



9th Street/10th Street Corridor

Capital City Bikeway Interim Design Study

Summary of Engineering Recommendations // Report 4/22/20

Public Hearing Date: 5/6/20

Project

The *Capital City Bikeway Interim Design Study* builds off the [Capital City Bikeway Study Network Study and Design Guide](#), completed in 2016 and adopted by City Council in 2017, which identified a network of streets in downtown Saint Paul for future protected bikeways. The interim design study takes the network development a step further by developing, evaluating, and recommending interim designs for two corridors of the Capital City Bikeway network:

- 9th Street/10th Street
- St. Peter Street **or** St. Peter Street/Market Street **or** Wabasha Street/ St. Peter Street

This document summarizes the engineering recommendations for the interim design of the 9th Street/10th Street corridor of the Capital City Bikeway.

Purpose

The purpose of the 9th Street/10th Street Capital City Bikeway corridor project is to provide an east-west bicycle facility across the northern half of downtown Saint Paul that connects to the existing Jackson Street bikeway and neighborhoods outside of downtown. The project aims to incorporate a protected bikeway on the corridor that provides physical separation between people biking and people driving, while focusing on safety, design, and traffic impacts. The extents of the 9th Street/10th Street corridor are between Dorothy Day Place and Broadway Street.

Initiating Action

The [Saint Paul Bicycle Plan](#) adopted the [Capital City Bikeway Network Study and Design Guide](#), which identified the 9th Street/10th Street corridor as a component of the planned bicycle network and integral to the all ages and abilities bicycle network within downtown. The *Capital City Bikeway Network Study and Design Guide* recommends protected bikeways on 10th Street between Dorothy Day Place and Jackson Street, and on 9th Street between Jackson Street and Broadway Street on the eastern edge of downtown. The City of Saint Paul Department of Public Works (Public Works) is planning a mill and overlay of 10th Street in the fall of 2020. In fall of 2019, 9th Street was overlaid without replacement of permanent pavement markings. Chapter 9 of the Saint Paul Bicycle Plan identifies incorporating bicycle facilities into larger construction or maintenance projects as the most fiscally efficient way to implement bicycle facilities, and makes the recommendation to “Incorporate implementation of bikeways with routine maintenance projects whenever possible.” To take advantage of the efficiencies associated with implementing bicycle facilities with existing maintenance projects, Public Works is proposing to implement protected bikeways on 9th Street and 10th Street as a component of the scheduled mill and overlay project.

The bikeway designs are considered “interim” because they will be at street-level and incorporated into the existing, between-the-curbs street width. The long-term vision is to develop protected bikeways at sidewalk level with physical separation between the bikeway and roadway.

Design and development of those bikeways will likely not happen until there are full street reconstruction projects along each segment.

Existing Conditions

For the purposes of this interim design study, the project corridor was categorized into three segments; 10th Street from Dorothy Day Place to Cedar Street, 10th Street from Cedar Street to Jackson Street, and 9th Street from Jackson Street to Broadway Street. The speed limit along each segment of the corridor is being lowered to 25 miles per hour (MPH) this year as part of the City of Saint Paul's new citywide speed limit changes.



Figure 1: Project corridor map

Existing Conditions

10th Street: Dorothy Day Place to Cedar Street

10th Street from Dorothy Day Place to Cedar Street has two-way motor vehicle traffic, and parking on both sides of the street between St. Peter Street and Cedar Street. The street is a Municipal State Aid Route (MSA) and is classified as an arterial street between Dorothy Day Place and Wabasha Street and as a local road between Wabasha Street and Cedar Street. Average Annual Daily Traffic (AADT) within this segment range from 3,500 to 6,900 vehicles per day (vpd).

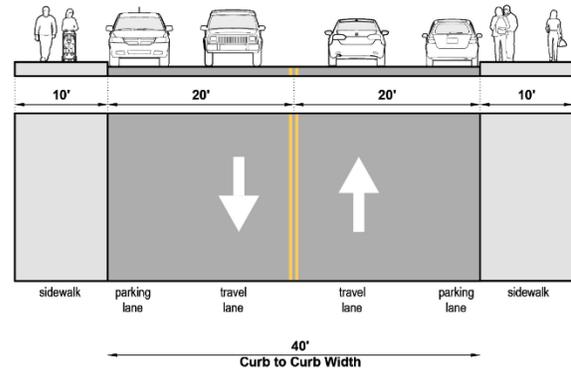


Figure 2: Existing conditions between St. Peter Street and Cedar Street. The segment between Dorothy Day Place and St. Peter Street does not have on-street parking.

10th Street: Cedar Street to Jackson Street

10th Street from Cedar Street to Jackson Street has two-way motor vehicle traffic and parking on both sides of the street. The street is classified as a major collector and a Municipal State Aid Route (MSA). AADT within this segment is 4,000 vpd.

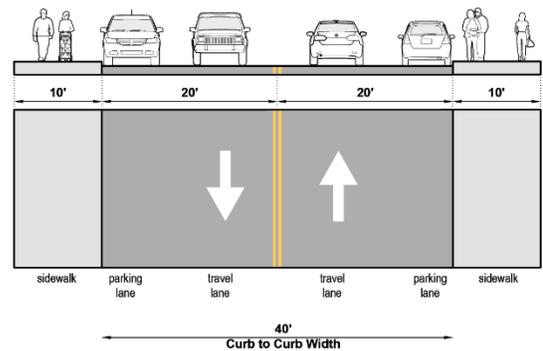


Figure 3: Existing conditions on 10th Street between Cedar Street and Jackson Street.

9th Street: Jackson Street to Broadway Street

9th Street from Jackson Street to Broadway Street has two-way motor vehicle traffic and parking on the south side of the street between Jackson Street and Wacouta Street. The street is classified as a major collector and a Municipal State Aid Route (MSA). AADT within this segment range from 2,300 to 4,650.

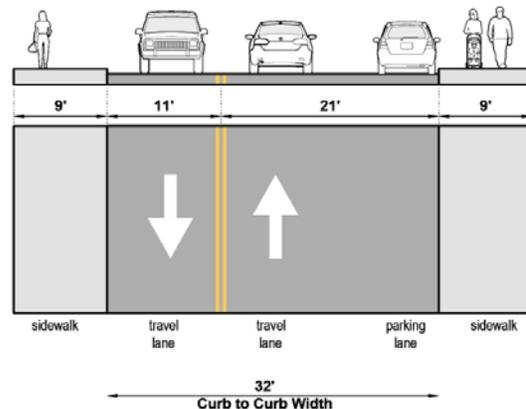


Figure 4: Existing conditions on 9th Street between Jackson Street and Wacouta Street.

Proposed Improvements

The recommended design concept varies between all three segments of the project corridor; design recommendations for each concept are described below. To view the recommended design concept layout in more detail, refer to **Appendix C**.

10th Street: Dorothy Day Place to Cedar Street

The recommended design concept for 10th Street between Dorothy Day Place and Cedar Street is a two-way protected bikeway on the south side of the street, and two-way motor vehicle traffic. The existing on-street parking between St. Peter Street and Cedar street would be removed.

Existing* (Looking East)

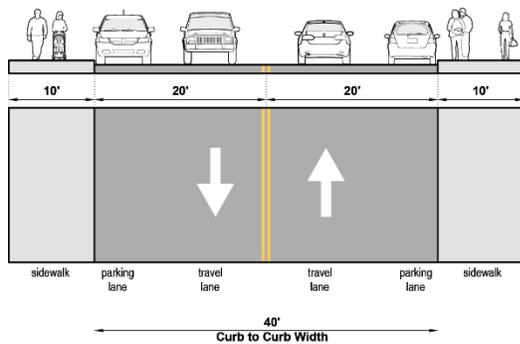


Figure 5: Existing conditions on 10th Street between St. Peter Street and Cedar Street*.

