

Memo

To: Honorable Mayor and City Council
From: Joe Kohlmann, City Administrator
Date: December 11, 2012
Re: LRT – Trail Bridge – Letter of Support

Staff received a feasibility study for a LRT Trail bridge crossing over County Road 19. The feasibility study contains information on a variety of proposals and options for the construction of this bridge. There were basically three different designs examined for an alternate trail connection. A tunnel and two different bridge options were reviewed in the feasibility study. A tunnel was determine will not be recommended due to utility relocation, groundwater issues, and the maintenance of a structure located below Lake Minnetonka.

The two bridge options were different in that one option uses steel truss to eliminate the need for a center pier, which would be located in the middle of County Road 19.

There is also a temporary trail connection proposed to be in use while the bridge is under construction.

Federal Funds will be used for the construction of the bridge.

At this time, Three Rivers Park District is looking for a letter of support from the City Administrator. I have included some revisions to the draft support letter sent to the City from Three Rivers. Most notably, a request to allow the City to locate an entrance monument on the Rail Authority's ROW. As the letter indicates, this is a preliminary letter of support and states:

“City of Tonka Bay would like to be involved in the design of any local trail connections associated with this project. We look forward to working with Three Rivers Park District”.

Attached is the Executive Summary of the Feasibility Study
Attached is a conceptual picture of the bridge superimposed on Cty. Rd. 19
Attached is a map showing the temporary trail while bridge is under construction
Attached is the proposed letter of support
Attached is a preliminary design for an entrance monument.

Council Action Requested:

Motion to approve the City Administrator sending the attached letter to the Three Rivers Park District.

Executive Summary

This report assesses the feasibility of constructing a grade separated trail crossing at the intersection of the Lake Minnetonka LRT Regional Trail (LMLRT Regional Trail) and CSAH 19 (Manitou Road) in the cities of Tonka Bay and Shorewood, MN. The intent of this grade separated trail crossing is to provide uninterrupted connection to the LMLRT Regional Trail, recreational facilities, surrounding residential neighborhoods, and provide a safer pedestrian alternative to the at-grade crossing at CSAH 19 (Manitou Road) that exists today.

CSAH 19 (Manitou Road) is a two-lane road that serves as a main north-south corridor through a large residential area surrounding multiple bays of Lake Minnetonka, and is part of the county state aid transportation system. CSAH 19 (Manitou Road) is generally characterized by relatively large suburban and lakeshore residential developments with small commercial properties at some of the larger intersections.

In recent years, safety of the at-grade trail crossing at the intersection of the LMLRT Regional Trail and CSAH 19 (Manitou Road) has been improved by separating the northbound and southbound lanes with a center median. The median has an at-grade crossing for the trail, and provides a safe zone for pedestrians crossing both lanes of traffic. Viable options to further improve safety for the LMLRT Regional Trail crossing were reviewed and a grade separated trail crossing of LMLRT Regional Trail and CSAH 19 (Manitou Road) in the vicinity of the existing intersection has been proposed. This proposed grade separated crossing would provide a safe and convenient crossing of CSAH 19 (Manitou Road) for the local residents and trail users.

The trail crossing can be constructed using a variety of structure types. An example of each structure type and a representative project is presented in Appendix D. While this report evaluated both bridge and tunnel options, it is recommended that a bridge be considered as the preferred option. Tunnels are generally used in areas that are more open and less dense. In developed areas, tunnels tend to be less aesthetically pleasing. They also can become havens for nuisance activities. While typical tunnel costs may be less than a bridge, there could be substantial utility relocation costs added to this project due to the possibility of large numbers of public and private utilities below the street. There could also be substantial costs associated with groundwater and the construction and maintenance of a structure that exists below the water level of Lake Minnetonka.

We recommend that the location of the trail bridge be centered in the HCRRRA ROW as indicated in Option 1 (noted in this report as "Preferred Option 1"), and that a prefabricated steel truss be used as the main span of the bridge crossing. The use of a steel truss eliminates the need for a center pier in the existing median, while also providing a long enough main span

to allow for future expansion considerations for CSAH 19 (Manitou Road). This option also provides for wide open sight lines rather than visual obstructions near the sides of the roadway.

A prefabricated steel truss also has the ability to be relocated for future alignment changes if the future Light Rail Transit (LRT) corridor is designed as a shared corridor with the LMLRT Regional Trail. In addition, this structure type tends to be more flexible for aesthetic considerations as well. This study does not consider all main span aesthetic treatment possibilities such as signage, logos, or lighting, but does allow for future considerations if desired by the owner or local stakeholders.

We further recommend the approach ramps be constructed of retaining walls for a length that provides between 5 to 6 feet of clearance to the low structure member for safety and maintenance considerations. Approach spans should be constructed with prestressed concrete beams for their low maintenance advantage over steel girders, and the low visibility of the approach spans from CSAH 19 (Manitou Road).

