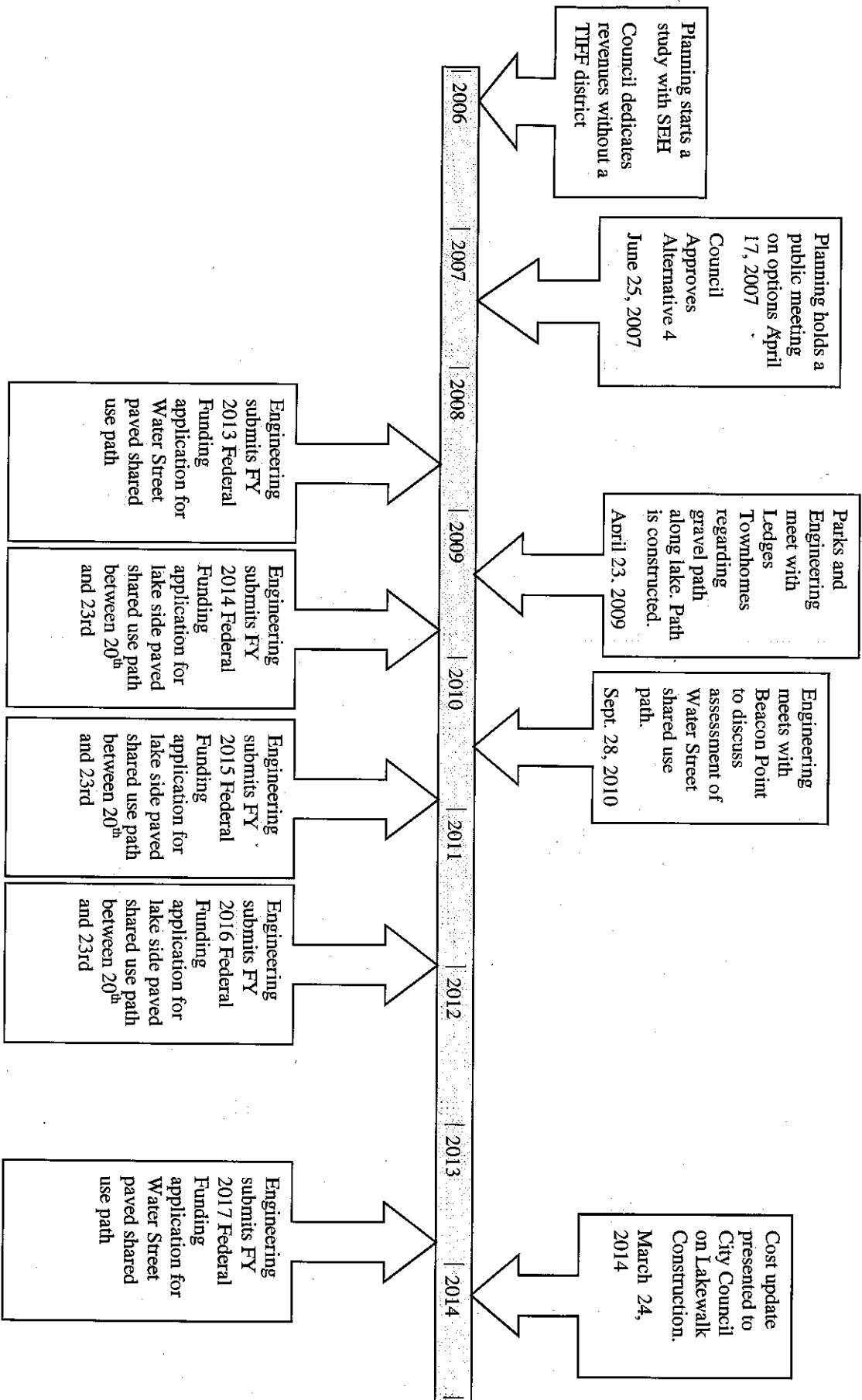


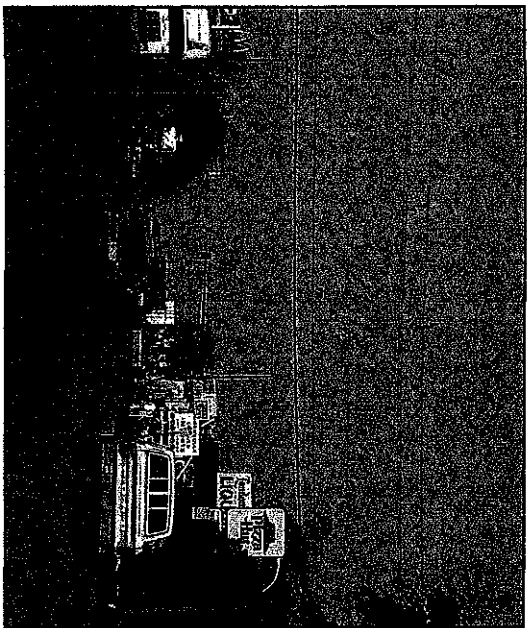
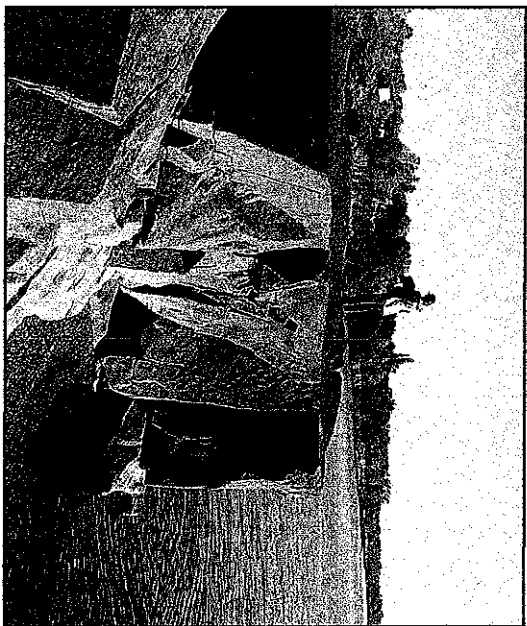
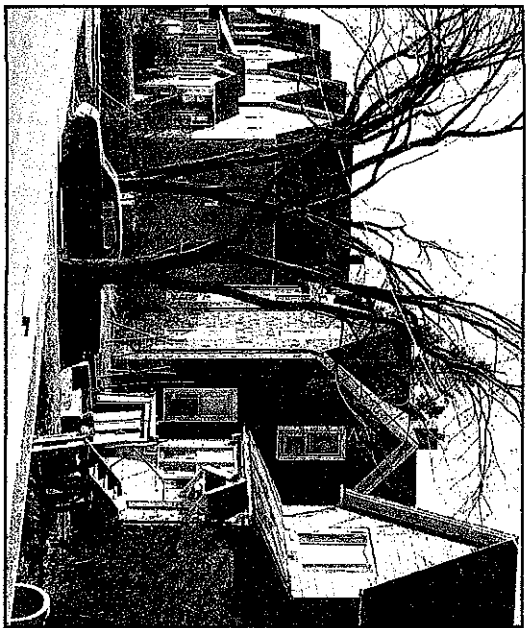
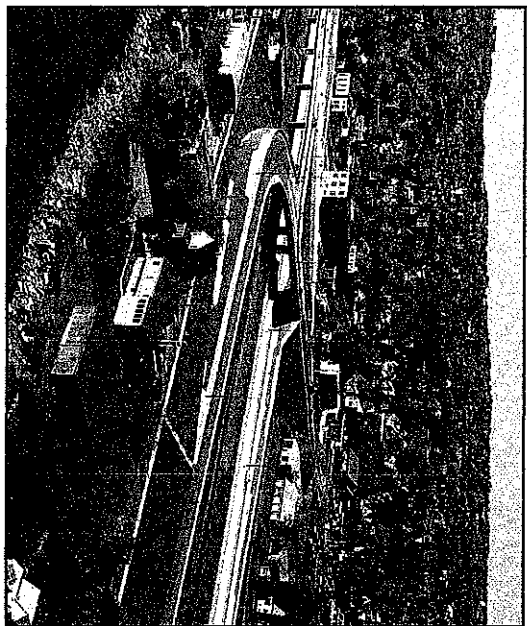
Plans and Studies

- 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



ENDION WATERFRONT PLAN AND DEVELOPMENT STRATEGY



**ENDION WATERFRONT PLAN AND
DEVELOPMENT STUDY**

(Excerpts)

City of Duluth, Planning Division

Buckhurst Fish & Jacquemart
in association with
Pei Group Holdings

February 1995

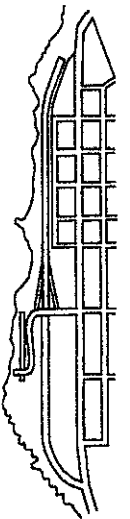
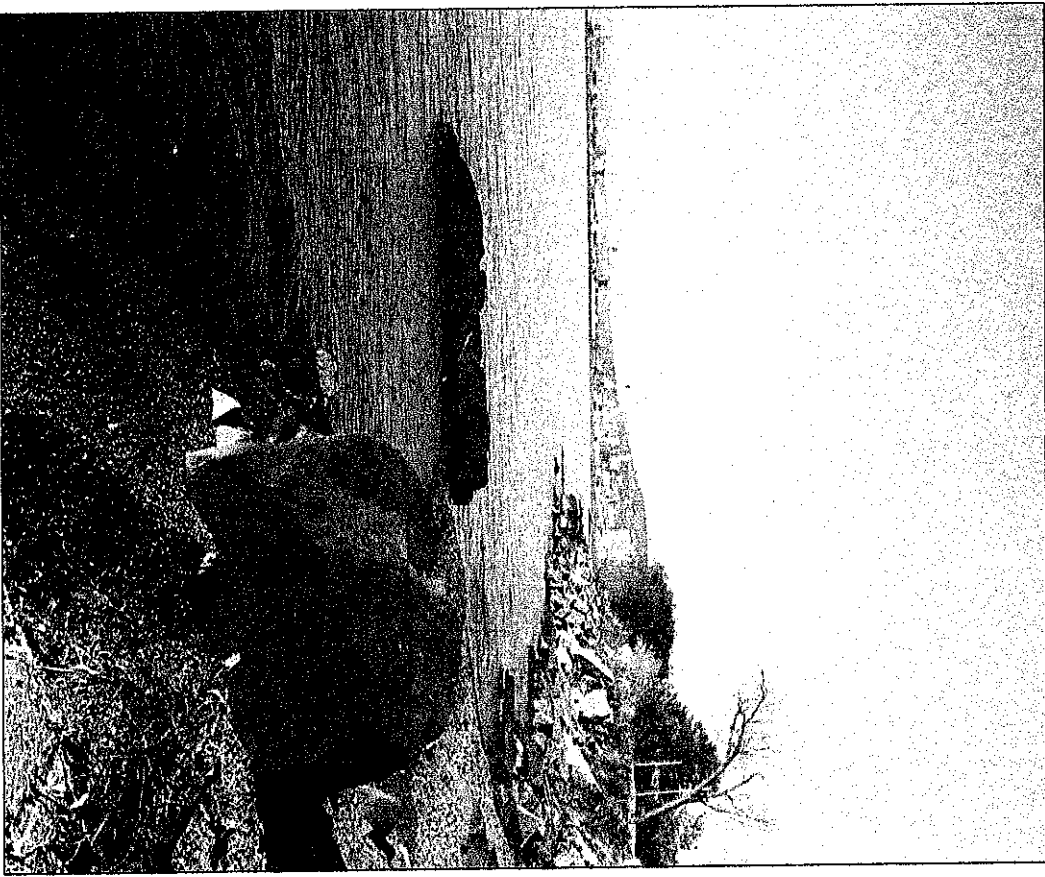
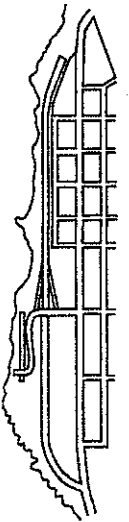


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1. INTRODUCTION

Study Goals

The plan for the Endion waterfront area has been developed in response to the recently constructed Interstate 35 (I-35) freeway that now extends along the Lake Superior waterfront to 26th Avenue East. The plan also continues the work previously implemented in the Downtown Waterfront Plan, prepared in 1985. This earlier project resulted in the revitalization of the City's waterfront area extending from the Harbor to 12th Avenue East. The plan described in this report seeks to expand this revitalization effort, encompassing the lower portion of the Endion neighborhood and its Lake Superior shoreline.

The Endion waterfront area has undergone significant change as a result of the I-35 construction, completed in 1992. Although the freeway work resulted in some dislocation to local services and access, the highway construction has opened up a number of opportunities for development and potential improvements in the Endion area. These opportunities include:

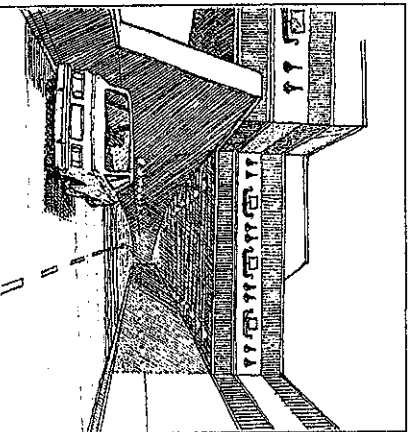
- The identification of development parcels on vacant and underutilized land near the shoreline.
- The potential to undertake improvements in the appearance and quality of London Road, including a reduction in the road width made possible by reduced through-traffic volumes.
- The development of a new marketing image for London Road through increased off-street parking and a streetscape beautification program.

The plan for the Endion waterfront takes full advantage of these development opportunities. It also provides a framework for future improvements that will establish the Endion neighborhood as an important gateway into the City of Duluth.

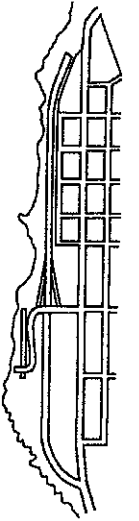
The proposals described in this report concentrate on three specific areas that reflect the varied use and character of the neighborhood: The London Road corridor; the Water Street area; and the shoreline overlooking Lake Superior.

Public Participation

Residents of the Endion neighborhood and local businesses contributed in a significant way to the planning recommendations for the study area. Over 100 citizens attended each of the public meetings, which were designed as round table discussions, in order to allow individual concerns and ideas to be clearly identified.



The Viking ship symbol is used along I-35 near 10th Avenue East.



Participants in the first workshop made suggestions for the future improvement of London Road and for the vacant land areas near the lakeshore. Citizens were also asked to suggest a future "vision" for the Endion waterfront. The ideas that were expressed at the meeting included the following:

- Provide new landscaping along London Road.
- Create a continuous pedestrian network with associated public open space on the waterfront.
- Develop low-rise housing, with related recreation and open space uses, on vacant parcels.
- Protect existing natural features such as the stretch of exposed shoreline bedrock.
- Provide convenient public access from existing Endion residential areas down to the lakefront area.

Press coverage
of public
workshop sessions

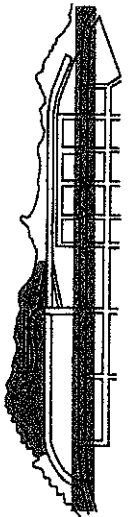


The second workshop meeting reviewed a number of alternative concepts for London Road and for the shoreline development sites. The preferred plan presented for London Road would reduce the road to three lanes, plus turning and parking lanes, and establish a coordinated lighting and signage program. A mix of townhouses and two and three story garden apartments was seen as the preferred plan for the vacant development sites between Water Street and the lakefront. Clearly defined pedestrian routes leading to the shoreline and the provision of public parking areas were also seen as important guidelines. Workshop participants also agreed that the continuation of Lakewalk East along the waterfront was an important objective.

Several additional meetings were held with London Road business representatives to identify issues and review alternatives for the plan.

Summary of Proposals

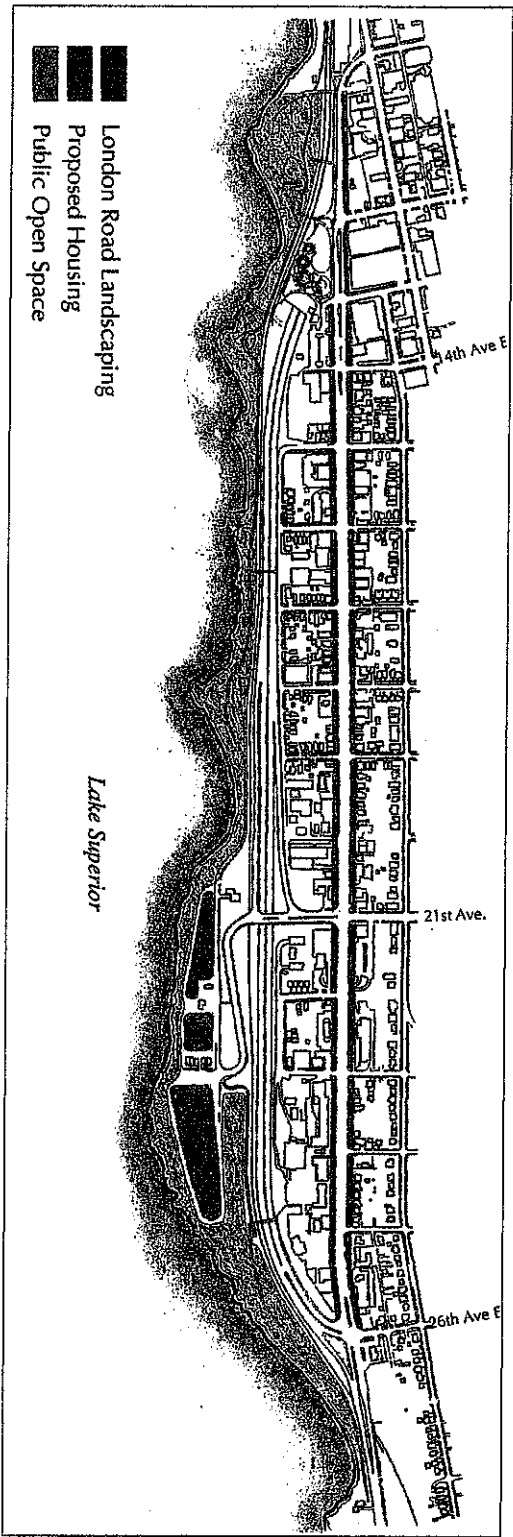
The plan for the Endion waterfront capitalizes on opportunities afforded by the I-35 construction. It creates a new,



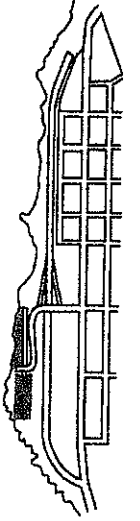
Round table discussion at a Public Meeting



positive image for the London Road corridor through landscape and streetscape proposals. The Plan also helps reinforce pedestrian linkages between the residential, commercial and shoreline properties within the neighborhood. Specific proposals for London Road include a reduction in road width in recognition of the declining through-traffic; additional off-street parking where possible; a coordinated tree planting, signage and lighting plan to establish a clear design vocabulary along the street; and site design guidelines for properties fronting London Road.



