Plans and Studies

I. Lakewalk Timeline (2006-2014)

II. Endion Waterfront and Development Strategy (September 1995)

III. Construction Feasibility Study For the Duluth Lakewalk- Summary of Estimate Costs (No Date)

IV. Construction Feasibility Study For the Duluth Lakewalk (April 2007)

V. Recommendations for Lakewalk (February 2008)

VI. Water Street Project-Transportation Alternatives Program Funding Application (January 2014)

VII. Report to City Council (March 2014)
Lakewalk Timeline

Prepared by City Engineer Cindy Lichten (August 2014)
1. INTRODUCTION
   - Study Goals
   - Public Participation
   - Summary of Proposals

2. CATALYST FOR CHANGE

3. THE PLAN
   - Physical Setting
   - London Road
     - Water Street Area
     - Lakeshore
   - I-35 Freeway

4. IMPLEMENTATION
   - 19
   - 22
   - 25
   - 29
   - 12
   - 14
   - 16
   - 7
   - 31
Introduction

1.
The Plan for the Edition Waterfront Capabilities on Opportunity

Summary of Proposals

Several additional meetings were held with London Road

Section three: measures for the town plan.

The Board of Directors agreed that the construction of

Workshop participants also agreed that the construction of

parking areas were also seen as important guidelines.

Routewater thinking to the shoreline and the provision of public

Green spaces and the Esplanade, Clear and defined pedestrian

approach for the Esplanade places between

and

London Road would provide the roads to three lanes, plus

4

The second workshop meeting reviewed a number of

Edition residential areas down to the Esplanade area.

- Provide consumer access from existing

- Emergency sloped deck

- Protect existing natural features such as the sandy of

- Develop low-rise housing with related recreation and

- Create a continuous pedestrian network with

- Provide new landscaping along London Road.

City seeks plan for Edition Waterfront

Parameters in the first workshop were always expressed at the meeting included the

Note: The city's vision for the Edition Waterfront. The


green spaces are the Esplanade. Citizens were also asked to

suggest a future vision for the Edition Waterfront. The

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London Road.
Sheet and site design guidelines for proposed housing plan to establish a clear design vocabulary along the street parallel to the site. Separate urban planning, signage, and landscape
throughout the site.

Specific proposals for London Road include a reduction in road width in recognition of the declining commercial and historical properties within the neighborhood. Reinforcement of pedestrian links between the residential and landscape proposals.

Positive example for the London Road corridor through

Public Meeting

Discussion of a
Round table
Across the lake, higher ground, giving future residents unparalleled views.

Development would be set back from the shoreline on lower housing could include a mix of townhouses and garden apartments. Proposed in scale to the existing.

New housing development is proposed for the southside of Water Street.
The key development issues focus on the degree and type of new investment and development that can take place in this area. Significant parcels of land in this area are owned by the City of Dublin and the state of Minnesota. Avenue East, several of the larger parcels are privately owned. Single family residences and a few larger industrial sites are clustered along the street extension of Avenue East. Most of the primary warehouse and storage buildings are located along these buildings. The area includes two single-story office buildings located within the potential new uses. The south of I-25, extending from South Avenue East, to a point almost two blocks east of 26th Avenue East, encompasses properties along Avenue East and the northern part of the City of London until it intersects with the remainder of the City of London. This section of the study area includes the architectural quality of the street and building design. The architectural quality is evaluated by the condition of the building and the use.
Redevelopment

Replaced with a new zone that encourages residential development, the current zoning in this area. The M-1 zone should be removed or light industry would also permit a revision to industrial and storage uses could help upgrade the area and create additional development opportunities. The removal of light industrial and storage uses would help upgrade the area.

Acquisition of some of the existing buildings in order to create larger development sites. The removal of light industrial and storage uses would help upgrade the area and create additional development opportunities. The removal of light industrial and storage uses could also involve

Redevelopment of the Water Street area could also involve

In regard to the development scheme, local providing public access to the shoreline could also be new development and landscaping. Modern-sized parking, 2nd Avenue East provides an important opportunity for particular, the waterfront’s yard/stage area to the east of this section of the Edson Waterfront study area. A new-

Existing uses change

Industrial facilities

Residential

Commercial

Lake Superior

Pondhead Tail
uses on the waters' edge.

Upland areas, and the scale and suitability of new land
map or pedestrian links between the shoreline and the
near public access points to the shoreline. The develop-
20th Avenue East corridor; the provision of public
parking.

Recreation and open space areas include along the shore-
part of 20th Avenue East involve the type and scale of
helps to make this area more accessible to the general
and from the three pedestrian access points across 1-35
through Left Exit On-Ramp. Public access from this point
Duffers, Lakewalk East extends to the Edmond Shoreline.

20th Avenue East westward.

NDOT has undertaken a clean-up of the shoreline from
A-6 Collection. This year, the 1-35 construction program,
recognized as a test project, will be used as a public
habitat and neighborhood area. A slight change to
broader than 20th Avenue East is a mixture of
The shoreline, Being and undulating edge creates two shell-
Residences and visitors to Bunker.

recreational resource for the Edmond neighborhood. City
20th Avenue East provides to be a unique environmental and
The lake Superior Shoreline from 12th Avenue East to 27th

Take Superior Shoreline
in conclusion, the shoreline's assets include:

- unobstructed views of the lake
- access in addition to the existing walkway along
- continuation of lakewalk East and additional shoreline
- Water Street and the freeway
- open space resources for the Eudon and South Street neighborhoods
- a unique pedestrian ledge ecology which could become
- an "outdoor classroom"
- access points for fishing and recreation such as passively
- shoreline showings
- bedrock formations
- views along shoreline watching and picnicking
Shoreline

Promote new high-rise residential development.
Maintain most existing residences.
South Street and Water Street

Reduce roadway widths.
Provide new landscape and streetscape image.
Establish a new image for the corridor.
London Road

DESIGN PRINCIPLES
Vacant and undeveloped properties.
Promote new low-rise residential development on
design guidelines, etc.
Safeguard most existing residences through zoning.

South Street and Water Street Area:
Uses while creating buffer and transition to residences.
Encourage a broad variety of retail and commercial
zones.
Integrate and parking lanes that create better
Reduce roadway width by eliminating one or more

London Road:
Establish a new image for the corridor, one that

Shoreline Area:
Parking lots.
Provide access routes and provision of visitor
Encourage public access to the lakeshore by north.

The Plan:
The plan for the edition waterfront is designed to establish
The proposed development includes improvements for the new area dedicated to landscape, and new landscaping in order to improve the character of the commercial area. This will clearly establish the character of the commercial area.

The Water Street Shoreline area offers significant advantages for residential development. Improvements here will enhance the scale and character of the shoreline, and direct views across the lake are superb. The site is well suited to accommodate significant improvements, and new waterfront buildings are designed to reflect the scale and character of the surrounding area. The results of two public meetings showed support for new housing construction in this area, provided that the mixed-income and higher density development opportunity for the London neighborhood is implemented in consideration of the economic impact and benefits to existing users of St. John's Avenue. East London Road must be received to reduce the visual impact of the current proposals. Buffer strips, mixed-use development, and landscaping are recommended as a good example of an effective simple treatment for the shoreline.

The site is adjacent to the chiropractic office on St. John's Avenue, and the site will be expanded to include shade trees and other plantings, providing an attractive and architecturally sensitive connection. The study area south of the 135 Freeway and extending to London Road and new landscape proposals within lots and site are also significant improvements. In order to implement these parking lot improvements, the proposal will need to be given to receive circulation patterns without significant reduction in parking spaces considered.
adjacent to the lake with no blocking roadway. The access is provided from an extension of Water Street.

Building clusters:

- Stacked clusters take advantage of views.
- The layout includes the following features:

larger development parcel to the east of 25th Avenue East and the undeveloped residential, and the L-35 levee. The access right-of-way will form part of the primary buffer between development areas and the 25th levee.

Buildings are included along the narrow Development.

- The plan illustrates a mix of townhouses and gardens with the existing two-story houses already in the area.
- Market analyses are based on the study's section of the 25th Avenue East Improvement.
- Connections via the 21st Avenue East intersection.