This study does outline the possibility of using temporary trail connections for purposes of detouring trail users during construction as permanent local access points to the LMLRT Regional Trail. However, we recommend this decision be made by the owner with stakeholder and community input as its value to the trail and local neighborhoods should be a point of discussion.

A preliminary cost estimate has been prepared with consideration given to project design and construction costs and property easement and acquisition requirements. The preliminary estimate identifies total project and right of way costs for the trail crossing that range from \$2.8 to \$3.1 million in 2012 dollars. For budgeting purposes, utility relocations have been included in the estimated project cost. However relocation costs might not become project costs, but rather utility owner costs as they are within public Right-of-Ways and could be requested to relocate by Hennepin County on behalf of the project.

Three Rivers Park District has identified and secured Federal funding to significantly improve safety and the trail user experience by providing a safe pedestrian crossing that is both functional and can provide a distinctive landmark for the community. The LMLRT Regional Trail grade separated trail crossing should consider the need of the user, local stakeholder input, and long-term future planning of the region and trail/LRT corridor.

**For Three Rivers Park District
In the Cities of Tonka Bay & Shorewood, MN
CSAH 19 (Manitou Road) – Grade Separated Trail Crossing**

**Feasibility Study
September, 2012**

Introduction

CSAH 19 (Manitou Road) is a two-lane roadway that serves as a main north-south corridor through a large residential area in the heart of the Lake Minnetonka area. CSAH 19 (Manitou Road) is part of the county state aid transportation system. This corridor is generally characterized by suburban and lakeshore residential developments with small commercial properties at some of the larger intersections. The CSAH 19 (Manitou Road) corridor is a two-lane road with shoulders. No pedestrian areas such as sidewalks or bike trails run along this corridor.



In an effort to provide the greatest pedestrian safety at the LMLRT Regional Trail intersection with CSAH 19 (Manitou Road) the feasibility of constructing a grade separated pedestrian crossing at this intersection has been evaluated. The grade separated trail crossing is the focus of this feasibility study.

The intent of this grade separated trail crossing at CSAH 19 (Manitou Road) is to provide a safer pedestrian crossing than exists today as well as local access to:

- LMLRT Regional Trail. The structure and trail must comply with the Americans with Disabilities Act (ADA).
- Recreational facilities. The crossing will provide local residents safe access to Manitou Park north of the LMLRT Regional Trail and west of CSAH 19 (Manitou Road).
- Adjacent residential neighborhoods.

Study Objectives

A grade separated trail crossing over CSAH 19 (Manitou Road) would provide pedestrians and bicyclists an alternative to the at-grade crossing that exists today. The purpose of this study is to:

- Identify potential locations for a new grade separated trail crossing of CSAH 19 (Manitou Road) for the existing trail corridor.
- Conduct conceptual analysis of alignments and profiles for consideration
- Identify impacts to properties adjacent to the trail crossing and potential right of way easements and acquisitions
- Identify impacts to existing utilities
- Outline potential structure types and aesthetic options
- Provide cost estimate of the proposed improvements
- Provide a schedule of tasks moving forward in compliance with funding requirements

Crossing Location/Trail Connections

Although some local pedestrian traffic will use the bridge as a means to bypass the at-grade crossing, the anticipated primary users of the crossing will be recreational trail users. The existing LMLRT Regional Trail alignment includes an at-grade crossing of CSAH 19 (Manitou Road). The intent is to replace the at-grade crossing with a grade separated trail crossing while utilizing the same LMLRT Regional Trail corridor. Slight trail alignment modifications may be necessary to best fit a crossing within the existing trail corridor.

No sidewalks or trails run along CSAH 19 (Manitou Road). Due to this, there is little reason to provide primary connections from the grade separated crossing back to the CSAH 19 (Manitou Road) ROW. This provides the opportunity for long straight approaches to be utilized to the benefit of trail users rather than requiring tight curved alignments, switchbacks, or helix type approaches which typically require design exceptions.

The LMLRT Regional Trail is within the Right-of-Way (ROW) of the Hennepin County Regional Rail Authority (HCRRA). An agreement between Three Rivers Park District (TRPD) and the HCRRA currently allows TRPD to use the corridor for pedestrian and trail purposes. The HCRRA acquired the corridor for Light Rail Transit (LRT) expansion, and has the authority to reclaim the ROW as necessary to construct the LRT system in the future.

Discussions with HCRRA have indicated that it is possible for both the trail and LRT to exist within the same corridor, although the existing trail alignment would need to be shifted to accommodate both. This study considered both a trail bridge alignment that would accommodate the future LRT corridor allowing the bridge to remain during LRT construction, and an alignment that would be in conflict with the future LRT.