Proposed (Looking East)

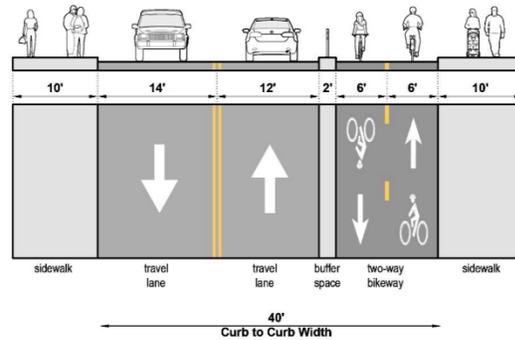


Figure 6: Proposed conditions on 10th Street between St. Peter Street and Cedar Street.

*Note: There is no existing on-street parking between Dorothy Day Place and St. Peter Street.

Reasons for recommending this design concept include:

- Maintains two-way motor vehicle access to St. Joseph's Hospital as well as for vehicles exiting off the I-94 ramp
- Less on-street parking demand on this segment
- The segment between Dorothy Day Place and St. Peter Street does not currently have on-street parking
- Community members preferred a two-way bikeway over one-way bikeways on both sides of the street

10th Street: Cedar Street to Jackson Street

The recommended design concept for 10th Street between Cedar Street and Jackson Street is a two-way bikeway on the south side of the street, one lane of one-way motor vehicle traffic (westbound), and on-street parking on the north side of the street. The existing on-street parking on the south side of the street would be removed. Adjacent land uses and site conditions were considered as part of the recommended design concept.

The primary reason for locating the two-way bikeway on the south side of 10th Street instead of the north side is because there is an existing Metro Transit bus stop in the northeast quadrant of the intersection of 10th Street and Cedar Street. Installing a two-way protected bikeway on the north side of the road would require the development of a floating bus stop (Figure 7) or moving the bus

stop onto Cedar Street. There is not sufficient space to move the bus shelter onto Cedar Street, and a floating bus stop is cost prohibitive.

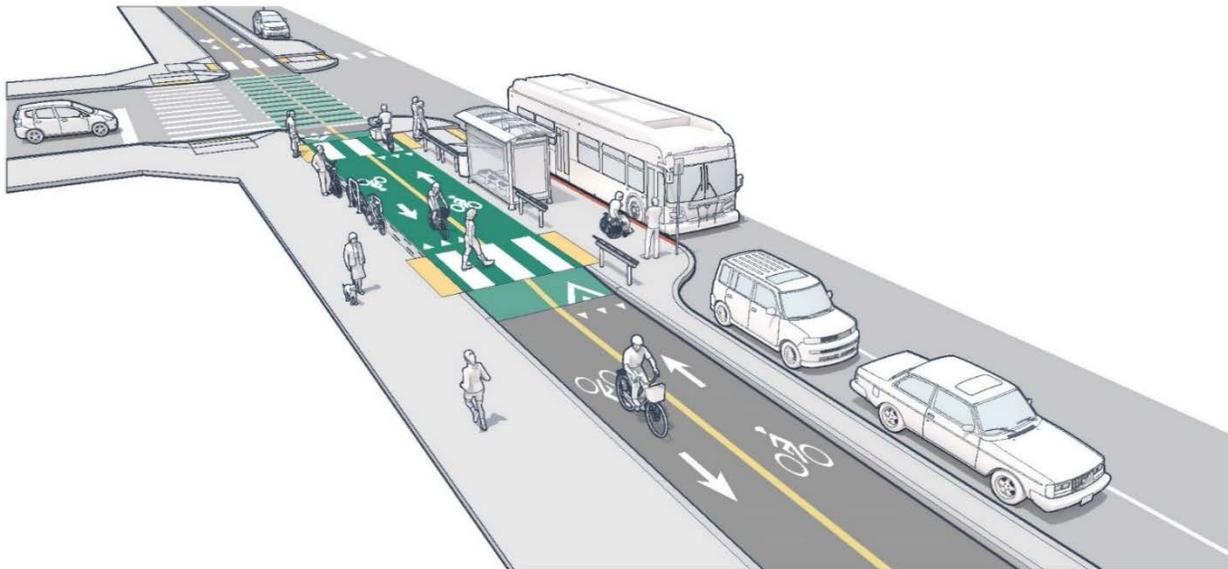


Figure 7: An illustration of a floating bus stop with a two-way protected bikeway. This design feature would be cost prohibitive, and is therefore not recommended on 10th Street for the interim design.

Existing (Looking East)

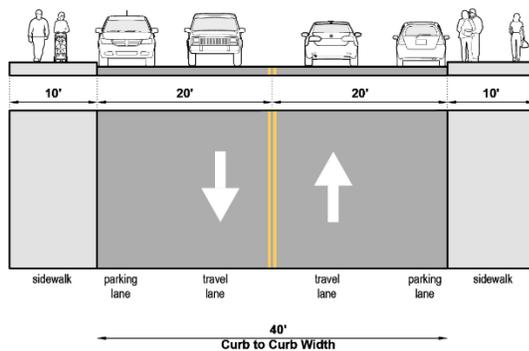


Figure 8: Existing conditions on 10th Street between Cedar Street and Jackson Street.

Proposed (Looking East)

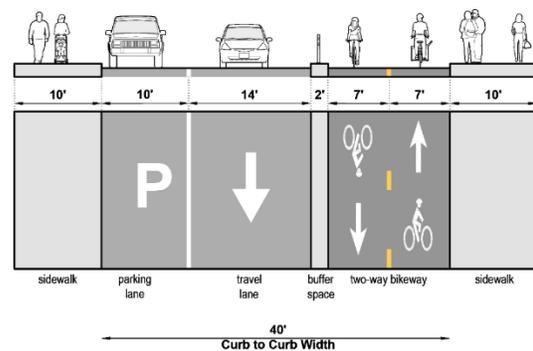


Figure 9: Proposed conditions on 10th Street between Cedar Street and Jackson Street.

Reasons for recommending this design concept include:

- Greater on-street parking demand on this segment than others
- Advantages of bikeway on the south side of 10th Street:
 - Avoids conflicts with Metro Transit bus stop east of Cedar Street
 - South side bikeway will minimize conflicts with fire vehicles
 - Simpler bikeway transition between 10th Street and Jackson Street

9th Street: Jackson Street to Broadway Street

The recommended design concept for 9th Street between Jackson Street and Broadway Street is one-way bike lanes on each side of the street and two-way motor vehicle traffic. The existing on-street parking on the south side of 9th Street would be removed.

Existing (Looking East)

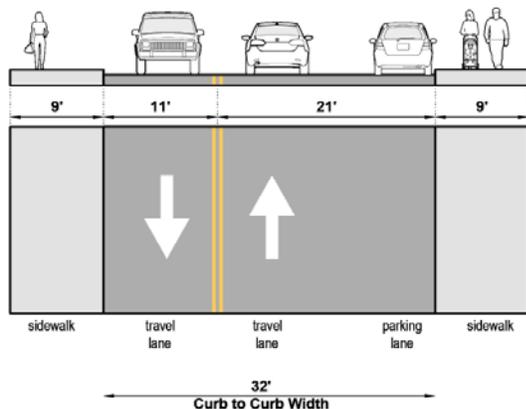


Figure 10: Existing conditions on 9th Street between Jackson Street and the I-94 Bridge.

Proposed (Looking East)*

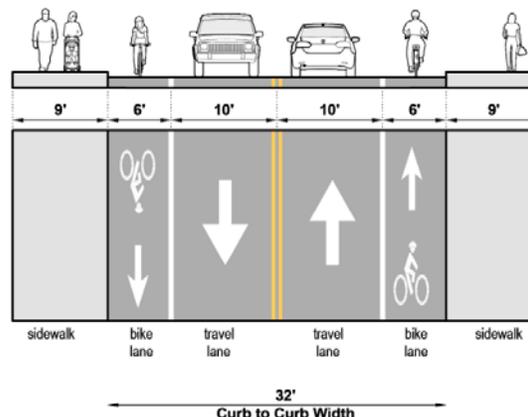


Figure 11: Proposed conditions on 9th Street between Jackson Street and the I-94 Bridge*.