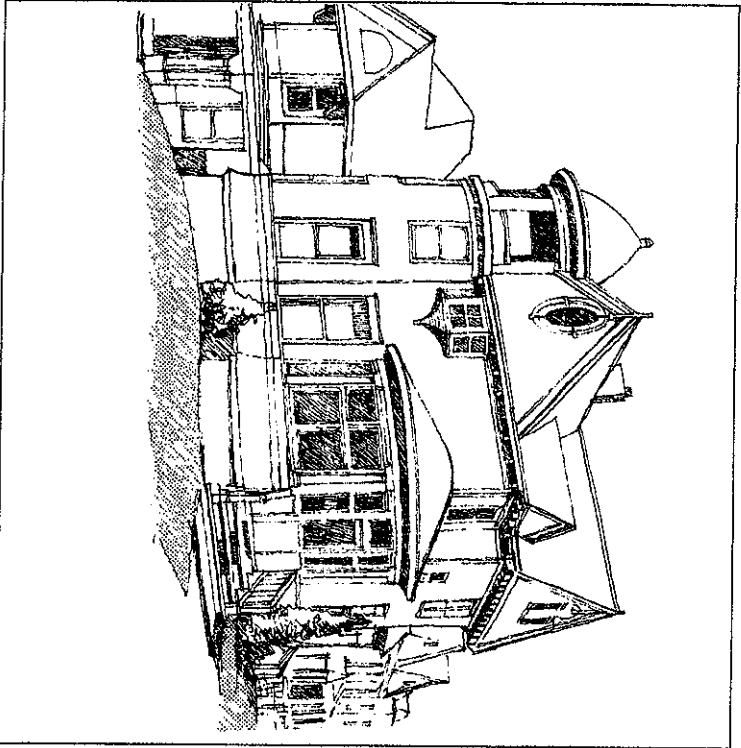
Plan showing summary of proposals



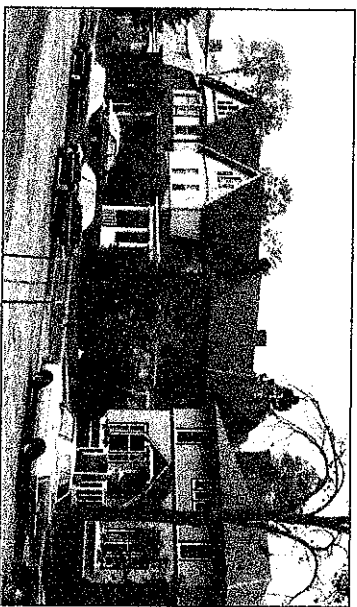
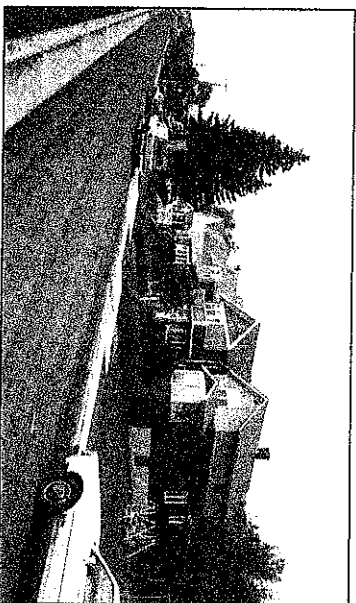
New housing development is proposed for sites overlooking Lake Superior, along the southside of Water Street. New low-rise housing could include a mix of townhouse and garden apartments, related in scale to the existing houses on South Street and 23rd Avenue East. The new development would be set back from the shoreline on higher ground, giving future residents unparallelled views across the lake.

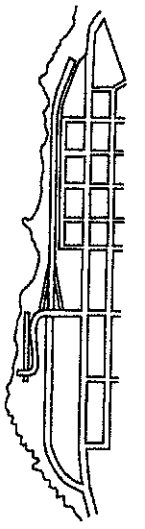
Pedestrian access near the shoreline is already in place as part of the highway construction program. Additional routes directly adjacent to the shoreline are recommended in order to encourage pedestrian access to the water's edge and to bedrock areas. A new natural open space -- Endion Ledges -- will form an important focus and destination point for users of Lakewalk East on the east side of the Endion neighborhood.

Right: Housing on Jefferson Street and on South Street overlooking I-35

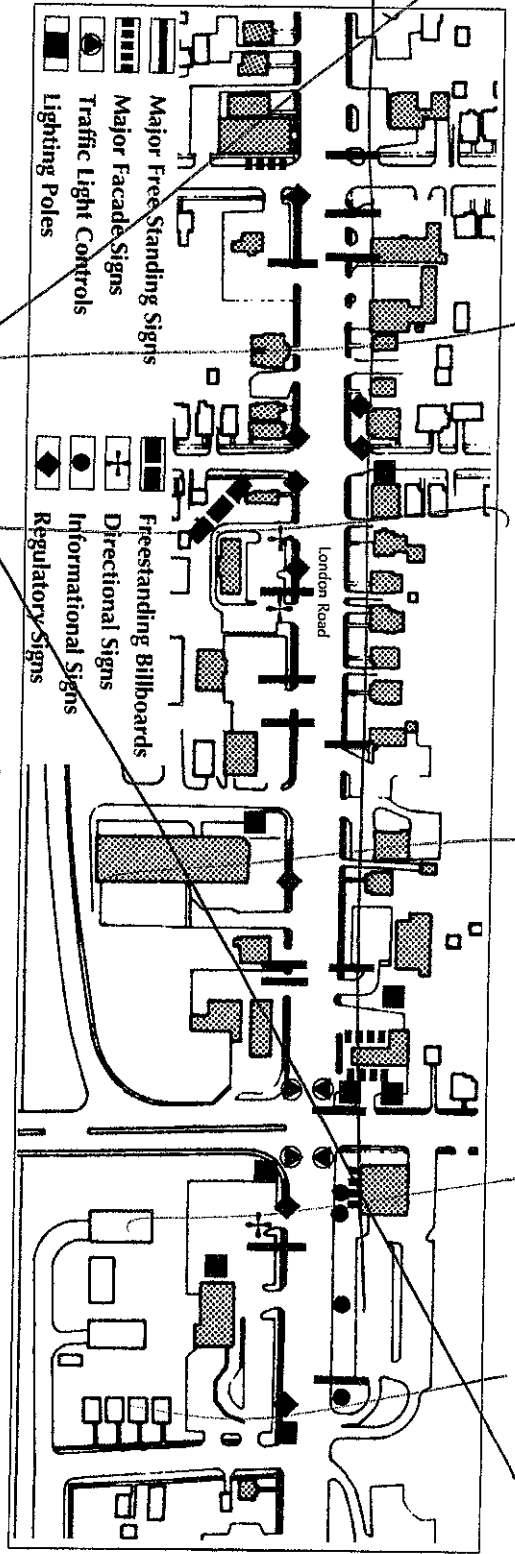


Left: Housing on Jefferson Street.

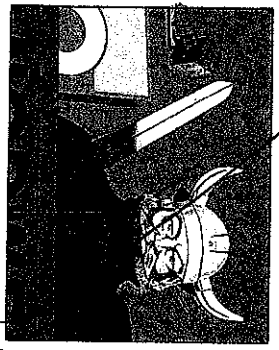
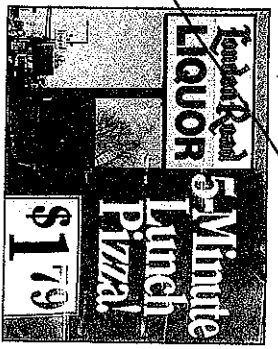




London Road:
distribution of major
signs between 18th
Avenue East and 22nd
Avenue East.



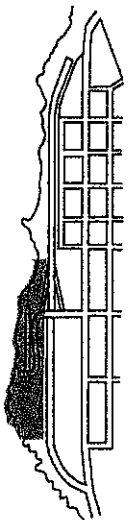
- Land use and building design: The architectural quality of buildings, variety in building setbacks, haphazard design of parking lots, and the mixture and scale of land uses within the corridor all contribute to the negative image of London Road and its strip character.



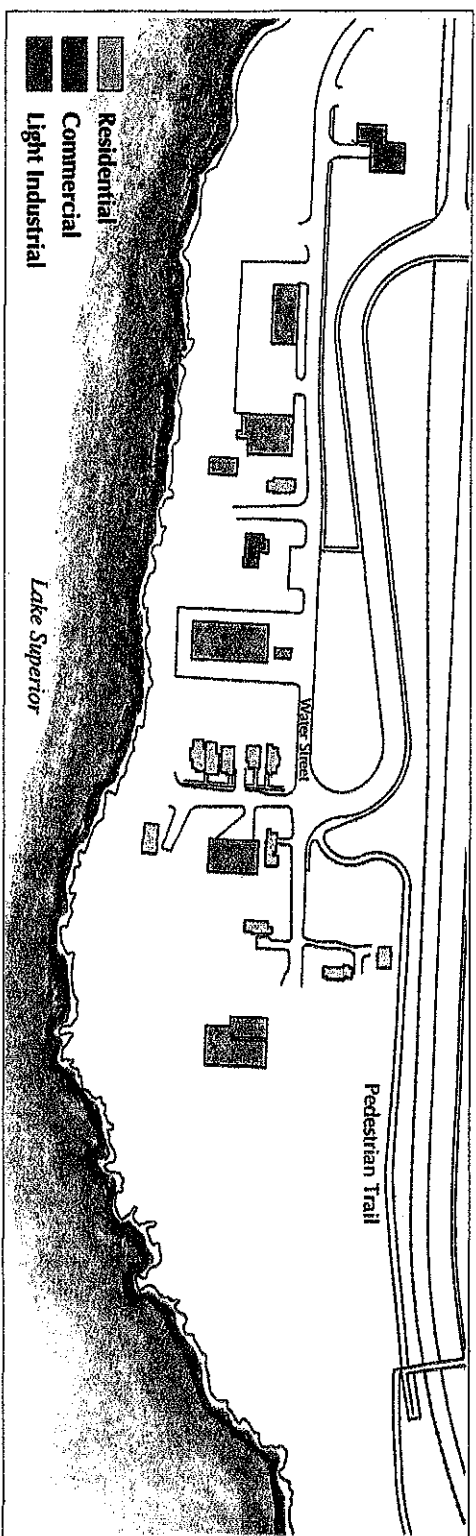
The Water Street Area

This section of the study area encompasses properties to the south of 1-35, extending from about 20th Avenue East to a point almost two blocks east of 26th Avenue East. Existing buildings in the area include two single-story office buildings erected within the past few years, ten single family residences, and a few light industrial sites, primarily warehouses and storage buildings. Most of the houses are clustered along the short extension of 23rd Avenue East. Several of the larger parcels are privately owned. The City of Duluth and State of Minnesota also own significant parcels of land in this area.

The key development issues focus on the degree and type of new investment and development that can take place in

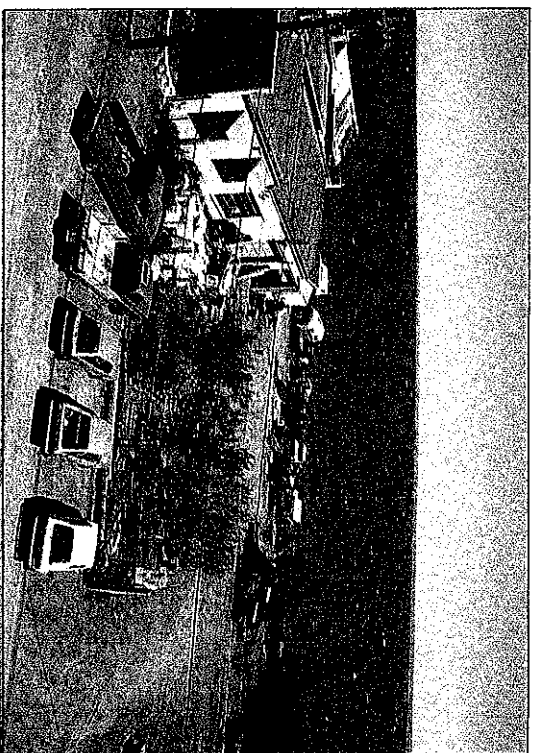


Existing uses along Water Street and the shoreline include housing and light industrial facilities.

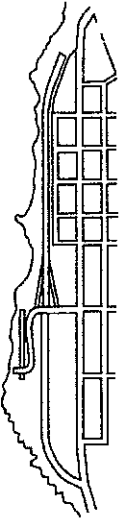


this section of the Endion Waterfront study area. A number of larger vacant sites have frontage on Water Street. In particular, the contractor's yard/storage area to the east of 24th Avenue East provides an important opportunity for new development and landscaping. Modest-sized parking lots providing public access to the shoreline could also be integrated into the development scheme.

Redevelopment of the Water Street area could also involve 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 industry would also permit a revision to the current zoning in this area. The M-1 zone should be replaced with a new zone that encourages residential development.



Redevelopment sites include light-industrial uses along Water Street.



Lake Superior Shoreline

The Lake Superior shoreline from 12th Avenue East to 27th Avenue East promises to be a unique environmental and recreational resource for the Endion neighborhood, City residents and visitors to Duluth.

The shoreline's gently undulating edge creates two shallow bays west of 24th Avenue, a deeper bay at 28th Avenue, and three promontories that provide excellent views in both directions. Two creeks from the upland areas flow to the shoreline: Chester Creek at 13th Avenue and Oregon Creek east of 19th Avenue.

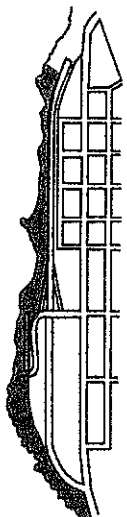


Rock outcrops occur along the shoreline between 24th and 27th Avenue East.

The dominant features of the shoreline are the spectacular rock outcrops. The most extensive bedrock outcrops are located between 24th Avenue East and 27th Avenue East, rising 10 to 30 feet above the lake. The rocks are easily explored on foot and support many fascinating types of grasses, mosses and lichens.

The shoreline west of 24th Avenue East is a mixture of narrow beachfront, sometimes severely eroded, with haphazard and unsightly attempts at stabilization, and smaller areas of bedrock interspersed with mixed deciduous vegetation. As part of the I-35 construction program, MnDOT has undertaken a clean-up of the shoreline from 20th Avenue East westward.

Duluth's Lakewalk East extends to the Endion shoreline through Leif Ericson Park. Public access from this point and from the three pedestrian access points across I-35 helps to make this area more accessible to the general public. Planning issues to be addressed for the shoreline east of 20th Avenue East involve the type and scale of recreation and open space areas suitable along the shoreline (e.g., active versus passive uses); the ability to provide for continuous public access along the water's edge from 20th Avenue East eastward; the provision of public parking near public access points to the shoreline; the development of pedestrian links between the shoreline and the upland areas; and the scale and suitability of new land uses on the water's edge.



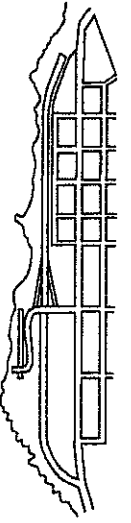
In conclusion, the shoreline's assets include:

- unrestricted views of the lake
- continuation of Lakewalk East and additional shoreline access (in addition to the existing walkway along Water Street and the freeway)
- open space resources for the Endion and South Street neighborhoods
- a unique bedrock ledge ecology which could become an "outdoor classroom"
- access points for fishing and recreation such as passive siting, lake watching and picnicking



Views along shoreline showing bedrock formations.

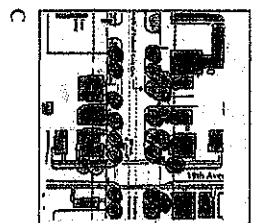
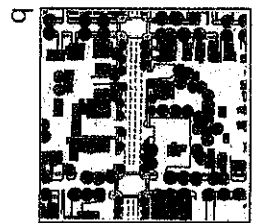
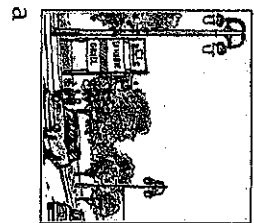




DESIGN PRINCIPLES

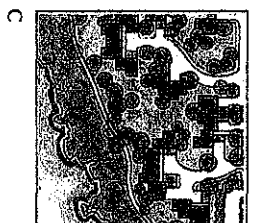
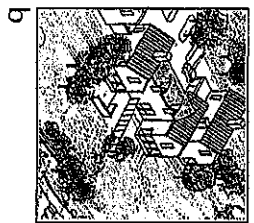
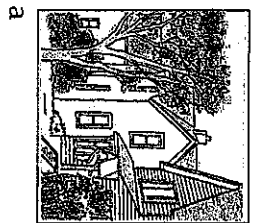
London Road

- (a) Establish a new image for the corridor.
- (b) Provide new landscape and streetscape image.
- (c) Reduce roadway width.



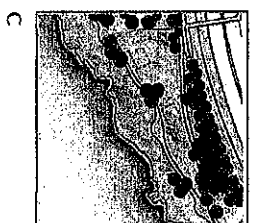
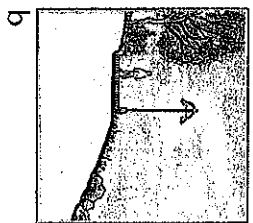
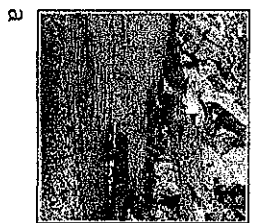
South Street and Water Street

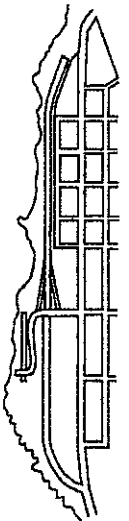
- (a) Maintain most existing residences.
- (b) Promote new low-rise residential development.
- (c) Encourage public access to the lakeshore.



Shoreline

- (a) Preserve existing landscape.
- (b) Extend Lakewalk East.
- (c) Provide new public open space called Endion Ledges.





3. THE PLAN

The plan for the Endion waterfront is designed to establish a long-term master guide that enhances the land use elements. The recommendations focus on upgrading the character and image of the neighborhood, and involve the following design principles:

London Road:

- (a) Establish a new image for the corridor, one that reacts positively to the fact that it now must rely more on local customers in drawing additional business to the street.
- (b) Provide new landscape and streetscape features that help to create a coordinated design image for the corridor.
- (c) Reduce roadway width by eliminating one or more traffic and parking lanes but creates better turning lanes.
- (d) Encourage a broad variety of retail and commercial uses while creating buffers adjacent to residences.

South Street and Water Street Area:

- (a) Safeguard most existing residences through zoning, design guidelines, etc.
- (b) Promote new low-rise residential development on vacant and underutilized properties.

