

# BURLINGTON BICYCLE PATH

a preliminary report for the Community and Economic Development Office

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## BOYLE / BOEHM ASSOCIATION

landscape architecture    site engineering    301 college st., burlington, vermont 05401    863-1964

May 25, 1984

Peter Clavelle, Director  
Community and Economic Development Office  
City Hall  
Burlington, Vermont 05401

Dear Peter:

We are pleased to submit the Preliminary Bicycle Path Report for the proposed bicycle corridor from the mouth of the Winooski River to the southern border of the City.

We have collected data and evaluated alternate routes in a manner that provides both initial information for City officials and the public, as well as a framework for further development of the project.

Once a commitment is made by the City Aldermen, the major issues will include funding, land acquisition, and the environmental and social concerns of constructing such a facility along the fragile shorelines and the active areas of the City's waterfront.

The potential for great numbers of people to utilize this facility and the overwhelming opportunity for public use of the lakeshore should encourage a favorable public policy and an affirmative commitment to face these issues.

We look forward to continued enthusiasm by the City on this project, so that actual construction can be realized.

Sincerely,

David W. Boehm, P.E.  
Terrence J. Boyle

## INTRODUCTION

The City of Burlington has, for the past ten years, been committed to the provision of pedestrian/bicycle access throughout the City. Efforts are currently focused on the development of a bicycle path and pedestrian corridor along the western boundary of the City. Recently, the Community and Economic Development Office was authorized to initiate negotiations with property owners for the acquisition of title, easements and/or rights-of-way required to allow for the realization of a continuous bicycle path from Oakledge Park, at Burlington's southern border, to the mouth of the Winooski river, at the City's northern boundary. The envisioned path would be paved and open to the public for bicycling, jogging, cross-country skiing or strolling. The pathway would link existing City parks at Oakledge, Perkins Pier, North Beach and Leddy Park. Certain segments of the pathway are or will soon be under City control. Sections of the path have been paved; the section from Starr Farm Road to the Winooski River will be paved this spring. Preliminary engineering services have been provided to examine route alternatives for the segment of the pathway from the Barge Canal to Oakledge Park; to compare preliminary costs required for the various alternatives, and to review the total cost of completing the project in its entirety.

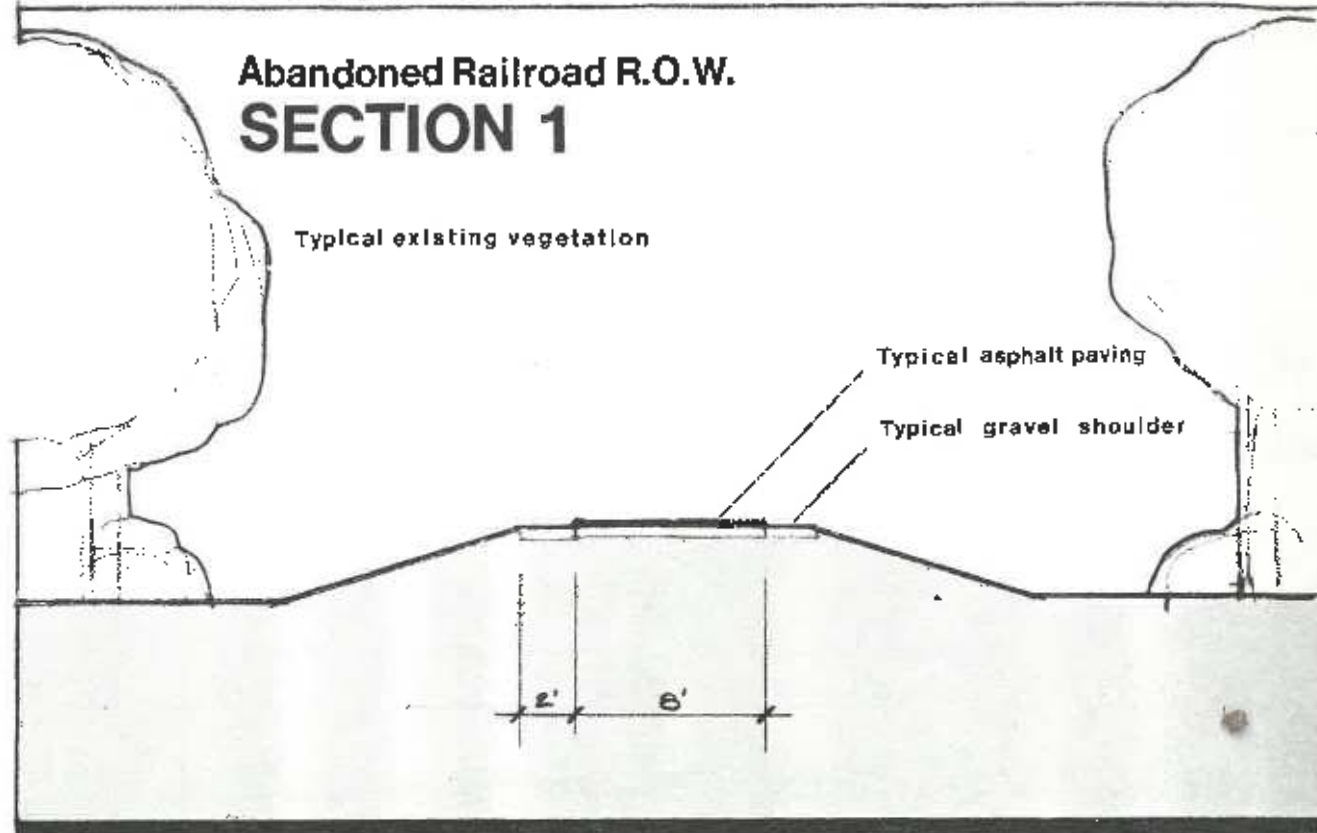
This report summarizes the examination of route alternatives and provides a preliminary opinion of cost.

The project approach is broken down into four categories:

1. Site inventory and analysis, which was accomplished through site visits and collection and inspection of existing map data.
2. Identification of the most promising possible bicycle routes.
3. Inventory, analysis, and recommendations of typical cross sections from which cost estimates per linear foot were derived.
4. A rating system and route evaluation framework to assist in route recommendations.

The work accomplished in Categories One and Two allows the identification and analysis of the six typical types of areas which the possible routes traverse. Typical cross sections are illustrated on the following pages along with analysis, recommendations, and estimated construction cost per foot.

# TYPICAL CROSS SECTIONS



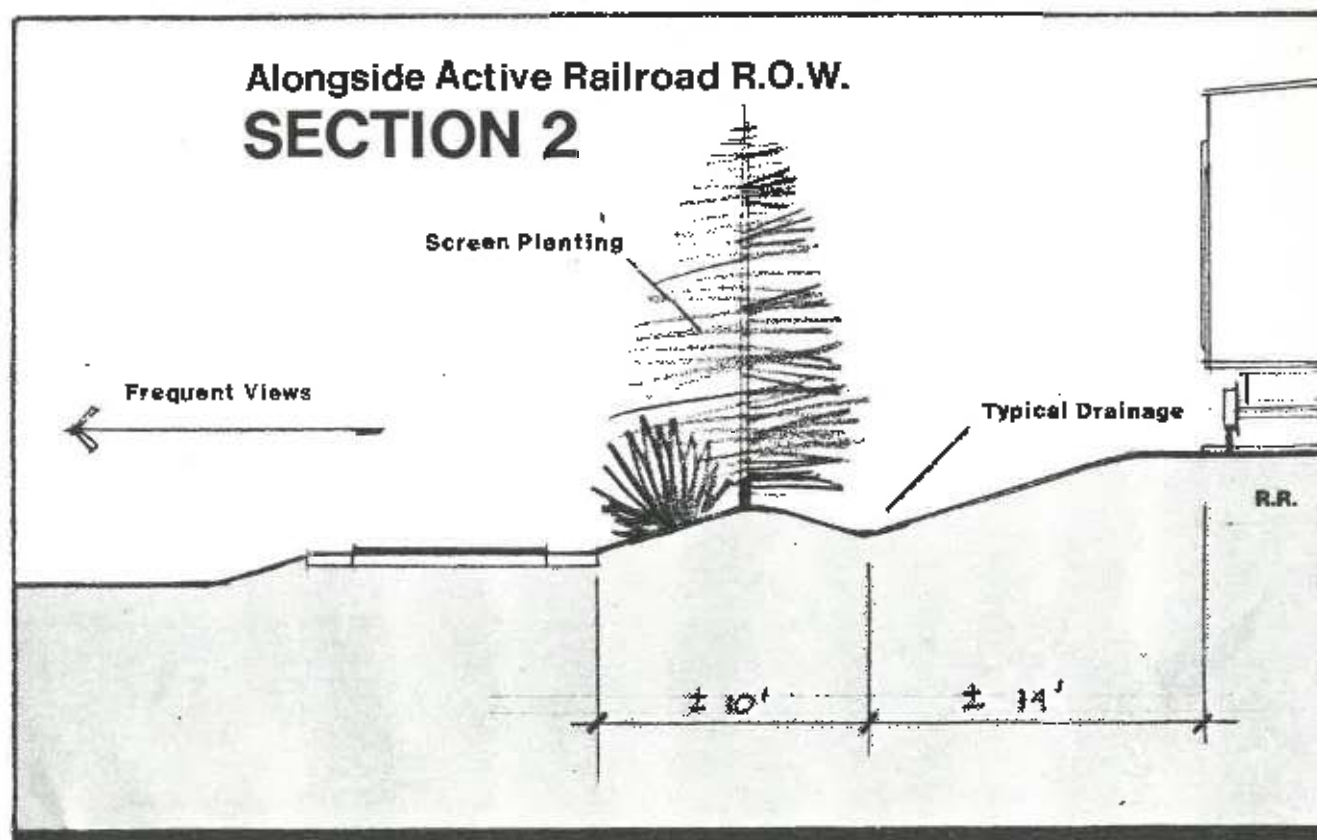
## Analysis

Typically stable well drained subbase with gentle grades and vegetated edges.

## Recommendations

Minor clearings, grading and drainage work required. 12' wide gravel base with 8' asphalt paving.

Based on this recommendation, the estimated construction cost per linear foot of path is \$15.



