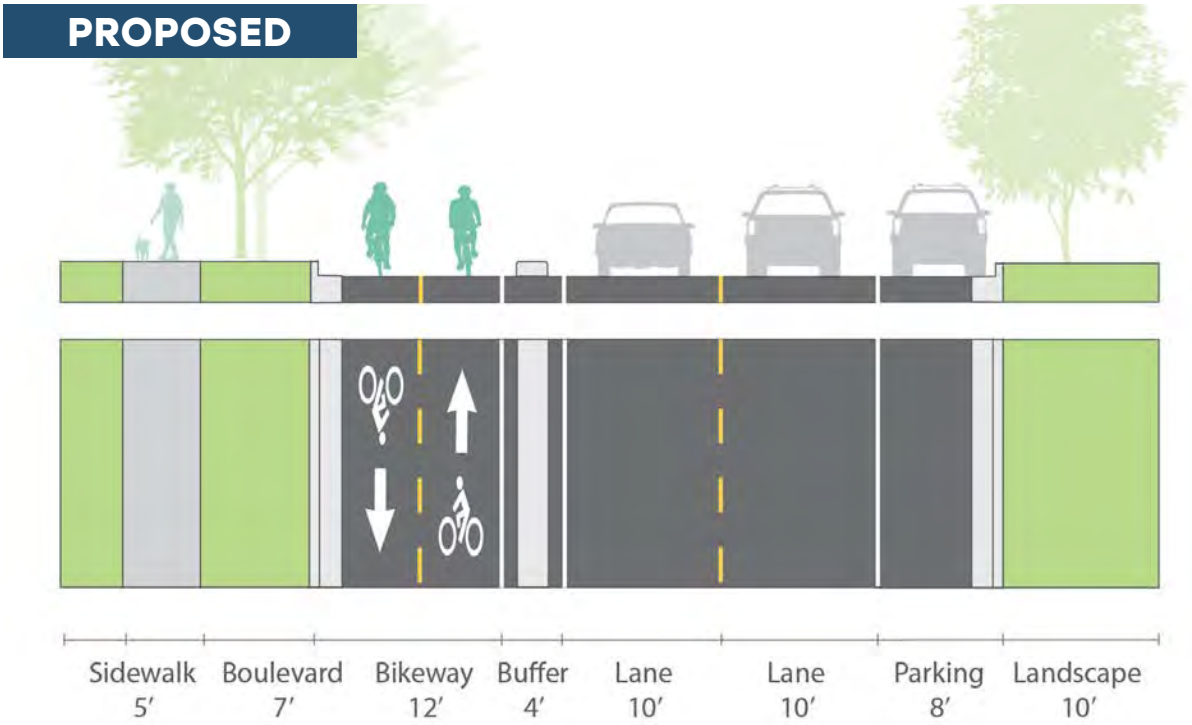


Lincoln Street N/Lincoln Parkway/Spring Street:

From Forest Avenue North to Lincoln Parkway, Looping East to Spring Street N and Then South to Greenvale Avenue W

Overview

Length: 1.6 miles

Existing Curb-to-Curb: 36 feet on Lincoln Street north to Greenvale Avenue W on the west side, and 44 feet on the loop ending at Spring Street N and Greenvale Avenue W on the east side

Total Right-of-Way: ranges from 65 to 78 feet

Traffic Volumes (AADT, based on two full-day counts):

- Lincoln Street N between Greenvale Avenue W and St. Olaf Avenue: 3,047
- Lincoln Street N north of First Street W: 3,124

Connection to the CIP:

- No project identified

Notes on the Proposed Cross Sections

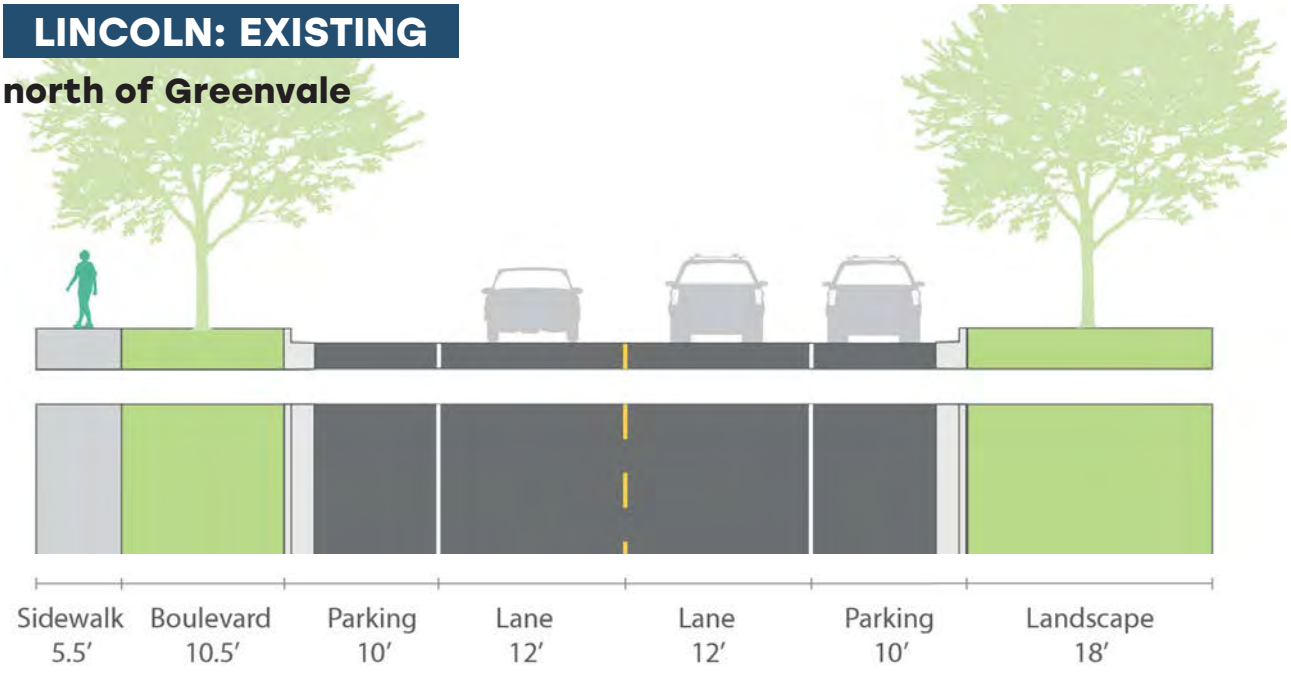
- Lincoln Street N/Lincoln Parkway/Spring Street recommendation: implement a two-way, in-street separated bikeway on the outside of the loop. The project would include striping, signage, and concrete bike buffers as a form of separation within a four-foot buffer.
- This route connects St. Olaf College, Greenvale Park Elementary School, Northfield Community Education Center, and indirectly connects to Longfellow District Office and Area Learning Center, and Open Door Preschool.
- The proposed bikeway is planned to connect to the Mill Town Trail at the intersection of Armstrong Road and Sechler Park Road.

Proposed bikeway extents

Location of cross section

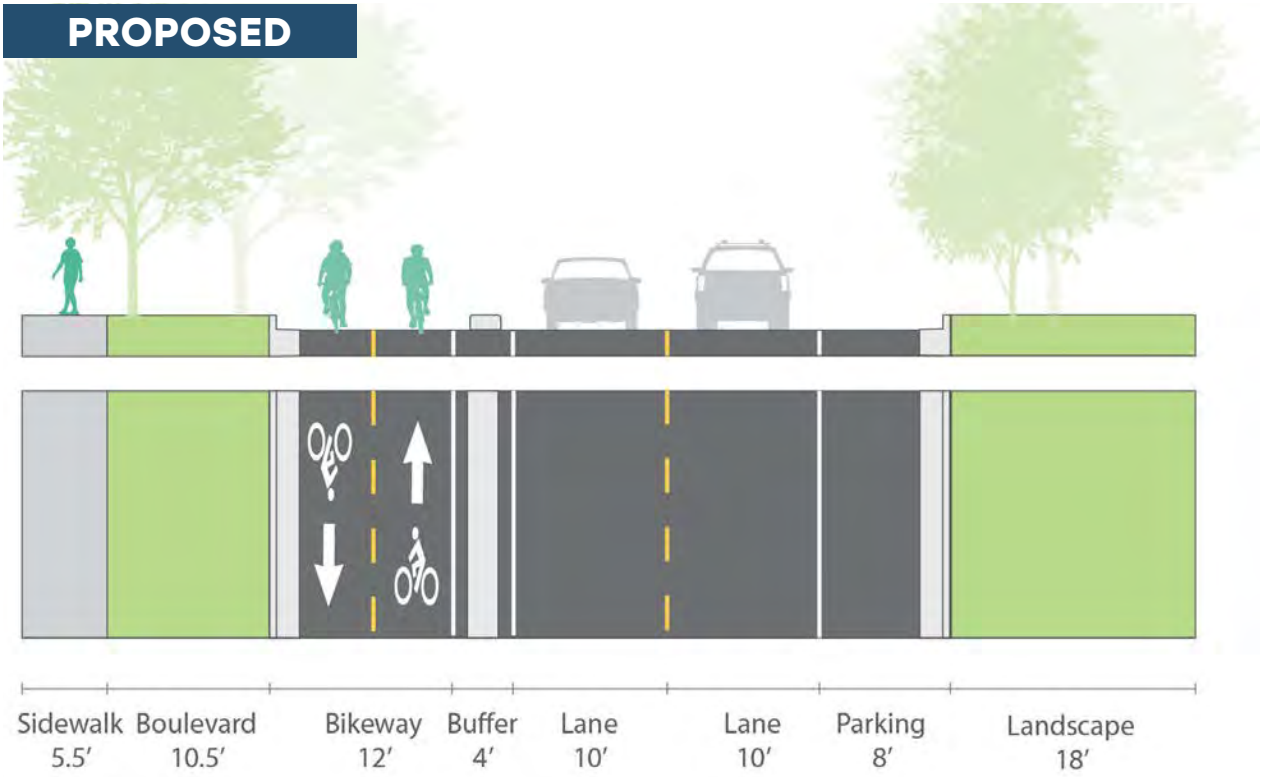
LINCOLN: EXISTING

north of Greenvale



Looking North

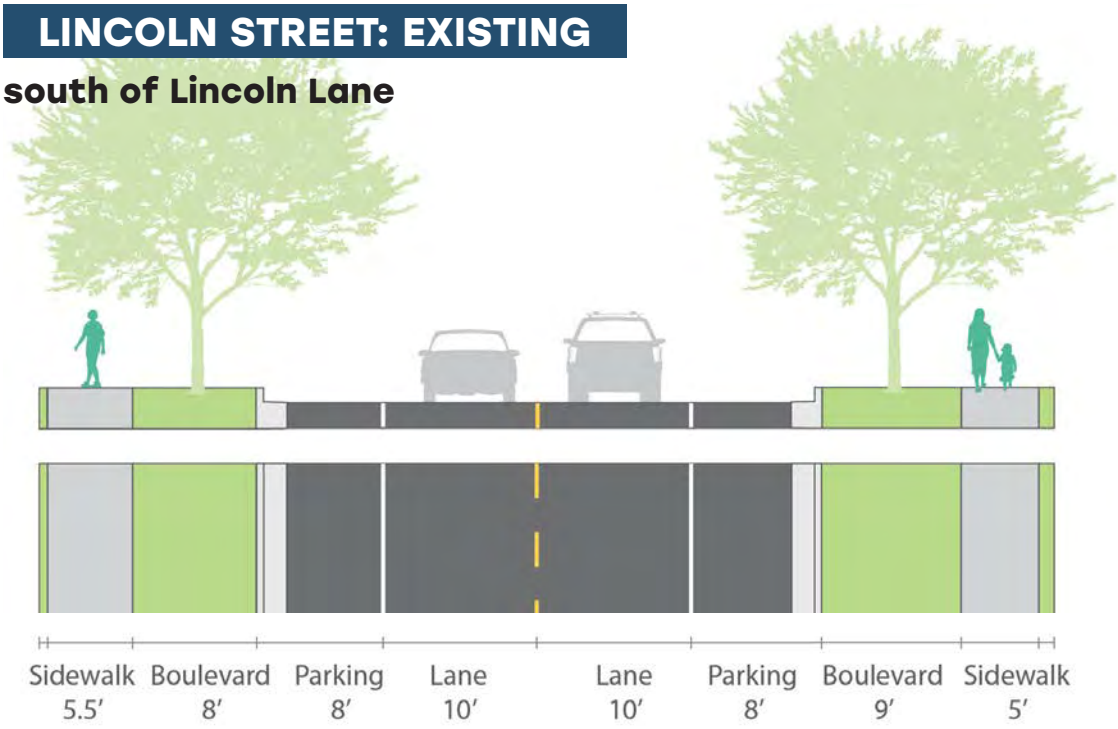
PROPOSED



Looking North

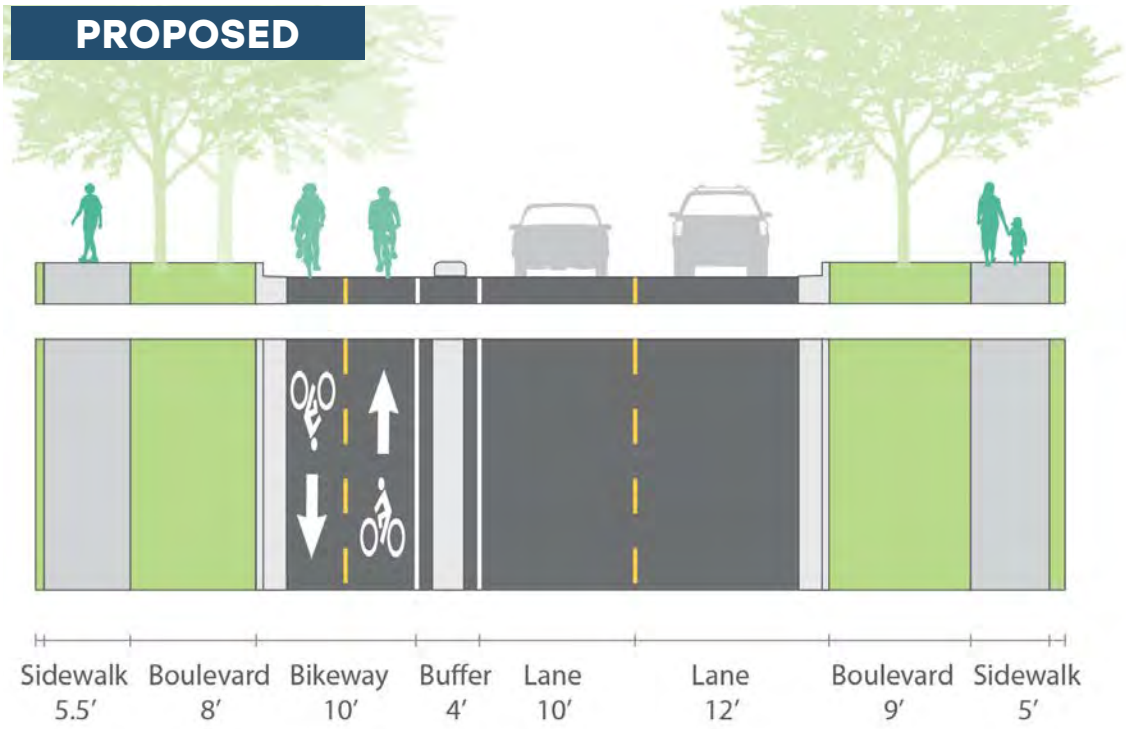
LINCOLN STREET: EXISTING

south of Lincoln Lane



Looking North

PROPOSED



Looking North

Armstrong Road:

From Sechler Park Road to Lincoln Street S

Overview

Length: 1 mile

Existing Curb-to-Curb: 24-foot street with no curb and gutter on the southern portion to just south of Industrial Drive, and 44 feet on the northern portion to Lincoln Street S

Total Right-of-Way: 80 feet

Traffic Volumes (AADT, based on two full-day counts):

- Armstrong Road between Industrial Drive and Sechler Park Road: 2,249
- Armstrong Road between Colville Memorial Highway and Industrial Drive: 2,754
- Armstrong Road west of Lincoln Street S: 2,480

Connection to the CIP:

- No project identified

Proposed bikeway extents

Location of cross section

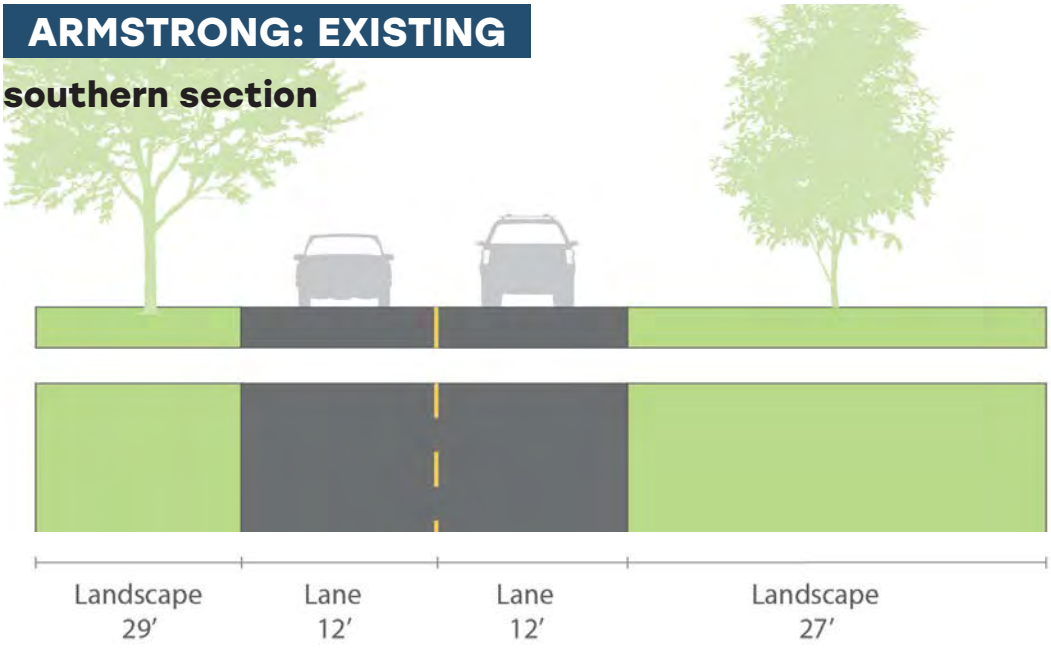
Notes on the Proposed Cross Sections

- Armstrong Road recommendation: construct an off-street shared-use path on Armstrong Road from Sechler Park Road to Highway 19. The proposed bikeway is planned to connect to the Mill Town Trail, where it terminates on Armstrong Road at Sechler Park Road, and to the planned bikeway on Lincoln Street S.
- There are existing one way in street bike lanes on Armstrong from Highway 10 to Lincoln Street S. Recommend a retrofit two way bikeway in the stretch. The assumption for a project would include striping, signage and concrete bike buffers as a form of separation within a 4-foot buffer.
- There are ROW constraints along the northern section of Armstrong Road, particularly near Industrial Drive. The City may need to explore an easement to get proper separation from the street, adequate trail width, and clear zones.
- There are also some grade challenges along the 24-foot street section in the southern portion of Armstrong Road. Further exploration of grading and slope issues will be required in concept and final design phases of a trail project.
- The MnDOT Bicycle Facility Design Manual notes a two-foot minimum horizontal clearance per State Aid Standards and five-foot minimum for steep slopes.[1]

1 *https://www.dot.state.mn.us/bike/bicycle-facility-design-manual.html*

ARMSTRONG: EXISTING

southern section



Looking East

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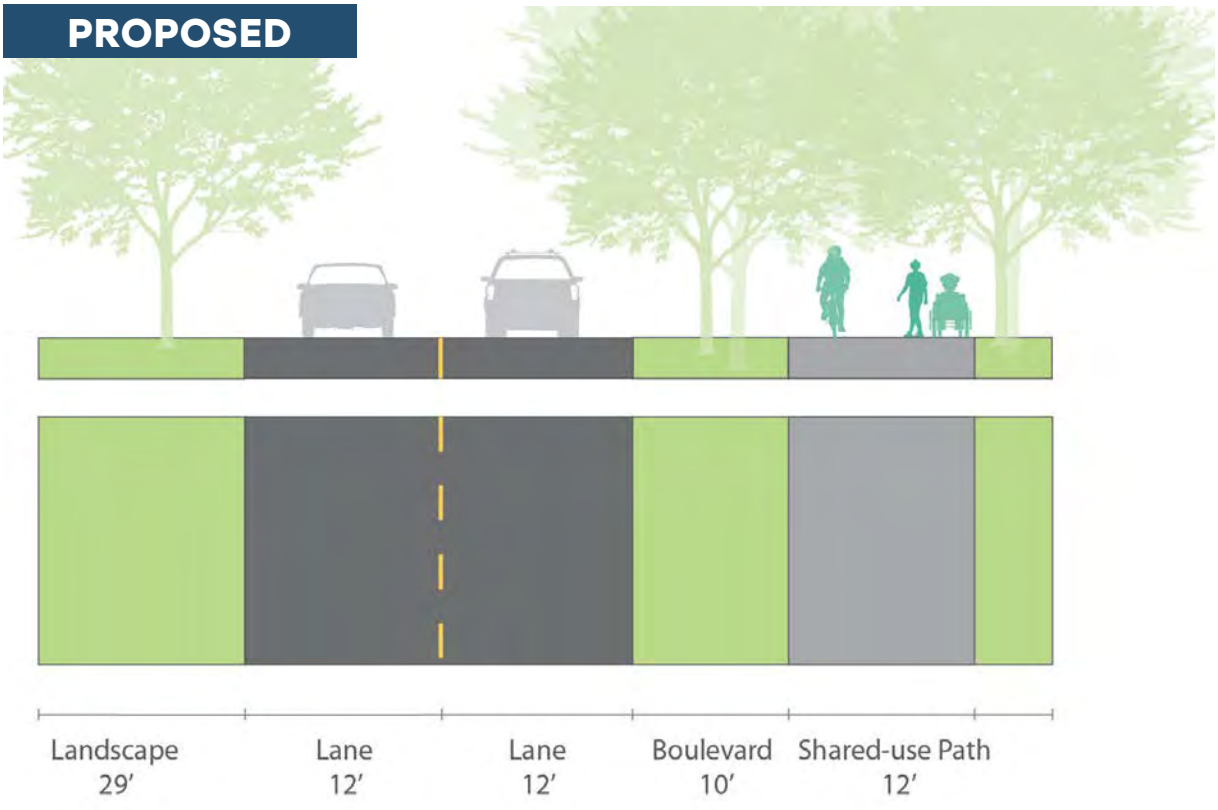
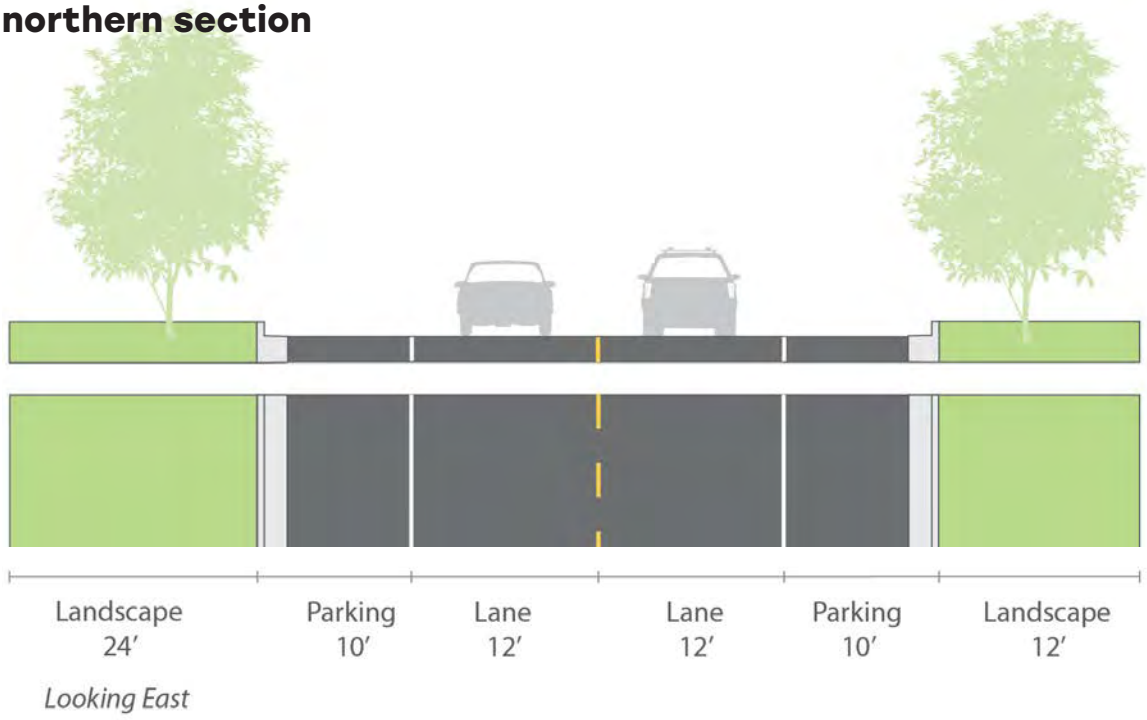


