Application

19837 - 2024 Roadway Spot Mobility
20081 - Richfield 76th Street and Knox Avenue Intersection Improvements
Regional Solicitation - Roadways Including Multimodal Elements

Status: Submitted
Submitted Date: 12/13/2023 1:26 PM

## Primary Contact

Feel free to edit your profile any time your information changes. Create your own personal alerts using My Alerts.

**Name:*** He/him/his (Pronouns) | Matt (First Name) | (Middle Name) | Hardegger (Last Name)

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* Richfield (City) | Minnesota (State/Province) | 55423 (Postal Code/Zip)

**Phone:*** 612-861-9792 (Phone) | (Ext.)

**Fax:**
**What Grant Programs are you most interested in?** Regional Solicitation - Roadways Including Multimodal Elements

## Organization Information

**Name:** RICHFIELD,CITY OF
**Jurisdictional Agency (if different):**
**Organization Type:** City
**Organization Website:**
**Address:** 6700 PORTLAND AVE S

* RICHFIELD (City) | Minnesota (State/Province) | 55423 (Postal Code/Zip)

**County:** Hennepin
**Phone:*** 612-861-9700 (Ext.)

**Fax:**
**PeopleSoft Vendor Number** 0000004028A1

## Project Information

**Project Name** Richfield 76th Street and Knox Avenue Intersection Improvements
**Primary County where the Project is Located** Hennepin
**Cities or Townships where the Project is Located:** Richfield
**Jurisdictional Agency (If Different than the Applicant):**

**Brief Project Description (Include location, road name/functional class, type of improvement, etc.)**

The proposed project consists of the conversion of the existing signalized intersection at W 76th St (MSAS 361) and Knox Ave S in the City of Richfield to a 2x1 multilane roundabout. W 76th St is classified as an A Minor Reliever and Knox Ave S is a local street. The proposed roundabout design will include channelized intersection approaches and pedestrian refuge islands. Existing nonmotorized facilities in the project area will be reconstructed to ADA standards and realigned to match the roundabout design. The existing sidewalk along Knox Ave will be reconstructed as a new trail connection to the Nine Mile Creek Regional Trail. The existing retaining wall in the southeast intersection quadrant will be reconstructed. The existing driveway access to the apartment building on the north side of the existing intersection will be relocated to accommodate the proposed roundabout. Permanent right of way acquisition and temporary construction easements will be required.

*(Limit 2,800 characters; approximately 400 words)*

**TRANSPORTATION IMPROVEMENT PROGRAM (TIP) DESCRIPTION - will be used in TIP if the project is selected for funding. See MnDOT's TIP description guidance.**

MSAS 361 (W 76TH ST), AT KNOX AVE S IN RICHFIELD, CONSTRUCT ROUNDABOUT, SIDEWALK, TRAIL, ADA, RETAINING WALL.

*Include both the CSAH/MSAS/TH references and their corresponding street names in the TIP Description (see Resources link on Regional Solicitation webpage for examples).*

**Project Length (Miles)**

0.4

*to the nearest one-tenth of a mile*

## Project Funding

**Are you applying for competitive funds from another source(s) to implement this project?**

No

**If yes, please identify the source(s)**

**Federal Amount**

$2,687,040.00

**Match Amount**

$671,760.00

*Minimum of 20% of project total*

**Project Total**

$3,358,800.00

*For transit projects, the total cost for the application is total cost minus fare revenues.*

**Match Percentage**

20.0%

*Minimum of 20%*
*Compute the match percentage by dividing the match amount by the project total*

**Source of Match Funds**

City of Richfield Local Funds

*A minimum of 20% of the total project cost must come from non-federal sources; additional match funds over the 20% minimum can come from other federal sources*

**Preferred Program Year**

**Select one:**

2028, 2029

*Select 2026 or 2027 for TDM and Unique projects only. For all other applications, select 2028 or 2029.*

**Additional Program Years:**

2027

*Select all years that are feasible if funding in an earlier year becomes available.*

## Project Information: Roadway Projects

**NOTE: If your project has already been assigned a State Aid Project # (SAP or SP), please Indicate SAP# here**

**SAP#:**

**County, City, or Lead Agency**

City of Richfield

**Functional Class of Road**

A Minor Reliever

**Road System**

MSAS

*TH, CSAH, MSAS, CO. RD., TWP. RD., CITY STREET*

**Road/Route No.**

361

*i.e., 53 for CSAH 53*

**Name of Road**

W 76th St

*Example; 1st ST., MAIN AVE*

**TERMINI:(Termini listed must be within 0.3 miles of any work)**

**From:**
**Road System**

**Road/Route No.**

*i.e., 53 for CSAH 53*

**Name of Road**

*Example; 1st ST., MAIN AVE*

| | |
|---|---|
| **To:** | |
| **Road System** | |
| *DO NOT INCLUDE LEGAL DESCRIPTION* | |
| **Road/Route No.** | |
| *i.e., 53 for CSAH 53* | |
| **Name of Road** | |
| *Example; 1st ST., MAIN AVE* | |
| **In the City/Cities of:** | |
| *(List all cities within project limits)* | |
| **OR:** | |
| **At:** | |
| **Road System** | City Street |
| *(TH, CSAH, MSAS, CO. RD., TWP. RD., City Street)* | |
| **Road/Route No.** | |
| *i.e., 53 for CSAH 53* | |
| **Name of Road** | Knox Ave S |
| *Example; 1st ST., MAIN AVE* | |
| **In the City/Cities of:** | Richfield |
| *(List all cities within project limits)* | |
| **PROJECT LENGTH** | |
| **Miles** | 0.4 |
| *(nearest 0.1 miles)* | |
| **Primary Types of Work (check all the apply)** | |
| **New Construction** | |
| **Reconstruction** | Yes |
| **Resurfacing** | |
| **Bituminous Pavement** | Yes |
| **Concrete Pavement** | Yes |
| **Roundabout** | Yes |
| **New Bridge** | |
| **Bridge Replacement** | |
| **Bridge Rehab** | |
| **New Signal** | |
| **Signal Replacement/Revision** | |
| **Bike Trail** | Yes |
| **Other (do not include incidental items)** | SIDEWALK, PED RAMPS, RETAINING WALL |
| **BRIDGE/CULVERT PROJECTS (IF APPLICABLE)** | |
| **Old Bridge/Culvert No.:** | |
| **New Bridge/Culvert No.:** | |
| **Structure is Over/Under (Bridge or culvert name):** | |
| **OTHER INFORMATION:** | |
| **Zip Code where Majority of Work is Being Performed** | 55423 |
| **Approximate Begin Construction Date** | 04/01/2028 |
| **Approximate End Construction Date** | 12/31/2028 |
| **Miles of Trail (nearest 0.1 miles)** | 0.2 |
| **Miles of Sidewalk (nearest 0.1 miles)** | 0.2 |
| **Miles of trail on the Regional Bicycle Transportation Network (nearest 0.1 miles):** | 0 |
| **Is this a new trail?** | Yes |

## Requirements - All Projects

**All Projects**

*1. The project must be consistent with the goals and policies in these adopted regional plans: Thrive MSP 2040 (2014), the 2040 Transportation Policy Plan (2018), the 2040 Regional Parks Policy Plan (2018), and the 2040 Water Resources Policy Plan (2015).*

| | |
|---|---|
| **Check the box to indicate that the project meets this requirement.** | Yes |

*2. The project must be consistent with the 2040 Transportation Policy Plan. Reference the 2040 Transportation Plan goals, objectives, and strategies that relate to the project.*

**Briefly list the goals, objectives, strategies, and associated pages:**

Goal A (p. 2.2)

Objective A: Preserve and maintain the transportation system in a state of good repair (p. 2.2)

Objective B: Operate the transportation system to efficiently move people and freight (p. 2.2)

Strategy A1: Prioritize transportation investments on strategically preserving, maintaining, and operating the transportation system (p. 2.2)

Strategy A2: Incorporate improvements for safety, lower-cost congestion management and mitigation, transit, bicycle, and pedestrian facilities (p. 2.3)

Goal B (p. 2.5)

Objective A: Reduce fatal and serious injury crashes (p. 2.5)

Strategy B1. Incorporate safety and security considerations for all modes and users (p. 2.5)

Strategy B6. Use best practices to provide/improve facilities for safe walking and bicycling (p. 2.8)

Goal C (p. 2.10)

Objective A. Increase availability of multimodal travel options (p. 2.10)

Objective B. Increase travel time reliability and predictability (p. 2.10)

Objective D. Increase the number and share of trips taken using transit, carpools, bicycling, and walking. (p. 2.10)

Objective E. Improve availability of multimodal travel options for all people (p. 2.10)

Strategy C1. Implement transportation systems that are multimodal and provide connections between modes (p. 2.10)

Strategy C2. Provide a network of interconnected roadways, bicycle and pedestrian facilities using Complete Streets principles (p. 2.11)

Strategy C4. Promote multimodal travel and alternatives to single occupant vehicle travel (p. 2.14)

Strategy C9. Support investments in A-minor arterials (p. 2.17)

Strategy C16: Improve key regional bicycle barrier crossing locations, provide for pedestrian travel across physical barriers, and improve continuity of bicycle and pedestrian facilities (p.2.23)

Strategy C17. Provide reliable, cost-effective, and accessible transportation choices (p. 2.24)

*Limit 2,800 characters, approximately 400 words*

*3. The project or the transportation problem/need that the project addresses must be in a local planning or programming document. Reference the name of the appropriate comprehensive plan, regional/statewide plan, capital improvement program, corridor study document [studies on trunk highway must be approved by the Minnesota Department of Transportation and the Metropolitan Council], or other official plan or program of the applicant agency [includes Safe Routes to School Plans] that the project is included in and/or a transportation problem/need that the project addresses.*

**List the applicable documents and pages: Unique projects are exempt from this qualifying requirement because of their innovative nature.**

2023-2027 Capital Improvement Budget and Plan (p.86)

*Limit 2,800 characters, approximately 400 words*

*4. The project must exclude costs for studies, preliminary engineering, design, or construction engineering. Right-of-way costs are only eligible as part of transit stations/stops, transit terminals, park-and-ride facilities, or pool-and-ride lots. Noise barriers, drainage projects, fences, landscaping, etc., are not eligible for funding as a standalone project, but can be included as part of the larger submitted project, which is otherwise eligible. Unique project costs are limited to those that are federally eligible.*

**Check the box to indicate that the project meets this requirement.**

Yes

*5. Applicant is a public agency (e.g., county, city, tribal government, transit provider, etc.) or non-profit organization (TDM and Unique Projects applicants only). Applicants that are not State Aid cities or counties in the seven-county metro area with populations over 5,000 must contact the MnDOT Metro State Aid Office prior to submitting their application to determine if a public agency sponsor is required.*

**Check the box to indicate that the project meets this requirement.** Yes

*6. Applicants must not submit an application for the same project elements in more than one funding application category.*

**Check the box to indicate that the project meets this requirement.** Yes

*7. The requested funding amount must be more than or equal to the minimum award and less than or equal to the maximum award. The cost of preparing a project for funding authorization can be substantial. For that reason, minimum federal amounts apply. Other federal funds may be combined with the requested funds for projects exceeding the maximum award, but the source(s) must be identified in the application. Funding amounts by application category are listed below in Table 1. For unique projects, the minimum award is $500,000 and the maximum award is the total amount available each funding cycle (approximately $4,000,000 for the 2024 funding cycle).*

***Strategic Capacity (Roadway Expansion):** $1,000,000 to $10,000,000*
***Roadway Reconstruction/Modernization:** $1,000,000 to $7,000,000*
***Traffic Management Technologies (Roadway System Management):** $500,000 to $3,500,000*
***Spot Mobility and Safety:** $1,000,000 to $3,500,000*
***Bridges Rehabilitation/Replacement:** $1,000,000 to $7,000,000*

**Check the box to indicate that the project meets this requirement.** Yes

*8. The project must comply with the Americans with Disabilities Act (ADA).*

**Check the box to indicate that the project meets this requirement.** Yes

*9. In order for a selected project to be included in the Transportation Improvement Program (TIP) and approved by USDOT, the public agency sponsor must either have a current Americans with Disabilities Act (ADA) self-evaluation or transition plan that covers the public right of way/transportation, as required under Title II of the ADA. The plan must be completed by the local agency before the Regional Solicitation application deadline. For future Regional Solicitation funding cycles, this requirement may include that the plan has undergone a recent update, e.g., within five years prior to application.*

**The applicant is a public agency that employs 50 or more people and has a completed ADA transition plan that covers the public right of way/transportation.** Yes

**(TDM and Unique Project Applicants Only) The applicant is not a public agency subject to the self-evaluation requirements in Title II of the ADA.**

**Date plan completed:** 02/25/2014

**Link to plan:** https://www.richfieldmn.gov/departments/public_works/transportation/bicycle___pedestrian_planning/ada.php

**The applicant is a public agency that employs fewer than 50 people and has a completed ADA self-evaluation that covers the public right of way/transportation.**

**Date self-evaluation completed:**

**Link to plan:**

**Upload plan or self-evaluation if there is no link**

*Upload as PDF*

*10. The project must be accessible and open to the general public.*

**Check the box to indicate that the project meets this requirement.** Yes

*11. The owner/operator of the facility must operate and maintain the project year-round for the useful life of the improvement. This includes assurance of year-round use of bicycle, pedestrian, and transit facilities, per FHWA direction established 8/27/2008 and updated 4/15/2019. Unique projects are exempt from this qualifying requirement.*

**Check the box to indicate that the project meets this requirement.** Yes

*12. The project must represent a permanent improvement with independent utility. The term ?independent utility? means the project provides benefits described in the application by itself and does not depend on any construction elements of the project being funded from other sources outside the regional solicitation, excluding the required non-federal match. Projects that include traffic management or transit operating funds as part of a construction project are exempt from this policy.*

**Check the box to indicate that the project meets this requirement.** Yes

*13. The project must not be a temporary construction project. A temporary construction project is defined as work that must be replaced within five years and is ineligible for funding. The project must also not be staged construction where the project will be replaced as part of future stages. Staged construction is eligible for funding as long as future stages build on, rather than replace, previous work.*

**Check the box to indicate that the project meets this requirement.** Yes

*14. The project applicant must send written notification regarding the proposed project to all affected state and local units of government prior to submitting the application.*

**Check the box to indicate that the project meets this requirement.** Yes

## Roadways Including Multimodal Elements

*1. All roadway projects must be identified as a principal arterial (non-freeway facilities only) or A-minor arterial as shown on the latest TAB approved roadway functional classification map. Bridge Rehabilitation/Replacement projects must be located on a minor collector and above functionally classified roadway in the urban areas or a major collector and above in the rural areas.*

**Check the box to indicate that the project meets this requirement.** Yes

**Roadway Strategic Capacity and Reconstruction/Modernization and Spot Mobility projects only:**

*2. The project must be designed to meet 10-ton load limit standards.*

**Check the box to indicate that the project meets this requirement.** Yes

**Bridge Rehabilitation/Replacement and Strategic Capacity projects only:**

*3. Projects requiring a grade-separated crossing of a principal arterial freeway must be limited to the federal share of those project costs identified as local (non-MnDOT) cost responsibility using MnDOT?s ?Cost Participation for Cooperative Construction Projects and Maintenance Responsibilities? manual. In the case of a federally funded trunk highway project, the policy guidelines should be read as if the funded trunk highway route is under local jurisdiction.*

**Check the box to indicate that the project meets this requirement.**

*4. The bridge must carry vehicular traffic. Bridges can carry traffic from multiple modes. However, bridges that are exclusively for bicycle or pedestrian traffic must apply under one of the Bicycle and Pedestrian Facilities application categories. Rail-only bridges are ineligible for funding.*

**Check the box to indicate that the project meets this requirement.**

**Bridge Rehabilitation/Replacement projects only:**

*5. The length of the in-place structure is 20 feet or longer.*

**Check the box to indicate that the project meets this requirement.**

*6. The bridge must have a Local Planning Index (LPI) of less than 60 OR a National Bridge Inventory (NBI) Rating of 3 or less for either Deck Geometry, Approach Roadway, or Waterway Adequacy as reported on the most recent Minnesota Structure Inventory Report.*

**Check the box to indicate that the project meets this requirement.**

**Roadway Expansion, Reconstruction/Modernization, and Bridge Rehabilitation/Replacement projects only:**

*7. All roadway projects that involve the construction of a new/expanded interchange or new interchange ramps must have approval by the Metropolitan Council/MnDOT Interchange Planning Review Committee prior to application submittal. Please contact David Elvin at MnDOT (David.Elvin@state.mn.us or 651-234-7795) to determine whether your project needs to go through this process as described in Appendix F of the 2040 Transportation Policy Plan.*

**Check the box to indicate that the project meets this requirement.**

## Requirements - Roadways Including Multimodal Elements

### Specific Roadway Elements

| CONSTRUCTION PROJECT ELEMENTS/COST ESTIMATES | Cost |
|---|---|
| Mobilization (approx. 5% of total cost) | $180,000.00 |
| Removals (approx. 5% of total cost) | $255,000.00 |
| Roadway (grading, borrow, etc.) | $196,000.00 |
| Roadway (aggregates and paving) | $388,400.00 |
| Subgrade Correction (muck) | $0.00 |
| Storm Sewer | $363,500.00 |
| Ponds | $0.00 |
| Concrete Items (curb & gutter, sidewalks, median barriers) | $555,500.00 |
| Traffic Control | $200,000.00 |
| Striping | $27,000.00 |
| Signing | $11,000.00 |
| Lighting | $100,000.00 |
| Turf - Erosion & Landscaping | $86,000.00 |
| Bridge | $0.00 |
| Retaining Walls | $246,400.00 |
| Noise Wall (not calculated in cost effectiveness measure) | $0.00 |
| Traffic Signals | $0.00 |
| Wetland Mitigation | $0.00 |
| Other Natural and Cultural Resource Protection | $0.00 |
| RR Crossing | $0.00 |
| Roadway Contingencies | $300,000.00 |
| Other Roadway Elements | $300,000.00 |
| **Totals** | **$3,208,800.00** |

### Specific Bicycle and Pedestrian Elements

| CONSTRUCTION PROJECT ELEMENTS/COST ESTIMATES | Cost |
|---|---|
| Path/Trail Construction | $0.00 |
| Sidewalk Construction | $0.00 |
| On-Street Bicycle Facility Construction | $0.00 |
| Right-of-Way | $0.00 |
| Pedestrian Curb Ramps (ADA) | $0.00 |
| Crossing Aids (e.g., Audible Pedestrian Signals, HAWK) | $150,000.00 |
| Pedestrian-scale Lighting | $0.00 |
| Streetscaping | $0.00 |
| Wayfinding | $0.00 |
| Bicycle and Pedestrian Contingencies | $0.00 |
| Other Bicycle and Pedestrian Elements | $0.00 |
| **Totals** | **$150,000.00** |

### Specific Transit and TDM Elements

| CONSTRUCTION PROJECT ELEMENTS/COST ESTIMATES | Cost |
|---|---|
| Fixed Guideway Elements | $0.00 |

| | |
|---|---|
| Stations, Stops, and Terminals | $0.00 |
| Support Facilities | $0.00 |
| Transit Systems (e.g. communications, signals, controls, fare collection, etc.) | $0.00 |
| Vehicles | $0.00 |
| Contingencies | $0.00 |
| Right-of-Way | $0.00 |
| Other Transit and TDM Elements | $0.00 |
| **Totals** | **$0.00** |

## Transit Operating Costs

| | |
|---|---|
| **Number of Platform hours** | 0 |
| **Cost Per Platform hour (full loaded Cost)** | $0.00 |
| **Subtotal** | $0.00 |
| **Other Costs - Administration, Overhead,etc.** | $0.00 |

## PROTECT Funds Eligibility

*One of the new federal funding sources is Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT). Please describe which specific elements of your project and associated costs out of the Total TAB-Eligible Costs are eligible to receive PROTECT funds. Examples of potential eligible items may include: storm sewer, ponding, erosion control/landscaping, retaining walls, new bridges over floodplains, and road realignments out of floodplains.*

*INFORMATION: Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) Formula Program Implementation Guidance (dot.gov).*

**Response:**

The proposed project will reconstruct and modernize an existing surface transportation facility, upgrading it to modern standards and improving stormwater management capabilities. Roadway, concrete items, storm sewer, retaining wall, and erosion and landscaping items are potentially eligible for PROTECT funds.

## Totals

| | |
|---|---|
| **Total Cost** | $3,358,800.00 |
| **Construction Cost Total** | $3,358,800.00 |
| **Transit Operating Cost Total** | $0.00 |

## Congestion within Project Area:

| | |
|---|---|
| **Free-Flow Travel Speed:** | 34 |
| *The free-flow travel speed is the black number* | |
| **Peak Hour Travel Speed:** | 24 |
| *The peak hour travel speed is the red number* | |
| **Percentage Decrease in Travel Speed in Peak Hour Compared to Free-Flow (calculation):** | 29.41% |
| **Upload the "Level of Congestion" map:** | 1701718990953_76th&Knox_Level of Congestion.pdf |

## Congestion on adjacent Parallel Routes:

| | |
|---|---|
| **Adjacent Parallel Corridor** | I-494 |
| **Adjacent Parallel Corridor Start and End Points:** | |
| **Start Point:** | Penn Ave |
| **End Point:** | I-35W |
| **Free-Flow Travel Speed:** | 65 |
| *The Free-Flow Travel Speed is black number.* | |
| **Peak Hour Travel Speed:** | 48 |
| *The Peak-Hour Travel Speed is red number.* | |
| **Percentage Decrease in Travel Speed in Peak Hour Compared to Free-Flow (calculation):** | 26.15% |
| **Upload the "Level of Congestion" map:** | 1701718990953_76th&Knox_Level of Congestion.pdf |

## Principal Arterial Intersection Conversion Study:

**Proposed at-grade project that reduces delay at a High Priority Intersection:**

*(70 Points)*

**Proposed at-grade project that reduces delay at a Medium Priority Intersection:**

*(65 Points)*

**Proposed at-grade project that reduces delay at a Low Priority Intersection:**

*(60 Points)*

**Not listed as a priority in the study:** Yes

*(0 Points)*

## Congestion Management and Safety Plan IV:

**Proposed at-grade project that reduces delay at a CMSP opportunity area:**

*(70 Points)*

**Not listed as a CMSP priority location:** Yes

*(0 Points)*

## Measure C: Current Heavy Commercial Traffic

*RESPONSE: Select one for your project, based on the updated 2021 Regional Truck Corridor Study:*

**Along Tier 1:**

**Miles:** 0

*(to the nearest 0.1 miles)*

**Along Tier 2:**

**Miles:** 0

*(to the nearest 0.1 miles)*

**Along Tier 3:**

**Miles:** 0

*(to the nearest 0.1 miles)*

**The project provides a direct and immediate connection (i.e., intersects) with either a Tier 1, Tier 2, or Tier 3 corridor:** Yes

**None of the tiers:**

## Measure A: Engagement

*i. Describe any Black, Indigenous, and People of Color populations, low-income populations, disabled populations, youth, or older adults within a ½ mile of the proposed project. Describe how these populations relate to regional context. Location of affordable housing will be addressed in Measure C.*

*ii. Describe how Black, Indigenous, and People of Color populations, low-income populations, persons with disabilities, youth, older adults, and residents in affordable housing were engaged, whether through community planning efforts, project needs identification, or during the project development process.*

*iii. Describe the progression of engagement activities in this project. A full response should answer these questions:*

1. *What engagement methods and tools were used?*
2. *How did you engage specific communities and populations likely to be directly impacted by the project?*
3. *What techniques did you use to reach populations traditionally not involved in community engagement related to transportation projects?*
4. *How were the project?s purpose and need identified?*
5. *How was the community engaged as the project was developed and designed?*
6. *How did you provide multiple opportunities for of Black, Indigenous, and People of Color populations, low-income populations, persons with disabilities, youth, older adults, and residents in affordable housing to engage at different points of project development?*
7. *How did engagement influence the project plans or recommendations? How did you share back findings with community and re-engage to assess responsiveness of these changes?*
8. *If applicable, how will NEPA or Title VI regulations will guide engagement activities?*

**Response:**

The neighborhoods around the proposed project are diverse, and the area is designated as a Regional Environmental Justice Area. Between the two census tracts where the project is located, 36 percent of residents are BIPOC. Eighteen percent of residents are below 185 percent of the Federal poverty level. Children under 18 make up 16 percent of the population and older adults 65 and up make up 13 percent of the population. Eleven percent of residents have a disability. Ten percent of residents don?t have a vehicle. Richfield Middle School, located one block north of the project area, enrolls 74 percent students of color. Sixty-eight percent of students qualify for free or reduced-price lunch, and ten percent of students regularly walk or bike to school. Minnesota Independence College and Community, a nonprofit vocational and life skills training program for autistic and neurodivergent young adults, is located on the block north of the project area.