Groups of townhouses could be developed on sites between Water Street and the shore. See Preliminary Report. 1991.
The design of new housing development needs to reflect the various design elements should be consistent with the units and entire individual and private. At the same time range of building forms should also be considered to make buildings. Various roof planes, building setbacks, and balconies. Vertical roof planes, dormer windows, and so forth are essential features such as architectural detailing and incorporate views such as.

Lakeshore East Extension - Lacemakr. Views along the shoreline and provide space for the housing is set back from the shoreline to retain open.

The freeway are unobstructed. Upland areas (e.g., from the avenues looking south over New buildings are set so that view corridors from...
adjacent the AMOCO station.

Upper site of London Road east of 26th Avenue East.

Parking congestion, the site plans a parking lot on the park. Impacts on the area, and in order to further minimize space, each in order to reduce visual impact, to about 30 spaces each. Both of these proposed parking areas are located at the access to the shoreline park entrance and lakewalk routes.

These two facilities will provide convenient ramp bridge. These two facilities will provide convenient access to the shoreline park entrance and lakewalk routes.

Public parking sites are planned in the public parking sites are planned in the Water Street area.

Two streets to serve new development sites will be added. Two cul-de-sac: in addition, an eastern extension of Water Street and the 23rd Avenue East local road access to the area will be provided by two.

Conditioning units, meters, etc.

Development elements such as storage areas, art and design, planting should also be used to screen the landscape plan help to ensure a local character.

The landscape plan is used to local realism (e.g., nearby rock formations) within the immediate area. The site in order to enhance the project.

The integration of the site with new, special, and use plan materials, and use plan materials that are ion with nearby materials, and use plan materials that are.

The landscape plan is used to local realism (e.g., nearby rock formations) within the immediate area. The site in order to enhance the project.

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A new trail system will provide access to beach areas and a proposed park. "Edition lead es" points leading directly to the water's edge.

The underwater edge and shallow bays along the shore line create a number of fine viewpoints. The path will provide picnic and seating areas in addition to special access points. The path will provide a number of these viewing points. The path will provide direct access to the existing lakefront rail trail and along the shore. The proposed lakefront rail trail will extend east or balloon a half to about 800 feet. The existing lakefront rail trail is on an extension of a public access route of the Lake Shoreline. The views of the lake and adjacent shoreline. The key to the plan for the lakefront focuses on the need to preserve the existing natural quality of the lakefront and to maintain the values of the lake and shoreline. The plan for the lakefront focuses on the need to preserve the existing natural quality of the lakefront and to maintain.
along the shore.

Section of proposed residential area.

23rd Avenue East

Exposes bedrock

Exposed bedrock

Lake walk East would provide seasonal interest and views.

Lakewalk East

Lake walk

Adjoining native planting in selected areas will help enhance this portion of the city's trail.

The new lakeshore development will

mandated.

Native vegetation should be preserved to maintain the character of the shoreline and to help reduce the visual impact of the new development.

Preservation, enhancement and interpretation within de-

natural vegetation, and the lake walk and sectioning of the lakeshore.

Natural vegetation should be considered when appro-

natural setting of the lakeshore trail, earth berms and

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Parking lots.

Design and construction of proposed public Avenue East.

Line between 19th Avenue East and 24th Avenue South, which is designated on map and plan.

Construction of a lakewalk extension.

Construction of a lakewalk extension along the waterfront and acquisition of land to establish and establish the waterfront.

Creation of the assembly of the land.

Identification of a land-paddling area, whether a program.

Identification of residential development sites.

South Street.

Replacement of existing housing adjacent to existing "R-2" zone with "R-2."
CONSTRUCTION FEASIBILITY STUDY
FOR THE DULUTH LAKEWALK
SUMMARY OF ESTIMATED COSTS

<table>
<thead>
<tr>
<th>Item</th>
<th>Total Option 1*</th>
<th>Total Option 2**</th>
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<tbody>
<tr>
<td>Water Street</td>
<td>$103,022.00</td>
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</tr>
<tr>
<td>Lakeshore 20th to 23rd Avenues</td>
<td>$135,046.00</td>
<td>$157,708.00</td>
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<tr>
<td>Lakeshore 23rd to 25th Avenues</td>
<td>$397,408.00</td>
<td>$476,121.00</td>
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<tr>
<td><strong>Total Construction Cost</strong></td>
<td><strong>$636,076.00</strong>*</td>
<td><strong>$736,849.00</strong>*</td>
</tr>
</tbody>
</table>

*Option 1 - 10' Paved Trail on Water Street
**Option 2 - 6' Paved Trail on 20th to 23rd Avenues and 23rd to 25th Avenues
***No Property Acquisition Costs Included
****Estimated costs based on assumed access at West Trail Head,
22nd Avenue East, 23rd Avenue East, and East Trail Head
CONSTRUCTION FEASIBILITY STUDY FOR THE DULUTH LAKEWALK 
WATER STREET
'10' PAVED TRAIL (OPTIONS 1 AND 2) 
Preliminary Construction Cost Estimate

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Quantity</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMON EXCAVATION</td>
<td>CU YD</td>
<td>$10.00</td>
<td>778</td>
<td>$7,778.00</td>
</tr>
<tr>
<td>SCARIFICATION</td>
<td>CU YD</td>
<td>$8.00</td>
<td>593</td>
<td>$4,687.00</td>
</tr>
<tr>
<td>AGGREGATE BASE CLASS 5 (CV)</td>
<td>CU YD</td>
<td>$25.00</td>
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* ASSUMPTIONS
NO ROCK EXCAVATION
1500 FOOT TRAIL LENGTH
### CONSTRUCTION FEASIBILITY STUDY FOR THE DULUTH LAKEWALK
LAKESHORE - 23RD TO 25TH AVENUES
10' PAVED TRAIL (OPTION 2)
Preliminary Construction Cost Estimate

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*ASSUMPTIONS*
NO ROCK EXCAVATION
1200 FOOT TRAIL LENGTH

Short Elliott Hendrickson Inc.®
CONSTRUCTION FEASIBILITY STUDY FOR THE DULUTH LAKEWALK
LAKE SHORE - 23RD TO 25TH AVENUES
6' PAVED TRAIL (OPTION 1)
Preliminary Construction Cost Estimate

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*ASSUMPTIONS
NO ROCK EXCAVATION
1200 FOOT TRAIL LENGTH
## CONSTRUCTION FEASIBILITY STUDY FOR THE DULUTH LAKEWALK
### LAKESHORE - 20TH TO 23RD AVENUES
#### 10' PAVED TRAIL (OPTION 2)

Preliminary Construction Cost Estimate

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**Sub Total Construction:**

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**Total Construction:**

$476,121

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* ASSUMPTIONS

- NO ROCK EXCAVATION
- 1500 FOOT TRAIL LENGTH

Short Elliott Hendrickson Inc.®
# Construction Feasibility Study for the Duluth Lakewalk Lakeshore - 20th to 23rd Avenues

6' Paved Trail (Option 1)

Preliminary Construction Cost Estimate

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Short Elliott Hendrickson Inc.