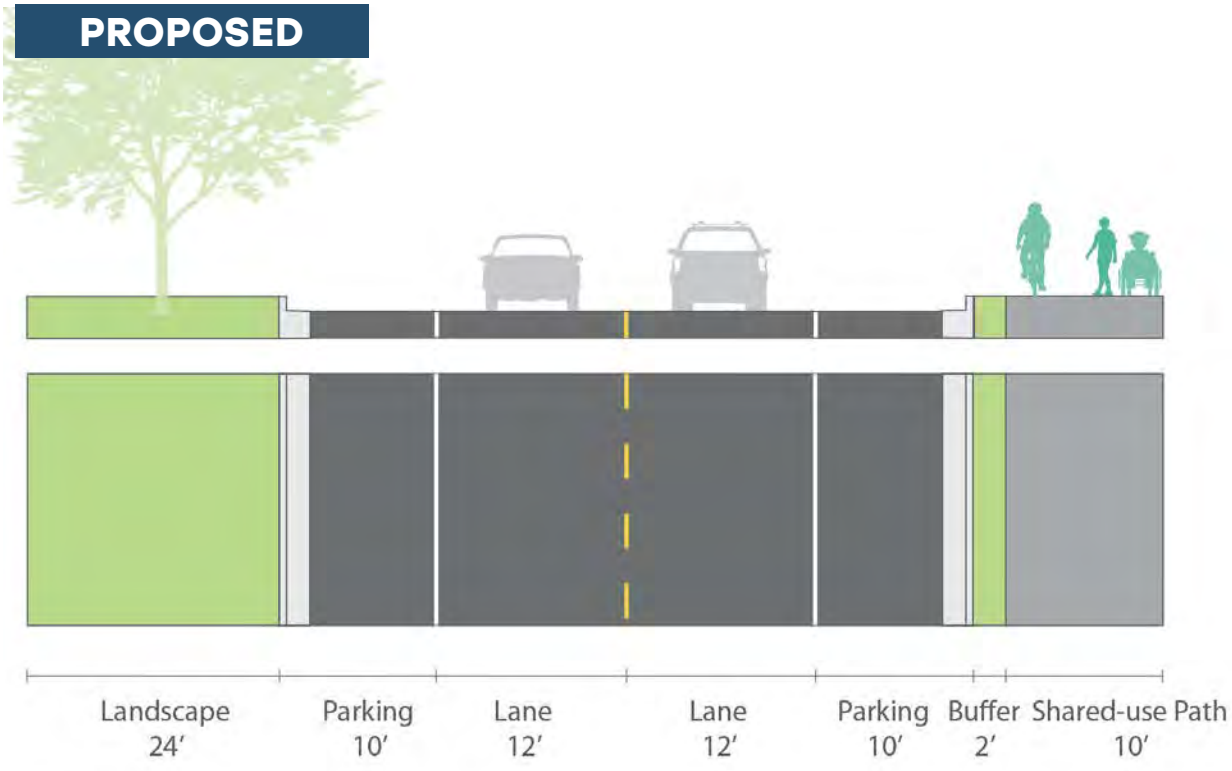
ARMSTRONG: EXISTING

northern section



Looking East

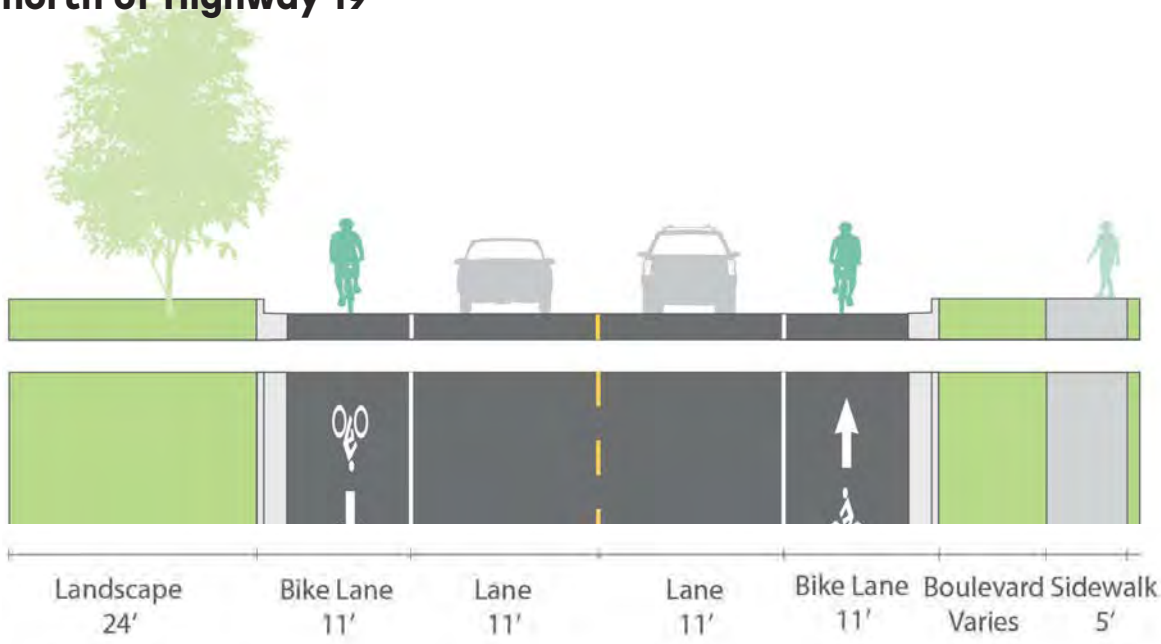
PROPOSED



Looking East

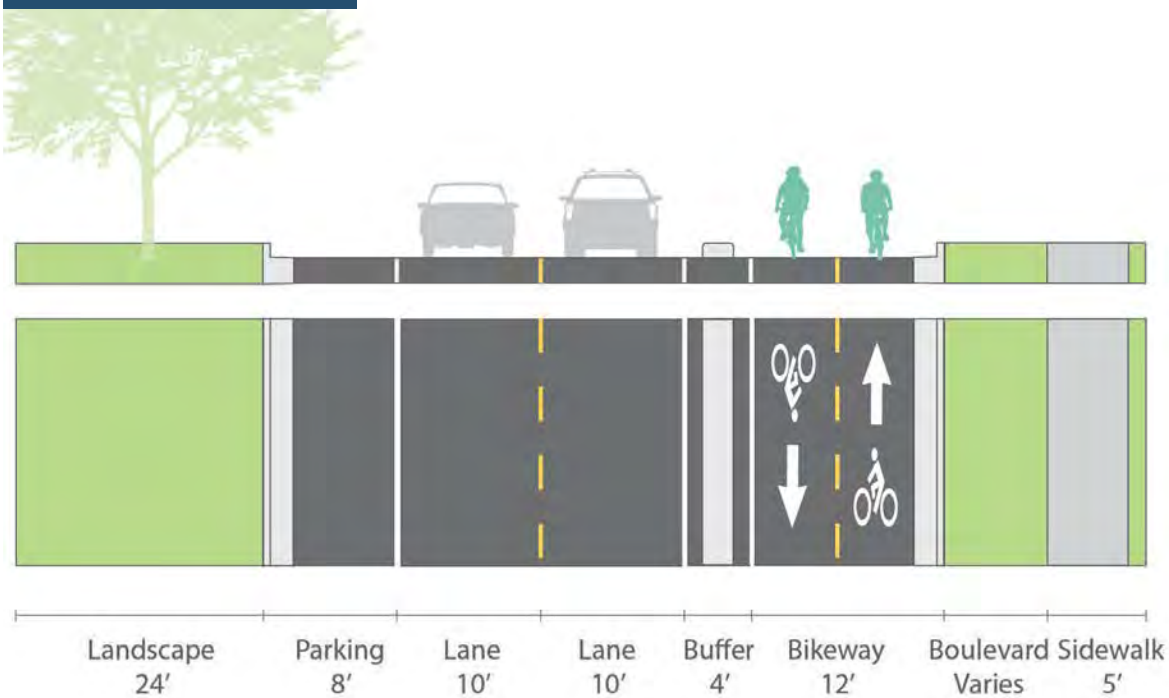
ARMSTRONG: EXISTING

north of Highway 19



Looking East

PROPOSED



Looking East

Washington Street:

From Woodley Street E south to the Cul-de-Sac

Overview

Length: 0.4 miles

Existing Curb-to-Curb: 36 feet from Woodley Street W to Ames Street, and 32 feet from Ames Street to the cul-de-sac

Total Right-of-Way: 80 feet from Woodley Street to Ames Street, and 66 feet from Ames Street to cul-de-sac

Traffic Volumes (AADT, based on two full-day counts):

- Washington Street south of Woodley Street E: 530

Connection to the CIP:

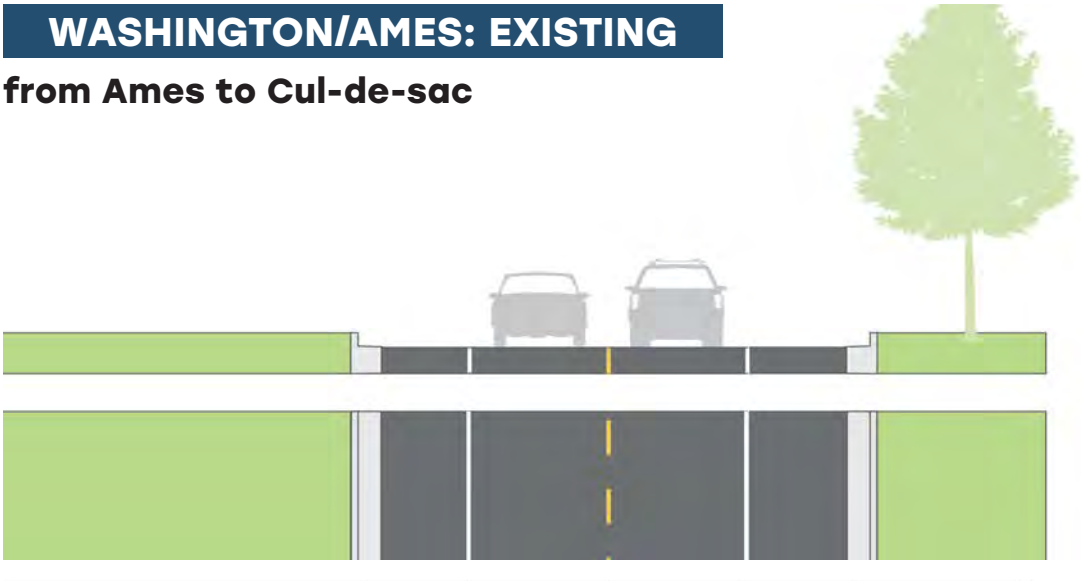
- Woodley Street E to Sumner Street E: No project identified
- Sumner Street E to cul-de-sac: reclamation and sidewalk/trail improvements (2025)

Notes on the Proposed Cross Sections

- Recommendation for Washington Street E from Sumner Street E to the cul-de-sac: construct a two-way shared-use path on the west side as a part of the reclamation project.
- Recommendation for Washington Street E from Woodley Street E to Sumner Street E: explore expanding the scope of the reclamation project two blocks north to Woodley Street E and match the two-way shared-use path recommendation. If expanding the scope is not feasible, the alternative recommendation is to include a two-way separated bikeway with a concrete bike buffer within the existing street section as a retrofit project to connect to Woodley Street E. This option would include removing parking from both sides of the street.
- This project connects to the existing bicycle boulevard on Washington Street and may include future connections to the south.

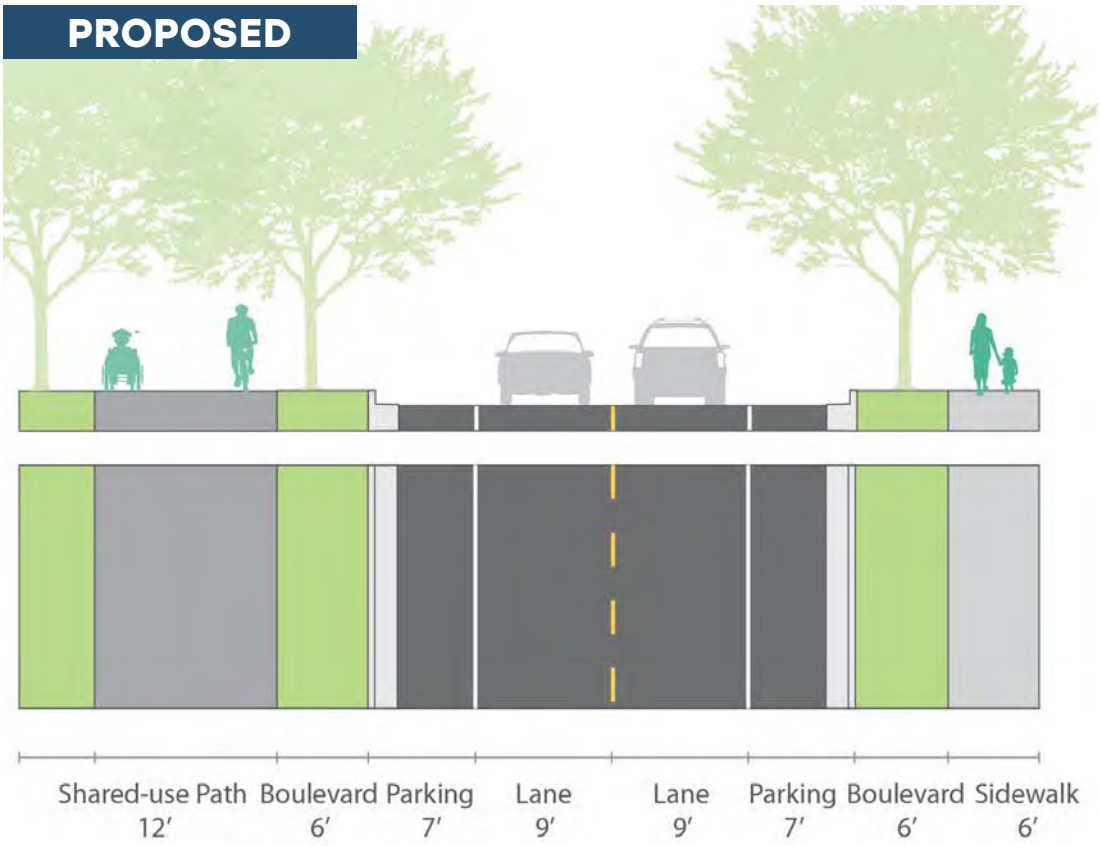
WASHINGTON/AMES: EXISTING

from Ames to Cul-de-sac



Looking North

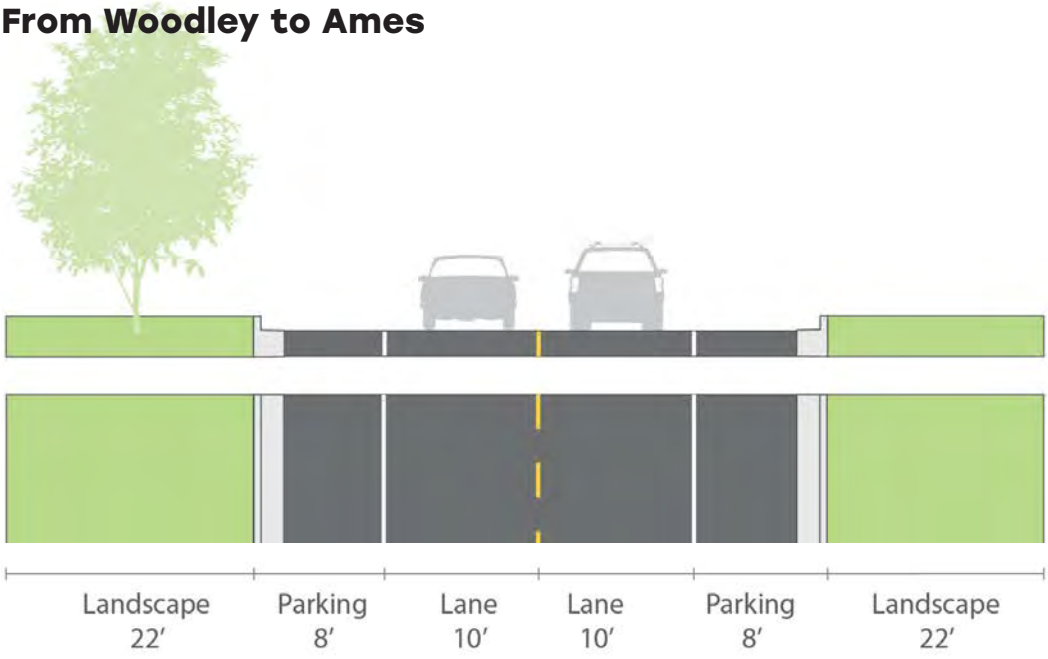
PROPOSED



Looking North

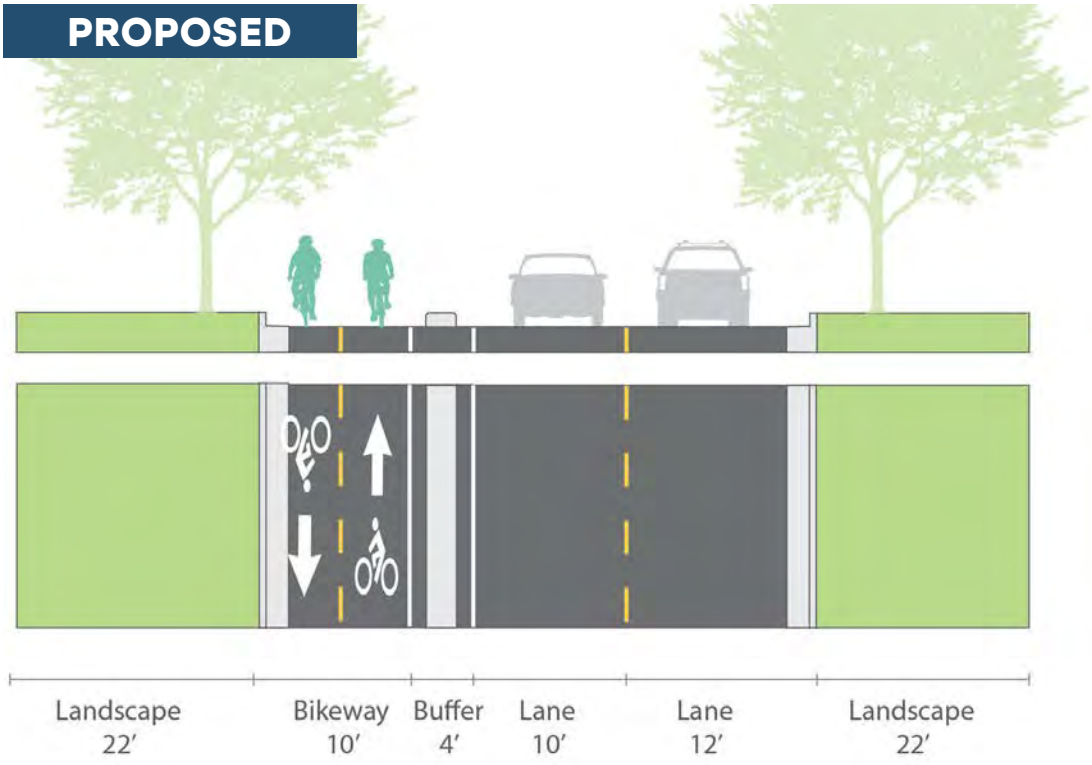
WASHINGTON/WOODLEY: EXISTING

From Woodley to Ames



Looking North

PROPOSED



Looking North

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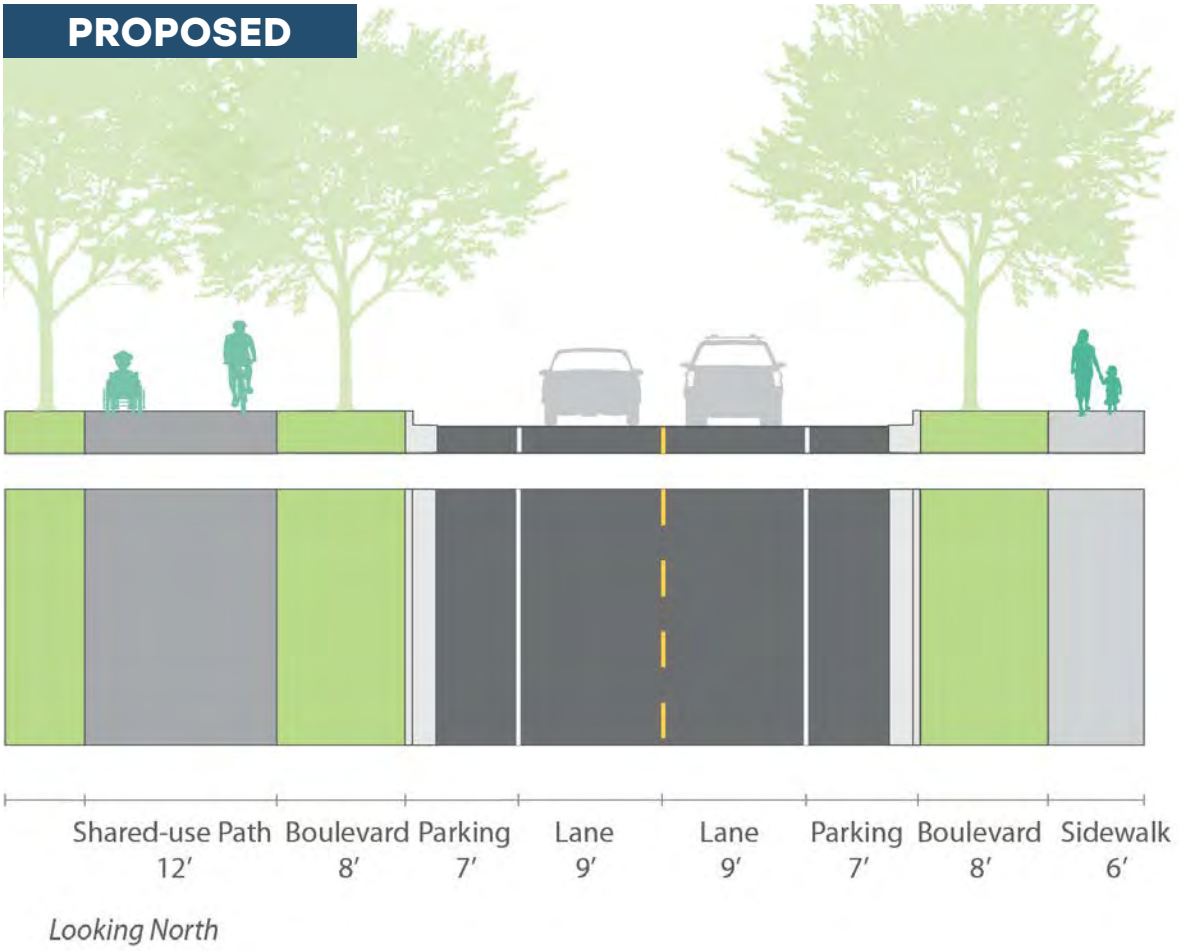


Looking North

Eighth Street E:

from Water Street S to Nevada Street S

Overview

Length: 0.5 miles

Existing Curb-to-Curb: 38 feet from Water Street S to Washington Street S, 32 feet from Washington Street S to College Street S, and 40 feet from College Street S to Nevada Street S

Total Right-of-Way: 80 feet

Traffic Volumes (AADT, based on two full-day counts):

- No counts taken

Connection to the CIP:

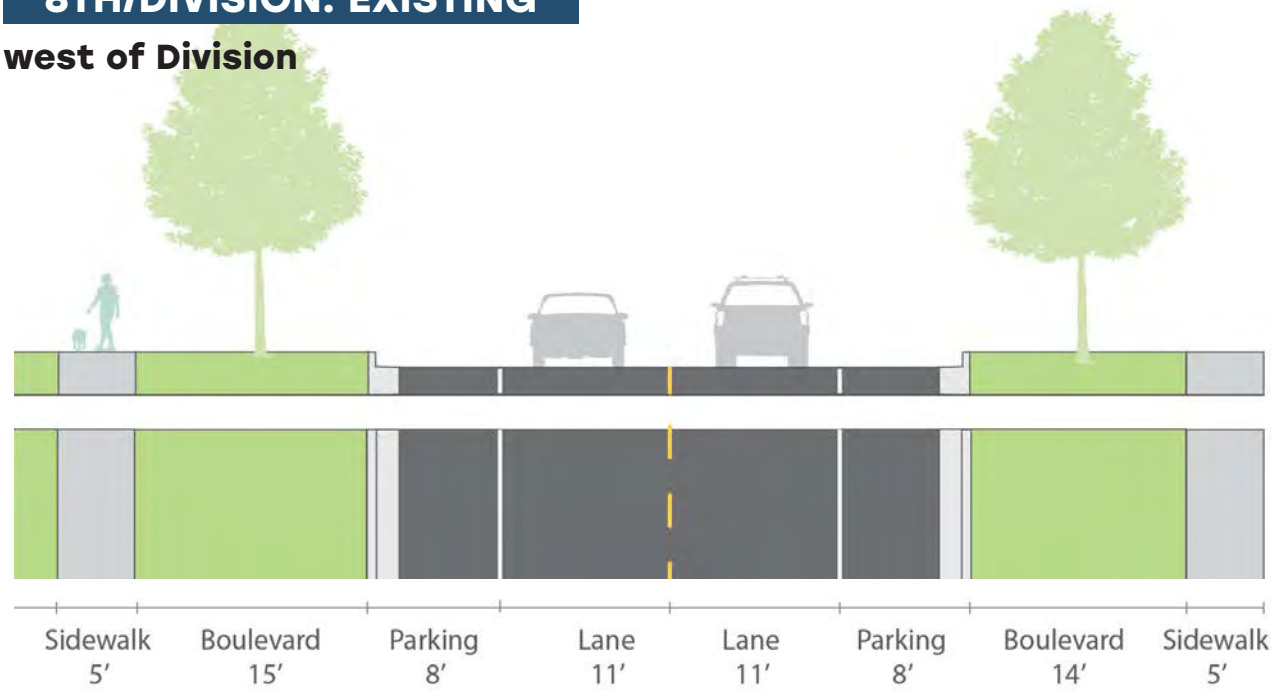
- College Street S to Nevada Street S: Sidewalk/Trail Improvements (2024)
- Water Street to College Street: No project identified

Notes on the Proposed Cross Sections

- Eighth Street E from Union Street S to Nevada Street recommendation: implement a two-way in-street separated bikeway on the north side of the street. This would include striping, signage, and some strategic use of a concrete bike buffer where the buffer width is 4 feet (College Street S to Nevada Street S).
- Recommend expanding the scope of the 2024 Sidewalk/Trail Improvements project to include the four blocks between Water Street S and College Street S. This section would require striping and signage. The width of the street changes every two blocks. Transitions through intersections will be important.
- Recommend connecting with the MnDOT State Aid Office regarding the recommended dimensions. A variance may be required due to minimum dimensions. Eighth Street E is a Municipal State Aid Route west of Washington Street S.
- Eighth St E is a critical east/west connector for the bikeway network in this part of the city. It connects to multiple north/south routes, including Nevada Street S and Washington Street S, as well as the East River Trail (via Linden Street S).