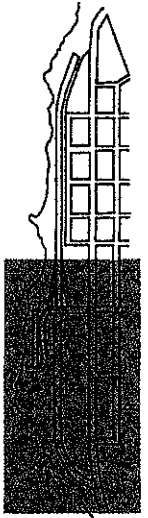
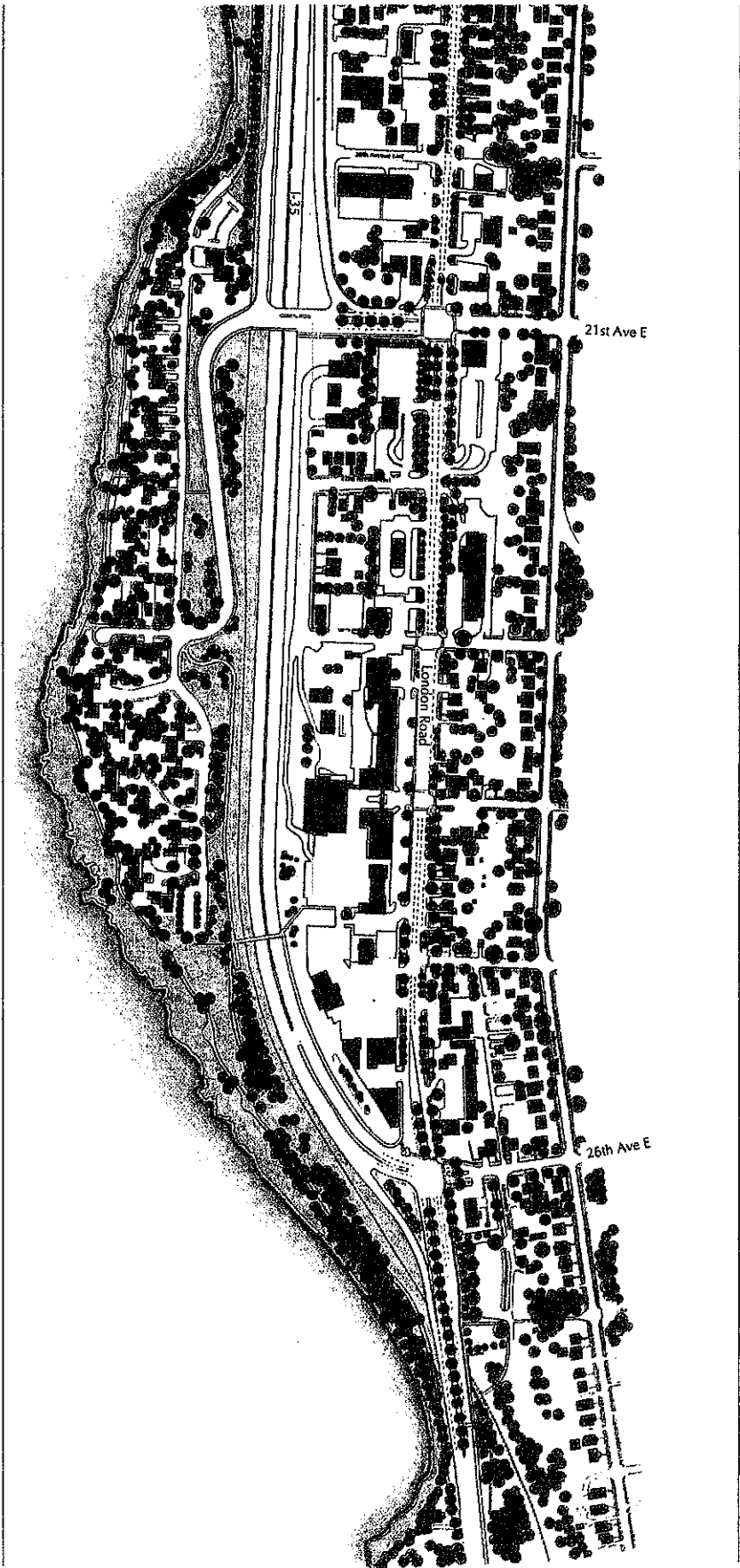
- (c) Encourage public access to the lakeshore by north-south access routes and provision of visitor parking lots.

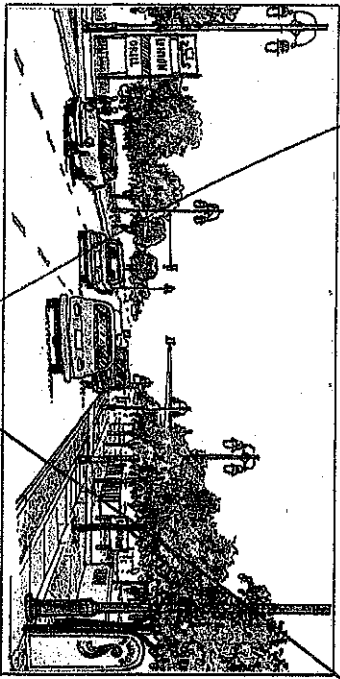
Shoreline Area:

- (a) Maintain and enhance the natural landscape quality of the shoreline, including the major rock outcrops.
- (b) Provide an extension of the Lakewalk East trail along the water's edge.
- (c) Develop a public open space at the eastern end of the study area.

The following pages summarize the proposals for these three major zones within the study area.





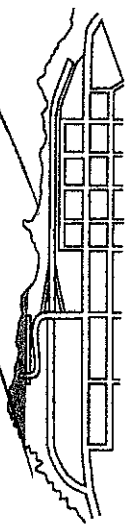


area. This will clearly establish the character of the commercial area.

Facade improvements at individual sites should reinforce the new corridor image while maintaining individuality through architectural detail. Parking lots should be upgraded to include shade trees and buffer plantings, particularly where commercial and residential uses abut. Particular effort should be made to reduce the visual impact of cars parked at the sidewalk edge along London Road. Shrubs, small trees and fencing are recommended as buffers.

A good example of an effective simple treatment is the planted hedge at the chiropractic office on 18th Avenue East and London Road.

In order to implement these parking lot improvements, without significant reduction in parking spaces, consideration will need to be given to revised circulation patterns within lots and striping for compact cars. The proposed

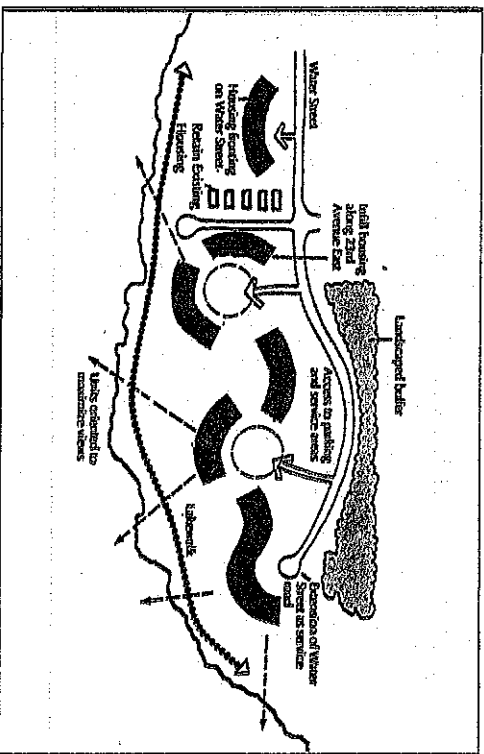


elimination of multiple-curb cuts at lots will also help compensate for the new areas dedicated to landscape improvements.

WATER STREET AREA

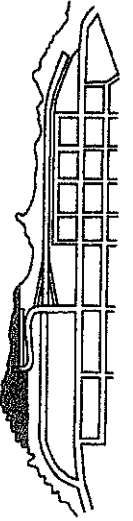
The study area south of the I-35 freeway and extending eastward from 20th Avenue East represents an important redevelopment opportunity for the Endion neighborhood area. The results of two public meetings showed support for new housing construction in this area, provided that buildings are designed to reflect the scale and character of nearby development.

The Water Street shoreline area offers significant advantages for residential development. The site has direct shoreline access, affords excellent views across the lake, is



London Road showing proposed reduction in width and new landscaping.

Proposed residential clusters take advantage of views across the lake.



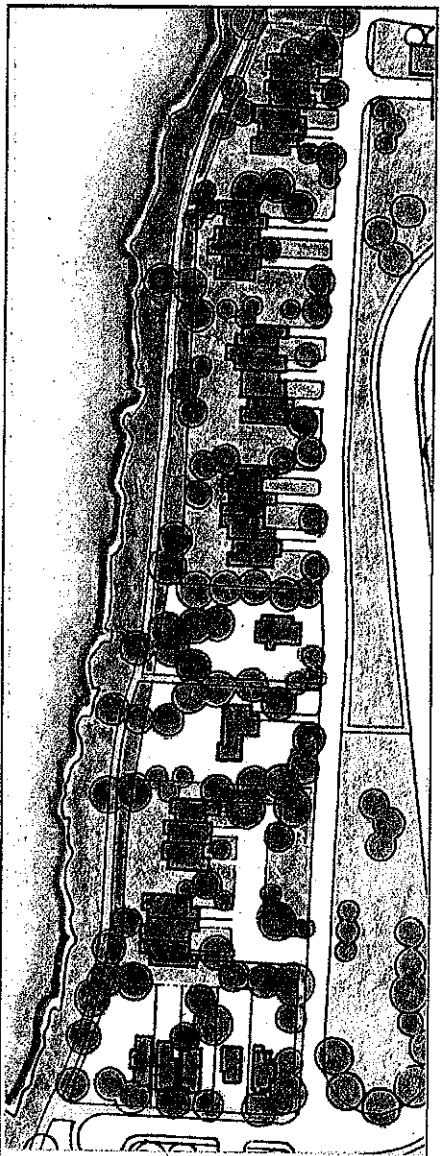
convenient to downtown facilities and has good highway connections via the 21st Avenue East intersection. A¹ market analysis carried out as part of the study recommended the development of townhouses or low-rise apartment development, uses that would be compatible with the existing two-story houses already in the area.

The plan illustrates a mix of townhouses and garden apartments involving between 75 and 100 units. Townhouses are sited along the narrower development parcel to the west of 23rd Avenue East. Garden apartments, comprising a mix of two and three levels of attached units within walk-up buildings, are planned for the larger development parcel to the east of 23rd Avenue East.

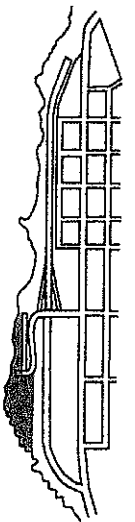
The layout includes the following features:

- Building clusters take maximum advantage of views across the lake, with parking and service areas located away from the shoreline on the north side of the building clusters.
- Access is provided from an extension of Water Street along the upland side of the development area. In this way, the access right-of-way will form part of the buffer between development sites and the I-35 freeway, and the entire residential development will adjoin the lake with no bisecting roadway.

Groups of townhouses could be developed on sites between Water Street and the shore.

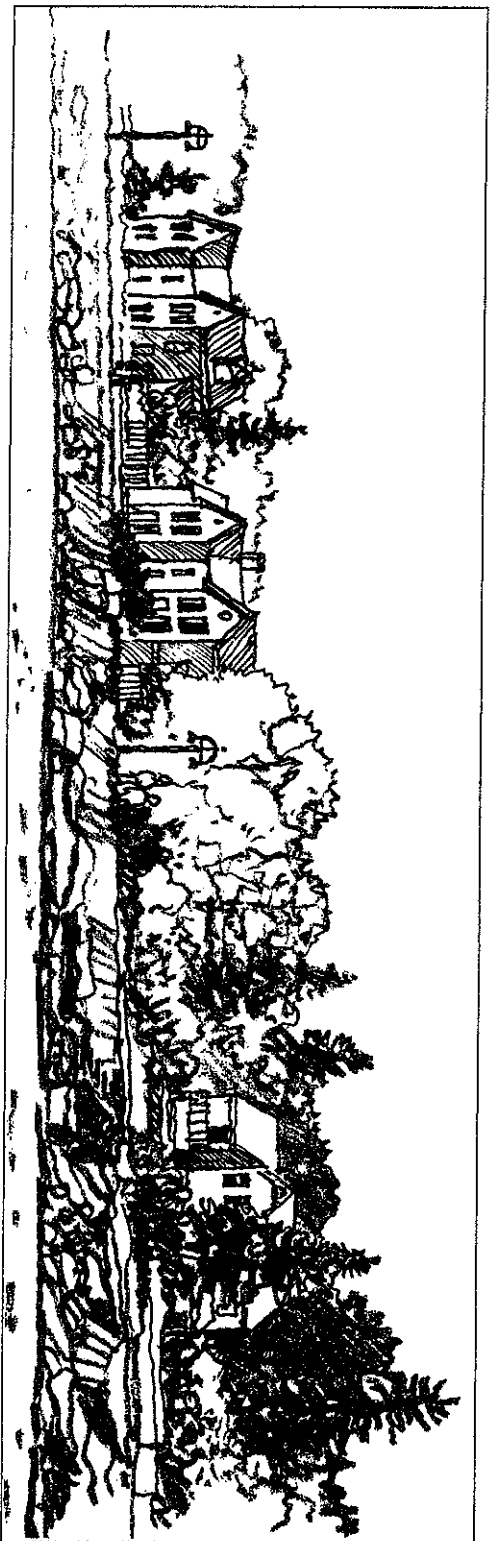
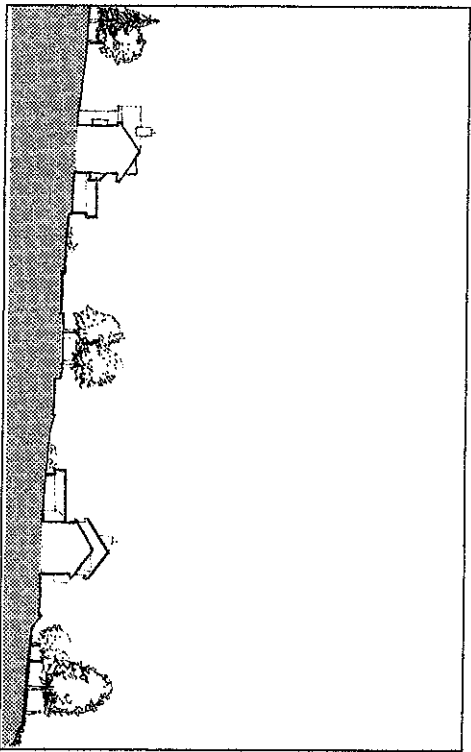


¹ See "Preliminary Report", 1991, listed on the Appendix page of the booklet.

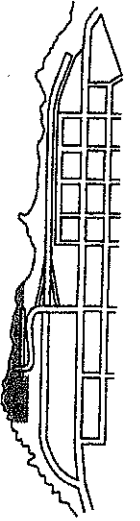


- New buildings are sited so that view corridors from upland areas (e.g. from the Avenues looking south over the freeway) are unobstructed.
- Housing is set back from the shoreline to retain open views along the shoreline and provide space for the Lakewalk East extension.

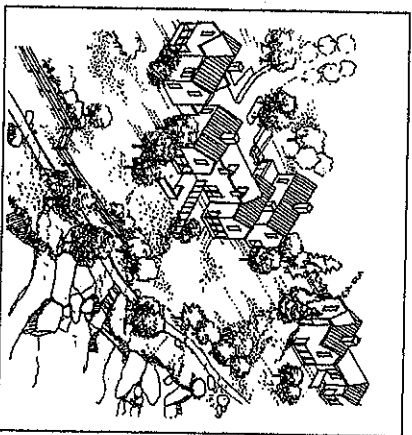
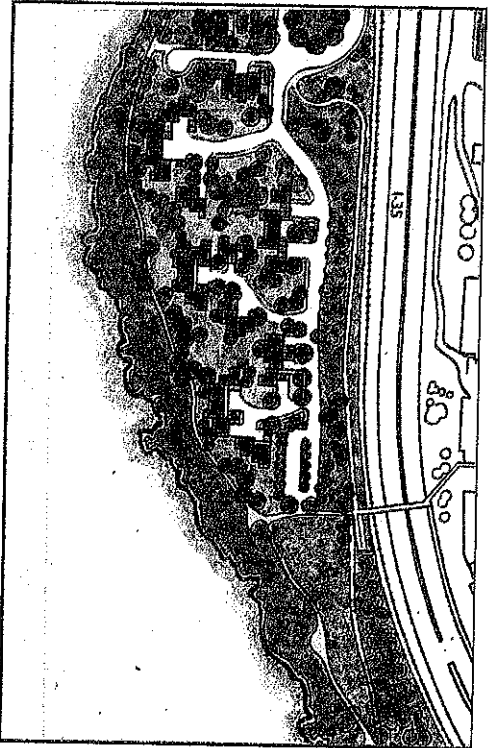
The design of new housing development needs to reflect local architectural detailing and incorporate features such as hipped or gabled roofs, dormer windows, porches and balconies. Varied roof planes, building setbacks and a range of building forms should also be considered to make units and entries individual and private. At the same time the various design elements should be consistent with the



View of townhouses along the Lake Superior shoreline.



Proposed housing is set back from the shoreline to retain views along the shore.

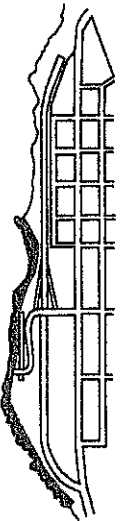


Proposed housing should reflect local architecture, and incorporate features such as hipped roofs and dormer windows.

Overall architectural theme of the project. The use of relatively simple building forms, accented with simple trim and the carefully selected use of one or two building materials can help achieve a successful design treatment.

The landscape plan for the development site should preserve existing tree masses, supplement existing vegetation with new specimens, and use plant materials that are indigenous to the site in order to enhance the project. The use of local features (e.g., nearby rock formations) within the landscape plan will help to ensure a local character and identity. Planting should also be used to screen development elements such as trash storage areas, air conditioning units, meters, etc.

Local road access to the area will be provided by two existing streets: Water Street and the 23rd Avenue East cul-de-sac. In addition, an eastern extension of Water Street to serve new development sites will be added. Two public parking sites are proposed in the Water Street area: one at the western end of the Water Street extension at the gate and a second to the east, at a site near the pedestrian ramp bridge. These two facilities will provide convenient access to the shoreline park areas and lakewalk routes. Both of these proposed parking areas are located at the edge of the general development zone and would be limited to about 30 spaces each in order to reduce visual impacts on the area. And, in order to further minimize parking congestion, the city plans a parking lot on the upper side of London Road East of 26th Avenue East, adjacent the AMOCO Station.



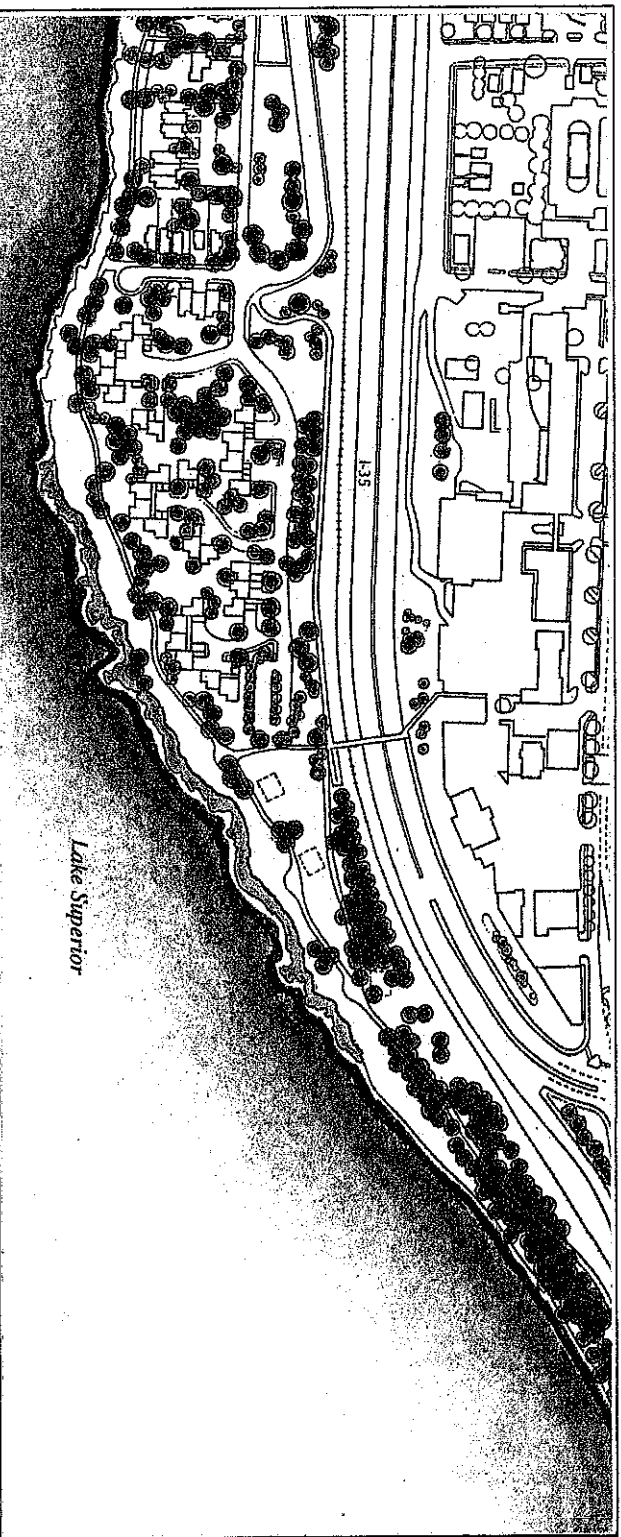
LAKESHORE

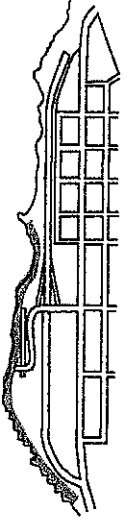
The plan for the lakeshore focuses on the need to preserve the existing natural quality of the lakefront and to maintain the views of the lake and adjacent shoreline. The key feature of the plan is an extension of a public access lakeshore trail from 20th Avenue East to about 800 feet east of 26th Avenue East. The existing trail along Water Street and along the freeway is not a lakewalk, but provides excellent access to the existing and future waterfront trail. The new trail will provide direct access to the extensive rock outcrop area between 24th Avenue East

and 27th Avenue East. The Endion lakeshore trail will make the bedrock area more accessible for the general public and for school children, who could visit the site as an "outdoor classroom". The outcrops are one of the truly unique features of the Endion waterfront.