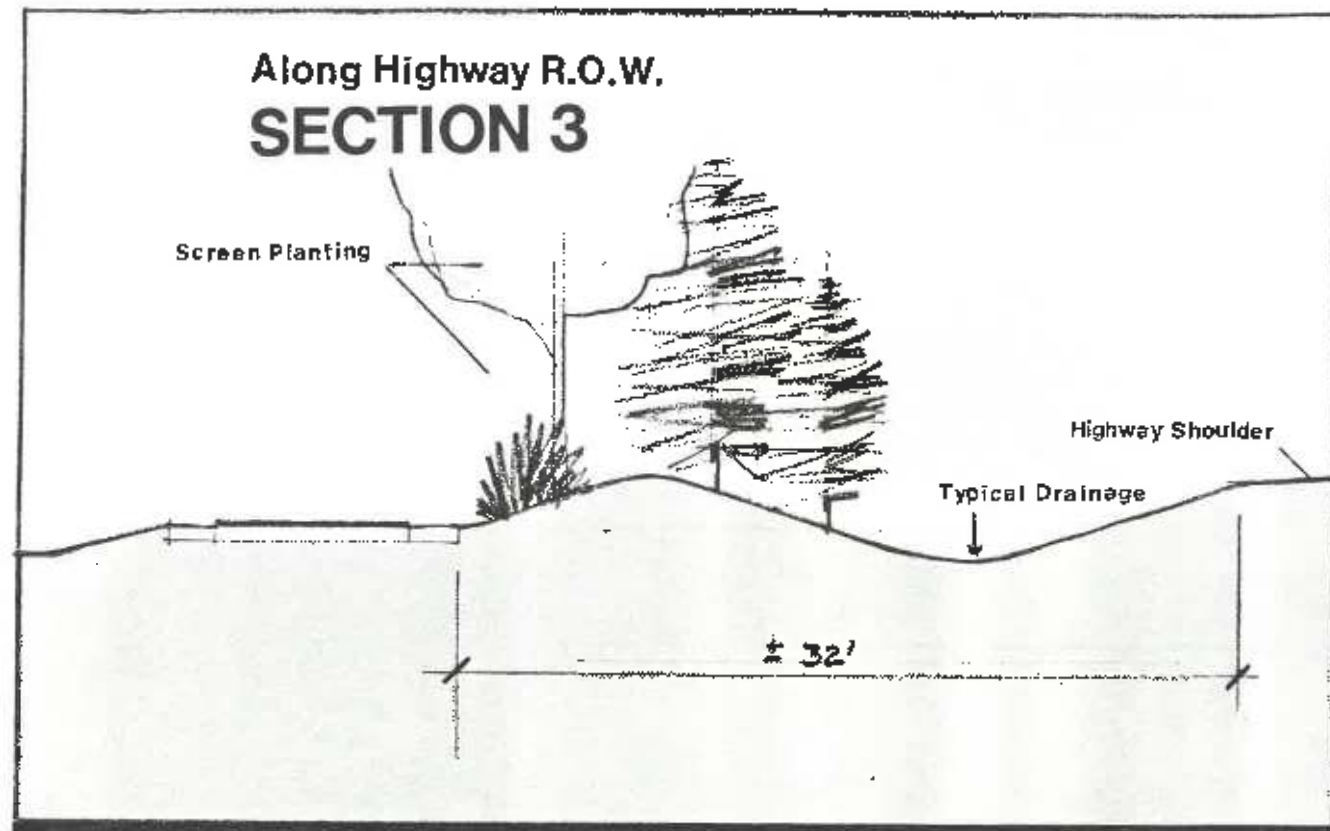
## Analysis

Typically stable well drained subbase with gentle grades and vegetated edges. Potential visual and noise intrusion from trains.

## Recommendations

May require removal of existing tracks. Moderate grading and drainage work required. Plant screen with seasonal interest. Path located on west side of active tracks to enhance frequent views to lake. 12' wide gravel base with 8' asphalt paving.

Based on this recommendation, the estimated construction cost per linear foot of path is \$30.



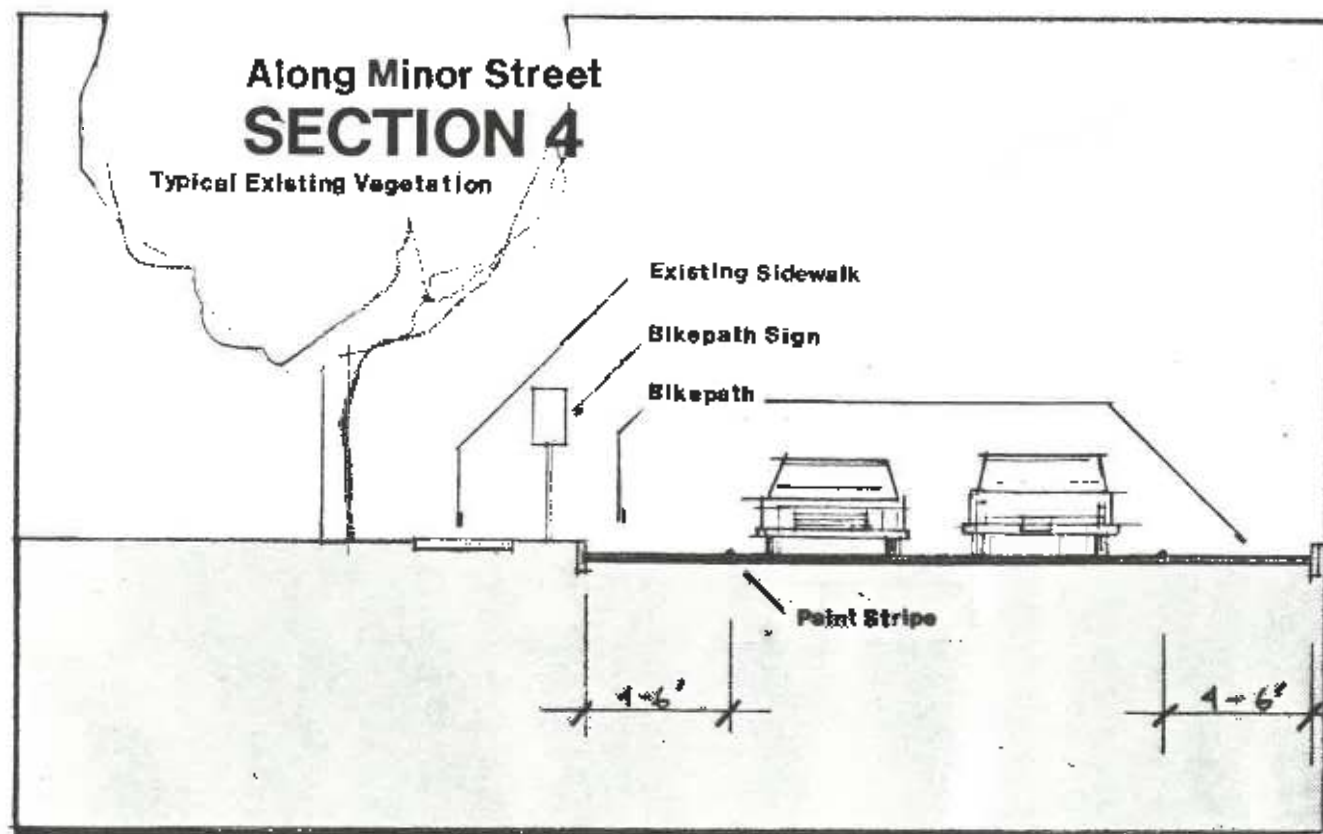
**Analysis**

Typically stable well drained subbase, with fairly gentle grades. visual and noise intrusion from highway.

**Recommendations**

Requires clearing work and moderate grading and drainage work. Plant screen with seasonal and year round interest. 12' wide gravel base with 8' asphalt paving.

Based on this recommendation, the estimated construction cost per linear foot of path is \$30.



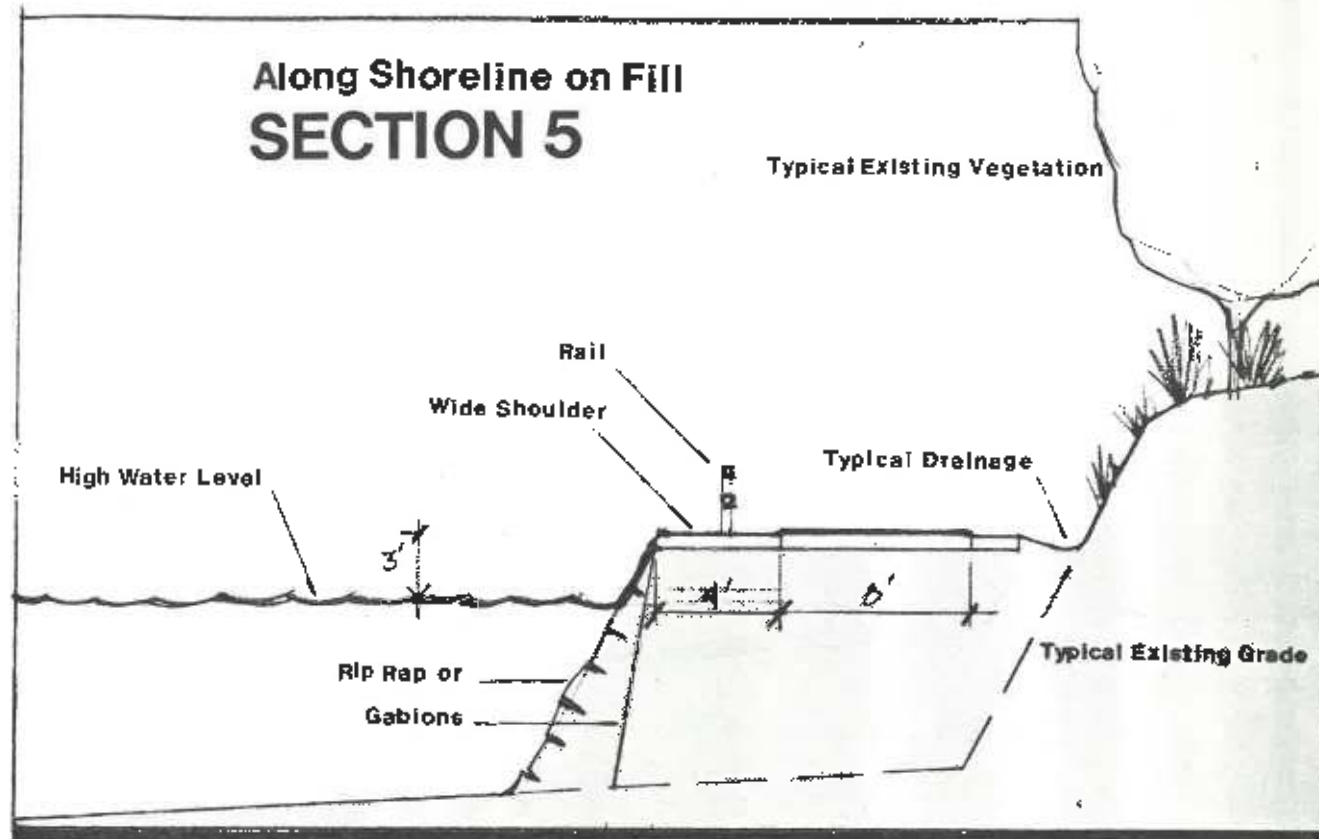
**Analysis**

30' wide tree lined street. Currently standard sidewalk, curbs, and parking on both sides. Asphalt paving.

**Recommendations**

Provide bike lane on each side of the road defined by a paint stripe and identified by signs. This may require that streetside parking not be permitted.