The city uses public engagement to ensure all residents can participate in community planning activities. Recent examples include the Richfield 2040 Comprehensive Plan, the Pedestrian Master Plan, and the Active Transportation Action Plan. Ensuring participation from all residents ? including the groups identified above, affordable housing residents, and other underrepresented communities ? requires deliberate outreach. In Richfield, this includes targeted solicitation of feedback from multi-family housing residents, Spanish-language interpreting and translation, and promotion through trusted community partners.

This project is included in the City of Richfield?s Capital Improvement Plan (CIP). For the CIP development, each year during the budget preparation, every resident, tenant, and property owner is sent a postcard and other engagement materials informing them of the budget process. Each year, the CIP is discussed through Transportation Commission meetings and City Council public hearings.

The Public Engagement Policy for Street Projects (2019) sets a framework for engaging with nearby residents and includes engagement activities at each step of the planning and construction process. The bulk of engagement for this and all projects occurs in the preliminary design phase during concept development, including resident and stakeholder engagement by the Transportation Commission and a series of in-person and/or virtual open houses. As part of the process of developing this application, the City of Richfield has met with the surrounding businesses and apartment complexes including the Colony Apartments, where MICC is located, so their concerns can be incorporated into the design. All future outreach will be bilingual and promoted through a combination of digital marketing, direct mail, and word of mouth.

*(Limit 2,800 characters; approximately 400 words):*

## Measure B: Disadvantaged Communities Benefits and Impacts

*Describe the project?s benefits to Black, Indigenous, and People of Color populations, low-income populations, children, people with disabilities, youth, and older adults. Benefits could relate to:*

*? pedestrian and bicycle safety improvements;*
*? public health benefits;*
*? direct access improvements for residents or improved access to destinations such as jobs, school, health care, or other;*
*? travel time improvements;*
*? gap closures;*
*? new transportation services or modal options;*
*? leveraging of other beneficial projects and investments;*
*? and/or community connection and cohesion improvements.*

*This is not an exhaustive list. A full response will support the benefits claimed, identify benefits specific to Disadvantaged communities residing or engaged in activities near the project area, identify benefits addressing a transportation issue affecting Disadvantaged communities specifically identified through engagement, and substantiate benefits with data.*

*Acknowledge and describe any negative project impacts to Black, Indigenous, and People of Color populations, low-income populations, children, people with disabilities, youth, and older adults. Describe measures to mitigate these impacts. Unidentified or unmitigated negative impacts may result in a reduction in points.*

*Below is a list of potential negative impacts. This is not an exhaustive list.*

*? Decreased pedestrian access through sidewalk removal / narrowing, placement of barriers along the walking path, increase in auto-oriented curb cuts, etc.*
*? Increased speed and/or ?cut-through? traffic.*
*? Removed or diminished safe bicycle access.*
*? Inclusion of some other barrier to access to jobs and other destinations.*

**Response:**

The disadvantaged communities in the project area will benefit from the safety, mobility, and transit improvements provided by the project. In addition to the low income and BIPOC communities discussed above who may rely more on transit or nonmotorized transportation, there are children in the project area traveling to and from Richfield Middle School, people with disabilities traveling to and from the MICC, and users of the Nine Mile Creek Regional Trail.

Ten percent of Richfield Middle School students regularly walk or bike to school. W 76th St as it exists today can be a major barrier for students walking and biking to school because of the speed of traffic and the number of lanes that must be crossed. The proposed roundabout will slow the speed of vehicles entering the intersection which will reduce the severity of potential crashes (for all modes of transportation). The addition of pedestrian refuge islands, an FHWA Proven Safety Countermeasure, on the south and east intersection legs will shorten crossings distances and allow pedestrians to cross the roadway in two stages. Crossing only one direction of traffic at a time will increase visibility and awareness between people driving and people walking.

Improved safety and comfort for people traveling through the intersection will improve connections to nearby community resources and employment centers such as the Best Buy Headquarters, Richfield Middle School, Seven Hills Preparatory Academy, Donaldson Park, and destinations south of I-494 via connection to the METRO Orange Line tunnel, which provides pedestrian and bicycle access under I-494. Drivers using the intersection will also see more consistency and reliability in their travel time due to improved traffic flow.

The project would also improve pedestrian and bicycle accessibility to transit stops/stations for METRO Orange Line and Route 540, improve safety for transit operators and customers due to the reduction in intersection conflict points, and improve on-time performance for METRO Orange Line and Route 540 buses due to removal of a traffic signal. The roundabout would also improve fuel efficiency for METRO Orange Line and Route 540 buses due to removal of traffic signal and improve air quality in the vicinity of the project intersection, particularly for transit customers waiting at stops/stations.

In addition to temporary impacts associated with construction of the proposed roundabout, one possible negative impact of the project is a potential temporary increase in minor/non-injury vehicle crashes. These types of crashes can sometimes increase temporarily following construction of traffic control changes, particularly roundabouts, while the change is still unfamiliar to users.

*(Limit 2,800 characters; approximately 400 words):*

## Measure C: Affordable Housing Access

*Describe any affordable housing developments?existing, under construction, or planned?within ½ mile of the proposed project. The applicant should note the number of existing subsidized units, which will be provided on the Socio-Economic Conditions map. Applicants can also describe other types of affordable housing (e.g., naturally-occurring affordable housing, manufactured housing) and under construction or planned affordable housing that is within a half mile of the project. If applicable, the applicant can provide self-generated PDF maps to support these additions. Applicants are encouraged to provide a self-generated PDF map describing how a project connects affordable housing residents to destinations (e.g., childcare, grocery stores, schools, places of worship).*

*Describe the project?s benefits to current and future affordable housing residents within ½ mile of the project. Benefits must relate to affordable housing residents. Examples may include:*

- *? specific direct access improvements for residents*
- *? improved access to destinations such as jobs, school, health care or other;*
- *? new transportation services or modal options;*
- *? and/or community connection and cohesion improvements.*

*This is not an exhaustive list. Since residents of affordable housing are more likely not to own a private vehicle, higher points will be provided to roadway projects that include other multimodal access improvements. A full response will support the benefits claimed, identify benefits specific to residents of affordable housing, identify benefits addressing a transportation issue affecting residents of affordable housing specifically identified through engagement, and substantiate benefits with data.*

**Response:**

In addition to the 490 publicly subsidized rental housing units in census tracts within half a mile of the project, there are many Naturally Occurring Affordable Housing (NOAH) developments near the project area. These are shown in the attached map. There are 26 properties that are NOAH within or just outside a half mile of the project area with a total of 620 affordable units. There is also one proposed housing development within half a mile that would add an additional 70 affordable units.

The project will address existing barriers to pedestrian use along the project corridor as described above by narrowing the roadway, providing safer crossings, slowing vehicle speeds, shortening pedestrian crossing distances, and increasing pedestrian visibility. Additionally, new ADA-compliant curb ramps will improve the ease of crossing for people with disabilities and elderly residents and visitors. These pedestrian access improvements will provide benefits to those who rely on walking to access public transportation (including the METRO Orange Line and Route 540), jobs, education, and recreational destinations.

These improvements will improve access to numerous community resources, amenities, and job centers for affordable housing residents. Nearby destinations include the Best Buy headquarters, St. Richard's Catholic Church, Richfield Middle School, South Education Center (which includes Pre-K programs, special education programs, and an alternative high school), and Minnesota Independence College and Community (a vocational and life skills program for autistic and neurodiverse young adults).

The improved walking and biking connection to the METRO Orange Line underpass at I-494 will greatly improve nonmotorized access to destinations south of the highway, such as the Southtown Shopping Center, Fresh Thyme grocery store, SouthPoint Office Center, and a growing number of multifamily residences. To the east and west of Knox Ave, the nearest highway crossings are Lyndale Ave and Penn Ave, which are long crossings that involve potential conflicts with traffic entering or exiting I-494, and may not be comfortable for people walking and biking. This improved connection will allow residents north of I-494 and users of the Nine Mile Creek Regional Trail to access all the destinations south of the highway and will allow Bloomington residents on the south side of the highway to access all the aforementioned destinations north of I-494.

*(Limit 2,800 characters; approximately 400 words):*

## Measure D: BONUS POINTS

| | |
|---|---|
| **Project is located in an Area of Concentrated Poverty:** | |
| **Project?s census tracts are above the regional average for population in poverty or population of color (Regional Environmental Justice Area):** | Yes |
| **Project located in a census tract that is below the regional average for population in poverty or populations of color (Regional Environmental Justice Area):** | |
| **Upload the ?Socio-Economic Conditions? map used for this measure.** | 1701719260892_76th&Knox_Socio-Economic Conditions.pdf |

## Measure A: Congestion Reduction/Air Quality

| Total Peak Hour Delay Per Vehicle Without The Project (Seconds/Vehicle) | Total Peak Hour Delay Per Vehicle With The Project (Seconds/Vehicle) | Total Peak Hour Delay Per Vehicle Reduced by Project (Seconds/Vehicle) | Volume without the Project (Vehicles per hour) | Volume with the Project (Vehicles Per Hour): | Total Peak Hour Delay without the Project: | Total Peak Hour Delay by the Project: | Total Peak hour Delay Reduced by project | EXPLANATION of methodology used to calculate railroad crossing delay, if applicable. | Synchro or HCM Reports |
|---|---|---|---|---|---|---|---|---|---|
| 19.0 | 11.0 | 8.0 | 2895 | 2866 | 55005.0 | 31526.0 | 23479.0 | NA | 1701719384625_Synchro Attachment_All scenarios.pdf |
| | | | | | | **31526** | | | |

## Vehicle Delay Reduced

| Total Peak Hour Delay Reduced | Total Peak Hour Delay Reduced | Delay Reduced Total |
|---|---|---|
| 55005.0 | 31526.0 | 23479.0 |

## Measure B: Roadway projects that do not include new roadway segments or railroad grade-separation elements

| Total (CO, NOX, and VOC) Peak Hour Emissions without the Project (Kilograms): | Total (CO, NOX, and VOC) Peak Hour Emissions with the Project (Kilograms): | Total (CO, NOX, and VOC) Peak Hour Emissions Reduced by the Project (Kilograms): |
|---|---|---|
| 5.79 | 5.37 | 0.42 |
| **6** | **5** | **0** |

## Total

**Total Emissions Reduced:** 0.42

**Upload Synchro Report** 1701719476333_Synchro Attachment_All scenarios.pdf

*Please upload attachment in PDF form (Save Form, then click 'Edit' in top right to upload file.)*

## Measure B: Roadway projects that are constructing new roadway segments, but do not include railroad grade-separation elements (for Roadway Expansion applications only):

| Total (CO, NOX, and VOC) Peak Hour Emissions without the Project (Kilograms): | Total (CO, NOX, and VOC) Peak Hour Emissions with the Project (Kilograms): | Total (CO, NOX, and VOC) Peak Hour Emissions Reduced by the Project (Kilograms): |
|---|---|---|
| **0** | **0** | **0** |

## Total Parallel Roadway

**Emissions Reduced on Parallel Roadways** 0

**Upload Synchro Report**

*Please upload attachment in PDF form (Save Form, then click 'Edit' in top right to upload file.)*

## New Roadway Portion:

**Cruise speed in miles per hour with the project:** 0

**Vehicle miles traveled with the project:** 0

**Total delay in hours with the project:** 0

**Total stops in vehicles per hour with the project:** 0

**Fuel consumption in gallons:** 0

| | |
|---|---|
| **Total (CO, NOX, and VOC) Peak Hour Emissions Reduced or Produced on New Roadway (Kilograms):** | 0 |
| **EXPLANATION of methodology and assumptions used:(Limit 1,400 characters; approximately 200 words)** | |
| **Total (CO, NOX, and VOC) Peak Hour Emissions Reduced by the Project (Kilograms):** | 0.0 |

## Measure B: Roadway projects that include railroad grade-separation elements

| | |
|---|---|
| **Cruise speed in miles per hour without the project:** | 0 |
| **Vehicle miles traveled without the project:** | 0 |
| **Total delay in hours without the project:** | 0 |
| **Total stops in vehicles per hour without the project:** | 0 |
| **Cruise speed in miles per hour with the project:** | 0 |
| **Vehicle miles traveled with the project:** | 0 |
| **Total delay in hours with the project:** | 0 |
| **Total stops in vehicles per hour with the project:** | 0 |
| **Fuel consumption in gallons (F1)** | 0 |
| **Fuel consumption in gallons (F2)** | 0 |
| **Fuel consumption in gallons (F3)** | 0 |
| **Total (CO, NOX, and VOC) Peak Hour Emissions Reduced by the Project (Kilograms):** | 0 |
| **EXPLANATION of methodology and assumptions used:(Limit 1,400 characters; approximately 200 words)** | |

## Measure A: Benefit of Crash Reduction

| | |
|---|---|
| **Crash Modification Factor Used:** | Conversion of signalized intersection into single- or multi-lane roundabout |
| *(Limit 700 Characters; approximately 100 words)* | |
| **Rationale for Crash Modification Selected:** | This CMF was selected because the existing signalized intersection is proposed to be converted into a hybrid (two lanes by one lane) roundabout in an urban area. This CMF had the highest expected crash reduction based on the proposed improvements. |
| *(Limit 1400 Characters; approximately 200 words)* | |
| **Project Benefit ($) from B/C Ratio** | $0.00 |
| **Total Fatal (K) Crashes:** | 0 |
| **Total Serious Injury (A) Crashes:** | 0 |
| **Total Non-Motorized Fatal and Serious Injury Crashes:** | 0 |
| **Total Crashes:** | 0 |
| **Total Fatal (K) Crashes Reduced by Project:** | 0 |
| **Total Serious Injury (A) Crashes Reduced by Project:** | 0 |
| **Total Non-Motorized Fatal and Serious Injury Crashes Reduced by Project:** | 0 |
| **Total Crashes Reduced by Project:** | 0 |
| **Worksheet Attachment** | 1701720346746_76th&Knox_HSIP_Combined.pdf |
| *Upload Crash Modification Factors and B/C Worksheet in PDF form* | |

## Measure B: Pedestrian Safety

***Determine if these measures do not apply to your project.*** *Does the project match either of the following descriptions?*

*If either of the items are checked yes, then* ***score for entire pedestrian safety measure is zero****. Applicant does not need to respond to the sub-measures and can proceed to the next section.*

| | |
|---|---|
| **Project is primarily a freeway (or transitioning to a freeway) and does not provide safe and comfortable pedestrian facilities and crossings.** | No |
| **Existing location lacks any pedestrian facilities (e.g., sidewalks, marked crossings, wide shoulders in rural contexts) and project does not add pedestrian elements (e.g., reconstruction of a roadway without sidewalks, that doesn?t also add pedestrian crossings and sidewalk or sidepath on one or both sides).** | No |

***SUB-MEASURE 1: Project-Based Pedestrian Safety Enhancements and Risk Elements***

*To receive maximum points in this category, pedestrian safety countermeasures selected for implementation in projects should be, to the greatest extent feasible, consistent with the countermeasure recommendations in the Regional Pedestrian Safety Action Plan and state and national best practices. Links to resources are provided on the Regional Solicitation Resources web page.*

*Please answer the following two questions with as much detail as possible based on the known attributes of the proposed design. If any aspect referenced in this section is not yet determined, describe the range of options being considered, to the greatest extent available. If there are project elements that may increase pedestrian risk, describe how these risks are being mitigated.*

***1. Describe how this project will address the safety needs of people crossing the street at signalized intersections, unsignalized intersections, midblock locations, and roundabouts.***

*Treatments and countermeasures should be well-matched to the roadway?s context (e.g., appropriate for the speed, volume, crossing distance, and other location attributes). Refer to the Regional Solicitation Resources web page for guidance links.*

**Response:**

The goals of the proposed project include improving safety of people walking and biking through the project intersection. As noted previously, there are many pedestrian generators in the immediate vicinity of the project, including a METRO Orange Line station, Nine Mile Creek Regional Trail, Best Buy headquarters, Richfield Middle School, Seven Hills Preparatory Academy, Donaldson Park, Minnesota Independence College and Community, and several multifamily apartment buildings. In the existing conditions, there are several pedestrian safety and mobility challenges. The existing curb ramps and push buttons are not ADA-compliant, and the existing marked crosswalk on the east intersection leg changes direction at the midpoint rather than continuing in a straight line. In addition, the south leg has wide curb radii that allow traffic to make turning movements at high speeds, and both existing marked crosswalks have long crossing distances.

The proposed conversion of this intersection to a roundabout will have several pedestrian crossing benefits, including slowing the speed of vehicles entering the intersection which will reduce the severity of potential crashes. The addition of pedestrian refuge islands, an FHWA Proven Safety Countermeasure, on the south and east intersection legs will shorten crossings distances and allow pedestrians to cross the roadway in two stages. Crossing only one direction of traffic at a time will increase visibility and awareness between people driving and people walking. FHWA suggests that this treatment is appropriate for urban/suburban multilane roadways with a mix of pedestrian and vehicle traffic, daily traffic volumes exceeding 9,000, and speeds 35 mph or greater. The project location meets all of these criteria. The addition of refuge islands to facilitate two stage crossings will be especially beneficial for students, people with disabilities, and other vulnerable roadway users in the area who may need additional time to cross the street.

In addition, Rectangular Rapid Flashing Beacons (RRFBs) will be added to the pedestrian crossings on all legs of the intersection. RRFBs are an FHWA Proven Safety Countermeasure that can reduce pedestrian crashes up to 47 percent and can result in motorist yielding rates as high as 98 percent at marked crosswalks.

*(Limit 2,800 characters; approximately 400 words)*

*Is the distance in between signalized intersections increasing (e.g., removing a signal)?*

**Select one:** Yes

*If yes, describe what measures are being used to fill the gap between protected crossing opportunities for pedestrians (e.g., adding High-Intensity Activated Crosswalk beacons to help motorists yield and help pedestrians find a suitable gap for crossing, turning signal into a roundabout to slow motorist speed, etc.).*

**Response:**

The removal of the existing signalized intersection at 76th St and Knox Ave will increase the distance between signalized intersections along 76th St where pedestrian crossing is allowed. The closest signalized intersection to the west is Newton Ave and the closest to the east is Girard Ave. The distance between these crossings is approximately 0.4 miles. However, the proposed improvements will improve safety for pedestrians crossing 76th St in between these locations by converting the existing signalized intersection into a roundabout. In addition to correcting ADA deficiencies at the intersection and providing median refuges on the east and south legs to allow for two-stage crossings, the new roundabout will slow vehicles entering the intersection compared to the existing conditions, which will reduce the risk of severe crashes caused by high speeds.

In addition, Rectangular Rapid Flashing Beacons (RRFBs) will be added to the pedestrian crossings on all legs of the intersection. RRFBs are an FHWA Proven Safety Countermeasure that can reduce pedestrian crashes up to 47 percent and can result in motorist yielding rates as high as 98 percent at marked crosswalks.

*(Limit 1,400 characters; approximately 200 words)*

*Will your design increase the crossing distance or crossing time across any leg of an intersection? (e.g., by adding turn or through lanes, widening lanes, using a multi-phase crossing, prohibiting crossing on any leg of an intersection, pedestrian bridge requiring length detour, etc.). This does not include any increases to crossing distances solely due to the addition of bike lanes (i.e., no other through or turn lanes being added or widened).*

**Select one:** No

*If yes,*
*? How many intersections will likely be affected?*

**Response:**

*? Describe what measures are being used to reduce exposure and delay for pedestrians (e.g., median crossing islands, curb bulb-outs, etc.)*

**Response:**

*(Limit 1,400 characters; approximately 200 words)*

*? If grade separated pedestrian crossings are being added and increasing crossing time, describe any features that are included that will reduce the detour required of pedestrians and make the separated crossing a more appealing option (e.g., shallow tunnel that doesn?t require much elevation change instead of pedestrian bridge with numerous switchbacks).*

**Response:**

*(Limit 1,400 characters; approximately 200 words)*

*If mid-block crossings are restricted or blocked, explain why this is necessary and how pedestrian crossing needs and safety are supported in other ways (e.g., nearest protected or enhanced crossing opportunity).*

**Response:**

*(Limit 1,400 characters; approximately 200 words)*

***2. Describe how motorist speed will be managed in the project design, both for through traffic and turning movements.*** *Describe any project-related factors that may affect speed directly or indirectly, even if speed is not the intended outcome (e.g., wider lanes and turning radii to facilitate freight movements, adding turn lanes to alleviate peak hour congestion, etc.). Note any strategies or treatments being considered that are intended to help motorists drive slower (e.g., visual narrowing, narrow lanes, truck aprons to mitigate wide turning radii, etc.) or protect pedestrians if increasing motorist speed (e.g., buffers or other separation from moving vehicles, crossing treatments appropriate for higher speed roadways, etc.).*

**Response:**

One of the primary benefits of the proposed roundabout design is its ability to slow vehicles entering the intersection. As shown in the attached layout, all three intersection legs feature channelized, curved intersection approaches that will reduce vehicle speeds compared to the existing through lanes. This design will also remove the existing wide corner radii that create pedestrian safety issues today. Roundabouts are one of FHWA?s Proven Safety Countermeasures because of their ability to reduce fatal and serious injury crashes by minimizing conflict points and reducing vehicle speeds. The new design will also include pedestrian refuge islands, another FHWA Proven Safety Countermeasure. As noted previously, this crossing treatment allows the roadway to be crossed in two stages, one direction of traffic at a time, reducing the amount of time nonmotorized users spend exposed to traffic and increasing visibility between people driving and people walking.

In addition, Rectangular Rapid Flashing Beacons (RRFBs) will be added to the pedestrian crossings on all legs of the intersection. RRFBs are an FHWA Proven Safety Countermeasure that can reduce pedestrian crashes up to 47 percent and can result in motorist yielding rates as high as 98 percent at marked crosswalks.

*(Limit 2,800 characters; approximately 400 words)*

*If known, what are the existing and proposed design, operation, and posted speeds? Is this an increase or decrease from existing conditions?*

**Response:**

The existing posted speed limit along W 76th St is 35 mph. The design speed of the proposed roundabout is 15-20 mph. The operating speed following construction is expected to be reduced compared to the existing conditions along W 76th St, as the channelized, curved intersection approaches will force traffic to reduce speed and stop in some cases to wait for a gap in traffic to enter the roundabout.