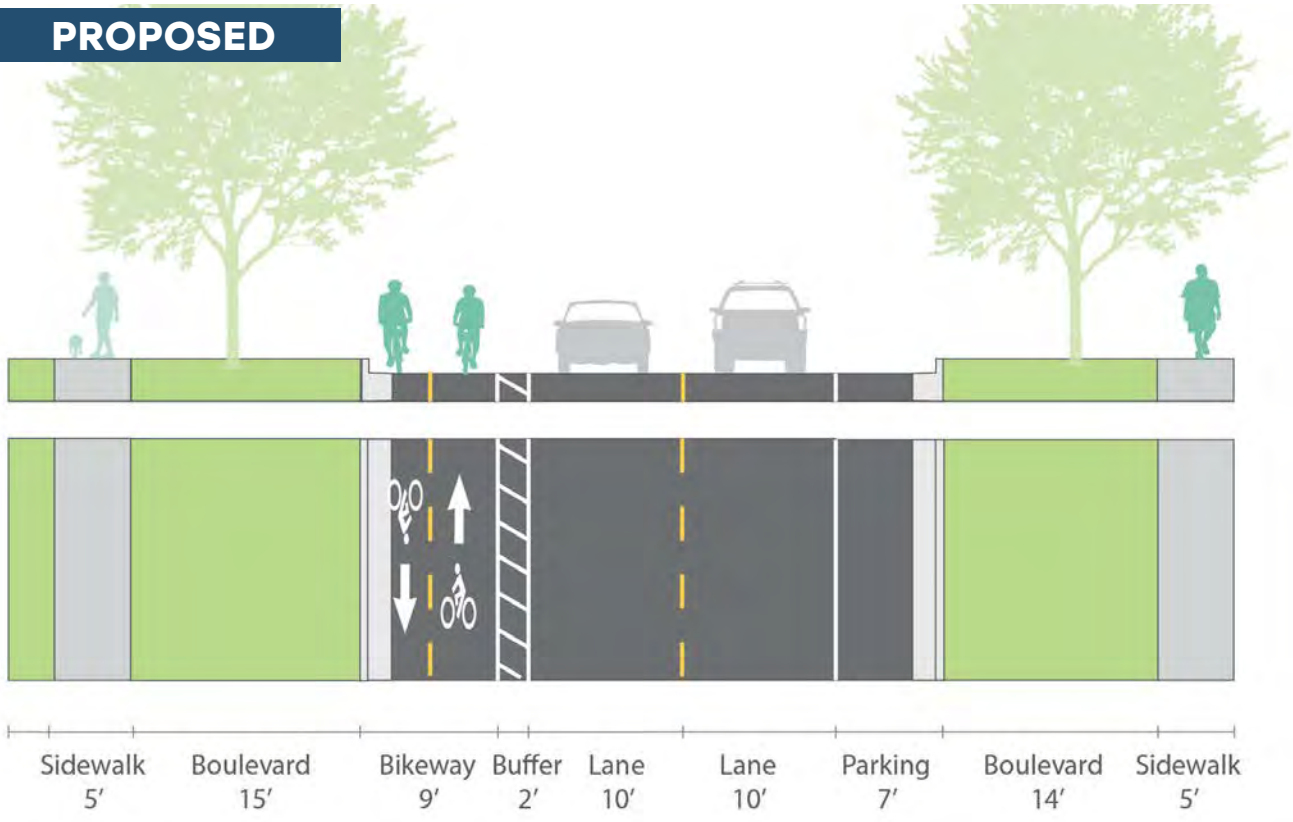
8TH/DIVISION: EXISTING

west of Division



Looking East

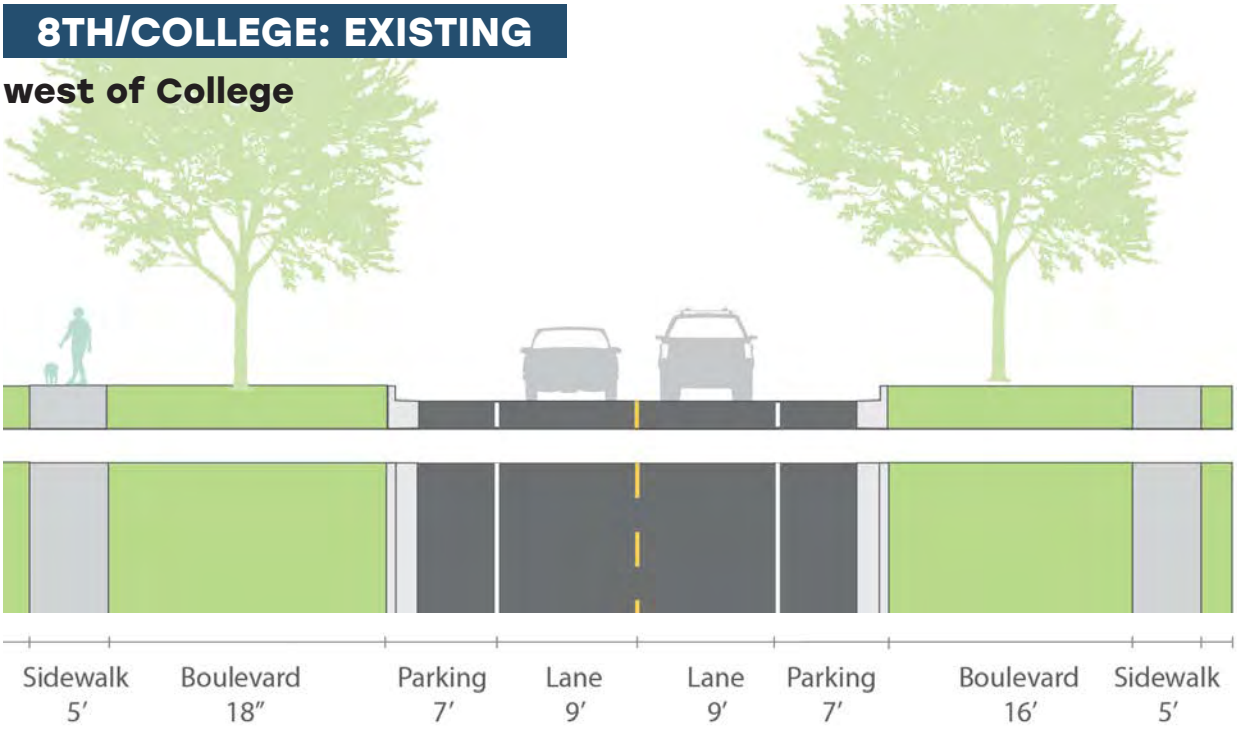
PROPOSED



Looking East

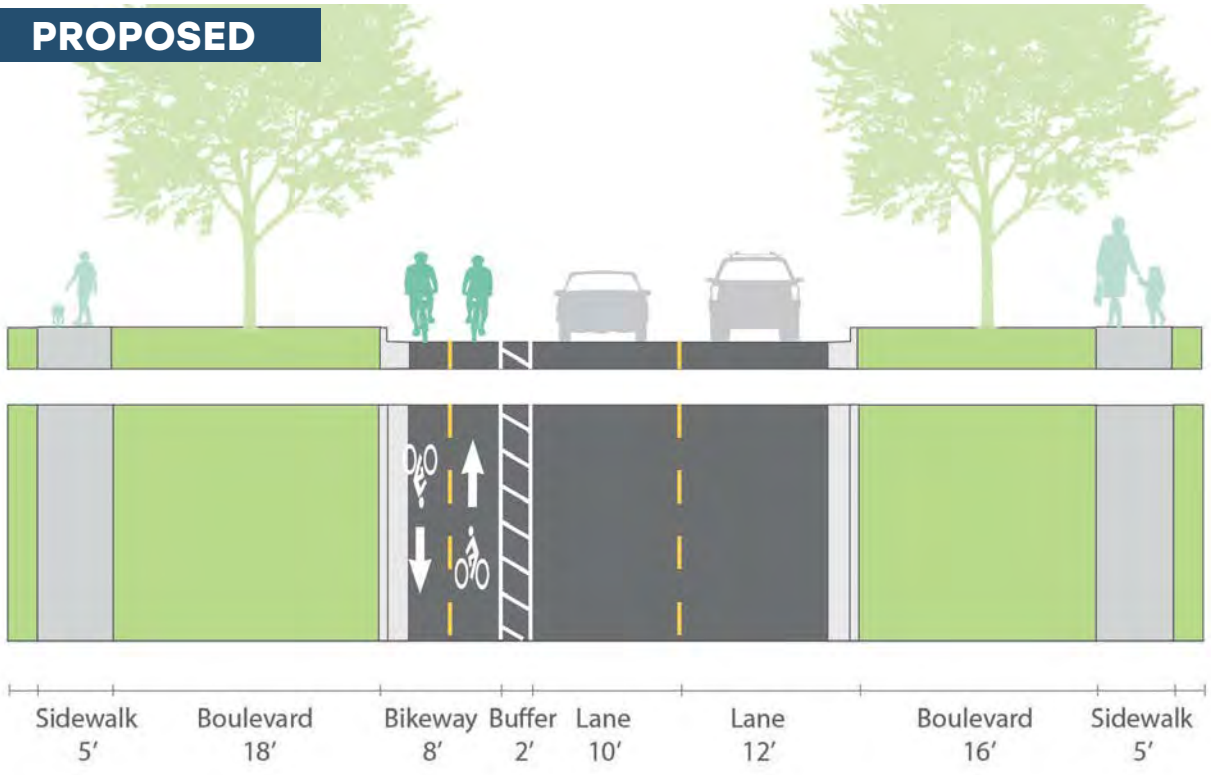
8TH/COLLEGE: EXISTING

west of College



Looking East

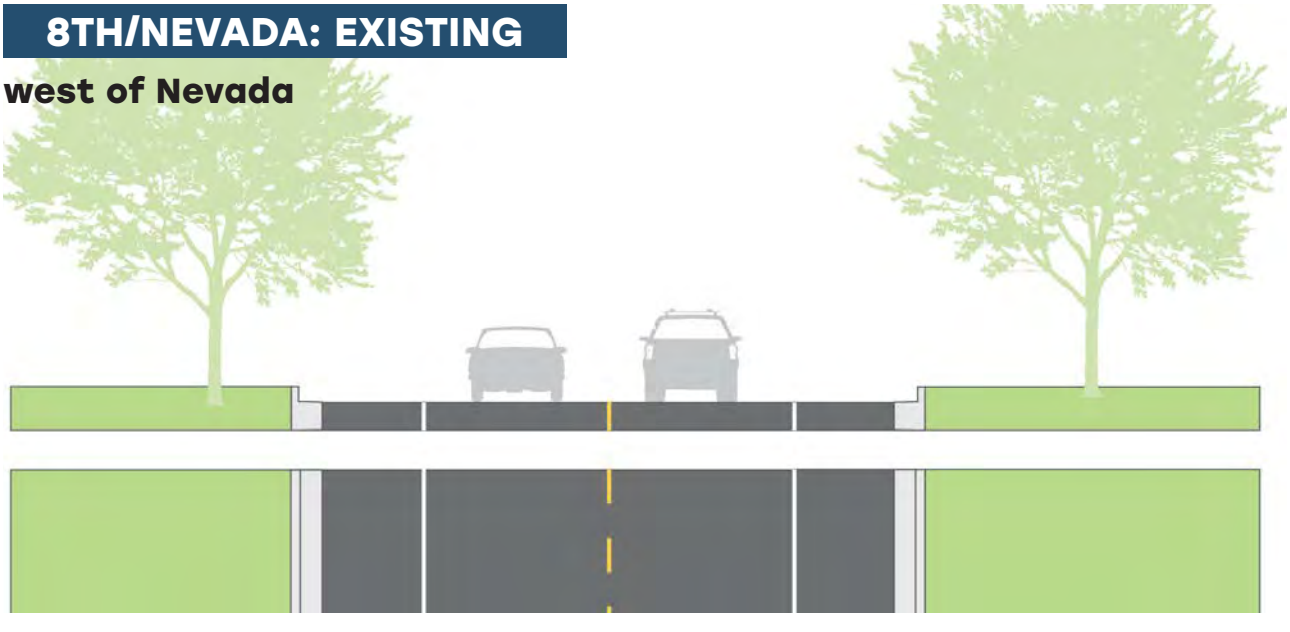
PROPOSED



Looking East

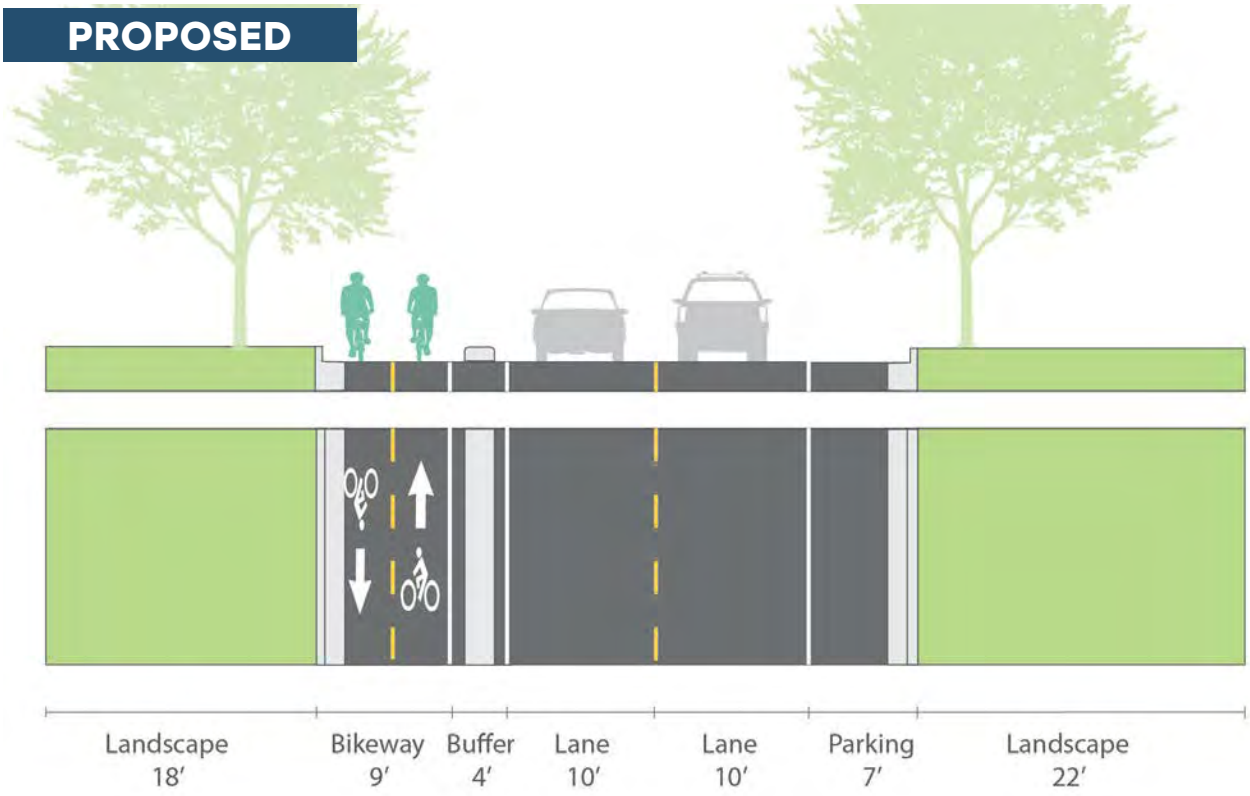
8TH/NEVADA: EXISTING

west of Nevada



Looking East

PROPOSED



Looking East

03

PEDESTRIAN DESIGN CONCEPTS AND REPORT

Approach

This section provides high-level recommendations for pedestrian safety countermeasures to consider for each of four crossing types–stop-controlled T-intersections, mid-block crossings, four-way stop-controlled intersections, and two-way stop controlled intersections–as well as a supporting Pedestrian Toolbox with more detailed countermeasure guidance. These materials are intended to serve as a reference for City of Northfield staff when moving into the conceptual design phase of projects in the CIP.

The primary goal of this section is to identify opportunities to reduce barriers for people walking. Walking in this context also includes people using mobility devices and wheelchairs. This includes focusing on the comfort of people walking along the street, such as providing buffers from the street, shade via trees in a boulevard, and other less visible benefits such as green stormwater infrastructure. It also includes a large focus on intersections and improving the street crossing experience, such as bumpouts, median refuge islands, protected intersections, and raised crossings.

Methodology

A pedestrian origin and destination analysis overlaid the CIP with pedestrian origins and destinations used to identify locations for pedestrian improvements. The origins and destinations included the following:

Community services

- Places of worship
- Hospital
- Library
- Schools
- Community Action Center and Senior Center
- Community Education Center
- Stores that accept SNAP benefits

Pedestrian generating land uses

- Recreational (parks and trails)
- City or State-owned property
- Commercial
- Housing with four or more units
- Low-income land or building
- Homesteads with people with disabilities
- Manufactured home park

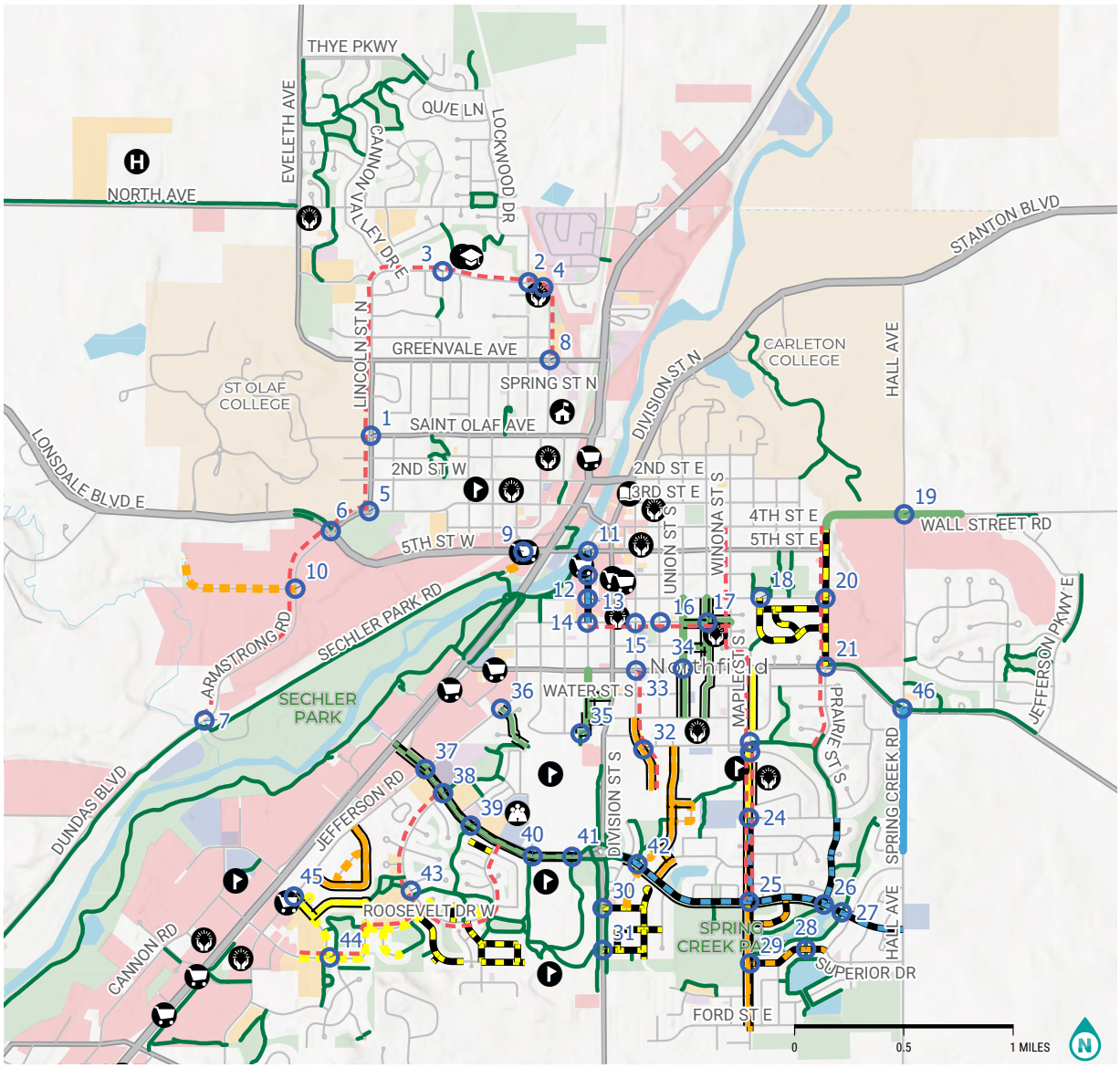
Analysis Results

Locations to consider for pedestrian crossing improvements while implementing projects in the CIP are shown in Table 2 and highlighted in Figure 3; 45 locations were identified as places where pedestrian crossing improvements would make walking to destinations safer and more appealing.

Table 2: Potential pedestrian crossing improvement locations

Location Number	Nearest Cross Street
1	St. Olaf Ave. & Lincoln St. N
2	Lincoln Pkwy. & Linden St N
3	Lincoln Pkwy. & Lathrop Dr.
4	Lincoln Pkwy. & Dresden Ave.
5	Forest Ave. & Lincoln St. S
6	Hwy. 19 & Armstrong Rd.
7	Armstrong Rd. & Sechler Park Rd.
8	Greenvale Ave. & Spring St. N
9	Hwy. 19 & Laurel Ct
10	Industrial Dr. & Armstrong Rd.
11	5th St. W & Water St. S
12	6th St. W & Water St. S
13	7th St. W & Water St. S
14	8th St. W & Water St. S
15	8th St. E & Washington St. S
16	8th St. E & Union St. S
17	8th St. E & Winona St. S
18	7th St. E & Fareway Dr.
19	Wall Street Rd. & Spring Creek Rd.
20	7th St. E & Prairie St. S
21	Woodley St. E & Prairie St. S
22	Ames St. & Maple St. S
23	Sibley St. & Maple St. S
24	Meadow View Dr. & Maple St. S
25	Jefferson Pkwy. E & Maple St. S
26	Jefferson Pkwy. E & Prairie St.
27	Jefferson Pkwy. E & Michigan Dr.
28	Superior Dr. & Michigan Dr.
29	Superior Dr. & Maple St. S
30	Anderson Dr. & Division St. S
31	Arbor St. & Division St.
32	Ames St. & Washington St. S
33	Woodley St. E & Washington St.
34	Woodley St. E & College St. S
35	Linden Pl S & Water St. S
36	Jefferson Rd. & Spruce Ct
37	Jefferson Pkwy. & Jefferson Rd.
38	Jefferson Pkwy. & Roosevelt Dr. W
39	Jefferson Pkwy. & Roosevelt Dr. E
40	Jefferson Pkwy. & Raider Dr.
41	Jefferson Pkwy. & Division St. S
42	Jefferson Pkwy. & Washington St. S
43	Roosevelt Dr. W & Truman Ct
44	Heritage Dr. & Hidden Valley Dr.
45	Jefferson Rd. & Hidden Valley Rd.

Figure 4. Bicycle Network Map



PEDESTRIAN ORIGINS & DESTINATIONS

NORTHFIELD, MN
Citywide

COMMUNITY SERVICES

- Places of Worship
- Hospital
- Library
- Preschool
- School
- Community Action Center and Senior Center
- Northfield Community Education Center
- SNAP Stores
- Trail

CAPITAL IMPROVEMENT PROJECTS (2023-2026)

- 2023 - Mill and Overlay
- 2023 - Reclamation
- 2023 - Sidewalk/Trail/Bike Construction
- 2024 - Mill and Overlay
- 2024 - Reconstruction
- 2024 - Sidewalk/Trail/Bike Construction
- 2025 - Mill and Overlay
- 2025 - Reclamation
- 2025 - Sidewalk/Trail/Bike Construction
- 2026 - Mill and Overlay
- 2026 - Reconstruction
- Proposed Bikeway Corridor
- Recommended Crossing Improvements

PEDESTRIAN GENERATING LAND USES

- Recreational
- City or State Owned Property
- Commercial
- Housing with 4+ Units
- Low-Income Land or Building; Homesteads with People with Disabilities; Manufactured Home Park

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The analysis revealed that all crossing locations that provide access to destinations are on streets with no more than one through travel lane in each direction, with relatively low traffic volumes. The roadway geometries of the crossing locations are limited to the following:

- Stop-controlled T-intersections
- Mid-block crossings
- Four-way stop-controlled intersections
- Two-way stop controlled intersections

Examples of these crossing types are shown in Figures 4 through 7. The toolbox included with this report is tailored to the roadway conditions found at these locations.

Figure 5. Stop-controlled T-intersection

Figure 6. Mid-block crossing

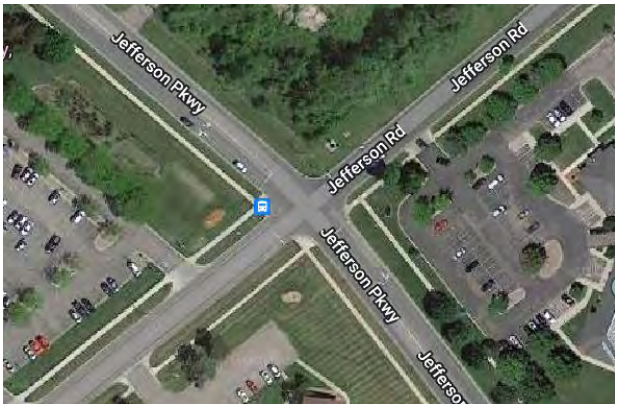


Figure 7. Four-way stop-controlled intersection

Figure 8. Two-way stop-controlled intersection

Pedestrian Toolbox

The tools in the Pedestrian Toolbox are intended to not only reduce the likelihood that collisions with vehicles result in the death or serious injury of people walking, but to also make walking more appealing, comfortable, and convenient. These pedestrian safety countermeasures can shorten crossing distances, slow vehicle speeds, simplify crossings, and prioritize pedestrian movements.

Table 5 provides guidance on how to use the tools on different types of CIP projects.

Potential Next Steps

For mill and overlay projects:

- Include the "standard" tools based on internal practices, and use the Pedestrian Origins and Destinations Map to determine which locations are suitable for opportunistic treatments. Bumpouts, median refuge islands, and rectangular rapid flashing beacons (RRFBs) are likely the most common tools to enhance pedestrian crossings for mill and overlay projects.

For reconstruction and reclamation projects:

- This is an opportunity to include all the "standard" tools, and determine if there are locations to include the "opportunistic" tools.

For stand-alone sidewalk/trail improvement projects:

- Include the "standard" tools based on internal practices, and use the Pedestrian Origins and Destinations Map to determine which locations are suitable for opportunistic treatment. Bumpouts, median refuge islands, and RRFBs are likely the most common tools to enhance pedestrian crossings for stand-alone or spot improvements.