Constructing a grade separated trail crossing that is in conflict with a future LRT alignment is not a disadvantage due to the relatively insignificant cost of the trail crossing compared to the extensive cost of the LRT project and the long range implementation of such a project. A new trail crossing could be constructed as a part of the LRT project.

Construction of the trail crossing will interfere with the existing trail such that users will need a temporary detour to by-pass construction. On the east side of CSAH 19 (Manitou Road), trail users could be routed to a temporary connection between the LMLRT Regional Trail and Brentwood Avenue to the north by way of a trail connection at Bay Street. Local residents have established a path through the undeveloped public ROW at this location to access the trail. On the west side of CSAH 19 (Manitou Road), trail users could be routed to a temporary connection between the LMLRT Regional Trail and CSAH 19 (Manitou Road) through Manitou Park. At both locations, temporary trails would need to be constructed.

As an alternative to being used only as temporary detours for the LMLRT Regional Trail during construction, these access points could be constructed to remain as permanent connections to provide access points between the LMLRT Regional Trail, park users, and local residents.

Property Identification

Properties included within and adjacent to the project area which may be directly or indirectly impacted by the construction of the crossing and temporary facilities were identified. The impacted parcels within the vicinity of the project are listed below:

Property ID No.	Owner	Address	Type
2811723430047	City of Tonka Bay	4901 Manitou Road Tonka Bay MN 55331	Torrens
3311723110018	J & L Development	15 Brentwood Avenue Tonka Bay MN 55331	Torrens
3311723110045	Northern States Power Co.	NSP – Property Tax Dept 414 Nicollet Mall Minneapolis MN 55401	Torrens
3311723110064	Dorothy Jean Tisdale	85 Brentwood Avenue Tonka Bay MN 55331	Abstract
3311723110075	Fred Hanus Et Al	Hanus Enterprises 15801 West Oaks Drive Minnetonka MN 55345	Torrens
3311723120001	J & L Development	15 Brentwood Avenue Tonka Bay MN 55331	Abstract

3311723120019	Hennepin Forfeited Land	Hennepin County Regional Rail Authority 701 4 th Avenue South Suite 400 Minneapolis MN 55415	Abstract
3311723120045	Metropolitan Sewer Board	Metropolitan Council Environmental Services 390 Robert Street North St. Paul MN 55101	Torrens
3311723120046	J & L Development	15 Brentwood Avenue Tonka Bay MN 55331	Torrens
3311723120049	Village of Tonka Bay	Village of Tonka Bay 4901 Manitou Road Tonka Bay MN 55331	Abstract
3311723120050	JR Mega Inc.	JR Mega Inc. 2908 Hayes Drive Burnsville MN 55337	Torrens
3311723120076	Gideon's Woods Twin Home Association Inc.	Gideon's Woods Twin Home Association Inc. 5535 Gideons Lane Shorewood MN 55331	Abstract
3311723120080	Northern States Power Co.	NSP – Property Tax Dept 414 Nicollet Mall Minneapolis MN 55401	Abstract

Refer to Appendix F for a map detailing property identification numbers for each parcel listed in the table above.

Existing Utility Impacts

A preliminary investigation into existing utilities has been completed. Continuation of this utility investigation will be required in the preliminary design phase of the project as potential impacts become better defined. The options presented in this report will require varying amounts of adjustment/relocation of the utilities for the design and construction of a pedestrian facility.

Utilities included within the project area were contacted through Gopher State One Call (GSOC). Requests for as-built plans, maps, and field locates were made on call ticket number 121012872. Utility companies contacted by GSOC include:

- Access Communication Technologies
- City of Shorewood
- City of Tonka Bay
- Hennepin County Public Works
- Metro Waste Commission
- Centerpoint Energy
- Mediacom
- Centurylink
- Xcel Energy

The **Trail Bridge** options indicated in Preferred Option 1 and Option 2 impact utilities suspended from the overhead power poles running parallel to CSAH 19 (Manitou Road) along the east shoulder. Affected utilities include:

- Xcel Energy distribution lines
- MediaCom cable line and fiber optic lines

These utilities would need to be relocated to allow for a bridge crossing. It is anticipated that the clearance to the low structural member of the bridge from the roadway will be 17'-6" from the roadway. The structure depth in Preferred Option 1 ranges from 7'-0" to about 13'-6" (from bottom chord to top of metal railing or top chord) resulting in an approximate maximum structure height of 31'-0" from existing grade. Typical utility clearances to structures would need to be observed if relocation was to include taller overhead poles rather than a buried utility condition.

