



FEASIBILITY STUDY

54th STREET ROADWAY RECONSTRUCTION

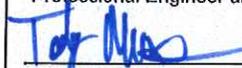
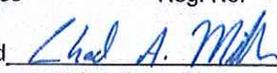
54th Street between Wooddale Avenue to France Avenue

IMPROVEMENT NO. BA-416

November 25, 2013

ENGINEERING DEPARTMENT
CITY OF EDINA

I hereby certify that this feasibility study was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.

	43364	11/25/13
Toby Muse	Reg. No.	Date
Approved 		11/25/13
Chad A. Millner, PE		Date
Interim Director of Engineering		



FEASIBILITY STUDY – BA-416 ENGINEERING DEPARTMENT CITY OF EDINA

54TH STREET ROADWAY RECONSTRUCTION NOVEMBER 25, 2013

SUMMARY:

The decision-making framework used to arrive at the recommended improvements presented in this report is driven by the pilot Stakeholder Engagement Process and Envision Sustainable Infrastructure Rating System summarized in this report and detailed in the Appendix. Proposed improvements address many of the issues and concerns raised by stakeholders while still balancing and maintaining required minimum State and City engineering requirements. The table on Page 2 of the stakeholder engagement report in Appendix M illustrates the impact of stakeholder contributions on the design process

The project includes adding to 54th Street shared vehicle and bicycle lanes, a sidewalk and lighting on the north side of 54th Street, and replacing the bridge at Minnehaha Creek. The project involves removing and replacing all existing concrete curb and gutter and reconstructing the bituminous pavement and a portion of the poor subgrade soils. It also includes installing storm sewer that meets State Aid requirements and connecting a sump pump drain pipe to the storm sewer system as needed. In addition, a trunk water main pipe will be installed to connect separate City water main pipe distribution systems on either side of Minnehaha Creek.

The total estimated project cost is \$3,308,000. Funding for the entire project will be from a combination of special assessments, Municipal State Aid (MSA), and City utility funds. All roadway, sidewalk and residential lighting costs east of Kellogg Avenue up to and including the bridge over Minnehaha Creek will be funded 100% by MSA. The remaining roadway, sidewalk and residential lighting cost will be 80 percent funded by MSA and 20 percent funded by special assessments at a rate of \$6,400 per REU. Utility improvements and repairs amount to \$664,100 and will be funded through respective utility funds.

The project can be completed during the 2014 construction season. Staff believes the project is necessary, cost effective and feasible to improve the infrastructure as initiated by the vision of Edina's Vision 20/20 – "Livable Environment" and "A Sound Public Infrastructure".

LOCATION:

The project includes 54th Street between the Wooddale Avenue right-of-way (ROW) to the west and the France Avenue ROW to the east for a total distance of approximately 2,640 feet (Figure 1).



Figure 1 - Project Location Map

INITIATION & ISSUES:

The project was initiated by the Engineering Department as part of the City’s MSA Street reconstruction program and identified in the Capital Improvement Program. As part of this project the City collaborated with the Minnehaha Creek Watershed District (MCWD) to address creek issues and needs and develop a separate comprehensive water resource management plan for the Arden Park Area. This feasibility study addresses updating aging infrastructure issues associated with the pavement condition, a structurally deficient bridge, and stormwater collection and conveyance within the project corridor.

All Engineering projects are reviewed for compatibility with the City of Edina 2008 Comprehensive Plan Update, Comprehensive Bicycle Transportation Plan, the Comprehensive Water Resource Management Plan, the Living Streets Policy and a sustainable project evaluation.

City of Edina 2008 Comprehensive Plan Update

Sidewalk Facilities

Chapter 7 of the plan addresses locations of proposed sidewalks facilities within the City. As shown in Figure 7.10 of Appendix F, a sidewalk is proposed along 54th Street between Wooddale Avenue and France Avenue.

Bicycle Facilities

Chapter 7 of the plan addresses locations of proposed bicycle facilities within the City as part of the Comprehensive Bicycle Transportation Plan. Figure 7.11 of Appendix F identifies 54th Street as a secondary bicycle route between Wooddale Avenue and France Avenue.

City of Edina Comprehensive Water Resource Management Plan

The project is located within the Minnehaha Creek Watershed District. The Comprehensive Water Resource Management Plan indicates no storm water issues within the street right of way.

Living Streets Policy and Envision™ Sustainability Evaluation

The vision statement of the Living Streets Policy, attached in Appendix K, expresses the need to look at projects differently in the future:

Living Streets balance the needs of motorists, pedestrians, bicyclists, and transit riders in ways that promote safety and convenience, enhance community identity, create economic vitality, improve environmental sustainability, and provide meaningful opportunities for active living and better health.

Although the Living Streets Plan has not been developed, staff has included elements that pertain to collector streets such as 54th Street in the rehabilitation of the infrastructure and replacement of the road.

For the very first time, staff used a sustainability scoring system for this project called ENVISION™ to help measure what effect project decisions and recommendations have on sustainability. ENVISION™ was developed in joint collaboration between the Zofnass Program for Sustainable Infrastructure at the Harvard Graduate School of Design and the Institute for Sustainable Infrastructure¹.

ENVISION™ was created to support transformational, collaborative approaches that promote sustainable infrastructure development using a comprehensive, triple bottom line approach toward decision-making. It is intended to foster a necessary and dramatic improvement in the performance and resiliency of physical infrastructure across the full economic, social, and environmental dimensions of sustainability.

The rating system includes a total of 60 credits organized into five categories:

- **Quality of Life:** Goal is to improve the project's impact on the surrounding community
- **Leadership:** Goal is to strengthen collaboration, stakeholder involvement, and long-term planning considerations

¹ The Institute for Sustainable Infrastructure is a not for profit education and research organization founded by the American Public Works Association, the American Society of Civil Engineers, and the American Council of Engineering Companies

- **Resource Allocation:** Goal is to wisely manage materials, energy, and water resources used for project
- **Natural World:** Goal is to understand and minimize negative environmental impacts of project
- **Climate and Risk:** Goal is to minimize emissions and design for resilience - in both the short-term and long-term

Within each credit, points are earned based on level of achievement obtained, with five levels of achievement ranging from “improved” to “enhanced” to “superior” to “conserving” to “restorative”.

The project was evaluated based on a set of 52 ENVISION™ credits which were determined to be most relevant to the 54th Street Reconstruction and Arden Park Stormwater Management Plan.