Table 3: Pedestrian Toolbox tools relevant to Capital Improvement Projects

Tool	Mill and Overlay	Reconstruction and Reclamation	Sidewalk/Trail Improvements
Curb ramps	Standard	Standard	Standard (except bike lane striping/signing with no other associated project)
Corner treatments*	Opportunistic (especially curb extensions)	Standard	Opportunistic (especially curb extensions)
Crosswalks	Standard	Standard	Standard
Median refuge islands	Opportunistic	Opportunistic	Opportunistic
RRFBs	Opportunistic	Opportunistic	Opportunistic
Raised crossings	Opportunistic	Standard	Opportunistic (not applicable for sidewalk gap or bike lane striping projects)
Raised intersections	Limited	Opportunistic	Limited
Trees	Standard	Standard	Limited
Green stormwater infrastructure	Limited	Standard	Opportunistic
Roundabouts	Limited	Opportunistic	Limited
Other speed and volume control measures	Limited	Opportunistic	Opportunistic

**Curb extensions, corner radii, mountable truck aprons, and protected Intersections*

The Pedestrian Toolbox includes pedestrian-oriented infrastructure elements that create a more comfortable and safe pedestrian experience. This toolbox is important because it contains tools for creating a system that meets the needs of the community.

This toolbox will help city staff in addressing pedestrian needs and opportunities throughout the City of Northfield. It should be noted that the tools contained in this guide are not exhaustive and should be referenced along with NACTO's Urban Street Design Guide, as well as local guidance of Minnesota. Further, all pedestrian treatments should meet or exceed the minimums set by the Americans with Disabilities Act Accessible Design Guidelines (ADAAG) and the Public Right of Way Accessibility Guidelines (PROWAG).

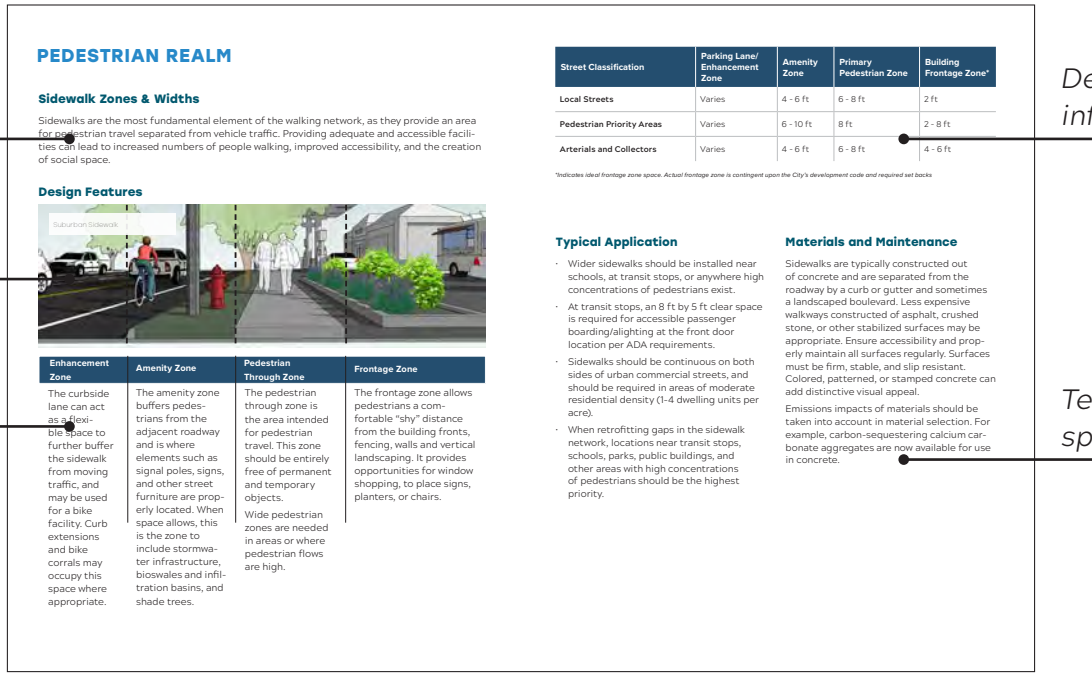
Facility overview

Typical scenario

Component descriptions

Detailed information

Technical specifications



PEDESTRIAN REALM

Sidewalk Zones & Widths

Sidewalks are the most fundamental element of the walking network, as they provide an area for pedestrian travel separated from vehicle traffic. Providing adequate and accessible facilities can lead to increased numbers of people walking, improved accessibility, and the creation of social space.

Design Features

Enhancement Zone	Amenity Zone	Pedestrian Through Zone	Frontage Zone
The curbside lane can act as a flexible space to further buffer the sidewalk from moving traffic, and may be used for a bike facility. Curb extensions and bike corrals may occupy this space where appropriate.	The amenity zone buffers pedestrians from the adjacent roadway and is where elements such as signal poles, signs, and other street furniture are properly located. When space allows, this is the zone to include stormwater infrastructure, bioswales and infiltration basins, and shade trees.	The pedestrian through zone is the area intended for pedestrian travel. This zone should be entirely free of permanent and temporary objects. Wide pedestrian zones are needed in areas or where pedestrian flows are high.	The frontage zone allows pedestrians a comfortable "shy" distance from the building fronts, fencing, walls and vertical landscaping. It provides opportunities for window shopping, to place signs, planters, or chairs.

Street Classification	Parking Lane/ Enhancement Zone	Amenity Zone	Primary Pedestrian Zone	Building Frontage Zone*
Local Streets	Varies	4 - 6 ft	6 - 8 ft	2 ft
Pedestrian Priority Areas	Varies	6 - 10 ft	8 ft	2 - 8 ft
Arterials and Collectors	Varies	4 - 6 ft	6 - 8 ft	4 - 6 ft

**Indicates ideal frontage zone space. Actual frontage zone is contingent upon the City's development code and required set backs*

Typical Application

- Wider sidewalks should be installed near schools, at transit stops, or anywhere high concentrations of pedestrians exist.
- At transit stops, an 8 ft by 5 ft clear space is required for accessible passenger boarding/alighting at the front door location per ADA requirements.
- Sidewalks should be continuous on both sides of urban commercial streets, and should be required in areas of moderate residential density (1-4 dwelling units per acre).
- When retrofitting gaps in the sidewalk network, locations near transit stops, schools, parks, public buildings, and other areas with high concentrations of pedestrians should be the highest priority.

Materials and Maintenance

Sidewalks are typically constructed out of concrete and are separated from the roadway by a curb or gutter and sometimes a landscaped boulevard. Less expensive walkways constructed of asphalt, crushed stone, or other stabilized surfaces may be appropriate. Ensure accessibility and properly maintain all surfaces regularly. Surfaces must be firm, stable, and slip resistant. Colored, patterned, or stamped concrete can add distinctive visual appeal.

Emissions impacts of materials should be taken into account in material selection. For example, carbon-sequestering calcium carbonate aggregates are now available for use in concrete.

PEDESTRIAN REALM

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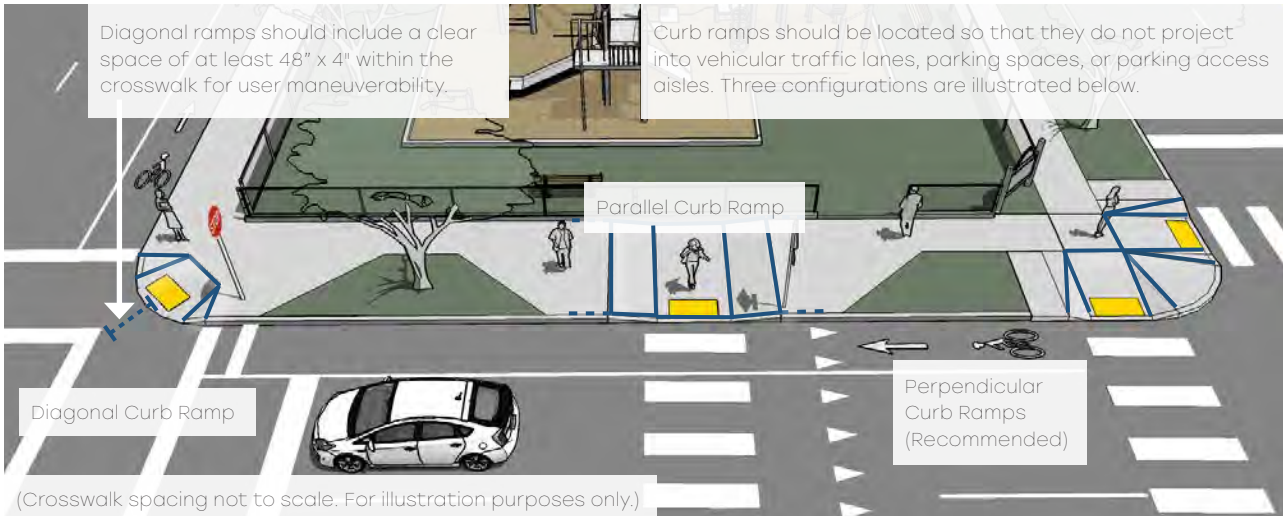
Emissions impacts of materials should be taken into account in material selection. For example, carbon-sequestering calcium carbonate aggregates are now available for use in concrete.

CURB RAMPS

Curb ramps are the design elements that allow all users to make the transition from the street to the sidewalk. A sidewalk without a curb ramp can be useless to someone in a wheelchair, forcing them back to a driveway and out into the street for access.



Typical Application

Curb ramps must be installed at all intersections and midblock locations where pedestrian crossings exist, as mandated by federal legislation (1973 Rehabilitation Act and ADA 1990). All newly constructed and altered roadway projects must include compliant curb ramps. In addition, existing facilities must be upgraded to current standards when appropriate.

The edge of an ADA compliant curb ramp should be marked with a detectable warning surface (also known as truncated domes) to alert people with visual impairments to the boundary between a pedestrian and vehicular route. Visual contrast between the raised tactile device and the surrounding infrastructure is important so that the change is readily evident to partially sighted pedestrians.

Design Features

- The level landing at the top of a ramp should be at least 4 feet long and at least the same width as the ramp itself. The slope of the ramp should be compliant to current standards.
- If the top landing is within the sidewalk or corner area where someone in a wheelchair may have to change direction, the landing must be a minimum of 4'-0" long (in the direction of the ramp run) and at least as wide as the ramp, although a width of 5'-0" is preferred.

Not recommended: Diagonal curb ramp configuration.

Recommended: Directional curb ramps for crossing in both directions.

Further Considerations

Where feasible, separate directional curb ramps for each crosswalk at an intersection should be provided rather than having a single ramp at a corner for both crosswalks. Although diagonal curb ramps might save money, they orient pedestrians directly into the center of the intersection, which can be challenging for wheelchair users and pedestrians with visual impairments. Diagonal curb ramp configurations are not recommended.

Curb radii need to be considered when designing directional ramps. While curb ramps are needed for use on all types of streets, the highest priority locations are on streets near transit stops, schools, parks, medical facilities, shopping areas.

Where feasible, design curb ramps in conjunction with sidewalk stormwater infrastructure and plantings such as bioswales and infiltration basins, as well as shade trees. In this context it is important to not interfere with pedestrian and vehicular sightlines, therefore close attention to these details is critical.

Materials and Maintenance

It is critical that the interface between a curb ramp and the street be maintained adequately. Asphalt street sections can develop vertical differentials where concrete meets asphalt at the foot of the ramp, which can catch the front wheels of a wheelchair.

CORNER TREATMENTS

Corner Radii Design

The size of a curb's radius can have a significant impact on pedestrian comfort and safety. A smaller curb radius provides more pedestrian area at the corner, allows more flexibility in the placement of curb ramps, results in a shorter crossing distance and requires vehicles to slow more on the intersection approach. During the design phase, the chosen radius should be the smallest possible for the circumstances and consider the effective radius in any design vehicle turning calculations.

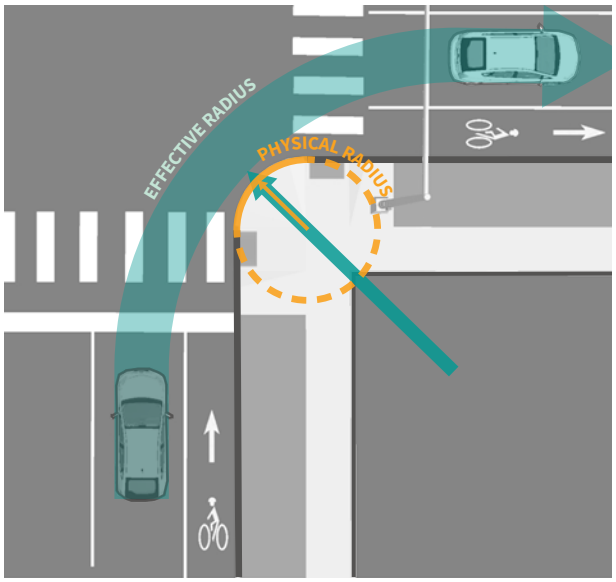
Typical Application

The curb radius may be as small as 3 ft where there are no turning movements, or 5 ft where there are turning movements and adequate street width. Wide outside travel lanes, on-street parking and bike lanes create a larger effective turning radius and can therefore allow a smaller physical curb radius.

Design Features

Corners have two critical dimensions which must be considered together.

- The physical radius controls the pedestrian experience.
- The effective radius is the widest turning arc that a vehicle can take through the corner and is larger than the physical radius.



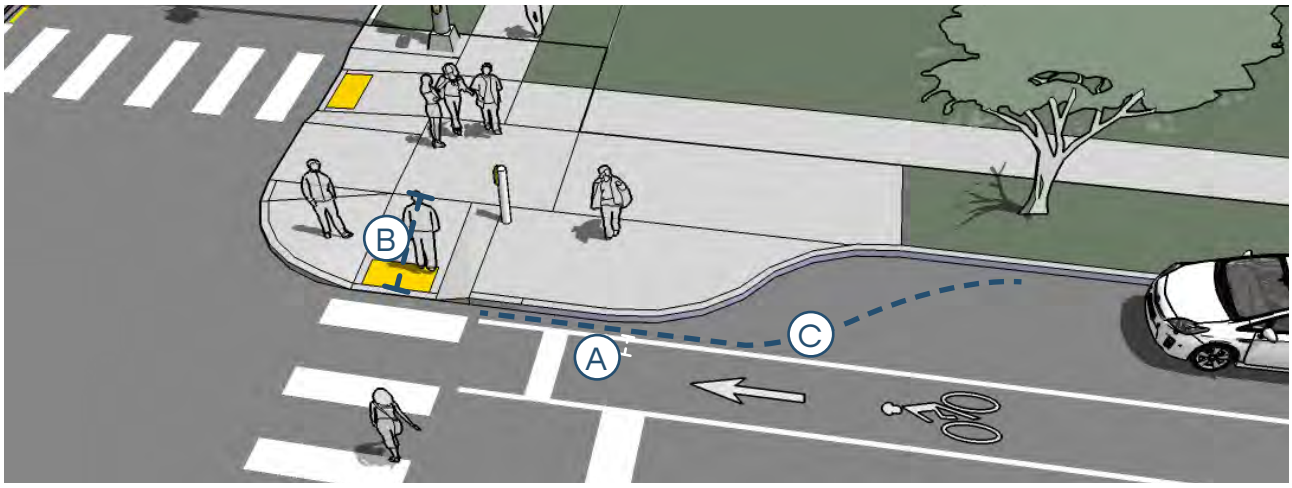
Recommended: Bidirectional curb ramps for crossing in both directions.

Further Considerations

Several factors govern the choice of curb radius in any given location. These include the desired pedestrian area of the corner, street classifications, design vehicle turning radius, intersection geometry, and whether there is on-street parking or a bike lane (or both) between the travel lane and the curb.

Curb Extensions

Curb extensions, also called curb bulbouts and neckdowns, minimize pedestrian exposure during crossing by shortening the crossing distance and giving pedestrians a better chance to see and be seen before beginning to cross. Curb extensions are appropriate for any crosswalk where it is desirable to shorten the crossing distance and there is a parking lane adjacent to the curb.



Typical Application

- For purposes of efficient street sweeping and snow plowing, the minimum radius for the reverse curves of the transition is 10 ft and the two radii should be balanced to be nearly equal.
- The curb extension width should terminate one foot short of the parking lane to maximize bicyclist safety when bicycle lanes are not present. This buffer is also preferred when bicycle lanes are present.

Design Features

(A) Where a bike lane runs adjacent to the curb extension, design with a 1‘ buffer from edge of parking lane (preferred).

(B) Crossing distance is shortened by approximately 6-8 feet with a parallel parking lane or 15 feet or more with an angled parking lane.

(C) Curb extension length can be adjusted to accommodate bus stops or street furniture.

Further Considerations

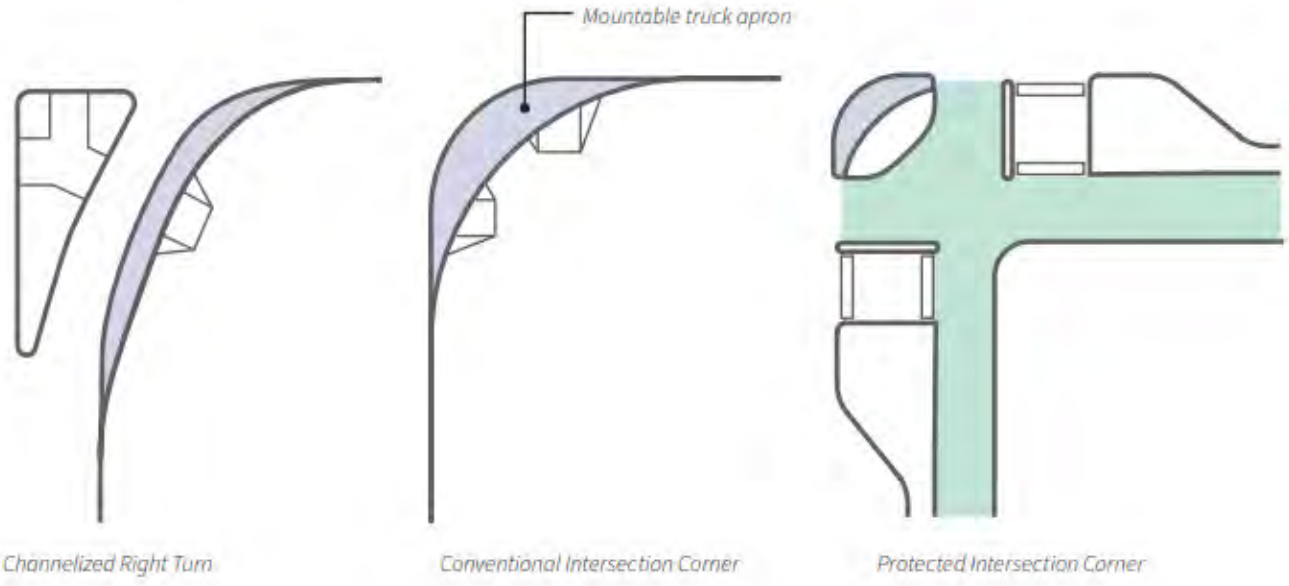
When adding curb extensions across a roadway shoulder with no parking lane, consider ways to facilitate bicycle travel (such as with a protected intersection design) and truck or bus turning movements (such as with a mountable curb apron).

Materials and Maintenance

Planted curb extensions may be designed as a bioswale or a vegetated system for stormwater management. To maintain proper stormwater drainage, curb extensions can be constructed as pedestrian refuge islands offset by a drainage channel or feature a covered trench drain.

Mountable Truck Aprons

Corner designs that limit turning speed for passenger vehicles while still allowing larger vehicles to complete the turn will likely have some form of a truck apron, which creates a tighter effective radius for smaller vehicles while still accommodating large trucks without endangering other road users.



Typical Application

Curb aprons with a single radius with mountable zone are designed to be usable for the vast majority of vehicles. Only very infrequent control vehicles (such as fire trucks) are expected to mount the curbs.

Curb aprons with a dual radius with defined apron area are intended for encroachment by larger design and control vehicles on a more frequent basis, while providing a tighter radius for managed vehicles.

Design Features

For a truck apron to be effective as a pedestrian safety measure, it must:

- Deter smaller vehicles from turning across it
- Clearly convey to drivers of larger control vehicles that it is traversable
- Be traversable by large vehicles without threatening stability
- Deter pedestrians and bicyclists from stopping or queuing on it

Further Considerations

The ability of the apron to function during and after snow events and its compatibility with snow removal equipment should be considered in design.

A surface material that is the same color as the sidewalk reinforces the distinction from the roadway for drivers, but may encourage pedestrians to dwell on it. A more aesthetically enhanced apron distinguishes it from both the roadway and sidewalk, but if the surface finish looks too “nice” it may be unclear that it is intended to be driven over.

Protected Intersections

A protected intersection is designed to make it safer for vulnerable road users, which includes people on bicycles and pedestrians, in the approach to and when crossing an intersection. This is achieved by shortening crossing distances, reducing exposure, increasing visibility, and improving yielding behavior by motor vehicle drivers.

Typical Application

Protected intersections can be implemented at signalized or stop-controlled intersections to create safe, comfortable conditions for people bicycling. Protected intersections are most commonly used with separated bike lanes, but can be used with conventional bike lanes, shoulders, or shared lanes.

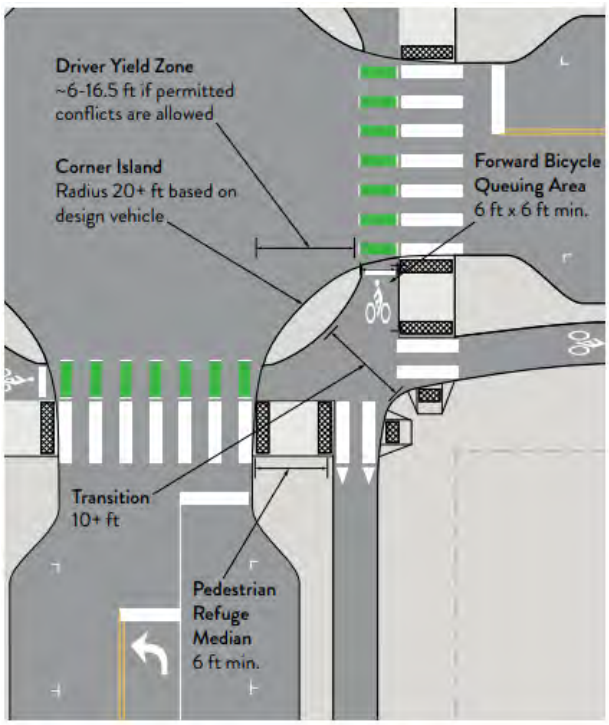
Design Features

Although a protected intersection consists of several interacting design elements, the most important are:

- Crossride setback, or the lateral offset from the motor vehicle lane to the bicycle crossride, which enables better sightlines and allows more time for drivers to stop for people walking and bicycling
- Forward stop bar, which places people on bicycles who are waiting further ahead than motor vehicles, improving visibility of people on bicycles and reducing potential for conflicts at the start of the signal phase
- Corner safety island, which separates and protects the bicycle and pedestrian space from the roadway at the corner
- Integrated accessibility features to facilitate safe crossing by vulnerable road users

Further Considerations

An intersection is made up of more than one corner, and depending on the context, each corner may or may not include all of the elements listed above.



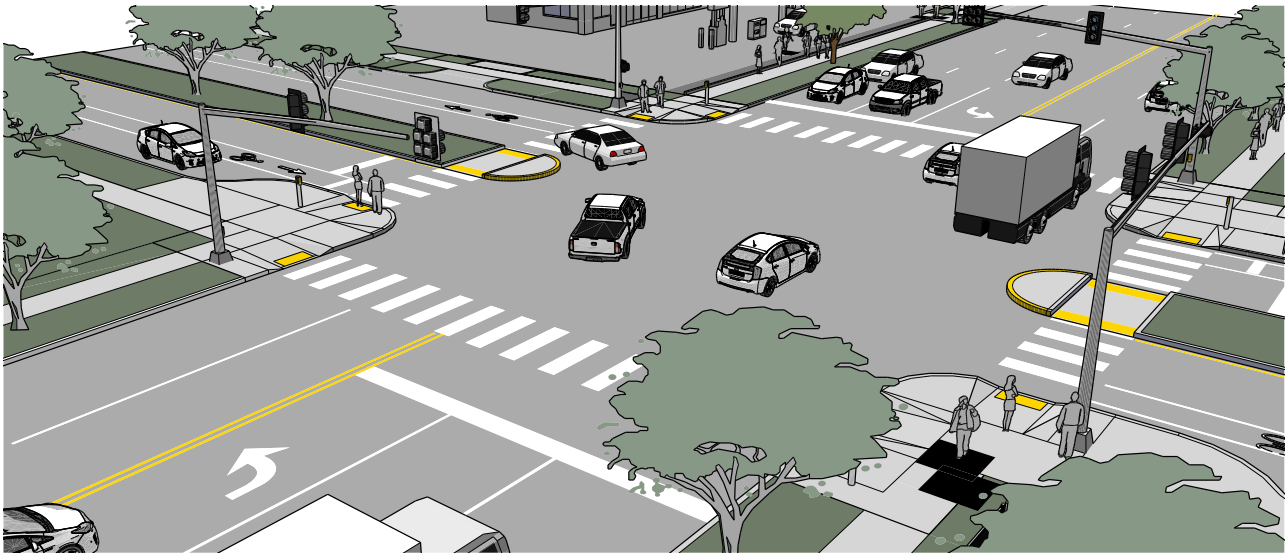
Consider access and legibility for pedestrians when designing a protected intersection. Align pedestrian refuge medians and crosswalks directly the extension of the PAR. Refuge medians that are 6-feet wide or more should have detectable warnings. Consider placement of APS buttons when designing the intersection. Wider medians and buffer areas make it easier to place required pedestrian elements.

Protected intersections may require additional right-of-way at intersection corners if parking lanes are not present. They may also require specialized snow removal equipment.

MARKED CROSSWALKS AT INTERSECTIONS

Marked crosswalks signal to motorists that they must stop for pedestrians and encourages pedestrians to cross at designated locations. Installing crosswalks alone will not necessarily make crossings safer, particularly on multi-lane roadways.

Marked crosswalks across the uncontrolled leg of unsignalized intersections should follow the design guidance of marked crosswalks at mid-block locations.



Typical Application

At signalized intersections, all crosswalks should be marked. At unsignalized intersections, crosswalks may be marked under the following conditions:

- At an intersection within a school zone or on a walking route, trail crossings, and at parks, libraries, or community centers.
- At a complex intersection, to orient pedestrians in finding their way across.
- At an offset intersection, to show pedestrians the preferred route across traffic with the least exposure to vehicular traffic and traffic conflicts.
- At an intersection with visibility constraints, to position pedestrians where they can best be seen by oncoming traffic.