The **Trail Tunnel** option indicated in Option 3 would impact multiple public and private utilities. These include:

- local sanitary sewer connections to the Metropolitan Council 30" sanitary sewer system
- local storm sewers
- gas line
- watermain
- telephone
- fiber optic line
- an open cut for tunnel installation would likely impact the adjacent overhead power poles as well

In addition, the bottom of the excavation for installation of the tunnel as well as the elevation of the permanent trail floor within the tunnel will be below the water level of Lake Minnetonka. Special consideration will be necessary for the design and maintenance of a structure for this condition as well as how to treat additional drainage. It is primarily for this reason and for potential buried utility conflicts, a tunnel option is not recommended for this project.

Refer to Appendix F for utilities marked and surveyed in the field. Soil borings were not obtained for this report as these are generally done as part of the preliminary engineering design phase.

An additional Gopher State One Call request was made related to ticket number 122150491. This ticket was a request for a field meeting that was held on August 23rd, 2012 to discuss concerns with impacted utilities. Meeting minutes and notes can be found in Appendix F.

Trail Crossing Options

One of the key criteria for the project is to comply with the current Americans with Disabilities Act (ADA), International Building Code (IBC), and Minnesota Department of Transportation (MNDOT) Bikeway Facilities Manual design requirements. Current IBC code allows for designed

grades to be set at a maximum 5% slope without requiring the use of landings based on ADA criteria. The IBC also allows grades up to 8.33% with the use of landings after every 2.5 feet of vertical rise. The use of a maximum 5% slope without landings is preferred to provide a smooth ride for trail users, and was the basis for this study. The MnDOT LRFD Bridge Design Manual requires that the vertical clearance between the lowest structural member of the bridge and CSAH 19 (Manitou Road) be a minimum of 17 feet 4 inches. This study used a clearance height 17 feet 6 inches to determine the bridge elevation from which the length of bridge and approach could be estimated. This provides for possible grade changes in the future for CSAH 19 (Manitou Road).

For similar reasons, the tunnel option was also evaluated with a 5% slope at the approaches. This was done to provide a smooth ride for trail users, and still achieve adequate cover between the surface of CSAH 19 (Manitou Road) and the top of the tunnel. A minimum vertical clearance in the tunnel of 10 feet was designed to comply with requirements of the MnDOT Bikeway Facilities Manual. Appendix B contains a schematic of the assumed bridge and tunnel profiles used to develop the crossing options.

Alignments were investigated to best serve the users and fit within site constraints. The MnDOT Bikeway Facility Design Manual requires a minimum 90-foot radius of curvature be used to accommodate the desired 20 mph design speed for bicyclists. Construction of a helix or curved switchback at the approaches is typically not feasible based on this constraint without requiring a design exception, or substantial structural footprint. The tight constraints of the existing trail corridor are best suited for long, straight approach configurations. Site photos are presented in Appendix A.

Appendix C contains graphics for three grade separated crossing concepts at the intersection of the LMLRT Regional Trail and CSAH 19 (Manitou Road), along with a comparison matrix. In general, options indicating a trail bridge crossing could be constructed as a tunnel with moderate adjustments to the approach configurations and additional temporary easement for structure excavation.

The existing LMLRT Regional Trail corridor to either side of CSAH 19 (Manitou Road) best accommodates a long straight approach to the grade separated crossing. No sidewalks or trails exist along CSAH 19 (Manitou Road) that would require a more direct connection from the bridge to the roadway.

The options for a trail crossing and some of their considerations are as follows:

1. **PREFERRED OPTION 1 - Trail Bridge over CSAH 19 (Manitou Road) - Centered Alignment**
 - a. Provides an alignment near the center of the existing LMLRT Regional Trail corridor. Does not provide for future LRT considerations.
 - b. Straight approach configurations at both the east and west approaches.
 - c. Provides temporary/permanent local connection point through public park space to CSAH 19 (Manitou Road) at the west approach.