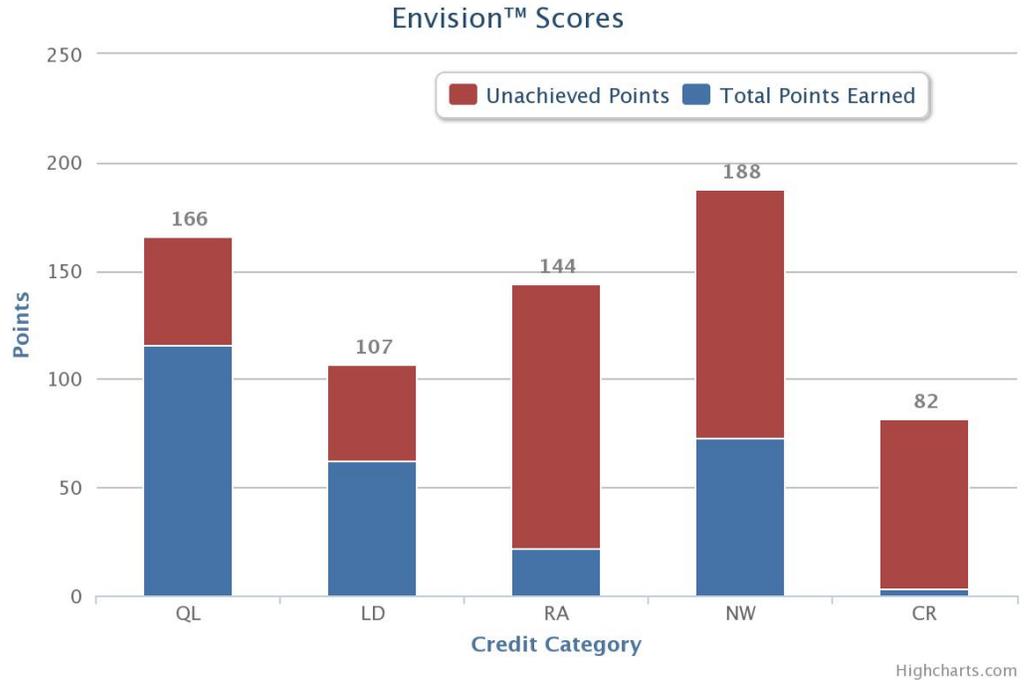
The ENVISION™ evaluation was conducted at three stages during the planning process. During the first stage, the project team identified ENVISION™ credits deemed most relevant to the critical issues identified through stakeholder engagement including intercept surveys and door knocking.

During the second stage the project team used ENVISION™ to evaluate the alternative design scenarios for each of the three project sections (West End, Middle Section, and East End). Results of this evaluation were presented at the September 30th final scenario workshop and are summarized in Appendix L.

Finally, ENVISION™ was used by the project team to evaluate the preferred design alternative which is being presented as part of this study. Results of this evaluation are summarized in Appendix L.

Overall, the preferred alternative scored 264 points out of a possible 687 points. It should be noted that the scores will increase substantially if the project moves from the feasibility phase to the detailed design and construction phases. At this stage of the project there was no basis to assign points to a large number of the credits available because decisions related to those credits have not yet been made.

As can be seen in Figure 2, the project scored relatively high in the Quality of Life, Natural World and Leadership categories in particular. This reflects a number of factors including a very thorough stakeholder engagement program, a holistic planning approach that pro-actively considered infrastructure integration opportunities, and the extensive efforts to design the project in a manner that will preserve community quality of life, promote alternative transportation modes, and preserve cultural and natural resources.



QL=Quality of Life; LD=Leadership; RA=Resource Allocation; NW=Natural World; CR=Climate & Risk

Figure 2 –Overall Project Scoring Using Envision™

The preferred design scored highest in terms of Quality of Life (108 points), Natural World (73 points) and Leadership (58 points). It achieved fewer points for Resource Allocation (22 points) and Climate and Risk (3 points).

In terms of Quality of Life, the preferred design scored well because it improves quality of life for the neighborhood, encourages alternative modes of transportation, improves site accessibility, safety, and way finding, and enhances public spaces.

For the Natural World criteria, the project scored well, however at this stage of the project it is not possible to score several of the credits. The project team and City are however addressing a number of these credits, especially those related to the creek, and as the project moves forward there will be an opportunity to capture additional points associated with factors such as: protecting surface water, preserving floodplain functions, and preventing surface water contamination among several others.

It is noteworthy that the City is developing a stormwater management plan in conjunction with this project and in collaboration with the watershed. The plan will address the whole Arden Park sub-watershed area, helping achieve synergistic project benefits that would have otherwise not been realized.

For Leadership, the project scored well because of the City and project team’s effective leadership and commitment to the project, a robust

stakeholder involvement process, and efforts to improve infrastructure integration (linking Arden Park and 54th street reconstruction project planning together for example).

In terms of Resource Allocation, the project scored low because many of the credits become more relevant and easier to score during the design phase of the project. The project does anticipate using regional materials, diverting waste from landfills, and reduce excavated materials taken off site through the on-site re-use of road material. This material will be used as fill material to help raise the road elevation around the bridge. Addressing this category of credits more fully in the next phase of the project will significantly increase scoring.

In the Climate and Risk category, the project scored low, reflecting the fact that while the design (in particular raising the bridge) does help the community prepare for long-term adaptability and short-term hazards associated with changing climate conditions, it does not do so explicitly. Efforts such as minimizing pavement use helps manage heat island effects; however to improve the scoring in this category the City would need to conduct a more thorough assessment of potential risks as part of the design phase of the project.

Staff Issues

The following existing issues and/or features, some generated by stakeholders, are addressed in this study:

- Pedestrian, bicycle and vehicle safety
- Minnehaha Creek access/safety
- Recreational use at Minnehaha Creek as it relates to 54th Street
- Parking capacity
- Poor condition of existing pavement surface
- Storm water quality and drainage
- Existing landscaping, retaining walls and driveways
- Existing mature trees

Summary Stakeholder Engagement Process and Outcomes

This robust, collaborative, and transparent engagement served as a pilot/model for the City. Below is a summary of both the process and outcomes.

Technical and Engagement Parameters (June 13, 2013): The City and consulting team jointly determined the key engagement issues and “promise” to the public, agreed on core engagement values, identified and analyzed the project’s key stakeholders, and determined the project’s technical and engagement parameters. The resulting Stakeholder Engagement Plan drove all engagement activities and communications. The technical parameters framed the project within the context of City policies, plans, and regulations including sidewalks, bike facilities, and special assessments; Watershed policies and plans, and the partnership with the City to help address Minnehaha Creek’s impaired waterway status; and MnDOT State Aid requirements for this roadway.



Input on Needs and Issues (late June-late July 2013): Over 450 stakeholders offered issues and needs for both projects through doorknocking, intercept surveys, online surveys, and small group sessions in response to questions around issues and needs on 54th Street and the bridge, and stormwater-related issues and needs for Minnehaha Creek and Arden Park. All input was documented and reported back to the community, and informed the preliminary street design components and stormwater management plan. Broad categories of input were aesthetics; Creek access and safety; water quality and runoff; parking availability; road geometry and pavement conditions; safety for pedestrians, bicyclists, vehicles, Creek users; lighting and signage; and traffic and speeding. See detailed report in Appendix A.

Feedback on Design Components (August 2013): Based on that input, the consulting team developed a variety of design components and received great feedback from over 112 stakeholders attending a workshop or completing an online survey. Participants provided either positive or negative feedback on each design component. See detailed report in Appendix B.

- Roadway Configurations (sidewalks, bike lanes, parking): Many participants still weren't aware of the MnDOT/City roadway requirements. Feedback on specific design components varied



considerably and was often highly individualized. Stakeholders with children, walkers and bikers, and Arden Park and Creek users more often provided positive feedback on the practical and safety advantages of these requirements. There was generally positive feedback on one vs. two sidewalks, and varied feedback on where parking was needed and why, and the value of boulevards; there were many more concerns about the narrower western section of the roadway. Some drivers and bicyclists were frustrated about the “mixed messages” about bike lanes/sharrows on the east end of the road. Some stakeholders wanted more parking for Park and Creek, as well as church attendees. Others were concerned about the impact on people's property – even though the City owns that right-of-way.

- Pedestrian and Bicyclist Safety, Speeding: Original stakeholder issues and needs prioritized pedestrian and bicyclist safety, so numerous design components focused on those topics. Feedback continued to support safety as a key priority. Many concerns and opinions reflected the interconnections among effectiveness, cost, and appropriateness of various speed reduction and pedestrian crossing safety design components. There were concerns about flashing signals and

stakeholders took various positions on pedestrian crossing aesthetics, but there was clear consensus on the need for safe crossings.