* Assumptions
  - No Rock Excavation
  - 1500 Foot Trail Length
Construction Feasibility Study for the Duluth Lakewalk

20th to 25th Avenues East

Prepared for the City of Duluth

SEH No. A-DULT0701.00

April 6, 2007
# Table of Contents

1.0 Purpose ................................................................................................................. 1

2.0 Background/Study Area ......................................................................................... 1

3.0 Potential Route Alternatives ................................................................................. 3
  3.1 Alternative 1 ........................................................................................................ 5
  3.2 Alternative 2 ........................................................................................................ 5
  3.3 Alternative 3 ........................................................................................................ 6

4.0 Construction Options ............................................................................................. 10
  4.1 Alternative 1, Lakeshore Option A – Sea Wall .................................................. 10
  4.2 Alternative 1, Lakeshore Option B – Wood/Steel Bridge on Pilings ................. 11
  4.3 Alternative 1, Lakeshore Option C – Cast-in-Place Concrete Bridge .......... 11
  4.4 Alternative 2, Water Street – Standard Trail Construction ......................... 11
  4.5 Alternative 3, Water Street/Lakeshore ............................................................... 12

5.0 Regulatory Permits ............................................................................................... 19
  5.1 U.S. Army Corps of Engineers ........................................................................ 19
  5.2 Minnesota Department of Natural Resources ............................................... 19
  5.3 Minnesota Pollution Control Agency .............................................................. 20

6.0 Alternatives Analysis and Conclusions .................................................................. 21

## Appendix

Detailed Cost Estimates
Construction Feasibility Study for the Duluth Lakewalk

20th to 25th Avenues East

1.0 Purpose
This document has been prepared to assess the feasibility of constructing the Duluth Lakewalk trail system along the shore of Lake Superior from 20th Avenue East to 25th Avenues East. Due to the complexity of construction, the City of Duluth has prepared this analysis to guide decision-makers and define funding requirements with the ultimate goal of providing a continuous trail system from Canal Park to East Duluth. This effort has evaluated five construction options and three alternative route locations. This analysis considers both the regulatory aspects and physical construction of the proposed trail.

2.0 Background/Study Area
The Lakewalk trail system is one of the most popular attractions in the City of Duluth for both residents and tourists. The trail currently begins in Canal Park and runs approximately three miles along the north shore of Lake Superior to 28th Avenue East. The first mile of the Lakewalk beginning in Canal Park includes both a wooden boardwalk and multi-use paved trail. The remaining two miles includes a multi-use paved trail with connections to Lake Avenue, Superior Street, and London Road at several locations. The trail is continuous to 20th Avenue East at the water’s edge. The trail then follows Water Street to 23rd Avenue East where it is once again a separate corridor, but not adjacent to Lake Superior.

Between 20th and 23rd Avenues East, the Lakewalk connection follows the Water Street right-of-way along a five foot wide concrete sidewalk adjacent to the curb of Water Street. There is no delineated separation between the trail route and motorized vehicles, presenting a safety concern for trail users in this area. In addition, this route does not provide the trail user with a view of the lake or other significant features, diminishing the experience provided along much of the Lakewalk.
With the exception of the segment from 20th to 23rd Avenues East, the trail generally meets Minnesota Department of Transportation Trail Standards. This standard provides for a paved surface that is 10 feet wide plus one foot of clearance on each side, complies with American with Disabilities Act (ADA) accessibility standards, and is designed to accommodate pedestrians, inline skaters, and cyclists. This design standard applies to any of the proposed alternatives with the exception of the proposed footpath along the lakeshore.

The goal of the proposed Lakewalk connection from 20th to 25th Avenues East is to improve the connectivity, safety, and user experience. Figure 1 indicates the study area.

3.0 Potential Route Alternatives

The development of this feasibility study started with the identification of alternatives for the rerouting the trail. Three potential routes were identified and evaluated for additional study. Varying construction methods were also considered.

Figures 2 through 7 show the existing shoreline condition from 20th to 25th Avenues East. This area presents a significant challenge for trail construction and includes steep slopes, bedrock, heavy rubble and debris, and a very rugged natural shoreline. These site factors, along with high wind and waves and the potential for significant ice accumulation require a variety of engineering considerations.

Existing Conditions Photos

![Existing Conditions Photos](image)

Figure 2 – west side of Beacon Point looking east
Figure 3 – east side of Beacon Point looking east

Figure 4 – east side of Beacon Point looking west

Figure 5 – east side of Beacon Point looking east
Three route alternatives have been evaluated:

3.1 Alternative 1
The first route alternative includes realigning the Lakewalk to follow the lakeshore within existing easements and public ownership from 20th to 25th Avenues East. Figure 8 on page 7 shows this alignment alternative.

3.2 Alternative 2
The second route alternative provides a dedicated trail along the northwest side of Water Street following the existing sidewalk from 20th to 23rd Avenues East. This route utilizes the existing street right-of-way but provides a standard trail and separation between trail users and vehicles for enhanced safety. Figure 9 on page 8 shows this alignment alternative.
3.3 Alternative 3

The final route alternative includes a combination of alternatives one and two. With this alternative, an improved, pedestrian-only path is constructed along the lakeshore, and a standard trail is constructed along Water Street. The pedestrian trail along the lakeshore could potentially be constructed as a variable three to four foot wide paved bituminous path. The final surface and construction methods used will be dependant on the site conditions. This type of pedestrian path may potentially need a series of small retaining walls in order to maintain a level surface. This pedestrian path would be susceptible to any type of major wave or wind damage. This solution minimizes the impacts along the lakeshore while providing a natural trail experience for pedestrians. Figure 10 on page 9 shows this alignment alternative.

The criteria used to evaluate all route alternatives and construction methods includes construction and maintenance costs, impacts to the shoreline, difficulty of construction, user experience, and permit restrictions.
Figure 8
Alternative #1

LEGEND
- SPECIAL CONSTRUCTION
- STANDARD CONSTRUCTION
- EXISTING LAKEWALK

CONSTRUCTION FEASIBILITY STUDY FOR THE DULUTH LAKEWALK
Figure 10
Alternative #3

LEGEND
- STANDARD CONSTRUCTION
- FOOT PATH
- EXISTING LAKEWALK

CONSTRUCTION FEASIBILITY STUDY
FOR THE DULUTH LAKEWALK
4.0 Construction Options

Five different construction options have been developed and analyzed for application within the study area. Constructability and regulatory compliance are key considerations for the routes following the lakeshore. Specifically, for trail construction along the lakeshore from 20th to 23rd Avenues East (a distance of 1,300 feet), the difficult terrain requires the use of special construction methods. This will include the removal of a significant amount of rubble for the placement of footings directly onto the bedrock in this area. It is anticipated that the terrain and site access restrictions will necessitate construction via barge directly from the lake during the summer months.

In addition to the various construction options that can be employed, other important engineering considerations will apply to any proposed route following the lakeshore. As the area is subjected to significant wind, waves, and ice, any structures placed in this area must be designed to withstand these elements to provide for maximum user safety and reliability. Even with the application of state-of-the-art engineering practices, it can be anticipated that water, rubble, and ice accumulation will require enhanced, on-going maintenance efforts. The various construction options are discussed below.

4.1 Alternative 1, Lakeshore Option A – Sea Wall

For this option, a continuous retaining wall would be constructed to facilitate trail construction along the shoreline from 20th to 23rd Avenues East. This includes a concrete wall poured on a spread footing that is connected directly to bedrock. The wall would be a minimum of 1.5 feet thick and would rise to an elevation of 610.00 feet. The current lake level is 601.50 feet and the ordinary high water mark is elevation 603.10 feet. The trail would be constructed on the inland side of the wall and could vary in width. A granular backfill would be placed under the trail to allow for drainage through the wall at various locations. For pedestrian safety, a railing would be installed on the lake side of the wall. A schematic of this option is shown in Figures 11A and 11B.

The construction option would be required from 20th Avenue East to approximately 23rd Avenue East, for approximately 1,300 linear feet. From 23rd to 25th Avenues East, for approximately 1,500 linear feet, traditional paved trail construction can be utilized. With this option, a massive excavation of rock, rubble, and debris is necessary in order to construct the sea wall.

Overall this option has a higher initial cost but the long term serviceability would result in lower maintenance costs due to structural stability.
4.2 Alternative 1, Lakeshore Option B – Wood/Steel Bridge on Pilings

This option would facilitate trail construction through the use of steel pilings connected to a base plate that is anchored to bedrock. Installation of a girder system and steel “I” beams allow a wood deck ten feet wide to be constructed. Conceptual analysis assumes that the pilings would span a maximum length of 30 feet. Railings would be constructed on both sides of the decking for user safety. This method is illustrated in Figures 12A and 12B.

This option would also need to be constructed from 20th Avenue East to approximately 23rd Avenue East with traditional trail construction from 23rd to 25th Avenues East. With this option, excavation of the shoreline debris down to bedrock would be necessary at all piling locations.