* The proposed bike lanes on 9th Street east of Wacouta Street and on the bridge over I-94 include a buffer space between the bikeway and motor vehicle travel lane.

Reasons for recommending this design concept include:

- Maintains two-way motor vehicle travel
- Lower cost to implement conventional, one-way bike lanes (and bike lanes with buffer) compared to constructing a two-way protected bikeway
- Lower motor vehicle volumes on this segment compared to other two segments, thus the physically protected bike facility is less critical

Alternatives

Multiple design concept alternatives were developed for each of the three segments of the 9th Street/10th Street corridor. Each of the concepts were analyzed based on safety, traffic impacts, and other technical design criteria. The design concept alternatives for each of the three segments of the corridor are shown in **Appendix A**. Pursuing the 10th Street mill and overlay without bicycle facilities would not improve safety or comfort for people bicycling downtown, and would prevent taking advantage of the cost efficiencies associated with striping bike facilities with existing maintenance projects.

Positive Benefits

Bicyclist Safety and Comfort

Providing protected bikeways on 9th Street and 10th Street will improve the safety and comfort for people bicycling on the street, encourage predictable riding behavior, and will provide connectivity to existing bike facilities on Jackson Street and destinations on the north side of downtown.

Pedestrian Safety

Narrowing the travel lanes to accommodate bicycle facilities will minimize roadway exposure to motorized traffic for pedestrians.

Adverse Effects

Modification to On-Street Parking

To accommodate the proposed recommended bikeway facility, on-street parking removal is required for the following locations:

- North and south side of 10th Street between St Peter Street and Cedar Street
- South side of 10th Street between Cedar Street and Jackson Street
- South side of 9th Street between Jackson Street and Wacouta Street

Removal of some on-street parking will reduce overall parking capacity and may make parking less convenient for some users who frequent the above-mentioned parking locations. To capture demonstrative parking demand, our team conducted an on-street parking utilization study. Based on the parking data collected and studied, it is anticipated the remaining on-street parking spaces within the 9th Street/10th Street corridor and on adjacent side streets will be sufficient to meet observed demand. The parking utilization is attached in **Appendix B** of this document.

Modification to Circulation

The 9th Street/10th Street corridor proposed concept design recommends converting 10th Street from Cedar Street to Jackson Street from two-way motor vehicle travel to one-way westbound motor vehicle travel. Travel time on 11th Street between St. Peter Street and Jackson Street would increase slightly, approximately 15 seconds, however no additional adverse impacts to existing circulation patterns are anticipated.

Time Schedule

It is anticipated that the bicycle improvements as proposed will be installed concurrent with the planned mill and overlay on 10th Street, scheduled for Fall 2020.

Cost Estimate

\$500,000*

**Note: This is a preliminary cost estimate for the bikeway elements in the recommended design concept, such as paint, curbs, pavement markings, and bikeway signage. The cost estimate does not include costs for roadway resurfacing or engineering.*

Estimated Financing

Signing, striping, buffers and other elements specific to the bicycle facilities will be funded through Capital Improvement Bonds and Parking Fund. Improvements associated with the general roadway resurfacing will be funded through the Street Maintenance Service Program.

Source of Additional Information

For additional information, please contact:

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City Traffic Engineer, Department of Public Works

Phone: 651.266.6209

Email: randy.newton@ci.stpaul.mn.us

Summary and Recommendations

The Department of Public Works believes the project submitted herein to be necessary and feasible. The Department's Engineering Recommendation is for approval of the project as proposed.

Appendices

Attached:

Appendix A: Community Engagement Results

Appendix B: Corridor Parking Utilization

Appendix C: 9th Street/10th Street Recommended Design Concept Layout

Appendix A: Community Engagement Results

Community Engagement Overview

The project included a robust public engagement process that included public open houses, small group stakeholder meetings, and online surveys.

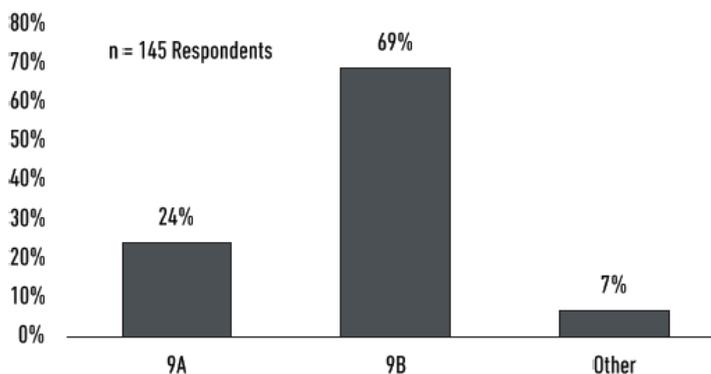
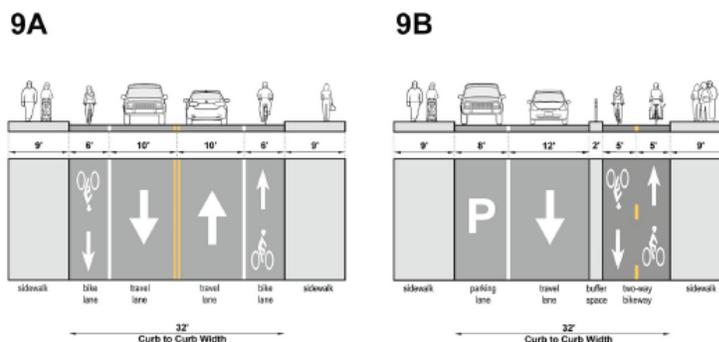
Three open houses have been held to present project information and technical analyses, as well as to solicit feedback on the proposed designs for the bikeways on 9th Street and 10th Street. Open houses were held on:

1. Thursday, May 30, 2019 at Saint Paul Fire Station 8
2. Thursday, October 10, 2019 at Osborn 370
3. Thursday, February 6, 2020 at Osborn 370

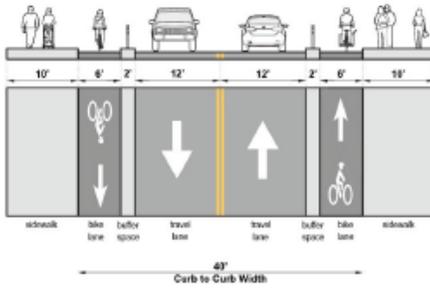
Following each of the three open houses, the project team developed online surveys to gather feedback from community members who were unable to attend the open houses in person. In general, community feedback supported the recommended design concept for the corridor. The summaries below include the information presented at each open house/online survey, as well as the feedback received from community members.

Open House #1/Online Survey #1 - May 2019

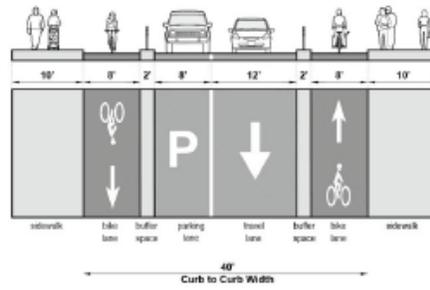
At the first project open house in May 2019, the project team presented typical cross sections of various design concepts for 9th Street and 10th Street. Two options were presented for 9th Street (Options 9A and 9B), and four options were presented for 10th Street (10A-10D). Typical cross sections are shown below in addition to the voting results from community members.