- Bridge Safety and Creek Access: Feedback on the bridge designs varied, and many participants preferred a bridge that maintains the area's "country" feel and fits with the residential area. Others focused on designs that allow Creek users sufficient headroom; many were attracted to the possibility of a path underneath the bridge. Stakeholders posed important questions about Creek access and use as well, including positive feedback on an updated canoe landing that is not "slickery" when wet, and how landings or steps can double as places to play, watch, and otherwise have fun and be safe alongside the Creek.
- Water Quality, Road Drainage, Park Flooding: While there appeared to be general understanding and support for the need for stormwater management, a number of the design components in this category garnered a range of positive and negative feedback. There was a lot of feedback on filtration design components, with generally positive feelings about including native plants. Stakeholders generally favored maintaining green space and existing park uses, and ensuring that any new design components address water safety especially in play areas.



Feedback on Design Scenarios (September 2013): The design team developed alternative

scenarios for different segments: west, middle/bridge plus Creek and stormwater, and east. Each of these brought together feedback on the design components with MnDOT and City plans and policies. At the session and subsequent online survey, c. 120 stakeholders offered feedback. See detailed report in Appendix C.

- Middle/bridge, Creek, stormwater: There was very strong support for Scenario 1 that directly addressed stakeholder-identified safety issues at that intersection for both crossings and vehicle/bicycle stopping, and also maintained the rapids for recreational use. For canoe landing, bridge, and railing designs, etc., there was solid preference for a more natural look, but these component design choices merit more specific input and feedback once the process moves forward.
- West end: The scenarios for this narrower section of roadway generated the most response, especially from residents on 54th Street. The concerns were overwhelmingly focused on ways to avoid or minimize property impacts from any of the options. Widespread objections to dedicated bike lanes in Scenario 1 focused on the property impacts of the additional 10' of pavement; the sharrow option garnered more support. (See West+East below.)

- **East end:** These scenarios generated varied responses, again with many concerns about property impacts with an additional sidewalk plus dedicated bike lanes and parking in various configurations. The option to mix bike lanes and sharrows caused some to worry this would confuse drivers and bicyclists. Feedback generally supported one-sided parking, with mixed feedback and questions about the need for extra or special parking on the north side. (See West+East below.)
- **West+East:** Most stakeholders supported a sidewalk on one side, but the varied opinions about north versus south side suggest that the volume of information may have resulted in misunderstandings about impacts. Some recommended centering the roadway to “share the pain” on both north and south sides. Many questioned the purpose and width of even the smaller 2’ curbs. Everyone preferred preserving trees. Most supported more and better lighting, and many specified the design must be downward-facing/sky-friendly. Almost no one saw any value to having a bike rail at bus stops, and some noted that most buses now have bike racks in front. Most objected to concrete pads at any bus stops, although some of those assumed a sidewalk without noticing that a sidewalk on only one side of the roadway serves only half the bus stops.

Feedback on Design Recommendations (October 2013): Staff hosted a design feedback session for stakeholders on October 23, 2013. Stakeholders were able to review the roadway design and associated elements presented in this study. At the session and subsequent online survey, c. 80 stakeholders offered feedback. See detailed report in Appendix M.

- **East end:** This draft design generated varied responses, with continued concerns about the six-foot increase for a short section just east of Minnehaha Boulevard to accommodate additional parking on Sundays. There was less concern for the two-foot increase for the remaining section. Other feedback included a need for landscaping around the rapids and bridge area.
- **Middle section, bridge, rapids and grade-control structure, landing:** There was consistent support for the recommended design, in particular around increased safety for children and creek users by raising the bridge and minimizing the need to cross 54th Street. Stakeholders indicated concerns over whether the new construction would damage the creek or rapids in any way, the overall width of the road, and the potential for undesirable activities underneath the bridge. Some also said they wanted a sidewalk on the south side to watch boat users and other creek activities. Overall, participants strongly supported maintaining the rapids and grade-control structure, and various stakeholders expressed different design ideas for the natural landing.
- **West end:** Consistent throughout the engagement process, the draft design for this section generated the most response, especially from residents on 54th Street. The concerns remained focused on the impact of the increased width on properties and vehicle speed. Even though the draft design responded to stakeholder concerns by using shared

bike/vehicle lanes (2-foot width increase) and no tree removal, some stakeholders continued to express their objections to bike lanes. Others wrote that a shared vehicle and bicycle lane is appealing.

- **Lighting, intersection configurations, bus stops:** Responses to these topics were limited. Although the in-person and online surveys attempted to clarify that lighting decisions will be made during the final design process in early 2014 and will include stakeholder input, some stakeholders expressed a need for more details and information, and would have preferred being asked sooner.

EXISTING CONDITIONS: This segment of 54th Street is included in the City's MSA roadway system.

Street

The street was originally constructed in 1954. The existing street is surfaced with bituminous pavement. Patches, longitudinal cracking and transverse cracking are present throughout the street section as shown in Figures 3 and 4. The existing pavement is generally in poor condition.



Figure 3- Looking West from Oaklawn Avenue towards Kellogg Avenue



Figure 4- Looking East from Halifax Avenue to France Avenue

As part of this study, a total of four (4) soil borings were taken along 54th Street. The borings identified an 8 to 17-inch thick layer of poorly graded gravel base material beneath the pavement. Plastic sandy loam soils beneath the street section are poor and do not provide proper structural capacity for the existing street section.

The average pavement condition index (PCI) for the City of Edina is 51 and the average PCI for 54th Street as calculated in 2009 is approximately 20. The City of Edina recently hired a consultant to evaluate all bituminous roadways within the City. The streets were graded based on a number of conditions such as sagging, alligator cracking, raveling and potholes. Streets are rated on a scale from 0 to 100; with 0 being extremely poor and 100 representing a brand new road surface. The City evaluates the PCI values of streets to determine a proper maintenance program. Streets with a PCI less than 45 are evaluated for total reconstruction, PCI's between 45 and 65 are evaluated for mill and overlays, and PCI's greater than 65 are considered for seal coats.

The pavement surface of the street appears to be near the end of its useful life while the costs to maintain and repair the road are steadily increasing. Overlaying or seal coating the pavement is no longer cost effective.

Street grades vary throughout the area from approximately 0.4 percent to 7.5 percent.

Currently, 54th Street has two (2) distinct and different street typical sections west and east of the bridge at Minnehaha Creek.

West Segment Typical Section

The existing street between Wooddale Avenue and the bridge at Minnehaha Creek is abutted by residential properties. The street varies in width from 29-feet to 34-feet with no parking, concrete curb and gutter or sidewalks on either side. This segment includes 5-foot dedicated bicycle lanes on both sides. A three space bump-out vehicle parking area exists west of the bridge at Minnehaha Creek

East Segment Typical Section

The existing street between the bridge at Minnehaha Creek and France Avenue is abutted by residential, commercial and civic properties. The street has an existing width of 40-feet with concrete curb and gutter and 8-foot parking lanes on both sides. The street is striped with 5-foot advisory bike lanes in both directions inside of the dedicated parking lanes. The concrete curb and gutter and pavement are generally in poor condition.

Metro Transit operates a total of seven (7) bus stops on each side of 54th Street between and including Wooddale Avenue and France Avenue. The existing bus stops are typically located at each intersecting street. Existing stop signs are in-place at the Minnehaha Boulevard intersection.