This option has a lower initial cost but would be more susceptible to the effects of the lake resulting in higher maintenance costs. A large storm event has the potential to cause damage to any type of wood boardwalk as is the case with the existing Lakewalk. With this type of structure, the railing system will not be as sturdy as Option A and would also be more susceptible to damage.

4.3 Alternative 1, Lakeshore Option C – Cast-in-Place Concrete Bridge

Similar in application to Option B, this construction option would utilize cast-in-place concrete to form a solid bridge deck. Concrete piers and abutments would be constructed at approximately 30 foot intervals to provide a bridge span. The piers would be anchored directly to bedrock. The deck would be 10 feet wide and railings would be provided on both sides for user safety. This method is illustrated in Figure 13A and 13B.

As with Options A and B, this option would be constructed from 20th Avenue East to approximately 23rd Avenue East with traditional trail construction continuing from 23rd to 25th Avenues East. With this option, excavation on the shoreline debris down to bedrock would be necessary at all pier locations.

This option would also have higher initial cost than Option B but would have lower maintenance costs and it would provide a stable structure which is minimally susceptible to the elements.

4.4 Alternative 2, Water Street – Standard Trail Construction

With this option, trail construction would occur on the northwest side of Water Street, following the alignment of the existing sidewalk from 20th to 23rd Avenues East. Adequate space exists within the public right-of-way to construct a standard 10’ wide trail to accommodate all trail users. The right-of-way of Water Street is generally flat and would easily facilitate this trail construction. Maintenance costs for this option are essentially the same as the rest of the Lakewalk corridor.
4.5 Alternative 3, Water Street/Lakeshore

This option would allow for a segment of the Lakewalk to be constructed along the lakeshore while minimizing the impacts to the shoreline itself. Bicycles, inline skaters, strollers, etc. would follow a standard trail along Water Street as outlined in Alternative 2, Water Street above. Pedestrians would have the option of using a signed foot-accessible trail that follows the shoreline from 20<sup>th</sup> to 23<sup>rd</sup> Avenues East. At 23<sup>rd</sup> Avenue East, the pedestrian trail would follow 23<sup>rd</sup> Avenue East and connect to the existing Lakewalk. As a variation, this foot trail could continue along the lakeshore to 25<sup>th</sup> Avenue East on city-owned land as shown in Figure 10.

A review of construction methods shows that there is no feasible way to provide an ADA accessible route along the lakeshore through this area without employing the construction methods identified in Lakeshore Options A, B, or C. For this reason, only minor improvements are proposed with this option to provide a moderately accessible footpath along the lakeshore.

This alternative would result in the same maintenance standard as the current Lakewalk. It is anticipated that this portion would not be susceptible to wave and ice damage and would require standard maintenance such as sweeping and plowing.
Figure 11-A
Alternative 1- Lakeshore Option A - Sea Wall

9" REINFORCED CONCRETE SLAB
10' LAKEWALK .02% 

ELEVATION = 610

HEAVY POST & PIPE RAILING

4' 6"

1' 6"

CONCRETE RETAINING WALL

1' 9"

ELEVATION = 603

GRANULAR FILL WITH PERFORATED PIPE

6'

SPREAD FOOTING DOWELED TO ROCK

ELEVATION = 601

LAKE SUPERIOR

NO SCALE

CONSTRUCTION FEASIBILITY STUDY
FOR THE DULUTH LAKEWALK
Figure 11-B
Alternative 1-Lakeshore Option A - Sea Wall

CONSTRUCTION FEASIBILITY STUDY
FOR THE DULUTH LAKEWALK
Figure 12-A
Alternative 2-Lakeshore Option B - Wood/Steel Bridge on Pilings

12" X 30' STEEL BEAMS

10' LAKEWALK 3" WOOD DECK

ELEVATION = 610

STEEL/CONCRETE PIER CAP

STEEL COLUMNS WITH BASE PLACE ANCHORED INTO ROCK.

ELEVATION = 603

BASE STEEL PLATE

DIAGONAL TIES

ANCHORS TO ROCK

ELEVATION = 610

LAKE SUPERIOR
ELEVATION = 601

NO SCALE

CONSTRUCTION FEASIBILITY STUDY
FOR THE DULUTH LAKEWALK
Figure 13-A
Alternative 1-Lakeshore Option C - Cast in place Concrete Bridge

- RAILING
- 10'橋
- 1'-6"
- 30' SPANS BETWEEN PIERS
- CONCRETE PIERS AND ABUTMENT (APPROX. 10' WIDE X 2'-6" THICK)
- ELEVATION = 610
- ELEVATION = 603
- LAKE SUPERIOR ELEVATION 601

NO SCALE

CONSTRUCTION FEASIBILITY STUDY FOR THE DULUTH LAKEWALK
Figure 13-B
Alternative 1-Lakeshore Option C - Cast in place Concrete Bridge
5.0 Regulatory Permits

Due to the location of the proposed Lakewalk trail in proximity to Lake Superior, there are multiple regulatory agencies that have jurisdiction over this portion of the construction. In addition to the City of Duluth as the Local Governmental Unit (LGU), the U.S. Army Corps of Engineers (COE), Minnesota Department of Natural Resources (DNR), and the Minnesota Pollution Control Agency (MPCA) are all involved in regulating construction activities along the shore of Lake Superior.

5.1 U.S. Army Corps of Engineers

The COE has national jurisdiction over wetlands and within the High Water Elevation of Lake Superior. The High Water Elevation of Lake Superior as established by the COE is 603.1 feet above Mean Sea Level. Because there are no wetlands within the proposed project boundary and the construction of the proposed Lakewalk trail will not be lower than the High Water Elevation of Lake Superior, COE permits will not be required.

5.2 Minnesota Department of Natural Resources

The DNR has state jurisdiction over wetlands and any construction within public waters of the State. The boundary of the public water as determined by DNR extends to the Ordinary High Water Level (OHWL). The OHWL as defined by Minnesota Statute 103G.005 Subdivision 14 is "an elevation delineating the highest water level that has been maintained for a sufficient period of time to leave evidence upon the landscape, commonly the point where the natural vegetation changes from predominantly aquatic to predominantly terrestrial." The OHWL is determined by examining, in the field, the physical features on the landscape that the presence and action of water make upon the bed and banks of a basin. These physical features include tree evidence, water-formed evidence, and vegetative evidence. These physical features are used to determine a line of equal elevation surrounding a basin from which the OHWL is set.

During previous projects adjacent to the proposed Lakewalk trail, the City of Duluth as LGU has established the OHWL along segments of the proposed alignment of the trail. Other areas of the trail alignment will require that the OHWL be established by a qualified professional and concurred by the DNR. Based on the established OHWL, a portion of the proposed Lakewalk trail may be constructed lakeward of the OHWL. This will require that a Public Waters Work Permit, Part 1 be completed and submitted to the DNR for review and approval.

Part 1 of the Public Waters Work Permit must identify the amount of fill or excavation within the OHWL, project purpose, description, dimensions, and the alternatives considered. At this time, there are no established criteria for mitigating the placement of fill within the OHWL in areas such as this that are not considered wetlands or part of a flood plain.
5.3 **Minnesota Pollution Control Agency**

The MPCA has the authority to administer the National Pollution Discharge Elimination System (NPDES) General Storm-Water Permit for Construction Activity (MN R100001). Prior to August 2003, only construction sites that disturbed five acres or more of land were required to apply for a NPDES General Storm-Water Permit for Construction. In August 2003, the new NPDES Phase II rules came into effect. The new rules reduced the regulated land disturbing activity from five acres down to one acre. The proposed Lakewalk Trail project will disturb more than one acre of land and will therefore need to apply to the MPCA for a NPDES General Storm-Water Permit for Construction Activity.

The NPDES General Storm-Water Permit for Construction Activity requires that the permittee prepare a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP includes temporary and permanent erosion prevention and sediment control Best Management Practices to minimize and prevent sediment and pollutants from leaving the construction site and contaminating adjacent waters. The NPDES General Storm-Water Permit for Construction Activity also identifies selected streams and lakes as special waters. Lake Superior is included in the list of special waters.