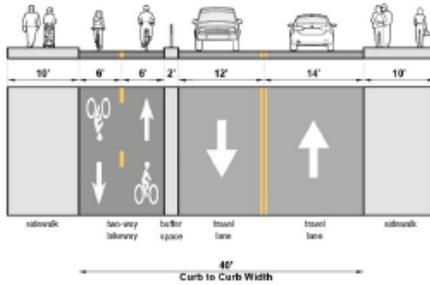
10A



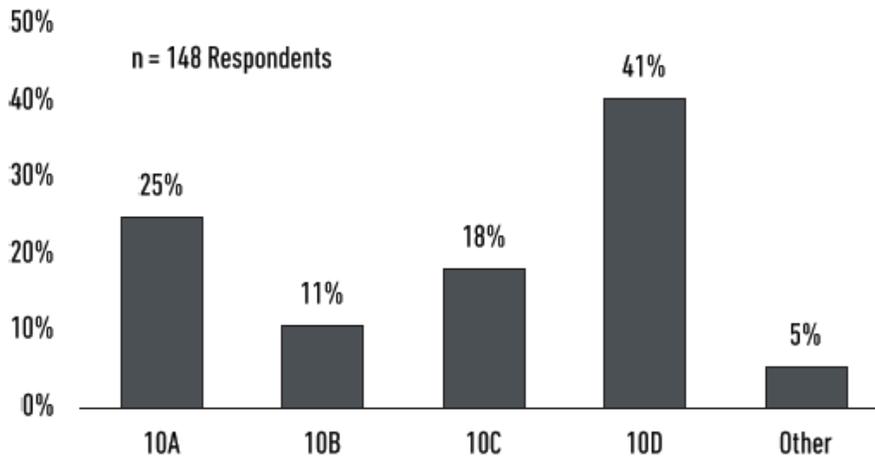
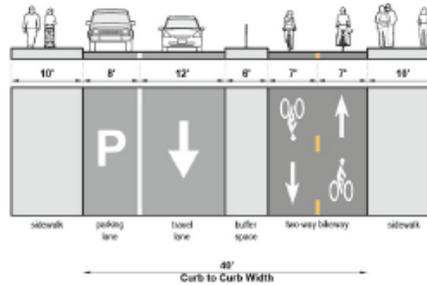
10B



10C



10D



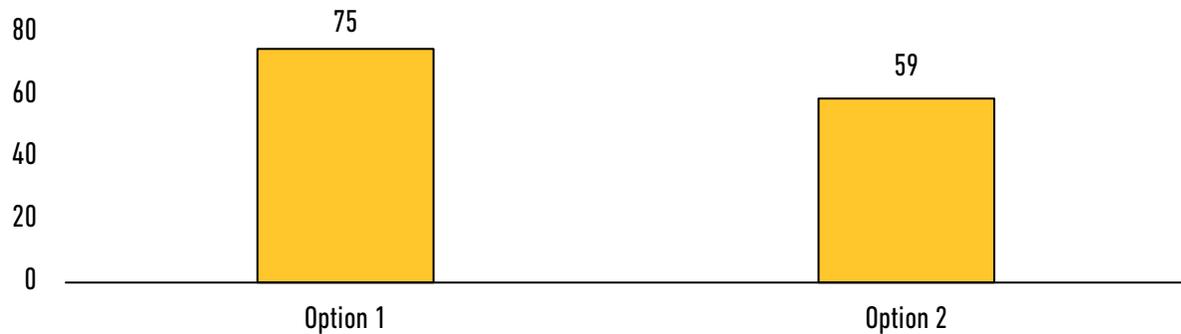
Open House #2/Online Survey #2 - October 2019

At the 2nd open house and in the 2nd online survey, participants were asked their preference on one-way and two-way motor vehicle circulation, as well to rank their preferences on various design concepts for each of the three segments of the corridor. The following pages show multiple design concepts for each of the three segments of the corridor:

- 10th Street – Dorothy Day Place to Cedar Street
- 10th Street – Cedar Street to Jackson Street
- 9th Street – Jackson Street to I-94 Bridge

9th Street & 10th Street Circulation and On-Street Parking

Open house and online survey participants were asked if they prefer two-way motor vehicle traffic with no on-street parking preserved (Option 1) or one-way motor vehicle traffic with some on-street parking preserved (Option 2). The results are shown below.



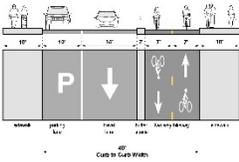
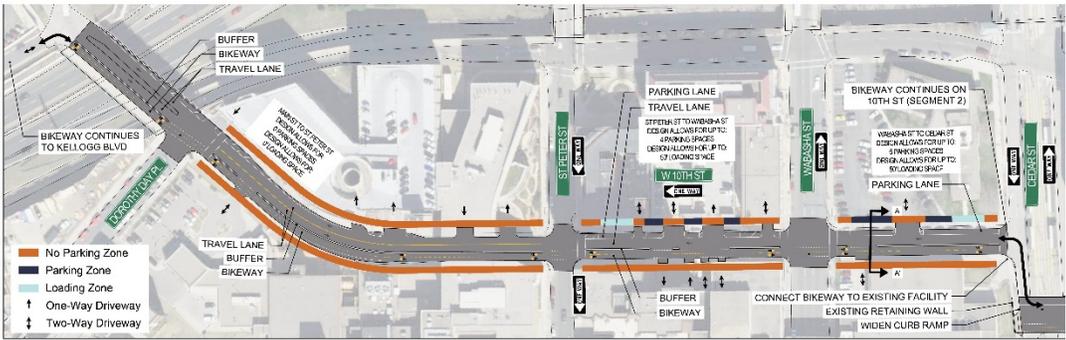
Option 1: Two-way motor vehicle traffic with no parking preserved

Option 2: One-way motor vehicle traffic with some parking preserved

10th Street – Dorothy Day Place to Cedar Street

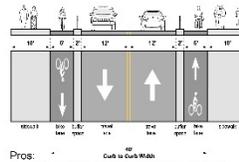
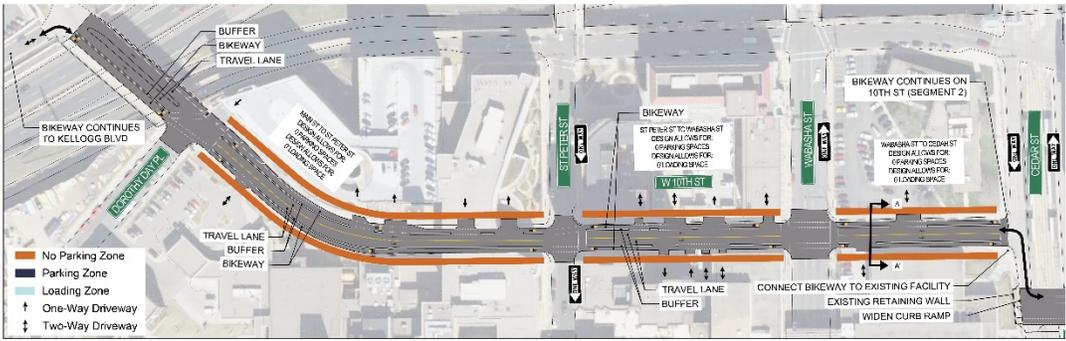
Three design concepts were presented for this segment of the corridor. Results are shown below.

CONCEPT A1: ONE-WAY STREET WITH TWO-WAY SEPARATED BIKEWAY



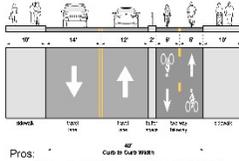
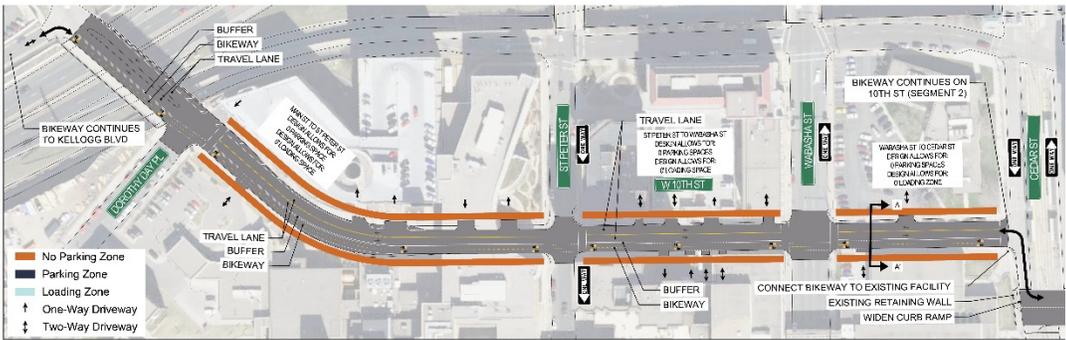
- Pros:**
- One-way roadway allows space for on-street parking and loading on one side of the street.
 - Two-way bikeway wide enough to maintain with similar equipment as roadway.
- Cons:**
- One-way roadway makes some driving routes less direct.
 - Drivers crossing bikeway must watch for gaps in bicycle traffic approaching from two directions.