There are nineteen (19) residential and five (5) commercial driveway entrances along the street. Two (2) residential driveway pavements feature decorative concrete textures and brick paver blocks along the west segment of 54th Street. Figure 5 depicts a driveway with brick paver block edging found in the project area.



Figure 5 – 5357 Oaklawn Avenue - Paver Block Driveway and Retaining Walls

The existing geometry of the intersections at Park Place and Minnehaha Boulevard creates large surface areas of pavement and intersection corners with long radius curb-lines. This existing geometry allows vehicles to

comfortably maneuver through the intersection at speeds higher than typical or desirable for conventional intersections. This situation can lead to diminished pedestrian crossing safety and requires additional city resources during snow removal operations. The existing geometric configuration of the intersections is shown in Figure 6.

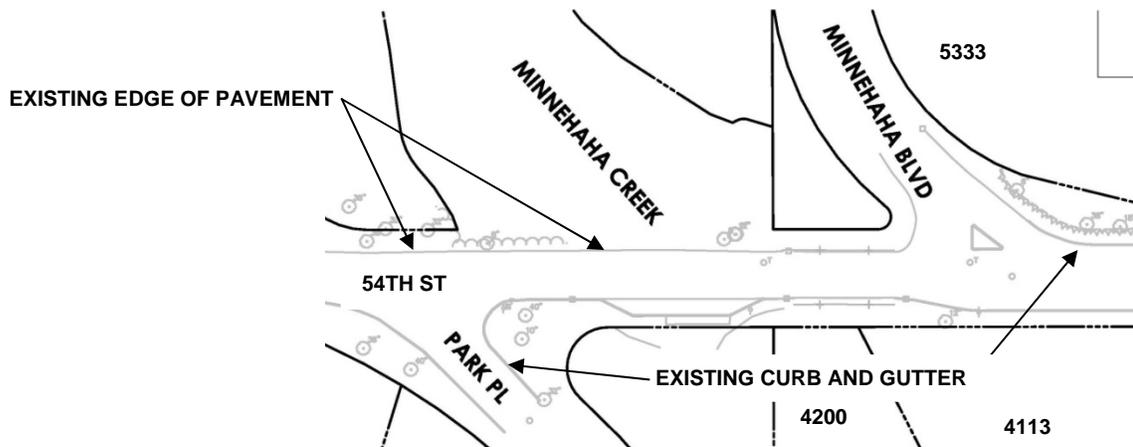


Figure 6 – Existing Geometric Configuration at the Park Place and Minnehaha Boulevard Intersections

Sidewalks and Bicycle Facilities

Existing sidewalk is present along the south side of 54th Street beginning east of the Edina Lutheran Community Church parking lot up to 4015 54th Street for approximately 250-feet and along the north and south side of 54th Street beginning at 3907 54th Street up to the France Avenue ROW for approximately 135-feet on each side. The existing sidewalk is in satisfactory condition.

54th Street is identified as a secondary bicycle route and contains dedicated and advisory lanes on the west and east segments respectively. The 54th Street corridor also serves as the only direct connection between 44th Street and 58th Street in Edina to the existing/proposed City of Minneapolis bikeway system on 54th Street east of France Avenue.

Lighting

Street lighting in the project area consists of standard cobra head lights mounted on wood utility poles that are typically located at intersections of side streets. The locations of the existing street lights are shown in Appendix H.

Traffic, Parking and Crash Data

Average daily traffic volumes ranged from 1,166 to 2,602 cars per day with 85th percentile speed ranging from 29.8 to 30.5 mph. Traffic and crash data are included in Appendix G.

A parking survey was conducted on the east side of the project area from Minnehaha Boulevard to France Avenue to determine existing parking capacity and usage rates. Parking survey results are shown in Appendix J.

Landscaping

Fourteen (14) private retaining walls and decorative landscaping features are located in the ROW in the project area. Many of these landscape items are located directly behind the edge of the street. Figure 7 shows a typical landscaping feature found in the project's ROW.



Figure 7 – 5336 Brookview Avenue - Landscaping Feature

Recreational Creek Use and Bridge

The project area contains unique recreational opportunities at Minnehaha Creek due to its configuration near the existing bridge and the presence of a grade control structure. During moderate to high flow conditions, the existing grade control structure causes the creek water to form rapids that are enjoyed by experienced users. A photo of the existing rapids is shown in Figure 8.

Typically, recreational users access Minnehaha Creek by parking on Minnehaha Boulevard or on 54th Street. Currently, there is an unmarked creek landing area located on the eastern creek bank north of the bridge. Based on observations and stakeholder feedback, lesser experienced users avoid the rapids by crossing 54th Street near the bridge. Stakeholders overwhelmingly identified these crossings as common and unsafe since no clearly marked pedestrian crossing(s) exist(s).

The Minnehaha Creek Watershed District recognizes the unique recreational opportunities in this area, but has also identified the grade control structure as a source of inhibiting water quality, fish passage and aquatic growth upstream of the project area.

The existing bridge at Minnehaha Creek was originally constructed in 1935 and widened to the current configuration in 1948. The structure is a single span comprised of steel beams with a concrete deck that has been paved over with bituminous as part of previous street surfacing projects. The main span is 32-feet long and the deck is 33.5-feet wide including concrete curb and gutter and a 4-foot sidewalk on the south side. The superstructure is supported on high concrete abutments and wingwalls. The bridge is not eligible for the National Register of Historic Places. MnDOT's Structure Inventory Report shown in Appendix I; identifies the bridge as Structurally Deficient with a Sufficiency Rating of 40.2. The existing bridge railing is rated substandard. The bridge is also load restricted and posted. A photo of the existing bridge is shown in Figure 8.



Figure 8 – 54th Street Bridge Looking South at Minnehaha Creek

Public Utilities

Water Main

The existing water main system layout is shown in Appendix D. Properties abutting 54th Street east of Halifax Avenue are served from a 8-inch cast iron trunk water main pipe that was constructed in 1946. The valves are operable and the trunk pipe is in satisfactory condition due to no record of pipe breaks. In 2009, the City repaired two (2) water service pipe breaks at 4109 and 4113 54th Street.

All other properties abutting 54th Street are served by trunk water main pipes located in north/south intersecting streets. Trunk water main pipe was never installed along 54th Street between Halifax Avenue and Park Place to loop the City's water distribution system. System pressure and water quality needs are satisfactory without this missing trunk pipe, but are not optimal.

Sanitary Sewer

The existing sanitary sewer system layout is shown in Appendix D. Properties abutting 54th Street east of Halifax Avenue are served from a 9-inch clay trunk sanitary sewer pipe that was constructed in 1952. Historical records indicate there have been no sewer backups or blockages in the trunk or service pipes. All other properties abutting 54th Street are served by trunk sanitary sewer pipes located in north/south intersecting streets.

Storm Sewer

The existing storm sewer system layout is shown in Appendix D. The storm sewer system is located within the legal boundary of Minnehaha Creek Watershed. Resident feedback identified ice problems near the bridge during winter. No locations of either localized surface drainage issues or street flooding during heavy storm events were identified by stakeholders.

Private Utilities

Providers of privately owned gas, electric, communications and cable television utilities are present in the neighborhood. These utilities are either overhead or buried underground within the street ROW. Private utility poles carrying overhead electric, communications and television lines are located on the south side of 54th Street. Locations of the utility poles are generally the same as the street light locations shown in Appendix H.