Based on this recommendation, the estimated construction cost per linear foot of path is \$0.50.



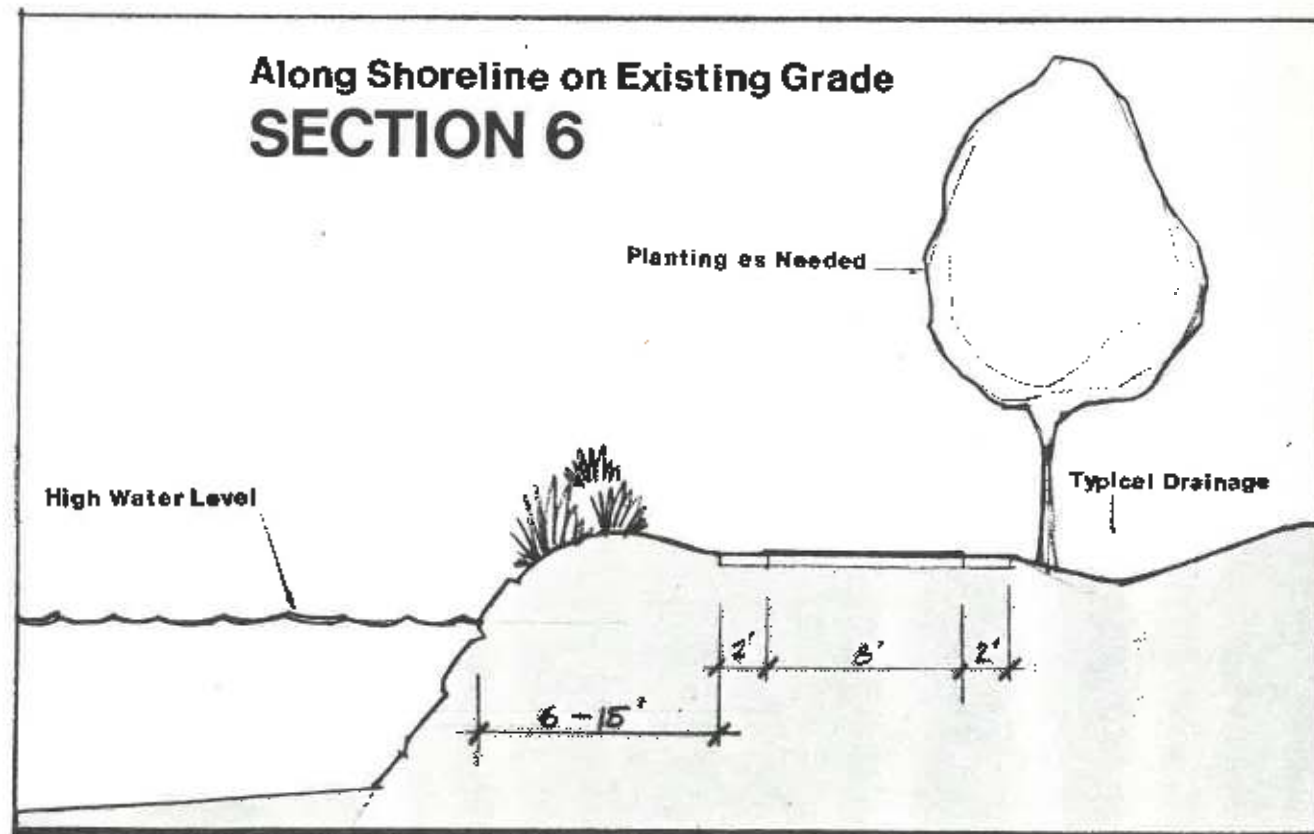
**Analysis**

Typically in areas where existing grade is between the high and low water levels.

**Recommendations**

Extensive fill, grading and drainage work required. Rip rap or gabions are necessary to retain and protect the fill. A safety barrier between the path and the water could take the form of a rail or a low stone wall. 12' wide gravel base with 8' asphalt paving.

Based on this recommendation, the estimated construction cost per linear foot of path is \$300.



**Analysis**

Grades vary but are gentle and typically 5 - 10' above highwater. Stability of soil and drainage requirements vary. Views vary from lakefront panorama to the visual intrusion of oil tanks and industrial structures.

**Recommendations**

Stabilization and drainage of subgrade may be required. Create berm with minor planting at lakeshore, and plant on east to soften the views of industrial structures. 12' wide gravel base with 8' asphalt paving.

Based on this recommendation, the estimated construction cost per linear foot of path is \$30.

# RATING SYSTEM AND ROUTE EVALUATION

Individual routes were evaluated on a 1 to 5 scale with 5 being the most desirable. Categories evaluated were Cost, Aesthetics, Slope, and whether the Land was in public or private ownership. The following list of criteria was used as a frame of reference, and actual ratings for a particular section were made on the basis of overall judgement and site inspection information.

The chart below indicates the format of the computer aided evaluation summary sheet.

A complete copy of the summary may be found at the conclusion of this report. Line items have been included on the following pages to correspond with the maps and route descriptions.

The appendix contains evaluations for the entire route, limiting the criteria to aesthetics only, and cost only. Criteria for the evaluations were as follows:

### Estimated Cost:

- 1- \$101 per linear foot and above
- 2- \$76 to \$100 per linear foot
- 3- \$51 to \$75 "
- 4- \$26 to \$50 "
- 5- \$0 to \$25

### Aesthetics:

- Based on subjective rating
- 1- Lowest-industrial views
  - 5- Highest-typically lake views

### Slope and Ease of Traffic Flow::

- 1- Approaching 8%
- 3- 4% to 8% for short distance
- 5- Under 4%


### Land Availability:

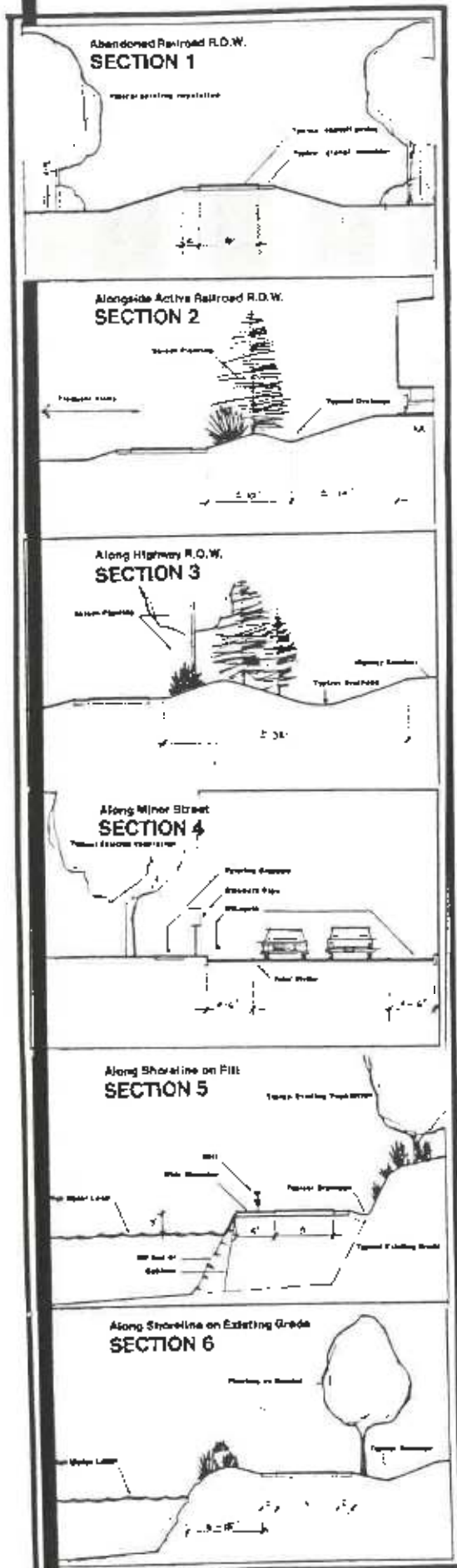
- 1- Lowest, mostly private property
- 5- Highest, mostly City-owned property

The pages opposite the route maps will highlight with shading the section types which occur on that particular map.

COST ESTIMATION							ALTERNATE ROUTE EVALUATIONS							
ROUTE	TOTAL LENGTH (FEET)	Itemized Length by Section Type (Feet)						Lump Sum Costs	Opinion of Probable Cost	Evaluations on a 1 to 5 scale				
		Section 1 @ \$15/FT.	Section 2 @\$30/ft	Section 3 @\$30/ft	Section 4 @\$ .50/ft	Section 5 @\$300/ft	Section 6 @\$30/ft			Aesthetics	Slope & Flow	Cost	Land	Weighted Average