CONCEPT A2: TWO-WAY STREET WITH ONE-WAY SEPARATED BIKEWAYS



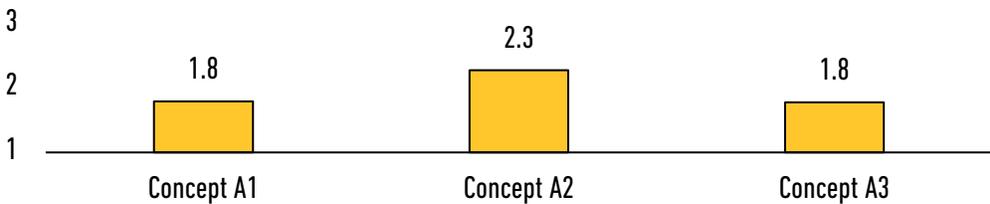
- Pros:**
- Two-way roadway provides most direct access for drivers.
- Cons:**
- Drivers crossing bikeway only need to watch for gaps in bicycle traffic approaching from one direction.
 - No space for on-street parking or loading on 10th St.
 - Narrow bikeways require the use of smaller maintenance equipment and two bikeways must be maintained instead of one.

CONCEPT A3: TWO-WAY STREET WITH TWO-WAY SEPARATED BIKEWAY



- Pros:**
- Two-way roadway provides most direct access for drivers.
 - Two-way bikeway wide enough to maintain with similar equipment as roadway.
- Cons:**
- Large vehicles may need to cross into oncoming lane to make certain turns.
 - No space for on-street parking or loading on 10th St.
 - Drivers crossing bikeway must watch for gaps in bicycle traffic approaching from two directions.

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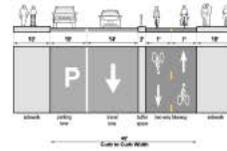


*Lowest average value indicates the preferred concept. The highest average value indicates the least preferred.

10th Street - Cedar Street to Jackson Street

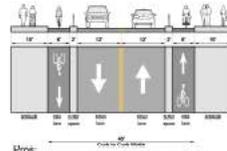
Three design concepts were presented for this segment of the corridor. Results are shown below.

CONCEPT B1: ONE-WAY STREET WITH TWO-WAY SEPARATED BIKEWAY



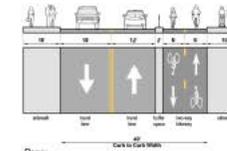
- Pros:**
- One-way roadway allows space for on-street parking and loading on one side of the street.
 - Two-way bikeway wide enough to maintain with similar equipment as roadway.
- Cons:**
- One-way roadway makes some driving routes less direct.
 - Drivers crossing bikeway must watch for gaps in bicycle traffic approaching from two directions.

CONCEPT B2: TWO-WAY STREET WITH ONE-WAY SEPARATED BIKEWAYS

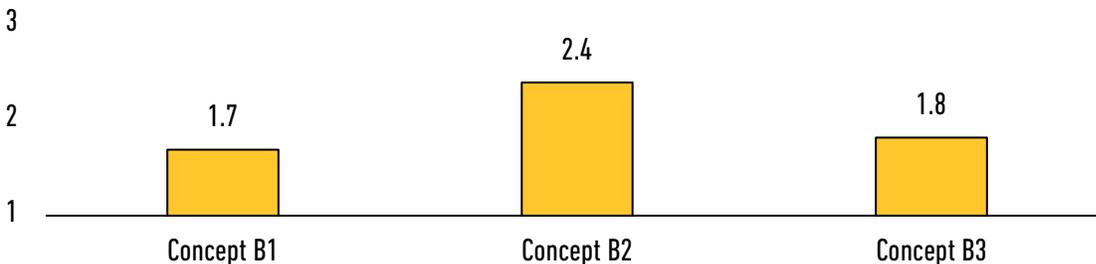


- Pros:**
- Two-way roadway provides most direct access for drivers.
 - Drivers crossing bikeway only need to watch for gaps in bicycle traffic approaching from one direction.
- Cons:**
- No space for on-street parking or loading on 10th St.
 - Narrow bikeways require the use of smaller maintenance equipment and two must be maintained instead of one.

CONCEPT B3: TWO-WAY STREET WITH TWO-WAY SEPARATED BIKEWAY



- Pros:**
- Two-way roadway provides most direct access for drivers.
 - Two-way bikeway wide enough to maintain with similar equipment as roadway.
- Cons:**
- Large vehicles may need to cross into oncoming lane to make certain turns.
 - No space for on-street parking or loading on 10th St.
 - Drivers crossing bikeway must watch for gaps in bicycle traffic approaching from two directions.

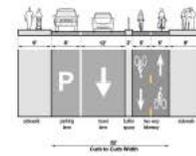
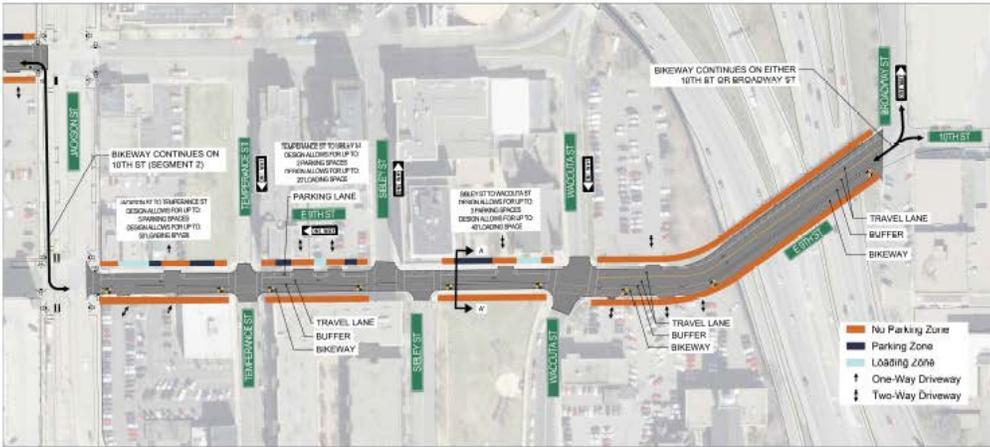


**Lowest average value indicates the preferred concept. The highest average value indicates the least preferred.*

9th Street - Jackson Street to I-94 Bridge

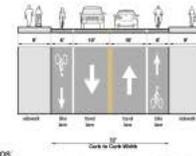
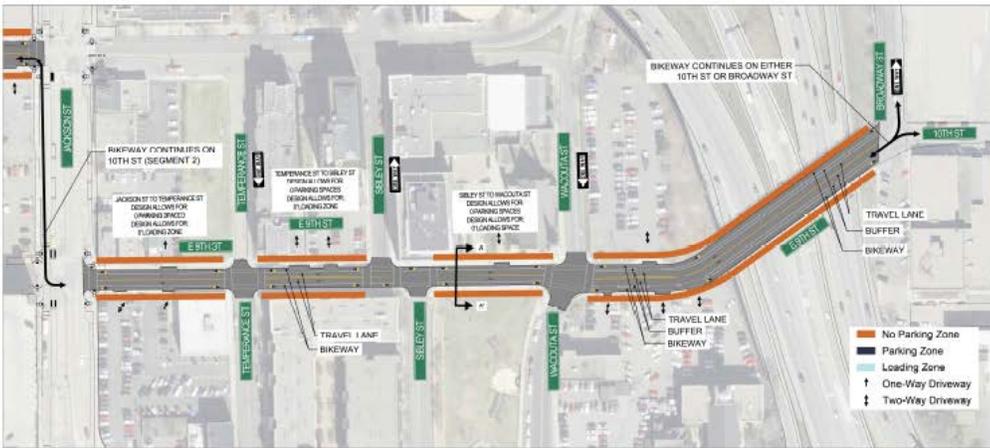
Two design concepts were presented for this segment of the corridor. Results are shown below.