PROPOSED IMPROVEMENTS:

The decision-making framework used to arrive at the recommended improvements presented in this report is driven by the pilot Stakeholder Engagement Process and Envision Sustainable Infrastructure Rating System summarized previously and detailed in the Appendix. Proposed improvements address many of the issues and concerns raised by stakeholders while still balancing and maintaining required minimum State and City engineering standards. The table on Page 2 of the stakeholder engagement report in Appendix M illustrates the impact of stakeholder contributions on the design process.

The project includes adding to 54th Street shared vehicle and bicycle lanes, a sidewalk and lighting on the north side of 54th Street, and replacing the bridge at Minnehaha Creek. The project involves removing and replacing all existing concrete curb and gutter and reconstructing the bituminous pavement and a portion of the poor subgrade soils. It also includes installing storm sewer that meets State Aid requirements and connecting a sump pump drain pipe to the storm sewer system as needed. In addition, a trunk water main pipe will be installed to connect separate City water main pipe distribution systems on either side of Minnehaha Creek.

Street

The project will reconstruct the street with a bituminous surface to approximately its existing widths on the west and east segments respectively. The project will recycle and mix the existing bituminous street pavement and the amounts of aggregate base below it together to form a material that can

be used as utility trench backfill or as a suitable fill material to accommodate raising the bridge.

The project will remove and replace all of the sections of existing concrete curb and gutter. New concrete driveway aprons are proposed whether they are present today or not. The stop signs at the Minnehaha Boulevard intersection are proposed to remain in place.

54th Street West Segment Typical Section

The proposed street typical section between Wooddale Avenue and the bridge at Minnehaha Creek is shown in Figure 9. The bump-out vehicle parking area west of the bridge at Minnehaha Creek will be reincorporated into the project.

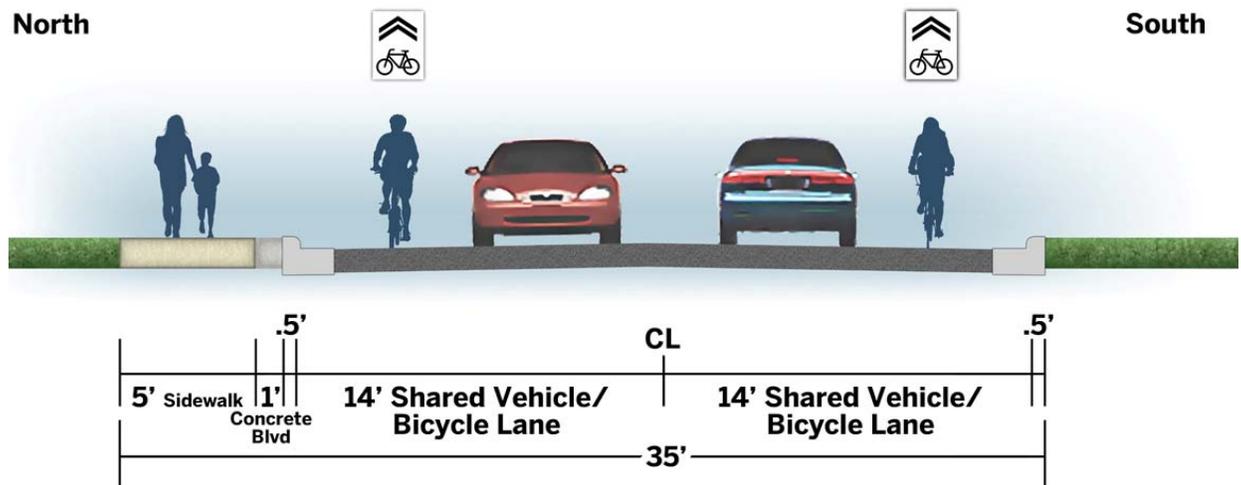


Figure 9 – 54th Street West Segment Typical Section

The recommended typical section for the West Segment (Figure 9) addresses the following stakeholder needs, issues and concerns in conjunction with meeting minimum State Aid and City design requirements:

- Minimizes impact to adjacent ROW and calms traffic by using MnDOT's minimum width design standards for shared vehicle and bicycle lanes
- Results in no tree removals on either side of the street
- Improves motorist and bicyclist expectation by creating consistent facilities throughout the corridor
- Avoids a significant construction schedule delay to relocate eight (8) overhead power/telephone/cable TV poles and remove at least five (5) trees by generally matching the proposed south edge of the new concrete curb and gutter with the south edge of the existing street
- Minimizes the number of pedestrian street crossings by adding a sidewalk on the north side (compared to if the sidewalk were proposed on the south side) to support access to Arden Park; the corridor's primary pedestrian destination

- Improves the pedestrian’s level of comfort on the sidewalk by installing a 1-foot detectable warning strip or buffer zone of different patterned concrete between the concrete curb and the sidewalk
- Meets the combined minimum sidewalk / buffer zone width dimensions preferred by City Public Works staff, see Appendix R

54th Street East Segment Typical Sections

The east segment contains two (2) proposed street typical sections as shown in Figures 10 and 11. The typical section in Figure 10 is proposed east of Minnehaha Boulevard for approximately 350-feet up to Halifax Avenue. Here, a wider sharrow-lane supports combined vehicle/bike use, with Sunday-only parking allowed on the north side of 54th Street to accommodate parking needs near the Edina Community Lutheran Church. Thirteen (13) Sunday-only parking spaces would be provided with this section. If the project moves forward, staff would need to seek a variance from State Aid in March 2013 to incorporate the typical section shown in Figure 10.

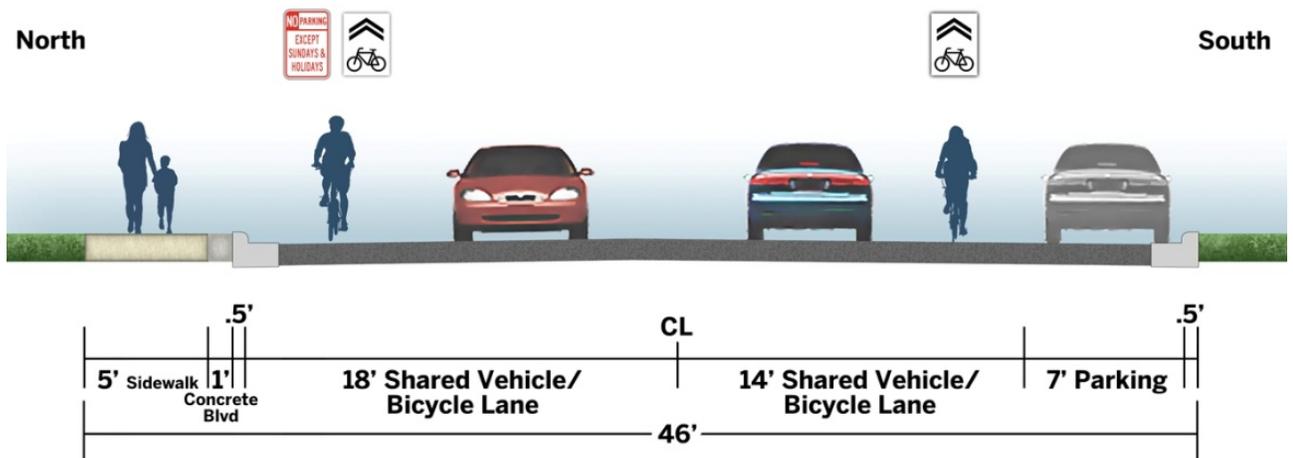


Figure 10 – 54th Street East Segment Typical Section – for 350-foot East of Minnehaha Boulevard - North Side Parking on Sunday Only

The typical section in Figure 11 is proposed east of Halifax Avenue to the west ROW line of France Avenue. A transition in the section will be made to incorporate the existing 135-feet of sidewalk on both sides of 54th Street near France Avenue.