*(Limit 1,400 characters; approximately 200 words)*

***SUB-MEASURE 2: Existing Location-Based Pedestrian Safety Risk Factors***

*These factors are based on based on trends and patterns observed in pedestrian crash analysis done for the Regional Pedestrian Safety Action Plan. Check off how many of the following factors are present. Applicants receive more points if more risk factors are present.*

**Existing road configuration is a One-way, 3+ through lanes**

**or**

| | |
|---|---|
| **Existing road configuration is a Two-way, 4+ through lanes** | Yes |
| **Existing road has a design speed, posted speed limit, or speed study/data showing 85th percentile travel speeds in excess of 30 MPH or more** | Yes |
| **Existing road has AADT of greater than 15,000 vehicles per day** | |

**List the AADT**

***SUB-MEASURE 3: Existing Location-Based Pedestrian Safety Exposure Factors***

*These factors are based on based on trends and patterns observed in pedestrian crash analysis done for the Regional Pedestrian Safety Action Plan. Check off how many of the following existing location exposure factors are present. Applicants receive more points if more risk factors are present.*

| | |
|---|---|
| **Existing road has transit running on or across it with 1+ transit stops in the project area (If flag-stop route with no fixed stops, then 1+ locations in the project area where roadside stops are allowed. Do not count portions of transit routes with no stops, such as non-stop freeway sections of express or limited-stop routes.)** | Yes |
| **Existing road has high-frequency transit running on or across it and 1+ high-frequency stops in the project area (high-frequency defined as service at least every 15 minutes from 6am to 7pm weekdays and 9am to 6pm Saturdays.)** | Yes |
| **Existing road is within 500? of 1+ shopping, dining, or entertainment destinations (e.g., grocery store, restaurant)** | Yes |

**If checked, please describe:**

The proposed improvements are approximately 500 feet from the Dick?s Sporting Goods store located along Knox Ave south of the project intersection.

*(Limit 1,400 characters; approximately 200 words)*

| | |
|---|---|
| **Existing road is within 500? of other known pedestrian generators (e.g., school, civic/community center, senior housing, multifamily housing, regulatorily-designated affordable housing)** | Yes |
| **If checked, please describe:** | Other pedestrian generators within approximately 500 feet of the project include Donaldson Park (one block north of the project), Minnesota Independence College and Community (a nonprofit vocational and life skills training program for autistic and neurodivergent young adults just north of the project), and several multifamily apartment buildings immediately adjacent to the project to the north and south. These apartment developments are recognized by the city as naturally occurring affordable housing (see attached map). Richfield Middle School is just beyond 500 feet north of the project next to Donaldson Park, and Seven Hills Preparatory Academy is just beyond 500 feet from the project across I-35W. |

*(Limit 1,400 characters; approximately 200 words)*

## Measure A: Multimodal Elements and Existing Connections

**Response:**

The proposed project will provide a direct connection and benefit to the Nine Mile Creek Regional Trail, a Tier 1 RBTN alignment. Nine Mile Creek Regional Trail runs east-west along W 75th St, one block north of the project area, before turning south at Humboldt Ave S. It follows the alignment of Humboldt Ave until W 76th St, where it continues east along the north side of the roadway on the bridge over I-35W. By improving the ability for people walking and biking to safely cross W 76th St through roundabout conversions and adding RRFBs, the proposed project will improve safety for trail users traveling to and from the regional trail facility. As shown in the proposed layout, the project would also extend a trail facility from the project intersection south along Knox Ave, providing access to a METRO Orange Line station as well as the Orange Line Transitway under I-494. The existing nonmotorized facilities along the transitway provide a grade-separated crossing of the freeway in an area designated as a Tier 1 Expressway Barrier Crossing Area. By improving the ability to safety cross W 76th St, the proposed project is further reducing barriers to access Nine Mile Creek Regional trail for users with trips originating south of I-494. In addition, the I-494 and I-35W interchange area is a Metropolitan Council-designated Regional Destination in the job centers category, further underscoring the importance of safer access to existing barrier crossings.

The METRO Orange Line BRT exits and enters I-35W at W 76th St and travels through the project intersection with northbound and southbound stops along Knox Ave S. Route 540 buses also travel through the project area along W 76th St, with eastbound and westbound stops in the northeast and southwest quadrants. The proposed project will provide several benefits to these existing services:

-Improved pedestrian accessibility to transit stops for METRO Orange Line and Route 540 users. Several elements of the existing intersection are not ADA compliant, and the proposed roundabout would improve safety for pedestrians crossing W 76th St and Knox Ave S, including transfers between the Orange Line and Route 540. Nearby trip generators include Best Buy headquarters, apartment buildings, Richfield Middle School, Donaldson Park, and Minnesota Independence College and Community

-Improved bicycle accessibility to METRO Orange Line and Route 540 stops for users of Nine Mile Creek Regional Trail.

-Reduced delay, improved on-time performance, and improved fuel efficiency for METRO Orange Line and Route 540 buses.

-Improved safety for transit operators and customers due to reduction in intersection conflict points.

-Improved air quality for transit customers in the vicinity of the project intersection.

*(Limit 2,800 characters; approximately 400 words)*

## Transit Projects Not Requiring Construction

*If the applicant is completing a transit application that is operations only, check the box and do not complete the remainder of the form. These projects will receive full points for the Risk Assessment.*

*Park-and-Ride and other transit construction projects require completion of the Risk Assessment below.*

**Check Here if Your Transit Project Does Not Require Construction**

## Measure A: Risk Assessment - Construction Projects

**1. Public Involvement (20 Percent of Points)**

*Projects that have been through a public process with residents and other interested public entities are more likely than others to be successful. The project applicant must indicate that events and/or targeted outreach (e.g., surveys and other web-based input) were held to help identify the transportation problem, how the potential solution was selected instead of other options, and the public involvement completed to date on the project. The focus of this section is on the opportunity for public input as opposed to the quality of input. NOTE: A written response is required and failure to respond will result in zero points.*

**Multiple types of targeted outreach efforts (such as meetings or online/mail outreach) specific to this project with the general public and partner agencies have been used to help identify the project need.**

*100%*

**At least one meeting specific to this project with the general public has been used to help identify the project need.**

*50%*

**At least online/mail outreach effort specific to this project with the general public has been used to help identify the project need.**

*50%*

**No meeting or outreach specific to this project was conducted, but the project was identified through meetings and/or outreach related to a larger planning effort.** Yes

*25%*

**No outreach has led to the selection of this project.**

*0%*

*Describe the type(s) of outreach selected for this project (i.e., online or in-person meetings, surveys, demonstration projects), the method(s) used to announce outreach opportunities, and how many people participated. Include any public website links to outreach opportunities.*

**Response:**

This project is included in the City of Richfield?s Capital Improvement Plan (CIP). For the CIP development, each year during the budget preparation, every resident, tenant, and property owner is sent a postcard and other engagement materials informing them of the budget process. Each year, the CIP is discussed through Transportation Commission meetings and City Council public hearings.

The city uses public engagement to ensure all residents can participate in community planning activities. The Public Engagement Policy for Street Projects (2019) sets a framework for engaging with nearby residents and includes engagement activities at each step of the planning and construction process. This policy will guide engagement activities on this project should it be selected for funding. The bulk of engagement for this and all projects occurs in the preliminary design phase during concept development, including resident and stakeholder engagement by the Transportation Commission and a series of in-person and/or virtual open houses. Ensuring participation from all residents requires deliberate outreach. In Richfield, this includes Spanish-language interpreting and translation and promotion through trusted community partners.

As part of the process of developing this application, the City of Richfield has met with Metro Transit as well as the surrounding businesses and apartment complexes including the Colony Apartments, where MICC is located, so their concerns can be incorporated into the preliminary design. This engagement will continue as the process moves forward.

If this project is awarded funding, Richfield will continue its public engagement process to finalize details and ensure that the project continues to reflect community wishes. This will include a combination of in-person open houses and online survey techniques. All future outreach will be bilingual and promoted through a combination of digital marketing, direct mail, and word of mouth. More information about the city?s engagement process is included in the attached Public Engagement Policy.

*(Limit 2,800 characters; approximately 400 words)*

**2. Layout (25 Percent of Points)**

*Layout includes proposed geometrics and existing and proposed right-of-way boundaries. A basic layout should include a base map (north arrow, scale; legend;* city and/or county limits; existing ROW, labeled; existing signals;* and bridge numbers*) and design data (proposed alignments; bike and/or roadway lane widths; shoulder width;* proposed signals;* and proposed ROW). An aerial photograph with a line showing the project?s termini does not suffice and will be awarded zero points. *If applicable*

**Layout approved by the applicant and all impacted jurisdictions (i.e., cities/counties/MnDOT. If a MnDOT trunk highway is impacted, approval by MnDOT must have occurred to receive full points. A PDF of the layout must be attached along with letters from each jurisdiction to receive points.** Yes

*100%*

**A layout does not apply (signal replacement/signal timing, stand-alone streetscaping, minor intersection improvements). Applicants that are not certain whether a layout is required should contact Colleen Brown at MnDOT Metro State Aid ? colleen.brown@state.mn.us.**

*100%*

**For projects where MnDOT trunk highways are impacted and a MnDOT Staff Approved layout is required. Layout approved by the applicant and all impacted local jurisdictions (i.e., cities/counties), and layout review and approval by MnDOT is pending. A PDF of the layout must be attached along with letters from each jurisdiction to receive points.**

*75%*

**Layout completed but not approved by all jurisdictions. A PDF of the layout must be attached to receive points.**

*50%*

**Layout has been started but is not complete. A PDF of the layout must be attached to receive points.**

*25%*

**Layout has not been started**

*0%*

**Attach Layout** | 1702052619421_023562-000_Exhibit-76thStreetRoundabout_2023-12-08.pdf

*Please upload attachment in PDF form*

**Additional Attachments**

*Please upload attachment in PDF form*

**3. Review of Section 106 Historic Resources (15 Percent of Points)**

**No known historic properties eligible for or listed in the National Register of Historic Places are located in the project area, and project is not located on an identified historic bridge** | Yes

*100%*

**There are historical/archeological properties present but determination of ?no historic properties affected? is anticipated.**

*100%*

**Historic/archeological property impacted; determination of ?no adverse effect? anticipated**

*80%*

**Historic/archeological property impacted; determination of ?adverse effect? anticipated**

*40%*

**Unsure if there are any historic/archaeological properties in the project area.**

*0%*

**Project is located on an identified historic bridge**

**4. Right-of-Way (25 Percent of Points)**

**Right-of-way, permanent or temporary easements, and MnDOT agreement/limited-use permit either not required or all have been acquired**

*100%*

**Right-of-way, permanent or temporary easements, and/or MnDOT agreement/limited-use permit required - plat, legal descriptions, or official map complete**

*50%*

**Right-of-way, permanent or temporary easements, and/or MnDOT agreement/limited-use permit required - parcels identified** | Yes

*25%*

**Right-of-way, permanent or temporary easements, and/or MnDOT agreement/limited-use permit required - parcels not all identified**

*0%*

**5. Railroad Involvement (15 Percent of Points)**

**No railroad involvement on project or railroad Right-of-Way agreement is executed (include signature page, if applicable)** | Yes

*100%*

**Signature Page**

*Please upload attachment in PDF form*

**Railroad Right-of-Way Agreement required; negotiations have begun**

*50%*

**Railroad Right-of-Way Agreement required; negotiations have not begun.**

*0%*

## Measure A: Cost Effectiveness

**Total Project Cost (entered in Project Cost Form):** | $3,358,800.00

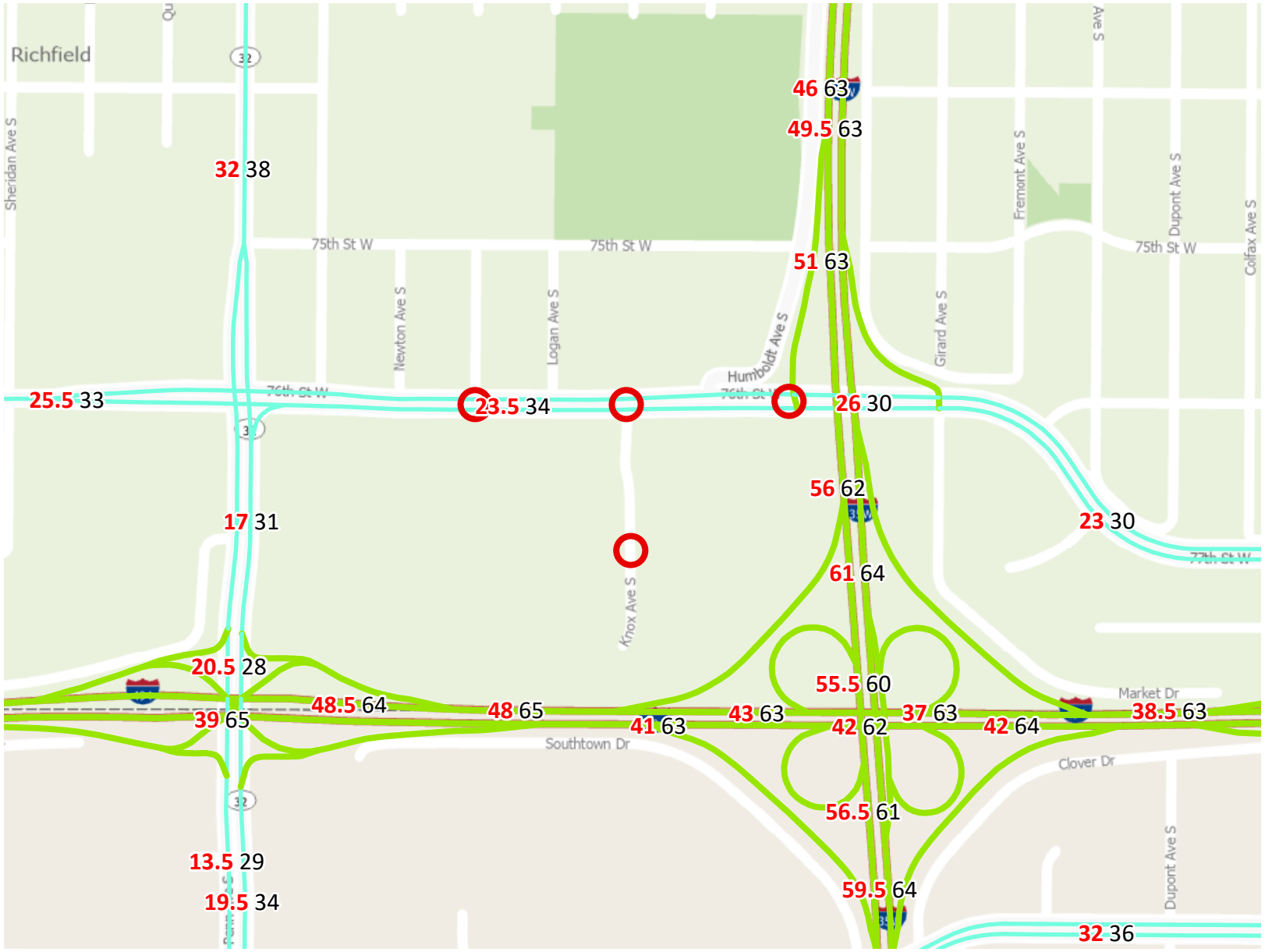
| | |
|---|---|
| **Enter Amount of the Noise Walls:** | $0.00 |
| **Total Project Cost subtract the amount of the noise walls:** | $3,358,800.00 |
| **Enter amount of any outside, competitive funding:** | $0.00 |
| **Attach documentation of award:** | |
| **Points Awarded in Previous Criteria** | |
| **Cost Effectiveness** | $0.00 |

## Other Attachments

| File Name | Description | File Size |
|---|---|---|
| 2024 Snow and Ice Policy.pdf | Snow and Ice Policy | 125 KB |
| 76th&KnoxAve_One_Page_Summary.pdf | One Page Project Summary | 250 KB |
| 76th&Knox_Maps_Combined.pdf | Project Location Map, Layout, and Affordable Housing Map | 5.9 MB |
| 76th&Knox_Photos.pdf | Existing Conditions Photos | 526 KB |
| Resolution Richfield RS 76th & Knox.pdf | City of Richfield Resolution of Support | 803 KB |
| Richfield 76th St & Knox Maintenance Letter of Support.pdf | Richfield Public Works Letter of Support | 118 KB |
| RPS_76th&Knox.pdf | Richfield Public Schools Letter of Support | 66 KB |
| StreetProjectsPEP.pdf | Public Engagement Policy | 307 KB |
| TRPD_Richfield 76th St&Knox Ave Intersection Improvements.pdf | Three Rivers Park District Letter of Support | 356 KB |

# Level of Congestion

Roadway Spot Mobility & Safety Project: 76th St & Knox Ave | Map ID: 1700602968594




Project Points

A Minor Arterials

A Minor Arterials Planned

Principal Arterials

Principal Arterials Planned

0 0.075 0.15 0.3 0.45 0.6 Miles

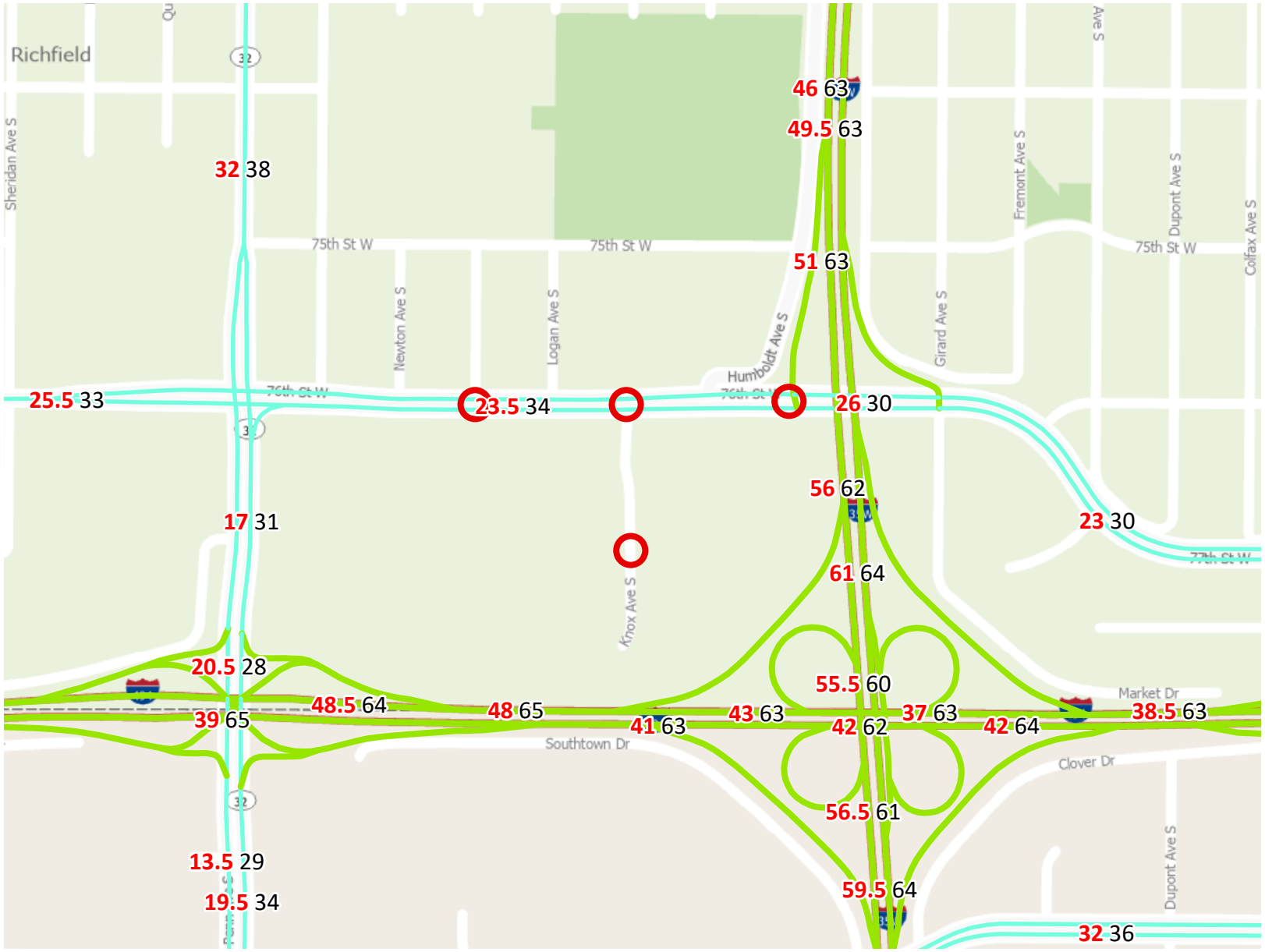
Created: 11/21/2023
LandscapeRSA1

For complete disclaimer of accuracy, please visit
https://giswebsite.metc.state.mn.us/gissite/notice.aspx

METROPOLITAN COUNCIL

# Level of Congestion

Roadway Spot Mobility & Safety Project: 76th St & Knox Ave | Map ID: 1700602968594




Project Points

A Minor Arterials

A Minor Arterials Planned

Principal Arterials

Principal Arterials Planned

0 0.075 0.15 0.3 0.45 0.6 Miles

Created: 11/21/2023
LandscapeRSA1

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https://giswebsite.metc.state.mn.us/gissite/notice.aspx

METROPOLITAN COUNCIL

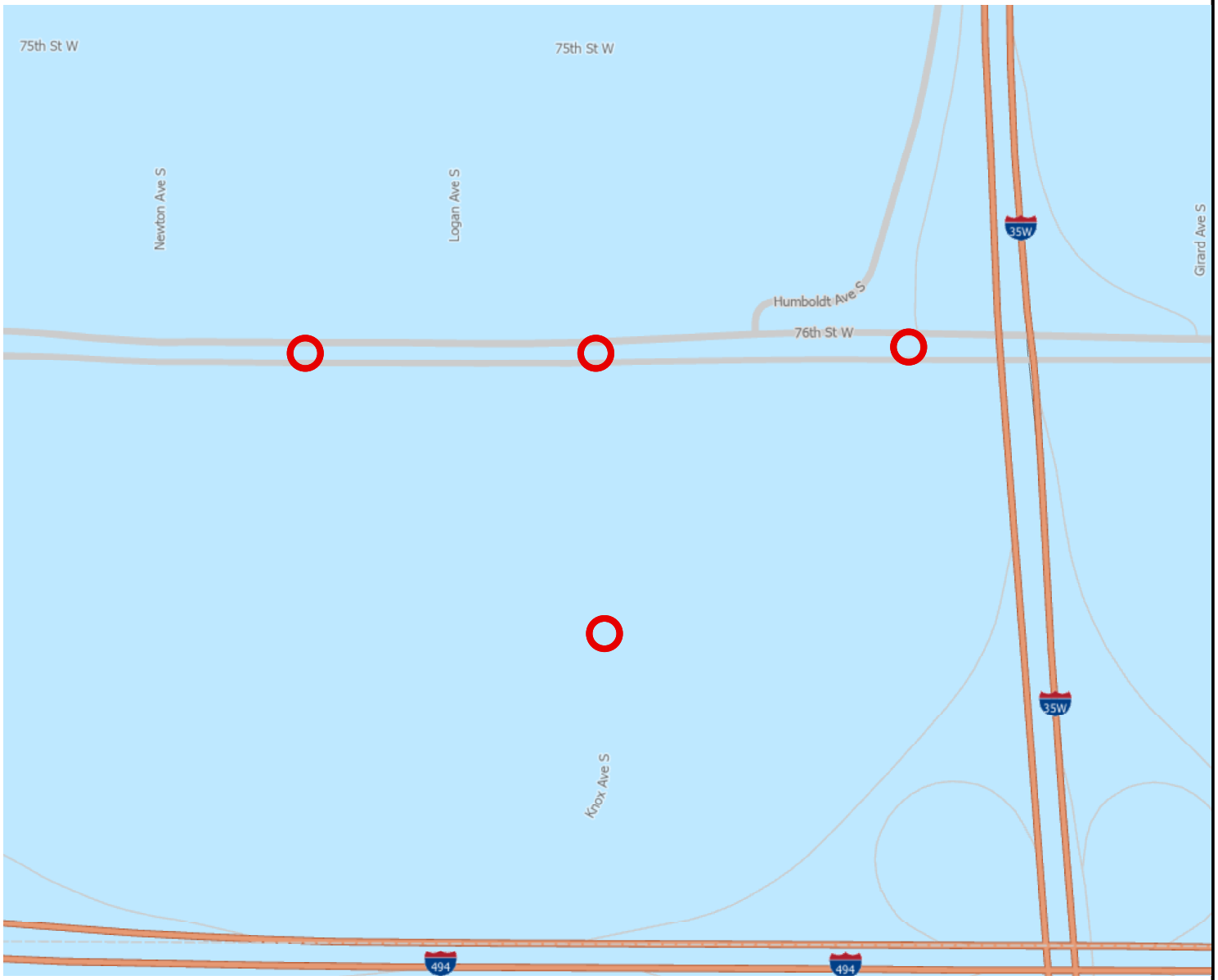
# Socio-Economic Conditions

Roadway Spot Mobility & Safety Project: 76th St & Knox Ave | Map ID: 1700602968594

## Results

Total of publicly subsidized rental housing units in census tracts within 1/2 mile: 490

Project located in census tract(s) that are ABOVE the regional average for population in poverty or population of color.