CONCEPT C1: ONE-WAY STREET WITH TWO-WAY SEPARATED BIKEWAY

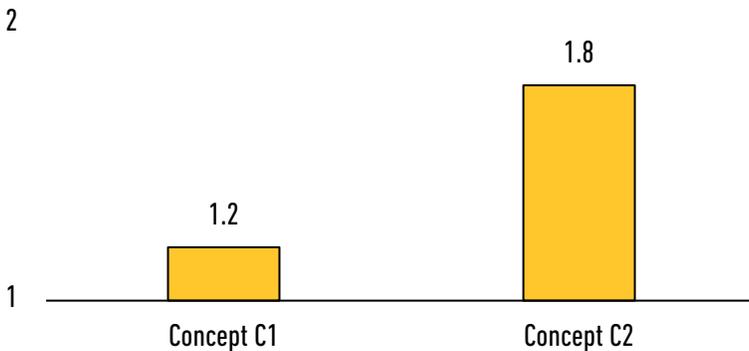


- Pros:**
- One-way roadway allows space for on-street parking and loading on one side of the street.
 - Two-way bikeway wide enough to maintain with wide range of equipment.
- Cons:**
- One-way roadway makes some driving routes less direct.
 - Drivers crossing bikeway must watch for gaps in bicycle traffic approaching from two directions.

CONCEPT C2: TWO-WAY STREET WITH ONE-WAY BIKE LANES



- Pros:**
- Two-way roadway provides most direct access for drivers.
 - Drivers crossing bikeway only need to watch for gaps in bicycle traffic approaching from one direction.
- Cons:**
- Striped bike lanes do not provide same level of safety and comfort as separated bike lanes.
 - No space for on-street parking or loading on 9th St.



**Lowest average value indicates the preferred concept. The highest average value indicates the least preferred.*

Survey Voting Breakdown

9th Street / 10th Street Corridor – Dorothy Day Place to Cedar Street

Concept	Average score	1 st place votes	2 nd place votes	3 rd place votes
Concept A1	1.8	47	13	29
Concept A2	2.3	15	29	38
Concept A3	1.8	32	37	14

9th Street / 10th Street Corridor – Cedar Street to Jackson Street

Concept	Average score	1 st place votes	2 nd place votes	3 rd place votes
Concept B1	1.7	54	10	26
Concept B2	2.4	9	30	40
Concept B3	1.8	29	39	14

9th Street / 10th Street Corridor – Jackson Street to I-94 Bridge

Concept	Average score	1 st place votes	2 nd place votes
Concept C1	1.2	75	18
Concept C2	1.8	18	64

Open House #3/Online Survey #3 - February 2020

At the third open house and in the third online survey, participants were presented the recommended design concept layout for the 9th Street/10th Street corridor. Over 60 participants provided comments at the open house, and over 180 people participated in the online survey. Due to the high volume of responses, the section below summarizes key themes from comments that were made by multiple community members.

General Comments/Questions

- Coordinate with the History Center property owners to either purchase right-of-way or obtain an easement for a wider shared use path at the Cedar Street /10th Street intersection transition
- Will the snow be removed during the winter and will the bollards be replaced if they are damaged?

Positive Comments

- The project is a great step towards connecting the Summit Avenue bike corridor with a safe route to/from downtown.
- People appreciate the willingness to incorporate street parking along the north side of 10th, which is especially important for businesses near the corridor.
- Many people support the physical buffer between the bike lanes and the motor vehicles lanes between Dorothy Day Place and Jackson Street

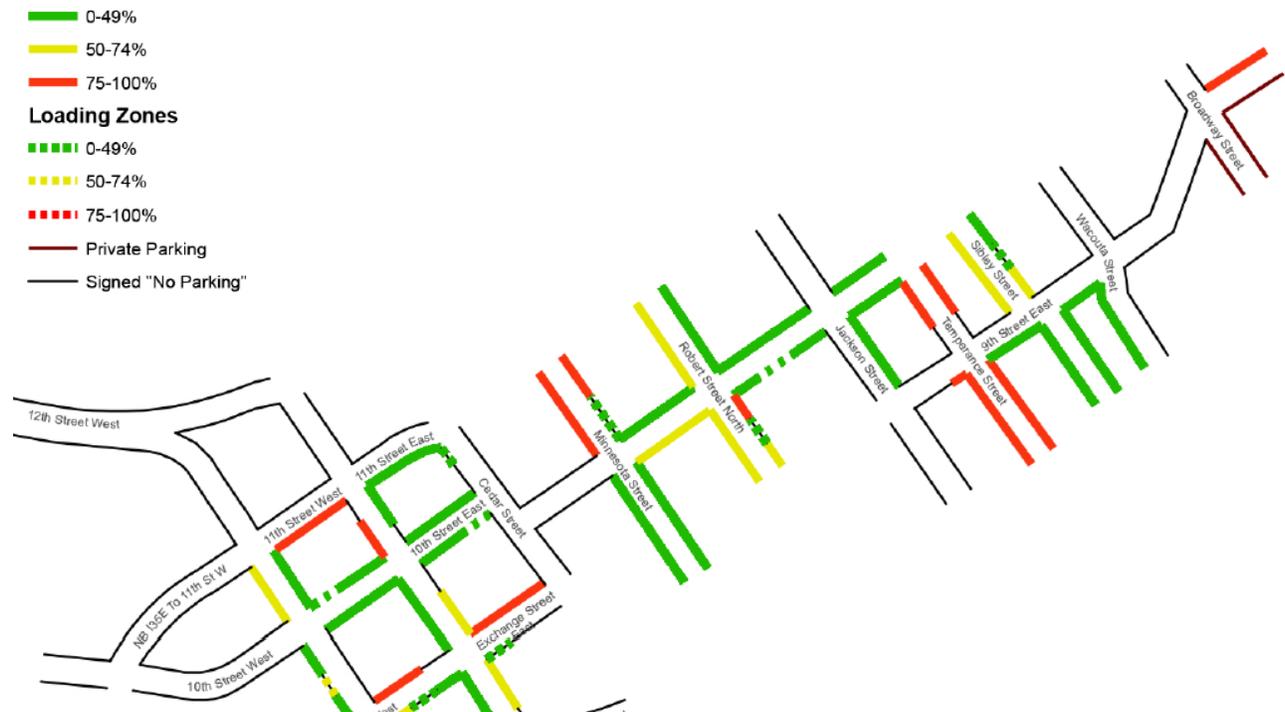
Negative Comments

- Some respondents feel that the project would negatively impact motor vehicle traffic
- Some respondents think that there is not enough bike traffic to justify the bikeway, and the cost of upkeep and repairs are an unfair burden for taxpayers and businesses in the area
- People are concerned about losing parking, and the impact it would have on residents and businesses
- People are concerned with the 10th Street and Cedar Street intersection design
- People feel that the west end of the 10th Street corridor is incomplete without signage and additional treatment up to Kellogg Boulevard and John Ireland Boulevard
- People want more leading pedestrian intervals installed at intersections