Alternate routes 

Preferred route indicated by 

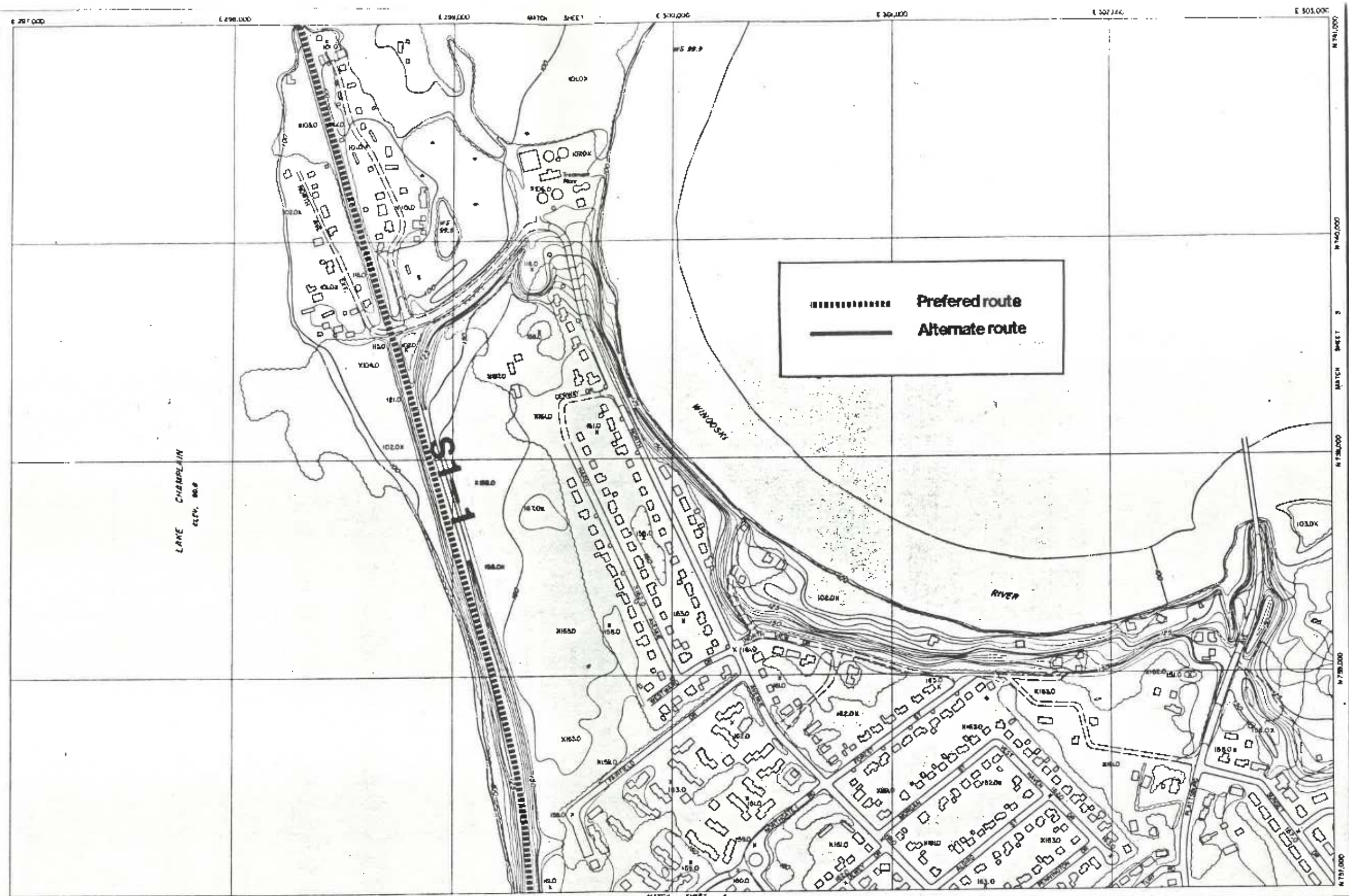


The bike path begins where the Winoski River flows into Lake Champlain and continues south to Starr Farm Road. This segment is labeled S1-1. It is currently under construction and is to be completed in June, 1984.

See the rating evaluation below.

CGST ESTIMATION						ALTERNATE ROUTE EVALUATIONS									
ROUTE	TOTAL LENGTH (FEET)	Itemized Length by Section Type (Feet)						Lump Sum Costs	Opinion of Probable Cost	Evaluations on a 1 to 5 scale					Asterisk Denotes Preferred Route
		Section 1	Section 2	Section 3	Section 4	Section 5	Section 6			Aesthetics	Slope & Flow	Cost	Land	Weighted Average	
S1-1	16800	EXISTING						0	0	4.5	5	5	5	4.875	*





LANE CHAMPLAIN  
ELEV. 86.8

----- Preferred route  
 \_\_\_\_\_ Alternate route

- LEGEND**
- |              |                        |                     |                 |              |                |
|--------------|------------------------|---------------------|-----------------|--------------|----------------|
| --- ROAD     | --- BRIDGE             | --- FENCE           | ○ POLE          | △ LIGHT POLE | ○ LIGHT POLE   |
| --- SIDEWALK | --- DRIVE              | --- RAILROAD        | ○ TRAFFIC LIGHT | ○ WAREHOUSE  | ○ FIRE HYDRANT |
| --- TRAIL    | --- WATER OF DIVERSION | --- TYPED ELEVATION | ○ SIGN          |              |                |
| --- RAILROAD | --- TRENCH             |                     |                 |              |                |



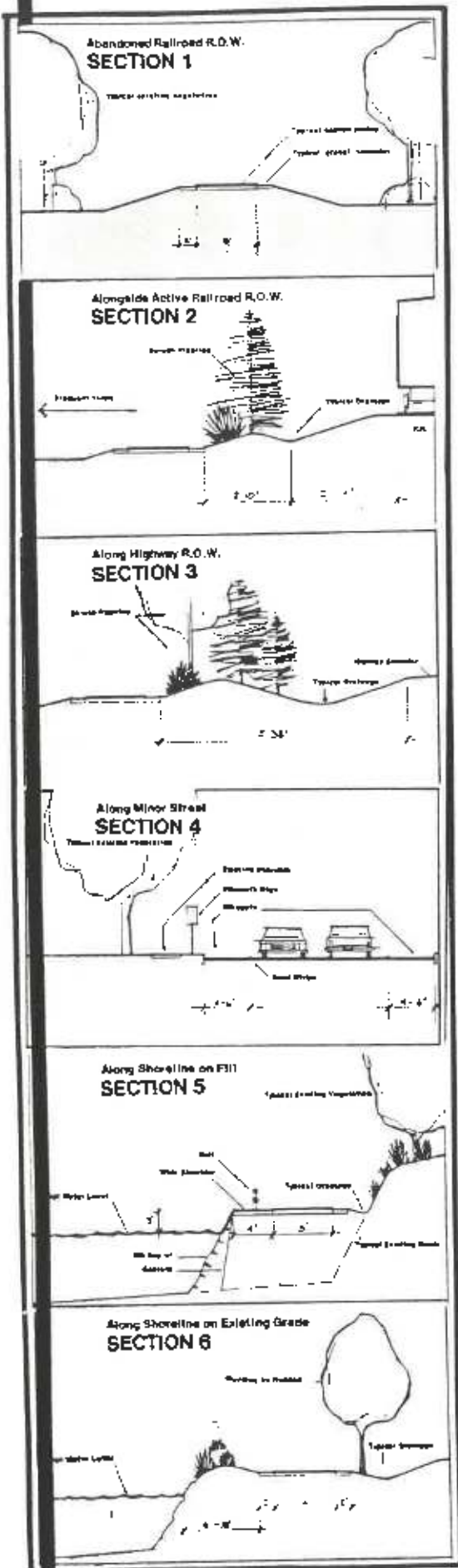
**TOPOGRAPHIC MAP**  
**CITY OF BURLINGTON, VERMONT**

200 0 200 400 600 800 1000

DATE OF AERIAL PHOTOGRAPH: 4/30/79 C.A.S. PROJECT NUMBER: C10258  
 CAMERA FOCAL LENGTH: 82.40 MM. CONTOUR INTERVAL: 5 FOOT

CHICAGO AERIAL SURVEY  
 2115 WOLF ROAD  
 641 PHOENIX, MICHIGAN 48166  
 313 744 1486

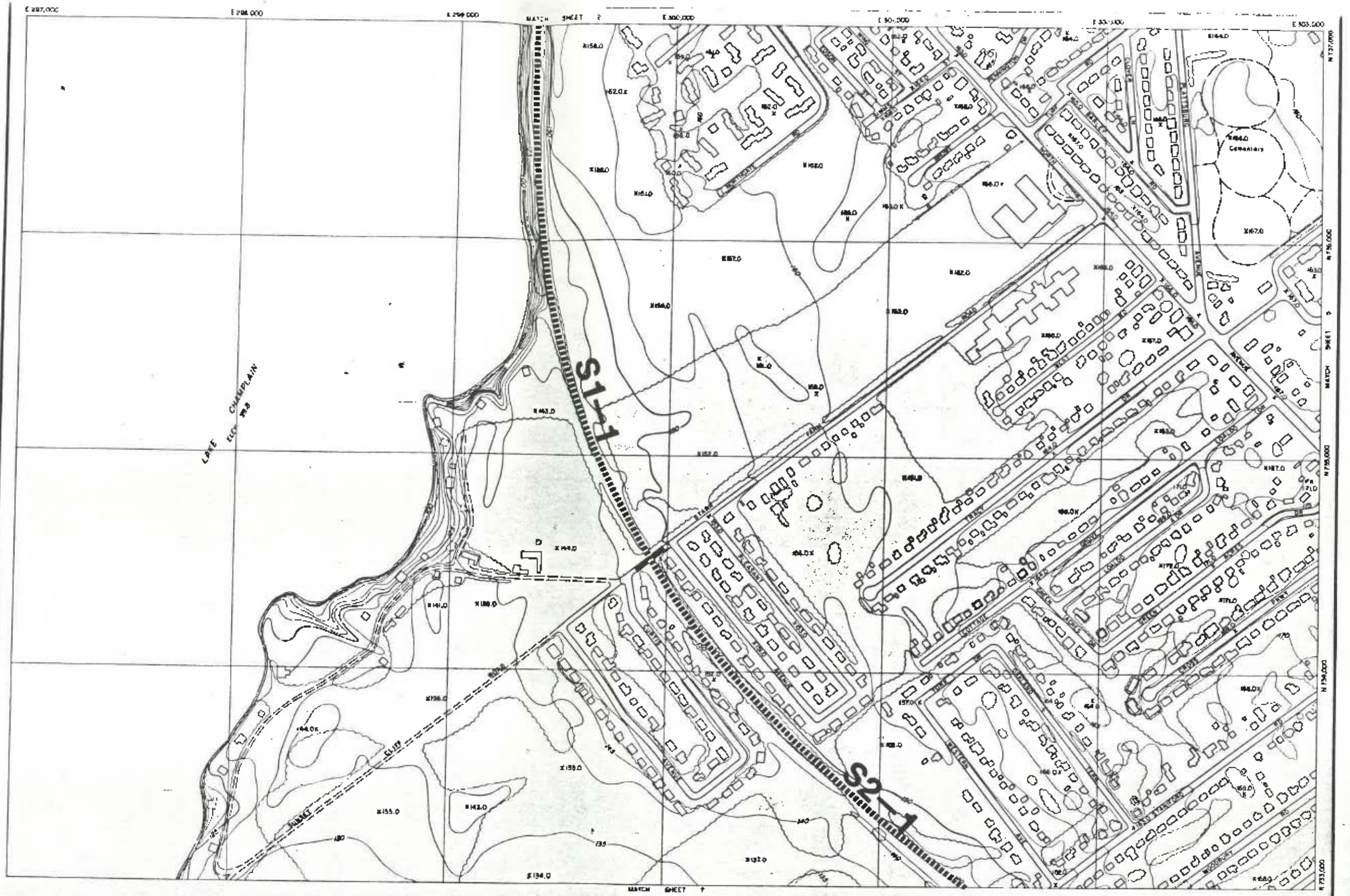
SHEET 2 OF 24 SHEETS



The existing bike path begins at Starr Farm Road and continues on 6' wide pavement to the south. This segment is labeled S2-1.

See the rating evaluation below.

