Parallel Pedestrian and Bicycle Facility Opportunities
APPENDIX T13 -
PARALLEL PEDESTRIAN AND BICYCLE FACILITY OPPORTUNITIES

Introduction

As part of a comprehensive evaluation and rethinking of the future of the Interstate 94 corridor in Minneapolis and St. Paul, the project team conducted an exploration of potential options for new or improved pedestrian and bicycle facilities running parallel to the I-94 corridor between downtown Minneapolis and downtown St. Paul. Consistent with the Rethinking I-94 intent, the vision for any new parallel pedestrian or bicycle facilities is that they improve multimodal connectivity between and among the I-94 communities for a wide range of non-motorized users.

As with many urban interstate freeways constructed in the middle of the 20th Century, the construction of I-94 cut through many Saint Paul and Minneapolis neighborhoods. In addition to socioeconomic and other impacts, construction of the freeway introduced a major barrier into the neighborhood transportation grid. What were previously largely residential blocks with connected street and sidewalk systems became freeway facilities and freeway right-of-way where pedestrian and bicycle travel was either prohibited or was unsafe and uncomfortable.

Communities around the country and around the world have sought to address similar issues by adding high-quality pedestrian and bicycle facilities along freeway corridors or major roadway facilities. This analysis is in part intended to provide an initial vision for the addition of such facilities in the I-94 corridor.

Vision and Methodology

PARALLEL FACILITY VISION

Within the Rethinking I-94 corridor between downtown Minneapolis and downtown St. Paul, the pedestrian facilities that exist parallel to the freeway are typically sidewalks on the adjacent streets, some of which function as freeway frontage roads. While an inventory of existing pedestrian facilities was not conducted as part of this effort, the sidewalk system is generally complete in areas where there are roads paralleling the freeway. However, because there is not a continuous system of parallel roads, there is not a consistent sidewalk system adjacent to I-94 in this segment. Also, many of the frontage road sidewalks are old and in relatively poor condition.
The primary vision for a parallel bicycle facility is a protected bikeway between downtown Saint Paul and the Hiawatha LRT Trail in Minneapolis. Such a facility, intended to be constructed in public right-of-way or railroad right-of-way if available, would represent the current state-of-the-art in bicycle planning practice. Implementing this improvement would require coordination between local, regional, and state agencies. During public open houses held in 2017, the desire for an east-west parallel bikeway was supported by members of various communities in the corridor.

While the discussion in this memorandum focuses on the possibility of a new protected facility or facilities that could accommodate both pedestrian and bicycle travel, there are a range of possibilities that should be considered, both separate and shared facilities. These include:

**Pedestrian Only**

- Adding a sidewalk or other facility where no pedestrian facility exists currently
- Adding pedestrian facilities on both sides of road if only on one side currently
- Improving existing sidewalks (including widening, intersection treatments, landscaping, etc.)

**Bicycle Only**

- Implement short-term protected bikeway segments along existing frontage roads as construction project opportunities arise
- Develop new protected bikeway facility throughout the corridor

**Combined Pedestrian and Bicycle**

- Include new pedestrian facility as part of a protected bikeway design
- Add multiuse trail within I-94 right-of-way
- Provide continuous sidewalk plus separated cycle track
- Add multiuse trail within railroad right-of-way (if and when available; seek joint use possibilities for small segments in shorter term)
- Add combined pedestrian and bicycle facility to existing bridge crossings (for example, I-94 Dartmouth Bridge over Mississippi River)

### DEFINITIONS

For the purposes of the discussion that follows, the following definitions are relevant:

- **Bikeway:** A bikeway refers to a route or alignment where bicycle facilities are provided. A bikeway can be made up of a variety of bicycle facility types depending on the location and constraints of the project.
• **Protected Bikeway:** A protected bikeway is a route or alignment that is made up of bicycle facilities that provide physical separation or protection from motor vehicle traffic, including at intersections. Protected bikeways offer a high level of user safety and comfort.

• **Separated/Protected Bicycle Facility (Cycle Track):** A designated bicycle-only facility, provided on or immediately adjacent to the roadway, that is separated from motor-vehicle traffic by both spatial separation (distance) and physical barriers (vertical elements, barriers or curbs). The Capital City Bikeway in St. Paul provides a separated/protected, two-directional facility, as do on-street bikeways (such as in Minneapolis) where a conventional bicycle lane is separated from motor traffic by bollards and a spatial buffer from motor-vehicle travel lanes. Separated or protected bicycle facilities provide a high sense of comfort to users and are compatible with the traffic stress tolerance of the mainstream adult population.