The undulating edge and shallow bays along the shore line create a number of fine viewpoints, across the lake and along the shore. The proposed lakeshore trail will access a number of these viewing points. The path will provide picnic and seating areas in addition to special access points leading directly to the water's edge.

A new trail system will provide access to bedrock areas and a proposed "Endion Ledges" park.

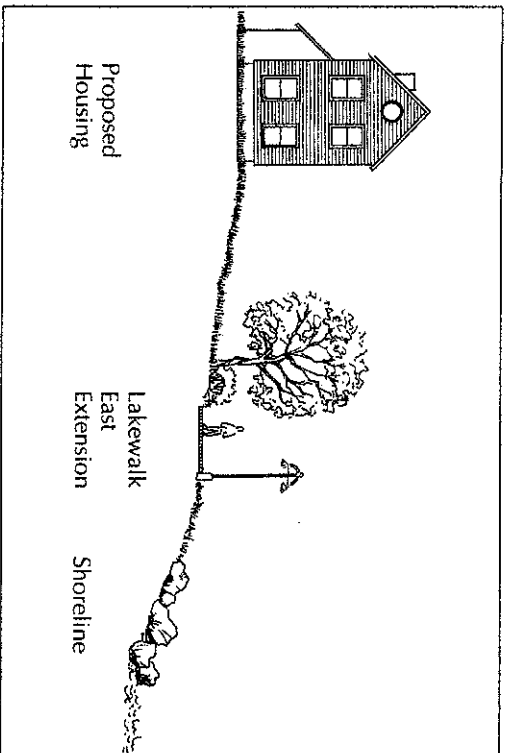


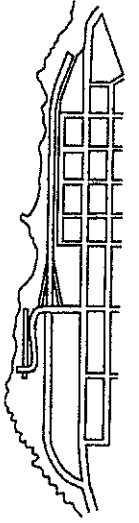


Preservation, enhancement and interpretation with descriptive markers along the lakeshore is also recommended. Native vegetation should be preserved to maintain the character of the shoreline and to help reduce the visual impact of the new townhouse development adjacent to the trail. Additional native planting in selected areas will help enhance this portion of the city's trail system. Special planting projects such as wildflower borders (similar to the ones planted by MnDOT on Lakewalk East) would provide seasonal interest and recognition for shoreline restoration projects. To preserve the natural setting of the lakeshore trail, earth berming and evergreen vegetation should be considered (when appropriate) to reduce noise and visual impact from the Water Street development.

Exposed bedrock extends along much of the Endion waterfront to the east of 23rd Avenue East.

Section of proposed residential and pedestrian trail along the shore.

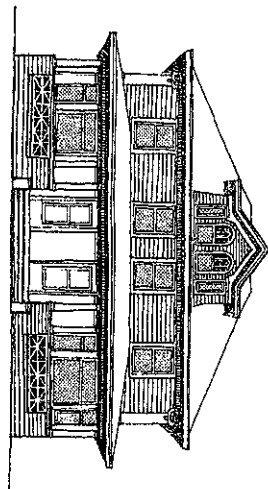




- Replace the existing "M-1" zone with "R-2" zoning to encourage maintenance and improvement of existing housing adjacent to South Street.

(b) Water Street and Shoreline Area

- Identification of residential development sites including land appraisal and acquisition programs.
- Identify a "land packaging agent," whether a private or public entity, which has the ability to coordinate the assembly of the land.
- Establishment of a Lakewalk easement along the water.
- Retention and acquisition of land to establish proposed "Endion Ledges."
- Replacement of the existing "M-1" industrial zoning with a new residential design review category. (It may be desirable to institute a temporary development moratorium to prevent further industrial development until the new zoning is in place.)
- Construction of Lakewalk East extension, including stabilization and clean-up of shoreline between 19th Avenue East and 24th Avenue East.
- Design and construction of proposed public parking lots.



**CONSTRUCTION FEASIBILITY STUDY
FOR THE DULUTH LAKEWALK
SUMMARY OF ESTIMATED COSTS**

Item	Total Option 1*	Total Option 2**
Water Street	\$103,022.00	\$103,022.00
Lakeshore 20th to 23rd Avenues	\$135,646.00	\$157,706.00
Lakeshore 23rd to 25th Avenues	\$397,408.00	\$476,121.00
Total Construction Cost	\$636,076.00***	\$736,849.00***

These
are switched ↗

- *Option 1 - 10' Paved Trail on Water Street
6' Paved Trail on 20th to 23rd Avenues and 23rd to 25th Avenues
- **Option 2 - 10' Paved Trails on all Sections
- ***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

Item Description	Unit	Unit Price	Quantity	Amount
COMMON EXCAVATION	CU YD	\$10.00	778	\$7,778.00
SCARIFICATION	CU YD	\$8.00	583	\$4,667.00
AGGREGATE BASE CLASS 5 (CV)	CU YD	\$25.00	389	\$9,722.22
GEOTEXTILE FABRIC	SQ YD	\$1.00	2333	\$2,333.33
BITUMINOUS	TON	\$75.00	350	\$26,250.00
RETAINING WALL	LUMP	\$25,000.00	1	\$25,000.00
Sub Total Construction:				\$75,751
TRAFFIC CONTROL		1%		\$758.00
MOBILIZATION		10%		\$7,575.00
MISCELLANEOUS CONSTRUCTION		10%		\$7,575.00
CONTINGENCIES		15%		\$11,363.00
Total Construction:				\$103,022

Short Elliott Hendrickson Inc.®

*** 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

Item Description	Unit	Unit Price	Quantity	Amount
COMMON EXCAVATION	CU YD	\$10.00	630	\$6,300.00
SCARIFICATION	CU YD	\$8.00	470	\$3,760.00
AGGREGATE BASE CLASS 5 (CV)	CU YD	\$25.00	320	\$8,000.00
GEOTEXTILE FABRIC	SQ YD	\$1.00	1900	\$1,900.00
BITUMINOUS	TON	\$75.00	280	\$21,000.00
DRAINAGE	LUMP	\$25,000.00	1	\$25,000.00
RIPRAP	LUMP	\$50,000.00	1	\$50,000.00
Sub Total Construction:				\$115,960
TRAFFIC CONTROL		1%		\$1,160.00
MOBILIZATION		10%		\$11,596.00
MISCELLANEOUS CONSTRUCTION		10%		\$11,596.00
CONTINGENCIES		15%		\$17,394.00
Total Construction:				\$157,706

Short Elliott Hendrickson Inc. ®

* ASSUMPTIONS
 NO ROCK EXCAVATION
 1200 FOOT TRAIL LENGTH

CONSTRUCTION FEASIBILITY STUDY FOR THE DULUTH LAKEWALK
LAKESHORE - 23RD TO 25TH AVENUES
6' PAVED TRAIL (OPTION 1)
 Preliminary Construction Cost Estimate

Item Description	Unit	Unit Price	Quantity	Amount
COMMON EXCAVATION	CU YD	\$10.00	380	\$3,800.00
SCARIFICATION	CU YD	\$8.00	280	\$2,240.00
AGGREGATE BASE CLASS 5 (CV)	CU YD	\$25.00	190	\$4,750.00
GEOTEXTILE FABRIC	SQ YD	\$1.00	1200	\$1,200.00
BITUMINOUS	TON	\$75.00	170	\$12,750.00
DRAINAGE	LUMP	\$25,000.00	1	\$25,000.00
RIPRAP	LUMP	\$50,000.00	1	\$50,000.00
Sub Total Construction:				\$99,740
TRAFFIC CONTROL		1%		\$997.00
MOBILIZATION		10%		\$9,974.00
MISCELLANEOUS CONSTRUCTION		10%		\$9,974.00
CONTINGENCIES		15%		\$14,961.00
Total Construction:				\$135,646

Short Elliott Hendrickson Inc. ®

* 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**

Item Description	Unit	Unit Price	Quantity	Amount
COMMON EXCAVATION	CU YD	\$10.00	800	\$8,000.00
SCARIFICATION	CU YD	\$8.00	600	\$4,800.00
AGGREGATE BASE CLASS 5 (CV)	CU YD	\$25.00	400	\$10,000.00
GEOTEXTILE FABRIC	SQ YD	\$1.00	2400	\$2,400.00
BITUMINOUS	TON	\$75.00	350	\$26,250.00
CONNECTION TO WATER STREET	EACH	\$9,000.00	1	\$9,000.00
75' PEDESTRIAN BRIDGE (10' WIDE)	EACH	\$119,000.00	2	\$238,000.00
DRAINAGE	LUMP	\$30,000.00	1	\$30,000.00
BANK STABILIZATION	LUMP	\$35,000.00	1	\$35,000.00
Sub Total Construction:				\$383,450
TRAFFIC CONTROL		1%		\$3,635.00
MOBILIZATION		5%		\$18,173.00
MISCELLANEOUS CONSTRUCTION		10%		\$36,345.00
CONTINGENCIES		15%		\$54,518.00
Total Construction:				\$476,121

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*** ASSUMPTIONS**

NO ROCK EXCAVATION
1500 FOOT TRAIL LENGTH

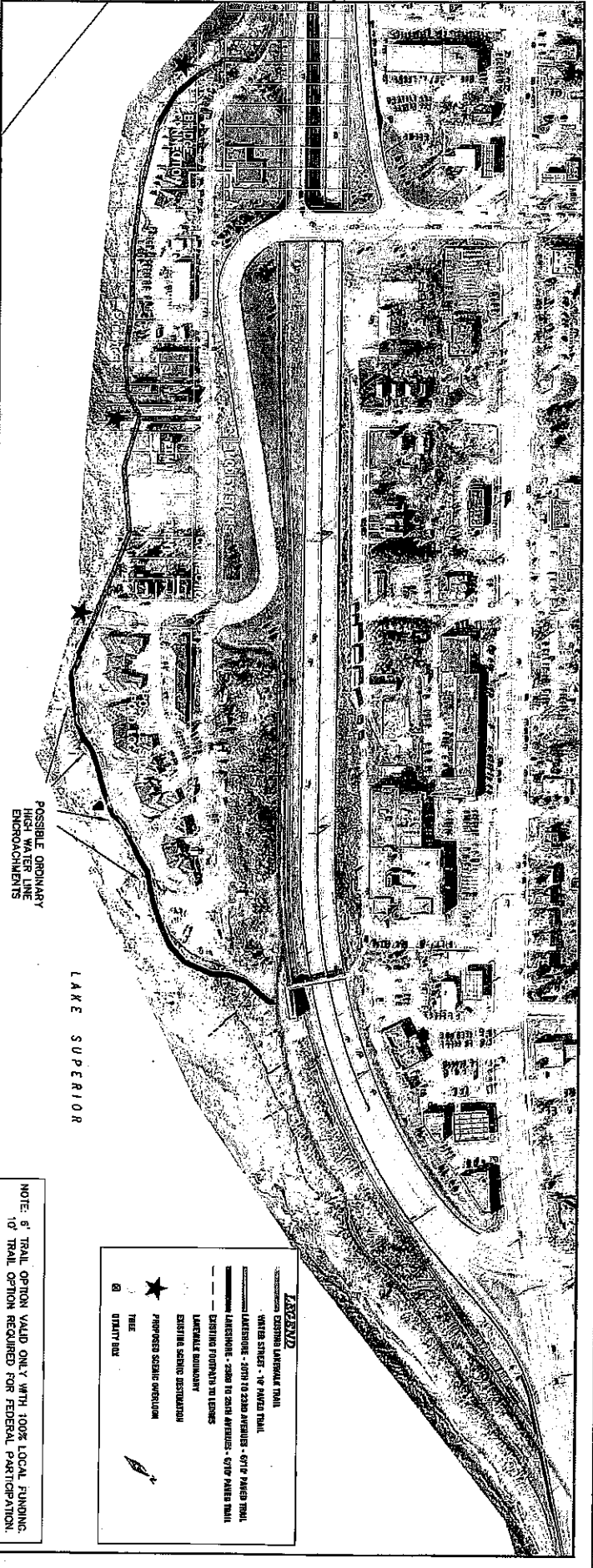
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**CONSTRUCTION FEASIBILITY STUDY FOR THE DULUTH LAKEWALK
 LAKESHORE - 20TH TO 23RD AVENUES
 6' PAVED TRAIL (OPTION 1)
 Preliminary Construction Cost Estimate**

Item Description	Unit	Unit Price	Quantity	Amount
COMMON EXCAVATION	CU YD	\$10.00	500	\$5,000.00
SCARIFICATION	CU YD	\$8.00	320	\$2,560.00
AGGREGATE BASE CLASS 5 (CV)	CU YD	\$25.00	250	\$6,250.00
GEOTEXTILE FABRIC	SQ YD	\$1.00	1400	\$1,400.00
BITUMINOUS	TON	\$75.00	220	\$16,500.00
CONNECTION TO WATER STREET	EACH	\$5,500.00	1	\$5,500.00
75' PEDESTRIAN BRIDGE (6' WIDE)	EACH	\$95,001.00	2	\$190,002.00
DRAINAGE	LUMP	\$30,000.00	1	\$30,000.00
BANK STABILIZATION	LUMP	\$35,000.00	1	\$35,000.00
Sub Total Construction:				\$292,212
TRAFFIC CONTROL		1%		\$2,922.00
MOBILIZATION		10%		\$29,221.00
MISCELLANEOUS CONSTRUCTION		10%		\$29,221.00
CONTINGENCIES		15%		\$43,832.00
Total Construction:				\$397,408

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* ASSUMPTIONS
 NO ROCK EXCAVATION
 1500 FOOT TRAIL LENGTH

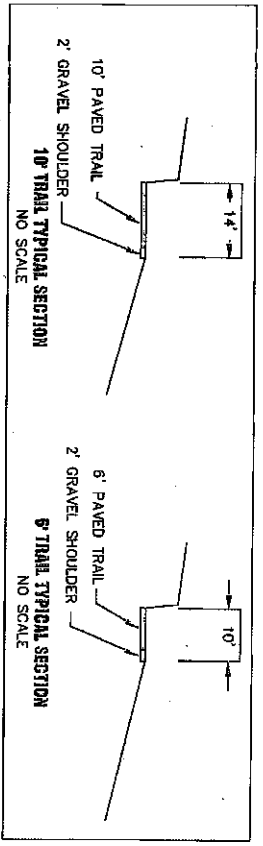
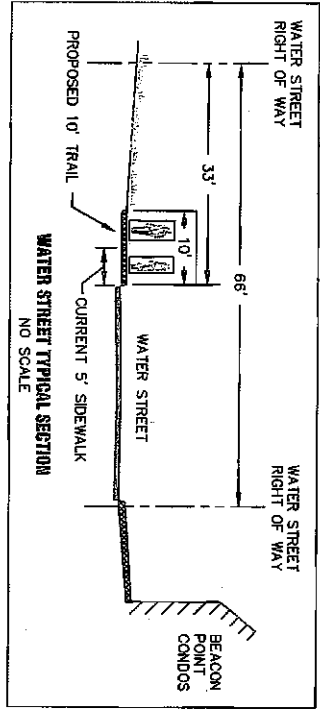


POSSIBLE ORDINARY HIGH WATER LINE ENCROACHMENTS

LAKE SUPERIOR

- LEGEND**
- EXISTING LAKEWALK TRAIL
 - WATER STREET - 10' PAVED TRAIL
 - LAKEWALKS - 200N TO 250N AVENUES - 6'10" PAVED TRAIL
 - LAKEWALKS - 250N TO 260N AVENUES - 6'10" PAVED TRAIL
 - EXISTING FOOTPATHS IN TREES
 - LAKEWALKS BOUNDARY
 - EXISTING SCENIC DESTINATION
 - PROPOSED SCENIC OVERLOOK
 - ★ TREE
 - UTILITY BOX

NOTE: 6' TRAIL OPTION VALID ONLY WITH 100% LOCAL FUNDING. 10' TRAIL OPTION REQUIRED FOR FEDERAL PARTICIPATION.



PROPOSED LAKEWALK CONNECTION
200N TO 250N AVENUE EAST

MAY 12, 2009
 4270 275-000
 1111 BURNS, NW 87002

Construction Feasibility Study for the Duluth Lakewalk

20th to 25th Avenues East

Prepared for the City of Duluth

SEH No. A-DULUT0701.00

April 6, 2007



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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