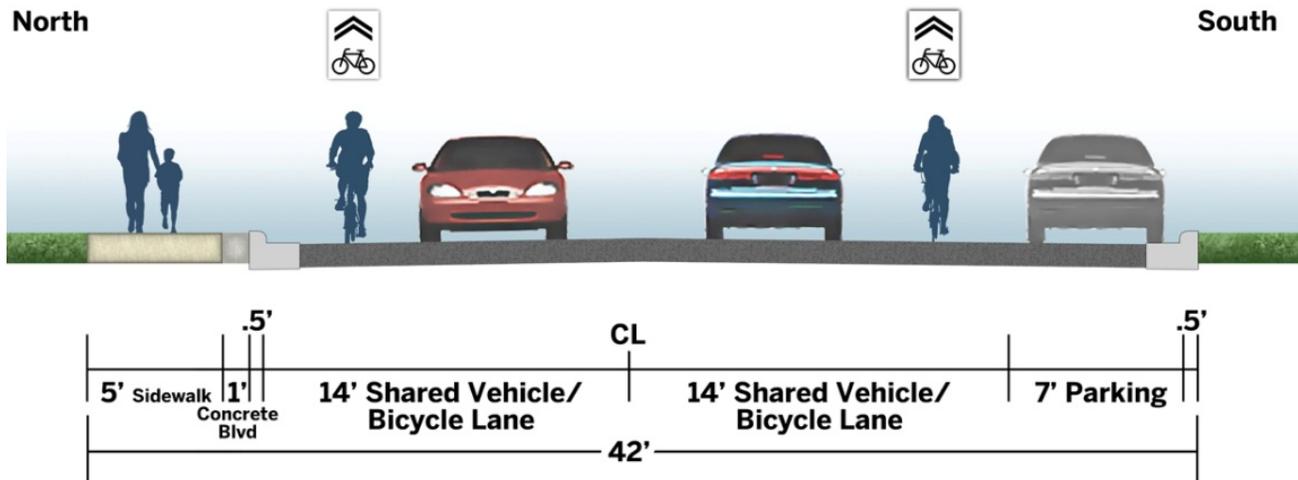


Figure 11 – 54th Street East Segment Typical Section – from Halifax Avenue to France Avenue

The recommended typical sections in Figures 10 & 11 address the following stakeholder needs, issues and concerns in conjunction with meeting minimum State Aid and City design requirements:

- Minimizes impact to adjacent ROW and calms traffic by using MnDOT's minimum width design standards for shared vehicle and bicycle lanes along with a dedicated parking lane
- Results in no tree removals on either side of the street
- Improves motorist and bicyclist expectation by creating consistent facilities throughout the corridor
- Avoids a significant construction schedule delay to relocate seven (7) overhead power/telephone/cable TV poles, removal of at least five (5) trees and significant impact to Edina Community Lutheran Church landscaping, lighting and retaining walls by generally matching the proposed south edge of the new concrete curb and gutter with the existing south edge of the existing street
- Minimizes the number of pedestrian street crossings by adding a sidewalk on the north side (compared to if the sidewalk were proposed on the south side) to support access to Arden Park; the corridor's primary pedestrian destination
- Improves the pedestrian's level of comfort on the sidewalk by installing a 1-foot detectable warning strip or buffer zone of different patterned concrete between the concrete curb and the sidewalk
- Meets the combined minimum sidewalk / buffer zone width dimensions preferred by City Public Works staff, see Appendix R

Graphics showing the approximate distance between the edge of existing pavement/curb and gutter and the north edge of the proposed sidewalk for both the West and East segments of the project are shown in Appendix P.

Metro Transit has approved the removal of bus stops at the Halifax Avenue, Brookview Avenue and Kellogg Avenue intersections. If the project moves

forward, staff will further evaluate relocating the existing bus stop at Minnehaha Boulevard to near the Edina Community Lutheran Church.

As shown in Figure 12, the project will reduce the curb radii at the intersections of Park Place and Minnehaha Boulevard. These reductions will reduce turning vehicular speeds, make vehicle turns more deliberate for drivers and predictable for pedestrians, and decrease the amount of future maintenance performed by the City at these intersections.

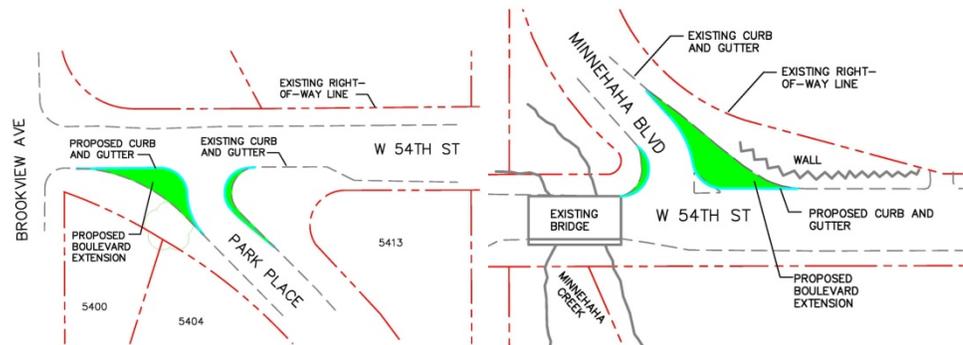


Figure 12 – Proposed Geometric Configurations at Park Place and Minnehaha Boulevard Intersections

Sidewalks and Bicycle Facilities

A 5-foot wide sidewalk and 1-foot wide detectable warning strip are recommended. This recommendation is supported by MnDOT as referenced in their report titled 'Minnesota's Best Practices for Pedestrian/Bicycle Safety' where both the Federal Highway Administration (FHWA) and the Institute of Transportation Engineers (ITE) recommend a minimum sidewalk width of 5-feet and at least a 4 to 6 foot buffer zone. Although a 4 to 6 foot wide buffer zone is not feasible for this project, a 1-foot buffer zone will improve the pedestrian's level of comfort while using the sidewalk. A link to this report can be found here:

<http://www.dot.state.mn.us/stateaid/trafficsafety/reference/ped-bike-handbook-09.18.2013-v1.pdf>

See the Street section of this study for recommendations on bicycle facilities for the project.

Lighting

Stakeholder feedback favored low impact downward-directed lights, which is consistent with established City lighting standards. City standard residential light poles will be installed at approximately each intersection on the north side of the proposed sidewalk. Staff is proposing to gather additional stakeholder feedback on preferred light poles and luminaires during final design.

Recreational Creek Use and Bridge

Most stakeholders who provided feedback strongly preferred maintaining the rapids for recreational use. As of the date of this feasibility study, MCWD is evaluating fish passage options at 54th Street. MCWD recognizes the best

option for allowing fish passage is to remove the existing grade control structure, but understands this option is not preferred based on stakeholder feedback. Other fish passage options being considered are parallel bypasses via a culvert or open channel adjacent to the creek. MCWD is in the process of determining the level of benefit and preliminary costs associated with these options. If a fish passage option is found to be beneficial, MCWD has indicated they would like to partner with the City to implement it as part of this project.