COST ESTIMATION						ALTERNATE ROUTE EVALUATIONS									
ROUTE	TOTAL LENGTH (FEET)	Itemized Length by Section Type (Feet)						Lump Sum Costs	Opinion of Probable Cost	Evaluations on a 1 to 5 scale					
		Section 1	Section 2	Section 3	Section 4	Section 5	Section 6			Aesthetics	Slope & Flow	Cost	Land	Weighted Average	Asterisk Denotes Preferred Route
S2-1	4600	EXISTING						0	0	4	5	5	5	4.75	*



**LEGEND**

ROAD	WALL	FENCE	POLE	BENCH MARK
IMPROVED ROAD	ELEVATION	TELEPHONE TOWER	LIGHT POLE	SURVEY MONUMENT
TUNNEL	SPOT ELEVATION	WELL	TELEPHONE POLE	MANHOLE
BUILDING	EDGE OF PLATEAU	SPOT ELEVATION	FIRE HYDRANT	WELL
RAILROAD				



**TOPOGRAPHIC MAP**

**CITY OF BURLINGTON, VERMONT**

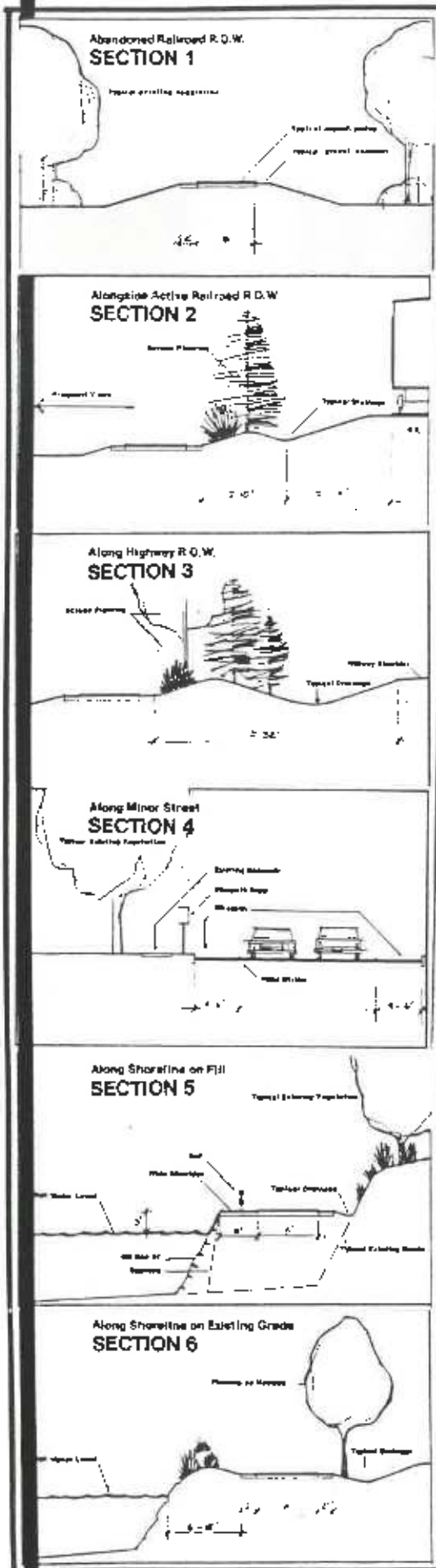
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DATE OF AERIAL PHOTOGRAPH: 6/20/78 C.A.S. PROJECT NUMBER: C1029

CAMERA FOCAL LENGTH: 82.40 mm. CONTOUR INTERVAL: 5 FOOT

CHICAGO AERIAL SURVEY  
314 WEST 34th ST  
CHICAGO, ILLINOIS 60616  
312 374-1428

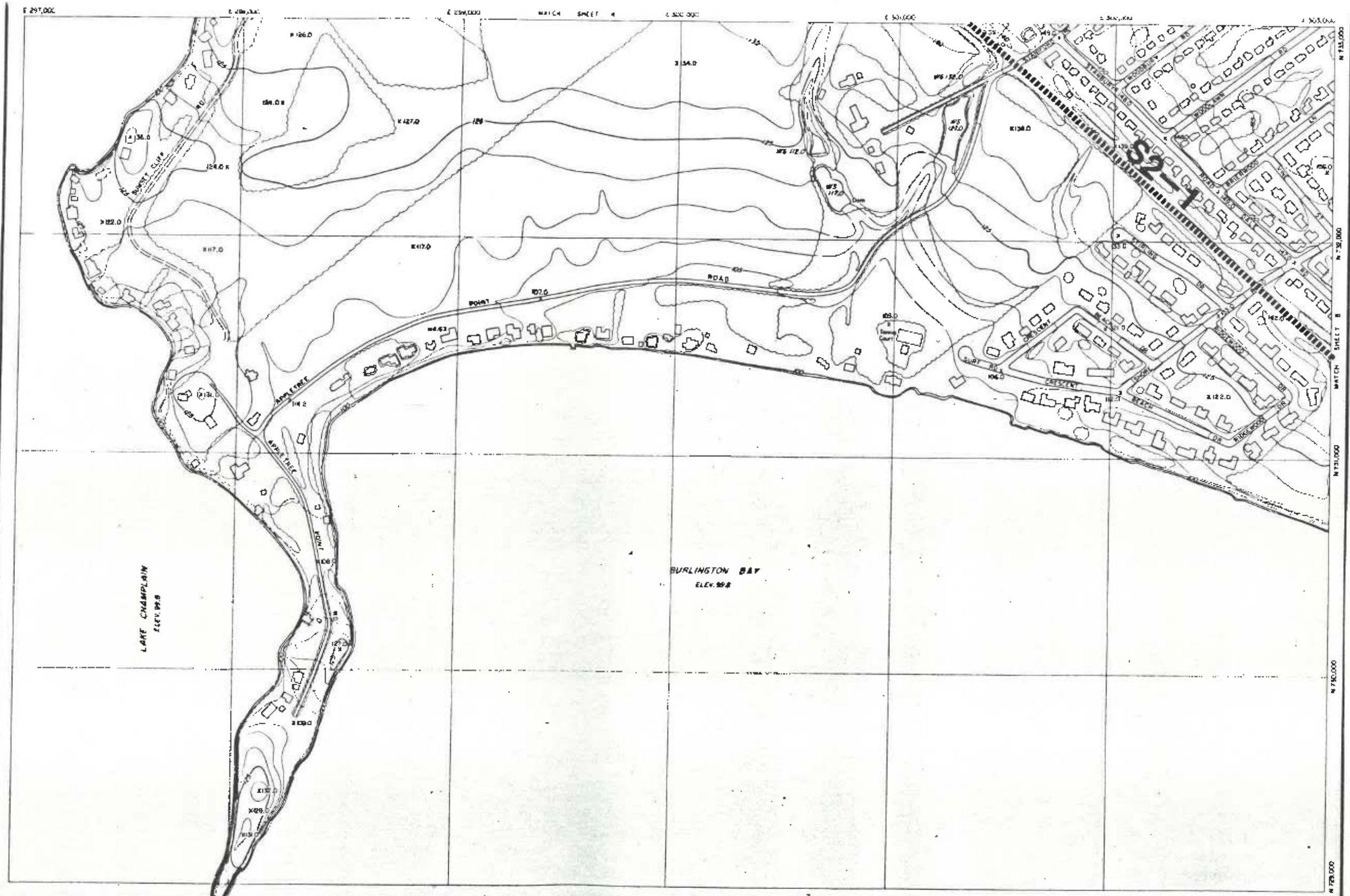
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The existing bike path continues on a 6' wide pavement to Leddy Park. This segment is labeled S2-1.

See the rating evaluation below.

COST ESTIMATION							ALTERNATE ROUTE EVALUATIONS							
ROUTE	TOTAL LENGTH (FEET)	Itemized Length by Section Type (Feet)						Leap Sun Costs	Opinion of Probable Cost	Evaluations on a 1 to 5 scale				Asterisk Denotes Preferred Route
		Section 1	Section 2	Section 3	Section 4	Section 5	Section 6			Aesthetics	Slope & Flow	Cost	Land Average	
S2-1	4600	EXISTING						EXISTING	4	5	5	5	4.75	



**LEGEND**




**TOPOGRAPHIC MAP**

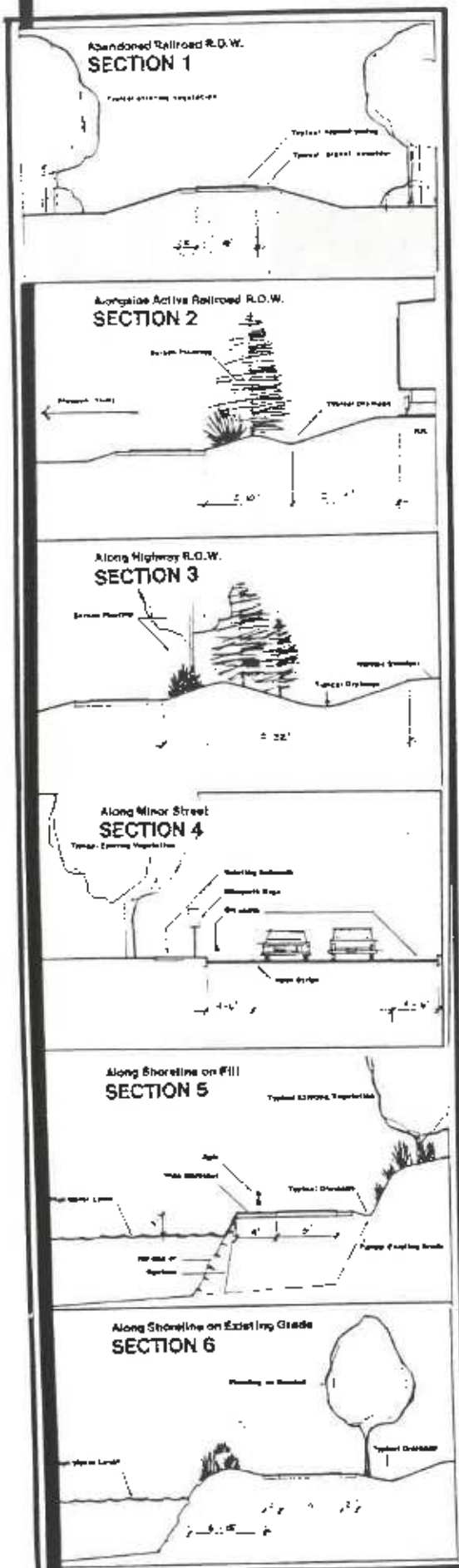
**CITY OF BURLINGTON, VERMONT**

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DATE OF AERIAL PHOTOGRAPHS- 4/30/76 C.A.S. PROJECT NUMBER- C10258  
 CAMERA FOCAL LENGTH- 852.40 mm. CONTOUR INTERVAL- 5 FEET