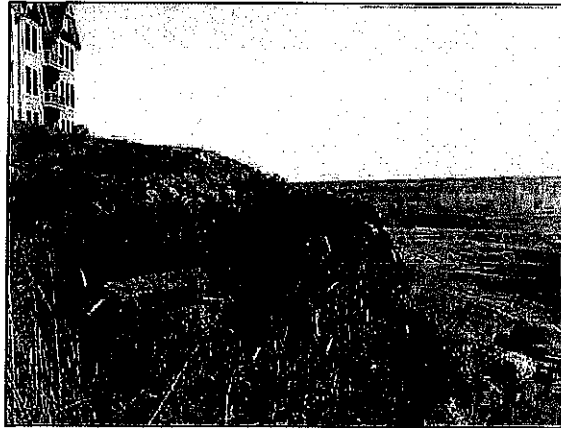


Figure 2 – west side of Beacon Point looking east



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



Figure 6 – west side of Ledges Townhomes looking west

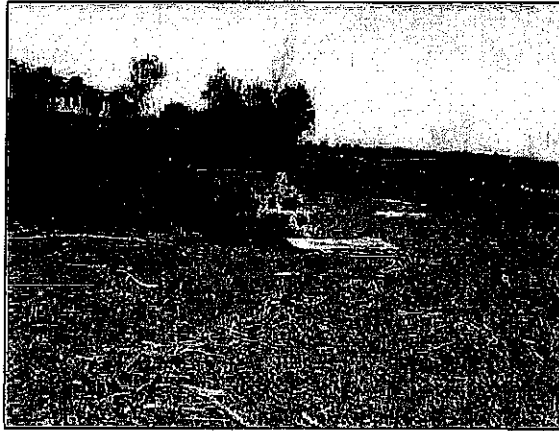


Figure 7 – west side of Ledges Townhomes looking east

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

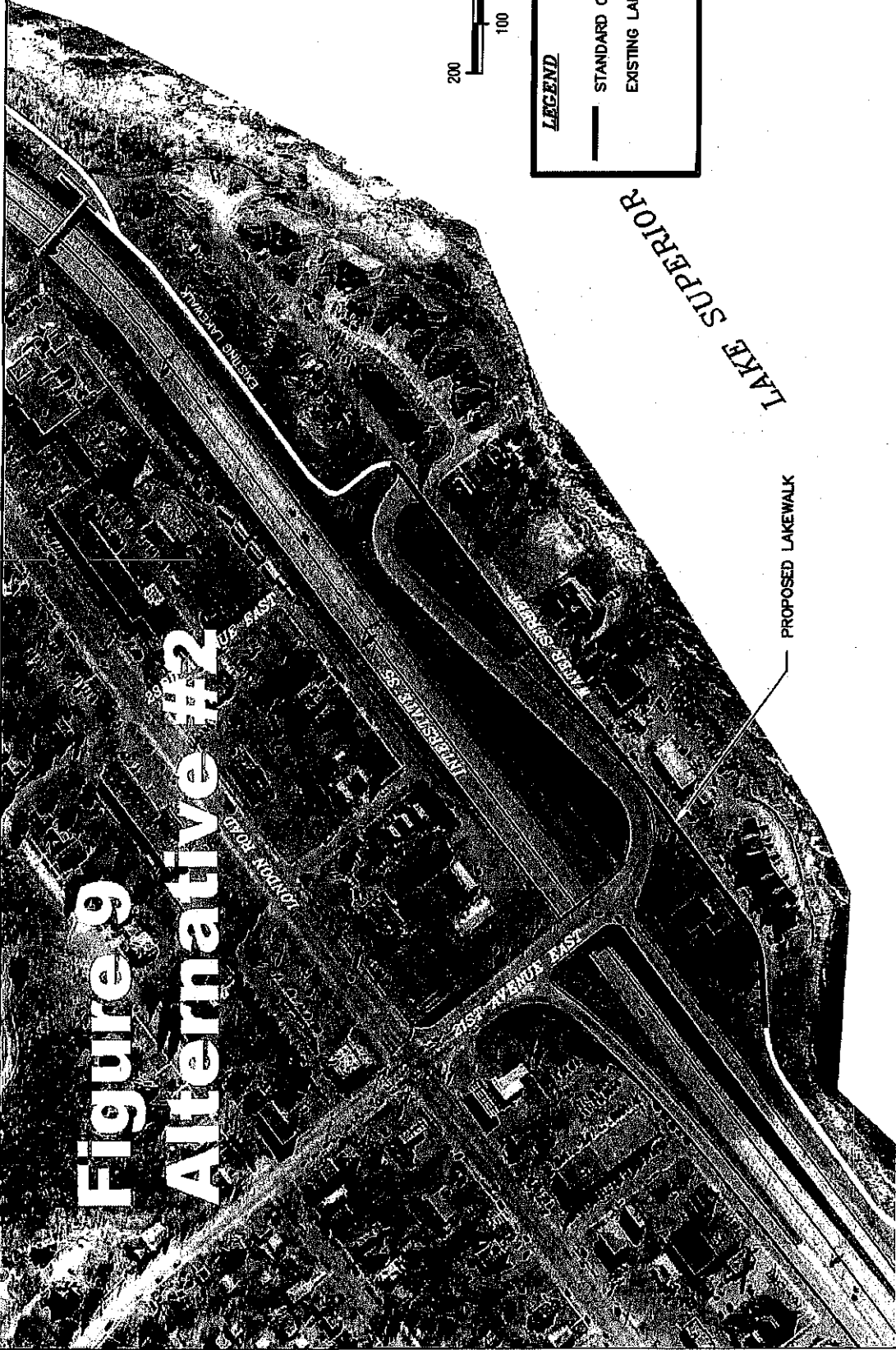
The second route alternative provides a dedicated trail along the northwest side of Water Street following the existing sidewalk from 20th to 23rd Avenues East. This route utilizes the existing street right-of-way but provides a standard trail and separation between trail users and vehicles for enhanced 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.

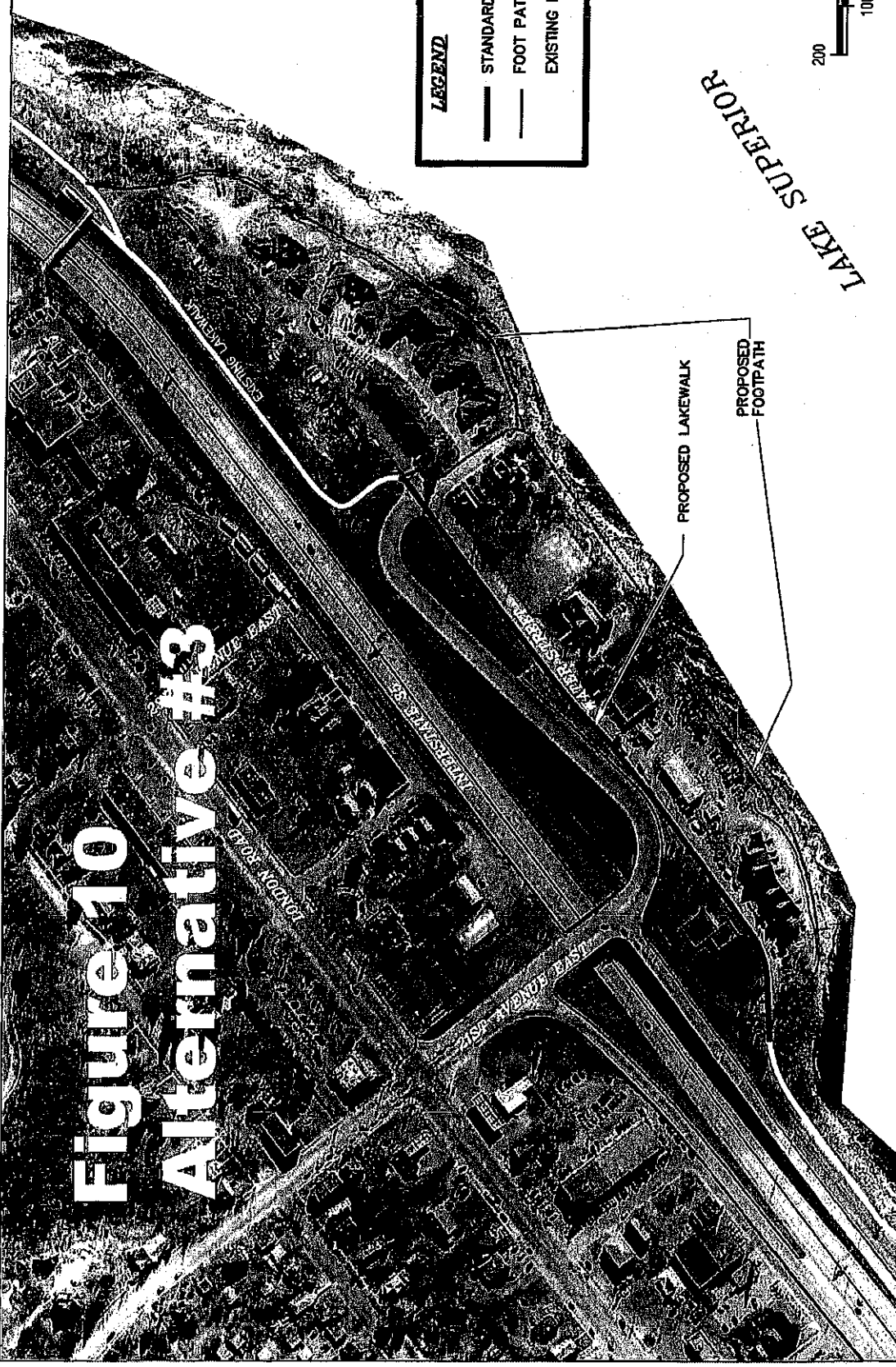
The criteria used to evaluate all route alternatives and construction methods includes construction and maintenance costs, impacts to the shoreline, difficulty of construction, user experience, and permit restrictions.

Figure 9 Alternative #2



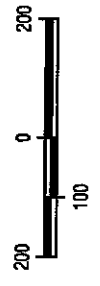
CONSTRUCTION FEASIBILITY STUDY FOR THE DULUTH LAKEWALK

Figure 10 Alternative #3

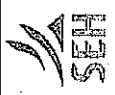


LEGEND

- STANDARD CONSTRUCTION
- - - FOOT PATH
- EXISTING LAKEWALK



LAKE SUPERIOR



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 lineal feet. From 23rd to 25th Avenues East, for approximately 1,500 lineal 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.

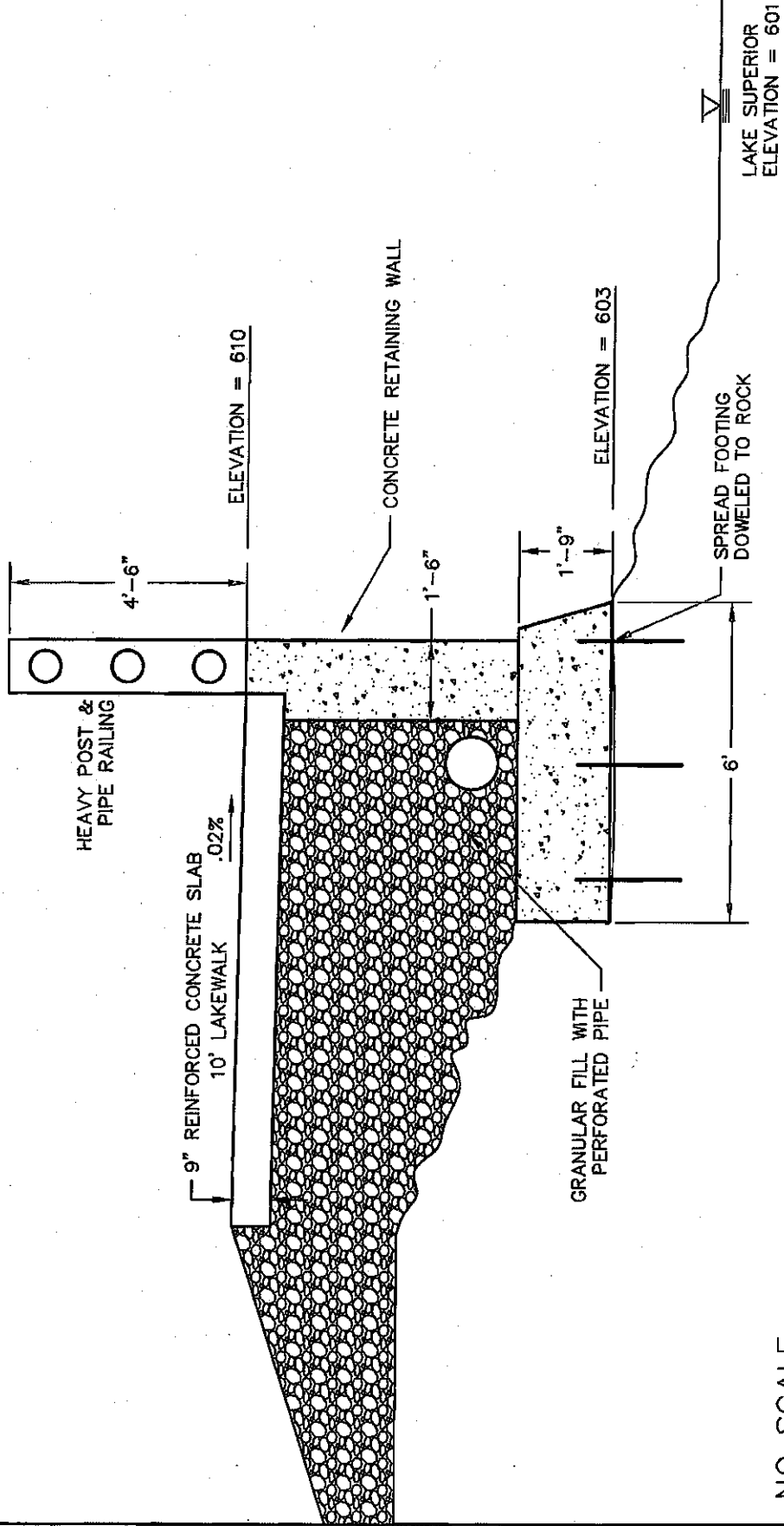
4.5 Alternative 3, Water Street/Lakeshore

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 20th to 23rd Avenues East. At 23rd Avenue East, the pedestrian trail would follow 23rd Avenue East and connect to the existing Lakewalk. As a variation, this foot trail could continue along the lakeshore to 25th 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