Points

Regional Environmental Justice Area

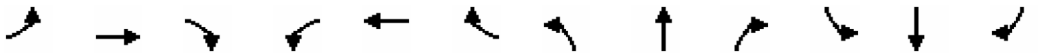
Area of Concentrated Poverty

0 0.04 0.08 0.16 0.24 0.32 Miles

Created: 11/21/2023
LandscapeRSA2

For complete disclaimer of accuracy, please visit http://giswebsite.metc.state.mn.us/gissite/notice.aspx

METROPOLITAN COUNCIL

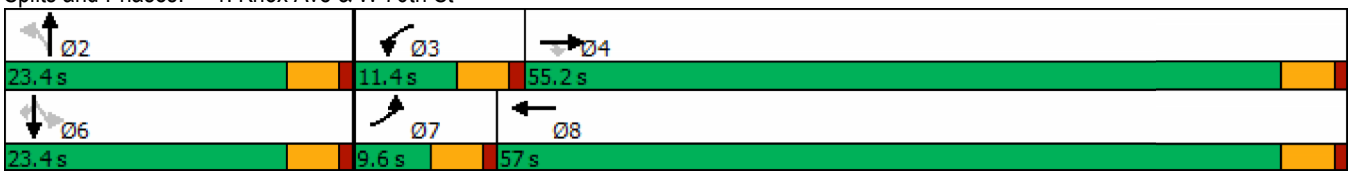


| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 5 | 500 | 27 | 41 | 1734 | 16 | 24 | 0 | 34 | 16 | 0 | 10 |
| Future Volume (vph) | 5 | 500 | 27 | 41 | 1734 | 16 | 24 | 0 | 34 | 16 | 0 | 10 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft) | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Grade (%) | | 0% | | | 0% | | | 0% | | | 0% | |
| Storage Length (ft) | 80 | | 190 | 400 | | 0 | 0 | | 0 | 0 | | 90 |
| Storage Lanes | 1 | | 1 | 1 | | 0 | 1 | | 0 | 0 | | 1 |
| Taper Length (ft) | 25 | | | 25 | | | 25 | | | 25 | | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | | | | | | | | | | | |
| Frt | | | 0.850 | | 0.999 | | | 0.850 | | | | 0.850 |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | | 0.950 | |
| Satd. Flow (prot) | 1770 | 3539 | 1583 | 1770 | 3536 | 0 | 1770 | 1583 | 0 | 0 | 1770 | 1583 |
| Flt Permitted | 0.950 | | | 0.950 | | | 0.746 | | | | 0.732 | |
| Satd. Flow (perm) | 1770 | 3539 | 1583 | 1770 | 3536 | 0 | 1390 | 1583 | 0 | 0 | 1364 | 1583 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 73 | | 2 | | | 363 | | | | 73 |
| Link Speed (mph) | | 35 | | | 35 | | | 30 | | | 30 | |
| Link Distance (ft) | | 1852 | | | 1286 | | | 899 | | | 222 | |
| Travel Time (s) | | 36.1 | | | 25.1 | | | 20.4 | | | 5.0 | |
| Confl. Peds. (#/hr) | | | | | | | | | | | | |
| Confl. Bikes (#/hr) | | | | | | | | | | | | |
| Peak Hour Factor | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 |
| Growth Factor | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% |
| Heavy Vehicles (%) | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 2% |
| Bus Blockages (#/hr) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Parking (#/hr) | | | | | | | | | | | | |
| Mid-Block Traffic (%) | | 0% | | | 0% | | | 0% | | | 0% | |
| Adj. Flow (vph) | 6 | 575 | 31 | 47 | 1993 | 18 | 28 | 0 | 39 | 18 | 0 | 11 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 6 | 575 | 31 | 47 | 2011 | 0 | 28 | 39 | 0 | 0 | 18 | 11 |
| Turn Type | Prot | NA | Perm | Prot | NA | | Perm | NA | | Perm | NA | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | | 2 | | | 6 | |
| Permitted Phases | | | 4 | | | | 2 | | | 6 | | 6 |
| Detector Phase | 7 | 4 | 4 | 3 | 8 | | 2 | 2 | | 6 | 6 | 6 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 9.5 | 22.5 | 22.5 | 9.5 | 22.5 | | 22.5 | 22.5 | | 22.5 | 22.5 | 22.5 |
| Total Split (s) | 9.6 | 55.2 | 55.2 | 11.4 | 57.0 | | 23.4 | 23.4 | | 23.4 | 23.4 | 23.4 |
| Total Split (%) | 10.7% | 61.3% | 61.3% | 12.7% | 63.3% | | 26.0% | 26.0% | | 26.0% | 26.0% | 26.0% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | | 3.5 | 3.5 | | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | | 1.0 | 1.0 | | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | 0.0 |
| Total Lost Time (s) | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | | 4.5 | 4.5 | | | 4.5 | 4.5 |
| Lead/Lag | Lead | Lag | Lag | Lead | Lag | | | | | | | |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | Yes | | | | | | | |
| Recall Mode | None | None | None | None | None | | Max | Max | | Max | Max | Max |
| Act Effct Green (s) | 5.1 | 47.6 | 47.6 | 6.5 | 52.6 | | 18.9 | 18.9 | | | 18.9 | 18.9 |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Actuated g/C Ratio | 0.06 | 0.58 | 0.58 | 0.08 | 0.64 | | 0.23 | 0.23 | | | 0.23 | 0.23 |
| v/c Ratio | 0.05 | 0.28 | 0.03 | 0.34 | 0.89 | | 0.09 | 0.06 | | | 0.06 | 0.03 |
| Control Delay | 39.2 | 10.0 | 0.2 | 43.6 | 19.8 | | 27.2 | 0.2 | | | 26.9 | 0.1 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | 0.0 |
| Total Delay | 39.2 | 10.0 | 0.2 | 43.6 | 19.8 | | 27.2 | 0.2 | | | 26.9 | 0.1 |
| LOS | D | A | A | D | B | | C | A | | | C | A |
| Approach Delay | | 9.8 | | | 20.3 | | | 11.5 | | | 16.7 | |
| Approach LOS | | A | | | C | | | B | | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 90 | | | |
| Actuated Cycle Length: 82.3 | | | |
| Natural Cycle: 90 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.89 | | | |
| Intersection Signal Delay: 17.7 | | Intersection LOS: B | |
| Intersection Capacity Utilization 68.0% | | ICU Level of Service C | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 1: Knox Ave & W 76th St

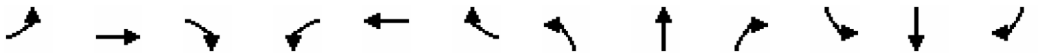


## 1: Knox Ave & W 76th St

| Direction | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Future Volume (vph) | 532 | 1791 | 58 | 26 | 2407 |
| Control Delay / Veh (s/v) | 10 | 20 | 11 | 17 | 18 |
| Queue Delay / Veh (s/v) | 0 | 0 | 0 | 0 | 0 |
| Total Delay / Veh (s/v) | 10 | 20 | 11 | 17 | 18 |
| Total Delay (hr) | 1 | 10 | 0 | 0 | 12 |
| Stops / Veh | 0.46 | 0.73 | 0.34 | 0.54 | 0.66 |
| Stops (#) | 247 | 1303 | 20 | 14 | 1584 |
| Average Speed (mph) | 28 | 19 | 19 | 7 | 21 |
| Total Travel Time (hr) | 7 | 23 | 1 | 0 | 30 |
| Distance Traveled (mi) | 187 | 436 | 10 | 1 | 634 |
| Fuel Consumed (gal) | 10 | 34 | 1 | 0 | 45 |
| Fuel Economy (mpg) | 18.6 | 12.9 | NA | NA | 14.2 |
| CO Emissions (kg) | 0.70 | 2.36 | 0.05 | 0.01 | 3.13 |
| NOx Emissions (kg) | 0.14 | 0.46 | 0.01 | 0.00 | 0.61 |
| VOC Emissions (kg) | 0.16 | 0.55 | 0.01 | 0.00 | 0.72 |
| Unserved Vehicles (#) | 0 | 0 | 0 | 0 | 0 |
| Vehicles in dilemma zone (#) | 22 | 98 | 0 | 0 | 120 |

## Network Totals

| Number of Intersections | 1 |
|---|---|
| Control Delay / Veh (s/v) | 18 |
| Queue Delay / Veh (s/v) | 0 |
| Total Delay / Veh (s/v) | 18 |
| Total Delay (hr) | 12 |
| Stops / Veh | 0.66 |
| Stops (#) | 1584 |
| Average Speed (mph) | 21 |
| Total Travel Time (hr) | 30 |
| Distance Traveled (mi) | 634 |
| Fuel Consumed (gal) | 45 |
| Fuel Economy (mpg) | 14.2 |
| CO Emissions (kg) | 3.13 |
| NOx Emissions (kg) | 0.61 |
| VOC Emissions (kg) | 0.72 |
| Unserved Vehicles (#) | 0 |
| Vehicles in dilemma zone (#) | 120 |
| Performance Index | 16.2 |

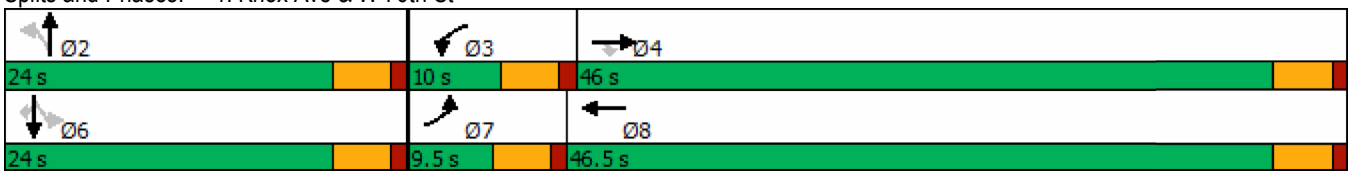


| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 11 | 1472 | 58 | 75 | 1064 | 30 | 54 | 1 | 63 | 41 | 0 | 26 |
| Future Volume (vph) | 11 | 1472 | 58 | 75 | 1064 | 30 | 54 | 1 | 63 | 41 | 0 | 26 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft) | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Grade (%) | | 0% | | | 0% | | | 0% | | | 0% | |
| Storage Length (ft) | 80 | | 190 | 400 | | 0 | 0 | | 0 | 0 | | 90 |
| Storage Lanes | 1 | | 1 | 1 | | 0 | 1 | | 0 | 0 | | 1 |
| Taper Length (ft) | 25 | | | 25 | | | 25 | | | 25 | | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | | | | | | | | | | | |
| Frt | | | 0.850 | | 0.996 | | | 0.852 | | | | 0.850 |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | | 0.950 | |
| Satd. Flow (prot) | 1770 | 3539 | 1583 | 1770 | 3525 | 0 | 1770 | 1587 | 0 | 0 | 1770 | 1583 |
| Flt Permitted | 0.950 | | | 0.950 | | | 0.728 | | | | 0.712 | |
| Satd. Flow (perm) | 1770 | 3539 | 1583 | 1770 | 3525 | 0 | 1356 | 1587 | 0 | 0 | 1326 | 1583 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 82 | | 5 | | | 68 | | | | 82 |
| Link Speed (mph) | | 35 | | | 35 | | | 30 | | | 30 | |
| Link Distance (ft) | | 1852 | | | 1286 | | | 899 | | | 222 | |
| Travel Time (s) | | 36.1 | | | 25.1 | | | 20.4 | | | 5.0 | |
| Confl. Peds. (#/hr) | | | | | | | | | | | | |
| Confl. Bikes (#/hr) | | | | | | | | | | | | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Growth Factor | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% |
| Heavy Vehicles (%) | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 2% |
| Bus Blockages (#/hr) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Parking (#/hr) | | | | | | | | | | | | |
| Mid-Block Traffic (%) | | 0% | | | 0% | | | 0% | | | 0% | |
| Adj. Flow (vph) | 12 | 1600 | 63 | 82 | 1157 | 33 | 59 | 1 | 68 | 45 | 0 | 28 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 12 | 1600 | 63 | 82 | 1190 | 0 | 59 | 69 | 0 | 0 | 45 | 28 |
| Turn Type | Prot | NA | Perm | Prot | NA | | Perm | NA | | Perm | NA | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | | 2 | | | 6 | |
| Permitted Phases | | | 4 | | | | 2 | | | 6 | | 6 |
| Detector Phase | 7 | 4 | 4 | 3 | 8 | | 2 | 2 | | 6 | 6 | 6 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 9.5 | 22.5 | 22.5 | 9.5 | 22.5 | | 22.5 | 22.5 | | 22.5 | 22.5 | 22.5 |
| Total Split (s) | 9.5 | 46.0 | 46.0 | 10.0 | 46.5 | | 24.0 | 24.0 | | 24.0 | 24.0 | 24.0 |
| Total Split (%) | 11.9% | 57.5% | 57.5% | 12.5% | 58.1% | | 30.0% | 30.0% | | 30.0% | 30.0% | 30.0% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | | 3.5 | 3.5 | | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | | 1.0 | 1.0 | | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | 0.0 |
| Total Lost Time (s) | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | | 4.5 | 4.5 | | | 4.5 | 4.5 |
| Lead/Lag | Lead | Lag | Lag | Lead | Lag | | | | | | | |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | Yes | | | | | | | |
| Recall Mode | None | None | None | None | None | | Max | Max | | Max | Max | Max |
| Act Effct Green (s) | 5.1 | 39.1 | 39.1 | 5.6 | 44.8 | | 19.8 | 19.8 | | | 19.8 | 19.8 |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Actuated g/C Ratio | 0.07 | 0.52 | 0.52 | 0.07 | 0.59 | | 0.26 | 0.26 | | | 0.26 | 0.26 |
| v/c Ratio | 0.10 | 0.88 | 0.07 | 0.63 | 0.57 | | 0.17 | 0.15 | | | 0.13 | 0.06 |
| Control Delay | 37.5 | 23.4 | 1.9 | 59.9 | 11.0 | | 25.5 | 7.7 | | | 25.0 | 0.2 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | 0.0 |
| Total Delay | 37.5 | 23.4 | 1.9 | 59.9 | 11.0 | | 25.5 | 7.7 | | | 25.0 | 0.2 |
| LOS | D | C | A | E | B | | C | A | | | C | A |
| Approach Delay | | 22.7 | | | 14.1 | | | 15.9 | | | 15.5 | |
| Approach LOS | | C | | | B | | | B | | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 80 | | | |
| Actuated Cycle Length: 75.6 | | | |
| Natural Cycle: 75 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.88 | | | |
| Intersection Signal Delay: 18.8 | | Intersection LOS: B | |
| Intersection Capacity Utilization 65.8% | | ICU Level of Service C | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 1: Knox Ave & W 76th St



## 1: Knox Ave & W 76th St

| Direction | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Future Volume (vph) | 1541 | 1170 | 117 | 67 | 2895 |
| Control Delay / Veh (s/v) | 23 | 14 | 16 | 15 | 19 |
| Queue Delay / Veh (s/v) | 0 | 0 | 0 | 0 | 0 |
| Total Delay / Veh (s/v) | 23 | 14 | 16 | 15 | 19 |
| Total Delay (hr) | 10 | 5 | 1 | 0 | 15 |
| Stops / Veh | 0.78 | 0.58 | 0.49 | 0.49 | 0.68 |
| Stops (#) | 1206 | 679 | 57 | 33 | 1975 |
| Average Speed (mph) | 21 | 22 | 17 | 7 | 21 |
| Total Travel Time (hr) | 25 | 13 | 1 | 0 | 39 |
| Distance Traveled (mi) | 541 | 285 | 20 | 3 | 848 |
| Fuel Consumed (gal) | 37 | 19 | 2 | 1 | 58 |
| Fuel Economy (mpg) | 14.7 | 14.7 | 13.2 | NA | 14.6 |
| CO Emissions (kg) | 2.57 | 1.35 | 0.11 | 0.04 | 4.06 |
| NOx Emissions (kg) | 0.50 | 0.26 | 0.02 | 0.01 | 0.79 |
| VOC Emissions (kg) | 0.60 | 0.31 | 0.02 | 0.01 | 0.94 |
| Unserved Vehicles (#) | 0 | 0 | 0 | 0 | 0 |
| Vehicles in dilemma zone (#) | 91 | 57 | 0 | 0 | 148 |

## Network Totals

| Number of Intersections | 1 |
|---|---|
| Control Delay / Veh (s/v) | 19 |
| Queue Delay / Veh (s/v) | 0 |
| Total Delay / Veh (s/v) | 19 |
| Total Delay (hr) | 15 |
| Stops / Veh | 0.68 |
| Stops (#) | 1975 |
| Average Speed (mph) | 21 |
| Total Travel Time (hr) | 39 |
| Distance Traveled (mi) | 848 |
| Fuel Consumed (gal) | 58 |
| Fuel Economy (mpg) | 14.6 |
| CO Emissions (kg) | 4.06 |
| NOx Emissions (kg) | 0.79 |
| VOC Emissions (kg) | 0.94 |
| Unserved Vehicles (#) | 0 |
| Vehicles in dilemma zone (#) | 148 |
| Performance Index | 20.6 |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 12.3 |
| Intersection LOS | B |

| Approach | EB | WB | NB |
|---|---|---|---|
| Entry Lanes | 2 | 2 | 1 |
| Conflicting Circle Lanes | 1 | 1 | 2 |
| Adj Approach Flow, veh/h | 611 | 2069 | 67 |
| Demand Flow Rate, veh/h | 624 | 2110 | 69 |
| Vehicles Circulating, veh/h | 65 | 29 | 609 |
| Vehicles Exiting, veh/h | 2074 | 649 | 80 |
| Ped Vol Crossing Leg, #/h | 0 | 0 | 0 |
| Ped Cap Adj | 1.000 | 1.000 | 1.000 |
| Approach Delay, s/veh | 4.8 | 14.8 | 5.2 |
| Approach LOS | A | B | A |

| Lane | Left | Right | Left | Right | Left |
|---|---|---|---|---|---|
| Designated Moves | LT | TR | LT | TR | LR |
| Assumed Moves | LT | TR | LT | TR | LR |
| RT Channelized | | | | | |
| Lane Util | 0.470 | 0.530 | 0.470 | 0.530 | 1.000 |
| Follow-Up Headway, s | 2.535 | 2.535 | 2.535 | 2.535 | 2.535 |
| Critical Headway, s | 4.544 | 4.544 | 4.544 | 4.544 | 4.328 |
| Entry Flow, veh/h | 293 | 331 | 992 | 1118 | 69 |
| Cap Entry Lane, veh/h | 1339 | 1339 | 1383 | 1383 | 846 |
| Entry HV Adj Factor | 0.981 | 0.979 | 0.980 | 0.981 | 0.971 |
| Flow Entry, veh/h | 287 | 324 | 972 | 1096 | 67 |
| Cap Entry, veh/h | 1313 | 1310 | 1356 | 1356 | 822 |
| V/C Ratio | 0.219 | 0.247 | 0.717 | 0.808 | 0.082 |
| Control Delay, s/veh | 4.6 | 4.9 | 12.7 | 16.7 | 5.2 |
| LOS | A | A | B | C | A |
| 95th %tile Queue, veh | 1 | 1 | 7 | 10 | 0 |

## 1: Knox Ave & W 76th St

| Direction | EB | WB | NB | All |
|---|---|---|---|---|
| Future Volume (vph) | 532 | 1801 | 58 | 2391 |
| Control Delay / Veh (s/v) | 0 | 0 | 0 | 0 |
| Queue Delay / Veh (s/v) | 0 | 0 | 0 | 0 |
| Total Delay / Veh (s/v) | 0 | 0 | 0 | 0 |
| Total Delay (hr) | 0 | 0 | 0 | 0 |
| Stops / Veh | 1.00 | 1.00 | 1.00 | 1.00 |
| Stops (#) | 532 | 1801 | 58 | 2391 |
| Average Speed (mph) | 35 | 35 | 30 | 35 |
| Total Travel Time (hr) | 5 | 13 | 0 | 18 |
| Distance Traveled (mi) | 187 | 439 | 10 | 635 |
| Fuel Consumed (gal) | 11 | 30 | 1 | 42 |
| Fuel Economy (mpg) | 16.8 | 14.5 | NA | 15.1 |
| CO Emissions (kg) | 0.78 | 2.12 | 0.05 | 2.94 |
| NOx Emissions (kg) | 0.15 | 0.41 | 0.01 | 0.57 |
| VOC Emissions (kg) | 0.18 | 0.49 | 0.01 | 0.68 |
| Unserved Vehicles (#) | 0 | 0 | 0 | 0 |
| Vehicles in dilemma zone (#) | 0 | 0 | 0 | 0 |

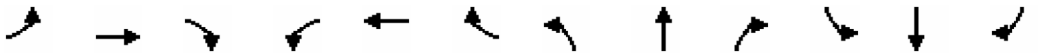
| Intersection | |
|---|---|
| Intersection Delay, s/veh | 10.8 |
| Intersection LOS | B |

| Approach | EB | WB | NB |
|---|---|---|---|
| Entry Lanes | 2 | 2 | 1 |
| Conflicting Circle Lanes | 1 | 1 | 2 |
| Adj Approach Flow, veh/h | 1675 | 1311 | 129 |
| Demand Flow Rate, veh/h | 1708 | 1338 | 131 |
| Vehicles Circulating, veh/h | 130 | 60 | 1690 |
| Vehicles Exiting, veh/h | 1268 | 1761 | 148 |
| Ped Vol Crossing Leg, #/h | 0 | 0 | 0 |
| Ped Cap Adj | 1.000 | 1.000 | 1.000 |
| Approach Delay, s/veh | 12.3 | 7.9 | 19.5 |
| Approach LOS | B | A | C |

| Lane | Left | Right | Left | Right | Left |
|---|---|---|---|---|---|
| Designated Moves | LT | TR | LT | TR | LR |
| Assumed Moves | LT | TR | LT | TR | LR |
| RT Channelized | | | | | |
| Lane Util | 0.470 | 0.530 | 0.470 | 0.530 | 1.000 |
| Follow-Up Headway, s | 2.535 | 2.535 | 2.535 | 2.535 | 2.535 |
| Critical Headway, s | 4.544 | 4.544 | 4.544 | 4.544 | 4.328 |
| Entry Flow, veh/h | 803 | 905 | 629 | 709 | 131 |
| Cap Entry Lane, veh/h | 1262 | 1262 | 1345 | 1345 | 338 |
| Entry HV Adj Factor | 0.980 | 0.981 | 0.980 | 0.980 | 0.985 |
| Flow Entry, veh/h | 787 | 888 | 616 | 695 | 129 |
| Cap Entry, veh/h | 1237 | 1237 | 1318 | 1318 | 332 |
| V/C Ratio | 0.636 | 0.717 | 0.468 | 0.527 | 0.388 |
| Control Delay, s/veh | 11.0 | 13.5 | 7.4 | 8.4 | 19.5 |
| LOS | B | B | A | A | C |
| 95th %tile Queue, veh | 5 | 7 | 3 | 3 | 2 |