Based on feedback received, stakeholders generally prefer creek landings similar to the one shown in Figure 13. This natural type of landing is supported west of the bridge on both the north and south side of 54th Street. Exact types, locations and configurations would be determined following MCWD completing their evaluation of fish passage options.



Figure 13 – Possible Natural Creek Landing Type

Based on feedback received, stakeholders prefer a natural looking bridge that they feel fits better into the neighborhood and complements the creek. A conceptual level bridge is proposed as part of this study. The actual type of bridge has not been determined. Staff recognizes several options exist regarding bridge aesthetics and associated lighting and railing elements. Staff is proposing to gather additional stakeholder feedback on all these elements during final design.

The bridge shown in Figure 14 is an arch structure with vertical sidewalls to accommodate the water flow and recreational use of Minnehaha Creek. This arch-type bridge was generally preferred by stakeholders. It would span 42-feet of clear width and provide for a 10-foot wide access bench along the west side, within the arch. The arch would be supported on piling. The bench wall is on cantilevered sheet piling. The concrete headwall, wingwalls, and concrete railing base could incorporate a stone texture and coloring to match the local limestone. An ornamental metal railing could be mounted on the concrete traffic base at a safe height for pedestrians.

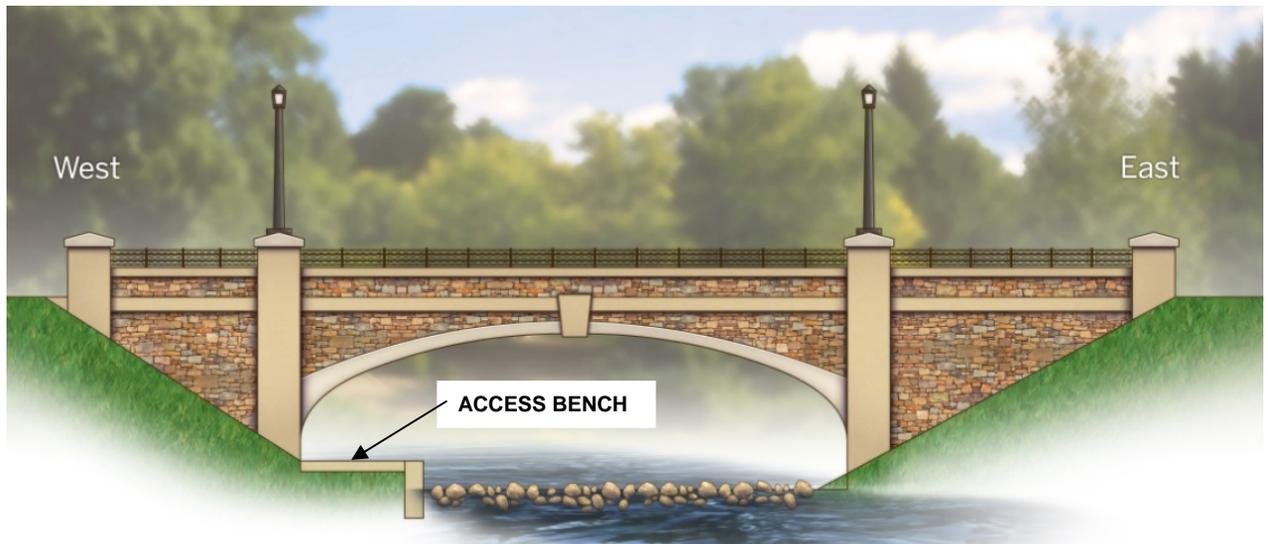


Figure 14 – 54th Street Conceptual Bridge Looking North at Minnehaha Creek

This structure would carry two 17-foot shared vehicle and bicycle lanes and a 6-foot sidewalk on the north side as shown in Figure 15.

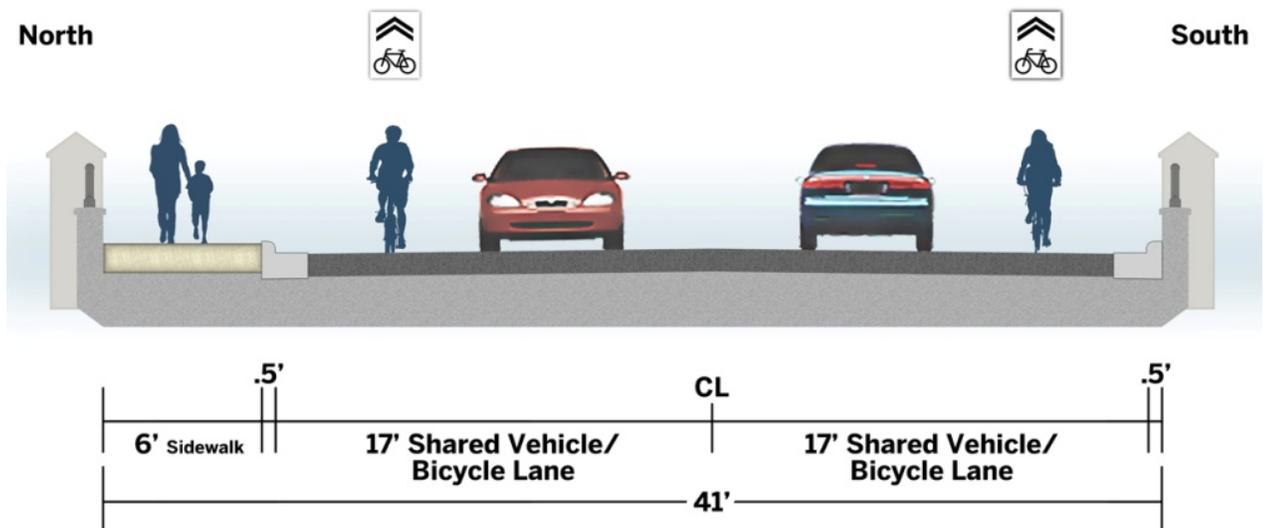


Figure 15 – 54th Street Bridge Typical Section

The recommended typical section in Figure 15 addresses the following stakeholder needs, issues and concerns in conjunction with meeting minimum State Aid and City design requirements:

- Raises the bridge approximately 3-feet to accommodate the access bench underneath that will minimize the need for creek users to cross 54th Street either to avoid the rapids or run them repeatedly without having to cross 54th Street at grade
- Provides sufficient width to accommodate future bridge needs
- Improves motorist and bicyclist expectation by creating consistent facilities throughout the corridor

- Provides decorative knee-wall and railing for vehicle, pedestrian and bicyclist safety

Raising the bridge will remove approximately 10 trees and require retaining walls on the north and south side of 54th Street as shown in Table 1. The Minnehaha Boulevard intersection will also be re-graded and reconfigured to accommodate this changed condition.

**Table 1
Proposed Approximate Retaining Wall Locations and Lengths**

From:	To:	Side of 54 th Street	
		North	South
Park Place	Bridge	150'	100'
Bridge	Minnehaha Blvd Intersection	-	100'

Edina Transportation Commission (ETC)

Staff presented the draft feasibility study containing the recommendations included in this study at the October 24 ETC meeting. A copy of the meeting minutes is included in Appendix N.

At their November 21 meeting, the ETC recommended removing bicycle facilities throughout the entire 54th Street corridor, incorporating MSA minimum lane widths, maintaining north and south parking lanes east of the bridge and not raising the elevation of the bridge. Staff believes these recommendations do not meet the vision of the City's Comprehensive Plan, allow for a direct bicycle connection to the City of Minneapolis or meet the needs of all stakeholders identified throughout the stakeholder engagement process. Copies of the meeting minutes and the ETC's recommended changes are included in Appendix Q.