Because Lake Superior is designated as special water, additional rules are required for stormwater discharges. These rules require the contractor to temporarily or permanently stabilize disturbed soil areas more quickly and to treat additional stormwater run-off volume from new impervious surfaces.

In addition to erosion and stormwater management, MPCA rules require that an Undisturbed Buffer Zone of not less than 100 linear feet from the special water shall be maintained at all times. This undisturbed zone is measured from the High Water Elevation of Lake Superior (603.1 feet above Mean Sea Level) throughout the proposed alignment and no construction is permitted within this area unless approved by MPCA. Encroachment within the 100 foot Undisturbed Buffer Zone has been allowed where prior or existing development or disturbance has occurred and can be documented through aerial photos or field reviews with MPCA staff.

For all of the proposed lakeshore options, MPCA approval is required as most of the construction will occur within the 100 foot Undisturbed Buffer Zone. Based on initial reviews with MPCA staff, clear evidence of prior disturbance exists from 20th to 23rd Avenues East due to previous dumping and commercial activities. From 23rd to 25th Avenues East, additional documentation and conference with MPCA is necessary to determine if the prior disturbance along the lakeshore in the form of stone walls and debris is adequate to allow MPCA to approve encroachment within the Undisturbed Buffer Zone through this area.

Prior to finalizing a preferred course of action, a meeting with these regulatory agencies is recommended to obtain concurrence with the proposed construction.
6.0 Alternatives Analysis and Conclusions

Arriving at a straight-forward and cost-effective recommendation regarding the proposed Lakewalk trail construction through the Beacon Point and Ledges Townhomes is not easily accomplished. While it is clearly desirable to follow the lakeshore through this area to provide the most enjoyable trail experience, several significant factors must be considered. A comparison of the alternatives is provided in Table 1 below.

Construction Feasibility Study for the Duluth Lakewalk
20th to 26th Avenues East
Alternatives Analysis

<table>
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<tr>
<th>Alternative</th>
<th>Constructed Type and Length (Lineal Feet)</th>
<th>Within 100-foot OWHM* Required Setback</th>
<th>Additional Easements Required</th>
<th>Difficulty of Construction</th>
<th>Long Term Maintenance Cost (High/Med/Low)</th>
<th>Estimated Construction Cost</th>
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* OWHM = Ordinary High Water Mark as defined by Minnesota Pollution Control Agency

Some of the major decision elements are as follows:

**MPCA Approval** – If the MPCA will allow construction within the 100 foot Undisturbed Buffer Zone due to adequate documentation of prior disturbance within this area, a major regulatory issue will be resolved. If this approval does not occur, the City will have to determine to what extent it will challenge MPCA authority and interpretation of the lakeshore disturbance through this area. There are no feasible or allowable locations within the existing and planned easements that will allow the Lakewalk to be constructed outside of the 100 foot buffer zone.

**Stormwater Management** – Creation of a paved trail along the lakeshore will require an NPDES permit from the MPCA as outlined above. This permit will approve what methods of stormwater treatment, if any, will need to be employed to allow for construction of the Lakewalk along the shoreline. As there are no practical opportunities for stormwater treatment ponds within the easements, other solutions, and/or variances may be required to allow construction to occur.

**Constructability** – This is a major consideration as the proposed lakeshore construction will be very costly. The volume of rubble and debris to be removed makes land-based construction impractical, if not impossible. Additional evaluation of the shoreline for barge and crane access is necessary to determine if the area is accessible from the lake along the entire Lakewalk corridor. If this evaluation determines that the underwater conditions will not allow for barge access, then construction in this area may not be possible unless additional right-of-way or easements are acquired.
Shoreline Disruption – The proposed lakeshore routes will cause significant disruption and visual impact to the existing shoreline. These impacts may be viewed as undesirable by the public and could offset the benefits of providing a lakeshore trail experience.

Maintenance - Long-term maintenance and operation of the Lakewalk trail through this area may require different treatment from other parts of the Lakewalk. While all areas of the Lakewalk are plowed, swept, and maintained, this area will provide some additional challenges. Access to this location may require additional equipment and manpower for effective snow removal. Sweeping is necessary to provide a usable trail surface. This activity will also be difficult as the debris can neither be swept into the adjacent yards, or directly into the lake, again resulting in additional equipment and manpower for proper maintenance.

Construction Cost – Comparison of the total cost of each of the proposed routes and construction options is always an important consideration in the development of public works projects. The estimated costs provided in Table 1 are based on the conceptual designs prepared for this study and could vary widely depending on additional analysis and design details. There are no foreseeable scenarios where the cost difference between the Water Street and lakeshore options will be within $1.0 million of each other and it is difficult to ignore such a significant disparity in this evaluation. It can be noted that if $1 million in funding were available for trail construction, this would provide for completion of a trail extension from 47th to 60th Avenues East as well as completing the connection from 20th to 23rd Avenues East, along Water Street as outlined in Alternative 2.

User Experience – There is no way to quantify and compare the value of providing a lakeshore experience with that of an inland trail experience for this three-block stretch of the Lakewalk. While the lakeshore is quite rugged and typical of Minnesota’s North Shore, the adjacent urban development and the significant trail infrastructure required through this area may offset this natural experience. It must be noted that beginning at 25th Avenue East and continuing to 60th Avenue East, that Lakewalk is planned to be constructed as an inland trail. Despite this fact, public support for the Lakeside extension remains quite high.

The results of this study require a comparison between the value of the lakeshore user experience and the various costs and impacts of the proposed construction. While the lakeshore experience is one of the important reasons the Lakewalk trail system is such a major success, the total cost of developing the lakeshore route is very significant.

Following an evaluation of these factors, the following recommendations are forwarded for additional discussion and consideration:

1. Alternative 2 Water Street – Standard Trail Construction should be pursued at this time as the most cost-effective and easily constructed alternative. This will provide trail continuity and improved safety for trail users.
2. Easements along the lakeshore should be reserved and acquired from 20th to 25th Avenues East to allow for future construction of a trail following the lakeshore through this area at some point in the future as funding and construction methods allow.

3. A foot trail following the lakeshore from 20th to 23rd Avenues East should be evaluated for “hand construction” and improvement with various trail advocates such as the Lake Superior Hiking Trail Committee.

As future development occurs in this area, easements should be acquired near 23rd Avenue East to provide a connection from Water Street to the lakeshore so a formal paved trail “loop” can be developed along the lakeshore from 23rd to 25th Avenues East. This will provide the lakeshore trail experience in an area where lower cost construction methods can be applied.
Appendix

Detailed Cost Estimates
CONSTRUCTION FEASIBILITY STUDY FOR THE DULUTH LAKEWALK
ALTERNATIVE 1, LAKEShORE OPTION A
SEA WALL
Preliminary Construction Cost Estimate

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Short Elliott Hendrickson Inc.

*ASSUMPTIONS*
 NO ROCK EXCAVATION
  1300 FOOT TRAIL LENGTH
  1300 FEET RUBBLE REMOVAL
CONSTRUCTION FEASIBILITY STUDY FOR THE DULUTH LAKEWALK
ALTERNATIVE 1, LAKE SHORE OPTION B
WOOD/STEEL BRIDGE
Preliminary Construction Cost Estimate

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* ASSUMPTIONS
NO ROCK EXCAVATION
1300 FOOT TRAIL LENGTH
RUBBLE REMOVAL AT PILINGS

Short Elliott Hendrickson Inc.®
CONSTRUCTION FEASIBILITY STUDY FOR THE DULUTH LAKEWALK
ALTERNATIVE 1, LAKESHORE OPTION C
CAST-IN-PLACE CONCRETE BRIDGE
Preliminary Construction Cost Estimate

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*ASSUMPTIONS*
NO ROCK EXCAVATION
1300 FOOT TRAIL LENGTH
RUBBLE REMOVAL AT PIER LOCATIONS

Short Elliott Hendrickson Inc.®
CONSTRUCTION FEASIBILITY STUDY FOR THE DULUTH LAKEWALK
ALTERNATIVE 2, WATER STREET
STANDARD CONSTRUCTION
Preliminary Construction Cost Estimate