- d. Provides temporary/permanent local connection point at Bay Street to Brentwood Avenue at the east approach.
 - e. Maximum profile grade of 5%
 - f. No design exceptions anticipated.
 - g. Temporary easements necessary for LMLRT Regional Trail detour (permanent easements necessary for permanent local connections)
 - h. No temporary easements necessary for structure excavations
 - i. Short closure of CSAH 19 (Manitou Road) to set main span superstructure
2. **OPTION 2 - Trail Bridge over CSAH 19 (Manitou Road) - Offset Alignment**
- a. Provides an alignment near the north edge of the existing LMLRT Regional Trail corridor. Considers future LRT expansion.
 - b. Straight approach configurations at both the east and west approaches.
 - c. Provides temporary/permanent local connection point through public park space to CSAH 19 (Manitou Road) at the west approach.
 - d. Provides temporary/permanent local connection point at Bay Street to Brentwood Avenue at the east approach.
 - e. Maximum profile grade of 5%
 - f. No design exceptions anticipated.
 - g. Temporary easements necessary for LMLRT Regional Trail detour (permanent easements necessary for permanent local connections)
 - h. Temporary easements necessary for structure excavation along north ROW
 - i. Short closure of CSAH 19 (Manitou Road) to set main span superstructure
3. **OPTION 3 - Trail Tunnel under CSAH 19 (Manitou Road) - Centered Alignment**
- a. Provides an alignment near the center of the existing LMLRT Regional Trail corridor. Does not provide for future LRT considerations.
 - b. Straight approach configurations at both the east and west approaches.
 - c. Provides temporary/permanent local connection point through public park space to CSAH 19 (Manitou Road) at the west approach.
 - d. Provides temporary/permanent local connection point at Bay Street to Brentwood Avenue at the east approach.
 - e. Maximum profile grade of 5%
 - f. No design exceptions anticipated.
 - g. Temporary easements necessary for LMLRT Regional Trail detour (permanent easements necessary for permanent local connections)
 - h. Temporary easements necessary for structure excavation along north and south ROW to accommodate a wide open cut for tunnel construction
 - i. Possible impacts with buried utilities in CSAH 19 (Manitou Road) ROW
 - j. Requires water management system for groundwater considerations due to existing water level of Lake Minnetonka above the elevation of the bottom of the tunnel.
 - k. Closure of CSAH 19 (Manitou Road) to vehicular traffic for duration of tunnel installation.

- I. Creates areas not easily visible from public spaces which are a safety concern.

Structure Type

There are multiple structure types that could accommodate a grade separated trail crossing. Ease of construction, site constraints, and desired aesthetics are among the key elements when considering an appropriate structure type.

It is our opinion that four of the five structure types listed below are feasible for the CSAH 19 (Manitou Road) crossing:

- Prefabricated Steel Truss Bridge
- Steel Girder Bridge
- Prestressed Concrete Through Girder Bridge
- Prestressed Concrete Girder Bridge
- Precast Concrete Box Culvert Tunnel (NOT RECOMMENDED)

The structure types listed for the bridge options would apply to the main span over CSAH 19 (Manitou Road), which is the visual focal point of the structure. Appendix D contains a typical cross section of each structure type, along with examples of bridges or tunnels where these structure types were used.

Depending on which main span option is chosen, the approach spans could be another structure type. Approach span structure types such as formed concrete tee beams, prestressed concrete beams, or steel girders may be considered, but final decision may be driven by cost and aesthetic considerations to best fit the main span structure type. Parallel retaining walls would also be used at the lower profile elevation of the approaches until between 5 to 6 feet of vertical clearance is available from ground to the low structure member. This reduces overhead obstructions and provides accessible maintenance areas below the approach spans.

The prestressed concrete girder with a concrete deck found on page 5 of 6 in Appendix D would require a greater structure depth than the other bridge alternatives. To maintain adequate vertical clearance over the roadway, the increased depth associated with this alternative creates a need for longer bridge approaches to achieve the higher deck elevations.

The prefabricated steel truss, steel girder, and prestressed concrete through girder would all provide a shallower structure depth to better accommodate the site constraints. While all are viable alternatives and relatively similar in cost, each provides a different look. Further discussion on the aesthetic aspects of the structure type is in the following section.

The precast box culvert tunnel alternative can be found in Figure 6 of 6 in Appendix D. This option is not recommended due to traffic impacts during construction, safety concerns, possible utility adjustments beneath CSAH 19 (Manitou Road), and construction and maintenance concerns due to required construction below the water level of Lake Minnetonka. A long enclosed tunnel would need additional lighting requirements for safety, and have very little visibility from CSAH 19 (Manitou Road) or adjacent properties.

Bridge Aesthetics

Crossing CSAH 19 (Manitou Road), the proposed pedestrian bridge will be a prominent civic design feature that could influence the overall character of the corridor and surrounding neighborhoods. The initial sketch options for the aesthetic character of the bridge strive to create a structure that fits sensitively within its surroundings while also complementing the distinct architectural identity established by Three Rivers Park District along other regional trail corridors in the area. The primary bridge features that influence the appearance are the span types, pier supports, retaining walls, railings, and any potential lighting. As part of this report, two concepts illustrating different bridge structural types (truss or girder) are presented for initial consideration.

- **Steel Truss Bridge Concept** – Refer to Appendix E, Figure 1 of 2
- **Girder Bridge Concept** - Refer to Appendix E, Figure 2 of 2

The concept sketches illustrate two unique approaches intended to facilitate further discussion and consideration of the desired structural type and other aesthetic aspects of the bridge and immediate surroundings.

The truss bridge type would have the signature arched “bowstring” shape with a clear span over the roadway. The girder bridge type would have a railing that steps up in height over the roadway and could include a center pier in the median. The proposed color finishes are light tan on smooth concrete surfaces and reddish-brown on the steel features similar to other Three Rivers Park District bridges in the west metro area. Additionally, a field stone formliner texture and color is proposed for the bases of piers and retaining wall surfaces. The distinct Park District emblem is proposed to be mounted on both sides of the bridge at the center of the main span.