## 1: Knox Ave & W 76th St

| Direction | EB | WB | NB | All |
|---|---|---|---|---|
| Future Volume (vph) | 1541 | 1206 | 119 | 2866 |
| Control Delay / Veh (s/v) | 0 | 0 | 0 | 0 |
| Queue Delay / Veh (s/v) | 0 | 0 | 0 | 0 |
| Total Delay / Veh (s/v) | 0 | 0 | 0 | 0 |
| Total Delay (hr) | 0 | 0 | 0 | 0 |
| Stops / Veh | 1.00 | 1.00 | 1.00 | 1.00 |
| Stops (#) | 1541 | 1206 | 119 | 2866 |
| Average Speed (mph) | 35 | 35 | 30 | 35 |
| Total Travel Time (hr) | 15 | 8 | 1 | 25 |
| Distance Traveled (mi) | 541 | 294 | 20 | 855 |
| Fuel Consumed (gal) | 32 | 20 | 1 | 54 |
| Fuel Economy (mpg) | 16.8 | 14.5 | 13.6 | 15.8 |
| CO Emissions (kg) | 2.25 | 1.42 | 0.10 | 3.77 |
| NOx Emissions (kg) | 0.44 | 0.28 | 0.02 | 0.73 |
| VOC Emissions (kg) | 0.52 | 0.33 | 0.02 | 0.87 |
| Unserved Vehicles (#) | 0 | 0 | 0 | 0 |
| Vehicles in dilemma zone (#) | 0 | 0 | 0 | 0 |

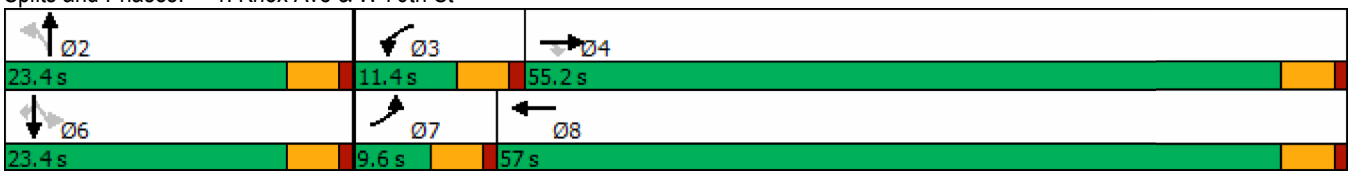


| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 5 | 500 | 27 | 41 | 1734 | 16 | 24 | 0 | 34 | 16 | 0 | 10 |
| Future Volume (vph) | 5 | 500 | 27 | 41 | 1734 | 16 | 24 | 0 | 34 | 16 | 0 | 10 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft) | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Grade (%) | | 0% | | | 0% | | | 0% | | | 0% | |
| Storage Length (ft) | 80 | | 190 | 400 | | 0 | 0 | | 0 | 0 | | 90 |
| Storage Lanes | 1 | | 1 | 1 | | 0 | 1 | | 0 | 0 | | 1 |
| Taper Length (ft) | 25 | | | 25 | | | 25 | | | 25 | | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | | | | | | | | | | | |
| Frt | | | 0.850 | | 0.999 | | | 0.850 | | | | 0.850 |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | | 0.950 | |
| Satd. Flow (prot) | 1770 | 3539 | 1583 | 1770 | 3536 | 0 | 1770 | 1583 | 0 | 0 | 1770 | 1583 |
| Flt Permitted | 0.950 | | | 0.950 | | | 0.746 | | | | 0.732 | |
| Satd. Flow (perm) | 1770 | 3539 | 1583 | 1770 | 3536 | 0 | 1390 | 1583 | 0 | 0 | 1364 | 1583 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 73 | | 2 | | | 363 | | | | 73 |
| Link Speed (mph) | | 35 | | | 35 | | | 30 | | | 30 | |
| Link Distance (ft) | | 1852 | | | 1286 | | | 899 | | | 222 | |
| Travel Time (s) | | 36.1 | | | 25.1 | | | 20.4 | | | 5.0 | |
| Confl. Peds. (#/hr) | | | | | | | | | | | | |
| Confl. Bikes (#/hr) | | | | | | | | | | | | |
| Peak Hour Factor | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 |
| Growth Factor | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% |
| Heavy Vehicles (%) | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 2% |
| Bus Blockages (#/hr) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Parking (#/hr) | | | | | | | | | | | | |
| Mid-Block Traffic (%) | | 0% | | | 0% | | | 0% | | | 0% | |
| Adj. Flow (vph) | 6 | 575 | 31 | 47 | 1993 | 18 | 28 | 0 | 39 | 18 | 0 | 11 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 6 | 575 | 31 | 47 | 2011 | 0 | 28 | 39 | 0 | 0 | 18 | 11 |
| Turn Type | Prot | NA | Perm | Prot | NA | | Perm | NA | | Perm | NA | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | | 2 | | | 6 | |
| Permitted Phases | | | 4 | | | | 2 | | | 6 | | 6 |
| Detector Phase | 7 | 4 | 4 | 3 | 8 | | 2 | 2 | | 6 | 6 | 6 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 9.5 | 22.5 | 22.5 | 9.5 | 22.5 | | 22.5 | 22.5 | | 22.5 | 22.5 | 22.5 |
| Total Split (s) | 9.6 | 55.2 | 55.2 | 11.4 | 57.0 | | 23.4 | 23.4 | | 23.4 | 23.4 | 23.4 |
| Total Split (%) | 10.7% | 61.3% | 61.3% | 12.7% | 63.3% | | 26.0% | 26.0% | | 26.0% | 26.0% | 26.0% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | | 3.5 | 3.5 | | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | | 1.0 | 1.0 | | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | 0.0 |
| Total Lost Time (s) | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | | 4.5 | 4.5 | | | 4.5 | 4.5 |
| Lead/Lag | Lead | Lag | Lag | Lead | Lag | | | | | | | |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | Yes | | | | | | | |
| Recall Mode | None | None | None | None | None | | Max | Max | | Max | Max | Max |
| Act Effct Green (s) | 5.1 | 47.6 | 47.6 | 6.5 | 52.6 | | 18.9 | 18.9 | | | 18.9 | 18.9 |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Actuated g/C Ratio | 0.06 | 0.58 | 0.58 | 0.08 | 0.64 | | 0.23 | 0.23 | | | 0.23 | 0.23 |
| v/c Ratio | 0.05 | 0.28 | 0.03 | 0.34 | 0.89 | | 0.09 | 0.06 | | | 0.06 | 0.03 |
| Control Delay | 39.2 | 10.0 | 0.2 | 43.6 | 19.8 | | 27.2 | 0.2 | | | 26.9 | 0.1 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | 0.0 |
| Total Delay | 39.2 | 10.0 | 0.2 | 43.6 | 19.8 | | 27.2 | 0.2 | | | 26.9 | 0.1 |
| LOS | D | A | A | D | B | | C | A | | | C | A |
| Approach Delay | | 9.8 | | | 20.3 | | | 11.5 | | | 16.7 | |
| Approach LOS | | A | | | C | | | B | | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 90 | | | |
| Actuated Cycle Length: 82.3 | | | |
| Natural Cycle: 90 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.89 | | | |
| Intersection Signal Delay: 17.7 | | Intersection LOS: B | |
| Intersection Capacity Utilization 68.0% | | ICU Level of Service C | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 1: Knox Ave & W 76th St

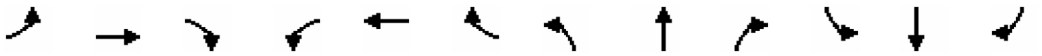


## 1: Knox Ave & W 76th St

| Direction | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Future Volume (vph) | 532 | 1791 | 58 | 26 | 2407 |
| Control Delay / Veh (s/v) | 10 | 20 | 11 | 17 | 18 |
| Queue Delay / Veh (s/v) | 0 | 0 | 0 | 0 | 0 |
| Total Delay / Veh (s/v) | 10 | 20 | 11 | 17 | 18 |
| Total Delay (hr) | 1 | 10 | 0 | 0 | 12 |
| Stops / Veh | 0.46 | 0.73 | 0.34 | 0.54 | 0.66 |
| Stops (#) | 247 | 1303 | 20 | 14 | 1584 |
| Average Speed (mph) | 28 | 19 | 19 | 7 | 21 |
| Total Travel Time (hr) | 7 | 23 | 1 | 0 | 30 |
| Distance Traveled (mi) | 187 | 436 | 10 | 1 | 634 |
| Fuel Consumed (gal) | 10 | 34 | 1 | 0 | 45 |
| Fuel Economy (mpg) | 18.6 | 12.9 | NA | NA | 14.2 |
| CO Emissions (kg) | 0.70 | 2.36 | 0.05 | 0.01 | 3.13 |
| NOx Emissions (kg) | 0.14 | 0.46 | 0.01 | 0.00 | 0.61 |
| VOC Emissions (kg) | 0.16 | 0.55 | 0.01 | 0.00 | 0.72 |
| Unserved Vehicles (#) | 0 | 0 | 0 | 0 | 0 |
| Vehicles in dilemma zone (#) | 22 | 98 | 0 | 0 | 120 |

## Network Totals

| Number of Intersections | 1 |
|---|---|
| Control Delay / Veh (s/v) | 18 |
| Queue Delay / Veh (s/v) | 0 |
| Total Delay / Veh (s/v) | 18 |
| Total Delay (hr) | 12 |
| Stops / Veh | 0.66 |
| Stops (#) | 1584 |
| Average Speed (mph) | 21 |
| Total Travel Time (hr) | 30 |
| Distance Traveled (mi) | 634 |
| Fuel Consumed (gal) | 45 |
| Fuel Economy (mpg) | 14.2 |
| CO Emissions (kg) | 3.13 |
| NOx Emissions (kg) | 0.61 |
| VOC Emissions (kg) | 0.72 |
| Unserved Vehicles (#) | 0 |
| Vehicles in dilemma zone (#) | 120 |
| Performance Index | 16.2 |

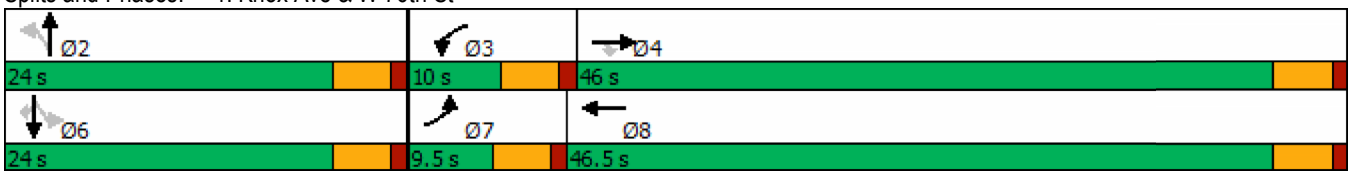


| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 11 | 1472 | 58 | 75 | 1064 | 30 | 54 | 1 | 63 | 41 | 0 | 26 |
| Future Volume (vph) | 11 | 1472 | 58 | 75 | 1064 | 30 | 54 | 1 | 63 | 41 | 0 | 26 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft) | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Grade (%) | | 0% | | | 0% | | | 0% | | | 0% | |
| Storage Length (ft) | 80 | | 190 | 400 | | 0 | 0 | | 0 | 0 | | 90 |
| Storage Lanes | 1 | | 1 | 1 | | 0 | 1 | | 0 | 0 | | 1 |
| Taper Length (ft) | 25 | | | 25 | | | 25 | | | 25 | | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | | | | | | | | | | | |
| Frt | | | 0.850 | | 0.996 | | | 0.852 | | | | 0.850 |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | | 0.950 | |
| Satd. Flow (prot) | 1770 | 3539 | 1583 | 1770 | 3525 | 0 | 1770 | 1587 | 0 | 0 | 1770 | 1583 |
| Flt Permitted | 0.950 | | | 0.950 | | | 0.728 | | | | 0.712 | |
| Satd. Flow (perm) | 1770 | 3539 | 1583 | 1770 | 3525 | 0 | 1356 | 1587 | 0 | 0 | 1326 | 1583 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 82 | | 5 | | | 68 | | | | 82 |
| Link Speed (mph) | | 35 | | | 35 | | | 30 | | | 30 | |
| Link Distance (ft) | | 1852 | | | 1286 | | | 899 | | | 222 | |
| Travel Time (s) | | 36.1 | | | 25.1 | | | 20.4 | | | 5.0 | |
| Confl. Peds. (#/hr) | | | | | | | | | | | | |
| Confl. Bikes (#/hr) | | | | | | | | | | | | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Growth Factor | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% |
| Heavy Vehicles (%) | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 2% |
| Bus Blockages (#/hr) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Parking (#/hr) | | | | | | | | | | | | |
| Mid-Block Traffic (%) | | 0% | | | 0% | | | 0% | | | 0% | |
| Adj. Flow (vph) | 12 | 1600 | 63 | 82 | 1157 | 33 | 59 | 1 | 68 | 45 | 0 | 28 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 12 | 1600 | 63 | 82 | 1190 | 0 | 59 | 69 | 0 | 0 | 45 | 28 |
| Turn Type | Prot | NA | Perm | Prot | NA | | Perm | NA | | Perm | NA | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | | 2 | | | 6 | |
| Permitted Phases | | | 4 | | | | 2 | | | 6 | | 6 |
| Detector Phase | 7 | 4 | 4 | 3 | 8 | | 2 | 2 | | 6 | 6 | 6 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 9.5 | 22.5 | 22.5 | 9.5 | 22.5 | | 22.5 | 22.5 | | 22.5 | 22.5 | 22.5 |
| Total Split (s) | 9.5 | 46.0 | 46.0 | 10.0 | 46.5 | | 24.0 | 24.0 | | 24.0 | 24.0 | 24.0 |
| Total Split (%) | 11.9% | 57.5% | 57.5% | 12.5% | 58.1% | | 30.0% | 30.0% | | 30.0% | 30.0% | 30.0% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | | 3.5 | 3.5 | | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | | 1.0 | 1.0 | | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | 0.0 |
| Total Lost Time (s) | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | | 4.5 | 4.5 | | | 4.5 | 4.5 |
| Lead/Lag | Lead | Lag | Lag | Lead | Lag | | | | | | | |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | Yes | | | | | | | |
| Recall Mode | None | None | None | None | None | | Max | Max | | Max | Max | Max |
| Act Effct Green (s) | 5.1 | 39.1 | 39.1 | 5.6 | 44.8 | | 19.8 | 19.8 | | | 19.8 | 19.8 |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Actuated g/C Ratio | 0.07 | 0.52 | 0.52 | 0.07 | 0.59 | | 0.26 | 0.26 | | | 0.26 | 0.26 |
| v/c Ratio | 0.10 | 0.88 | 0.07 | 0.63 | 0.57 | | 0.17 | 0.15 | | | 0.13 | 0.06 |
| Control Delay | 37.5 | 23.4 | 1.9 | 59.9 | 11.0 | | 25.5 | 7.7 | | | 25.0 | 0.2 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | 0.0 |
| Total Delay | 37.5 | 23.4 | 1.9 | 59.9 | 11.0 | | 25.5 | 7.7 | | | 25.0 | 0.2 |
| LOS | D | C | A | E | B | | C | A | | | C | A |
| Approach Delay | | 22.7 | | | 14.1 | | | 15.9 | | | 15.5 | |
| Approach LOS | | C | | | B | | | B | | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 80 | | | |
| Actuated Cycle Length: 75.6 | | | |
| Natural Cycle: 75 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.88 | | | |
| Intersection Signal Delay: 18.8 | | Intersection LOS: B | |
| Intersection Capacity Utilization 65.8% | | ICU Level of Service C | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 1: Knox Ave & W 76th St



## 1: Knox Ave & W 76th St

| Direction | EB | WB | NB | SB | All |
|---|---|---|---|---|---|
| Future Volume (vph) | 1541 | 1170 | 117 | 67 | 2895 |
| Control Delay / Veh (s/v) | 23 | 14 | 16 | 15 | 19 |
| Queue Delay / Veh (s/v) | 0 | 0 | 0 | 0 | 0 |
| Total Delay / Veh (s/v) | 23 | 14 | 16 | 15 | 19 |
| Total Delay (hr) | 10 | 5 | 1 | 0 | 15 |
| Stops / Veh | 0.78 | 0.58 | 0.49 | 0.49 | 0.68 |
| Stops (#) | 1206 | 679 | 57 | 33 | 1975 |
| Average Speed (mph) | 21 | 22 | 17 | 7 | 21 |
| Total Travel Time (hr) | 25 | 13 | 1 | 0 | 39 |
| Distance Traveled (mi) | 541 | 285 | 20 | 3 | 848 |
| Fuel Consumed (gal) | 37 | 19 | 2 | 1 | 58 |
| Fuel Economy (mpg) | 14.7 | 14.7 | 13.2 | NA | 14.6 |
| CO Emissions (kg) | 2.57 | 1.35 | 0.11 | 0.04 | 4.06 |
| NOx Emissions (kg) | 0.50 | 0.26 | 0.02 | 0.01 | 0.79 |
| VOC Emissions (kg) | 0.60 | 0.31 | 0.02 | 0.01 | 0.94 |
| Unserved Vehicles (#) | 0 | 0 | 0 | 0 | 0 |
| Vehicles in dilemma zone (#) | 91 | 57 | 0 | 0 | 148 |

## Network Totals

| Number of Intersections | 1 |
|---|---|
| Control Delay / Veh (s/v) | 19 |
| Queue Delay / Veh (s/v) | 0 |
| Total Delay / Veh (s/v) | 19 |
| Total Delay (hr) | 15 |
| Stops / Veh | 0.68 |
| Stops (#) | 1975 |
| Average Speed (mph) | 21 |
| Total Travel Time (hr) | 39 |
| Distance Traveled (mi) | 848 |
| Fuel Consumed (gal) | 58 |
| Fuel Economy (mpg) | 14.6 |
| CO Emissions (kg) | 4.06 |
| NOx Emissions (kg) | 0.79 |
| VOC Emissions (kg) | 0.94 |
| Unserved Vehicles (#) | 0 |
| Vehicles in dilemma zone (#) | 148 |
| Performance Index | 20.6 |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 12.3 |
| Intersection LOS | B |

| Approach | EB | WB | NB |
|---|---|---|---|
| Entry Lanes | 2 | 2 | 1 |
| Conflicting Circle Lanes | 1 | 1 | 2 |
| Adj Approach Flow, veh/h | 611 | 2069 | 67 |
| Demand Flow Rate, veh/h | 624 | 2110 | 69 |
| Vehicles Circulating, veh/h | 65 | 29 | 609 |
| Vehicles Exiting, veh/h | 2074 | 649 | 80 |
| Ped Vol Crossing Leg, #/h | 0 | 0 | 0 |
| Ped Cap Adj | 1.000 | 1.000 | 1.000 |
| Approach Delay, s/veh | 4.8 | 14.8 | 5.2 |
| Approach LOS | A | B | A |

| Lane | Left | Right | Left | Right | Left |
|---|---|---|---|---|---|
| Designated Moves | LT | TR | LT | TR | LR |
| Assumed Moves | LT | TR | LT | TR | LR |
| RT Channelized | | | | | |
| Lane Util | 0.470 | 0.530 | 0.470 | 0.530 | 1.000 |
| Follow-Up Headway, s | 2.535 | 2.535 | 2.535 | 2.535 | 2.535 |
| Critical Headway, s | 4.544 | 4.544 | 4.544 | 4.544 | 4.328 |
| Entry Flow, veh/h | 293 | 331 | 992 | 1118 | 69 |
| Cap Entry Lane, veh/h | 1339 | 1339 | 1383 | 1383 | 846 |
| Entry HV Adj Factor | 0.981 | 0.979 | 0.980 | 0.981 | 0.971 |
| Flow Entry, veh/h | 287 | 324 | 972 | 1096 | 67 |
| Cap Entry, veh/h | 1313 | 1310 | 1356 | 1356 | 822 |
| V/C Ratio | 0.219 | 0.247 | 0.717 | 0.808 | 0.082 |
| Control Delay, s/veh | 4.6 | 4.9 | 12.7 | 16.7 | 5.2 |
| LOS | A | A | B | C | A |
| 95th %tile Queue, veh | 1 | 1 | 7 | 10 | 0 |

## 1: Knox Ave & W 76th St

| Direction | EB | WB | NB | All |
|---|---|---|---|---|
| Future Volume (vph) | 532 | 1801 | 58 | 2391 |
| Control Delay / Veh (s/v) | 0 | 0 | 0 | 0 |
| Queue Delay / Veh (s/v) | 0 | 0 | 0 | 0 |
| Total Delay / Veh (s/v) | 0 | 0 | 0 | 0 |
| Total Delay (hr) | 0 | 0 | 0 | 0 |
| Stops / Veh | 1.00 | 1.00 | 1.00 | 1.00 |
| Stops (#) | 532 | 1801 | 58 | 2391 |
| Average Speed (mph) | 35 | 35 | 30 | 35 |
| Total Travel Time (hr) | 5 | 13 | 0 | 18 |
| Distance Traveled (mi) | 187 | 439 | 10 | 635 |
| Fuel Consumed (gal) | 11 | 30 | 1 | 42 |
| Fuel Economy (mpg) | 16.8 | 14.5 | NA | 15.1 |
| CO Emissions (kg) | 0.78 | 2.12 | 0.05 | 2.94 |
| NOx Emissions (kg) | 0.15 | 0.41 | 0.01 | 0.57 |
| VOC Emissions (kg) | 0.18 | 0.49 | 0.01 | 0.68 |
| Unserved Vehicles (#) | 0 | 0 | 0 | 0 |
| Vehicles in dilemma zone (#) | 0 | 0 | 0 | 0 |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 10.8 |
| Intersection LOS | B |

| Approach | EB | WB | NB |
|---|---|---|---|
| Entry Lanes | 2 | 2 | 1 |
| Conflicting Circle Lanes | 1 | 1 | 2 |
| Adj Approach Flow, veh/h | 1675 | 1311 | 129 |
| Demand Flow Rate, veh/h | 1708 | 1338 | 131 |
| Vehicles Circulating, veh/h | 130 | 60 | 1690 |
| Vehicles Exiting, veh/h | 1268 | 1761 | 148 |
| Ped Vol Crossing Leg, #/h | 0 | 0 | 0 |
| Ped Cap Adj | 1.000 | 1.000 | 1.000 |
| Approach Delay, s/veh | 12.3 | 7.9 | 19.5 |
| Approach LOS | B | A | C |

| Lane | Left | Right | Left | Right | Left |
|---|---|---|---|---|---|
| Designated Moves | LT | TR | LT | TR | LR |
| Assumed Moves | LT | TR | LT | TR | LR |
| RT Channelized | | | | | |
| Lane Util | 0.470 | 0.530 | 0.470 | 0.530 | 1.000 |
| Follow-Up Headway, s | 2.535 | 2.535 | 2.535 | 2.535 | 2.535 |
| Critical Headway, s | 4.544 | 4.544 | 4.544 | 4.544 | 4.328 |
| Entry Flow, veh/h | 803 | 905 | 629 | 709 | 131 |
| Cap Entry Lane, veh/h | 1262 | 1262 | 1345 | 1345 | 338 |
| Entry HV Adj Factor | 0.980 | 0.981 | 0.980 | 0.980 | 0.985 |
| Flow Entry, veh/h | 787 | 888 | 616 | 695 | 129 |
| Cap Entry, veh/h | 1237 | 1237 | 1318 | 1318 | 332 |
| V/C Ratio | 0.636 | 0.717 | 0.468 | 0.527 | 0.388 |
| Control Delay, s/veh | 11.0 | 13.5 | 7.4 | 8.4 | 19.5 |
| LOS | B | B | A | A | C |
| 95th %tile Queue, veh | 5 | 7 | 3 | 3 | 2 |