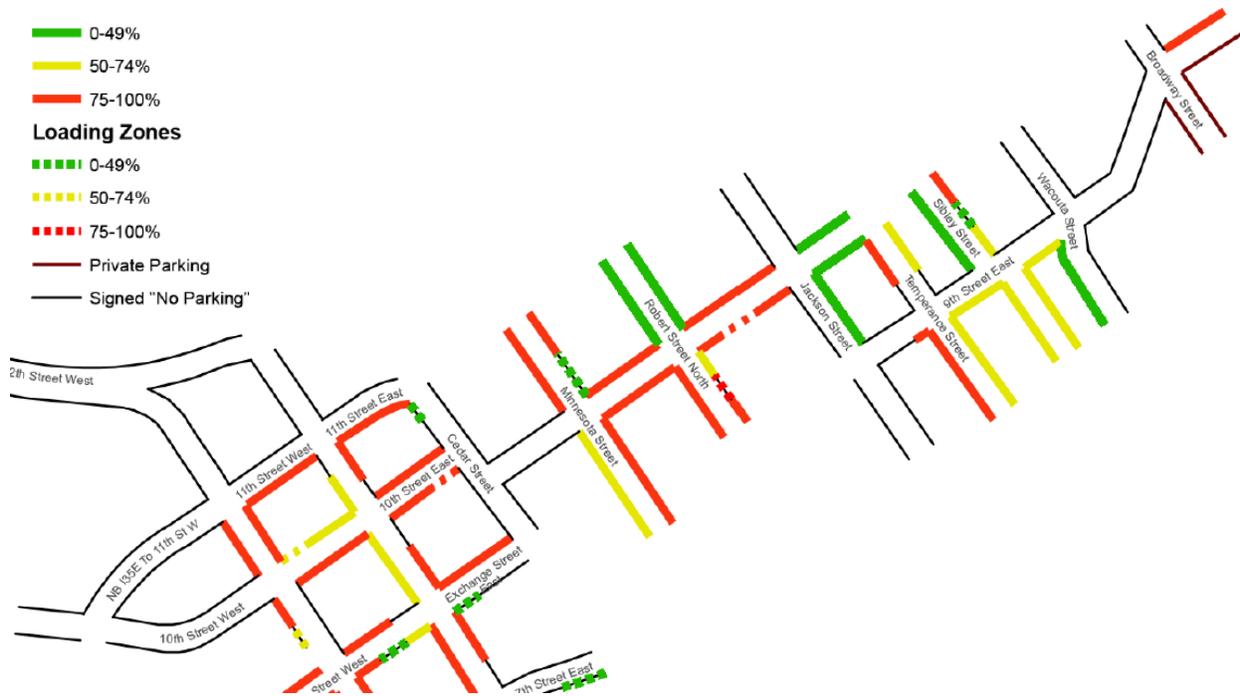
Appendix B: Corridor Parking Utilization

The following pages provide data on parking utilization and curbside uses along the 9th Street/10th Street corridor. The graphics below show parking utilization percentages at various times of day during the week, as well as during the evening on the weekends (when parking utilization is highest). The parking utilization percentages refer to the number of on-street parking spaces being used on that block (during the time the parking counts were taken) divided by the total number of on-street parking available on that block. On 9th Street and 10th Street, weekday parking count data was collected on Thursday 8/1/19 and weekend parking count data was collected on Saturday 7/27/19.

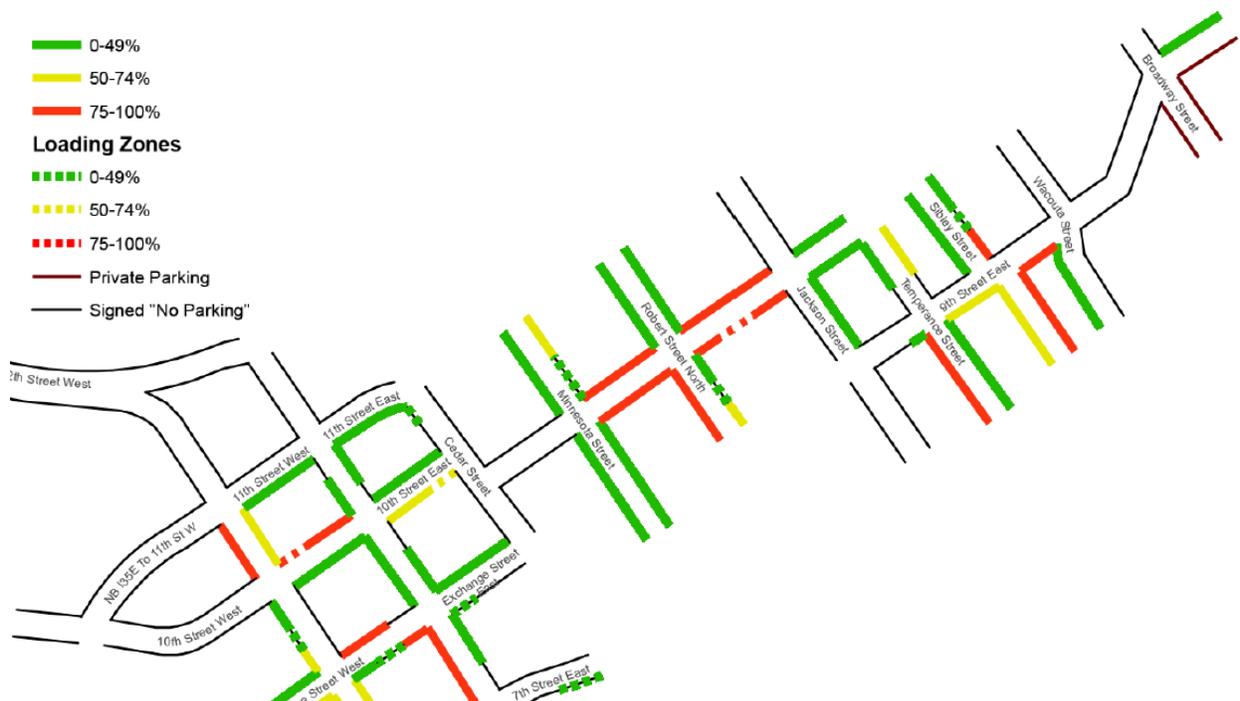
Weekday AM (8-10 AM) | On-Street Parking Utilization



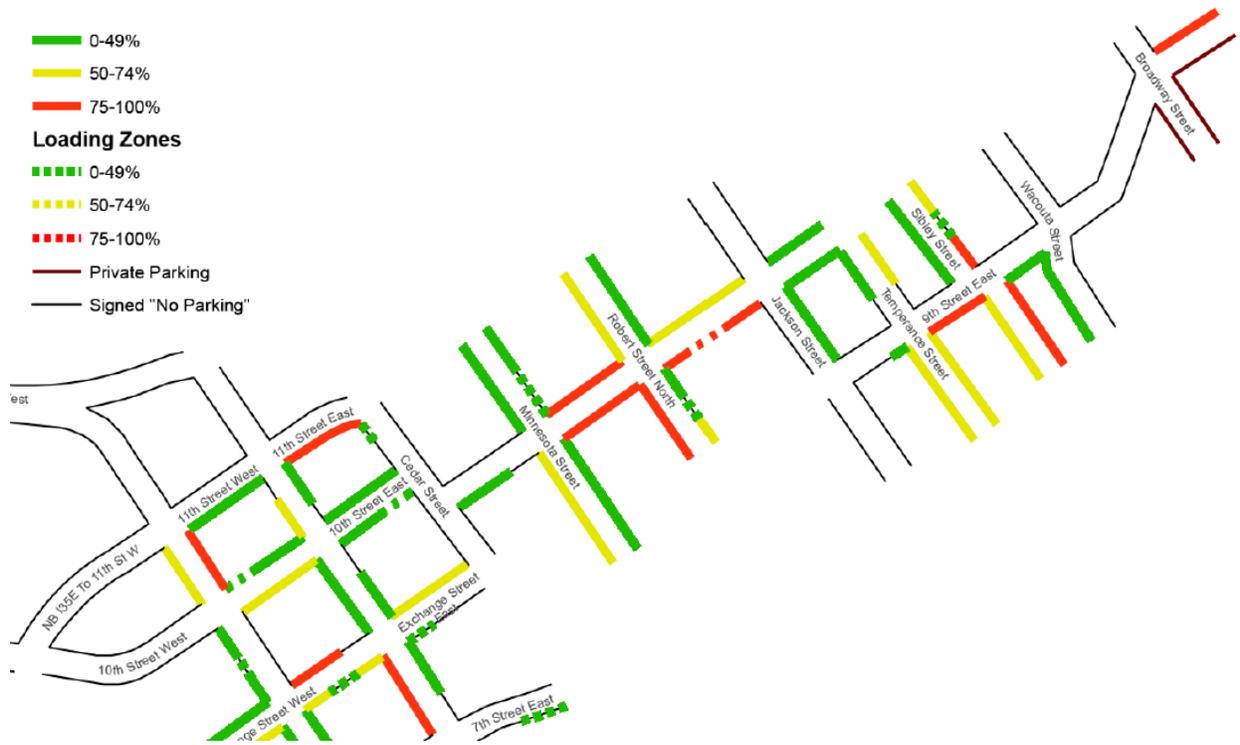
Weekday Mid-day (11 AM-1PM) | On-Street Parking Utilization