**CHICAGO AERIAL SURVEY**  
 1142 WEST ROAD  
 618 CLARK ST. CHICAGO, ILLINOIS 60641  
 312 299-1280

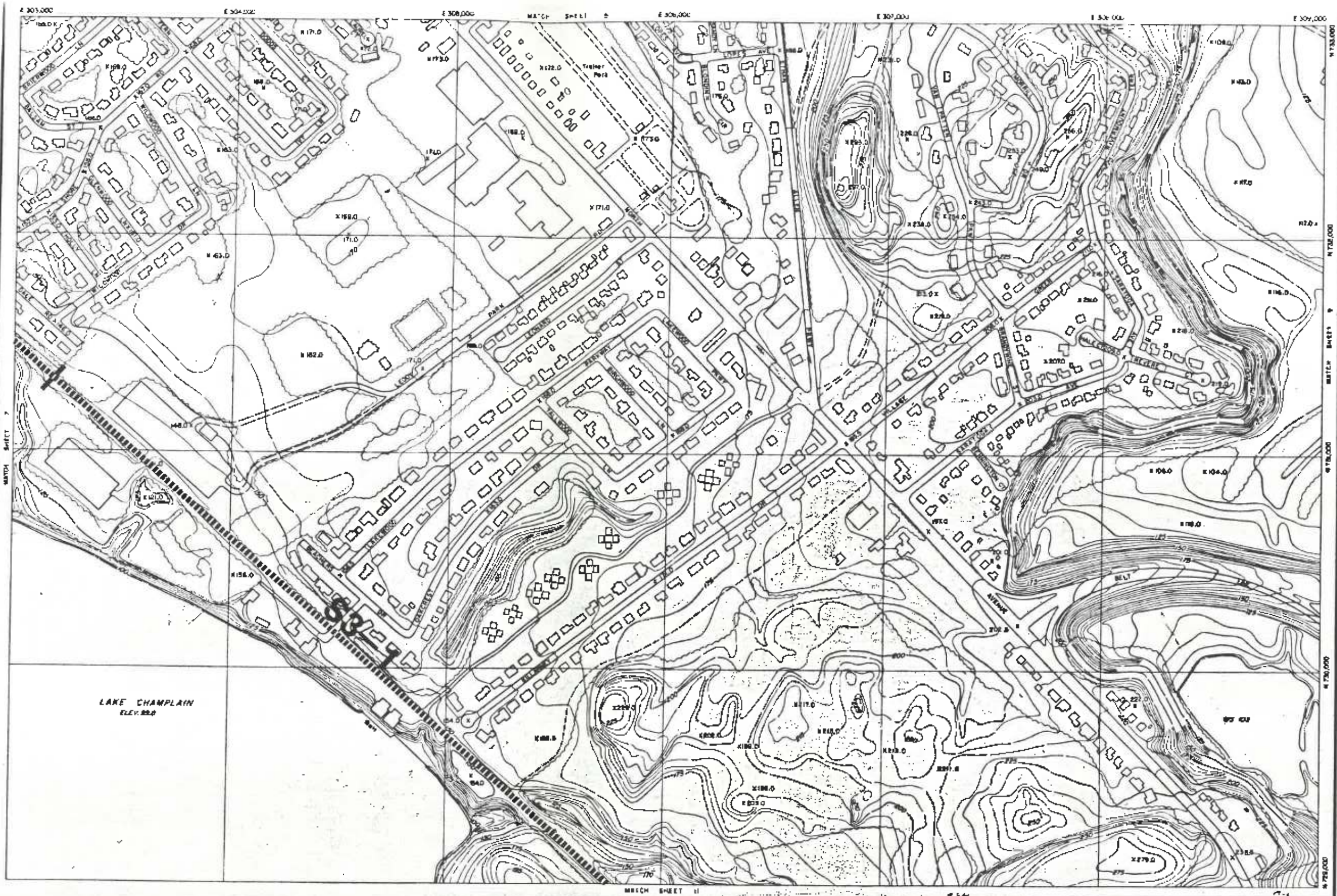
Sheet 7 of 24 sheets



South from Leddy Park, the bike path continues along the abandoned railroad right-of-way, currently under litigation. This segment is labeled S3-1.

See the rating evaluation below.

COST ESTIMATION							ALTERNATE ROUTE EVALUATIONS								
ROUTE	TOTAL LENGTH (FEET)	Itemized Length by Section Type (Feet)						Lump Sum Costs	Opinion of Probable Cost	Evaluations on a 1 to 5 scale					
		Section 1	Section 2	Section 3	Section 4	Section 5	Section 6			Aesthetics	Slope & Flow	Cost	Land	Weighted Average	Asterisk Denotes Preferred Route
S3-1	5500	5500						0	82500	4	5	5	3	4.25	*



LAKE CHAMPLAIN  
ELEV. 202.0

MARCH SHEET 11

**LEGEND**




**TOPOGRAPHIC MAP**

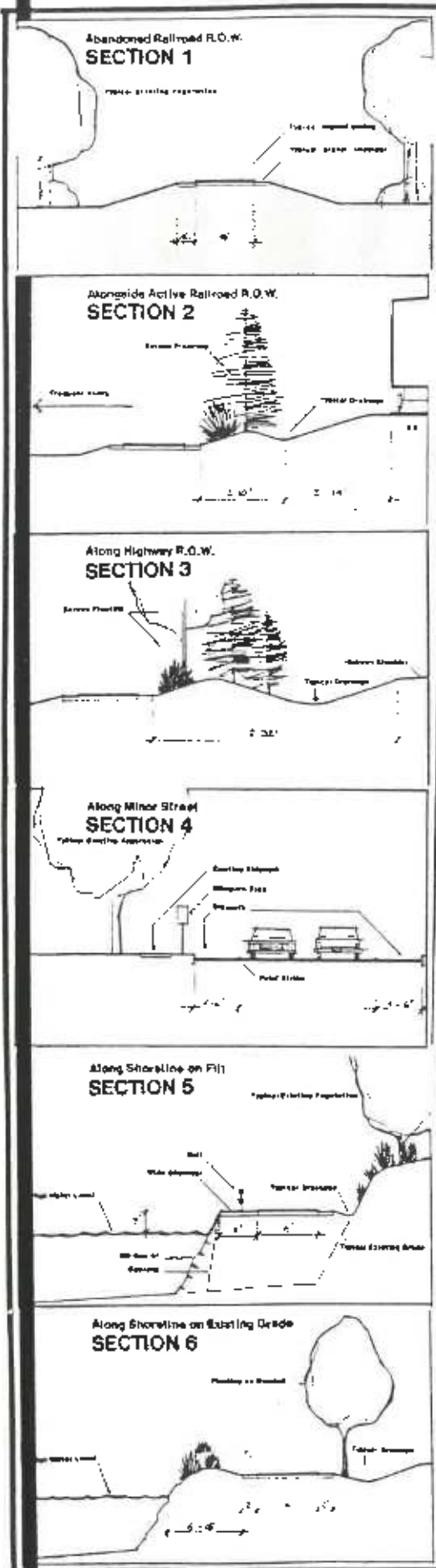
**CITY OF BURLINGTON, VERMONT**

0 200 400 600 800 1000

DATE OF AERIAL PHOTOGRAPHS: 4/30/75 C. A. S. PROJECT NUMBER: C1028

CAMERA FOCAL LENGTH: 82.40 mm. CONTOUR INTERVAL: 5 FEET

CHICAGO AERIAL SURVEY  
312 N. LAKE STREET, CHICAGO, ILL. 60601  
312-369-1400

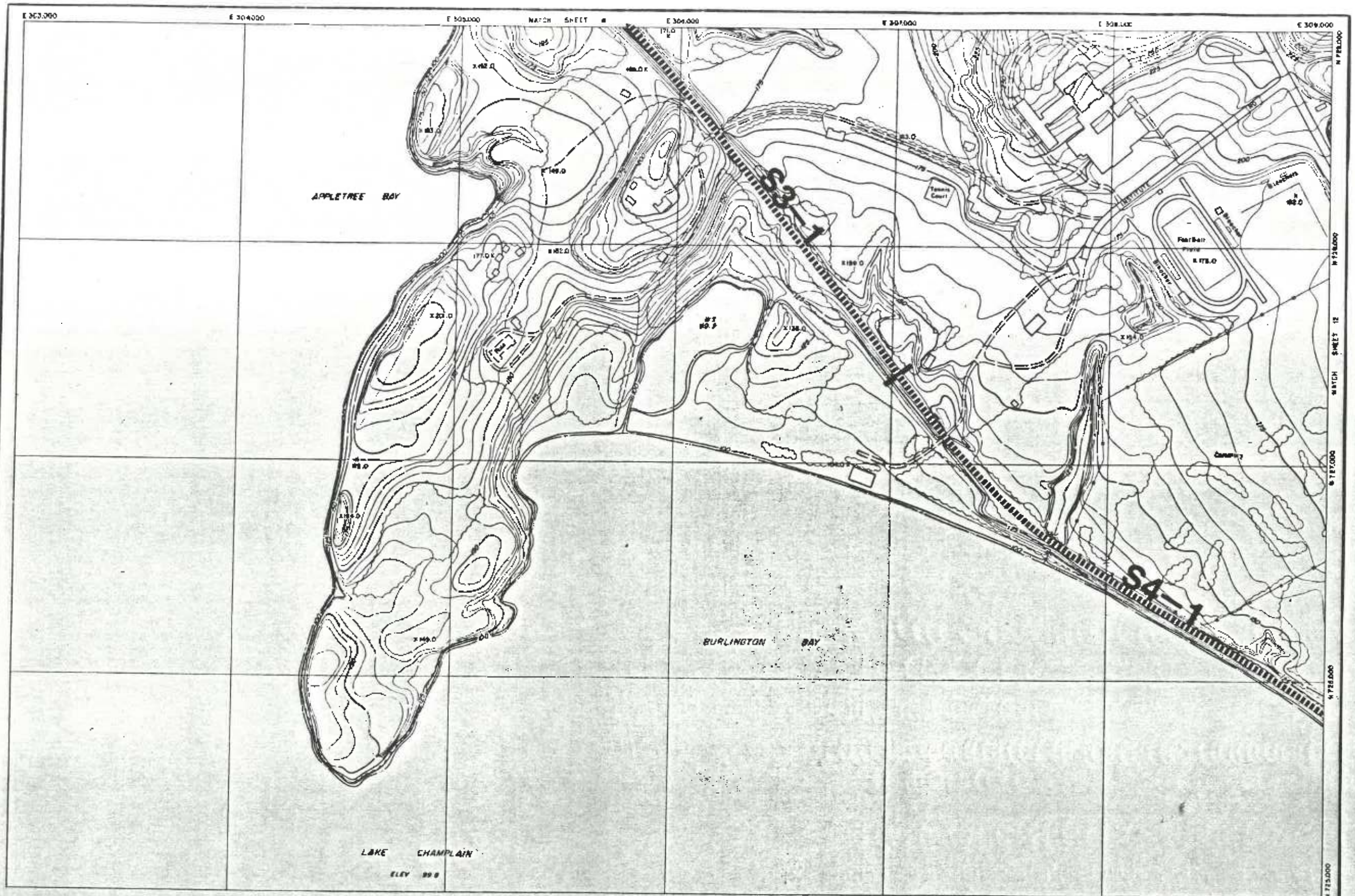


Segment S4-1 runs from North Beach along the railroad right-of-way to the northern boundary of the Central Vermont Railway property. An additional lump sum cost is required in this section for track and rail removal.

See the rating and cost evaluation below.