## 1: Knox Ave & W 76th St

| Direction | EB | WB | NB | All |
|---|---|---|---|---|
| Future Volume (vph) | 1541 | 1206 | 119 | 2866 |
| Control Delay / Veh (s/v) | 0 | 0 | 0 | 0 |
| Queue Delay / Veh (s/v) | 0 | 0 | 0 | 0 |
| Total Delay / Veh (s/v) | 0 | 0 | 0 | 0 |
| Total Delay (hr) | 0 | 0 | 0 | 0 |
| Stops / Veh | 1.00 | 1.00 | 1.00 | 1.00 |
| Stops (#) | 1541 | 1206 | 119 | 2866 |
| Average Speed (mph) | 35 | 35 | 30 | 35 |
| Total Travel Time (hr) | 15 | 8 | 1 | 25 |
| Distance Traveled (mi) | 541 | 294 | 20 | 855 |
| Fuel Consumed (gal) | 32 | 20 | 1 | 54 |
| Fuel Economy (mpg) | 16.8 | 14.5 | 13.6 | 15.8 |
| CO Emissions (kg) | 2.25 | 1.42 | 0.10 | 3.77 |
| NOx Emissions (kg) | 0.44 | 0.28 | 0.02 | 0.73 |
| VOC Emissions (kg) | 0.52 | 0.33 | 0.02 | 0.87 |
| Unserved Vehicles (#) | 0 | 0 | 0 | 0 |
| Vehicles in dilemma zone (#) | 0 | 0 | 0 | 0 |

**Traffic Safety Benefit-Cost Calculation**

Highway Safety Improvement Program (HSIP) Reactive Project

DEPARTMENT OF TRANSPORTATION

## A. Roadway Description

| | | | | | |
|---|---|---|---|---|---|
| **Route** | W 76th St | **District** | Metro | **County** | Hennepin |
| **Begin RP** | | **End RP** | | **Miles** | |
| **Location** | Intersection of W 76th St and Knox Ave | | | | |

## B. Project Description

| | | | |
|---|---|---|---|
| **Proposed Work** | Install a roundabout at W 76th St and Knox Ave | | |
| **Project Cost*** | $4,120,000 | **Installation Year** | 2024 |
| **Project Service Life** | 20 years | **Traffic Growth Factor** | |

** exclude Right of Way from Project Cost*

## C. Crash Modification Factor

| | | | |
|---|---|---|---|
| 0.65 | **Fatal (K) Crashes** | **Reference** | Conversion of signalized intersection into single- or multi-lane roundabout |
| 0.26 | **Serious Injury (A) Crashes** | | |
| 0.26 | **Moderate Injury (B) Crashes** | **Crash Type** | All |
| 0.26 | **Possible Injury (C) Crashes** | | |
| 0.65 | **Property Damage Only Crashes** | | www.CMFclearinghouse.org |

## D. Crash Modification Factor (optional second CMF)

| | | | |
|---|---|---|---|
| | **Fatal (K) Crashes** | **Reference** | |
| | **Serious Injury (A) Crashes** | | |
| | **Moderate Injury (B) Crashes** | **Crash Type** | |
| | **Possible Injury (C) Crashes** | | |
| | **Property Damage Only Crashes** | | www.CMFclearinghouse.org |

## E. Crash Data

| | | | | |
|---|---|---|---|---|
| **Begin Date** | 1/1/2020 | **End Date** | 12/31/2022 | 3 years |
| **Data Source** | MnCMAT2 | | | |

| Crash Severity | All | < optional 2nd CMF > |
|---|---|---|
| K crashes | 0 | |
| A crashes | 0 | |
| B crashes | 0 | |
| C crashes | 0 | |
| PDO crashes | 0 | |

## F. Benefit-Cost Calculation

| | | |
|---|---|---|
| $0 | **Benefit (present value)** | **B/C Ratio = 0.00** |
| $4,120,000 | **Cost** | |

*Proposed project expected to reduce 0 crashes annually, 0 of which involving fatality or serious injury.*

## F. Analysis Assumptions

| Crash Severity | Crash Cost |
|---|---|
| K crashes | $1,600,000 |
| A crashes | $800,000 |
| B crashes | $250,000 |
| C crashes | $130,000 |
| PDO crashes | $15,000 |

**Link:** mndot.gov/planning/program/appendix_a.html

| | | |
|---|---|---|
| **Real Discount Rate:** | 0.8% | Default |
| **Traffic Growth Rate:** | 0.0% | Default |
| **Project Service Life:** | 20 years | **Revised** |

## G. Annual Benefit

| Crash Severity | Crash Reduction | Annual Reduction | Annual Benefit |
|---|---|---|---|
| K crashes | 0.00 | 0.00 | $0 |
| A crashes | 0.00 | 0.00 | $0 |
| B crashes | 0.00 | 0.00 | $0 |
| C crashes | 0.00 | 0.00 | $0 |
| PDO crashes | 0.00 | 0.00 | $0 |
| | | | **$0** |

## H. Amortized Benefit

| Year | Crash Benefits | Present Value |
|---|---|---|
| 2024 | $0 | $0 |
| 2025 | $0 | $0 |
| 2026 | $0 | $0 |
| 2027 | $0 | $0 |
| 2028 | $0 | $0 |
| 2029 | $0 | $0 |
| 2030 | $0 | $0 |
| 2031 | $0 | $0 |
| 2032 | $0 | $0 |
| 2033 | $0 | $0 |
| 2034 | $0 | $0 |
| 2035 | $0 | $0 |
| 2036 | $0 | $0 |
| 2037 | $0 | $0 |
| 2038 | $0 | $0 |
| 2039 | $0 | $0 |
| 2040 | $0 | $0 |
| 2041 | $0 | $0 |
| 2042 | $0 | $0 |
| 2043 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |

**Total = $0**

*NOTE:*
*This calculation relies on the real discount rate, which accounts for inflation. No further discounting is necessary.*

# CMF COMPARISON

Below you will find comparisons for the CMFs you chose.
Please note that the rows ***highlighted and bold/italic*** contain the differences in the selected CMFs.

| Countermeasure Name | Conversion of signalized intersection into single- or multi-lane roundabout | Conversion of signalized intersection into single- c lane roundabout |
|---|---|---|
| CMF ID | 209 | 212 |
| CMF | 0.65 | 0.26 |
| Study Reference | PERSAUD ET AL., 2001 | PERSAUD ET AL., 2001 |
| ***Unadjusted Standard Error AMF*** | ***0.09*** | ***0.14*** |
| **CMFunction** | | |
| **Star Rating** | ★★★★☆ | ★★★★☆ |
| ***Rating Score Total*** | ***130*** | ***120*** |
| **Crash Type** | All | All |
| ***Crash Severity*** | ***All*** | ***Serious injury,Minor injury*** |
| **Crash Time of Day** | | |
| **Area Type** | Urban | Urban |
| **Road Division Type** | | |
| **Road Type** | Not specified | Not specified |
| **Min Number of Lanes** | | |
| **Max Number of Lanes** | | |
| **Number of Lanes Direction** | | |
| **Number of Lanes Comment** | | |
| **Intersection Type** | Roadway/roadway (not interchange related) | Roadway/roadway (not interchange related) |
| **Intersection Geometry** | Not specified | Not specified |
| **Traffic Control** | Stop-controlled | Stop-controlled |
| **Minimum Speed Limit** | | |
| **Maximum Speed Limit** | | |
| **Speed Unit** | | |
| **Speed Limit Comment** | | |
| **Study Type** | 2 | 2 |
| **Years From** | | |
| **Years To** | | |
| **Traffic Volume Unit** | Annual Average Daily Traffic (AADT) | Annual Average Daily Traffic (AADT) |
| **Min Traffic Volume** | | |
| **Max Traffic Volume** | | |
| **Min Major Rd Volume** | | |
| **Max Major Rd Volume** | | |
| **Min Minor Rd Volume** | | |
| **Max Minor Rd Volume** | | |
| **Avg Traffic Volume** | | |
| **Avg Major Rd Volume** | | |
| **Avg Minor Rd Volume** | | |

| |
|---|
| **State of Origin** |
| **Municipality** |
| **Country** |
| **Comments** |

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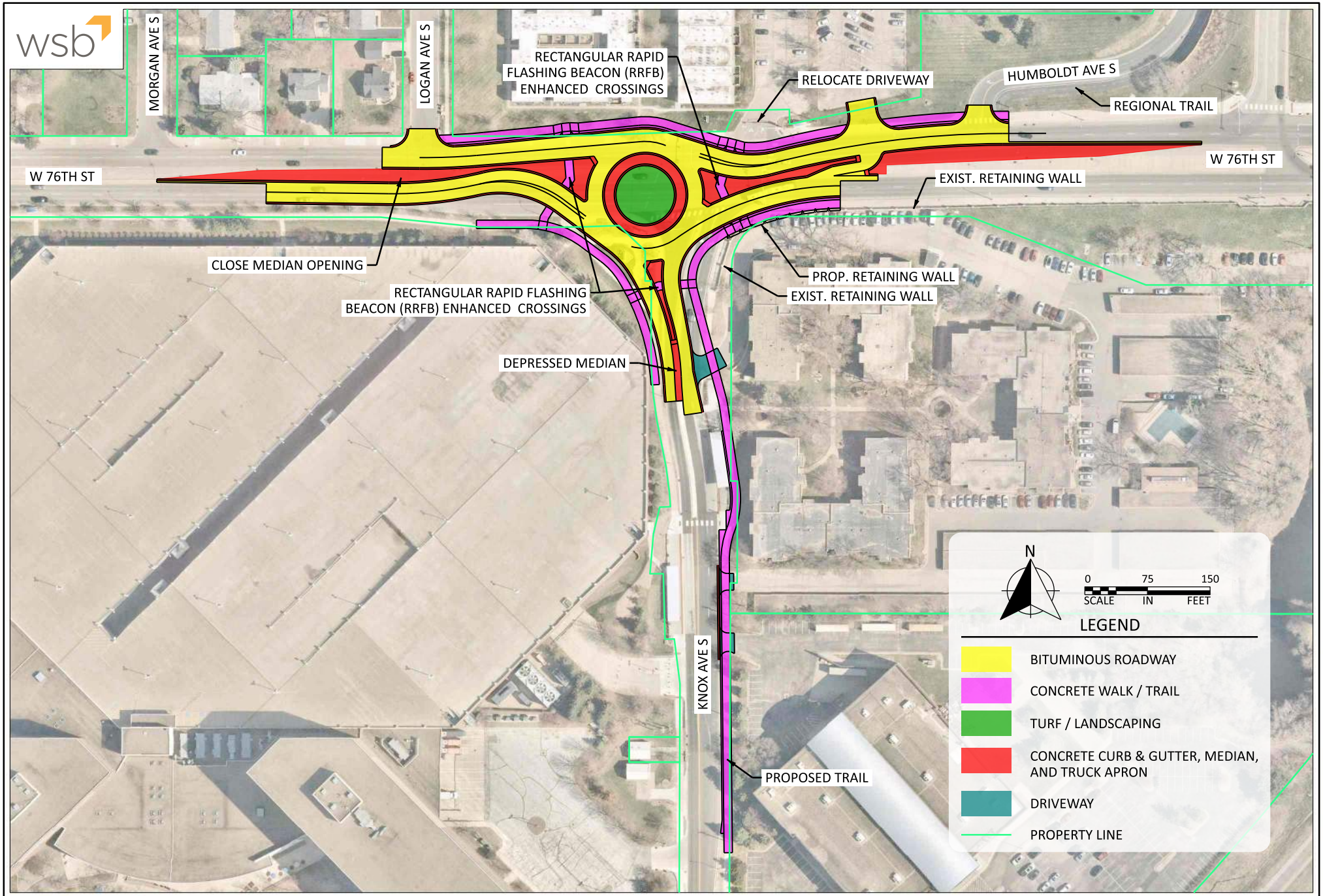
For more information, contact Sarah Weissman Pascual at **sara**




# W 76th St at Knox Ave S Roundabout

Richfield, MN

12/08/2023

Sheet 1 of 1

**PUBLIC WORKS DEPARTMENT**
**CITY OF RICHFIELD**

DATE: 11/29/2023

SUBJECT: Snow Removal and Ice Control Policy

## Purpose

The purpose of this Snow Removal and Ice Control Policy ("Policy") is to define and outline snow removal and ice control objectives and procedures as established by the City of Richfield ("City") and the Public Works Department ("Department").

## Introduction

The City assumes basic responsibility for snow removal on City streets, City sidewalks/trails/cycle tracks, and City-owned public parking lots. The City assumes basic responsibility for ice control and mitigation on City streets and City-owned public parking lots, but does not salt or sand City sidewalks/trails/cycle tracks. Reasonable snow removal and ice control is necessary for routine travel and emergency services. The City strives to provide this service in a timely, safe, and cost-effective manner while keeping in mind safety, budget, personnel, equipment, and environmental concerns. The City will primarily use its own personnel and equipment to provide this service, but may also use private contractors when necessary.

This Policy supersedes written or unwritten policies of the City and Department regarding snow removal and ice control. This Policy does not relieve the operators of private vehicles, pedestrians, property owners, residents, and all others that may be using public streets, sidewalks, and trails or that may otherwise be affected by snow/ice removal operations, of their responsibility to act in a reasonable, prudent, and cautious manner given the prevailing weather and street conditions.

## Policy

The Deputy Public Works Director, under the direction of the Public Works Director, will make decisions as to time, method, and materials used on snow removal and ice control operations. The Deputy Public Works Director is responsible for coordinating equipment and personnel, and assigning work based on the need for snow removal and ice control within the City. The Deputy Public Works Director maintains the authority to delegate any of the responsibilities laid out in this policy to appropriate Department staff.

The Department will only conduct snow and ice control operations when weather conditions do not endanger the safety of employees or equipment and operations are effective. Factors that may delay snow and ice control operations include:

- Severe cold
- Significant winds
- Limited visibility
- Rapid accumulation of snow and/or ice
- Traffic conditions (e.g., rush hour)

The Department continuously monitors forecasts and weather conditions to aid in mobilization decisions. The Department will use multiple sources for storm warning preparedness, including, but not limited to the following:

- National Weather Service (www.weather.gov)
- Hennepin County Emergency Management
- Local News Weather Reports
- Various weather-related web sites

## Planning and Scheduling

Snow removal and ice control operations may occur during assigned work shifts or, in some situations, on a call back of workers. When conditions allow, work schedules will be arranged to keep overtime at a minimum, with overtime scheduling being approved by the Deputy Public Works Director. The Deputy Public Works Director will notify the Public Works Director of any unusual amount of overtime to be performed and the reasons for the overtime.

The Deputy Public Works Director retains the authority to alter assignments based on weather conditions, equipment and personnel availability, and other conditions related to snow removal and ice control.

### Mobilization

Mobilization of employees is the responsibility of the Deputy Public Works Director. The Deputy Public Works Director will determine the dispatching of equipment for City streets, City sidewalks/trails, and City-owned public parking lots.

The Deputy Public Works Director will keep the Public Works Director informed of the start, progress, and completion of full-scale snow removal and ice control operations.

### Initiating Operations

The start of snow removal and ice control operations depends upon current and anticipated conditions. The Deputy Public Works Director will decide when to initiate snow removal and ice control operations. Snow removal and ice control operations may be initiated any time they are deemed to be beneficial to the City. Some criteria for the decision are:

- Appreciable snow accumulation on roads and sidewalks
- Drifting of snow that causes travel problems
- Icy conditions which seriously impact travel
- Timing of snowfall in relation to heavy use of streets (e.g., rush hour)
- Forecasted and anticipated changes in weather conditions

### Snow Route Assignment and Planning

Each year, the Department prepares a map of the street system, sidewalk/trail system, and public properties serviced by the City. These maps identify route areas that identify personnel, equipment, and, if necessary, the private contractors used to provide the

services. Annually, the Department revises route areas to correspond with budget, equipment, personnel, and other resources available to the City.

The Department identifies priority routes and hazards within each route area. These route areas are generally assigned to individuals and are used for planning and executing routine snow removal and ice control operations.

**Street Snow Removal Routes**
The Department has classified City streets based on the street function, traffic volume, and importance to the welfare of the community. The priority of snow removal routes are as follows:

1. Minor arterial roads: high-volume routes that connect the urban service area to cities inside and outside of the region
2. Collector streets: streets providing access between neighborhoods, minor business concentrations, and schools
3. Low-volume local streets
4. City parking lots, alleys, sidewalks, and trails

Emergency services officers may contact the Department to dispatch workers and equipment to provide services for emergency vehicles (i.e. police, fire, ambulance, equipment needed for electrical outages, gas leaks, etc.) responding to emergencies within the City. The Department will dispatch necessary workers and equipment as soon as possible.

**Sidewalk/Trail/Cycle Tracks Snow Removal Routes**
Priorities for snow removal on sidewalks are set to accommodate the needs of the mass transit public. During any given snow event, seven (7) pieces of equipment are dispatched to clear sidewalks, trails, and cycle tracks. In the event of a major snow event (six (6) inches or more) one side of each arterial street will be plowed, until all arterial roads are cleared. General priority for clearing sidewalks, trails, and cycle tracks is as follows:

1. Arterial roads
2. Collector streets
3. Residential neighborhoods

**Sidewalk/Trail/Cycle Tracks Ice Policy**
In effort to best utilize the City's finite resources and prioritize snow and ice removal in high-impact areas as outlined throughout this Policy, the Department will not apply salt, sand, or other de-icing chemicals to sidewalks/trails/cycle tracks. Due to the ever-changing nature of the Minnesota climate, the physical and financial cost of keeping all sidewalks/trails/cycle tracks free of ice at all times would substantially outweigh the benefit to the community. In addition, salt, sand, and other de-icing agents have adverse effects on the local environment. Application of these substances is imprecise and may result in negative effects to adjacent green space and/or infiltration into ground water. Residents and business owners are encouraged to make sure sidewalks adjacent to their properties are ice free or otherwise safe for passage.

**Transit Accommodations**

In addition to plowing sidewalks in the most heavily used areas first, the Department employs a Sentencing to Service crew through Hennepin County four days per week, whose primary task in the winter months is to clear bus stops of snow and ice for mass transit users. The Sentencing to Service crew works a defined schedule so it can take up to three days before some transit stops are cleared, depending on the timing of snowfall in relation to the schedule.

**Equipment Inspection**
The Department mechanics conduct a thorough inspection of all snow and ice related vehicles and equipment prior to the start of the snow season. In addition, all trucks are annually certified through the Minnesota State Patrol Mandatory Inspection Program.

The Department also conducts daily inspections of snow and ice related vehicles and equipment during the snow season. Operators of the vehicles and equipment record their daily inspections and the status of the vehicle.

**Equipment Calibration**
The Department calibrates all salting vehicles prior to the start of the snow season to ensure efficient and effective application. Calibration will also occur if there is a major hydraulic repair or service needed on the vehicle.

**Other Responsible Entities**
Other governmental entities maintain certain streets within the City, which includes snow and ice removal. The Minnesota Department of Transportation (MnDOT) and the Hennepin County Highway Department maintain separate maintenance policies for streets they maintain within the City. From time to time, entities may contract with each other to perform snow removal services. The ultimate responsibility for snow removal services rests with the controlling entity.

**Hennepin County** maintains streets on **Penn Ave, Nicollet Ave,** and **Portland Ave** from Trunk Highway 62 to Interstate 494 in Richfield, as well as the entirety of **66th Street** in Richfield and into Edina.

**MnDOT** is responsible for all freeway on/off ramps on Trunk Highways 62 and 77 and Interstates 35W and 494 in Richfield.

Responsibility varies between **Richfield, Hennepin County,** and **Bloomington** for sidewalks along interstate/trunk highway overpasses and underpasses.

The table below summarizes the entity responsible for clearing sidewalks.

| **Sidewalks on overpasses** | **Entity** |
|---|---|
| 494/Penn | Hennepin County |
| 494/Portland | Hennepin County |
| 494/Nicollet | Hennepin County |
| 62/Penn | Hennepin County |
| 62/Portland | Hennepin County |
| 77/66th Street | Hennepin County |

| | |
|---|---|
| 494/Lyndale | Bloomington |
| 494/12th Ave | Bloomington |
| 76th Street/35W | Richfield |
| **Sidewalks on underpasses** | **Entity** |
| 62/Lyndale | Richfield |
| 62/Nicollet | Richfield |
| 66th Street/35W | Richfield |

**Private Contractors Providing Snow Removal Services**
Richfield City Code, Subsection 930.17, limits the operation of vehicles for snow plowing on private property in residential districts and within fifty (50) feet of such districts to the period between 6:00AM and 10:00PM any day of the week.

**Post-Snowfall Events**
Operators conduct follow-up plowing as needed. Generally, further clearing takes place where cars were parked, at intersections, etc. Additional salting of intersections may occur at this time as well.

**Snow and Ice Control Materials**
The City does not have a “bare pavement” policy. The Department will wait for snowfall to cease or accumulate sufficiently before initiating snow removal. General snowpack will remain on City streets and sidewalks in many cases.

The Department will use snow and ice control materials when there are hazardous ice or slippery conditions on streets. The Department may use other minerals, chemicals, and mixtures to assist in ice control provided they have an equivalent or lesser effect on the environment than salting and are economically feasible. The Department is concerned with the effect of chemicals on the environment; therefore, it will limit its use of such chemicals.

The Department initiates salting operations to melt ice on City streets. The Department will apply snow and ice control materials at times and rates that maximize effectiveness and generally limit application to:

- Intersections
- Hazardous areas
- Isolated, slippery areas

The Department may order use of additional salt if pavement, air temperatures, or precipitation type warrant. The Department has adopted salt application best practices as stated in the Minnesota Snow and Ice Control Handbook.

The City does not employ salt or other ice control measures on sidewalks/trails/cycle tracks in the City.

**Refreeze Conditions**

It is not possible or practical for snow and ice to be completely removed from all sidewalks or prevent melting snow or ice from refreezing on sidewalks. Users of sidewalk and trail facilities are expected at all times to be mindful of current conditions and avoid hazards to remain safe.

**Material Handling and Storage**

Salt stockpiles are stored on-site (approximately 300 tons) in an enclosed structure at the Public Works maintenance facility. These stockpiles are routinely replenished to meet the needs of the winter season with the goal of having minimal salt in the bins by the end of the season. During the off-season, salt at the Public Works maintenance facility is tarped and stored inside a covered structure. No other materials or supplies are stored in the structure containing the salt.

**Spreading and Plowing Procedures**

The Department will plow snow in a manner that minimizes traffic obstructions. The center of the roadway will be plowed first, and then the snow will be plowed from left to right so the snow discharges onto the boulevard. When plowing on bridges, operators will adjust their speed to reduce or eliminate a snow wake from going over the side of the bridge. Snow on dead-end streets will generally be plowed to the end of the roadway and snow on cul-de-sacs will be plowed to the middle of the cul-de-sac.

As necessitated by available resources, snow is plowed to the edge of the street without regard for sidewalks, driveways, and other structures located in the right-of-way. Sidewalks will be cleared after roadways are cleared. The City recognizes the inconvenience that comes from snow piling up on driveways due to plowing activities, but the City is not responsible for removing this accumulated snow.

Snowplow operators are exempt from traffic regulations set forth in Minnesota Statutes, Chapter 169 while actually engaged in work on streets, except for regulations related to driving while impaired and the safety of school children. Pursuant to this authority, snowplow operators have discretion to disregard standard traffic laws, when, in their judgement, it is safe to disregard such laws.

**Hauling of Snow and Snow Storage**

From time to time, the Department will remove snow where space does not allow for snow to be pushed or piled outside the driving lanes by hauling to another location. The Deputy Public Works Director will determine when snow will be removed by truck from the boulevard area. Snow hauling operations will not commence until other snow/ice removal operations have been completed. Snow hauling operations may also be delayed depending on weather conditions, personnel, and budget availability. The snow will be removed and hauled to a snow storage area. The snow storage zone will be located in an area that minimizes environmental impact.