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Short Elliott Hendrickson Inc.®

* ASSUMPTIONS
NO ROCK EXCAVATION
1500 FOOT TRAIL LENGTH
CONSTRUCTION FEASIBILITY STUDY FOR THE DULUTH LAKEWALK
ALTERNATIVE 3, WATER STREET/LAKESHORE
Preliminary Construction Cost Estimate

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* ASSUMPTIONS
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1500 FOOT TRAIL LENGTH ON WATER STREET
CONSTRUCTION FEASIBILITY STUDY FOR THE DULUTH LAKEWALK
23RD TO 25TH AVENUES EAST
STANDARD CONSTRUCTION
Preliminary Construction Cost Estimate

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<td></td>
<td>1%</td>
<td></td>
<td>$1,170.00</td>
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<tr>
<td>MOBILIZATION</td>
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<td>5%</td>
<td></td>
<td>$5,850.00</td>
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<tr>
<td>MISCELLANEOUS CONSTRUCTION</td>
<td></td>
<td>10%</td>
<td></td>
<td>$11,700.00</td>
</tr>
<tr>
<td>CONTINGENCIES</td>
<td></td>
<td>15%</td>
<td></td>
<td>$17,550.00</td>
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<tr>
<td><strong>Total Construction</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>$153,270</strong></td>
</tr>
</tbody>
</table>

³ ASSUMPTIONS
- NO ROCK EXCAVATION
- 1500 FOOT TRAIL LENGTH

Short Elliott Hendrickson Inc.
CITY OF DULUTH
OFFICE OF PLANNING AND DEVELOPMENT

MEMORANDUM

February 12, 2008

To: City Council
   Administration

From: Bob Bruce, Director of Planning

Re: Recommendations for Lakewalk - 20th to 26th East

History
The first phase of Lakewalk from Canal Park to 20th Avenue East was created by federal and
state funds used in the construction of Interstate 35. The next section to 25th Avenue East differs
in two significant ways, 1) funds for land acquisition and construction is a City responsibility and
2) most of this lakeshore was in private ownership.

The engineering firm of SEH developed "Construction Feasibility Study for the Duluth
Lakewalk" to evaluate construction options in this section. On April 17th, the City hosted a public
meeting to present these findings and solicit public reaction. In the course of that meeting, an
additional alternative was discussed:

Alternative #4 A footpath from 20th to 23rd, 10' wide blacktop from 23rd to 25th and
Water Street as the principal route for bikes and rollerblades.

This alternative was accepted at the meeting as a valid option. On June 25, 2007 the City Council
passed a resolution supporting this option and the ongoing engineering focused on Alternative
#4.

Current Status
Further design work, the areas available for Lakewalk construction, Lakewalk usage to date and
likely outcomes from the project expansion east of 25th Avenue lead to the following
conclusions:

1. City does not have complete access, by easement or ownership, to the section between
   20th Avenue and 23rd Avenue, there is a gap across one private ownership.

2. Even if the continuity were to be established, the terrain in the section between 20th and
   21st, in front of Beacon Point, can not accommodate a 10' wide blacktop pathway without
   heavy structural systems. This alternative has no support.
3. As Lakewalk expands into the Lakeside neighborhood, the usage patterns will likely change with more bicycle commuting using the system into downtown.

**Lakewalk Memo**

February 12, 2008

Page 2

4. Separation of pedestrians from bicycles, roller blades, strollers or other wheeled vehicles makes the experience for all users safer and more pleasant.

5. A 10' wide walk on the upper side of Water Street should be the clear, safe area for Lakewalk users rather than using the street surface.

6. The existing crossing at 23rd Avenue will see increased conflict with vehicular traffic as Lakewalk usage expands.

7. Introducing wheeled usage to the area in front of the Ledges Townhouses between 23rd Avenue and 25th Avenue would require use of 23rd Avenue between the shore and Water Street. This grade and indirection is not attractive to through riders and would create a hazard for less-experienced cyclists. Maintenance of the lift station at the foot of 23rd Avenue adds another periodic activity here which further complicates this nexus.

8. New construction within the near-shore area requires regulatory approvals.

**Recommendation**

The factors noted above give rise to the following construction priority recommendations:

1. Improve upper side of Water Street with a 10' wide paved walkway suitable for pedestrians and wheeled users.

2. Review and attempt to improve sight distances and grades on the existing Lakewalk just east of the intersection between 23rd Avenue. Westbound Lakewalk wheeled traffic has limited sight and stopping distance here. Conflict occurs with vehicles, pedestrians and other wheeled users in this area.

3. Develop a 10' gravel path from 23rd Avenue to link up with existing Lakewalk at about 25th Avenue. This route provides a lake experience on land purchased by the city for this purpose. Considerations of impervious surface and final grading will affect regulatory review. The alignment for this gravel path is established. Should at some time in the future, continuity be establish to the west, and it is decided to create a lower, parallel route suitable for wheeled use, this gravel section can be paved with no loss of original investment.

4. Develop two spurs to provide access down to the shore and beach further east of 25th Avenue. Several locations have been identified where this access should be formalized for safety, to call out these areas a desirable destinations and to protect the ground from
erosion and compaction of informal use.

Lakewalk Memo
February 12, 2008
Page 3

**Next Steps**
As the recommendations in this memo depart from the Council action of June 25, 2007, the following sequence of events is recommended:

1. Council consideration of these current recommendations. If endorsed then,

2. Develop cost estimates of recommended construction priorities with contingency, design fees and permitting.

3. Review City share of current taxes being generated from the Beacon Point complex.

4. Compare estimated expenses with debt service capacity from Beacon Point taxes.

5. Bond sale. Amount and timing, to consider - 1) debt service available today, 2) debt service available with full Beacon Point build out, 3) timing of expenses for design and construction, 4) arbitrage, 5) possibility of second bond sale for future phases if future debt service capacity is present.

100' SET BACK FROM LAKE SHORE (as defined in Beacon shoreline)

LAKE SHORE

LAKEMARK EASEMENT/OWNED CONSTRUCTION EASEMENT

SURVEY POINT

LEGEND
Section 1: General Information

NOTES: If your overall project contains non-eligible or non-transportation related elements, please mention the entire project in the brief project description, but concentrate the application, budget, etc. on the elements that are eligible and transportation related.

Sponsoring Agencies, if sponsoring for another project applicant, are advised to have dialog with the project applicant to ascertain the level of commitment by the applicant to follow through on delivery of the project – including the potential use of Eminent Domain.

Desired year of construction: ☑ Summer 2017 ☐ Summer 2018

Name of Project: Lakewalk Shared Use Path along Water Street

Project is located in ATP(s) 1, in the county of St. Louis

Brief Project Description: This project is the final portion of the City of Duluth's Lakewalk Shared Use Trail. This last phase will connect the existing Lakewalk shared use path segments between 21st Ave. East and 23rd Ave. East.

Sponsoring Agency: City of Duluth

Project Applicant: City of Duluth

Contact Person (from sponsoring agency): Cindy Voigt, City Engineer

Mailing Address: 411 West 1st Street, Room 211, City Hall

City, State, Zip: Duluth, MN 55802

County: St. Louis

Phone No: 218-730-5071 Fax No: 218-730-5907

(Applicant Signature)

(Sponsoring Agency Engineer Signature)

(Local Unit of Government Signature)

(Roy Chicka)

(if in MPO area, signature of MPO Executive Director)

(if Safe Routes to School project, signature of MnDOT SRTS Coordinator)

(1-15-14)

(1-15-14)

(1-15-14)

(1-16-14)

Date

Date

Date
Section 2: Project Budget

Please identify what costs will be incurred to carry out the proposed project, using the following budget categories as a guideline. Where appropriate, break down your costs by units purchased. For example: number of acres, cubic yards of fill, etc. (Attach additional sheet(s) if necessary.)

Cost Estimates are to be submitted in 2013 dollars.