Design Features

- The crosswalk should be located to align as closely as possible with the through pedestrian zone of the sidewalk corridor.
- Transverse markings are the most basic crosswalk marking type, but may wear faster as every vehicle drives over the markings.
- Continental markings provide improved visibility and can be located outside of vehicle wheel paths.
- Local climate can present unique challenges for pavement markings due to extreme heat/ cold, snow plows, and de-icing techniques.

Further Considerations

Continental crosswalk markings should be used at crossings with high pedestrian use, particularly where the crossing is not controlled by signals or stop signs, such as a local street crossing of a multi-lane arterial. These type of markings should also be used where vulnerable pedestrians are expected, including crossings near schools. Continental crosswalk marking also requires less on-going maintenance and lasts longer than other marking techniques.

Materials and Maintenance

The effectiveness of marked crossings depends entirely on their visibility; maintaining marked crossings should be a high priority. Thermoplastic markings offer increased durability when compared to conventional paint.[1]

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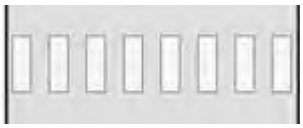
1 The appropriate marking material(s) should be determined on a project basis.

Crosswalk Examples

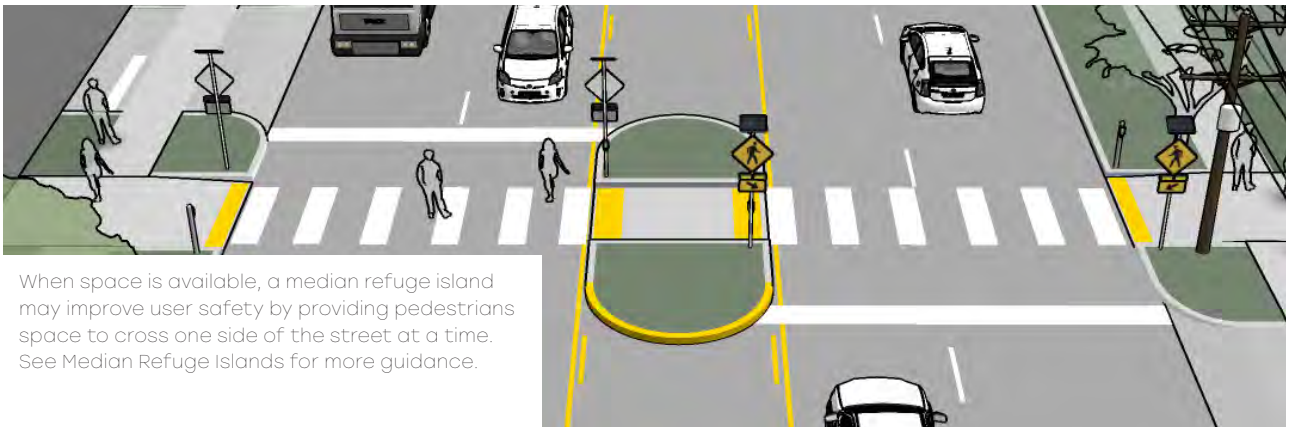
Transverse Markings

Continental Markings



MARKED CROSSWALKS AT MID-BLOCK

An effective pedestrian crossing at an uncontrolled location consists of a marked crosswalk, appropriate pavement markings, warning signage, and other treatments to slow or stop traffic such as curb extensions, median refuges, beacons, hybrid beacons, and signals. Designing crossings at mid-block locations depends on an evaluation of motor vehicle traffic volumes, sight distance, pedestrian traffic volumes, land use patterns, vehicle speed, and road type and width.



When space is available, a median refuge island may improve user safety by providing pedestrians space to cross one side of the street at a time. See Median Refuge Islands for more guidance.

Typical Application

Locations where mid-block crossings should be considered include:

- Long blocks (longer than 600 ft.) with destinations on both sides of the street.
- Locations with heavy pedestrian traffic, such as schools, shopping centers, and shared use trail crossings.
- At transit stops, where transit riders must cross the street on one leg of their journey.

Design Features

- Detectable warning strips are required to help visually impaired pedestrians identify the edge of the street and are required through ADA
- Advance stop lines should be placed 20-50 feet in advance of multi-lane uncontrolled mid-block crossings
- Crosswalk markings legally establish mid-block pedestrian crossing
- Pedestrian and stop warning signage (W11-2 and R1-5C) should be installed at the crossing to alert drivers of the potential presence of pedestrians in the roadway

Further Considerations

Uncontrolled crossings of multi-lane roadways with over 15,000 ADT may be possible with features such as sufficient crossing gaps in vehicular traffic (more than 60 per hour), median refuges, or beacons, and good sight distance.

On roadways with low to moderate traffic volumes and posted speeds at or below 30 mph, a raised crosswalk may be the most appropriate crossing design to improve pedestrian visibility and safety.

MEDIAN REFUGE ISLANDS

Median refuge islands are located at the mid-point of a marked crossing and help improve safety by increasing visibility and allowing pedestrians to cross one direction of traffic at a time. Refuge islands minimize pedestrian exposure at mid-block crossings by shortening the crossing distance and increasing the number of available gaps for crossing.

Median refuge islands can also be configured as an off-set crossing. This requires pedestrians to change their direction of travel while in the median - to face on-coming vehicles - before crossing. Here, pedestrians are more likely to see, and establish eye contact with on-coming motorists before stepping into the roadway.

Typical Application

- Refuge islands can be applied on any roadway with a left turn center lane or median that is at least 6’ wide.
- Islands are appropriate at signalized or unsignalized crosswalks.
- The refuge island must be accessible, preferably with an at-grade passage through the island rather than ramps and landings.
- The island should be at least 6’ wide between travel lanes and at least 20’ long (40’ minimum preferred).
- Provide double centerline marking, reflectors, and “KEEP RIGHT” signage in the island on streets with posted speeds above 30 mph.

Design Features

- Cut-through median refuge islands are preferred over curb ramps to better accommodate wheel chairs users.
- Pedestrian warning signage should be placed at the crossing. Advanced warning signage should also be considered where site obstructions may be present on the approach.

Further Considerations

This treatment may be combined with Rectangular Rapid Flashing Beacons (RRFBs). See treatment description for more information.

Materials and Maintenance

Refuge islands may require frequent maintenance of road debris. Trees and plantings in a landscaped median must be maintained so as not to impair visibility, and should be no higher than 30 inches.

RAISED CROSSINGS

A raised crossing is a crosswalk or bicycle crossing that is combined with a speed table. In addition to slowing motor vehicle traffic, raised crosswalks can also improve visibility between drivers, bicyclists and pedestrians at crossing locations. They may eliminate the need for ADA curb ramps, although tactile warnings are still necessary. Raised crosswalks also make a good gateway treatment at the entrance to a bicycle boulevard or a downtown area. Raised crosswalks can reduce pedestrian crashes by 45%.

Typical Application

The FHWA Safe Transportation for Every Pedestrian guide suggests raised crosswalks as a candidate treatment for unsignalized intersections on roads with posted speeds of 30 mph or less and AADT of 9,000 vehicles per day or less. Raised crosswalks across driveways help indicate to drivers that sidewalk and trail users have the priority.

Design Features

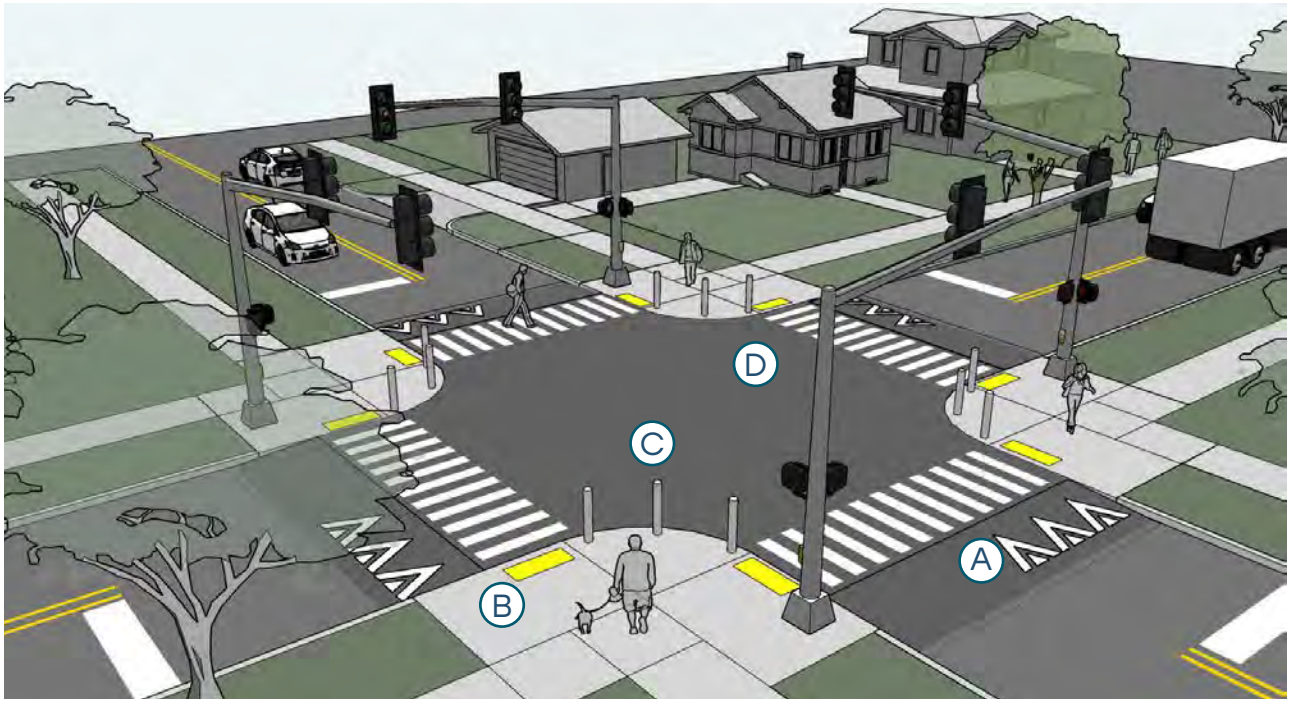
- Raised crosswalks are flush with the height of the sidewalk.
- The speed table is typically at least 10 feet wide.
- Truncated domes are installed at the edge of the sidewalk to alert people with low-vision that they are entering the roadway.

Further Considerations

Designers should consider drainage needs for all raised treatments to ensure the roadway still drains properly.

RAISED INTERSECTIONS

A raised intersection is a vertical speed control treatment that elevates the entire intersection and its crosswalks to the level of the sidewalk. The intersection operates as a large speed table with ramps on each approach, reinforcing slower vehicle speeds and increasing awareness of pedestrian crossing activity. Crosswalks flush with the sidewalk create a smoother travel path for pedestrians and reduces the need for curb ramps, although detectable warning strips at the edges should still be provided.



Typical Application

- Minor intersections with a high volume of pedestrian crossings.
- Roads with speed limits under 30 mph and annual average daily traffic (AADT) less than 9,000.
- Reduce vehicle speeds through pedestrian-oriented zones such as commercial areas, campus settings, and pick-up/drop-off locations.
- Support high yield-compliance behaviors by motorists at crossings.

Design Features

(A) Chevrons, or diagonal solid white lines meeting at an angle should be used to indicate ramps to vehicular traffic.

(B) If crosswalks are at-grade with the sidewalk, they do not need to be marked, but ADA-compliant detectable warning strips are always required.

(C) Include bollards on corners or along other pedestrian areas that are level with the street and where crossings are not desired. Bollards protect and delineate pedestrian spaces.

Unique crosswalk markings can be used to draw attention to the raised intersection, as demonstrated above on an offset residential intersection.

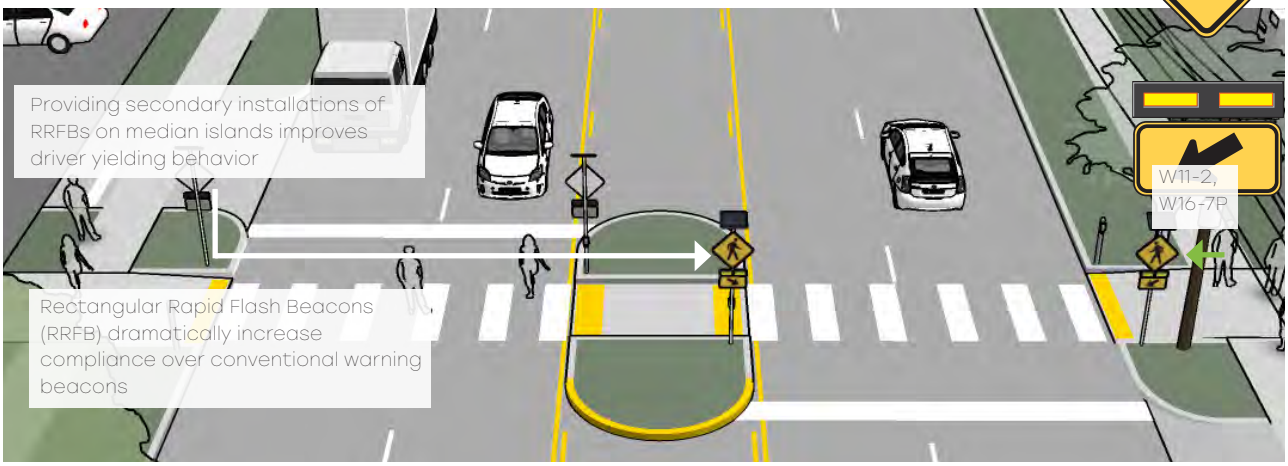
(D) The intersection can be constructed from special paving materials, emphasizing the pedestrian environment and public space. These materials can include asphalt, concrete, stamped concrete, or pavers. High visibility street materials will draw attention to the raised intersection.

Further Considerations

- If the intersection consists of two 1-way streets, there will be two corners with no vehicle turning movements. These corners should be designed with the smallest radius possible (approximately 2 ft).
- Consider how the color of the detectable warning strips will contrast with the colors of the raised intersection, sidewalk, and roadway. Detectable warning strips with higher contrast will improve the delineation of the spaces, such as red when adjoining light-colored sidewalks, or bright white/yellow when adjoining dark colored pavements.
- Avoid applying this treatment to major bus transit routes or primary emergency vehicle routes. These vehicles may experience issues with vertical speed control elements.
- Avoid applying this treatment to areas with sharp curves, limited sight distances, or steep roadway grades.
- Raised intersections may impact street drainage or require catch basin relocation.
- Include appropriate warning signs and roadway markings to prepare motorists for the raised crossings and alert snow plow operators to the location of the ramps.

RECTANGULAR RAPID FLASH BEACONS

Rectangular Rapid Flash Beacons (RRFB) are a type of active warning beacon used at unsignalized crossings. They are designed to increase driver compliance on multi-lane or high-volume roadways.



Typical Application

- Guidance for marked/unsignalized crossings applies.
- RRFBs should not be used at crosswalks controlled by YIELD signs, STOP signs, Pedestrian Hybrid Beacons (HAWKs), or traffic control signals.
- RRFBs should initiate operation based on user actuation and should cease operation at a predetermined time after the user actuation or, with passive detection, after the user clears the crosswalk.
- Rectangular Rapid Flash Beacons (RRFB) dramatically increase compliance over conventional warning beacons.

Design Features

- RRFBs are typically activated by pedestrians manually with a push button, or can be actuated automatically with passive detection systems. See Enhanced Crossing Treatment Selection page for more details on appropriate applications.
- Providing secondary installations of RRFBs on median islands improves conspicuity and driver stopping behavior.
- Must be used in conjunction with W11-2, S1-1, or W11-15, (and W16-7P if post-mounted). See FHWA Interim Approval 21 for more information.
- Beacons may be installed as side mounted or in overhead installations.

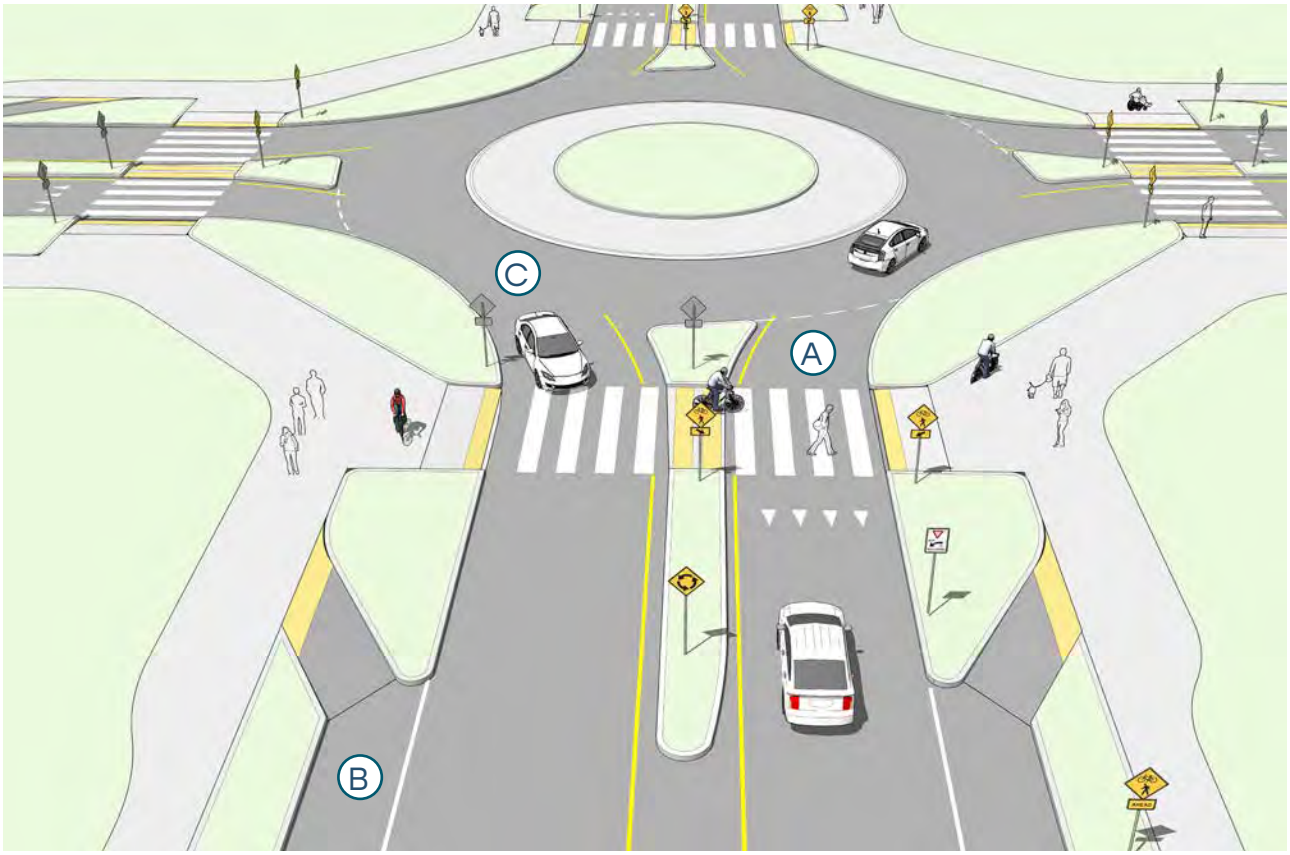
Further Considerations

Rectangular rapid flash beacons elicit the highest increase in compliance of all the amber warning beacon enhancement options.

See FHWA Interim Approval 21 (IA-21) for more information on RRFBs.

Materials and Maintenance

RRFBs should be regularly maintained to ensure that all lights and detection hardware are functional.



ROUNDABOUTS

Single lane roundabouts can provide high intersection throughput and reduced delay while reducing points of conflict between people driving, walking, and riding bikes. Multi-lane roundabouts can offer similar benefits, but introduce more complexity to the intersection and require special design considerations. At roundabouts, it is important to provide clear right-of-way rules to all people traveling through and guidance through use of appropriately designed signage, pavement markings, and geometric design elements.

Typical Application

- Where a bike lane or separated bikeway approaches a single-lane roundabout.
- Reduce vehicular speeds at crossings to 20 mph or less.
- Support high yield-compliance behaviors by motorists at crossings.
- Provide smooth transitions between on-street bicycle facilities and off-street trails.
- Ensure off-street trail users can see approaching traffic before initiating crossing maneuvers.

Design Features

Ⓐ Design approaches/exits to the lowest speeds possible. Use effective radius of curvature less than or equal to 130' for speeds of up to 20 MPH.

Ⓑ Allow people bicycling to exit the roadway onto a separated bike lane or shared use trail that circulates around the roundabout.

- Also allow people bicycling the choice to navigate the roundabout like motor vehicles to "take the lane."

Ⓒ Maximize yielding rate of motorists to people walking and people bicycling at crosswalks with small corner radii and reduced crossing distance.

- Ensure good sightlines at crossings, provide lighting at a point immediately upstream of the crosswalk so that drivers on both approaches to the crosswalk have ample time to see and react to those in the crosswalk.
- Use mountable aprons/ramps at roundabout entries, exits and the central island to accommodate larger vehicles while keeping passenger vehicle speeds low.
- Detectable directional indicators can be used at bike ramps entrances and exits to prevent people with vision disabilities from entering the roadway at these locations.

Further Considerations

- Consider using speed tables, or raised crosswalks to increase motorist yielding at crossings.
- The publication Roundabouts: Informational Guide states, "... it is important not to select a multilane roundabout over a single-lane roundabout in the short term, even when long-term traffic predictions eventually warrant a higher capacity intersection design" (NCHRP 2010 p 6-71). The purpose of this is to prevent crashes in the interim time period. When intersections have more lanes and are wider than necessary to safely and comfortably accommodate near term traffic, a higher crash rate and more frequent injury crashes occur.
- Other circulatory intersection designs exist but they function differently than the modern roundabout. These include traffic circles (also known as "Rotaries," and neighborhood traffic circles.
- Multilane roundabouts support higher traffic volumes and higher stress levels for people on bikes. People on bikes should not be encouraged to take the lane while traveling through a multilane roundabout.
- At multilane roundabout crossings, consider a jog in the median to enhance intersection awareness and judgment for those crossing.

GREEN STORMWATER INFRASTRUCTURE

Green stormwater infrastructure (GSI) is a design approach to managing stormwater, the urban heat island effect, and air and water quality. GSI includes streetscape elements such as rain gardens, bioswales, and flow-through planters. These elements intercept stormwater before it reaches the gray water infrastructure systems, or sewers. GSI can help protect people walking from the impacts of flooding, and can enhance and beautify the walking environment.

Typical Application

GSI implemented along with pedestrian improvements is typically located between the back of curb and sidewalk, in curb extensions, or in median refuge islands.

Design Features

- Rain gardens are designed to capture, clean, and infiltrate stormwater. They have a curb inlet that diverts stormwater into the basin. When the basin is full, stormwater bypasses the inlet and continues down the gutter.
- Bioswales are usually designed to both infiltrate and clean stormwater runoff from a 'first flush' storm event. They typically have an inlet in the curb at the upstream end as well as an outlet at the downstream end.
- Flow-through planters are designed to clean stormwater before returning it to the municipal storm drain system. They are useful in areas where stormwater infiltration is not possible due to soil conditions.

Further Considerations

Including shrubs and other understory plants in GSI helps to filter and slow stormwater so it can infiltrate into soil or be cleaned before entering the storm drain system. GSI plantings are most successful using a native plants that can tolerate periods of drought and inundation, as well as high salinity.

Routine maintenance includes things like debris removal, ensuring water infiltrates at the required rate, inspecting and replacing any damaged plant material, inspecting for and repairing any erosion damage, weeding, accumulated sediment removal, and cleanout of inlets and outlets.

STREET TREES

Street trees can increase comfort for pedestrians and bicyclists by lowering temperatures, filtering air and water, and improving the quality of both. The presence of trees can make walking and biking facilities feel more comfortable and appealing, contributing to mode shift and reducing greenhouse gas emissions. On tree-lined streets people tend to drive more slowly, reducing the risk of collisions.

Continuous planting areas increase available soil volume, moisture holding capacity,a larger soil surface area for gas exchange, and the ability to capture and store more stormwater.

Typical Application

Trees may be planted in the right-of-way where they do not negatively impact sight lines and where adequate soil volume is available. Trees should ideally be spaced to provide a continuous canopy along bicycle and pedestrian routes.

Design Features

- Provide as much soil volume as feasible to extend the life and increase the health of street trees. As a rule of thumb, a small tree (20-30ft), medium tree (30-60ft), and large tree (60ft+), should be provided a minimum of 600, 900, and 1200 cubic feet respectively of high-quality rootable (loose, aerated, water storing) soil.
- Choose an appropriate species for the context. Future-proof tree planting by selecting species tolerant of warming temperatures.

Further Considerations

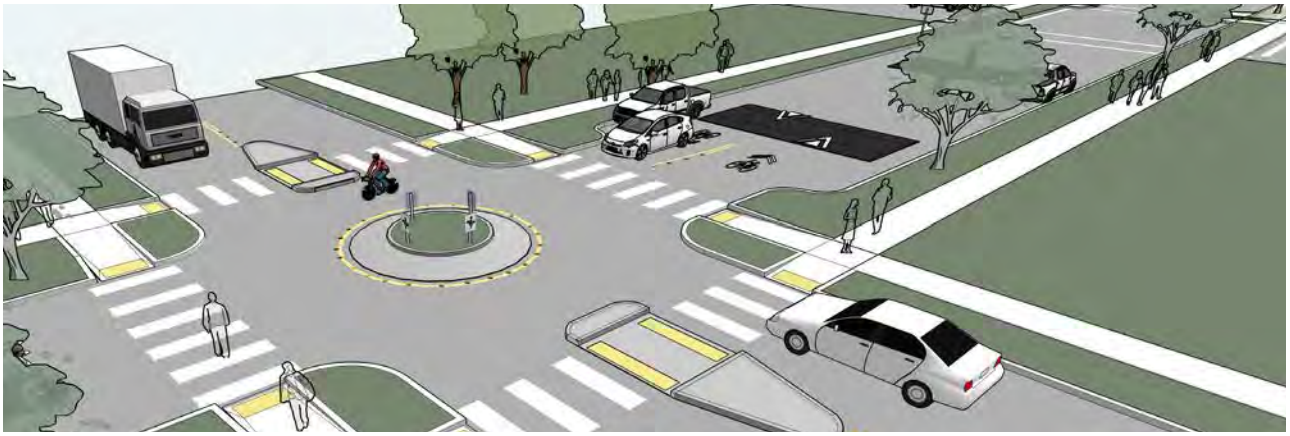
Irrigate whenever feasible to help trees survive periods of drought or extreme heat stress.