## Snow Emergencies

**Snow Emergency Procedures**

Concurrent with the above policy, the following are additional City practices employed during a declared snow emergency (see City Code, Subsection 1305.13).

**Snow Emergency Notifications**

A snow emergency is declared by the City Manager, or designee. Declaration of a snow emergency can be found at the following:

a. Contact the Snow Emergency Line at 612-861-9178
b. Visit the City Website at www.richfieldmn.gov
c. Sign up for e-update on the City website at www.richfieldmn.gov/residents/e-notification
d. Local news channels
    i. WCCO
    ii. KMSP
    iii. KSTP
    iv. KARE 11
e. Social Media (Facebook, “X” or Twitter)

**Parking Limitations**

Vehicles parked on the roadway during a snow or ice event may impair the effectiveness of snow and ice control and removal. Richfield City Code, Subsection 1305.13, prohibits on-street parking during a snow emergency. A snow emergency is in effect after a snowfall of four (4) or more inches and/or upon the declaration of a snow emergency by the City Manager, or designee, and continues until the street has been plowed curb-to-curb.

Richfield City Code, Section 1315, permits certain vehicles to park in the front yard areas of residential districts of the City during a snow emergency, subject to the following conditions:

a. The vehicle must be parked as close as possible to the established driveway area serving the property on which, or in front of which, it is parked;
b. Permission of the property owner must be obtained;
c. The vehicle must be parked at least eight (8) feet back from the curbline, and five (5) feet back from any public sidewalk;
d. The vehicle may not be parked off of an established driveway within the area bounded by the street curblines abutting said corner lot and a line connecting points on the abutting curblines of fifty (50) feet from the point of intersection of the extensions of the curblines; and
e. Movement to and from the parking area must be over the established driveway rather than over the curb.

The owner of the property shall repair any damage to the adjacent boulevard area caused by parking in the front yard areas of residential districts.

**Snow Emergency Parking Areas**

Snow emergency parking areas will be available for a total of 24 hours after a snow emergency is declared. Snow emergency parking area signs will mark those areas where parking is allowed. The City of Richfield’s website will indicate the specific time at which a snow emergency was declared, or residents can call the Richfield Snow Information Hotline at 612-861-9178. After the 24 hour snow emergency parking area period has expired, the city will begin clearing snow in these areas and any cars that remain are subject to a ticket and tow, per normal procedure. For these parking areas to

work correctly, it is important that residents promptly retrieve their vehicles after their street or parking lot has been cleared.

The City Manager has designated the following stretches of roadway as snow emergency parking areas:

- Cedar Avenue—East side, from 66th Street to Diagonal Boulevard
- Cedar Avenue—Both sides, from 67th Street to 75th Street

These snow emergency parking areas are clearly marked with a snow emergency parking area sign.

## Private Property

### Snow Removal on Private Properties

It is a public nuisance and violation of City Code, Subsection 830.41, to shovel, plow, or cast snow or ice from private property onto a public street, alley, sidewalk, boulevard, or public parking lot. It is allowable to remove snow or ice from a private driveway or walkway and deposit the snow or ice on the portion of the boulevard immediately adjacent to the private property. Pushing, piling, or storing snow in or across the street is prohibited.

### Service to Private Property

City personnel and any personnel contracted by the City do not provide snow removal and ice control services to private properties. Services may, however, be provided with the permission of the property owners in situations where City operations directly benefit from operations on private property. Snow removal operations may be conducted on any private property when emergency vehicles responding to a call for service require access to private property. Any operations on or services provided to private property are authorized by the Department or are provided at the request of any emergency services officer responding to a call.

### Snow Operation Damages

Snow removal and ice control operations can cause damage to property, even under the best circumstances and care by vehicle and equipment operators. Most often, damage occurs to property improvements in the City right-of-way, which generally extends eight (8) to twelve (12) feet beyond the edge of street pavement.

The City is not responsible for damage to vegetation caused by plowing or the application of sand and salt mixtures. However, the City will make its best effort to repair damaged grass along curb lines and sidewalk edges using black dirt and seeding.

Personal property in the City’s right-of-way damaged by snow being deposited from an accumulation on the blade of a snowplow will not be considered for compensation. Any property damage claims allegedly resulting from City snow plowing activities must be filed with the City’s insurance through the Human Resources Department

When disagreement about the responsibility for the damage occurs, the Department will investigate and decide responsibility.

Equipment operators and contractors are directed to immediately contact their supervisor and the supervisor will contact the Department and Police Department whenever an incident involves damage to vehicles, significant structures, or involves any injury to a person.

Equipment operators and contractors also report existing damage they observe to avoid any potential future claim the damage was caused by snow removal or ice control operations.

**Service Requests and Complaints**

The Department will take service requests and complaints regarding snow removal and ice control operations during normal working hours. The Department will prioritize service requests and provide resolution at their discretion, in keeping with available personnel, equipment, and materials. The Deputy Public Works Director will receive and respond to service requests or complaints that the administrative staff is unable to answer.

**Policy Review**

The Department will review this policy annually. The Department will keep on file written comments and complaints received regarding this policy. Any review will consider comments or complaints received since the last review. The review will also consider input from City employees and contractors, members of the public, and other affected parties.

## Project Name: Richfield 76th St & Knox Ave Intersection Improvements

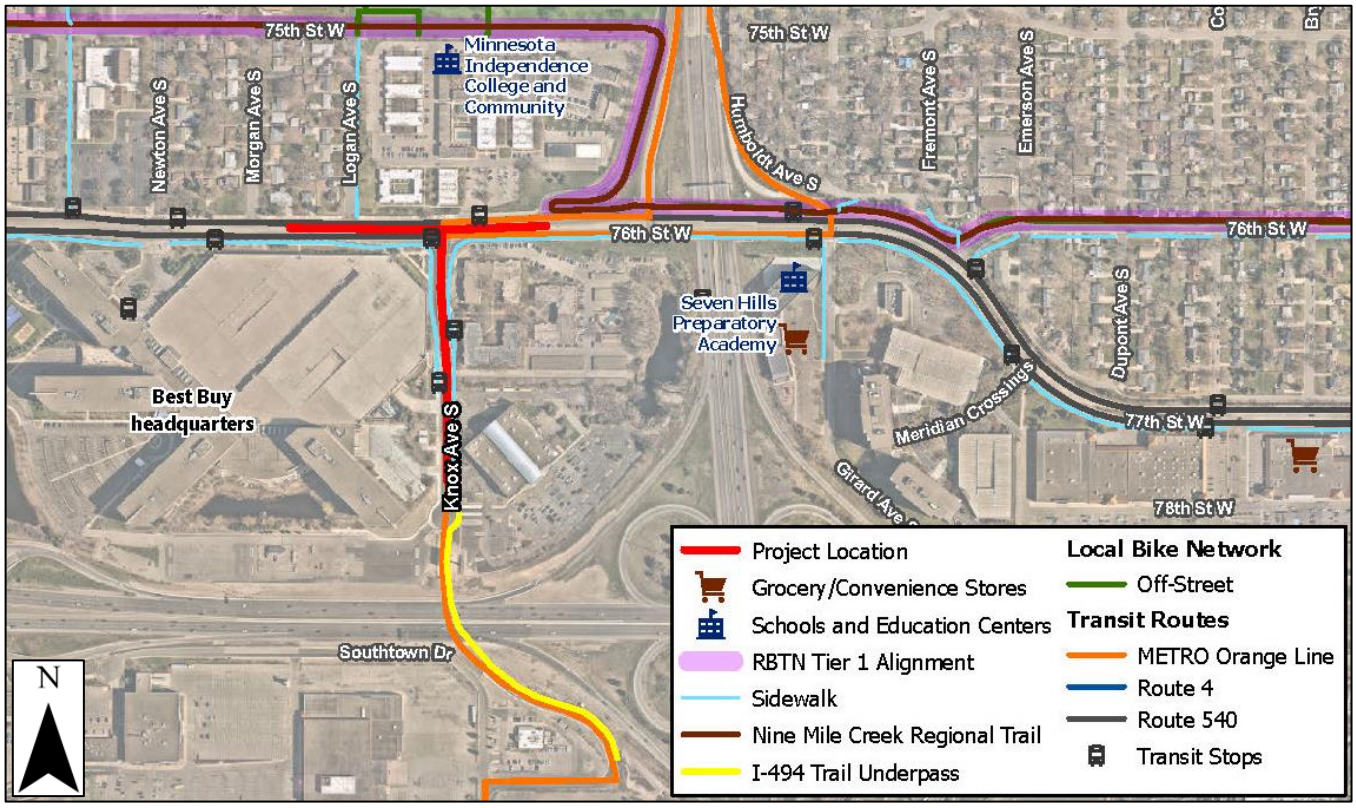
**Applicant**: City of Richfield
**Project Location**: 76th St at Knox Ave
**Total Project Cost**: $3,358,800
**Requested Federal Amount**: $2,687,040
**Local Match**: $671,760 (20%)

**Project Description**:

The City of Richfield is proposing to convert the existing signalized intersection at W 76th St and Knox Ave S into a multilane roundabout. The proposed roundabout design will include channelized intersection approaches, pedestrian refuge islands, and RRFBs. Existing nonmotorized facilities in the project area will be reconstructed to ADA standards and realigned to match the roundabout design. The existing sidewalk along Knox Ave will be reconstructed as a new trail connection linking the Nine Mile Creek Regional Trail, METRO Orange Line BRT station on Knox Ave, and the I-494 Orange Line underpass. In addition to safety and mobility improvements for people driving, this project will shorten crossing distances for nonmotorized users and improve nonmotorized connectivity.

**Project Benefits:**

- Reduced intersection conflict points and vehicle speeds
- Shorter crossing distances and improved crossing safety for people walking and biking, including METRO Orange Line BRT and Route 540 customers
- New trail connection between regional trail and I-494 Orange Line BRT underpass

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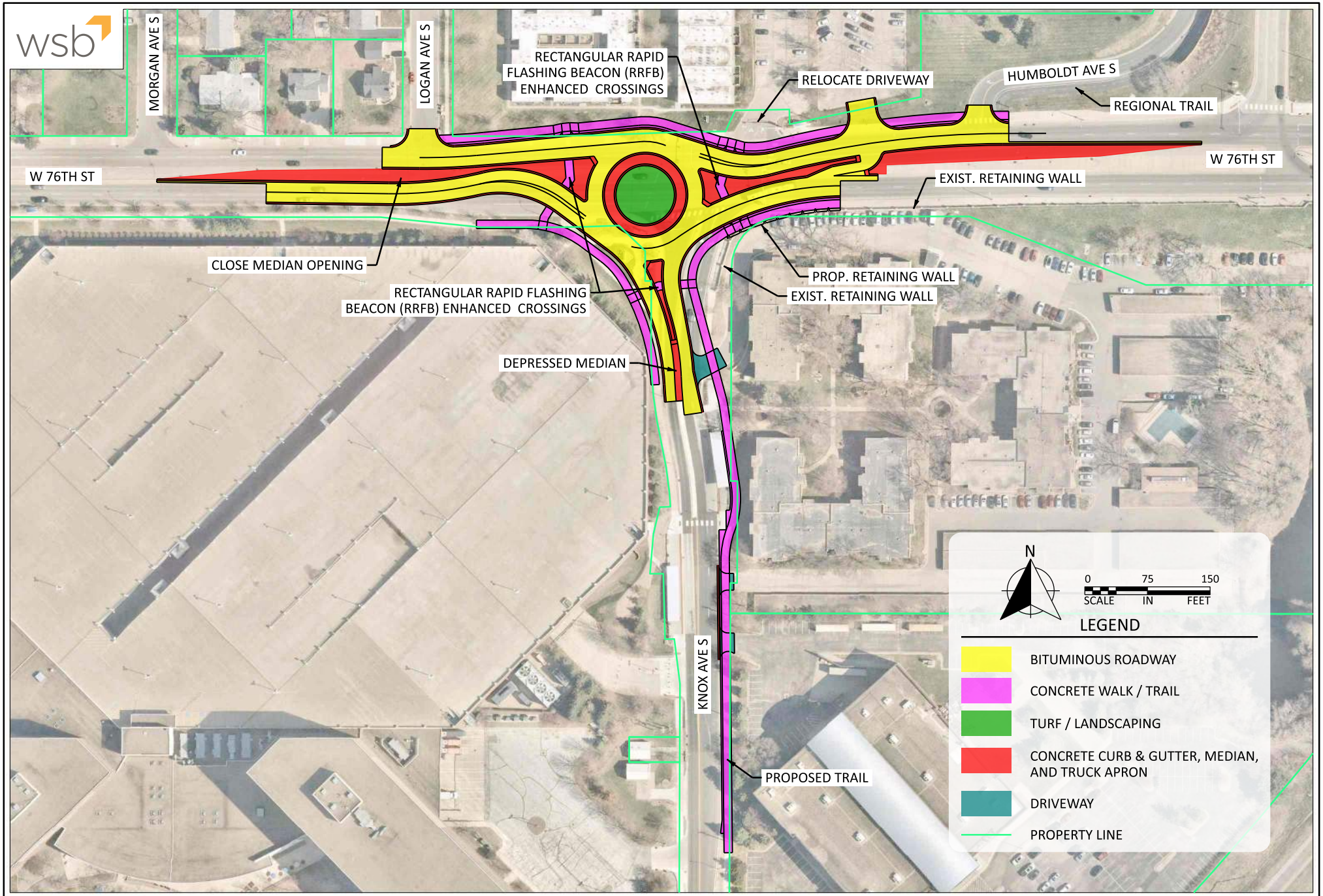
# 76th St and Knox Ave Roundabout

2024 Regional Solicitation Applications
City of Richfield

N

0 600 Feet

1 inch = 600 feet



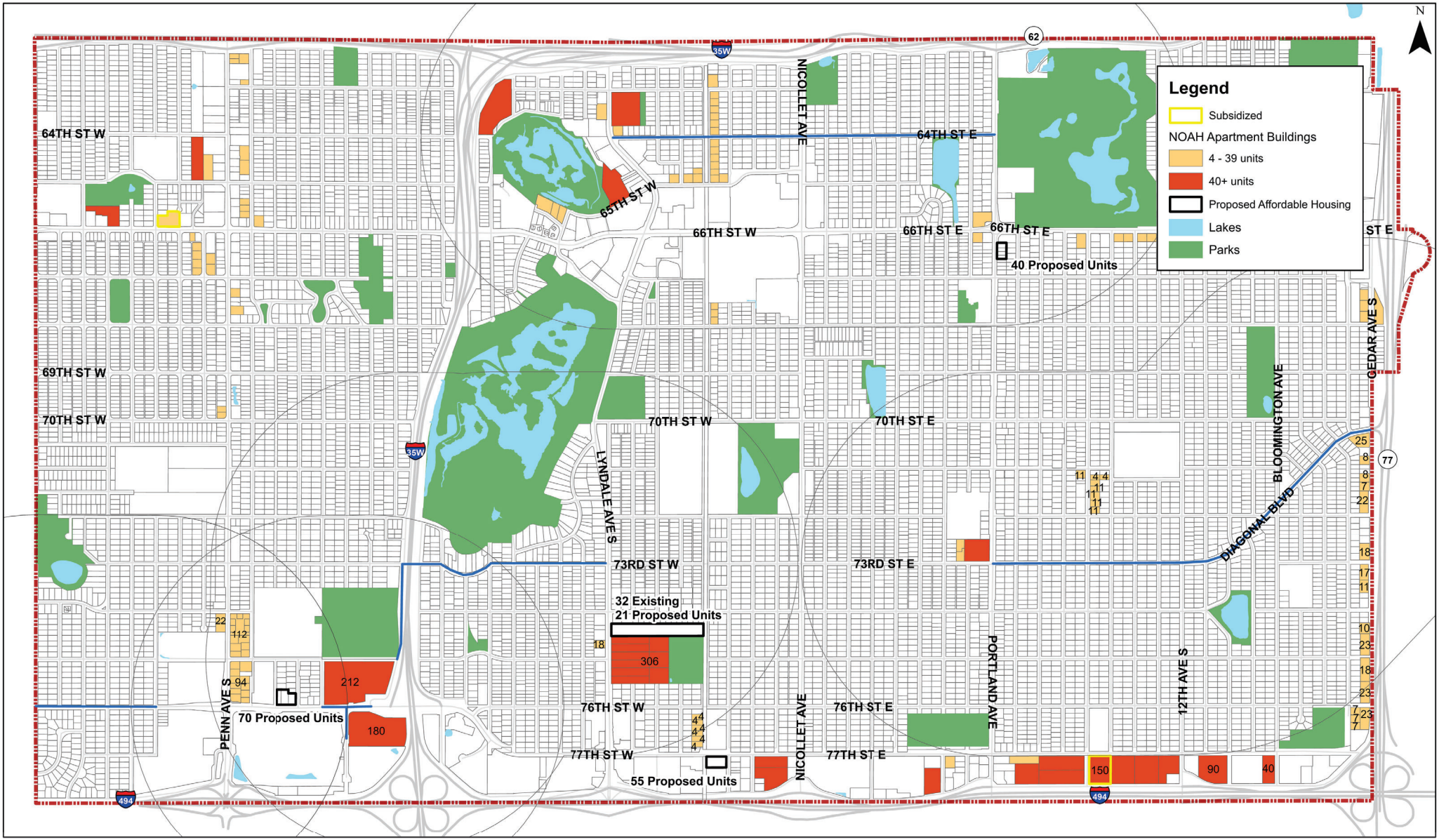

# W 76th St at Knox Ave S Roundabout

Richfield, MN

12/08/2023

Sheet 1 of 1

# Socio-Economic Conditions: Affordable Housing Access

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# Richfield 76th Street and Knox Avenue Intersection Improvements

Photo 1: Looking west down W 76th St from southeast intersection quadrant (Nov 2023).
Photo Credit: City of Richfield


Photo 2: Looking north from south intersection leg on Knox Ave (Nov 2023).
Photo Credit: City of Richfield


Photo 3: Looking north from southeast intersection quadrant, showing existing westbound bus stop and angled pedestrian crossing (Nov 2023).
Photo Credit: City of Richfield

Photo 4: Looking west from southeast intersection quadrant, showing existing pedestrian crossing and eastbound bus stop (Nov 2023).
Photo Credit: City of Richfield

**RESOLUTION NO. 12143**

**RESOLUTION OF SUPPORT FOR W 76TH ST AND KNOX AVE INTERSECTION REGIONAL SOLICITATION APPLICATION**

**WHEREAS**, the Metropolitan Council's regional solicitation is a competitive federal funding allocation process available to local governments in the Twin Cities region; and

**WHEREAS,** the regional solicitation's Spot Mobility category's purpose is to fund lower-cost, at-grade intersection projects that reduce delay and crashes; and

**WHEREAS,** W 76th St and Knox Ave is currently a four-leg signalized intersection; and

**WHEREAS,** the existing signal system is reaching the end of its useful life and has been identified for replacement in 2028; and

**WHEREAS**, converting signalized intersections to roundabouts reduces fatal and serious crashes; and

**WHEREAS**, W 76th St connects low, medium, and high density housing with the Centennial Lakes commercial area, Best Buy headquarters, and public transit; and

**WHEREAS,** the intersection is used by Metro Transit's Orange Line Bus Rapid Transit route; and

**WHEREAS,** there is currently no trail facility connecting the Nine Mile Creek Regional Trail to the Orange Line underpass underneath I-494; and

**WHEREAS,** a 20% local government match funding is required if the project is selected; and

**WHEREAS,** if the above project is selected, construction is tentatively scheduled for 2029; and

**WHEREAS**, the City of Richfield invests in infrastructure to best serve today's and tomorrow's residents, businesses, and visitors; and

**WHEREAS**, the City of Richfield ensures that City services are accessible to people of all races, ethnicities, incomes, and abilities.

**NOW, THEREFORE, BE IT RESOLVED**, that the City Council of the City of Richfield supports Public Works' 2023 regional solicitation application for W 76th St and Knox Ave intersection project.

Adopted by the City Council of the City of Richfield, Minnesota this 14th day of November, 2023.

Mary Supple, Mayor

ATTEST:

Dustin Leslie, City Clerk

# Public Works Department

December 6, 2023



Metropolitan Council
Regional Solicitation Scoring Committee

To whom it may concern,

The City of Richfield Public Works department acknowledges the Engineering division is applying for a Metropolitan Council regional solicitation grant to fund construction of a 2-lane roundabout and related improvements at the W 76th St and Knox Avenue intersection under the “Roadway Spot Mobility & Safety” category. This project aims to enable easier and safer transit access, improve safety and access for pedestrians throughout the area, and support safer motorized and nonmotorized travel for all users of the intersection, especially students of the multiple nearby schools.

Public Works supports this application as it has several pedestrian crossing benefits, including slowing the speed of vehicles entering the intersection which will reduce the severity of potential crashes. The city and school board also support this application as seen through the attached City Council and School Board resolutions of support.

Public Works commits to operate and maintain these facilities such that they are usable for all transportation modes in all seasons for their full design life. This is consistent with the city’s Snow Removal and Ice Control Policy dated 11/29/23 and attached to the application.

We hope that this application is awarded for tentative construction in 2028/2029. Improving this corridor will fulfill years of planning through the Safe Routes to School Comprehensive Plan (2009), Bike Master Plan (2012), Pedestrian Master Plan (2018), and Active Transportation Plan (draft, to be approved in 2024).

Respectfully,

Kristin Asher
Public Works Director

RICHFIELD
PUBLIC SCHOOLS

*Enriching and accelerating learning*

*Enriqueciendo y acelerando el aprendizaje*

**Steven Unowsky,** Superintendent

December 4, 2023

Matt Hardegger, PE
Transportation Engineer
City of Richfield

**RE: Richfield 76th St & Knox Avenue Intersection Improvements**
**2024 Metropolitan Council Regional Solicitation Application**

Dear Mr. Hardegger,

Richfield Public Schools supports the City of Richfield's application for Regional Solicitation funds for the 76th St & Knox Avenue Intersection Improvements. This project will:

- Construct a 2-lane roundabout at the W 76th St and Knox Avenue intersection that will increase safety for drivers as well as for people walking, biking, and rolling
- Enable easier and safer access to Metro Transit Route 540 and the Orange Line BRT
- Improve safety and access for people walking and biking between Richfield Middle School, nearby transit stops, the Nine Mile Creek Regional Trail, and surrounding neighborhoods
- Support safer motorized and nonmotorized travel for students and staff.

Richfield Middle School, located two blocks northwest of the project area, enrolls 74 percent students of color. Sixty-eight percent of students qualify for free or reduced-price lunch, and ten percent of students regularly walk or bike to school. W 76th St as it exists today can be a major barrier for students walking and biking to school because of the speed of traffic and the number of lanes that must be crossed.

Converting this intersection to a roundabout will have several pedestrian crossing benefits, including slowing the speed of vehicles entering the intersection which will reduce the severity of potential crashes. The addition of pedestrian refuge islands will shorten crossings distances and allow people walking to cross the roadway in two stages. Crossing only one direction of traffic at a time will increase visibility and awareness between people driving and people walking.

This project represents a major opportunity to provide safer transportation for our students, encourage more students to walk or bike, and improve a major corridor in the City of Richfield. Richfield Public Schools respectfully requests your consideration of the Richfield 76th St & Knox Avenue Intersection Improvements for Regional Solicitation funds.