Undoubtedly, local stakeholders and the greater community will have an interest in the visual quality of the structure. Further input from stakeholders will help ensure that it will be an attractive and distinctive civic landmark that reflects community values.

Property Easements and Acquisitions

The proposed project will require temporary easements through public right of way to provide a trail detour around the proposed construction. Impacted public land that exists in the study area consists of right of way for CSAH 19 (Manitou Road) and adjoining local streets, and Manitou Park land on the west side of CSAH 19 (Manitou Road). If Three Rivers Park District or local agencies determine that the proposed temporary detour facilities are desirable as local connections to the LMLRT Regional Trail, permanent easements may be required. No private land impacts or permanent land acquisitions are anticipated to provide temporary or permanent LMLRT Regional Trail access for this project.

Public ROW impacts to the west of CSAH 19 include a temporary or permanent easement through Manitou Park. Impacts include clearing brush and constructing an on grade local trail connection between the existing LMLRT Regional Trail to the west end of the project through the park land to either the existing parking lot, or directly to the CSAH 19 ROW and shoulder at the southbound lane. To connect the LMLRT Regional Trail to the temporary trail through the park, a crossing over the drainage area that runs parallel to trail along the north side will be required. This could either be accomplished with a fill section and drain pipe to provide for continued drainage to the west, or a small temporary bridge structure could be constructed over the drainage ditch.

Public ROW impacts to the east of CSAH 19 include a temporary or permanent easement through the public land at Bay Street. Impacts include clearing brush and constructing an on grade trail connection between the existing LMLRT Regional Trail to the east end of the project through the public land to a connection at Brentwood Avenue. Local residents have already worn a foot path to access the trail at this location.

The proposed project may require temporary easements impacting private lands depending on the crossing option selected. Temporary easements would be necessary for the limits of open excavation to install substructure foundations for both bridge and tunnel Options 2, and 3. Relatively little temporary easement may be necessary to construct bridge pier footings to frost depth adjacent to current HCRRA ROW. Substantially more temporary easement may be required for the installation of the tunnel due to the deeper elevation required for the installation of the precast box culvert sections, retaining wall footings and any potential soil corrections necessary below. Both Options 2 and 3 would require use of HCRRA land currently under lease for private use at the northeast corner of the project, and is not considered an acquisition as the HCRRA may allow the lease to expire and not be renewed. No temporary easements in private land are anticipated for the construction of bridge Preferred Option 1.

All bridge and tunnel options can be established within the existing CSAH 19 (Manitou Road) and HCRRA right of way. No permanent easements or acquisitions of private land are anticipated. Refer to Appendix F for property identification information.

Project Costs

A preliminary estimate of project costs was developed based on the three grade separated trail crossing options presented in this study. A more detailed cost estimate should be performed as the design elements within the project become more defined.

The estimated project cost for each option C is as follows:

Crossing Option	Cost in 2012 Dollars
Preferred Option 1 (Bridge)	\$2.8 million to \$3.1 million
Option 2 (Bridge)	\$2.8 million to \$3.1 million
Option 3 (Tunnel)	\$3.3 million to \$4.0 million

These costs include a 10% contingency and an estimated 20% for engineering and construction administration cost. A breakdown of the various components considered when developing these cost estimates can be found in Appendix G.

The estimated costs apply to any of the structure types suggested previously, as there is generally less variability in structure type cost for pedestrian bridges than typically expected for vehicular bridges. This is due to the higher substructure to superstructure ratio that is common in pedestrian bridges.

The costs shown assume a moderate level of aesthetic treatment on the structure and some minor site landscaping. The cost difference between the options shown is primarily due to the area of structure that would be needed to fit the site. The area of structure includes both the bridge or tunnel structure and retaining walls necessary to keep the grading within the project site.

An estimated cost of utility relocations can be found in the table in Appendix G, and has been included in the estimated project costs and in the table above. They have been listed for budgeting purposes. It is anticipated that utility relocation might be at the cost of the utility owner. All affected utilities are located in the CSAH 19 or LRT corridor ROW and are assumed to be under an easement. Both CSAH 19 and the LRT corridor are owned by Hennepin County agencies. The County may require utility relocations on behalf of the project.

Property Easement and Acquisition Costs

An estimate of property easement costs was developed based on the grade separated trail crossing options presented in this study. Temporary or permanent easements will be required for access to provide a temporary trail detour or permanent local trail access points. Temporary easements will be required for construction of substructures for Options 2 and 3. Permanent land acquisition is not anticipated for this project.

No cost has been included for temporary or permanent easements within existing public right of ways as these are typically no cost agreements between agencies. The costs indicated below are estimates for temporary easements on private lands. Actual costs may be negotiated with the land owner.