COST ESTIMATION						ALTERNATE ROUTE EVALUATIONS								
ROUTE	TOTAL LENGTH (FEET)	Itemized Length by Section Type (Feet)						Lump Sum Costs	Opinion of Probable Cost	Evaluations on a 1 to 5 scale				
		Section 1	Section 2	Section 3	Section 4	Section 5	Section 6			Aesthetics	Slope & Flow	Cost	Land Average	Asterisk Denotes Preferred Route
S4-1	2600	2600						28600	467600	3.5	5	4	3.875	*





**LEGEND**



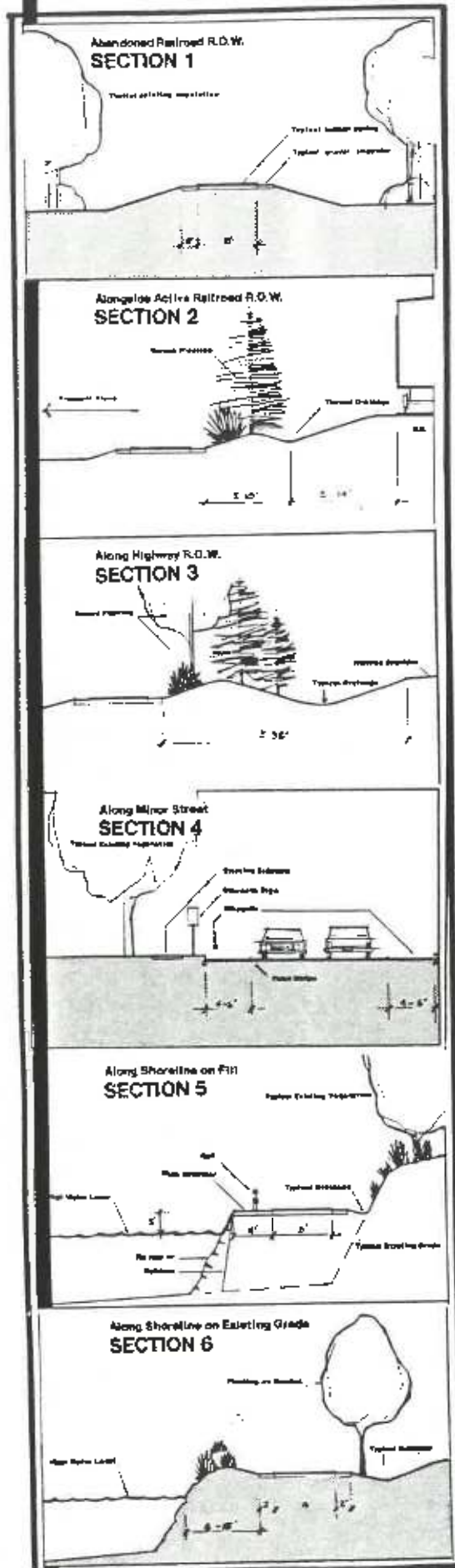

**TOPOGRAPHIC MAP**  
**CITY OF BURLINGTON, VERMONT**

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DATE OF AERIAL PHOTOGRAPHS: 4/30/79    C & S. PROJECT NUMBER: C10230  
 CAMERA FOCAL LENGTH: 152.40 mm    CONTOUR INTERVAL: 5 FEET

**CHICAGO AERIAL SERVICE**  
 2125 WEST 80th  
 CHICAGO, ILLINOIS 60619  
 TEL: 773-486-1000

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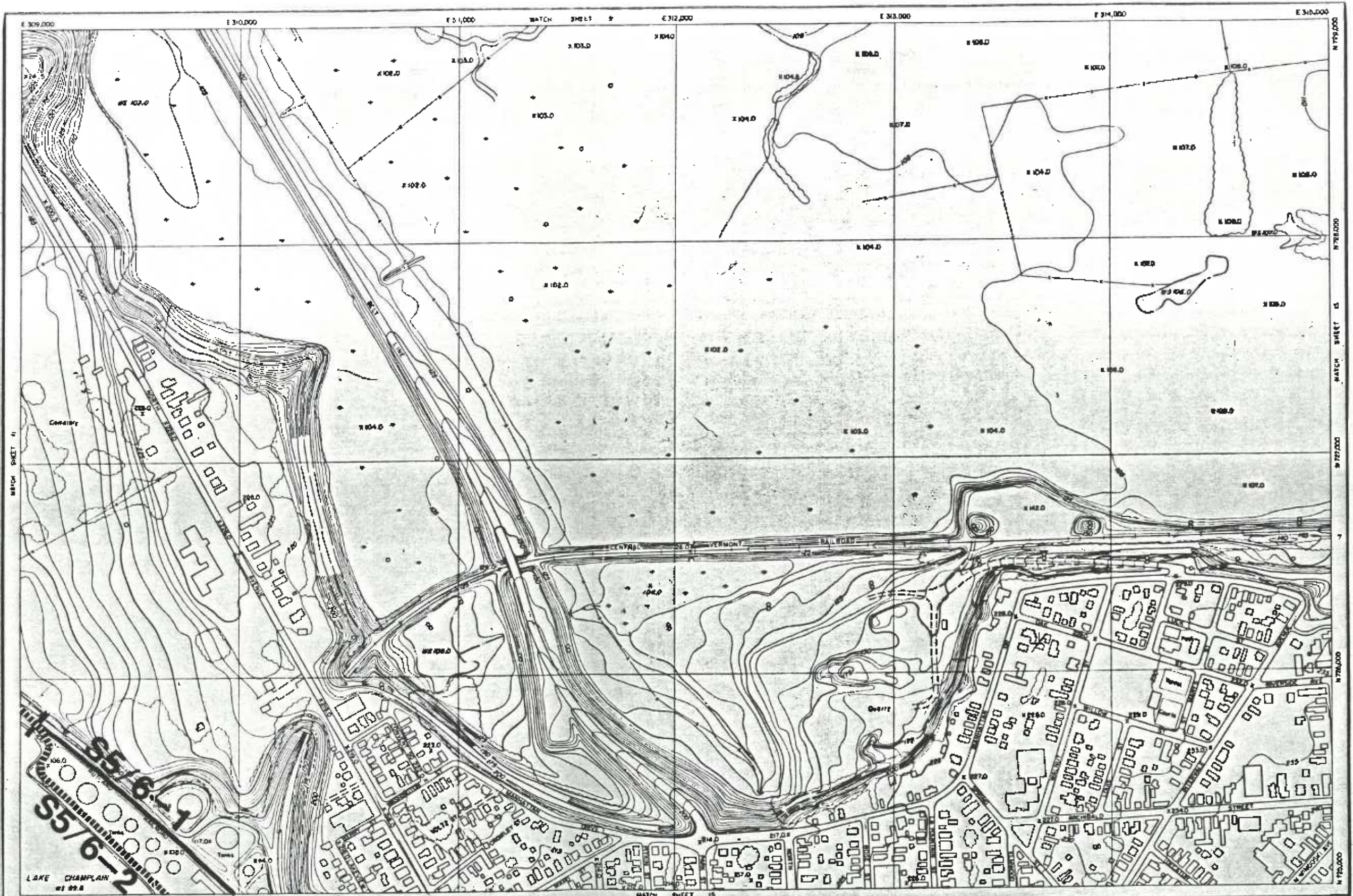
At the northern boundary of Central Vermont Railway property the bike path could take one of two alternate routes. The first route, labeled S5/6-1, continues south along the railway right-of-way, until it comes to a paved access road that serves the oil fields. The bike path follows this road south until it passes the generating plant and connects with Lake Street at the northern boundary of the Alden Waterfront Corporation property.

The other alternate, S5/6-2, also continues south from Central Vermont Railways properties northern border but it follows the lake shoreline on existing grade past oil tanks and through the public properties of the Moran Generating Plant and the Filtration Plant. The path then connects up with Lake Street at the northern boundary of the Alden Waterfront Corporation property. The lakefront alternate, S5/6-2, has wide views of the lake and the Adirondacks, whereas the interior route, S5/6-1, is less expensive to construct.

See the rating and cost evaluation, below, and both the map on the facing page and the next map.

THE PREFERRED ROUTE IS S5/6-2.

COST ESTIMATION							ALTERNATE ROUTE EVALUATIONS							
TOTAL LENGTH (FEET)	Itemized Length by Section Type (Feet)						Loop Sum Costs	Opinion of Probable Cost	Evaluations on a 1 to 5 scale					
	Section 1	Section 2	Section 3	Section 4	Section 5	Section 6			Aesthetics	Slope & Flow	Cost	Land	Weighted Average	Asterisk Denotes Preferred Route
S5/6-1	4000	1300		2700			0	20850	2	5	5	4	4	
S5/6-2	4500			800		3700	0	111400	4	4	5	4	4.25	*



55/6-2  
 179  
 LAKE CHAMPLAIN  
 #1 99.8

**LEGEND**

- |  |  |  |  |  |
|--|--|--|--|--|
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**TOPOGRAPHIC MAP**

**CITY OF BURLINGTON, VERMONT**

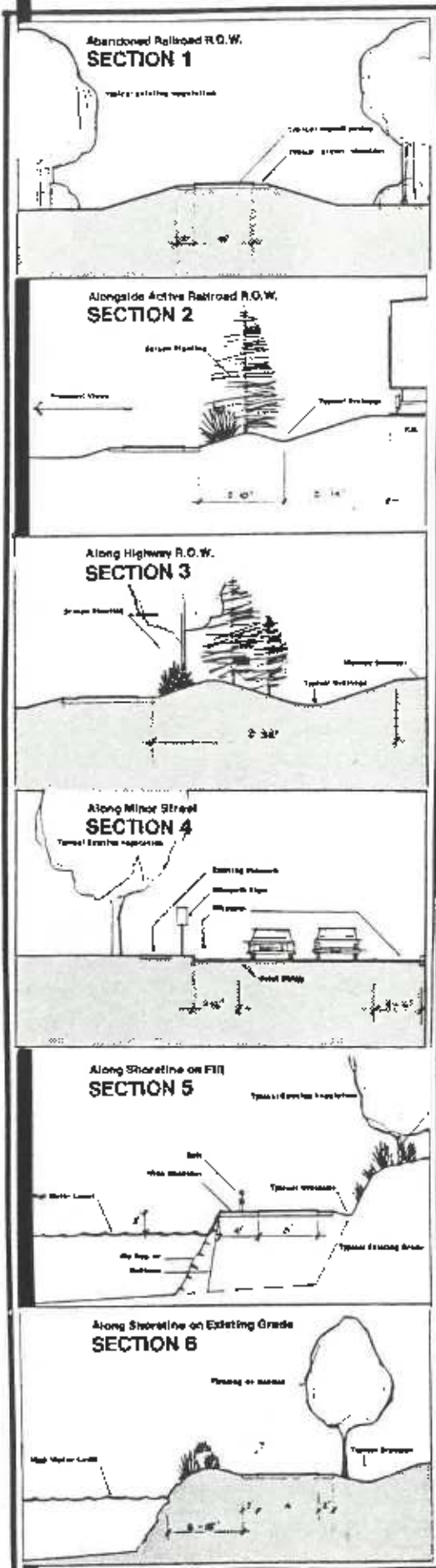
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DATE OF AERIAL PHOTOGRAPHS: 4/30/78 C. & G. PROJECT NUMBER: C1088