Sincerely,

Steven Unowsky, Superintendent

**Public Works Department**

**City of Richfield**

Date: April 3, 2019

Subject: Public Engagement Policy for Street Projects

## Policy Purpose & Overview

This policy is intended to formalize the public engagement process the City of Richfield utilizes to gather feedback and identify concerns held by stakeholders in the development and design of street construction projects. The bulk of public engagement occurs in the preliminary design phase during a project's "concept development." In the final design and construction phase of a project, public engagement is tailored to the adjacent property owners to review specific details related to their property. Throughout the preliminary and final design process and through project construction, staff maintains an informal openness to all project stakeholders and will correspond with and meet residents in person to discuss and talk through any concerns or questions arising from a project. All large-scale transportation projects in Richfield follow this general linear process (attachment #1).

## The Big Picture: Richfield's Guiding Documents

The City of Richfield relies on a set of guiding documents (attachment #2) to help shape the design of street reconstruction projects. The City of Richfield's Complete Streets Policy states in part:

> *"Early and frequent public engagement/involvement will be important to the success of this Policy. Those planning and designing street projects must give due consideration to the community values, from the very start of planning and design work. This will apply to all roadway projects, including those involving new construction, reconstruction, or changes in the allocation of pavement space on an existing roadway (such as the reduction in the number of travel lanes or removal of on-street parking)."*

In addition to the Complete Streets Policy, staff utilizes Guiding Principles, the Bicycle Master Plan, the Pedestrian Master Plan, and the Parks Master Plan to guide the design process from start to finish.

## Project Evolution & Public Engagement

1. **Capital Improvement Plan – Project Identification**
2. **Public Notification & Project Promotion**
3. **Phase 1: Preliminary Design (Concept Development)**
    a. **Transportation Commission**
    b. **Open House #1**
        - ✓**Virtual Open House**
        - ✓**Transportation Commission**
    c. **Open House #2**
        - ✓**Virtual Open House**
        - ✓**Transportation Commission**
        - ✓**City Council Work Session if Needed**

   d. **Open House #3**
      - ✓**Virtual Open House**
      - ✓**Transportation Commission**
      - ✓**City Council Work Session if Needed**
   e. **Meetings with Adjacent Property Owners with Physical Property Impacts**
   f. **Open House #4**
      - ✓**Virtual Open House**
      - ✓**City Council Work Session to Review Preferred Alternative Design**
      - ✓**Transportation Commission Recommendation to Council**
   g. **City Council Consideration of Preliminary Design Approval**
4. **Phase 2: Final Design Process**
   a. **Meetings with Adjacent Property Owners**
   b. **Final Design Approval**
   c. **Advertisement for Bid**
   d. **Award of Contract**
5. **Phase 3: Construction**
   a. **Project Construction Kick-Off Meeting**
   b. **Neighborhood Block Meetings**
   c. **Weekly Project Updates**
   d. **Individual Meetings**
   e. **Construction and Project Wrap Up**

## Capital Improvement Plan – Project Identification

Future projects are identified in the City's Capital Improvement Budget and Capital Improvement Plan (CIB/CIP) which is a comprehensive list of major improvements necessary to meet the needs of the community over a five-year period and beyond. The CIB/CIP sets forth the proposed scheduling and details of the specific project by year, estimated cost, sources of funding and a justification or description for each improvement. The CIB/CIP is updated and approved on an annual basis. Street projects generally find their way into the CIB/CIP due to degrading street and infrastructure quality, critical utility replacement needs, and the ability of the City to complete a project in conjunction with county, state, and private reconstruction initiatives.

## Public Notification & Project Promotion

For many projects, the public notification and engagement process will begin as far out as two years before any ground is broken, depending on the size and scope of the project. City staff work diligently to make sure the public is aware of upcoming projects, public engagement opportunities and public meetings related to the development of these projects. Residents and business owners are notified of upcoming projects and the opportunities to participate in their design through a variety of means, including but not limited to postcard mailers, flyers, newspaper advertisements, social media postings, website updates, emails and boulevard signage near the project sites.

# Phase I: Preliminary Design (Concept Development)

## Transportation Commission

The City Council, in recognition of the importance that transportation planning has on the overall development of the City of Richfield, created a Transportation Commission in April 2005 to advise the Council on a variety of transportation issues and to encourage citizen involvement in the City's decision-making process on transportation. The Council has tasked the commission with reviewing proposed improvements to street infrastructure, engaging the project stakeholders and ultimately providing recommendations for Council consideration. At its core, the Commission serves as the conduit for community and business perspectives to supplement the technical and regulatory characteristics and needs of a project. The Commission itself is made up of Richfield residents, business owners, youth appointees and liaisons from City Council and other City commissions. The public at-large also has an opportunity at Transportation Commission meetings to participate, provide feedback and ask questions regarding proposed project designs.

The Commission is a unique and powerful body in the City of Richfield, and no transportation project plans or designs will receive a recommendation for approval by City Council without thorough vetting and endorsement by the community-focused Commission. Throughout the preliminary design process, the Transportation Commission plays a critical role in the development of a project from the initial technical analysis to their recommendation to council. Following each open house (detailed below), the Commission considers the input received and directs staff and refines the evolving design.

## Open Houses

City and project staff utilize a series of "open houses" to infuse community input into the comprehensive problem statement, engage the public, and shape the preliminary design of a project, which will ultimately be presented to the City Council for approval at the end of the public engagement process. Generally speaking, there are three to four open houses in the preliminary design process. These open houses consist of both the formal hosted event and a "virtual open house" following each event (detailed later). The same general process is adhered to when preparing for and promoting each open house (attachment #3).

**Open House #1.** At the initial open house no future design is presented, instead, residents and business owners are invited to learn about the purpose and scope of a project and provide input on existing issues to be addressed during the design process. Through comment cards and discussions with residents, staff identifies the problems and concerns residents have with the existing conditions (vehicle speeds are too high, pedestrians feel unsafe, etc.).

**Open House #2.** At the second open house, the dominant themes that were identified in the feedback received from the initial open house will be presented to those in attendance as a "comprehensive problem statement." At this open house, the public is asked to confirm what project staff believe has been expressed through the initial open house. Staff will detail a variety of design "tools" that can be incorporated into the project to attempt to remedy the identified problems. Through the use of display boards and other visual aids, staff will detail the pros and cons of the various tools that are being considered to address the problem, and attendees will have the opportunity to provide their opinions and comments. No proposed layout or design is presented as this is still a discovery open house and input is being sought by staff regarding what works and what doesn't work with the existing conditions.

**Open House #3.** At the third open house, staff will use the feedback received in the first two open houses to propose to stakeholders a variety of layout concepts along different segments of the project that incorporate the favored design tools identified at open house #2 by residents through the participant feedback forms. Residents are asked through a detailed survey of their opinions about the

design options being offered, if the community problem statement is accurate, and if the concerns raised in previous open houses have been captured. The purpose of this open house is to review what has been done to date to respond to community feedback, present supporting technical analysis and provide input on potential design concepts for the corridor and for key intersections. This process will continue until a balanced design is developed that is acceptable to the public, meets the project goals identified in the comprehensive problem statement, and satisfies regulatory requirements (ADA, etc.) is developed.

**Open House #4.** At the final open house staff will present the proposed final layout and solicit feedback from stakeholders and the community. The purpose of this open house is to provide the public an opportunity to review and comment on the preferred alternative for the corridor, prior to final review and recommendation from the Transportation Commission to the City Council for formal approval. Prior to the preliminary design appearing before the Council for approval, a special work session is often held where the City Council will learn about the "preferred alternative design" that the public engagement process has achieved.

**Virtual Open Houses.** For those that are unable to attend an open house, staff will create a "virtual" open house on the City's website for the full week following each open house (attachment #4). The same materials and information displays are presented electronically for the public to view, and an electronic version of the comment card/survey is available for individuals to fill out. Community members are also given contact information to personally reach out to staff to discuss elements of the project. Many stakeholders choose to view the open house materials and then reach out directly to staff via phone or email to make their voices heard as well.

**Comment Cards, Participant Feedback & Open House Summaries.** Comment cards/surveys are made available to residents at all open houses that contain specific questions related to the project design allowing residents to share their thoughts regarding the question or topic at hand. Following the conclusion of each open house, staff will summarize the findings and results from resident surveys and present them to the Transportation Commission for comment, discussion, and direction at the next regular meeting (attachment #5). A corresponding City Council memo is prepared and distributed to council members and an open house summary is posted to the project website following the conclusion of each open house for residents and interested parties to review.

## Adjacent Property Owners with Physical Property Impacts

Property owners along a project route that would see physical property impacts meet one-on-one with project staff in the preliminary design process to discuss the various design scenarios and concepts and the possible implications for their property. This collaboration results in design concepts that satisfy the project needs and the individual property owner. Property owners directly impacted by a project are consulted with in this preliminary design phase because their buy-in is needed and can directly affect what layout is ultimately presented to Council. Property owners that have impacts limited to the right-of-way along their property boundaries are contacted during the final design process. If there are substantial impacts to private property in the right-of-way (e.g., a fence or retaining wall), project staff will notify the property owner in the preliminary design process to discuss the impacts.

## Transportation Commission Preliminary Design Recommendation to Council

In concluding the preliminary design and general public engagement process, the Transportation Commission will formally make a recommendation to City Council for the approval of the preliminary design layout for a project. Adoption of the preliminary design occurs at a regularly scheduled City Council meeting and the public has an opportunity to voice objections or support for a project's design

following a brief presentation by project staff to the body. If the preliminary design is approved by City Council, staff and the engineering firm leading the project will move right into the final design process.

# Phase II: Final Design

The final design process commences immediately following preliminary design approval by City Council. While much of this phase is highly technical engineering work, design team staff continues to meet with residents and stakeholders along the project corridor that will see impacts in the City right-of-way along their property lines.

## Meetings with Individual Property Owners

Staff will meet one-on-one with adjacent property owners that will have impacts to the City right-of-way that adjoins their private property. These discussions generally focus on impacts related to driveway aprons, grading, sidewalks, paths, plants, hedges, trees, fencing, berms, and retaining walls abutting the private property. Project staff work diligently to ensure a solution for each property owner is reached that best serves the project design and the property owner's wishes.

**Private Property in the Right-of-Way.** Individuals with personal property in the City right-of-way are governed by Richfield Municipal Code Section 811.07, which states in part that property owners must have a permit for private property in the City right-of-way, that the City reserves the right to revoke any permit at any time and for any reason. If the permit is revoked, the property owner has 60 days to remove the private encroachment at their own expense. Despite the plain language of the Ordinance, project staff almost always are able to resolve problems with private encroachments at minimal or no cost to the property owner or the project itself.

To reiterate, during the preliminary design the City focuses efforts on public outreach and making contact with those that will have direct property impacts or major impacts to private property located in the right-of-way as part of the design being proposed. It is in the final design process that project staff touches base with all adjacent property owners regarding what to expect along the boulevard and any private encroachments that will need to be moved, modified, or removed entirely.

## Final Design Approval, Advertisement for Bid, and Award of Contract

Following conclusion of the final design process and approval of the project's final design by City Council, project staff will advertise for sealed bids in compliance with Minnesota's Uniform Municipal Contracting Law (Minnesota Statutes, §471.345). In the bid solicitation process there is no public engagement, but the formal bid opening is a public meeting and the City Council is tasked with awarding the bid to the winning contractor at a regular City Council meeting.

# Phase III: Construction

## Kick-Off to Construction Open House

All City residents, and especially those along the project corridor, are invited to a construction kick-off meeting where they will meet the contractor and project staff. Project overviews are provided as well as information of what residents can expect with the upcoming construction. Layouts, project plans, and construction timelines are available for residents to view at this meeting and staff is on hand to speak with residents and answer any questions or concerns that residents might have.

## Neighborhood Block Meetings

During construction, block meetings are held on-site to keep residents informed of project progress and provide project updates and what residents can expect in front of their home in the upcoming weeks. These meetings provide residents a safe way to talk with the contractor during construction and opportunity to ask project staff or the contractor questions about the project and specific impacts adjacent to their property.

## Weekly Project Updates

Throughout the construction season, project staff will send weekly updates and construction recaps to individuals that have subscribed to our mailing lists. City staff produces a weekly video update that is also shared via email and through the City of Richfield and Richfield Sweet Streets Facebook pages. Construction recaps, updates and alerts are posted often to the Richfield Sweet Streets website and to both the Richfield Sweet Streets Facebook page and the City of Richfield's Facebook page.

## Individual Meetings

Throughout the construction phase of a project individual residents or businesses will occasionally raise concerns related to project progress or what they're seeing outside their property or business. Project staff will meet with these residents on-site or wherever is most appropriate to address concerns and do all they can to make the construction process go as smooth as possible.

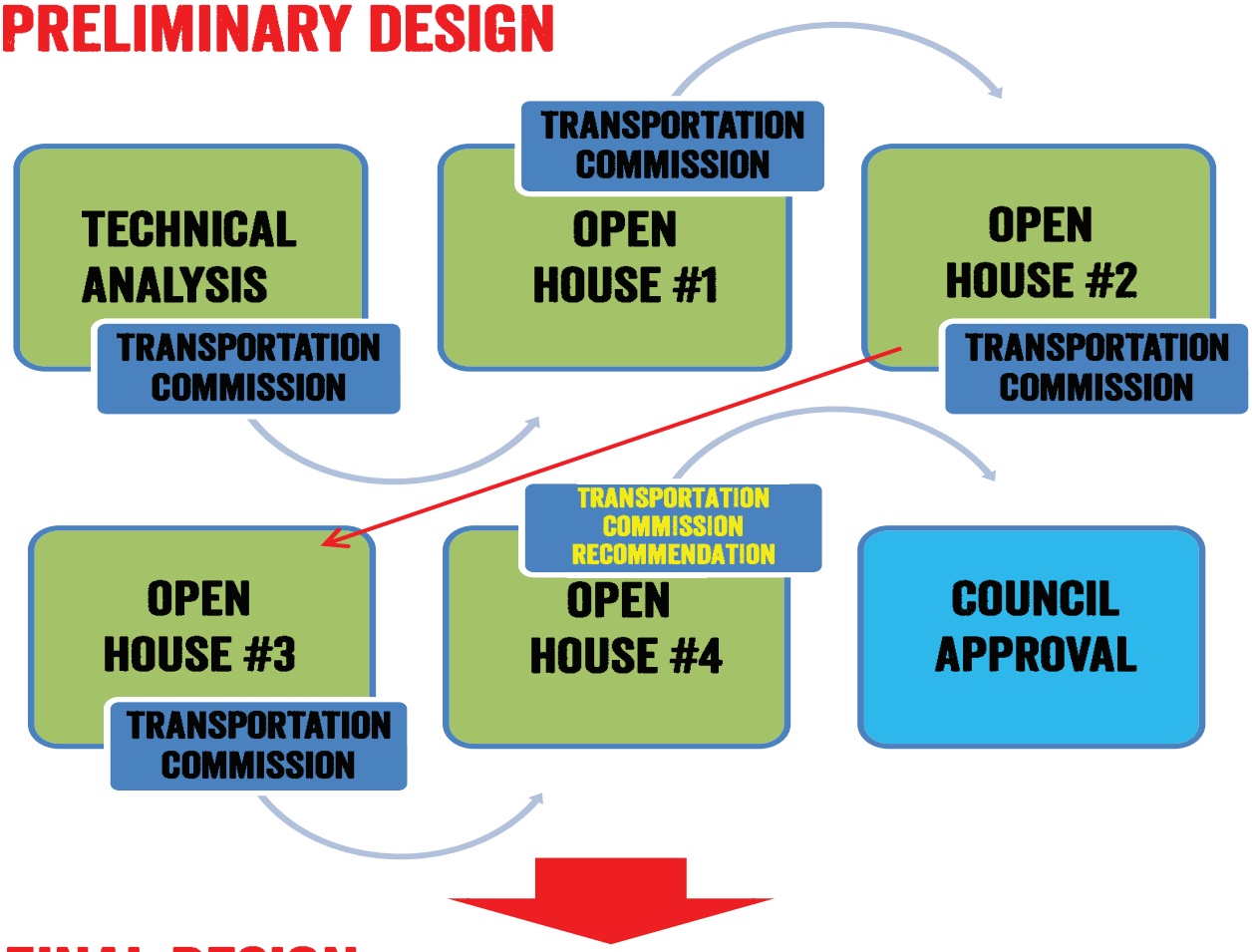
## Construction Wrap-Up

The amount of time it takes to carry a project from ground-breaking to 100% completion is highly variable. Staff does their best to forecast to residents when to expect major activity in their neighborhood.

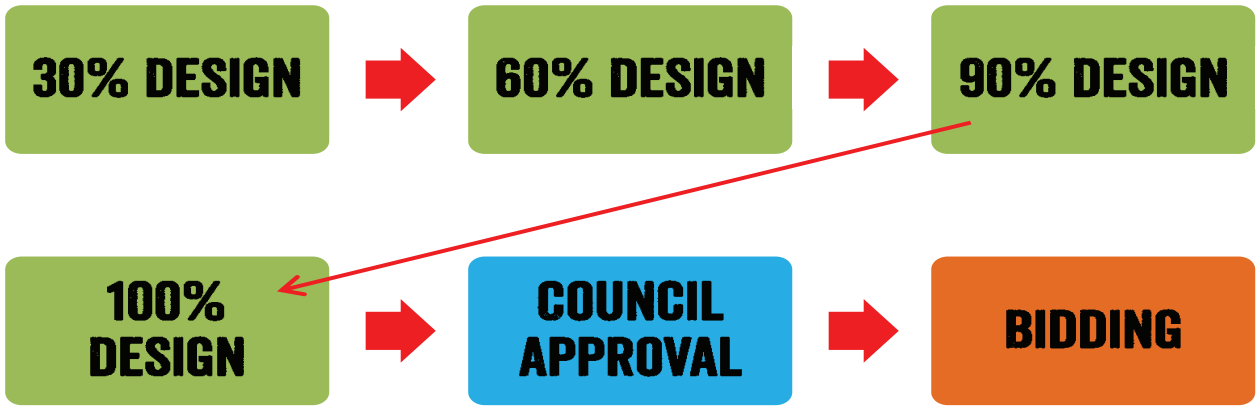
*If you have any questions or comments about the City's public engagement process, please contact City of Richfield Transportation Engineer Jack Broz at (612) 861-9792.*

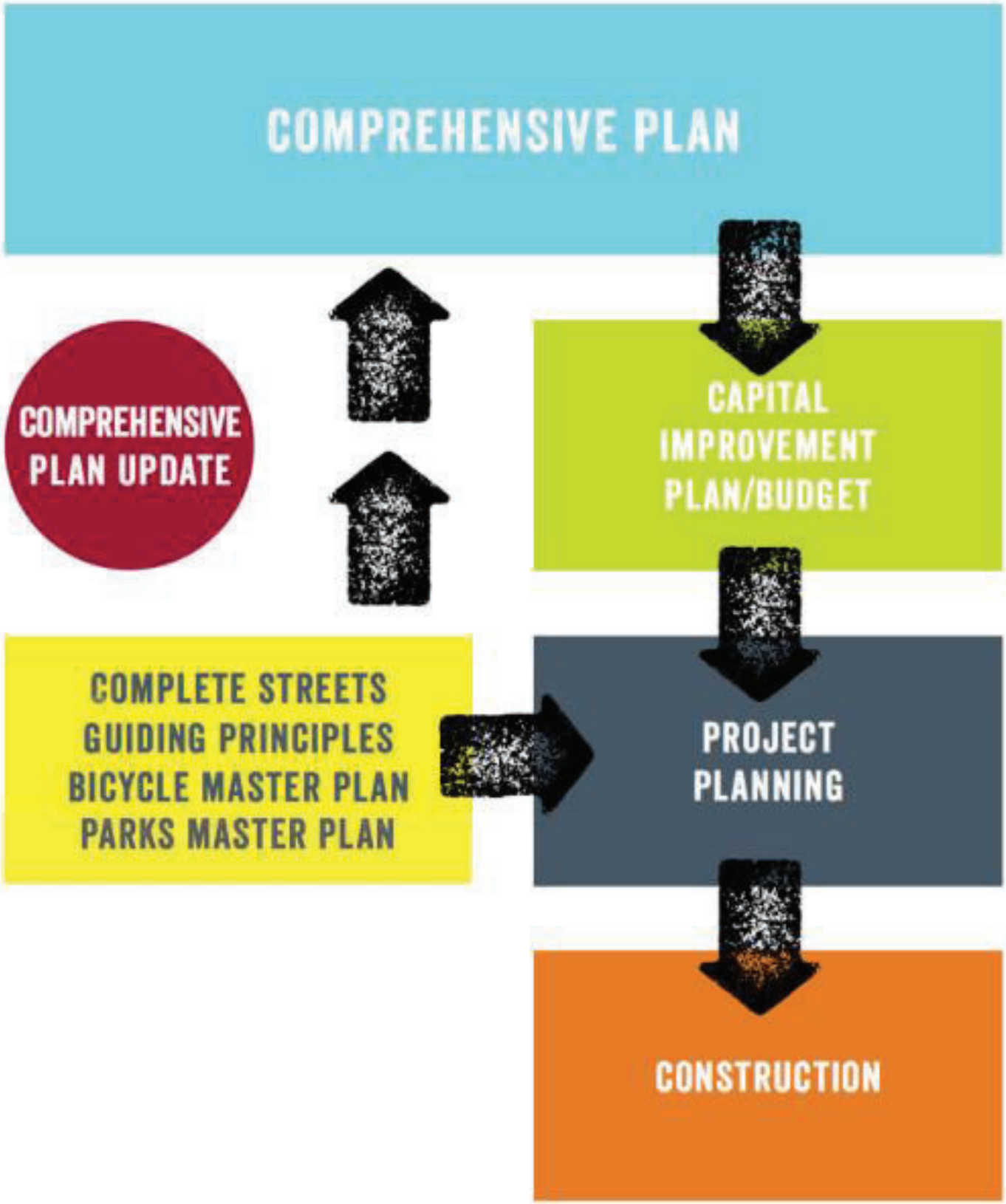
# PROJECT DEVELOPMENT & PLANNING PROCESS

## PRELIMINARY DESIGN




## FINAL DESIGN




COMPREHENSIVE PLAN
COMPREHENSIVE PLAN UPDATE
CAPITAL IMPROVEMENT PLAN/BUDGET
COMPLETE STREETS
GUIDING PRINCIPLES
BICYCLE MASTER PLAN
PARKS MASTER PLAN
PROJECT PLANNING
CONSTRUCTION

ThreeRivers
PARK DISTRICT

December 1, 2023

Matt Hardegger, PE
Transportation Engineer
City of Richfield

**RE: Richfield 76th St & Knox Avenue Intersection Improvements**
**2024 Metropolitan Council Regional Solicitation Application**

Dear Mr. Hardegger:

Three Rivers Park District (TRPD) extends its support for Richfield's 2024 Regional Solicitation application for the 76th St & Knox Avenue Intersection Improvement project. This project will improve safety and access to an existing Intercity Regional Trail along 75th and 76th St in the City Richfield.

This project will:

- Construct a 2-lane roundabout at the W 76th St and Knox Avenue intersection that will increase safety for people walking, biking, and rolling as well as for motorists
- Improve safety and access for people walking and biking to and from the 76th/75th St Intercity Regional Trail, nearby transit stops, and the high activity area near this intersection
- Improve access to the Nine Mile Creek Regional Trail
- Support safer multi-modal transportation travel for residents of the nearby single and multifamily homes and serve several schools, education facilities, and parks

This project supports the following Three Rivers Park District vision and goals:

- Vision: Every person can connect with nature every day
  - Goal 1: You belong here - We are welcoming and convenient to all people.
  - Goal 2: Parks matter - We are essential to vibrant, healthy and livable communities.
  - Goal 3: Lead by example - We are intentional and innovative in meeting the needs of today while anticipating and protecting the needs of tomorrow.

Three Rivers Park District appreciates your efforts to secure funding to improve safety for people traveling within the TRPD area. We will work with the City as plans are developed to ensure that a safe facility is developed for all users. If you have any questions, please contact me at 763-694-7635.

Sincerely,

Boe R. Carlson

Boe R. Carlson, Superintendent
Three Rivers Park District