<table>
<thead>
<tr>
<th>Eligible Work/Construction Items</th>
<th>Estimated Quantity</th>
<th>Unit Cost</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>See Attached Spreadsheet</td>
<td></td>
<td></td>
<td>231,809</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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</tr>
</tbody>
</table>

Line A: Total $231,809

Non eligible Items (list) *

| Engineering and Const. Engineering   |                    |           | 46,362     |
| Contingency                          |                    |           | 34,771     |
|                                      |                    |           |            |
|                                      |                    |           |            |
|                                      |                    |           |            |
|                                      |                    |           |            |
|                                      |                    |           |            |
|                                      |                    |           |            |
|                                      |                    |           |            |
|                                      |                    |           |            |
|                                      |                    |           |            |
|                                      |                    |           |            |
|                                      |                    |           |            |
|                                      |                    |           |            |
|                                      |                    |           |            |

Line B: Total $81,133

1. Total cost of proposed project: (line A + B ) $312,942
2. Items not eligible for Alternative funding: (line B) $81,133
3. Total eligible costs -- recommended range $100,000 to $1 million (line A) $231,809
4. Applicant’s contribution toward the eligible alternative project costs $46,362
5. Total amount requested in alternative funds (# 3 minus # 4) $185,447

*Includes Right of Way or Land Acquisition (appraisal fees, legal fees, etc.), Administrative Costs (preliminary and construction engineering and contingencies), Others

TAP Application – September 2013
Section 5: ATP Project Evaluation

Please answer the evaluation questions below. These questions were developed by the Northeast Minnesota Area Transportation Partnership.

1. Describe the proposed activities in detail. Include the approximate number of customers that will be served by the project:
   This project is the construction of a shared use path along Water Street that will connect the existing Lakewalk Shared Use Path segments located at 21st and 23rd Ave. East. Expect in the summer season that the connection will serve hundreds of pedestrians and bicyclists per day.

2. Describe the project location/termini—be specific and include a location map(s) and photo(s):
   The project is located along Water Street between 21st and 23rd Ave. East. See Attached location map.

3. Describe how your project creates and/or enhances pedestrian/bicycle connections, community assets, and/or eliminates barriers to projects serving a transportation purpose:
   Currently bicyclists are forced onto the local street, Water Street when traveling on the Lakewalk Shared Use Path. The portion of Lakewalk between 21st and 23rd Ave. East has not yet been constructed. Construction of this last segment will allow for a separate shared use facility from Brighton Beach to Canal Park. Upon completion of the Cross City Trail, and this portion of the Lakewalk, a shared use path will be available continuously from the southern to northern city limits. The completion of this segment will allow for the complete north-south network, and allow for connectivity to other future routes and paths.

4. How does your project enhance safety at the immediate project location and to the overall transportation system?
   This project allows for a separate facility for bikes, which eliminates the majority of the vehicle-bike interactions, resulting in a safer network. See attached typical section.

5. Describe how your project benefits economic development. This could include enhancing revenue, reducing expenses, adding to the community’s tax base, or otherwise generating economic development:
   The completion of this segment of the Lakewalk benefits the community because both residents and tourists alike are drawn to and retained in communities that provide alternative transportation options. Upon completion, tourists will be able to use the trail to access local businesses.

6. Describe how your project enhances availability and awareness, for protection of historic, cultural, aesthetic or natural resources:
   The location for this segment of the shared use path allows for the protection of Lake Superior, in keeping the construction away from this protected water.

7. Describe how your project enhances the transportation system and benefits overall quality of life, health, community, and environment locally, regionally, and statewide:
   The proposed shared use path would benefit residents and tourists by providing convenient connections to home, office and recreational activities. The trail would provide a safe corridor for pedestrians and cyclists, which would avoid vehicle conflicts with users on Water Street. The trail extension would also provide the public with an alternative mode of transportation for both recreational and non-recreational transit. This shared use path segment will continue a local transportation system what will ultimately connect to the Gitchi Gammi State Trail System, and the Willard Munger State Trail.

8. Describe the current and/or previous uses of the project area. Detail how your project benefits the immediate project location and environment. This could include innovation, creativity, and/or a mix of activities that will take place:
   The current project area is platted public right-of-way. The proposed shared use path will connect to an
existing parking lot recently constructed to serve the Lakewalk users. Property adjacent to the right-of-way includes a hotel, a local business and condominium.

<table>
<thead>
<tr>
<th>Existing Parking Lot Adjacent to Right-Of-Way</th>
</tr>
</thead>
<tbody>
<tr>
<td>Includes a hotel, local business, and condominium.</td>
</tr>
</tbody>
</table>

9. Is your project identified in a statewide, regional, local plan(s)? How does it relate to other plans and projects in the state, region, or locally? Identify these plans and include relevant information:
This project is not in any other plan; however, this segment will complete the gap that exists in the north-south shared use path through the city of Duluth.

<table>
<thead>
<tr>
<th>Project Identification</th>
</tr>
</thead>
<tbody>
<tr>
<td>For north-south path completion.</td>
</tr>
</tbody>
</table>

10. Describe the level of community and regional support of your project. Describe all efforts that are in place to reduce costs, and include letters of support and resolutions:
This project has been studied many times, with the original concept to construct the path along the shore of Lake Superior. This proved too costly and presented permitting concerns. The current design proposed is to construct a shared use path behind the existing curb, thereby reducing the costs substantially, and keeps construction away from the Shore Land Zone.

<table>
<thead>
<tr>
<th>Community and Regional Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shared use path behind existing curb.</td>
</tr>
</tbody>
</table>

11. Explain how you guarantee project deliverability in your desired year of construction. Please explain the status of the matching share, detail the Sponsoring Agency’s history of delivering TAP like projects with federal funds, and describe the timeframe you will follow to project completion:
The City of Duluth has delivered and completed construction of 5 phases of the Lakewalk Shared Use Path. Four of those phases involved federal funding, and all of the projects involved the use of DNR matching funds. We also completed the design and let the first phase of the city’s Cross City Trail. This 1st phase and 3 other subsequent phases have federal funding. We have also delivered several Safe Routes to School Infrastructure projects, and recently completed construction on the 2013 safe routes project. We delivered and completed, thanks to major MnDOT assistance, the Rehabilitation of the Stewart Creek Bridge, which was a Scenic By-Way funded project. We will ensure that the project is delivered on time by following all Project Development requirements as outlined by MnDOT State Aid. The city will also ensure that funds are available for the 20% match, and for the engineering required.

<table>
<thead>
<tr>
<th>Project Deliverability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Five phases completed with federal funding.</td>
</tr>
</tbody>
</table>

---

TAP Application – September 2013
## Section 6: Application Checklist

Check the boxes in the left column to ensure all needed materials in your application are submitted.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>✓</td>
<td>Applicant completed the Letter of Intent</td>
</tr>
<tr>
<td>✓</td>
<td>ARDC/other reviewing parties reviewed the LOI and recommended that the project move forward to the full application.</td>
</tr>
<tr>
<td></td>
<td>Application Form Information</td>
</tr>
<tr>
<td>✓</td>
<td>Section 1: General Information</td>
</tr>
<tr>
<td>✓</td>
<td>Section 2: Project Budget</td>
</tr>
<tr>
<td>✓</td>
<td>Section 3: Sponsoring Agency Resolution</td>
</tr>
<tr>
<td>✓</td>
<td>Section 4: Resolution Agreeing to Maintain Facility</td>
</tr>
<tr>
<td>✓</td>
<td>Section 5: Evaluation Questions</td>
</tr>
<tr>
<td>✓</td>
<td>Other Enclosures</td>
</tr>
<tr>
<td>✓</td>
<td>Project location map</td>
</tr>
<tr>
<td>✓</td>
<td>Photos, drawings, graphics, other relevant information</td>
</tr>
<tr>
<td></td>
<td>Copies of relevant plan information</td>
</tr>
<tr>
<td>✓</td>
<td>Letters of support and other resolutions</td>
</tr>
<tr>
<td></td>
<td>Other attachments included</td>
</tr>
<tr>
<td>✓</td>
<td>Complete application emailed to Jon Mason at (<a href="mailto:jmason@arlc.org">jmason@arlc.org</a>) by 4:30 p.m. on January 31, 2014.</td>
</tr>
</tbody>
</table>