• **Buffered Bicycle Lane:** A designated bicycle-only facility, provided on the roadway, that provides a space or "buffer" between motor-vehicle travel or parking lanes and the bicycle facility. A minimum buffer distance of 2 feet is provided on one or both sides. Park Avenue and Portland Avenue in south Minneapolis are examples of bikeways with buffering along both sides of the bicycle lane.

• **Conventional Bicycle Lane:** A designated bicycle-only facility, provided on the roadway, directly adjacent to motor-vehicle travel lanes, without physical barrier or spatial separation from the traffic lane or parking lane.

• **Shared-Use Path (SUP)/Multimodal Trail:** An off-roadway pedestrian and bicycle facility providing adequate width and other features to safely accommodate both walking and biking. A minimum width of 8 feet is recommended when facilities are provided on both sides of a roadway. When they are provided on only one side of a roadway, a minimum width of 10 feet is recommended. The Gateway Trail and the Bruce Vento Regional Trail are local examples of a shared-use path.

• **Pedestrian Facility:** A designated space for use by pedestrians. Typically, this would be a sidewalk but could also include a pedestrian trail or a shared use path (SUP).

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**PEDESTRIAN AND BICYCLE FACILITY PRINCIPLES**

Pedestrian and bicycle facilities vary widely in the characteristics they offer for user safety, comfort, cost, effectiveness, and impacts on other transportation modes. Impacts can depend on facility placement, features and proximity to other infrastructure.

As MnDOT and local partners explore future parallel pedestrian and bicycle facilities, the following guiding principles can be used to guide what form these facilities will take:

- **Safety:** Safety considers the number of opportunities for the paths of pedestrian and bicycle traffic and motor vehicle traffic to conflict, the speed of motor-vehicle traffic at those conflict points, and potential sightline and visibility issues. In particular for bicycle facility concepts with high potential for safety problems, it is assumed that a solution to address them would be deployed as part of that concept.
- **Comfort and user sense of safety**: Comfort encompasses the user’s experience while using the facility, including proximity to motor-vehicles, noise level, air quality, views, quality of surface, and other quantitative and qualitative attributes.

- **Connectivity**: Connectivity considers a concept's relative ease of connection with existing and planned city and neighborhood destinations and bicycle/pedestrian networks near the I-94 corridor.

- **Impacts on other transportation modes**: This principle responds to potential impacts from a concept's implementation, which may range from minimally affecting pedestrians, bicyclists, transit riders, or drivers to potentially more substantial impacts on other transportation modes or users (including freight).

### Existing Conditions and Potential Opportunities

Figure 1 at the end of this memo shows the general location of the parallel pedestrian and bicycle facility corridor. The map shown is intended to illustrate the linear extent of what was considered in this memo but does not define the area limits (width) for possible connections that may be needed to achieve a continuous east-west facility.

Figure 2 shows potential opportunity areas for initial consideration.

### POTENTIAL OPPORTUNITY AREAS

With input from agency partners, the project team reviewed opportunities for the parallel corridor, with the understanding that these would be revisited and refined in the future. For the purposes of this exercise, the corridor was divided into six Opportunity Areas (from west to east):

- **Area 1**: Hiawatha Avenue LRT Trail to 20th Avenue
- **Area 2**: 20th Avenue to East River Road
- **Area 3**: Huron Boulevard Interchange
- **Area 4**: SE 27th Avenue to Pelham Boulevard
- **Area 5**: Pelham Boulevard to Prior Avenue
- **Area 6**: Prior Avenue to Downtown St. Paul

The Opportunity Areas are illustrated in Figure 2 and discussed below. Opportunity Areas 1-5 are described at a high level only. Opportunity Area 6 is described in greater detail, with a focus on two potential cross-section concepts.

**Opportunity Area 1: Hiawatha Avenue LRT Trail to 20th Avenue**

The desire in this segment is to make an improved connection between 20th Avenue and the Hiawatha LRT Trail, which serves as a gateway into Minneapolis via the regional trail system. This segment is
constrained due to presence of I-94/Cedar Avenue ramps, Cedar Avenue itself, and existing development close to the freeway. Additional work is needed to develop potential route options through this segment. The future utility of a parallel bikeway through this segment may be dependent on parallel connections through Area 2 and the addition of a bikeway across a future re-constructed I-94 bridge over the Mississippi River.