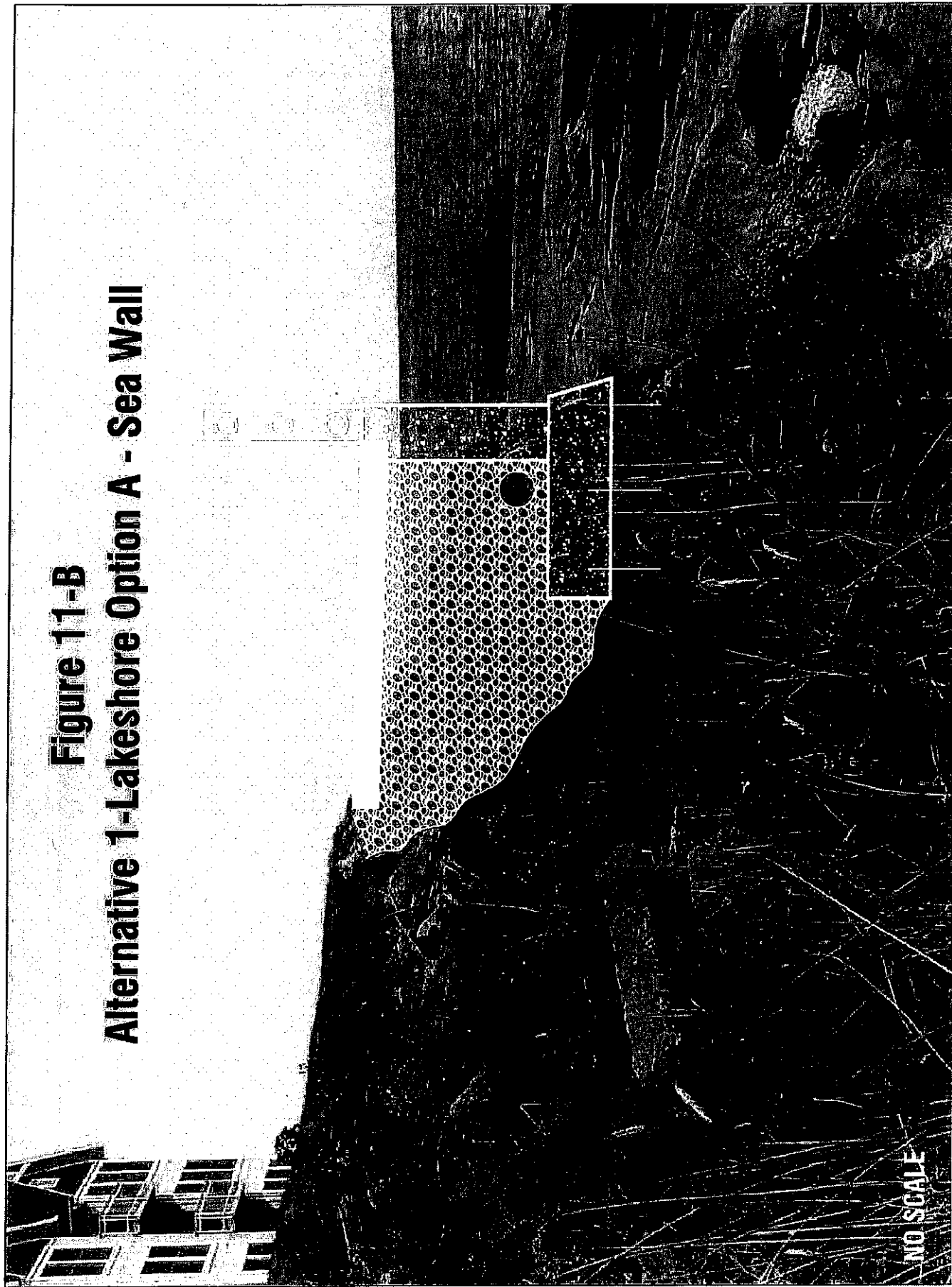


NO SCALE



CONSTRUCTION FEASIBILITY STUDY
FOR THE DULUTH LAKEWALK

Figure 11-B
Alternative 1-Lakeshore Option A - Sea Wall

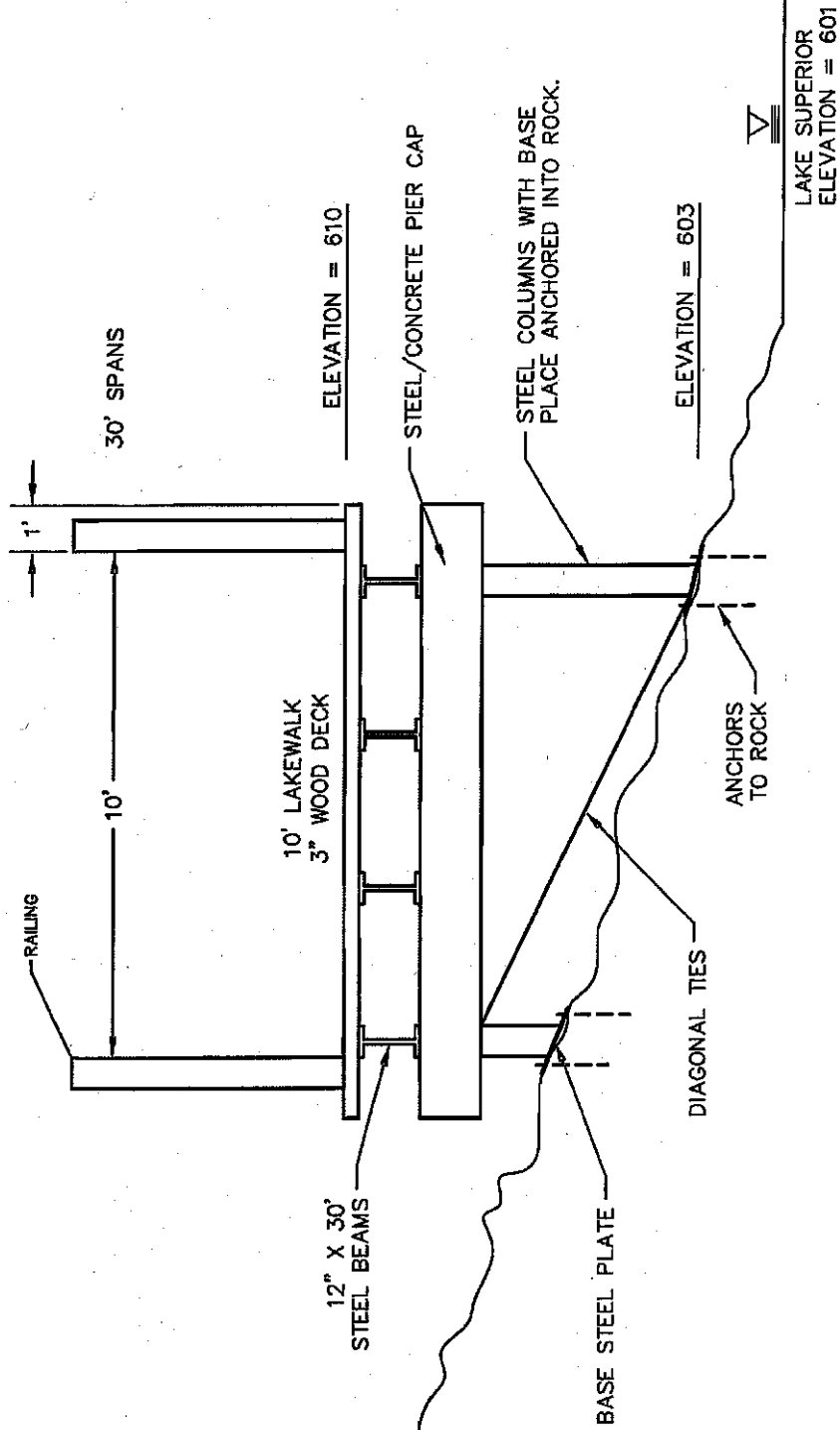


NO SCALE

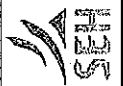
CONSTRUCTION FEASIBILITY STUDY
FOR THE DULUTH LAKEWALK



Figure 12-A
 Alternative 2-Lakeshore Option B - Wood/Steel Bridge on Pilings

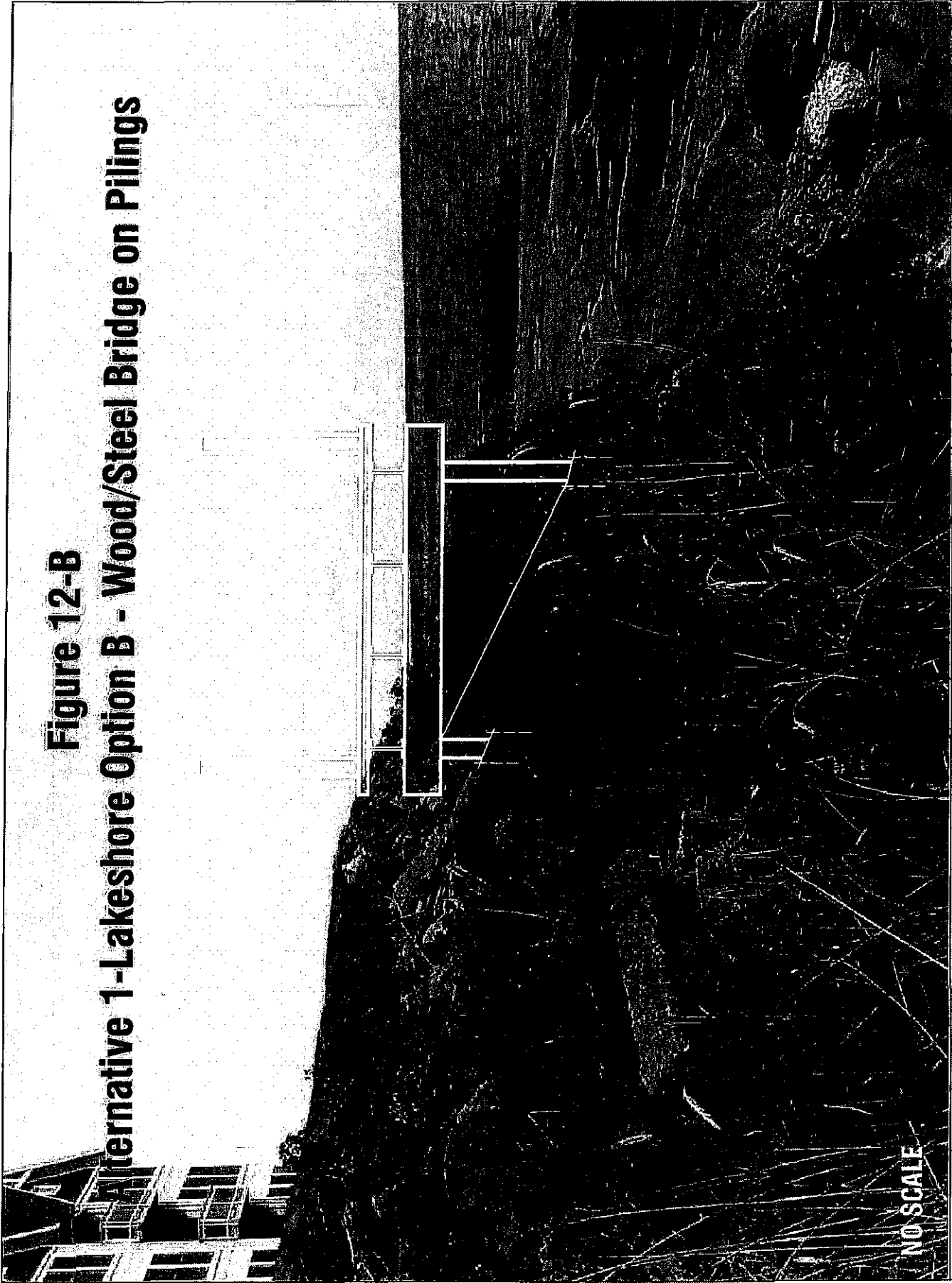


NO SCALE



CONSTRUCTION FEASIBILITY STUDY
 FOR THE DULUTH LAKEWALK

Figure 12-B
Alternative 1-Lakeshore Option B - Wood/Steel Bridge on Pilings

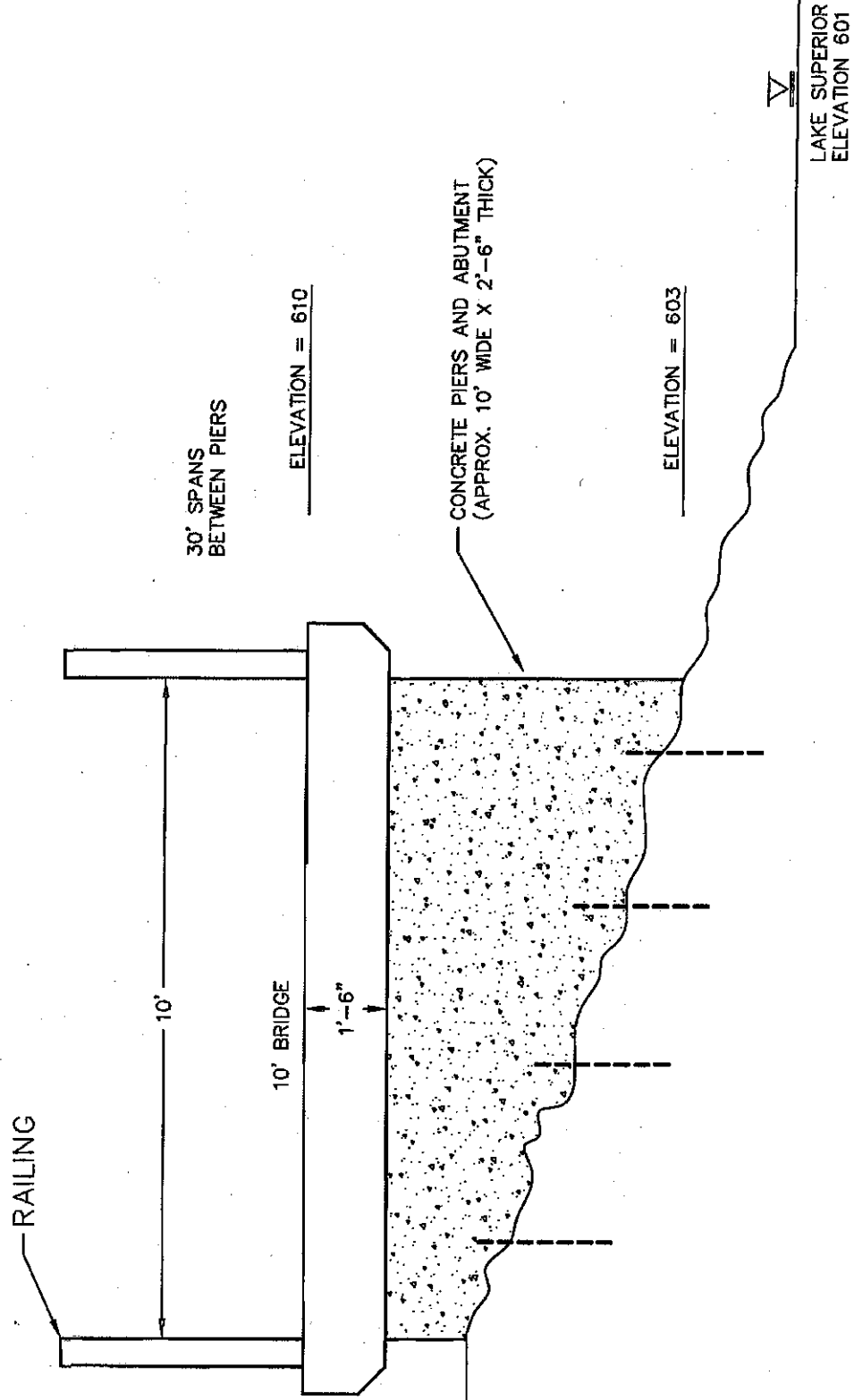


NO SCALE



CONSTRUCTION FEASIBILITY STUDY
FOR THE DULUTH LAKEWALK

Figure 13-A
Alternative 1-Lakeshore Option C - Cast in place Concrete Bridge

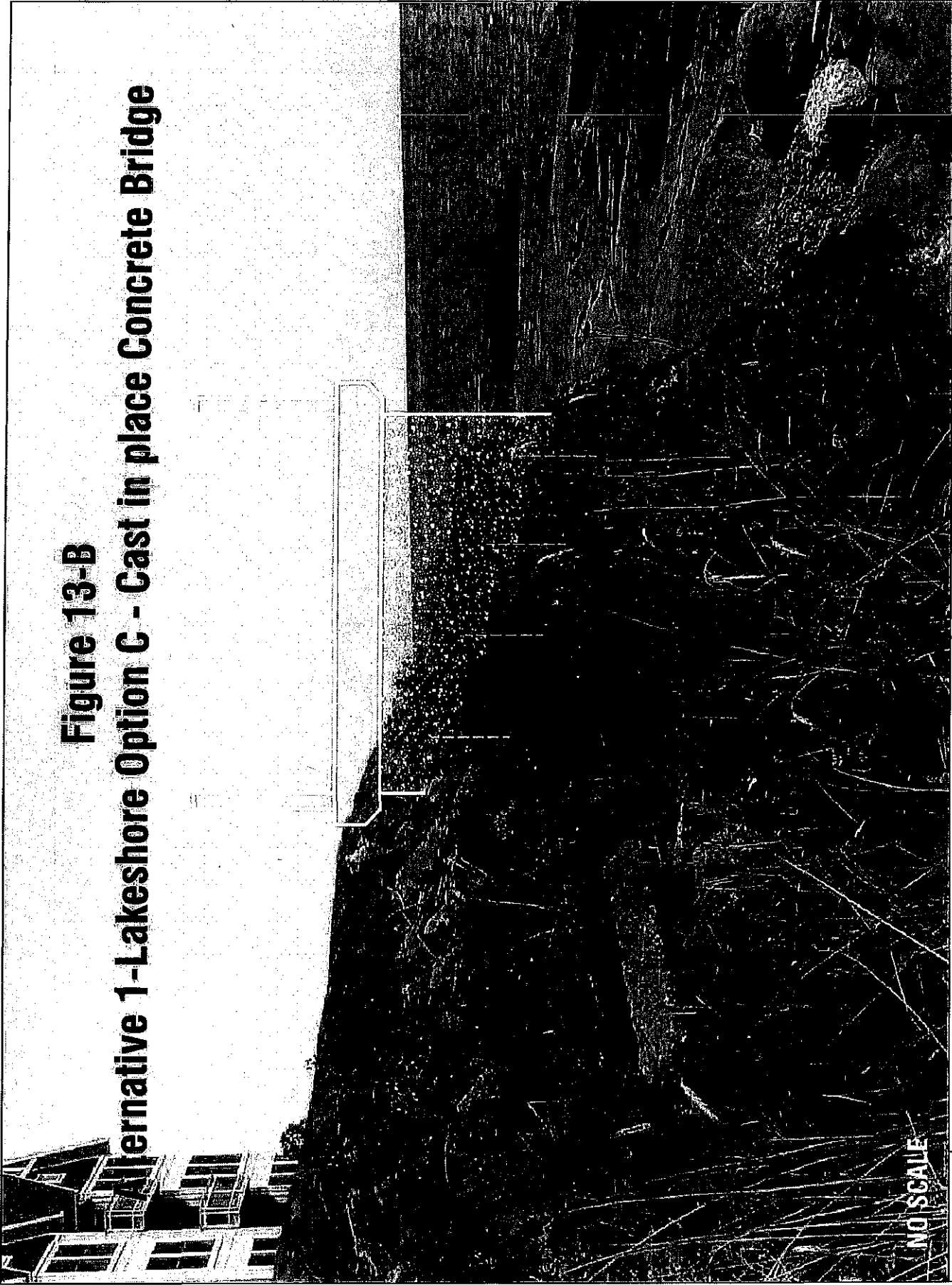


NO SCALE



**CONSTRUCTION FEASIBILITY STUDY
 FOR THE DULUTH LAKEWALK**

Figure 13-B
Alternative 1-Lakeshore Option C - Cast in place Concrete Bridge



NO SCALE

**CONSTRUCTION FEASIBILITY STUDY
FOR THE DULUTH LAKEWALK**



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 25th Avenues East Alternatives Analysis

Alternative	Constructed Type and Length (Lineal Feet)			Within 100-foot OHWM* Required Setback	Additional Easements Required	Difficulty of Construction	Long Term Maintenance Cost (High/Med/Low)	Estimated Construction Cost
	Special	Standard	Total					
1, Lakeshore Option A	1,300	1,500	2,800	Yes	Yes	High	Medium	\$1,879,200
1, Lakeshore Option B	1,300	1,500	2,800	Yes	Yes	High	High	\$1,645,560
1, Lakeshore Option C	1,300	1,500	2,800	Yes	Yes	High	Medium	\$2,143,200
2, Water Street	0	1,500	1,500	No	No	Low	Low	\$68,120
3, Water Street/Lakeshore	1,750	1,500	3,250	Yes	Yes	Low	Medium	\$140,520

* OHWM = 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**

Item Description	Unit	Unit Price	Quantity	Amount
RETAINING WALL	LIN FT	\$1,010.00	1300	\$1,313,000.00
STANDARD TRAIL	LIN FT	\$102.00	1500	\$153,000.00
RUBBLE REMOVAL	LUMP	\$100,000.00	1	\$100,000.00
<i>Sub Total Construction:</i>				\$1,566,000
MOBILIZATION		5%		\$78,300.00
CONTINGENCIES		15%		\$234,900.00
<i>Total Construction:</i>				\$1,879,200

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, LAKESHORE OPTION B
 WOOD/STEEL BRIDGE
 Preliminary Construction Cost Estimate**

Item Description	Unit	Unit Price	Quantity	Amount
WOOD/STEEL BRIDGE	LIN FT	\$891.00	1300	\$1,158,300.00
STANDARD TRAIL	LIN FT	\$102.00	1500	\$153,000.00
RUBBLE REMOVAL	LUMP	\$60,000.00	1	\$60,000.00
Sub Total Construction:				\$1,371,300
MOBILIZATION		5%		\$68,565.00
CONTINGENCIES		15%		\$205,695.00
Total Construction:				\$1,645,560

Short Elliott Hendrickson Inc.®

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

**CONSTRUCTION FEASIBILITY STUDY FOR THE DULUTH LAKEWALK
 ALTERNATIVE 1, LAKESHORE OPTION C
 CAST-IN-PLACE CONCRETE BRIDGE
 Preliminary Construction Cost Estimate**

Item Description	Unit	Unit Price	Quantity	Amount
CONCRETE BRIDGE	LIN FT	\$1,210.00	1300	\$1,573,000.00
STANDARD TRAIL	LIN FT	\$102.00	1500	\$153,000.00
RUBBLE REMOVAL	LUMP	\$60,000.00	1	\$60,000.00
Sub Total Construction:				\$1,786,000
MOBILIZATION		5%		\$89,300.00
CONTINGENCIES		15%		\$267,900.00
Total Construction:				\$2,143,200

Short Elliott Hendrickson Inc. ®

*** ASSUMPTIONS**

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

**CONSTRUCTION FEASIBILITY STUDY FOR THE DULUTH LAKEWALK
ALTERNATIVE 2, WATER STREET
STANDARD CONSTRUCTION
Preliminary Construction Cost Estimate**

Item Description	Unit	Unit Price	Quantity	Amount
COMMON EXCAVATION	CU YD	\$8.00	778	\$6,222.00
SCARIFICATION	CU YD	\$8.00	583	\$4,667.00
AGGREGATE BASE CLASS 5 (CV)	CU YD	\$20.00	389	\$7,777.78
GEOTEXTILE FABRIC	SQ YD	\$1.00	2333	\$2,333.33
BITUMINOUS	TON	\$60.00	350	\$21,000.00
RETAINING WALL	LUMP	\$10,000.00	1	\$10,000.00
Sub Total Construction:				\$52,000.00
TRAFFIC CONTROL		1%		\$520.00
MOBILIZATION		5%		\$2,600.00
MISCELLANEOUS CONSTRUCTION		10%		\$5,200.00
CONTINGENCIES		15%		\$7,800.00
Total Construction:				\$68,120.00

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**

Item Description	Unit	Unit Price	Quantity	Amount
WATER STREET				
COMMON EXCAVATION	CU YD	\$8.00	778	\$6,222.00
SCARIFICATION	CU YD	\$8.00	583	\$4,667.00
AGGREGATE BASE CLASS 5 (CV)	CU YD	\$20.00	389	\$7,777.78
GEOTEXTILE FABRIC	SQ YD	\$1.00	2333	\$2,333.33
BITUMINOUS	TON	\$60.00	350	\$21,000.00
RETAINING WALL	LUMP	\$10,000.00	1	\$10,000.00
FOOT PATH				
RUBBLE REMOVAL	LUMP	\$20,000.00	1	\$20,000.00
TRAIL	LUMP	\$30,000.00	1	\$30,000.00
RETAINING WALL	LUMP	\$10,000.00	1	\$10,000.00
Sub Total Construction:				\$112,000
TRAFFIC CONTROL		1%		\$1,120.00
MOBILIZATION		5%		\$5,600.00
MISCELLANEOUS CONSTRUCTION		10%		\$11,200.00
CONTINGENCIES		15%		\$16,800.00
Total Construction:				\$146,720

Short Elliott Hendrickson Inc.®

*** ASSUMPTIONS**

NO ROCK EXCAVATION
1500 FOOT TRAIL LENGTH ON WATER STREET

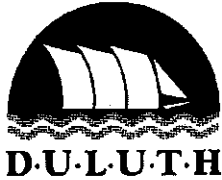
**CONSTRUCTION FEASIBILITY STUDY FOR THE DULUTH LAKEWALK
23RD TO 25TH AVENUES EAST
STANDARD CONSTRUCTION
Preliminary Construction Cost Estimate**

Item Description	Unit	Unit Price	Quantity	Amount
COMMON EXCAVATION	CU YD	\$8.00	778	\$6,222.00
SCARIFICATION	CU YD	\$8.00	583	\$4,667.00
AGGREGATE BASE CLASS 5 (CV)	CU YD	\$20.00	389	\$7,777.78
GEOTEXTILE FABRIC	SQ YD	\$1.00	2333	\$2,333.33
BITUMINOUS	TON	\$60.00	350	\$21,000.00
DRAINAGE	LUMP	\$25,000.00	1	\$25,000.00
RIPRAP	LUMP	\$50,000.00	1	\$50,000.00
Sub Total Construction:				\$117,000
TRAFFIC CONTROL		1%		\$1,170.00
MOBILIZATION		5%		\$5,850.00
MISCELLANEOUS CONSTRUCTION		10%		\$11,700.00
CONTINGENCIES		15%		\$17,550.00
Total Construction:				\$153,270

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*** ASSUMPTIONS**

NO ROCK EXCAVATION
1500 FOOT TRAIL LENGTH



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 accomodate 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 established 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 as desirable destinations and to protect the ground from

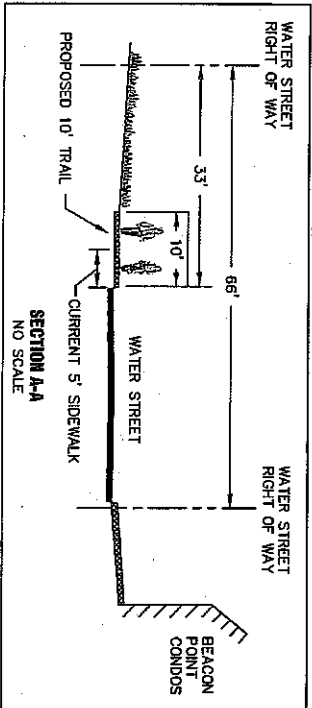
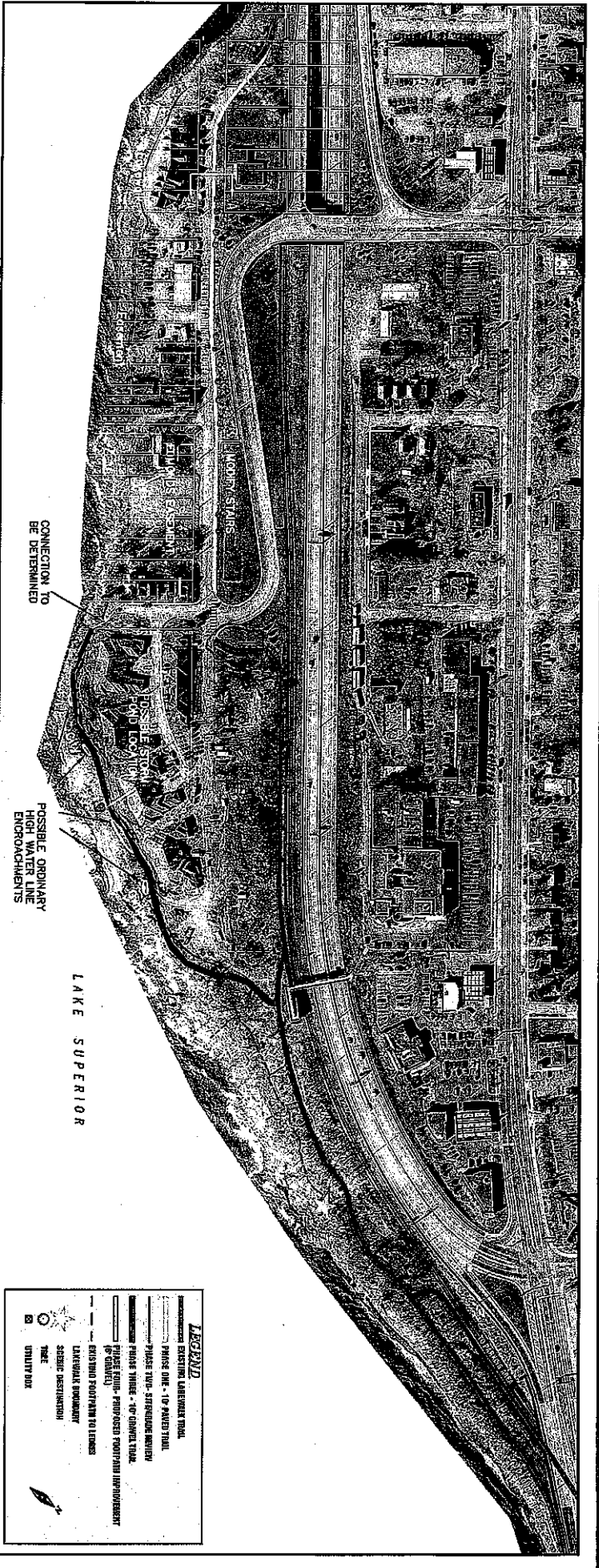
erosion and compaction of informal use.