The estimated temporary easement costs:

Crossing Option	Private ROW (SQ FT)	Estimated Unit Value	Total in 2012 Dollars
Preferred Option 1 (Bridge)	0	\$0	\$0
Option 2 (Bridge)	3,790	\$3.60	\$13,644
Option 3 (Tunnel)	10,540	\$4.45	\$46,903

These costs are based on a review of County assessments of market values for affected properties, and are included in the cost matrix found in Appendix G.

Summary and Recommendations

We believe that a tunnel should not be considered at this location for reasons identified previously in this report, and that a trail bridge is the most appropriate for the trail crossing. In addition, we recommend that the location of the bridge be centered in the HCRRA ROW as indicated in Preferred Option 1, with no consideration for future LRT expansion. Not enough planning for the LRT system has been completed to date. Adequate conceptual design information has not been developed or provided at this time regarding the LRT configuration and requirements at this site to ensure a proposed trail bridge could be constructed to accommodate the future system.

It is our recommendation that a prefabricated steel truss be used as the main span of the bridge crossing. The use of a steel truss eliminates the need for a center pier in the existing median, while also providing a long enough main span to allow for future expansion considerations for CSAH 19 (Manitou Road) to a 4-lane undivided urban roadway while still providing 30 foot horizontal clear zones. This simplifies all pier design and construction such that the MnDOT crash protection policy may be met without substantial pier protection measures.

There currently are no future plans to widen the roadway at this location, and future expansion is unlikely. However, placing end piers for the main span farther back from the roadway provides for wide open sight lines rather than visual obstructions near the sides of the roadway.

A prefabricated steel truss also has the ability to be relocated for future alignment changes. If the future LRT corridor is designed to consider a shared corridor with the LMLRT Regional Trail, the main span deck could be removed, and the truss lifted and set on a new alignment. New substructures could be built while the existing bridge remained in service. This could allow for a shorter trail closures during future construction.

This structure type tends to be more flexible for aesthetic considerations as well. A wide range of shapes and paint colors may be considered, as well as the use of self-painting steel. The structure may be easily adapted to include signage or logos into the truss over the roadway, or within its railings. Lighting can be included for functional uses such as lighting the trail path, or for aesthetic presentation of the structure itself. Not all of these aesthetic treatments are included for consideration in this study, but may be future considerations of the owner or local stakeholders.

It is also our recommendation that approach ramps be constructed of retaining walls for a length that provides for 5 to 6 feet of clearance to the low structure member for safety and maintenance considerations. Approach spans should be constructed with prestressed concrete beams for their low maintenance advantage over steel girders, and the low visibility of the approach spans from CSAH 19 (Manitou Road). Refer to Appendix H for a graphical summary of recommended alignment, profile, structure type, and aesthetic considerations outlined above.

Project Schedule

The Lake Minnetonka LRT Regional Trail & CSAH 19 Safe Crossing project is listed in the Minnesota Statewide Transportation Policy Plan (STIP) – Project No. 091-090-072, Fiscal Year 2014. The use of Federal Funds is anticipated and the project is listed under Program Category – EN (Enhancement); and under the Proposed Fund Category – TEA (Transportation Enhancement).

This is a reimbursable funding program in which the work must first be completed prior to the availability of Federal funding, and not a grant program. Specific planning milestones must be met within the program year. The project must be authorized by June 1st of the fiscal year it appears in the STIP. Typically, all projects have letting dates set within 90 days of receiving project authorization.

Refer to Appendix I for an outline of specific planning milestones to be met to achieve Project Authorization before June 1, 2014, and a recommended project schedule.

November 26, 2012

Cris Gears
Superintendent
Three Rivers Park District
3000 Xenium Lane North
Plymouth, Minnesota 55441

Re: Lake Minnetonka LRT Regional Trail Safe Bridge Crossing Project

Dear Mr. Gears:

The City of _____ supports Three Rivers Park District's construction of a safe bridge crossing at County Road 19 (Manitou Road) and the Lake Minnetonka LRT Regional Trail within the Hennepin County Regional Rail Authority Property. In addition, The City supports the proposed design and layout of a prefabricated Steel Truss Bridge with clear span of County Road 19.

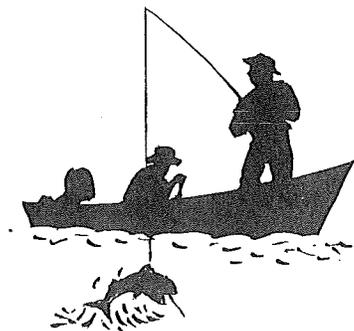
The safe bridge crossing will provide safe and accessible use and enjoyment of the Lake Minnetonka LRT Regional Trail, while minimizing potential for trail/road conflicts. Road traffic safety on County Road 19 will benefit from the separated bridge crossing as well.