In areas where green space is constrained, consider using suspended pavement systems to increase the amount of rootable soil available for street trees.

Trees can be planted in bioswales if they are planted on the upslope portion of the swale. Tree species should be tolerant of periodic inundation and drought conditions if no supplemental irrigation is provided. Trees can be planted adjacent to more intensive green infrastructure features (which are subject to full inundation) If trees are planted in a separate dedicated soil volume.

OTHER SPEED & VOLUME CONTROL MEASURES

Traffic calming devices can help mitigate speeding and cut-through traffic by changing driver behavior through a variety of visual or physical changes to the road environment. Such measures may reduce the design speed of a street and can be used in conjunction with reduced speed limits to reinforce the expectation of lowered speeds.



Typical Application

- Traffic calming measures should be limited to local or minor collector streets, typically with a maximum posted speed of 35 mph.
- Traffic calming measures can be more applicable in areas with high potential for conflict between pedestrian/bicyclist and motor vehicles.
- Traffic calming measures may be most appropriate in areas with predominantly residential or mixed-use land use.
- If applicable, traffic calming measures should not infringe on bicycle space. Where possible, provide a bicycle route outside of the element so bicyclists can avoid having to merge into traffic at a narrow pinch point.
- Traffic calming measures should always consider emergency vehicle response times and turning abilities.

Design Features

- Measures that are meant to regulate, warn, inform, enforce, and educate motorists, cyclists, and pedestrians on the road include radar signs, pavement markings, turn restrictions, temporary speed bumps.
- Measures that are used primarily to reduce traffic speeds within residential areas can include, speed tables, chicanes, traffic circles, and tree planting.
- Measures that are implemented to discourage cut-through traffic from utilizing residential streets include diverters, partial street closures, and median barrier/forced turn islands.

Further Considerations

Traffic calming can slow or deter motorists from driving on a street. Anticipate and monitor vehicle volumes on adjacent streets to determine whether traffic calming results in inappropriate volumes. Traffic calming can be implemented on a trial basis.

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CIP ANALYSIS AND RECOMMENDATIONS

Analysis and Recommendations

This section includes five recommendations based on the findings of this report. They include recommended changes to the CIP, bikeway implementation options, and next steps for prioritizing and selecting treatments for pedestrian crossing improvements.

Changes to the CIP

Recommendation #1: Separate Sidewalk/Trail Improvements Category in the CIP

This is an important category to address walking and biking projects in the CIP. In the current 2022-2026 CIP, several pedestrian and bikeway project types fall under this one category. This category should be split into distinct topic areas and with language provided in the "Description" and "Justification" section of the new CIP programs. This category should be split into three programs: Sidewalk Construction, All Ages and Abilities (AAA) Bikeways, and Pedestrian Crossing Improvements.

For the All Ages and Abilities (AAA) Bikeways program, the proposed bikeways map, individual route maps, and cross sections could be included in the program description to help provide clarity on the priorities of the program. For the Pedestrian Crossing Improvements program, the Pedestrian Origins and Destinations Map could be included in the program description. As individual projects are identified, those locations could be included as well to provide the same level of clarity. It may also be necessary to reevaluate funding levels in the CIP and identify an annual budget allocation for the separate CIP programs.

Bikeway Implementation Options

Recommendation #2: Identify a Preferred Bikeway Type in Northfield

Two-way separated bikeways should be identified as the preferred bikeway type in Northfield. This includes raised separated bikeways when there is an opportunity for reconstruction that includes moving an existing curb. For retrofit projects, such as mill and overlays, and stand-alone projects, this includes installing two-way separated bikeways with a concrete bike buffer.

Recommendation #3: Implement Unprogrammed Bikeways Identified in the "Proposed Bikeway Corridors"

For the unprogrammed sections of the "proposed bikeway corridors," add to the scope and implement them with a quick build approach. This should include striping, signage, and concrete bikeway buffers. This recommendation is based on a goal of providing continuity and seamless connections between bikeways. These projects could be included in a new CIP program as identified in Recommendation #1.

Recommendation #4: Use Concrete Bike Buffers as a Form of Physical Bikeway Separation

Explore a demonstration of a concrete bike buffer as a form of bikeway separation. The dimensions of the barrier are roughly six to eight inches tall and two feet wide. The pavement is milled slightly and slip form concrete is placed within a buffer separating moving motor vehicles and people biking. This could be included in an existing bikeway that has a four-foot striped buffer or as part of a new bikeway project. A good first location should be highly visible for people bicycling and driving, leaving plenty of room for turning vehicles, and use bollards to add to the visibility. Demonstrating this technique could have several benefits, including determining construction techniques, evaluating how it holds up, and engaging residents about the treatment. Lessons learned from the demonstration can improve future installations.

Pedestrian Crossing Improvements

Recommendation #5: Prioritize Pedestrian Crossing Improvements

Use the Pedestrian Origins and Destinations Map to prioritize pedestrian crossing improvements in conjunction with reconstruction and reclamation projects, mill and overlay projects, and stand-alone projects. There may be opportunities to pair pedestrian crossing improvement projects with bikeway projects to increase the benefit of the project. These projects could be included in a new CIP program as identified in Recommendation #1.

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City of Northfield Complete Streets Policy

Vision

Pedestrians, bicyclists, transit, motorists, freight carriers, and emergency responders must be able to safely move along and across Northfield's street network. The City of Northfield Complete Streets policy intends to ensure all streets within the City are planned, funded, designed, constructed, operated and maintained to safely accommodate users of all ages and abilities.

Purpose

The purpose of this Policy is to design surface transportation corridors that balance the needs of all users while implementing the principles of the Comprehensive Plan of enhancing Northfield's sense of place and creating a highly connected multi-modal transportation network. As part of developing pedestrian and bicycle infrastructure through the implementation of this Complete Streets, Northfield intends and expects to realize long-term cost savings in improved public health, better environmental stewardship, reduced fuel consumption, and reduced demand for motor vehicle infrastructure through the implementation of this Complete Streets policy. Complete Streets also contribute to walkable neighborhoods which can foster interaction, create a sense of community pride and improve quality of life.

Goals

1. Incorporate the vision, purpose, and goals of this Policy into all aspects of the project development process for surface transportation projects within the City of Northfield.

2. Create a balanced, highly interconnected and attractive surface transportation network which is consistent with the Comprehensive Plan and Transportation Plan and other relevant policies of the City.

3. Manage stormwater and improve Cannon River water quality by reducing impervious surfaces, narrowing street widths where suitable to the context, planting street trees, and, where appropriate, increasing stormwater infiltration along streets through the design of the public right-of-way.

4. Promote the use of the latest and best "complete streets" design standards, principles, policies, and guidelines within the context of the community.

Directives

The City of Northfield's surface transportation network shall balance the needs of all current and future users. Project identification, planning, scoping, and design for new construction, reconstruction, resurfacing, rehabilitation, repair, and maintenance within the public right-of-way shall adhere to the following:

1. Accommodations for all users of the surface transportation network shall be balanced in accordance with the latest and best "complete streets" standards, principles, policies, and guidelines, **except** under one (1) or more of the following conditions:

    a. Where the cost of providing such accommodations would be disproportionate given the need or probability of use, or

    b. Where severe topographic or natural resource constraints prohibit such accommodations, or

    c. Where conditions or restrictions outside the purview of the City of Northfield prohibit such actions.

    In cases where one or more of these conditions occur, the City Administrator and professional staff will evaluate the project and make a recommendation to the City Council for their decision.

2. Where segregated facilities cannot be provided for pedestrians and cyclists, the constructed roadway shall reflect the character of shared space, with appropriate mechanisms to calm vehicular traffic and provide a safe, reliable, integrated, and interconnected surface transportation network.

3. Where projects involve other jurisdictions, the City will work with those jurisdictions to ensure compliance with this policy to the fullest extent. Prior to seeking bids, the City Administrator or designee shall report to the City Council on the detail of how the project does or does not comply with this Policy.

4. Roadways, sidewalks, shared-use paths, street crossings, pedestrian signals, signs, street furniture, transit stops and facilities, and all connecting pathways shall be designed, constructed, and operated to limit maintenance, and maintained so that all users of the surface transportation network can travel safely, reliably and independently .

5. The implementation of this Policy shall reflect the context and character of the surrounding built and natural environments, and enhance the appearance of such.

6. The City will implement this policy by evaluating and revising relevant City plans, rules, regulations, and programs as appropriate to incorporate this policy by reference and to utilize the most current and most effective design guidelines and other tools when designing projects.

7. A system of performance measurements shall be established to gauge the success of this Policy with regards to the stated Goals above.

8. This Policy shall be reviewed at least every five years to determine its success and make any needed revisions.

CITY OF NORTHFIELD, MINNESOTA
CITY COUNCIL RESOLUTION 2012-064

ESTABLISHMENT OF A COMPLETE STREETS POLICY FOR
THE CITY OF NORTHFIELD, MINNESOTA

WHEREAS, the City Council of the City of Northfield adopted City Council Resolution 2012-017, at the City Council meeting of February 17, 2012; and,

WHEREAS, as expressed in that Resolution, the Northfield City Council desires to develop and adopt a Complete Streets Policy to assure city streets are designed, operated and maintained to be safe and accessible for pedestrians, transit riders, bicyclists, drivers—all users regardless of age or ability; and,

WHEREAS, The City of Northfield already has many of these elements established in its Comprehensive Land Use Plan, Transportation Plan, Safe Routes to School Plan, Land Development Code, zoning regulations, and design of street improvements projects; and,

WHEREAS, development and adoption of a Complete Streets Policy will draw these various elements into a single cohesive document that can be enhanced and clarified where necessary; and,

WHEREAS, having a City of Northfield Complete Streets Policy will better position the City of Northfield to partner with the Minnesota Department of Transportation to fully implement the 2010 state Complete Streets law, especially when considering improvements to State Trunk Highways 3, 19, and 246 into and through Northfield; and,

WHEREAS, the City Council of the City of Northfield adopted City Council Resolution 2012-027, at the City Council meeting of April 3, 2012; and,

WHEREAS, Resolution 2012-27 established the Complete Streets Task Force, which was directed to report back to the City Council a proposed draft Complete Streets Policy on or about July 15, 2012, and,

WHEREAS, a Complete Streets Policy for the City of Northfield has been prepared and presented to the Northfield City Council.

NOW, THERFORE, BE IT RESOLVED BY THE MAYOR AND CITY COUNCIL THAT:

1. The City Council of the City of Northfield hereby adopts the attached Complete Streets Policy.
2. This Policy shall be reviewed at least every five years to determine its success and make any needed revisions.

PASSED by the City Council of the City of Northfield on this 17th day of July, 2012.

ATTEST

Deb A Little
City Clerk

Mary Thoss
Mayor

VOTE: Y ROSSING Y BUCKHEIT Y GANEY Y NAKASIAN
Y POWNELL Y IMM Y ZWEIFEL

REGULAR

Date of City Council Meeting: July 17, 2012

TO: Mayor and City Council

FROM: Complete Streets Task Force
Rhonda Pownell, City Council
Betsey Buckheit, City Council
Steve Rholl, Planning Commission
Joey Robison, Planning Commission
Joe Gransee-Bowman, Environmental Quality Commission
George Kinney, Environmental Quality Commission
Joe Stapf, Public Works Director

RE: Complete Streets Draft Policy

Action Requested:

The City Council is being asked to approve Resolution #2012-064, which will adopt the proposed City of Northfield Complete Streets Policy.

Update:

The Complete Streets Task Force was initiated through Resolution 2012-017 on February 12, 2012. The Complete Streets Task Force met three times with Public Works Director Joe Stapf. We reviewed Complete Streets policies from other communities, policy elements identified by the national Complete Streets Coalition, and looked at some images of Northfield's streets to better understand what might be possible.

Other City's policies varied considerably from one paragraph statements to large documents with detailed design guidelines. The Task Force quickly determined that Northfield's policy should be a concise statement to direct the project design process rather than attempting to provide design details.

The draft policy attempts to be concise, yet also clear and comprehensive. The policy applies to all streets within the City limits, including those under County or MNDot jurisdiction, includes stormwater management, anticipates how any exceptions to the policy could be made, and recognizes the significance of Northfield's street network to transportation, public health, and sense of place.

Future work:

In addition to adopting this policy, there are two items which still need attention to make implementing the policy easier and ensure consistency with other City documents.

Revise current plans and regulations:
For most purposes, incorporating this policy by reference into Northfield's Comprehensive Plan, Transportation Plan, and Surface Water Management Plan will be sufficient. Several more specific updates are needed for the Land Development Code. Pedestrian access requirements and subdivision design standards in Article 3 of the Land Development Code should be revised to refer to this policy and to provide flexibility and context-sensitive planning for new streets.

Performance measures:
In order to be able to determine the success of this policy and quantify our accomplishments, national Complete Streets policy analysts recommend including performance measures. Examples of simple performance measures could include:

- annual increase in total miles of on-street bicycle routes defined by streets with marked bicycle lanes or bike route signage
- linear feet of new pedestrian accommodations (sidewalk, multi-use trail, crossings, etc.)
- number of new street trees planted
- reduction in sidewalk gaps
- completion of Safe Routes to School Projects
- completion of GreenStep Cities action steps

Many of these performance measures would benefit from having current data – such as total miles of on-street bicycle routes Northfield has established up to 2012 - from which to measure improvement, but the City could also start benchmarking now and measure success from 2012 forward. Having benchmarks could also help the City set goals for annual improvement and allocate resources efficiently.

Attachments:
1. Resolution 2012-064
2. Complete Streets Policy

City of Northfield, Minnesota	Policy Number: 3.02
PUBLIC WORKS (ENGINEERING DIVISION)	Adopted: 10/2/xxx – Motion xxxx-xxx
ENGINEERING GUIDELINES	Revised:

3.02 ENGINEERING DESIGN STANDARDS

A. PURPOSE

This policy is intended to guide effective and efficient construction of the City's public infrastructure. Standards identified in this policy are intended to provide safe and reliable infrastructure in accordance with industry standards and design requirements established by governing agencies. This policy takes into consideration public health and safety, environmental factors, and cost of implementation.

B. PUBLIC INFRASTRUCTURE DESIGN AND CONSTRUCTION

The City of Northfield provides for the engineering design and preparation of plans and specifications for all public infrastructure improvements that are owned and operated by the City. These improvements include, but are not limited to, public water supply, sanitary sewer service, storm drainage, streets, traffic control, street lights, and trails. Engineering design and construction inspection services are provided by in-house public works staff and/or professional engineering consultants contracted with the City of Northfield. The engineering design process is administered by the Engineering Manager under the direction of the Public Works Director/City Engineer.

C. STANDARD SPECIFICATIONS AND DETAIL PLATES

Public infrastructure shall be constructed in accordance with the City Standard Specifications and Standard Detail Plates on file with the Public Works Engineering Division. A list of the City's Standard Specification Sections and Detail Plates is provided in Appendix A to this policy. The City Engineer shall review and maintain these standards on an annual basis.

D. WATER DISTRIBUTION SYSTEM

Public water system infrastructure shall be designed to the standards contained herein, and may be subject to additional requirements as established by the Minnesota Department of Health and industry standards published by the American Water Works Association.

1. WATER MAIN PIPE

Material	Ductile Iron Pipe
Pipe Class	CL 52 <14" dia., CL 51 14" or more dia. See AWWA C150
Minimum Diameter	6-inches
Diameter Design	See Distribution System Model
Standard Cover	8 feet bury
Minimum Cover (isolated locations)	5 feet, with continuous insulation Requires City Engineer pre-approval
Location	Min. 10 feet from sanitary and storm sewers
Min. Pipe Crossing Clearance	18-inches above sewers
Water Main Encasement	All DIP Mains – Polyethylene

2. WATER HYDRANTS AND VALVES

Hydrant Type	Clow Medallion 16" Traffic Section, 1-vented cap 2-1/2" Nozzle Include valve for all hydrants
Hydrant Depth	8-foot bury
Max. Hydrant Spacing	600-feet (Low/Medium Residential) 500-feet (High Density Residential) 450-feet (Commercial / Industrial) Subject to Review by Fire Cheif
Hydrant Min. Fire Flow Capacity	1,125 GPM (Residential) See ISO Formula (Commercial/Industrial)
Hyd. Breakoff Height	2-inches above finished ground
Valve Type (12" dia. or less)	Resilient Seat Gate Valve AWWA C515
Valve Type (16" dia. or larger)	Resilient Seat Butterfly Valve AWWA C504
Maximum Distance between Valves	800-feet

3. WATER SERVICES

SFR/Townhome Service Material	Type K Copper
Service Material Other Land Use	See Specifications
Townhomes	1 service per each unit
Minimum Residential Service Diameter	1-inch
Minimum Depth	8 feet bury

E. SANITARY SEWER SYSTEM

Public sanitary sewer system infrastructure shall be designed to the standards contained herein, and may be subject to additional requirements as established by the Minnesota Pollution Control Agency and guidance published by Metropolitan Council Environmental Services Division.

1. SANITARY SEWER PIPE

Material	PVC
Minimum Diameter	8-inch
Class	SDR 35 (less than 18-ft depth) SDR 26 (18-ft to less than 28-ft depth) Determined by Engineer (28-feet or greater)
Minimum Cover	6-feet
Unit Flow Capacity Residential	90 GPD/Capita
Unit flow Capacity Commercial	2,000 GPD/acre
Minimum Pipe Grade for Main	2 feet per second velocity 8-inch dia. 0.40 percent 10-inch dia. 0.28 percent

	12-inch dia. 0.22 percent See 10-State Standards for larger diameter pipe
Minimum Separation from All Wells	50 feet

2. MANHOLES

Type	Precast with Gasket Joints
Minimum Size	48-inch diameter
Casting	Neenah R-1642 solid lid
Max Spacing	400-feet (18-inch Dia. or less) 500-feet (greater than 18-inch Dia.)
Outside Drop	If inverts cannot be within 12-inches
Off Road Manholes	Accessible by Maintenance Vehicle
Land Use with Any Food Prep/Mircobrew	Manhole on Service at Property Boundary

3. SEWER SERVICES

Material	PVC
Class	SCH 40 (solvent weld joints)
Locating	Tracer Wire with Access Box
Minimum Service Size	4-inch dia. @ 2.0% (Single Family Res) 6-inch dia. @ 1.0% (Multi-unit Res) 6-inch dia. @ 1.0% (C/I lots less than 4 acres) 8-inch dia. @ 0.4% (C/I lots 4 acres or more)
Cleanout	Service Line Exceeds 100-feet

F. STORM DRAINAGE SYSTEM

Public storm drainage infrastructure shall be designed to the standards contained herein and the standards established in the most recently adopted edition of the City's Surface Water Management Plan. Drainage system design may also be subject to additional requirements as established by the Minnesota Pollution Control Agency and local Watershed Management Organizations.

1. STORM SEWER PIPE

Material	RCP in City ROW HDPE in limited circumstances when Pre-approved By City Engineer
Minimum Pipe Diameter	15-inches
Class	Use Load Calculations
Minimum Depth	3-feet

Minimum Grade	3 fps Flow Velocity
Maximum Grade	12 fps Flow Velocity, 6 FPS at Pond Inlets
Location	10-feet from Water Main
Trash Guards	Inlet - Yes, where water leaves a BMP and enters the storm sewer Outlet - No, where water leaves the storm sewer enters BMP

2. MANHOLES AND CATCH BASINS

Type	Precast with Gasket Joints Block construction in limited circumstances when Pre-Approved by City Engineer
Manhole Diameter	48-inch Minimum Use Manhole Design Calculations
Manhole Casting	Neenah R-1642 with Solid Lid
Catch Basin Casting	See Detail Plate
Manhole Spacing	400-feet Max All pipe connection points
Catch Basin Spacing	Use Flow Spread Calculations 400-feet Max Upstream of Street Intersections

3. DESIGN AND CAPACITY

Design Frequency for Storm Sewers	MSA Routes and New Systems 10-year
Design Frequency for Detention Basins	100-year See Surface Water Management Plan
Minimum Manning N Value	0.013 for pipe 0.24 for open channel
Min. Low Opening Freeboard	2-feet above 100-year HWL
Emergency Overflow Swale	Minimum 1-foot below Low Opening
Maximum Basin Side Slopes above NWL	4:1
Basin Safety Bench Slope at NWL	10:1 for min. 10-feet wide
Maximum Site Discharge Limits	See Surface Water Management Plan
Minimum Water Quality and Infiltration	See Surface Water Management Plan
Min Drainage from Structure to Property Line	1.0% 6-inch min. drop within 10-ft from Structure
Swale flatter than 2.0%	Only permitted in limited circumstances Include drain tile

G. PUBLIC STREET SYSTEM

Public street infrastructure shall be designed to the standards contained herein and additional design standards contained within Minnesota Rules 8820 for designated Municipal State Aid routes. Traffic control signs on public streets conform with the requirements provided in the most recent edition of the Minnesota Manual on Uniform Traffic Control Devices.

The City has a goal of Complete Streets, improving walking and biking, and reducing impacts to Climate Change. The design and width of the streets shall be consider all users including connectivity to the road network, walking and biking network, and connecting neighborhoods, destinations and park.

1. GEOMETRIC DESIGN

Minimum Width – Local	See Appendix B for Street Table
Minimum Width – MSA	Follow MSA Chapter 8820
Maximum Grade	Arterial: 5 % Collector: 7 % Local/Residential: 8 %
Minimum Grade	0.50 %
Cross Slope	2.0 % Minimum 3.5 % Maximum
Vertical Curve	AASHTO Geometric Design Standards*
Horizontal Curve Radius	AASHTO Geometric Design Standards* 100-feet Min. for Low Volume Residential
Tangent Length between Curves	100-feet Minimum
Tangent Length Intersection Approach	100-feet Minimum
Intersection Approach Deflection Angle	+/- 20 degrees Max. from perpendicular

*Current edition of AASHTO "Geometric Design of Highways and Streets". Minimum stopping sight distance shall be provided at all locations.

2. PAVEMENT DESIGN

Minimum Structural Design	9-ton for all new local streets 10-ton for MSA and Collectors
Bituminous Pavement Thickness Design	MnDOT Flexible Pavement Method (w/R-value and ESALs)
Rigid Pavement (PCC) Thickness Design	MnDOT Rigid Pavement Design Method (w/R-value and ESALs)
Minimum Bituminous Thickness	4-inches Residential 5-inches Collector/Arterial
Min. Rigid Pavement (PCC) Thickness	6-inches
Minimum Aggregate Base Thickness	9-inches
Curb & Gutter	B618 (design speed < 45 mph) B418 (design speed 45 mph or greater)

Sub-base	In place granular or thickness of select granular as determined by City Engineer

3. BOULEVARD

Boulevard Width – Low Vol. Residential	5-feet minimum (or directly adjacent walk)
Boulevard Width – Collector/Arterial	8-feet minimum (or directly adjacent walk)
Minimum Cross Slope	2 %
Maximum Cross Slope	6 %

4. SIDEWALKS AND TRAILS

Sidewalks Width	6-feet Minimum for SF Residential 6-feet Minimum for Commercial/Industrial 8-feet minimum when adjacent to the curb
Sidewalk Material	4-inch Concrete main line 6-inch Concrete at driveways
Trail Width	10-feet, 8-feet Minimum if to narrow of blvd.
Trail Material	6-inch Concrete (Downtown) 3-inch Bituminous (Other Areas in ROW)
Clear Zone	18-inch Minimum
Pedestrian Ramps	Grey Cast Iron Truncated Domes Set in Concrete at all Public Street Intersections Red Cast Iron in the Downtown Area
Pavement Cross Slope	1.5 %
Maximum Grade	See current ADA design standards

5. Right of Way and Easements

Right of Way Width	See Street type table in Appendix B
Minimum Utility Easement Width	10-feet (front and rear yard) 5-feet (side yard) Residential 10-feet (side yard) Other Land Uses
Minimum Overland Drainage Easement	30-feet
Pond, Lake or Watercourse Shoreline – New Parcels	100-year HWL within drainage easement
Easements Over Interior Public Utilities	Interior utility easements only if utilities serving more than one parcel Min. width based on 1.5:1 slope to invert

6. Street Lighting – New Subdivision

Per the Land Development Code Chapter 34 Article 5 the developer shall pay the full amount of the capital costs for the installation of street lights. This includes, poles, underground wire, fixtures, and any equipment to make the lighting system operational. Xcel Energy is electric utility provider for the City of Northfield.

Residential /Commercial/Industrial Streets

Street lights shall be located at all intersections and marked mid-block cross-walk. If intersections are more than 700 feet apart a mid-block light shall be installed. For dead-end streets a light shall be installed at the end of the street. Street lights shall be installed on all sharp curves.

The LED Cobra style light listed below shall be used at all intersection and crosswalks. The LED Traditional shall be used mid-block, dead end streets, cul-de-sac, or between intersections.

LED Traditional

Displays the old-fashioned charm of traditional area lighting, enhancing any setting with distinctive styling. Downlight configuration delivers uniform and efficient illumination to pedestrian and roadway applications.
COLOR: Black Fiberglass Pole. 18' pole style "A" only, Dark Sky Friendly, 3000 Kelvin

LED Cobra

Appreciated for function and form that contributes to the safety and security of well-lit streets for your residents and business patrons.
COLOR: Black Fiberglass Pole. 30' pole style “A” only, Dark Sky Friendly, 3000 Kelvin

Arterial and Collector Streets

Street lighting along these streets is typically designed by the City. Lighting along these segments will take into account the location and context of the area. Lighting streets could be on one side or both sides of the streets.

H. LIMITATIONS

The design standards contained herein are intended to be used for the construction of new infrastructure starting from the approval date of this policy by the Northfield City Council. While the City fully intends to meet the guidelines established in this policy, there may be times when this is not feasible. Issues including, but not limited to, terrain, land use, system capacity, and other relevant issues may prevent the City from meeting the guidelines established herein. The Public Works Director may override provisions established within this policy upon documentation of the circumstances within the project file.

APPENDIX A

Northfield Standard Specifications for Construction

Copies of the following specification sections are available from the Engineering Division office.