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.
6. Proceed with contract documents, bid, award, construct.



LEGEND

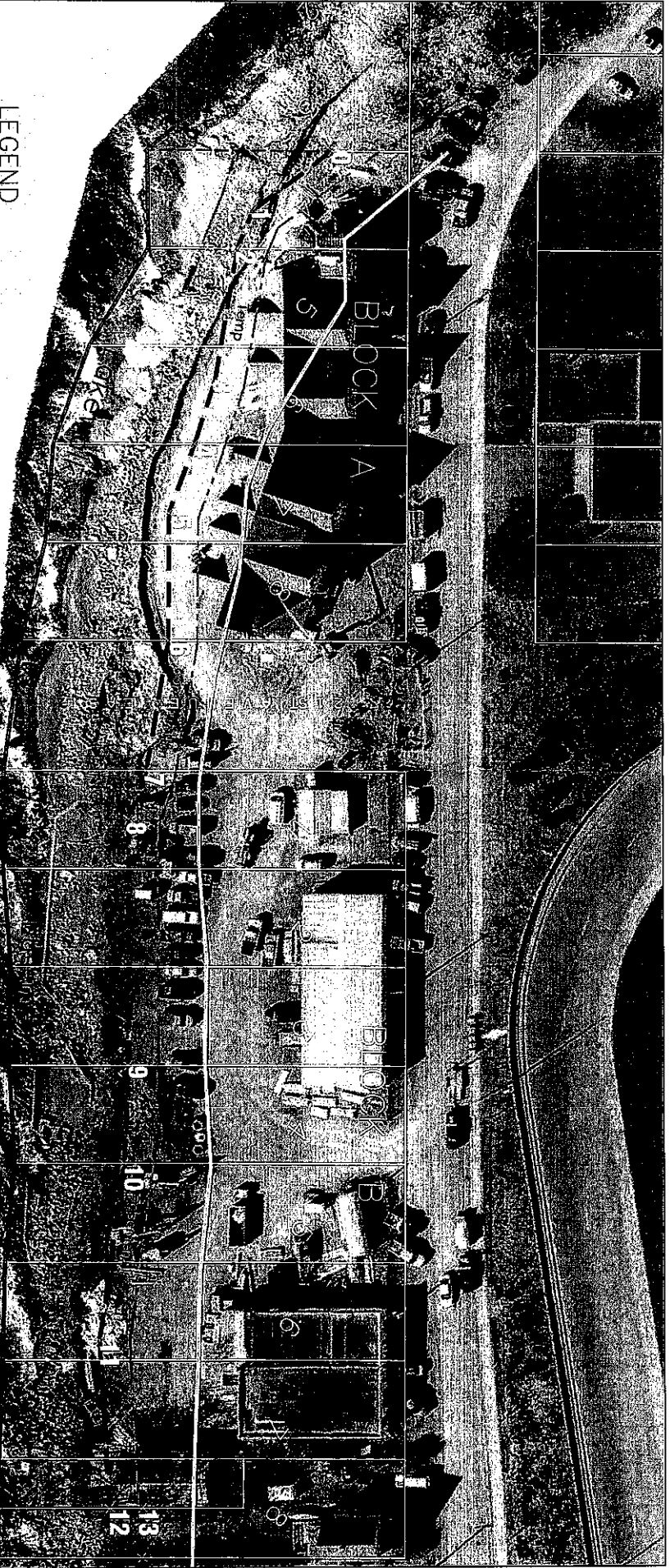
- EXISTING LAKEWALK TRAIL
- PHASE ONE - 10' PAVED TRAIL
- PHASE TWO - SIDEWALK IMPROVEMENT
- PROPOSED TRAIL - 10' CONCRETE TRAIL
- BEACON POINT - PROPOSED PROGRAM IMPROVEMENT (BY QUALITY)
- EXISTING ENCROACHMENT TO LAKES
- LATERAL ENCROACHMENT
- SCENIC DESTINATION
- TRAIL
- UTILITY DOW

PROPOSED LAKEWALK CONNECTION
20th to 28th AVENUE EAST

FEBRUARY 13, 2008

1210 27th AVENUE SE
SEEN ENGINEERING, INC. 50002

Two Sided →



LEGEND

- SURVEY POINT
- - - CONSTRUCTION EASEMENT
- ▬ LAKEWALK EASEMENT/CITY OWNED
- ▬ LAKESHORE
- 100' SET BACK FROM LAKE SHORE (as defined in Bedcon Point and Ledges Townhomes construction plans)

NO.	DATE	REVISIONS
1		
2		
3		

DESIGN TEAM	1				
OWNER	2				
DESIGNER	3				
DATE					

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SEH CONSULTANTS, INC. 100 N. 10th St., Suite 200, Minneapolis, MN 55401
 Phone: 612.339.8800
 Fax: 612.339.8801
 Email: info@seh.com

PROJECT NO. 07-001

SEH CONSULTANTS, INC.

CITY OF BURLINGAME
PROPOSED LAKEWALK EXPANSION

EASEMENT LOCATION

THE DATE OF THIS PLAN IS 8/15/07

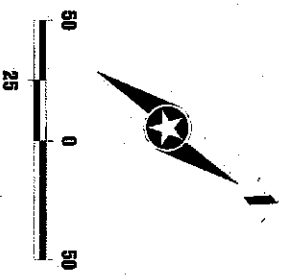
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LEGEND

- SURVEY POINT
- CONSTRUCTION EASEMENT
- LAKEWALK EASEMENT/CITY OWNED
- LAKESHORE
- 100' SET BACK FROM LAKE SHORE (as defined in Beacon Point and Ledges Townhomes construction plans)



REVISED BY:	DATE:	BY:	NAME:	REVISIONS:
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LIBERTY 1.000

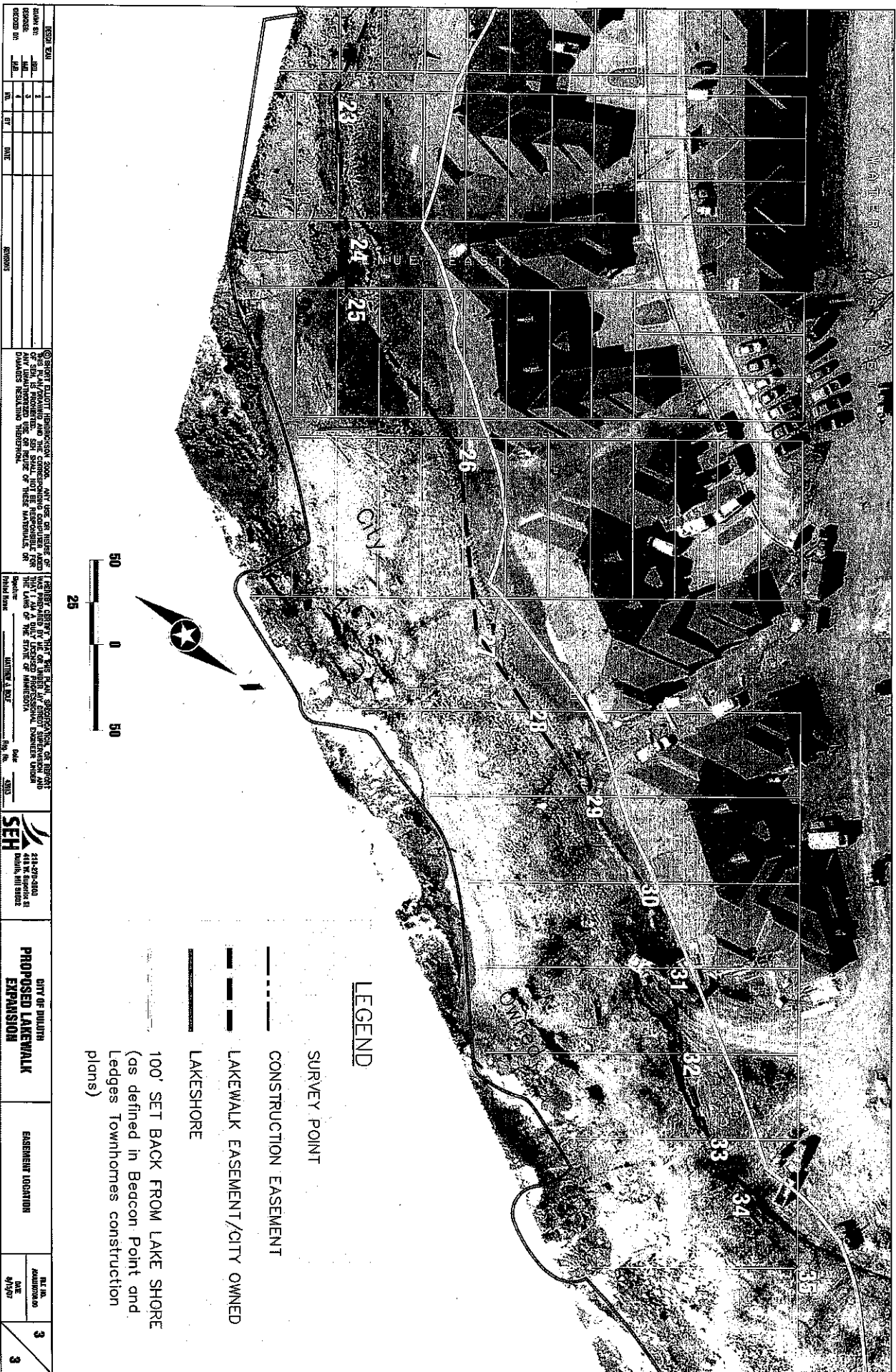
218-278-3300
218 W. Main Street
Darien, MA 01930

SEH

CITY OF BURLINGHAM
PROPOSED LAKEWALK
EXPANSION

EASEMENT LOCATION

REV. NO. 2
ADDITIONAL DATE 4/9/07



DESIGN DATE	NO.	DATE
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THESE PLANS WERE PREPARED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND I AM A LICENSED PROFESSIONAL ENGINEER OR ARCHITECT IN THE STATE OF MINNESOTA.

DATE: 11/11/2011
 SHEET NO. 3 OF 3
 PROJECT NO. 11011

SEH
 414-270-2800
 414 N. Grand Ave.
 Duluth, MN 55812

**CITY OF BULLITT
 PROPOSED LAKEWALK
 EXPANSION**

EASEMENT LOCATION

DATE: 11/11/2011
 SHEET NO. 3 OF 3

- LEGEND**
- SURVEY POINT
 - CONSTRUCTION EASEMENT
 - LAKEWALK EASEMENT/CITY OWNED
 - LAKESHORE
 - 100' SET BACK FROM LAKE SHORE
 (as defined in Beacon Point and
 Ledges Townhomes construction
 plans)

①

Transportation Alternatives Program Application

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:	<input checked="" type="checkbox"/> Summer 2017	<input type="checkbox"/> Summer 2018
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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)

1-15-14
(Date)



(Sponsoring Agency Engineer Signature)

1-15-14
(Date)



(Local Unit of Government Signature)

1-15-14
(Date)



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

1-16-14
Date

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

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.

<u>Eligible Work/Construction Items</u>	<u>Estimated Quantity</u>	<u>Unit Cost</u>	<u>Total Cost</u>
<u>See Attached Spreadsheet</u>			<u>231,809</u>
		Line A: Total	\$231,809

Non eligible Items (list) *

<u>Engineering and Const. Engineering</u>			<u>46,362</u>
<u>Contingency</u>			<u>34,771</u>
		Line B: Total	\$81,133

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

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

Section 5: ATP Project Evaluation

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

<p>1. Describe the proposed activities in detail. Include the approximate number of customers that will be served by the project:</p>
<p>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.</p>
<p>2. Describe the project location/termini- be specific and include a location map(s) and photo(s):</p>
<p>The project is located along Water Street between 21st and 23rd Ave. East. See Attached location map.</p>
<p>3. Describe how your project creates and/or enhances pedestrian/bicycle connections, community assets, and/or eliminates barriers to projects serving a transportation purpose:</p>
<p>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.</p>
<p>4. How does your project enhance safety at the immediate project location and to the overall transportation system?</p>
<p>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.</p>
<p>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:</p>
<p>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.</p>
<p>6. Describe how your project enhances availability and awareness, for protection of historic, cultural, aesthetic or natural resources:</p>
<p>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.</p>
<p>7. Describe how your project enhances the transportation system and benefits overall quality of life, health, community, and environment locally, regionally, and statewide:</p>
<p>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.</p>
<p>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:</p>
<p>The current project area is platted public right-of-way. The proposed shared use path will connect to an</p>

4

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.

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.

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.

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.

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Section 6: Application Checklist

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

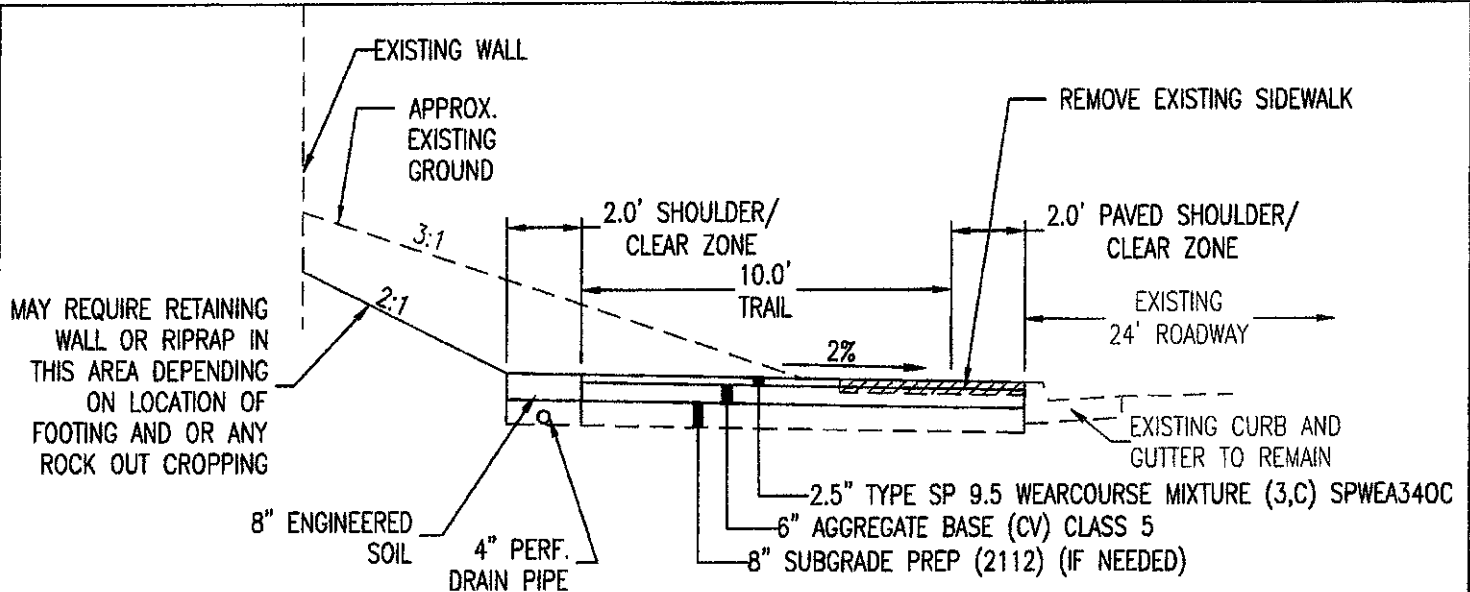
<input checked="" type="checkbox"/>	Applicant completed the Letter of Intent
<input checked="" type="checkbox"/>	ARDC/other reviewing parties reviewed the LOI and recommended that the project move forward to the full application.
<input type="checkbox"/>	Application Form Information
<input checked=""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

You will promptly receive an email confirming your application was received.