Public Utilities

Water Main

Since the existing trunk water main pipe is in satisfactory condition, reconstruction is not proposed as part of the project. New trunk water main pipe will be installed along 54th Street between Halifax Avenue and Park Place to loop the water main systems. By installing these pipes, the City will improve system pressures and water quality. Pipe installation will occur by horizontal directional drilling to minimize the construction footprint and protect Minnehaha Creek.

Sanitary Sewer

Since the sanitary sewer trunk and service pipes east of Halifax Avenue are in satisfactory condition, no improvements are proposed. The Arden Park Area has a 24-inch diameter clay sanitary sewer trunk pipe that follows the Minnehaha Creek corridor. This pipe may be part of a separate future City infiltration and inflow reduction project that would include manhole repair and pipe lining by the cured-in-place-pipe (CIPP) method.

Storm Sewer

The project will install new concrete curb and gutter and a trunk storm sewer pipe and inlet system meeting State Aid minimum design standards to capture and convey stormwater. The project will install two (2) separate storm sewer catch basin manholes with 3-foot vertical sumps and screens that will serve to catch sediment and debris from storm water runoff before it enters Minnehaha Creek. Based on stakeholder feedback, rain gardens are generally supported by stakeholders to help treat storm water runoff before it enters Minnehaha Creek. Staff will determine exact locations of rain gardens near the creek, if any, once MCWD determines fish passage options.

Installation of sump drains will be installed where feasible to allow the property owners to connect their sump pump discharges directly into the storm sewer system.

Private Utilities

The local gas utility company, CenterPoint Energy, has indicated that they will upgrade or replace gas mains within the project limits. This work is not part of the City's project but will be coordinated to occur prior to the start of construction.

Burying overhead transmission power lines is not proposed as part of this project. Excel Energy reports that it would cost property owners along 54th Street between Wooddale and France Avenue approximately \$500,000 to bury the overhead transmission power lines that exist along the south side of 54th Street. Additionally, it would cost these property owners approximately \$4,000 each to bury their individual service wires between the transmission line and their home. The City will coordinate other private utility relocations or upgrades prior to the start of construction.

Any damage to privately-owned pet containment and irrigation systems caused by street and City utility reconstruction activities will be repaired by the City.

**RIGHT-OF-WAY
& EASEMENTS:**

Existing right-of-way on all streets in the project area is 60-feet wide. No additional right-of-way or easements are anticipated to complete the proposed improvements.

PROJECT COSTS:

The total estimated project cost is \$3,308,000 and is summarized in Table 2. The total cost includes direct costs for engineering, clerical and construction finance costs from the start of the project to the final assessment hearing. Funding for the entire project will be from a combination of special assessments, MSA and City utility funds. All roadway, sidewalk and residential lighting costs east of Kellogg Avenue up to and including the bridge over Minnehaha Creek will be funded 100% by MSA. The remaining roadway, sidewalk and residential lighting cost will be 80 percent funded by MSA and 20 percent funded by special assessments. New concrete curb and gutter is included under the MSA fund, not under the roadway special

assessment. Utility improvements and repairs amount to \$664,100 and will be funded through respective utility funds.

Table 2
Summary of Total Estimated Project Cost ¹

Item	City Utility	MSA	Special Assessment	Total Cost
Roadway:		\$1,307,824	\$176,576	
Bridge:		\$1,159,500		
Roadway & Bridge Total:				\$2,643,900
Utilities:				
Storm Sewer ²		\$541,600		
Water Main	\$122,500			
Utilities Total:				\$664,100
Total Project Cost:				\$3,308,000

¹ Costs are given in 2014 dollars

² Assumes 100% storm sewer participation from MSA. If MSA funds less than 100%, the difference will be included in the City's storm sewer utility fund

ASSESSMENTS:

The assessments are based on the City's Special assessment policy, dated August 21, 2012. Based on the policy there are 27.59 residential equivalent units (REU). The assessments will be levied against the benefiting adjacent properties, see attached preliminary assessment roll and map (Figure 1) included in Appendix E. The estimated assessment per REU is \$6,400.

The methodologies for calculating the REU's for properties other than one REU are described below:

Residential Corner Lots:

5337 and 5401 Wooddale Avenue, 5333 Minnehaha Boulevard, 5336 and 5337 Halifax Avenue and 5400 and 5401 Halifax Lane, 0.333 REU = (1 REU) x (1/3 side yard)

Churches:

Edina Community Lutheran Church:

8.37 REU's = (10,458 sf / 1,000 sf) x (0.8 REU's per 1,000 sf) / (1 access)

Calvary Christian Reformed Church

6.48 REU's = (97,293 sf / 1,000 sf) x (0.8 REU's per 1,000 sf) x (0.333 REU) / (4 accesses)

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Commercial Properties:

3907 54th Street:

2.81 REU's = (1,540 sf / 1,000 sf) x (1.5 REU's per 1,000 sf) / (1 access) + (1.0 apartment unit x 0.5 REU's per apartment unit)

3908 54th Street:

2.50 REU's = (5 apartment units x 0.5 REU's per apartment unit)

5354 France Avenue:

1.25 REU's = (4,988 sf / 1,000 sf) x (1.5 REU's per 1,000 sf) x (0.333 REU) / (2 accesses)

5400 France Avenue:

0.87 REU's = (3,474 sf / 1,000 sf) x (1.5 REU's per 1,000 sf) x (0.333 REU) / (2 accesses)

PROJECT SCHEDULE: The following schedule is feasible from an Engineering standpoint:

Gather Stakeholder Issues and Needs	June - July 2013
Public Design Component Workshop	August 19, 2013
Public Design Scenario Workshop	September 29, 2013
Public Design Feedback Session	October 23, 2013
Edina Transportation Commission Meeting	October 24, 2013
Edina Transportation Commission Meeting	November 21, 2013
Receive Feasibility Report and Public Hearing	December 10, 2013
Bid Opening	April / May 2014
Award Contract	May 2014
Begin Construction	June 2014
Complete Construction	Fall 2014
Final Assessment Hearing	Fall 2015

FEASIBILITY: Staff believes the construction of this project is necessary, cost effective and feasible to improve the public infrastructure on 54th Street between Wooddale Avenue and France Avenue.

Feasibility Study
54th Street Roadway Reconstruction Improvement No. BA-416
November 25, 2013

APPENDIX:

- A. Stakeholder Engagement Issues and Needs Gathering – June-July 2013
- B. Stakeholder Feedback Workshop on Design Components – August 19, 2013
- C. Stakeholder Feedback Session on Design Scenarios – September 30, 2013
- D. Existing Water, Sanitary Sewer and Storm Features
- E. Preliminary Assessment Roll
- F. City Comprehensive Plan Update – Sidewalk and Bicycle Facilities
- G. Traffic and Crash Data
- H. Existing Street Lights and Signs
- I. 54th Street Bridge MnDOT Structure Inventory Report
- J. 54th Street Parking Study
- K. Living Streets Policy
- L. Envision Sustainable Infrastructure Rating System Summary Report
- M. Stakeholder Feedback Session on Design Recommendations – October 23, 2013
- N. ETC Meeting Minutes - October 24, 2013
- O. Resolution to Set Public Improvement Hearing - November 4, 2013
- P. ETC Meeting Packet for November 21, 2013 Meeting
- Q. ETC Meeting Minutes – November 21, 2013
- R. City Sidewalk Maintenance Communications