**Opportunity Area 2: 20th Avenue to East River Road**
The major opportunity in this area is the potential future reconstruction of the I-94 (Dartmouth) Bridge over the Mississippi River. While this project is not currently programmed, it is potentially within a 30-year timeline and is a consideration for long-term planning. It would be desirable for a future bridge reconstruction to include a high-quality bicycle/pedestrian facility. In addition to providing another non-motorized option to cross the river, such a facility also would provide a natural connection point to an I-94 parallel bicycle facility on the east side of the river. Additional work is needed to develop potential route options west of the I-94 Dartmouth Bridge. The future utility of improvements along this segment will likely be dependent on a bikeway constructed across a new I-94 bridge.

**Opportunity Area 3: Huron Boulevard Interchange**
As indicated in Figure 2, the I-94/Huron Boulevard Interchange would present a major barrier to providing a high-quality facility that connects Area 2 and Area 4. While reconstruction of the interchange is not currently programmed, as with the I-94/Dartmouth Bridge, the interchange will require work in the future. At that time, opportunities to allow for or create a connection through this area should be considered. The future utility of a bikeway through the Huron interchange will be dependent on a new I-94 Dartmouth Bridge with bikeway plus parallel connections proximate to the freeway through Areas 1 and 2 to the west.

**Opportunity Area 4: SE 27th Ave to Pelham Boulevard**
The potential opportunity for an off-road trail along the CP Railway right-of-way between approximately SE 27th Avenue in Minneapolis and Pelham Boulevard in St. Paul has been previously identified in city bike plans. It would have high functionality as a fully off-road facility through a developed and populated area (analogous to the Midtown Greenway in Minneapolis) as well as its many potential connections to existing and planned bicycle facilities. However, the rail line is in active use by the Canadian Pacific (CP) Railway with no known plans for abandonment. However, it is understood that this rail segment is currently used by the railroad on a limited scale and therefore may be considered surplus property in the future.

While the rail corridor is seen as a longer range element, shorter term options could be identified that would utilize some combination of local streets with existing and planned trails to establish bikeway connections through this segment. The option of joint use (i.e., trail along rail) should also be explored along segments of the active rail line.

**Opportunity Area 5: Pelham Boulevard to Prior Avenue**
The CP rail line through the western part of this segment (between Pelham Blvd and Cleveland Ave) is currently underutilized and is one potential long term option for an extended bikeway. However, there are
frontage roads, I-94 right of way, and other public land on one or both sides of the freeway where shorter
term options could be explored. Opportunities to extend an east-west bikeway through this segment to
Pelham Blvd would have independent utility from the larger project, as that existing bikeway would connect
to multiple planned trails and bikeways on either side of I-94.

**Opportunity Area 6: Prior Avenue to Downtown St. Paul**

Two potential protected bikeway facility concepts have been identified in this area. These represent two
distinct concepts that could be implemented in whole, in part, or together and with consideration for
other currently unidentified possibilities.

- **Concept A** is one-way or two-way separated/protected bicycle lane and pedestrian facility that
  would be provided along the inside of the frontage road, next to the I-94 trench. This facility
could be placed at roadway level with a buffer and bollard, or could be raised to the sidewalk
level.

- **Concept B** is a one-way or two-way separated/protected bicycle lane and pedestrian facility that
  would be provided along the outside of the frontage road, next to the residential sidewalk and
  away from the I-94 trench. This facility could be placed at roadway level with a buffer and
  bollards, or could be raised to the sidewalk level. As noted previously, many of the existing
  frontage road sidewalks in this segment are in poor condition.

The analysis and evaluation of the cross-section concepts discussed above are intended to advance the idea
of a parallel east-west bikeway and pedestrian facility through this corridor segment. More detailed concept
development will be required in a subsequent process, followed by a design phase for short to mid-term
bikeway projects. Important questions and design considerations for that subsequent process include:

- Identify a preferred design concept (cross-section and location relative to I-94 and frontage
  roads)
- Identify a preferred alignment (north side of I-94, south side, a combination, or both)
- Address street intersections to provide for appropriate balance among vehicle, bicycle,
  pedestrian modes. Potential options to be explored include:
  - a) utilize some segments of the I-94 trench, by routing the trail beneath existing major
    street bridges (e.g., Dale St., Lexington Ave)
  - b) continue the protected facility at grade through the street intersection using a
    protected intersection design
  - c) continue protected facility above trench with bike/ped bridges over major streets
    (e.g., Snelling, Hamline and Lexington Avenues)
- Review facility plans/designs and make adjustments, as needed, to minimize any potential
  adverse impacts the facility may have on motor vehicle capacity or mobility
- Address constraints and opportunities presented by the new Allianz Field (soccer stadium) at
  Snelling Avenue. The stadium and planned mixed-use development will be an important bicycle and
  pedestrian node and connections to and through the site are important to the overall bikeway
  concept.
- Coordinate with efforts led by others to construct a land bridge over I-94 in the Rondo neighborhood
• Identify potential short-term solutions. Given that a protected parallel facility would be contingent on funding, local support and possibly coordination with freeway infrastructure (e.g., bridge) reconstruction projects, this solution may not be implemented for some time, even if the idea has the necessary support. In the nearer term, however, portions of the concept could potentially be developed at relatively lower cost. For example, on-street protected bikeways (using striping and bollards) could potentially be implemented along I-94 frontage roads. Doing so could help demonstrate the benefits of and build support for the full bikeway corridor project.

OTHER OPTIONS CONSIDERED
Potential options for locating a protected bikeway at the I-94 freeway surface level were considered, both on the outside (right side) and on the inside (left/center) of the vehicle travel lanes. Despite some potential advantages, these options were considered to present significant challenges with respect to user comfort and sense of safety as well as connectivity to other facilities (including vertical circulation for the inside facilities, and interaction with on- and off-ramp traffic for the outside facilities). For these reasons, the options immediately adjacent to the I-94 freeway surface were not considered further as part of this analysis.

Next Steps
The purpose of this memo has been to document the consideration of parallel pedestrian and bicycle facilities as part of the first phase of Rethinking I-94. Until such a time as these concepts are considered further, this documentation is intended as a resource to other MnDOT and local projects so that a parallel pedestrian and bikeway facility concept may potentially be advanced and not precluded.

Important issues and next steps to consider as part of further exploration and development of potential parallel facilities in the I-94 corridor include:

• For pedestrian facilities, conduct inventory of existing pedestrian facilities parallel to I-94, including width and condition information, ADA compliance, etc.
• Conduct review of bicycle and pedestrian safety and crash history to identify locations potentially requiring more immediate attention and/or alternative solutions as part of a long-term plan
• Given funding constraints for a complete and continuous protected bikeway facility in this location, planning for the corridor should include phased and implementable project segments that take advantage of intermittent project opportunities as they arise. These intermittent projects should be planned with the longer term continuous east-west bikeway in mind.
• Develop an I-94 conceptual parallel bicycle and pedestrian plan that:
  o Considers the full range of infrastructure and bikeway connection possibilities
  o Analyzes the corridor segment by segment to identify safe, reliable and cost-effective options
Provides a phased implementation plan with proposed project staging aligned with roadway, utility and development project opportunities
Develops visual renderings of promising corridor segment options
Includes public input in the development of improvement options
Identifies multiple sources of transportation funding and other possible funding sources for corridor amenities and enhancements

• Move forward with a shared commitment among interested or responsible agencies to develop enhanced pedestrian facilities and a protected bikeway parallel to the I-94 corridor

• Agree and acknowledge that the successful development and implementation of any such bikeway and pedestrian facilities will be a cooperative effort with MnDOT, the Metropolitan Council, local governments, and community stakeholders

• Develop parallel pedestrian and bicycle facility segments as part of future programmed rehabilitation and enhancement projects along the I-94 corridor, as opportunities arise

• Develop solutions to address challenges at intersections, where relevant. Potential issues and options could include:
  - Develop “protected intersection” concepts that offer similar levels of user protection and comfort at intersections, both those with freeway entrances and exits (such as Lexington, Snelling, etc.) and those without (such as Victoria, Western, and Pascal).
  - Develop intersection concepts to mitigate potential conflicts from neighborhood motor vehicle traffic accessing the frontage roads and crossing the bikeway facility

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Figure 1. Potential Parallel Pedestrian/Bicycle Facility Corridor

Legend
- Yellow: Potential Parallel Pedestrian/Bicycle Corridor
- Purple: Minneapolis Existing Bikeways
- Orange: Saint Paul Existing Bikeways

1 inch = 0.5 miles
Figure 2. Potential Parallel Pedestrian/Bicycle Facility Opportunity Areas