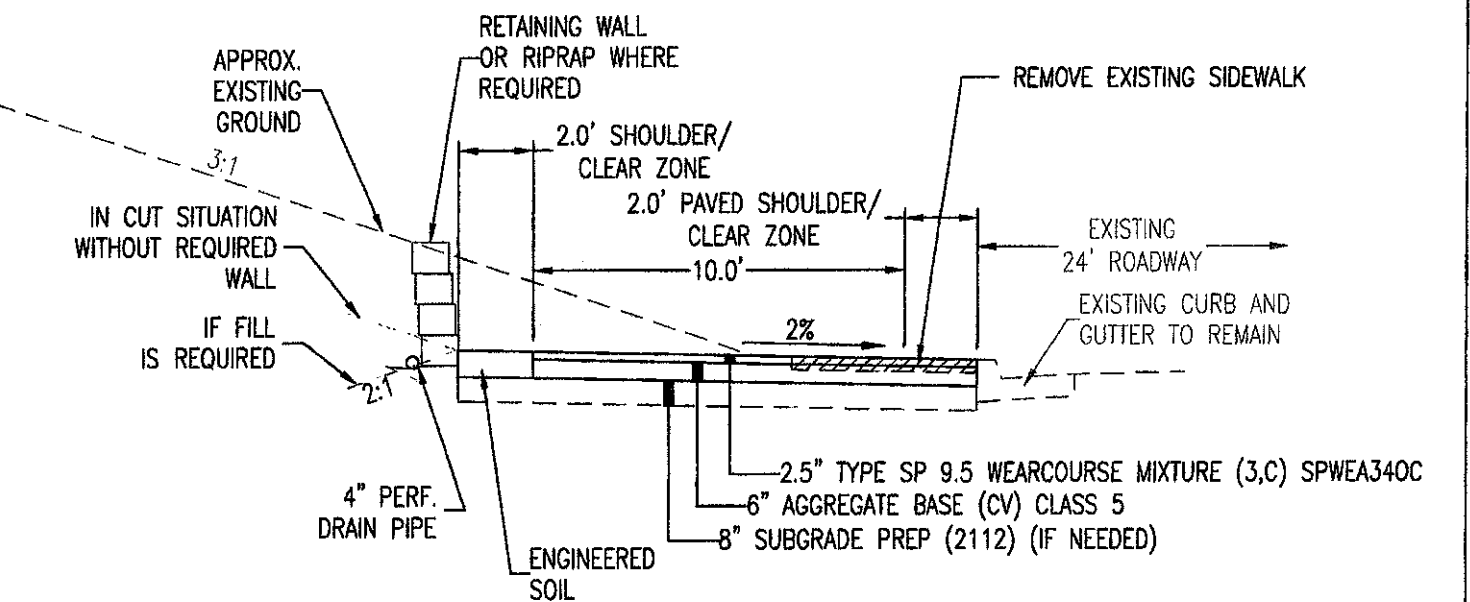
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December 23, 2013

Shared Use Path-Water Street from 20th to 23rd Ave. East					
Item No.	Qty.	Unit	Item	Unit Price	Total Price
1	1	LS	Mobilization	\$20,000.00	\$20,000.00
2	1	LS	Clearing & Grubbing	\$500.00	\$500.00
3	1	LS	Relocate Transformer	\$10,000.00	\$10,000.00
4	30	LinFt	Remove Curb & Gutter	\$8.71	\$261.30
5	5850	SqFt	Remove Concrete Sidewalk	\$1.00	\$5,850.00
6	40	LinFt	Sawing Bituminous Pavement (Full Depth)	\$2.07	\$82.80
7	20	LinFt	Sawing Concrete Pavement (Full Depth)	\$5.00	\$100.00
8	512	CuYd	Common Excavation	\$16.00	\$8,192.00
9	15	CuYd	Rock Excavation	\$45.00	\$675.00
10	120	CuYd	Salvage Topsoil	\$2.83	\$339.60
11	50	Hour	Street Sweeper (With Pick Up Broom)	\$115.00	\$5,750.00
12	9.75	RdSta	Subgrade Preparation - 6" to 12"	\$400.00	\$3,900.00
13	180	CuYd	Aggregate Base (CV), Class 5	\$45.00	\$8,100.00
14	149	Ton	Type SP 9.5 Wearing Course Mixture (3,C)	\$85.00	\$12,665.00
15	96	CuYd	Engineered Soil	\$30.00	\$2,880.00
16	2000	SqYd	Geotextile Fabric, Type VI	\$1.25	\$2,500.00
17	200	SqFt	7" Concrete Walk	\$12.80	\$2,560.00
18	30	LinFt	Concrete Curb & Gutter, Design B624	\$25.74	\$772.20
19	16	SqFt	Truncated Domes	\$36.00	\$576.00
20	1	LS	Traffic Control	\$2,500.00	\$2,500.00
21	25	SqFt	Sign Panels Type C	\$68.00	\$1,700.00
22	4	Each	Install Sign Type C	\$131.25	\$525.00
23	500	LinFt	Silt Fence Type Heavy Duty	\$3.20	\$1,600.00
24	6	Each	Storm Drain Inlet Protection	\$300.00	\$1,800.00
25	0.1	Acre	Seeding	\$1,300.00	\$130.00
26	7	Pound	Seed Mixture 250	\$5.00	\$35.00
27	0.2	Ton	Mulch Material Type 1	\$500.00	\$100.00
28	400	SqYd	Erosion Control Blankets Category 1	\$1.50	\$600.00
29	30	Pound	Fertilizer Type 2	\$0.50	\$15.00
30	6	Each	Coniferous Tree 6' HT B&B	\$350.00	\$2,100.00
31	1	LS	Concrete Steps	\$3,000.00	\$3,000.00
32	3300	SqFt	Retaining Wall	\$40.00	\$132,000.00
					\$231,808.90
Engineering				20%	\$46,361.78
Contingency and inflation				15%	\$34,771.34
Total					\$312,942.02



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

9

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,

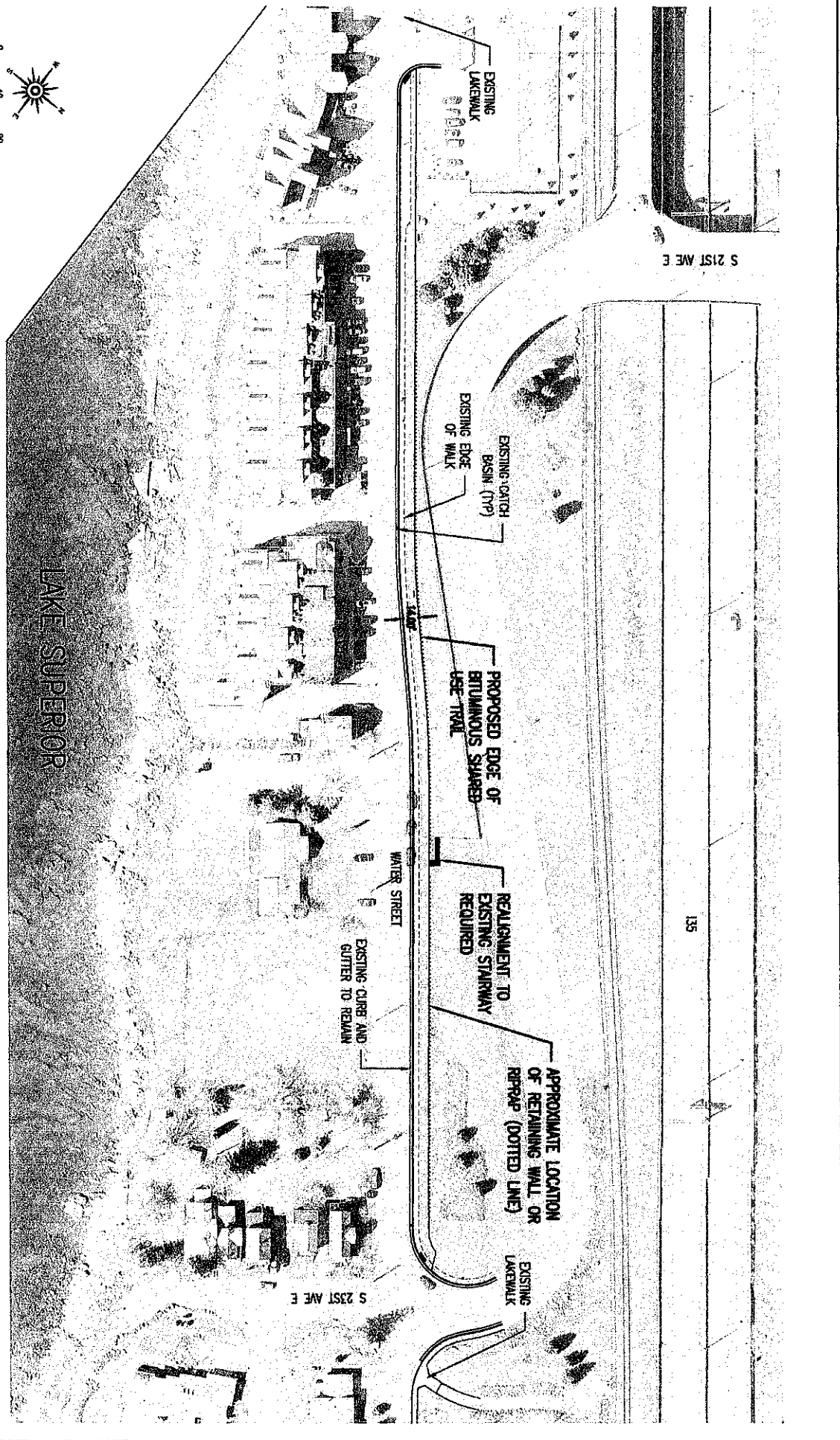
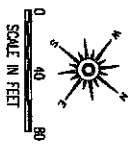
Andrea C.J. Agar

President, Friends of the Lakewalk

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*Andrea C.J. Agar
Co-Owner
Duluth Running Co.
1026 East Superior St.
Duluth, MN 55802
P - 218-728-1148
F - 218-728-1153
andrea@duluthrunning.com
www.duluthrunning.com*

CERTIFIED BY: X	RES. NO.: X	REVISION	LAKEMAX ENHANCEMENT APPLICATION, WATER ST (21ST TO 23RD AVE E)	DRAWN BY: SCA
SIGNATURE:	DATE: DECEMBER 11, 2013		CITY PROJECT NO.: 0925TR	LAYOUT
			CITY OF DULUTH	
			STATE AD PROJECT NO.: 000-000-000	SHEET NO. 1 OF 1



S 21ST AVE E

S 23ST AVE E

135

**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 on the Lake Side of the existing development	\$ 278,500
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	<u>(317,400)</u>
Total for Beacon Point Recreational Trail	<u>\$ 1,183,300</u>

LEDGES SHARED USE TRAIL (10' PAVED)

Construct 10 foot wide paved trail from 23rd Ave. East to the existing paved trail on the Lake Side of the existing development	\$ 444,250
Engineering Design	75,000
Professional Services for Easement Acquisition	<u>100,000</u>
Total for Ledges Shared Use Path	<u>\$ 619,250</u>

SUBTOTAL FOR LEDGES AND BEACON POINT	<u>\$ 1,802,550</u>
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WATER STREET SHARED USE TRAIL (10' PAVED)

Construct 10 foot wide paved trail from 21st to 23rd Ave. East behind existing curb on the upper side of Water Street	\$ 266,581
Engineering Design	<u>46,361</u>
Total for Water Street Shared Use Path	<u>\$ 312,942</u>

GRAND TOTAL FOR ALL 3 PROJECTS	<u>\$ 2,115,492</u>
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ADDITIONAL OPTIONS

Acquire Edmunds Property on Water Street for a parking lot	\$368,600
Parking lot construction 26 stalls	\$325,000
Retain Hayden Property for future city use	\$317,400
Rest Room Facility at overflow basin at the end of Water Street	\$500,000

Total for Additional Options \$1,511,000

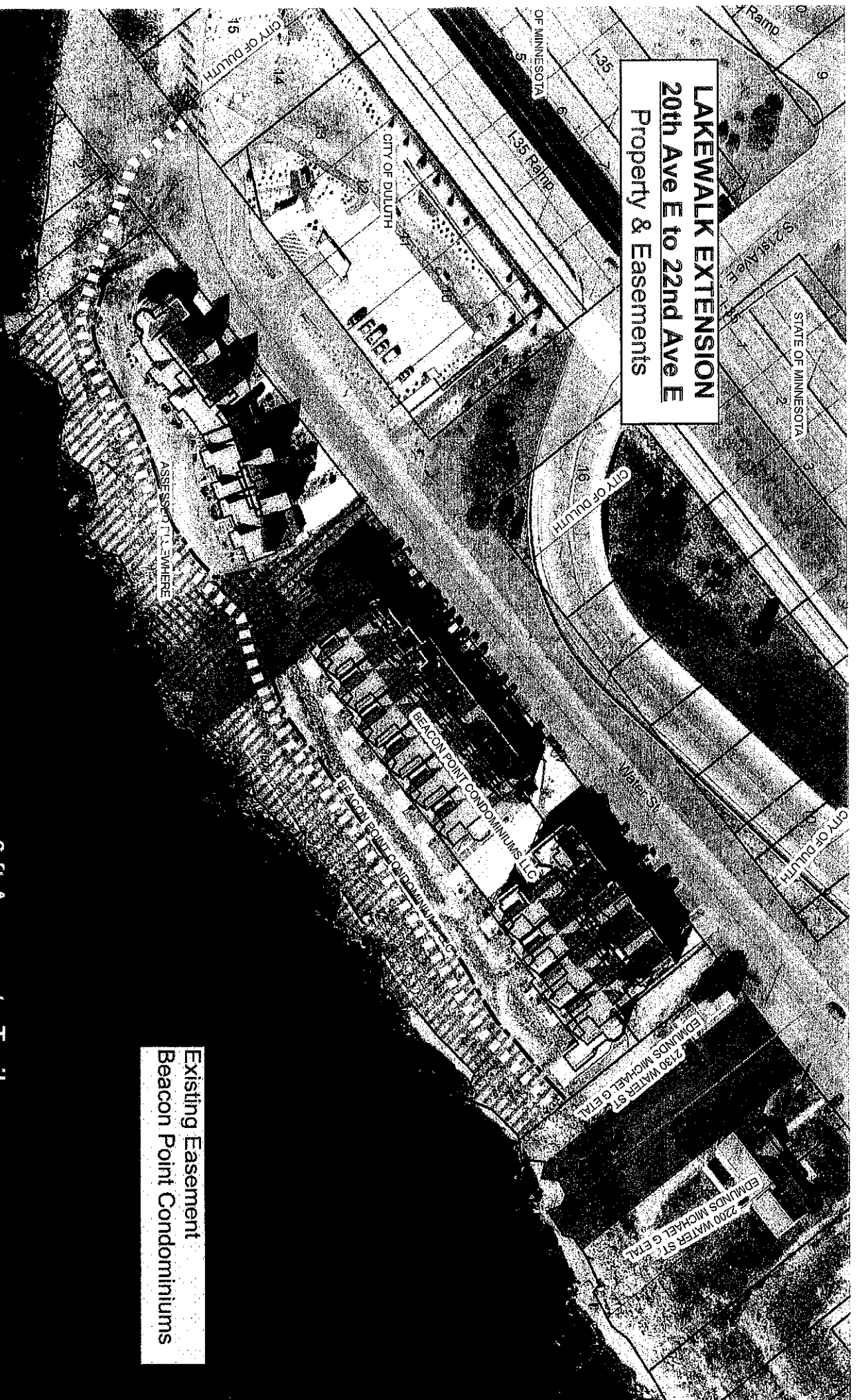
LAKEWALK EXTENSION
20th Ave E to 25th Ave E
Overview Map



—————
6 ft Aggregate Walking Path

- - - - -
Existing Lakewalk

**LAKEWALK EXTENSION
20th Ave E to 22nd Ave E
Property & Easements**



**Existing Easement
Beacon Point Condominiums**

----- 6 ft Aggregate Trail

MINNESOTA 3

LAKEWALK EXTENSION 2nd Ave E to 23rd Ave E Property & Easements

CITY OF DULUTH

CITY OF DULUTH

CITY OF DULUTH

CITY OF DULUTH

LAKEWALK TOWNHOMES LLC

SHORE DR

2802 SHORE DR
RKG1, GP1, PH1, PH2, LLC

2802 SHORE DR
RKG1, GP1, PH1, PH2, LLC

2802 SHORE DR
RKG1, GP1, PH1, PH2, LLC

7TH S 23RD AVE E
HAYDEN PAUL L & CYNTHIA M

7TH S 23RD AVE E
HAYDEN PAUL L & CYNTHIA M

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HAYDEN PAUL L & CYNTHIA M

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6 ft Aggregate Trail

Edmunds Trail Easement
\$68,200

Hayden Property
Acquisition
\$529,500

**LAKEWALK EXTENSION
23rd Ave E to 24th Ave E**

Ledges /
Lakewalk
Townhomes

Existing 6 ft
Aggregate Path

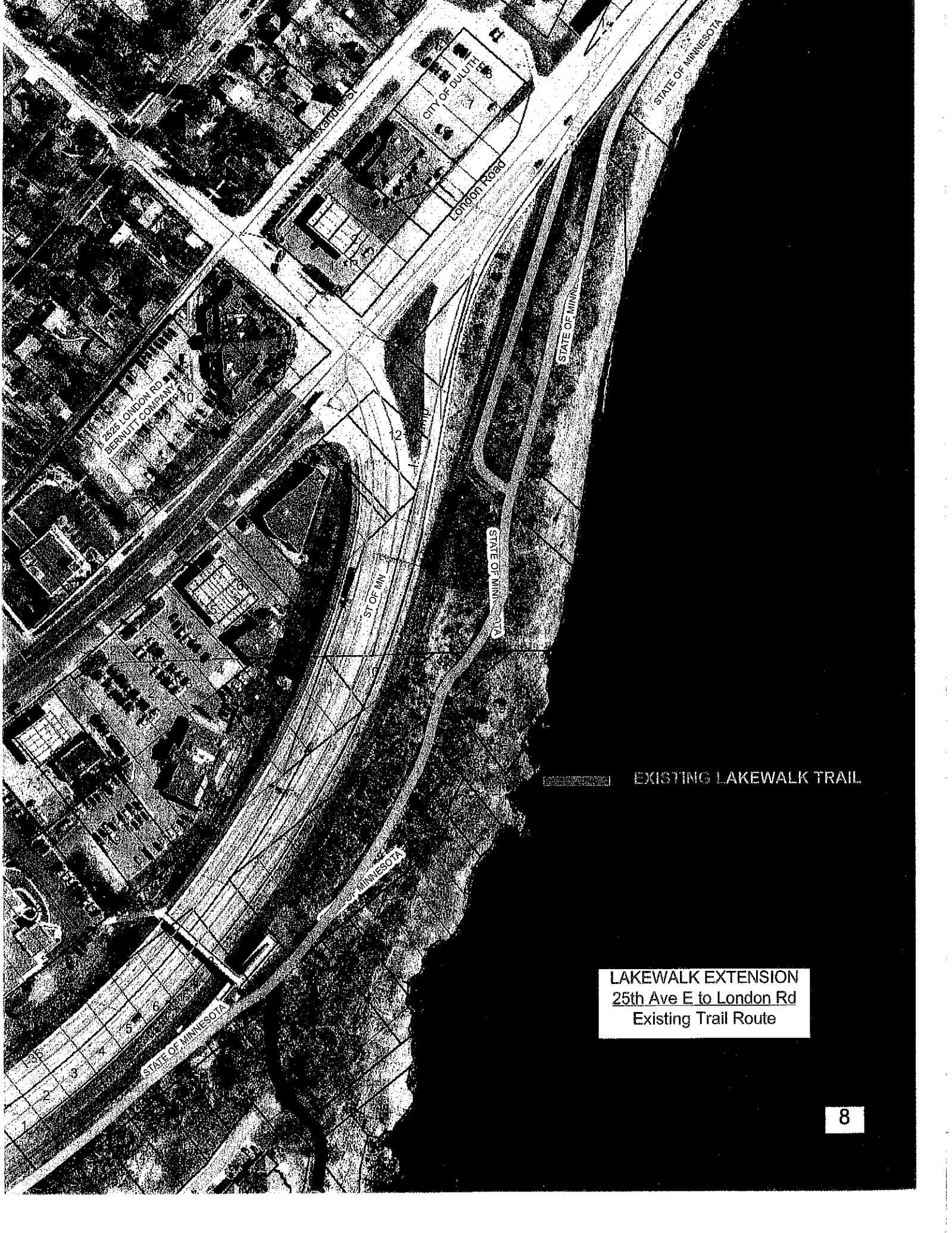
Stone Wall & Landscaping
Relocation Required

**LAKEWALK EXTENSION
24th Ave E to 25th Ave E**

Edges /
Lakewalk
Townhomes

Existing 6 ft
Aggregate Path

Stone Wall & Landscaping
Relocation Required



EXISTING LAKEWALK TRAIL

LAKEWALK EXTENSION
25th Ave E to London Rd
Existing Trail Route