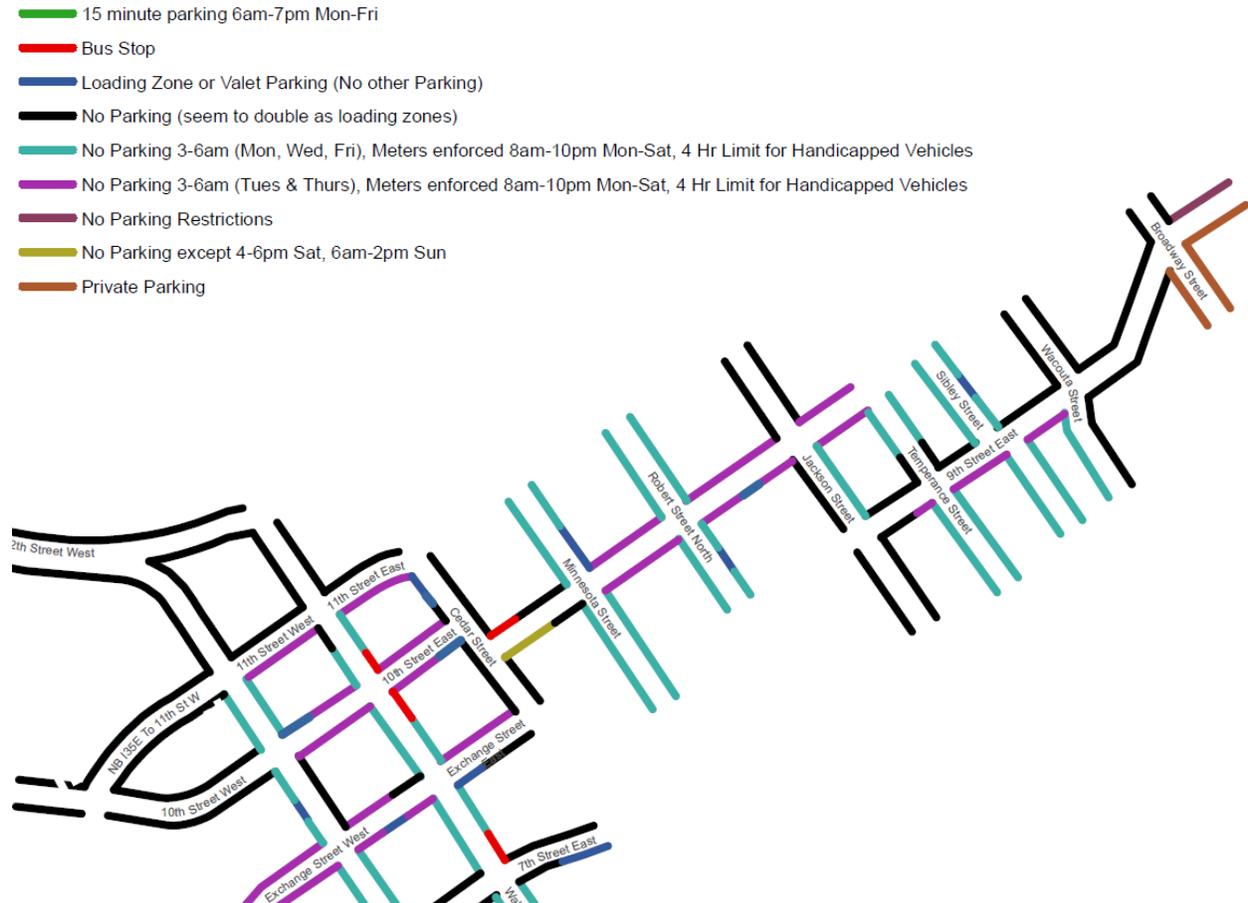
Weekday PM (6-8 PM) | On-Street Parking Utilization



Weekend PM (6-8 PM) | On-Street Parking Utilization

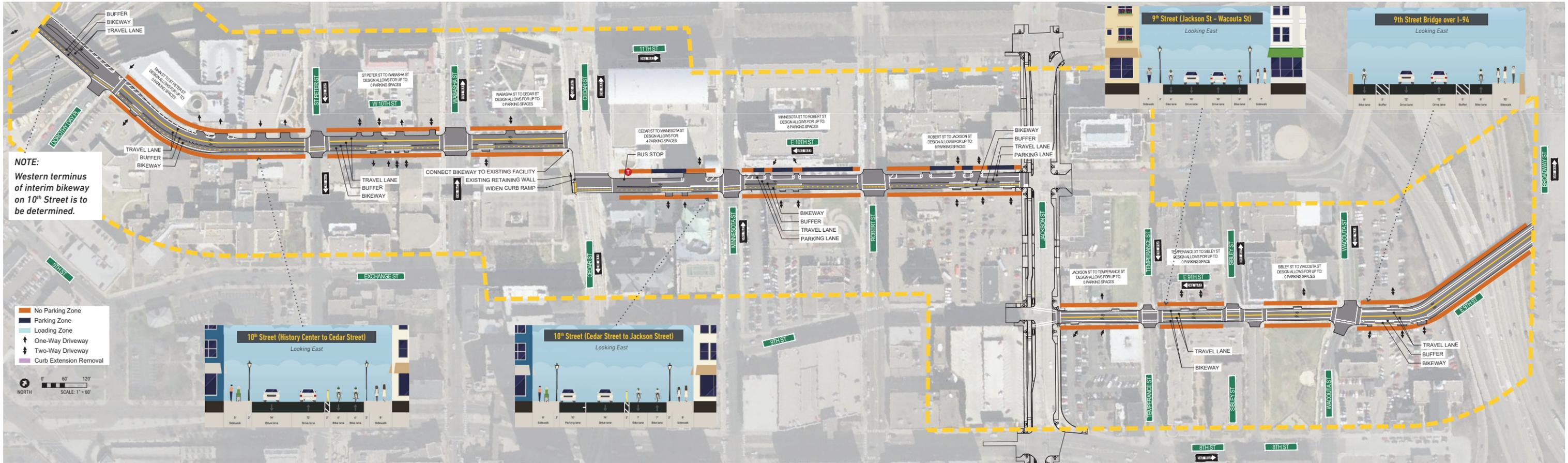


Curbside Uses



Appendix C: Recommended Design Concept Layout

The recommended design concept layout for the 9th Street/10th Street corridor is on the following page.



REASONS FOR DESIGN CONCEPT RECOMMENDATIONS

SEGMENT A: HISTORY CENTER TO CEDAR STREET

- Maintains two-way motor vehicle access to St. Joseph's Hospital as well as for vehicles exiting off I-94 ramp
- Less on-street parking demand on this segment
- Some portions of this segment do not currently have on-street parking
- Community members preferred two-way bikeway over on-way bikeways on both sides of street

SEGMENT B: CEDAR STREET TO JACKSON STREET

- Greater on-street parking demand on this segment than others
- Advantages of bikeway on the south side of 10th Street:
 - Avoids conflicts with Metro Transit bus stop east of Cedar Street
 - South side bikeway will minimize conflicts with fire vehicles
 - Simpler bikeway transition between 10th Street and Jackson Street

SEGMENT C: JACKSON STREET TO I-94 BRIDGE

- Maintains two-way motor vehicle travel
- Conventional, one-way bike lanes (and bike lanes with buffer) recommended due to budget constraints to construct a two-way separated bikeway
- Lower motor vehicle volumes on this segment compared to other two segments; thus the physically separated bike facility is less critical