Introductory Information

Professional Certifications
Table of Contents

32 12 36 00 – Seal Coats
32 13 14 00 – Concrete Walks, Medians, and Driveways
32 16 13 00 – Concrete Curbs and Gutters
32 17 23 00 – Pavement Markings
32 31 13 00 – Fences
32 32 23 00 – Concrete Segmental Retaining Wall
32 92 00 00 – Turf and Grasses
32 93 00 00 – Trees, Shrubs, Perennials

Division 33 – Utilities

33 05 05 00 – Trenching and Backfilling
33 10 00 00 – Water Utilities
33 12 12 00 – Water Services
33 31 00 00 – Sanitary Sewer Piping
33 31 14 00 – Sanitary Sewer Services
33 34 00 00 – Sanitary Sewer Force Mains
33 39 00 00 – Sanitary Sewer Structures
33 40 00 00 – Stormwater Utilities

Northfield Standard Detail Plates

SANITARY SEWER

SAN-1 STANDARD MANHOLE
SAN-2 STANDARD DROP SECTION MANHOLE
SAN-3 DEAD END SANITARY MANHOLE
SAN-4 WATERTIGHT MANHOLE
SAN-5 FLEXIBLE WATERTIGHT CONNECTION
SAN-6 MANHOLE STEP CASTING
SAN-7 TEMPORARY MANHOLE INSERTS

WATER

WAT-1 CONCRETE THRUST BLOCKING
WAT-2 HYDRANT & VALVE INSTALLATION
WAT-3 GATE VALVE & BOX INSTALLATION
WAT-4 PIPE INSULATION
WAT-5 WATER MAIN OFFSET
WAT-6 WATER MAIN AND SANITARY SEWER CROSSING

SERVICES

SER-1 SERVICE RISER SECTION
SER-2 TYPICAL HOUSE SERVICE
SER-3 SERVICE LINE CLEANOUTS
SER-4 SERVICE ABANDONMENT
SER-5 TRACE WIRE SEWER SERVICE DETAIL
SER-6 TRACE WIRE WATER SERVICE DETAIL
SER-7 TRACE WIRE SEWER MANHOLE DETAIL

SER-8 TRACE WIRE SAMPLE SEWER PLAN
SER-9 TRACE WIRE SAMPLE WATER PLAN
SER-10 TRACE WIRE HYRDANT DETAIL
SER-11 TYPICAL WATER SERVICE FOR WATERMAIN
SER-12 TYPICAL 6" WATER SERVICE

STORM SEWER

STM-1 TOP SLAB MANHOLE 48" DIA. RISER SECTION
STM-2 CATCH BASIN MANHOLE
STM-3 DRAINAGE STRUCTURE DESIGN SPECIAL
STM-4 CATCH BASIN WITH BEEHIVE STYLE CASTING
STM-5 ENERGY DISSIPATER AND TRASH GUARD
STM-6 DRAIN TILE TRENCH DETAIL
STM-7 DRAIN TILE CLEANOUT
STM-8 FLARED END SECTION WITH TRASH GUARD
STM-9 RIPRAP AT OUTLETS
STM-10 CATCH BASIN BOXOUT
STM-11 FLARED END SECTION WITH SHEET PILING
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PIPE BEDDING
BED-1 BEDDING METHODS FOR RCP OR DIP
BED-2 BEDDING METHODS FOR PVC
BED-3 DETERMINATION OF ROCK QUANTITIES

STREETS

STR-1 RESIDENTIAL & MULTI-FAMILY DRIVEWAY ENTRANCE WITH BOULEVARD SIDEWALK
STR-2 RESIDENTAIL, MULTI-FAMILY & COMMERCIAL DRIVEWAYS FOR EXISTING 4' APRON WITHOUT BOULEVARD SIDEWALK
STR-3 COMMERCIAL ENTRANCE WITHOUT BOULEVARD SIDEWALK
STR-4 COMMERCIAL ENTRANCE WITH BOULEVARD SIDEWALK
STR-5 TYPICAL STREET SECTION
STR-6 B618 CURB SECTION
STR-7 CONCRETE VALLEY GUTTER
STR-8 TYPICAL INTERSECTION
STR-9 BITUMINOUS PATHWAY
STR-10 TYPICAL CONCRETE STREET SECTION
STR-11 SIGN POST EMBEDMENT ASSEMBLY
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GENERAL

GEN-1 RETAINING WALL DETAIL
GEN-2 RESIDENTIAL CONCRETE STEPS & HANDRAIL
GEN-3 MAIL BOX INSTALLATION
EROSION CONTROL
ERO-1 ROCK CONSTRUCTION ENTRANCE
ERO-2 SILT FENCE INSTALLATION
ERO-3 INLET PROTECTION ROCK BAG
ERO-4 INLET PROECTION ROCK FILTER FOR CATCH BASIN DURING ROAD CONSTRUCTION
ERO-5 PERFORATED WALL INLET PROTECTION
ERO-6 EROSION CONTROL BLANKET INSTALLATION

ERO-7 BIOROLL DITCH CHECK TEMPORARY SEDIMENT CONTROL
ERO-8 BACK OF CURB PERIMETER CONTROL
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STANDARD PLAN 2 OF 6
STANDARD PLAN 3 OF 6
STANDARD PLAN 4 OF 6
STANDARD PLAN 5 OF 6
STANDARD PLAN 6 OF 6

APPENDIX B

Northfield Street Type Table

STREET TYPE TABLE UPDATE

March 2019 | *City of Northfield Pedestrian, Bike, and Trail System Update*

OVERVIEW

Toole Design was asked to review and update the Street Type Table in the City of Northfield's Land Development Code (LDC). The purpose of this update is to:

A) Incorporate Complete Streets principles into the table, and
B) Simplify the table and add clarity to its application.

In developing this update, Toole Design coordinated with the City of Northfield Public Works Director, Streets and Parks Manager, City Planner, Planning Commission members, and Park Board members. The decision was collectively made to simplify the table by reducing the influence of functional classification (arterial, collector, local roads) and increasing the influence of place type and land use context of each street.

The updated street type table consolidates several functional classification variations of each street type that were included in the previous table. The update contains two components:

1. Updated street type table that includes ranges of appropriate values that can apply to multiple functional classifications and variations in context.
2. Individual street type profiles to provide additional guidance on street design.

APPROACH

The approach to updating the street types and values shown on the table was to consider the context and design of existing streets in Northfield, and to consider the probable development context and patterns that might occur in the next 10 to 20 years. It is likely that the City will restripe, repave, reconstruct, or widen more miles of existing streets in the next few decades than it will build completely new roadways. The street types were therefore refined to reflect the various ways that existing street corridors can and should be reconfigured, enhanced, or redeveloped in the future, while also being flexible enough to apply to new roadways.

The greatest change between the original street type table and this update is that the Drive street type is fundamentally different in the updated street type table. Whereas before it appeared to be used in situations where one side of the roadway was urbanized and the other was rural, in this update it is a two-lane street that falls between the major streets (Parkway and Avenue) and minor streets (Street and Main Street) that are appropriate in developed portions of the city. The updated street type table also includes a 'target speed' for each street type. Target speed is the speed that people are expected to drive, it does not necessarily refer to the speed limit of the roadway. Achieving target speed depends on the selected design speed of the roadway and the posted speed limit.

UPDATED STREET TYPE TABLE

Street Type	Compatible Contexts	Function	Candidate Streets	Functional Classification	Typical Traffic Volume	Target Speed[1]	Typical Right-of-Way Widths[2]	Reaction Space[3]	Sidewalk / Off-street path	Boulevard	Shoulder / Parking	On-Street Bikeway[4]	Travel Lanes	Median / Center Turn Lanes
Parkway	Rural Urban/Rural Transition Park & Open Space Locations with deep setbacks	Throughput-focused	2nd Ave NW, Hwy 19 (9th Street West), Hwy 3	Principal & Minor Arterial	4,000+ AADT	35 mph or higher	100'-180'	2'	10'-12' off-street path (one or both sides)	16'-20'	6'-8' shoulder	n/a (shoulder)	10'-12' lanes (1 or 2 per direction)	16'-30' Median (with 2' curb offset on each side)
Avenue	Commercial Residential Downtown	Throughput/access balanced	Water Street/Hwy 3 (North of Hwy 19), Jefferson Pkwy	Principal & Minor Arterial, Major Collector	4,000+ AADT	25-30 mph	100'-150'	2'	6'-8' sidewalk (both sides)	7'-12'	n/a	6'-8' Bike lanes[5]	10'-11' Lanes (1 or 2 per direction)	16'-18' Median (with 1' curb offset on each side) or 12'-13' CTL
Drive	Commercial Residential	Throughput/access balanced	Woodley Street, Greenville Ave	Minor Arterial, Major Collector	Up to 6,000 AADT	25[6] mph	80'-90'	1'	6' sidewalk (both sides)	7'-10'	7'-8' parallel parking	6'-8' Bike lanes	10'-11' lanes	Not typical (10'-13' CTL optional)
Road	Rural Urban/Rural Transition Park & Open Space Locations with deep setbacks	Throughput-focused	Dresden Ave, Spring Creek Rd	Minor Arterial, Major & Minor Collector, Local	Up to 4,000 AADT	30-35 mph	60'-90'	1'[6]	10'-12' off-street path (one side)	6'-20'[7]	Not typical (4'-6' optional)	n/a (optional shoulder)	12' lanes	Not typical (12'-15' optional)
Street	Commercial Residential	Access-focused	Water St South, St Olaf Ave	Major & Minor Collector, Local	Up to 1,000 AADT	25[8] mph	50'-66'	1'	5'-6' sidewalk (both sides)	7'-10'	7' un-delineated parallel parking (one or both sides)	n/a	16'-20' feet total[9]	n/a
Main Street	Downtown Mixed Use	Access-focused	Downtown streets	Major & Minor Collector, Local	Up to 2,000 AADT	25[8] mph	70'-80'	0'	8'-10' sidewalk (both sides)	6'-10'[10]	7'-8' parallel parking (16' reverse angle optional on one side)	Shared lane markings	20'-22' feet total	n/a

The street type table provides guidance on street design cross sections. It does not address intersection design guidelines or any type of street crossing guidelines. The street type table is to be used for guidance purposes only, and its recommendations do not preclude other street design enhancements that may improve safety and comfort for all street users.

[1] Target speed is the speed that people are expected to drive. Achieving target speed depends on the selected design speed of the roadway and the posted speed limit.
[2] Right-of-way width ranges represent typical widths; widths may vary.
[3] Reaction space may be provided as a setback outside of the roadway right-of-way.
[4] On-street bikeways may include bicycle lanes, buffered bicycle lanes, advisory bicycle lanes, separated bicycle lanes, and bicycle boulevards. Bikeway facility type should be determined on a case by case basis. Generally, if the on-street bikeway width is greater than 6 feet, the portion over 6 feet should be a striped buffer or vertical separation.
[5] Separated bike lanes or off-street paths are recommended; facility type selected depends on available right-of-way space and other design considerations.
[6] Reaction space is only required on the side of the street that a sidewalk or off-street path is provided.
[7] Boulevards on Roads should only be narrower than 12 feet when between the roadway and a 10-foot wide off-street path.
[8] The default speed limit in Minnesota is 30 mph. Adopting a lower target speed does not require lowering the speed limit. Rather, street design characteristics can be incorporated to encourage people to drive closer to 25 mph.
[9] Streets and Main Streets do not have marked lane lines. The width shown is the total width of the portion of the roadway dedicated to two-way travel. The total pavement width of a Street in residential areas should not exceed 30 feet.
[10] Furnishing area to include street trees, street lights, benches, bicycle parking, trash/recycling cans, etc. At least 8 feet is needed for cafe seating. These amenities can also be placed in curb extensions that replace one or more on-street parking spaces.

Northfield

Street Type Table Update

TOOLE DESIGN

PARKWAY

	Reaction	Off-street path / Sidewalk	Boulevard	Shoulder	Travel Lanes[1]	Median	Travel Lanes[2]	Shoulder	Boulevard	Off-street path / Sidewalk	Reaction
Default Layout	2'	10' – 12'	16' – 20'	6 – 8'	10'-12' each (1 or 2 lanes)	18' – 30' (with 2' curb offsets)	10'-12' each (1 or 2 lanes)	6 – 8'	16' – 20'	10' – 12'	2'
Alternative Layout	"	12'	" "	" "	" "	" "	" "	8'	" "	6'	"

DESCRIPTION

Parkways extend through or along natural areas or large parks where there is a desire to maintain or create a park-like feel to the street. Elements often include wide planted medians, and shared use paths alongside the road instead of sidewalks. Parkway design should focus on minimizing impacts to the adjacent natural areas and maintaining the park-like character.

STREET DESIGN NOTES

- The number of lanes should be determined based on traffic volume and intersection capacity. One travel lane in each direction with a median or center turn lane can easily accommodate 15,000 ADT or more.
- Off-street paths are recommended on both sides of the street. If an off-street path is only provided on one side, the side selected should be based on connectivity to existing bicycle network and destinations in the area.
- Default minimum width for a shared use path is 10'. A width of 8' is acceptable in constrained situations.
- Left and right turn lanes at intersections may results in narrower median and boulevard space to accommodate extra lane width. If left and right turn lanes are present, consider pedestrian refuge islands between the right turn lanes and through lanes to minimize crossing distances for people walking.
- On-street bicycle lanes and/or parking lanes may be included in limited situations.

STREET FEATURES

- Adjacent to parks and other natural areas
- Shared use paths instead of sidewalks
- Wide, planted medians
- Target speed: 35 mph or higher

CANDIDATE STREETS IN NORTHFIELD

- 2nd Ave NW
- Highway 19 (5th Street West)
- Highway 3
- Jefferson Parkway

City Of Northfield Minnesota

Street Type Table Update

TOOLE DESIGN

AVENUE

	Reaction	Sidewalk	Boulevard	Bike Lane	Travel Lanes[1]	Median	Travel Lanes[1]	Bike Lane	Boulevard	Sidewalk	Reaction
Default Layout	2'	6'	7' – 12'	6 – 8'	10'-11' each (1 or 2 lanes)	16' – 18' (with 1' curb offsets)	10'-11' each (1 or 2 lanes)	6 – 8'	7' – 12'	6'	2'
Example Alternative Layout	"	8'	" "	" "	" "	12' – 13' Center Turn Lane	" "	" "	" "	8'	"

DESCRIPTION

Avenues are streets that balance access and throughput and often traverse commercial areas and neighborhoods. They have high volumes of motor vehicles and moderate to high volumes of people walking. While they are essential to the flow of people across the city, the needs of people passing through must be balanced with the needs of those who live and work along the street.

STREET FEATURES

- Mix of commercial and residential land use
- Median or center turn lane
- Sidewalks on both sides of the street
- On-street bikeways
- Target speed: 25-30 mph

STREET DESIGN NOTES

- The number of lanes should be determined based on traffic volume and intersection capacity. One travel lane in each direction with a median or center turn lane can easily accommodate 15,000 ADT or more.
- Left and right turn lanes at intersections may result in narrower median and boulevard space to accommodate extra lane width. If left and right turn lanes are present, consider pedestrian refuge islands between the right turn lanes and through lanes to minimize crossing distances for people walking.
- Wider sidewalks (e.g., 8 feet) should be provided where retail abuts the right-of-way.
- Bicycle lanes with physical separation recommended. Standard or buffered bike lanes may be appropriate at speeds up to 35 mph. Bike lanes should be continuous through all intersections. At right turn lanes, use protected intersection designs or provide high-visibility mixing zones.
- Bike lane widths do not include the gutter pan; the widths shown are in addition to the street gutter.

CANDIDATE STREETS IN NORTHFIELD

- Water Street/Highway 3 (North of Hwy 19)

City of Northfield Minnesota

Street Type Table Update

TOOLE DESIGN

DRIVE

	Reaction	Sidewalk	Boulevard	Parking	Bike Lane	Travel Lanes	Bike Lane	Parking	Boulevard	Sidewalk	Reaction
Default Layout	1'	6'	7' – 10'	7' – 8'	6' – 8'	11' – 12' each (one lane in each direction)	6' – 8'	7' – 8'	7' – 10'	6'	1'
Example Alternative Layout	"	"	"	None	"	11' – 12' each (one lane in each direction) Plus 10-13' center turn lane	"	None	"	"	"

DESCRIPTION

Drives are streets that balance access and throughput and typically traverse neighborhoods while providing access to commercial areas and downtown. They provide continuous walking and bicycling routes. While they are essential to the flow of people across the city, the needs of people passing through must be balanced with the needs of those who live and work along the street.

STREET FEATURES

- Primarily in residential areas, but often connecting to commercial
- On-street parking
- Sidewalks on both sides of the street
- On-street bikeways
- Target speed: 25 mph

STREET DESIGN NOTES

- Continuous center turn lanes or left turn lanes at higher-volume intersections may be provided. In these cases, it may be necessary to remove on-street parking.
- Minimize crossing distances for walking across intersections. If left and right turn lanes are present, consider pedestrian refuge islands between the right turn lanes and through lanes.
- Bike lane widths do not include the gutter pan; the widths shown are in addition to the street gutter. Bike lanes should be continuous through all intersections. At right turn lanes, provide high-visibility mixing zones.
- Bicycle lanes with physical separation (separated bicycle lanes) may be appropriate depending on the context.

CANDIDATE STREETS IN NORTHFIELD

- Woodley Ave
- Greenville Ave

City of Northfield Minnesota

Street Type Table Update

TOOLE DESIGN

ROAD

	Reaction	Off-street path	Boulevard	Travel Lanes[2]	Boulevard [3]	Reaction
Default Layout	1'	10' – 12'	6' – 10'	12' each (one lane in each direction)	12' – 20'	0'
Example Alternative Layout	"	" "	" "	12' each (one lane in each direction)	6' – 10' Boulevard 10' Off-street path	1'
Example Alternative Layout	"	" "	" "	12' each (one lane in each direction) with 4' – 6' shoulders	12' – 20'	0'

DESCRIPTION

Roads have rural cross sections and run through agricultural, low-density residential, open space, and other contexts with deep development setbacks from the roadway. They emphasize throughput but still provide access to neighborhoods and parks.

STREET FEATURES

- Adjacent to parks and other natural areas
- An off-street path instead of a sidewalk on one or both sides
- Do not have paved shoulders
- Wide boulevards that provide open drainage
- Target speed: 30-35 mph

STREET DESIGN NOTES

- The side of the road the off-street path is located on should be planned based on connectivity to existing bicycle network and destinations in the area.
- Default minimum width for a shared use path is 10'. A width of 8' is acceptable in constrained situations.
- Street trees are typically not provided in the boulevard since this is an area dedicated to open drainage. However, street trees can be provided if width allows and/or if storm sewer is present.

CANDIDATE STREETS IN NORTHFIELD

- Dresden Avenue
- Spring Creek Road

Street Type Table Update

STREET

	Reaction	Sidewalk	Boulevard	Travel Lanes	Parking	Boulevard	Sidewalk	Reaction
Default Layout	1'	5' – 6'	7' – 10'	16' – 20' total	7' One Side	7' – 10'	5 – 6'	1'
Example Alternative Layout	"	" "	" "	" "	7' Both Sides	" "	" "	"

DESCRIPTION

Streets serve mostly residential areas and some commercial areas with low levels of motor vehicle traffic and moderate to high levels of walking and bicycling. Most, but not all, 'Streets' in Northfield have sidewalks and offer on-street parking. Most 'Streets' have parking on only one side of the street, and some have parking on both sides. Design for 'Streets' should focus on encouraging slow speeds, safety for people walking, healthy street trees, and well-defined routes to nearby parks, transit, and schools.

STREET FEATURES

- Residential land uses; some commercial
- On-street parking (unstriped/undelineated)
- Low motor vehicle speeds and volumes
- Medium to heavy walking and bicycling, especially during weekends and in evenings
- Target speed: 25 mph

STREET DESIGN NOTES

- No painted centerline. Widths shown in the table under "travel lanes" is the combined width of the two bi-directional lanes.
- The default 'Street' only provides parking on one side of the street. Parking should only be provided on both sides if both sides are regularly occupied.
- Streets may be designed to be bicycle boulevards, with traffic calming elements, pavement markings, and signage indicating the bicycle boulevards.
- May include curb extensions (at intersections or midblock) in place of one or two on-street parking spaces in order to calm traffic. Curb extensions should be designed to ensure that they do not interfere with on-street bikeways.
- Other traffic calming treatments such as mini traffic circles and speed humps can be considered.

CANDIDATE STREETS IN NORTHFIELD

- Water Street S
- St Olaf Ave

City Of Northfield Minnesota

Street Type Table Update

TOOLE DESIGN

MAIN STREET

	Sidewalk	Boulevard	Parking	Travel Lanes	Parking	Boulevard	Sidewalk
Default Layout	8 – 10'	5 – 10'	16' (reverse angle parking)	20' – 22' total	7' – 8'	5 – 10'	8 – 10'
Example Alternative Layout	" "	" "	7' – 8'	20' total plus 5' – 6' bike lanes	" "	" "	" "

DESCRIPTION

Main Streets are located in the downtown core. In addition to conveying traffic, they are popular destinations. They have moderate motor vehicle volumes and high volumes of people walking. These streets may host a variety of uses such as farmers' markets, street fairs, and community gatherings. Typically, Main Streets have angled parking, parallel parking, or a mix. Reverse angle parking is safer, especially for people bicycling.

STREET DESIGN NOTES

- No painted centerline. The width shown under "travel lanes" in the table is the total width of the bidirectional travelway.
- On Main Streets, the boulevard is a furnishing area, which includes street trees, street lights, benches, bicycle parking, trash/recycling cans, etc. At least 8 feet is needed for café seating. These amenities can also be placed in curb extensions that replace one or more on-street parking spaces.
- Due to the low speeds and traffic volumes, shared bicycle lanes may be appropriate. Alternatively, bike lanes can be provided, though this may reduce on-street parking capacity.

STREET FEATURES

- Wide sidewalks and high volumes of people walking
- On-street parking is common
- Enhanced streetscapes with street trees and street furniture
- Medium to high density; buildings located close to the street
- Access-focused
- Target speed: 25 mph

CANDIDATE STREETS IN NORTHFIELD

- All streets in downtown core

City of Northfield Minnesota

Street Type Table Update

TOOLE DESIGN

CONSULTANT SERVICE CONTRACT

This Contract is made this ___ day of _____ 2023, by and between the CITY OF NORTHFIELD, a Minnesota municipal corporation, 801 Washington Street, Northfield, MN 55057, ("CITY"), and_____, a corporation under the laws of the State of Minnesota, _____("CONSULTANT"); (collectively the "PARTIES").

WHEREAS, CITY requires certain professional services in conjunction with the _____ (the "Project"); and

WHEREAS, CONSULTANT agrees to furnish the various professional services required by CITY.

NOW, THEREFORE, in consideration of the mutual covenants and promises contained herein, the Parties agree as follows:

SECTION I – CONSULTANT'S SERVICES AND RESPONSIBILITIES

A. **Scope of Services.** CONSULTANT agrees to perform various Project services as detailed in Exhibit 1, Scope of Services, attached hereto and incorporated herein by reference.

B. **Changes to Scope of Services/Additional Services.** Upon mutual agreement of the PARTIES hereto pursuant to Section VI, Paragraph K of this Contract, a change to the scope of services detailed in Exhibit 1, attached hereto, may be authorized. In the event that such a change to the scope of services detailed in Exhibit 1, attached hereto, requires additional services by CONSULTANT, CONSULTANT shall be entitled to additional compensation consistent with Section III of this Contract. CONSULTANT shall give notice to CITY of any additional services prior to furnishing such additional services. CITY may request an estimate of additional cost from CONSULTANT, and upon receipt of the request, CONSULTANT shall furnish such cost estimate, prior to CITY's authorization of the changed scope of services.

C. **Changed Conditions.** If CONSULTANT determines that any services it has been directed or requested to perform by CITY are beyond the scope of services detailed in Exhibit 1, attached hereto, or that, due to changed conditions or changes in the method or manner of administration of the Project, CONSULTANT's effort required to perform its services under this Contract exceeds the estimate which formed the basis for CONSULTANT's compensation, CONSULTANT shall promptly notify CITY of that fact. Upon mutual agreement of the PARTIES hereto pursuant to Section VI, Paragraph K of this Contract, additional compensation for such services, and/or an extension of time for completion thereof, may be authorized. In the absence of such a mutual agreement, amounts of compensation and time for completion shall be equitably adjusted, provided that CONSULTANT first provides notice to CITY as required by this Paragraph and

CITY has not terminated this Contract pursuant to Section IV, Paragraph B.

D. **Standard of Care.** Services provided by CONSULTANT or its subcontractors and/or sub-consultants under this Contract will be conducted in a manner consistent with that level of care and skill ordinarily exercised by members of CONSULTANT's profession or industry. CONSULTANT shall be liable to the fullest extent permitted under applicable law, without limitation, for any injuries, loss, or damages proximately caused by CONSULTANT's breach of this standard of care. CONSULTANT shall put forth reasonable efforts to complete its duties in a timely manner. CONSULTANT shall not be responsible for delays caused by factors beyond its control or that could not be reasonably foreseen at the time of execution of this Contract. CONSULTANT shall be responsible for costs, delays or damages arising from unreasonable delays in the performance of its duties.

E. **Insurance.** CONSULTANT shall not commence work under this Contract until CONSULTANT has obtained all insurance required herein and such insurance has been approved by CITY, nor shall CONSULTANT allow any subcontractor to commence work on a subcontract until such subcontractor has obtained like insurance covering as to worker's compensation, liability, and automobile insurance. All this insurance coverage shall be maintained throughout the life of this Contract.

1. CONSULTANT agrees to procure and maintain, at CONSULTANT's expense, statutory Workers' Compensation coverage. Except as provided below, CONSULTANT must provide Workers' Compensation insurance for all its employees. If Minnesota Statutes, section 176.041 exempts CONSULTANT from Workers' Compensation insurance or if CONSULTANT has no employees in the City, CONSULTANT must provide a written statement, signed by an authorized representative, indicating the qualifying exemption that excludes CONSULTANT from the Minnesota Workers' Compensation requirements. If during the course of the Contract CONSULTANT becomes eligible for Workers' Compensation, CONSULTANT must comply with the Workers' Compensation insurance requirements herein and provide CITY with a certificate of insurance.

2. CONSULTANT agrees to procure and maintain, at CONSULTANT's expense, Commercial General Liability ("CGL") and business automobile liability insurance coverages insuring CONSULTANT against claims for bodily injury or death, or for damage to property, including loss of use, which may arise out of operations by CONSULTANT or by any subcontractor or by anyone employed by any of them or by anyone for whose acts any of them may be liable (including automobile use). The following coverages shall, at a minimum, be included in the CGL insurance: Premises and Operations Bodily Injury and Property Damage, Personal and Advertising Injury, Blanket Contractual Liability, and Products and Ongoing and Completed Operations Liability. The required automobile liability coverage must include coverage for "any auto" which extends coverage to owned autos, non-owned autos, and hired autos. Such insurance shall include, but not be limited to, minimum coverages and limits of liability specified in this Paragraph,

or required by law. CITY shall have additional insured status and be listed by name on an endorsement attached to such policy(ies) for the services provided under this Contract and shall provide that CONSULTANT's coverage shall be primary and noncontributory in the event of a loss.