The City of _____ would like to be involved in the design of any local trail connections associated with this project. We look forward to working with Three Rivers Park District.

Sincerely,

City Administrator

C:



City of Tonka Bay

4901 Manitou Road, Tonka Bay, Minnesota 55331 (952) 474-7994

December 11, 2012

Mr. Cris Gears, Superintendent
Three Rivers Park District
3000 Xenium Lane North
Plymouth, Minnesota 55441

Re: Lake Minnetonka LRT Regional Trail Safe Bridge Crossing Project

Dear Mr. Gears:

The City of Tonka Bay supports Three Rivers Park District's construction of a safe bridge crossing at County Road 19 (Manitou Road) and the Lake Minnetonka LRT Regional Trail within the Hennepin County Regional Rail Authority Property. In addition, The City supports the proposed design and layout of a prefabricated Steel Truss Bridge with clear span of County Road 19.

The safe bridge crossing will provide safe and accessible use and enjoyment of the Lake Minnetonka LRT Regional Trail, while minimizing potential for trail/road conflicts. Road traffic safety on County Road 19 will benefit from the separated bridge crossing as well.

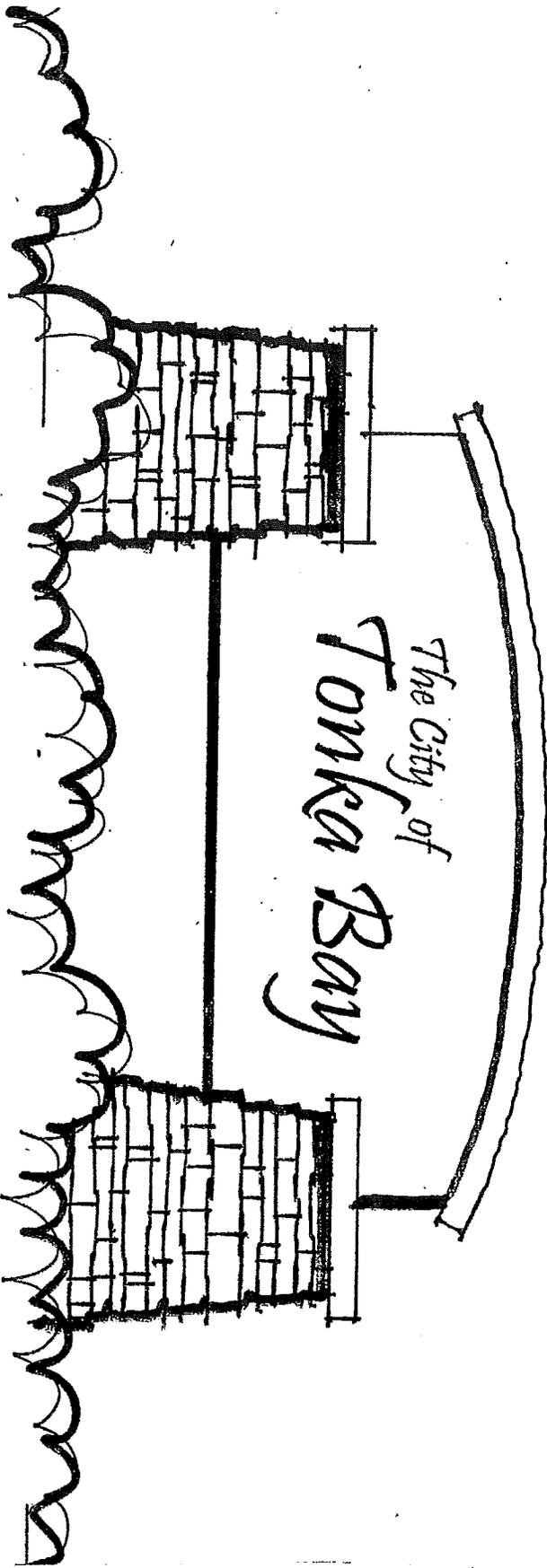
The City also requests consideration to allow the placement of an entrance monument similar to the *attached* conceptual drawing. The City would like to work with the Hennepin County Regional Rail Authority and Three Rivers Park District on an appropriate placement of this monument.

The City of Tonka Bay would also like to be involved in the design of any local trail connections associated with this project. We look forward to working with the Hennepin County Regional Rail Authority and Three Rivers Park District.

Sincerely,

Joe Kohlmann
City Administrator

Scale: 1/2" = 1'
Option 3



*Color is approximate and for placement only
as each computer monitor may display color
differently. Please refer to actual material
samples for precise color representations.

REVISED: _____

T# OF PROPOSAL: _____

SIGNED APPROVAL: _____

Elements, Inc.
Elements, Inc. • 10044 Flanders CT NE, #100 • Minneapolis, MN 55449

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