You will promptly receive an email confirming your application was received.
# Shared Use Path-Water Street from 20th to 23rd Ave. East

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Qty.</th>
<th>Unit</th>
<th>Item Description</th>
<th>Unit Price</th>
<th>Total Price</th>
</tr>
</thead>
<tbody>
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<td>LS</td>
<td>Mobilization</td>
<td>$20,000.00</td>
<td>$20,000.00</td>
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<tr>
<td>2</td>
<td>1</td>
<td>LS</td>
<td>Clearing &amp; Grubbing</td>
<td>$500.00</td>
<td>$500.00</td>
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<tr>
<td>3</td>
<td>1</td>
<td>LS</td>
<td>Relocate Transformer</td>
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<td>$10,000.00</td>
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<td>4</td>
<td>30</td>
<td>LinFt</td>
<td>Remove Curb &amp; Gutter</td>
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<td>$261.30</td>
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<td>5</td>
<td>5850</td>
<td>SqFt</td>
<td>Remove Concrete Sidewalk</td>
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<td>6</td>
<td>40</td>
<td>LinFt</td>
<td>Sawing Bituminous Pavement (Full Depth)</td>
<td>$2.07</td>
<td>$82.80</td>
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<td>20</td>
<td>LinFt</td>
<td>Sawing Concrete Pavement (Full Depth)</td>
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<td>$100.00</td>
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<td>8</td>
<td>512</td>
<td>CuYd</td>
<td>Common Excavation</td>
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<td>$8,192.00</td>
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<td>CuYd</td>
<td>Rock Excavation</td>
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<td>Salvage Topsoil</td>
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<td>11</td>
<td>50</td>
<td>Hour</td>
<td>Street Sweeper (With Pick Up Broom)</td>
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<td>8.75</td>
<td>RdSta</td>
<td>Subgrade Preparation - 6&quot; to 12&quot;</td>
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<td>CuYd</td>
<td>Aggregate Base (CV), Class E</td>
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<td>14</td>
<td>149</td>
<td>Ton</td>
<td>Type SP 9.5 Wearing Course Mixture (3,C)</td>
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<td>CuYd</td>
<td>Engineered Soil</td>
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<td>SqYd</td>
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<td>SqFt</td>
<td>7&quot; Concrete Walk</td>
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<td>$2,400.00</td>
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<td>LinFt</td>
<td>Concrete Curb &amp; Gutter, Design B024</td>
<td>$25.74</td>
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<td>Truncated Domes</td>
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<td>21</td>
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<td>SqFt</td>
<td>Sign Panels Type C</td>
<td>$68.00</td>
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<td>22</td>
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<td>Each</td>
<td>Install Sign Type C</td>
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<td>$525.00</td>
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<td>23</td>
<td>500</td>
<td>LinFt</td>
<td>Silt Fance Type Heavy Duty</td>
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<td>$1,600.00</td>
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<td>24</td>
<td>6</td>
<td>Each</td>
<td>Storm Drain Inlet Protection</td>
<td>$300.00</td>
<td>$1,800.00</td>
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<td>25</td>
<td>0.1</td>
<td>Acre</td>
<td>Seeding</td>
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<td>26</td>
<td>7</td>
<td>Pound</td>
<td>Seed Mixture 360</td>
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<td>27</td>
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<td>Ton</td>
<td>Mulch Material Type 1</td>
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<td>28</td>
<td>430</td>
<td>SqYd</td>
<td>Erosion Control Blankets Category 1</td>
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<td>$645.00</td>
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<td>29</td>
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<td>Pound</td>
<td>Fertilizer Type 2</td>
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<td>30</td>
<td>8</td>
<td>Each</td>
<td>Coniferous Tree 6' HT B&amp;B</td>
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<td>31</td>
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<td>LS</td>
<td>Concrete Steps</td>
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<td>32</td>
<td>3300</td>
<td>SqFt</td>
<td>Retaining Wall</td>
<td>$40.00</td>
<td>$132,000.00</td>
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</table>

**Total** $231,808.90

Engineering 20\% $46,361.78
Contingency and Inflation 15\% $34,771.34

**Total** $312,942.02
MAY REQUIRE RETAINING WALL OR RIPRAP IN THIS AREA DEPENDING ON LOCATION OF FOOTING AND OR ANY ROCK OUT CROPPING

TYPICAL SHARED USE TRAIL SECTION (ALONG EXISTING WALL)

TYPICAL SHARED USE TRAIL SECTION (IN AREAS REQUIRING CUT)

TYPICAL SHARED USE TRAIL SECTIONS PARKING TO REMAIN ON ONE SIDE
We were thrilled to read of your statement in the June 23 Duluth New Tribune Opinion article, “From my perspective, if (the grass roots Friends of Lakewalk group) came out and said, ‘It is our priority, it is our position that we want to see the trail completed on the upper side of Water Street,’ we would work together to make it happen.” It is in fact the priority of Friends of the Lakewalk to complete the missing link of the Lakewalk between 21st and 23rd Ave East and we believe that the most sensible way to do is by building a path on the upper side of Water Street.

We understand that completing the missing section of Lakewalk between 21st and 23rd Ave east has been a challenge because of the debate and differing interests of multiple parties and individuals. While building the connection on the upper side of Water Street will not appease everyone, it is a much more reasonable plan due to the substantially reduced construction and maintenance costs of locating the trail away from Lake Superior.

We are eager to work with you and the City of Duluth to complete this missing section of the Lakewalk. We feel that this is a perfect time to capitalize on this opportunity due to all the great publicity around the beautiful new 60th Avenue East section that has now been built.

Thank you again for your consideration of our proposal.

Respectfully,

Andrea C.J. Agar

President, Friends of the Lakewalk

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ESTIMATED COST TO COMPLETE LAKEWALK TRAIL CONSTRUCTION
WATER STREET FROM APPROXIMATELY 19TH AVE EAST TO 25TH AVE E.
BEACON POINT AND LEDGES LAKEWALK TOWNHOME AREAS
MARCH 2014 REPORT TO COUNCIL

BEACON POINT RECREATIONAL TRAIL (6' GRAVEL)
Construct 6 foot wide gravel trail from existing paved trail to 23rd Ave. East $ 278,500
on the Lake Side of the existing development
Construct bridge over creek/ravine 275,000
Acquire 709 & 711 S. 23rd Ave. East (Hayden) on Water Street 529,000
Acquire Easements at 2200 & 2130 Water Street (Edmunds) 68,200
Shoreline Clean-up and Restoration 100,000
Professional services for Easements, legal and Engineering 250,000
Redevelop/sell 709 & 711 S. 23rd Ave. East assume 60% recovery (317,400)
Total for Beacon Point Recreational Trail $ 1,183,300

LEDGES SHARED USE TRAIL (10' PAVED)
Construct 10 foot wide paved trail from 23rd Ave. East to the existing paved trail $ 444,250
on the Lake Side of the existing development
Engineering Design 75,000
Professional Services for Easement Acquisition 100,000
Total for Ledges Shared Use Path $ 619,250

SUBTOTAL FOR LEDGES AND BEACON POINT $ 1,802,550

WATER STREET SHARED USE TRAIL (10' PAVED)
Construct 10 foot wide paved trail from 21st to 23rd Ave. East behind existing curb $ 266,581
on the upper side of Water Street
Engineering Design 46,361
Total for Water Street Shared Use Path $ 312,942

GRAND TOTAL FOR ALL 3 PROJECTS $ 2,115,492
### ADDITIONAL OPTIONS

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquire Edmunds Property on Water Street for a parking lot</td>
<td>$368,600</td>
</tr>
<tr>
<td>Parking lot construction 26 stalls</td>
<td>$325,000</td>
</tr>
<tr>
<td>Retain Hayden Property for future city use</td>
<td>$317,400</td>
</tr>
<tr>
<td>Rest Room Facility at overflow basin at the end of Water Street</td>
<td>$500,000</td>
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<tr>
<td><strong>Total for Additional Options</strong></td>
<td><strong>$1,511,000</strong></td>
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