3. CONSULTANT agrees to procure and maintain, at CONSULTANT's expense, the following insurance policies, including the minimum coverages and limits of liability specified below, or as specified in the applicable insurance certificate(s), or as required by law, whichever is greater:

Worker's Compensation	Statutory Limits
Employer's Liability	$500,000 bodily injury by accident $500,000 bodily injury by disease aggregate $500,000 bodily injury by disease per employee
Commercial General Liability	$2,000,000 property damage and bodily injury per occurrence $4,000,000 annual aggregate $2,000,000 annual aggregate Products – Completed Operations
Automobile Liability	$1,000,000 per occurrence combined single limit for Bodily Injury and Property Damage (shall include coverage for all owned, hired and non-owned vehicles
Umbrella or Excess Liability	$1,000,000

4. Professional/Technical (Errors and Omissions) Liability Insurance. CONSULTANT agrees to procure and maintain, at CONSULTANT's expense, Professional/Technical (Errors and Omissions) Liability Insurance. The required policy will provide coverage for all claims CONSULTANT may become legally obligated to pay resulting from any actual or alleged negligent act, error, or omission related to CONSULTANT's professional services required under the contract. CONSULTANT is required to carry the following minimum limits: $2,000,000 – per wrongful act or occurrence; $4,000,000 – annual aggregate; or as specified in the applicable insurance certificate(s), or as required by law, whichever is greater. Any deductible will be the sole responsibility of CONSULTANT and may not exceed $50,000 without the written approval of CITY. If CONSULTANT desires authority from CITY to have a deductible in a higher amount, CONSULTANT shall so request in writing, specifying the amount

of the desired deductible and providing financial documentation by submitting the most current audited financial statements so that CITY can ascertain the ability of CONSULTANT to cover the deductible from its own resources. The retroactive or prior acts date of such coverage shall not be after the effective date of this contract and CONSULTANT shall maintain such insurance for a period of at least three (3) years, following completion of the work. If such insurance is discontinued, extended reporting period coverage must be obtained by CONSULTANT to fulfill this requirement.

5. Technology Errors and Omissions Insurance. CONSULTANT agrees to procure and maintain, at CONSULTANT's expense, Technology Errors and Omissions Insurance. The required policy will provide coverage for all claims CONSULTANT may become legally obligated to pay, including but not limited to infringement of copyright, trademark, trade dress, invasion of privacy violations, information theft, damage to or destruction of electronic information, release of private information, alteration of electronic information, cloud computing, extortion and network security. CONSULTANT is required to carry the following minimum limits: $2,000,000 – per occurrence; $4,000,000 – annual aggregate; or as specified in the applicable insurance certificate(s), or as required by law, whichever is greater.

6. True, accurate and current certificates of insurance, showing evidence of the required insurance coverages, are hereby provided to CITY by CONSULTANT and are attached hereto as Exhibit 2.

7. Any insurance limits in excess of the minimum limits specified herein above shall be available to CITY.

8. CONSULTANT’s insurance policies and certificate(s) shall not be cancelled without at least thirty (30) days’ advance written notice to CITY, or Ten (10) days’ prior written notice to CITY for nonpayment of premium.

9. CONSULTANT’s policies shall be primary insurance and noncontributory to any other valid and collectible insurance available to CITY with respect to any claim arising out of CONSULTANT’s performance under this Contract.

10. CONSULTANT is responsible for payment of Contract related insurance premiums and deductibles. If CONSULTANT is self-insured, a Certificate of Self-Insurance must be attached.

11. CONSULTANT shall ensure that all subcontractors comply with the insurance provisions contained in this Contract and such insurance is maintained as specified.

12. CONSULTANT’s policies shall include legal defense fees in addition to its liability policy limits, with the exception of the professional liability insurance

and technology errors and omissions insurance, if applicable.

13. All policies listed above, except professional liability insurance (or other coverage not reasonably available on an occurrence basis), shall be written on a per "occurrence" basis ("claims made" and "modified occurrence" forms are not acceptable) and shall apply on a "per project" basis.

14. CONSULTANT shall obtain insurance policies from insurance companies having an "AM BEST" rating of A- (minus); Financial Size Category (FSC) VII or better, and authorized to do business in the State of Minnesota, or as approved by CITY.

15. Effect of Failure to Provide Insurance. If CONSULTANT fails to provide the specified insurance, then CONSULTANT will defend, indemnify and hold harmless CITY and CITY's officials, agents and employees from any loss, claim, liability and expense (including reasonable attorney's fees and expenses of litigation) to the extent necessary to afford the same protection as would have been provided by the specified insurance. Except to the extent prohibited by law, this indemnity applies regardless of any strict liability or negligence attributable to CITY (including sole negligence) and regardless of the extent to which the underlying occurrence (i.e., the event giving rise to a claim which would have been covered by the specified insurance) is attributable to the negligent or otherwise wrongful act or omission (including breach of contract) of CONSULTANT, its subcontractors, agents, employees or delegates. CONSULTANT agrees that this indemnity shall be construed and applied in favor of indemnification. CONSULTANT also agrees that if applicable law limits or precludes any aspect of this indemnity, then the indemnity will be considered limited only to the extent necessary to comply with that applicable law. The stated indemnity continues until all applicable statutes of limitation have run.

    If a claim arises within the scope of the stated indemnity, CITY may require CONSULTANT to:

    a. Furnish and pay for a surety bond, satisfactory to CITY, guaranteeing performance of the indemnity obligation; or

    b. Furnish a written acceptance of tender of defense and indemnity from CONSULTANT's insurance company.

    CONSULTANT will take the action required by CITY within Fifteen (15) days of receiving notice from CITY.

16. Notwithstanding the foregoing, CITY reserves the right to immediately terminate this Contract if CONSULTANT is not in compliance with the insurance requirements contained herein and retains all rights to pursue any legal remedies against CONSULTANT.

SECTION II – CITY'S RESPONSIBILITIES

CITY shall promptly compensate CONSULTANT as services are performed to the satisfaction of the CITY's Public Works Director/City Engineer, in accordance with Section III of this Contract.

A. CITY shall provide access to any and all previously acquired information relevant to the scope of services detailed in Exhibit 1, attached hereto, in its custody to CONSULTANT for its use, at CONSULTANT's request.

B. CITY will, to the fullest extent possible, grant access to and make all provisions for entry upon both public and private property as necessary for CONSULTANT's performance of the services detailed in Exhibit 1, attached hereto.

C. David Bennett, P.E., CITY's Public Works Director/City Engineer, shall serve as the liaison person to act as CITY's representative with respect to services to be rendered under this Contract. Said representative shall have the authority to transmit instructions, receive instructions, receive information, interpret and define CITY's policies with respect to the Project and CONSULTANT's services. Such person shall be the primary contact person between CITY and CONSULTANT with respect to the services from CONSULTANT under this Contract. CITY reserves the right to substitute the authorized contact person at any time and shall notify CONSULTANT thereof.

SECTION III – CONSIDERATION

A. **Fees.** CITY will compensate CONSULTANT as detailed in Exhibit 3, Compensation, which is attached hereto and incorporated herein by reference, for CONSULTANT's performance of services under this Contract.

B. If CITY fails to make any payment due CONSULTANT for services performed to the satisfaction of the CITY's Public Works Director/City Engineer and expenses within thirty days after the date of CONSULTANT's invoice, CONSULTANT may, after giving seven days written notice to CITY, and without waiving any claim or right against CITY and without incurring liability whatsoever to CITY, suspend services and withhold project deliverables due under this Contract until CONSULTANT has been paid in full all amounts due for services, expenses and charges.

SECTION IV – TERM AND TERMINATION

A. **Term. Term.** This Contract shall be in effect until such time as the Project is completed, _____, or as otherwise provided in this Contract, whichever comes first.

B. **Termination.** This Contract may be terminated by either PARTY for any reason or for convenience by either PARTY upon Seven (7) days written notice. In the event of termination, CITY shall be obligated to CONSULTANT for payment of amounts due and

owing including payment for services performed or furnished to the date and time of termination, computed in accordance with Section III of this Contract.

C. **Default.** If CONSULTANT fails to satisfy any of the provisions of this Contract, or so fails to perform and/or administer the services detailed in Exhibit 1, attached hereto, pursuant to the requirements of Section I of this Contract, in such a manner as to endanger the performance of the Contract or the services provided hereunder, this shall constitute default. Unless CONSULTANT's default is excused by CITY, CITY may, upon written notice, immediately cancel this Contract or exercise any other rights or remedies available to CITY under this Contract or law. In the event of CONSULTANT's default, CONSULTANT shall be liable to CITY for any and all costs, disbursements, attorneys and consultant fees reasonably incurred by CITY in enforcing this Contract.

D. **Suspension of Work.** If any work performed by CONSULTANT is abandoned or suspended in whole or in part by CITY, CONSULTANT shall be paid for any services performed to the satisfaction of the CITY's Public Works Director/City Engineer prior to CONSULTANT's receipt of written notice from CITY of such abandonment or suspension, but in no event shall the total of CITY's payments to CONSULTANT under this Contract be required to exceed a percentage of the total contract price (calculated by either the Contract price or the maximum price set forth in Exhibit 3, attached hereto) equivalent to the percentage of the scope of services completed by CONSULTANT to the satisfaction of the CITY's Public Works Director/City Engineer as determined by CITY.

SECTION V – INDEMNIFICATION

A. CONSULTANT shall indemnify, protect, save, and hold harmless CITY, and its respective officers, directors, employees and members and agents, from and against any claims, liability, damages, costs, judgments, or expenses, including reasonable attorney's fees, to the extent attributable to or caused by the negligent or otherwise wrongful acts or omissions, including breach of a specific contractual duty, of CONSULTANT or CONSULTANT's independent contractors, subcontractors, agents, employees, vendors or delegates with respect to this Contract or the Project. CONSULTANT shall defend CITY against the foregoing, or litigation in connection with the foregoing, at CONSULTANT's expense, with counsel reasonably acceptable to CITY, except that for professional liability claims, CONSULTANT shall have no upfront duty to defend CITY, but shall reimburse defense costs to CITY to the same extent of CONSUTANT'S indemnity obligation herein. CITY, at its expense, shall have the right to participate in the defense of any claims or litigation and shall have the right to approve any settlement, which approval shall not be unreasonably withheld. The indemnification provision of this Section shall not apply to damages or other losses proximately caused by or resulting from the negligence or willful misconduct of CITY. All indemnification obligations shall survive termination, expiration or cancellation of this Contract. CONSULTANT agrees, that in order to protect itself and CITY under the indemnity provisions set forth above, it will at all times during the term of this Contract keep in force policies of insurances required in the Paragraph entitled, "Insurance." Nothing in this Contract shall be construed to waive any immunities or limitations to which CITY is entitled under Minn.

Stat. Chapter 466 or otherwise.

B. CITY shall indemnify protect, save, and hold harmless CONSULTANT, and its respective officers, directors, employees and members and agents, from and against any claims, liability, damages, costs, judgments, or expenses, including reasonable attorney's fees, to the extent attributable to or caused by the negligent or otherwise wrongful acts or omissions of CITY or its agents, employees, contractors or subcontractors with respect to CITY's performance of its obligations under this Contract. CITY shall defend CONSULTANT against the foregoing, or litigation in connection with the foregoing, at CITY's expense. CONSULTANT, at its expense, shall have the right to participate in the defense of any Claims or litigation. The indemnification provision of this Section shall not apply to damages or other losses proximately caused by or resulting from the negligence or willful misconduct of CONSULTANT. All indemnification obligations shall survive termination, expiration or cancellation of this Contract.

C. Nothing contained in this Contract shall create a contractual relationship with or a cause of action in favor of a third party against CITY or CONSULTANT. CONSULTANT's services under this Contract are being performed solely for CITY's benefit, and no other entity shall have any claim against CONSULTANT because of this Contract or the performance or nonperformance of services provided hereunder.

SECTION VI – GENERAL TERMS

A. **Voluntary and Knowing Action.** The PARTIES, by executing this Contract, state that they have carefully read this Contract and understand fully the contents hereof; that in executing this Contract they voluntarily accept all terms described in this Contract without duress, coercion, undue influence, or otherwise, and that they intend to be legally bound hereby.

B. **Authorized Signatories.** The PARTIES each represent and warrant to the other that (1) the persons signing this Contract are authorized signatories for the entities represented, and (2) no further approvals, actions or ratifications are needed for the full enforceability of this Contract against it; each PARTY indemnifies and holds the other harmless against any breach of the foregoing representation and warranty.

C. **Notices**. All notices and other communications required or permitted under this Contract shall be in writing, and hand delivered or sent by registered or certified mail, return-receipt requested, postage prepaid, or by overnight delivery service and shall be effective upon receipt at the following addresses or as either PARTY shall have notified the other PARTY. The PARTIES' representatives for notification for all purposes are:

CITY:

_____
_____
_____
_____
_____

CONSULTANT:

_____
_____
_____
_____
_____

D. **Dispute Resolution**. CITY and CONSULTANT agree to negotiate all disputes between them in good faith for a period of Thirty (30) days from the date of notice of dispute prior to proceeding to formal dispute resolution or exercising their rights under law.

E. **Electronic/Digital Data**. Because of the potential instability of electronic/digital data and susceptibility to unauthorized changes, copies of documents that may be relied upon by CITY are limited to the printed copies (also known as hard copies) that are signed or sealed by CONSULTANT. Except for electronic/digital data which is specifically identified as a Project deliverable by this Contract or except as otherwise explicitly provided in this Contract, all electronic/digital data developed by CONSULTANT as part of the Project is acknowledged to be an internal working document for CONSULTANT's purposes solely and any such information provided to CITY shall be on an "as is" basis strictly for the convenience of CITY without any warranties of any kind. In the event of any conflict between a hard copy document and the electronic/digital data, the hard copy document governs. The electronic/digital data shall be prepared in the current software in use by CONSULTANT and is not warranted to be compatible with other systems or software.

F. **Opinions or Estimates of Construction Cost**. Where provided by CONSULTANT as part of Exhibit 1 or otherwise, opinions or estimates of construction cost will generally be based upon public construction cost information. Since CONSULTANT has no control over the cost of labor, materials, competitive bidding process, weather conditions and other factors affecting the cost of construction, all cost estimates are opinions for general information of CITY and CONSULTANT does not warrant or guarantee the accuracy of construction cost opinions or estimates. CITY acknowledges that costs for project financing should be based upon contracted construction costs with appropriate contingencies.

G. **Independent Contractor Status.** CONSULTANT, at all times and for all purposes hereunder, shall be an independent contractor and is not an employee of CITY for any purpose. No statement contained in this Contract shall be construed so as to find CONSULTANT to be an employee of CITY, and CONSULTANT shall not be entitled to any of the rights, privileges, or benefits of employees of CITY, including but not limited to, workers' compensation, health/death benefits, and indemnification for third-party personal injury/property damage claims. CONSULTANT acknowledges that no withholding or deduction for State or Federal income taxes, FICA, FUTA, or otherwise, will be made from the payments due CONSULTANT, and that it is CONSULTANT's sole obligation to comply with the applicable provisions of all Federal and State tax laws. CONSULTANT shall at all times be free to exercise initiative, judgment and discretion as to how to best perform or provide services identified herein. CONSULTANT is responsible for hiring sufficient workers to perform the services/duties required by this Contract, withholding their taxes and paying all other employment tax obligations on their behalf.

H. **Acceptance of Deliverables.** Each deliverable shall be subject to a verification of acceptability by CITY to ensure such deliverable satisfies stated requirements. The acceptability of any deliverable will be based on CITY's satisfaction or non-satisfaction with the deliverable based on requirements of this Contract. If any deliverable is not acceptable, CITY will notify CONSULTANT specifying reasons in reasonable detail, and CONSULTANT will, at no additional cost, conform the deliverable to stated requirements of this Contract.

I. **Subcontracting.** CONSULTANT shall not enter into any subcontract for performance of any services contemplated under this Contract without the prior written approval of CITY. CONSULTANT shall be responsible for the performance of all subcontractors and/or sub-consultants. As required by Minn. Stat. § 471.425, CONSULTANT must pay all subcontractors, less any retainage, within Ten (10) calendar days of CONSULTANT's receipt of payment from CITY for undisputed services provided by the subcontractor(s) and must pay interest at the rate of one and one half percent per month or any part of a month to the subcontractor(s) on any undisputed amount not paid on time to the subcontractor(s).

J. **Assignment.** This Contract may not be assigned by either PARTY without the written consent of the other PARTY.

K. **Modifications/Amendment.** Any alterations, variations, modifications, amendments or waivers of the provisions of this Contract shall only be valid when they have been reduced to writing, and signed by authorized representative of CITY and CONSULTANT.

L. **Records—Availability and Retention.** Pursuant to Minn. Stat. § 16C.05, subd. 5, CONSULTANT agrees that CITY, the State Auditor, or any of their duly authorized representatives at any time during normal business hours and as often as they may reasonably deem necessary, shall have access to and the right to examine, audit, excerpt,

and transcribe any books, documents, papers, records, etc., which are pertinent to the accounting practices and procedures of CONSULTANT and involve transactions relating to this Contract. CONSULTANT agrees to maintain these records for a period of six years from the date of termination of this Contract.

M. **Force Majeure**. The PARTIES shall each be excused from performance under this Contract while and to the extent that either of them are unable to perform, for any cause beyond its reasonable control. Such causes shall include, but not be restricted to fire, storm, flood, earthquake, explosion, war, total or partial failure of transportation or delivery facilities, raw materials or supplies, interruption of utilities or power, and any act of government or military authority. In the event either PARTY is rendered unable wholly or in part by force majeure to carry out its obligations under this Contract then the PARTY affected by force majeure shall give written notice with explanation to the other PARTY immediately.

N. **Compliance with Laws.** CONSULTANT shall abide by all Federal, State and local laws, statutes, ordinances, rules and regulations now in effect or hereinafter adopted pertaining to this Contract or to the facilities, programs and staff for which CONSULTANT is responsible.

O. **Covenant Against Contingent Fee.** CONSULTANT warrants that it has not employed or retained any company or person, other than a bona fide employee working solely for CONSULTANT to solicit or secure this Contract, and that it has not paid or agreed to pay any company or person, other than a bona fide employee, any fee, commission, percentage, brokerage fee, gift or any other consideration, contingent upon or resulting from award or making of this Contract.

P. **Covenant Against Vendor Interest.** CONSULTANT warrants that it is not employed by any vendor of equipment or service provider that could result in a commission, percentage, brokerage, or contingent fee as a result of CONSULTANT's association with CITY.

Q. **Non-Discrimination.** The provisions of any applicable law or ordinance relating to civil rights and discrimination shall be considered part of this Contract as if fully set forth herein.

R. **Interest by City Officials.** No elected official, officer, or employee of CITY shall during his or her tenure or employment and for one year thereafter, have any interest, direct or indirect, in this Contract or the proceeds thereof.

S. **Work Product.** All materials such as reports, exhibits, models, graphics, computer files, maps, charts, and supporting documentation produced under work authorized by this Contract ("Materials") shall become the property of CITY upon completion of the work. CITY may use the information for the Project for which they were prepared. Such use by CITY shall not relieve any liability on the part of CONSULTANT. Notwithstanding any of the foregoing to the contrary; (a) CONSULTANT may reuse standard details of its Materials in the normal course of its business; and (b) CITY understands that the Materials

have been prepared for a specific project, and are not intended to be reused for other purposes. If CITY reuses the Materials for any other purpose, CITY waives any claims against CONSULTANT arising from such reuse and agrees to defend and indemnify CONSULTANT from any claims arising from such reuse.

Governing Law. This Contract shall be deemed to have been made and accepted in Rice County, Minnesota, and the laws of the State of Minnesota shall govern any interpretations or constructions of the Contract without regard to its choice of law or conflict of laws principles.

T. **Data Practices.** The PARTIES acknowledge that this Contract is subject to the requirements of Minnesota's Government Data Practices Act (Act), Minnesota Statutes, Section 13.01 *et seq.* CONSULTANT agrees to abide by the applicable provisions of the Act, HIPAA requirements and all other applicable state or federal rules, regulations or orders pertaining to privacy or confidentiality. CONSULTANT understands that all of the data created, collected, received, stored, used, maintained or disseminated by CONSULTANT in performing those functions that the CITY would perform is subject to the requirements of the Act, and CONSULTANT must comply with those requirements as if it were a government entity. This does not create a duty on the part of CONSULTANT to provide the public with access to public data if the public data is available from the CITY, except as required by the terms of this Contract.

U. **No Waiver.** Any PARTY's failure in any one or more instances to insist upon strict performance of any of the terms and conditions of this Contract or to exercise any right herein conferred shall not be construed as a waiver or relinquishment of that right or of that PARTY's right to assert or rely upon the terms and conditions of this Contract. Any express waiver of a term of this Contract shall not be binding and effective unless made in writing and properly executed by the waiving PARTY.

V. **Data Disclosure**. Under Minn. Stat. § 270C.65, Subd. 3 and other applicable law, CONSULTANT consents to disclosure of its social security number, federal employer tax identification number, and/or Minnesota tax identification number, already provided to CITY, to federal and state agencies and state personnel involved in the payment of CITY obligations. These identification numbers may be used in the enforcement of federal and state laws which could result in action requiring CONSULTANT to file state tax returns, pay delinquent state tax liabilities, if any, or pay other CITY liabilities.

W. **Patented Devices, Materials and Processes**. If this Contract requires, or CONSULTANT desires, the use of any design, device, material or process covered by letters, patent or copyright, trademark or trade name, CONSULTANT shall provide for such use by suitable legal agreement with the patentee or owner and a copy of said agreement shall be filed with CITY. If no such agreement is made or filed as noted, CONSULTANT shall indemnify and hold harmless CITY from any and all claims for infringement by reason of the use of any such patented designed, device, material or process, or any trademark or trade name or copyright in connection with the services agreed to be performed under the Contract, and shall indemnify and defend CITY for any

costs, liability, expenses and attorney's fees that result from any such infringement.

X. **Mechanic's Liens.** CONSULTANT hereby covenants and agrees that CONSULTANT will not permit or allow any mechanic's or materialman's liens to be placed on CITY's interest in the Property that is the subject of the Project during the term hereof. Notwithstanding the previous sentence, however, in the event any such lien shall be so placed on CITY's interest, CONSULTANT shall take all steps necessary to see that it is removed within thirty (30) days of its being filed; provided, however, that CONSULTANT may contest any such lien provided CONSULTANT first posts a surety bond, in favor of and insuring CITY, in an amount equal to 125% of the amount of any such lien.

Y. **Construction Observation.** CONSULTANT shall visit the project at appropriate intervals during construction to become familiar with the progress and quality of the contractors' work and to determine if the work is proceeding in general accordance with the Project plans and specifications, and shall be responsible for notifying CITY of any errors or omissions in contractor's work or any deviations in the contractor's work from the Project plans and specifications developed by CONSULTANT.

Z. **Severability.** The invalidity or unenforceability of any provision of this Contract shall not affect the validity or enforceability of any other provision. Any invalid or unenforceable provision shall be deemed severed from this Contract to the extent of its invalidity or unenforceability, and this Contract shall be construed and enforced as if the Contract did not contain that particular provision to the extent of its invalidity or unenforceability.

AA. **Entire Contract.** These terms and conditions constitute the entire Contract between the PARTIES regarding the subject matter hereof. All discussions and negotiations are deemed merged in this Contract.

BB. **Headings and Captions.** Headings and captions contained in this Contract are for convenience only and are not intended to alter any of the provisions of this Contract and shall not be used for the interpretation of the validity of the Contract or any provision hereof.

CC. **Survivability**. All covenants, indemnities, guarantees, releases, representations and warranties by any PARTY or PARTIES, and any undischarged obligations of CITY and CONSULTANT arising prior to the expiration of this Contract (whether by completion or earlier termination), shall survive such expiration.

DD. **Execution**. This Contract may be executed simultaneously in two or more counterparts that, when taken together, shall be deemed an original and constitute one and the same document. The signature of any PARTY to the counterpart shall be deemed a signature to the Contract, and may be appended to, any other counterpart. Facsimile and email transmissions of executed signature pages shall be deemed as originals and sufficient to bind the executing PARTY.

Remainder of page intentionally left blank.

SECTION VII –SIGNATURES

IN WITNESS WHEREOF, the PARTIES have hereunto executed this document the day and year first above written.

CONSULTANT: _____

By: _____ Date: _____
(Signature)
Title: _____
Print Name: _____

By: _____ Date: _____
(Signature)
Title: _____
Print Name: _____

CITY OF NORTHFIELD:

By: _____ Date: _____
Rhonda Pownell, Its Mayor

By: _____ Date: _____
Lynette Peterson, Its City Clerk

EXHIBIT 1

SCOPE OF SERVICES

Subject to the terms of this Contract, CONSULTANT shall perform the following services:

EXHIBIT 2

CERTIFICATES OF REQUIRED INSURANCE COVERAGES

[*Certificates of Insurance attached hereto*]

EXHIBIT 3

COMPENSATION

Subject to the limitations set forth in this Exhibit, CITY will compensate CONSULTANT in accordance with the schedule of fees below for the time spent in performance of services under this Contract, provided that under no circumstances shall CONSULTANT's total charges to CITY, including expenses, exceed $_____ ("maximum price"), unless such charges in excess of the maximum price are authorized in writing by the Public Works Director/City Engineer before they are incurred by CITY.

CITY will make periodic payment to CONSULTANT upon billing at intervals not more often than monthly at the rates specified in the schedule of fees included herein, provided that no bill/invoice submitted to CITY shall exceed a percentage of the maximum price equivalent to the percentage of the scope of services completed by CONSULTANT to the satisfaction of the Public Works Director/City Engineer as determined by CITY.

CITY shall be entitled to withhold five percent (5%) of the maximum price until such time as CONSULTANT has fully performed the scope of services detailed in Exhibit 1 to the satisfaction of the Public Works Director/City Engineer.

In no event shall the total of CITY's payments to CONSULTANT under this Contract be required to exceed a percentage of the maximum price equivalent to the percentage of the scope of services completed by CONSULTANT to the satisfaction of the Public Works Director/City Engineer.

Schedule of Fees