CAMERA FOCAL LENGTH: 82.40 mm. CONTOUR INTERVAL: 5 FEET

CHICAGO AERIAL SURVEY  
 815 WEST COLAR  
 DES PLAINES, ILLINOIS 60018  
 815 294 1400

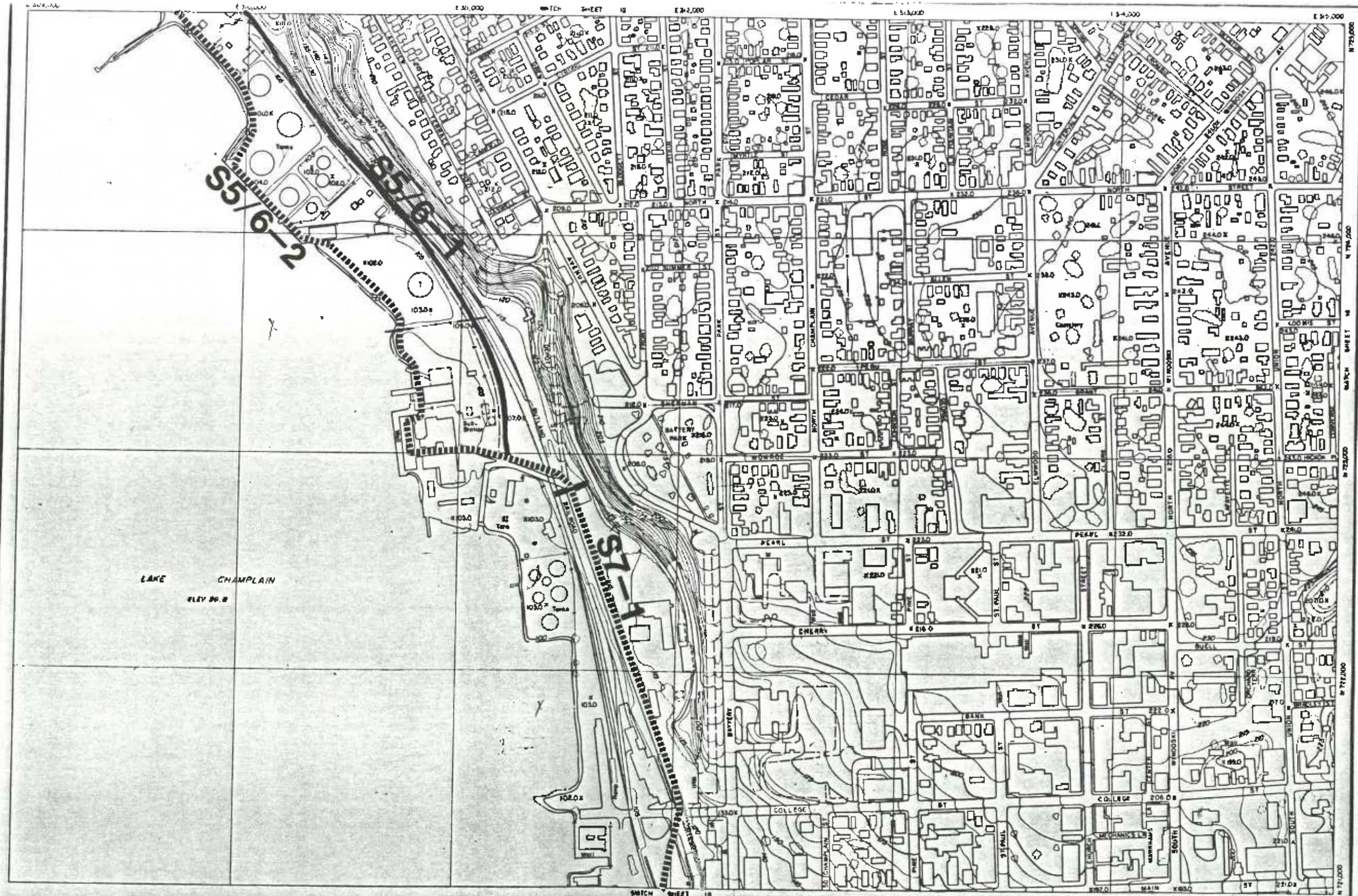
SHEET 12 OF 24 SHEETS



Segment S7-1 traverses the Alden Waterfront Corporation's property and is planned to follow the east side of Lake Street.

See the rating and cost evaluation, below.

COST ESTIMATION						ALTERNATE ROUTE EVALUATIONS									
ROUTE	TOTAL LENGTH (FEET)	Itemized Length by Section Type (Feet)						Lump Sum Costs	Opinion of Probable Cost	Evaluations on a 1 to 5 scale				Asterisk Denotes Preferred Route	
		Section 1	Section 2	Section 3	Section 4	Section 5	Section 6			Aesthetics	Slope & Flow	Cost	Land Average		Weighted Average
S5/6-1	4000	1300			2700			0	20850	2	5	5	4	4	
-2	1500			800		3700		0	111400	4	4	5	4	4.25	*
S7-1	2000		2000					0	60000	2	5	4	4	3.75	*



- LEGEND**
- |  |          |  |                |  |                |
|--|----------|--|----------------|--|----------------|
|  | ROAD     |  | FENCE          |  | WELL           |
|  | DRIVEWAY |  | UTILITY POLE   |  | LIGHT POLE     |
|  | SIDWALK  |  | TELEPHONE POLE |  | WATER LINE     |
|  | GUTTER   |  | GAS PIPE       |  | SEWER PIPE     |
|  | DITCH    |  | STORM SEWER    |  | MANHOLE        |
|  | STREAM   |  | FIRE HYDRANT   |  | BENCH MARK     |
|  | BRIDGE   |  | SPOT ELEVATION |  | SURVEY STATION |



**TOPOGRAPHIC MAP**

**CITY OF BURLINGTON, VERMONT**

0 200 400 600 800 1000

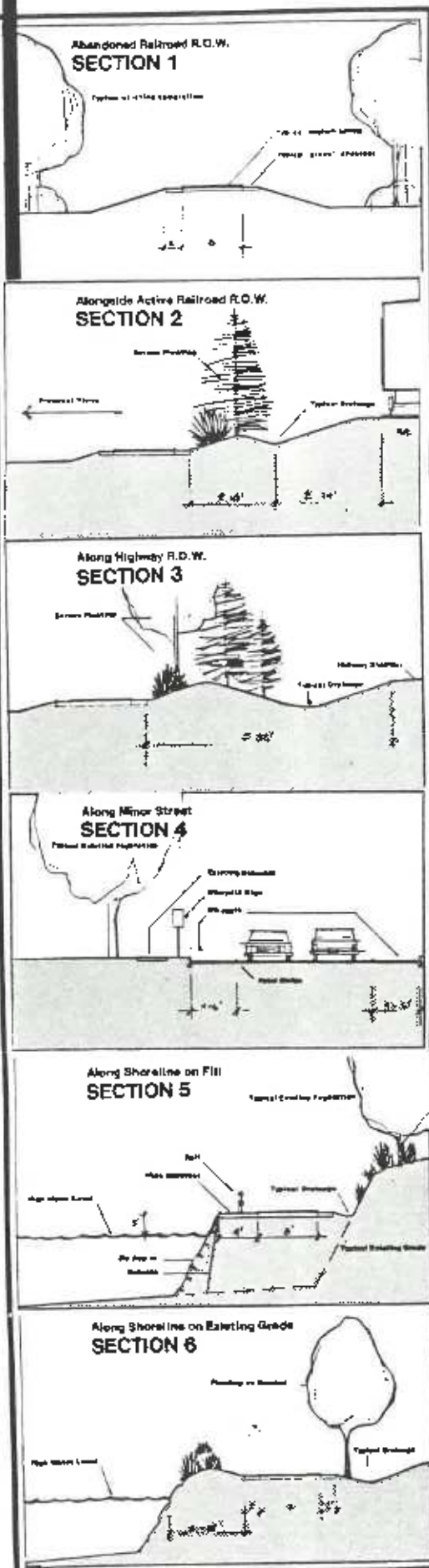
DATE OF AERIAL PHOTOGRAPHS: 4/30/79 C & S. PROJECT NUMBER: C2008

CAMERA FOCAL LENGTH: 152.40 mm. CONTOUR INTERVAL: 2 FEET

**CHICAGO AERIAL SURVEY**  
1100 WEST ROAD  
MILWAUKEE, WISCONSIN 53215  
312.715.1400

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SHEET 15 OF 24 SHEETS



Where Lake Street reaches Main Street, three alternate routes continuing south are evaluated. The first, S8-1, runs behind the old Green Mountain Power building until just past King Street. The second alternate, S8-2, crosses Lake Street and the railroad tracks at Main Street and follows along the west side of the railroad right-of-way until just past King Street. The third alternate, S8-3, also crosses Lake Street and the railroad at Main Street but then this alternate continues west along the Lake Champlain Transportation Company property line to the lake where it turns south and then follows the LCT parking lot and access road to where it joins the other two alternates just south of King Street.

The first two alternates, S8-1 and S8-2, are similar. The third alternate, S8-3, briefly fronts on the lake in two places but travels through a busy area with more possible circulation conflicts.

The preferred route is S8-1 or 2.

From King Street to Maple Street the bike path will run between the railroad right-of-way to the east and the parking lots and Perkins Pier boat ramp to the west. This segment, S9-1, affords pleasant views of Perkins Pier and the lake.

South from Maple Street the bike path could take one of two alternate routes: (1) S10/11-1A runs west along the Perkins Pier parking lot and then turns south and follows along the shoreline past Elias Lyman oil tanks and the sewage treatment plant to a parcel of undeveloped city land west of the railyard and south of the treatment plant. S10/11-1B also connects to this parcel by following the sewage treatment plant/railyard access road to the roundhouse and then a 20' right-of-way to the north west of the roundhouse and on to the city parcel. From this point, S11-1 leads to the old railroad drawbridge across the barge canal. (2) S10/11-2, crosses the railroad tracks and continues south along the proposed Southern Connector Highway right-of-way. The path would be

located on the west side of the highway. This segment continues south leading to the barge canal.

S11-1 and subalternate S10/11-1A provide excellent lake views at a similar cost to the Southern Connector alternate. S10/11-1B is a less scenic route, and S10/11-2 has only limited views of the lake.

THE PREFERRED ROUTE IS S10/11-1A.

The bike path continues south from the barge canal along one of three alternate routes. Segment S12-1 follows the Lake Champlain shoreline west of the railroad right-of-way. About half of this alternate would need to be constructed on fill in the lake along the railroad right-of-way, and the other half would pass along the Blodgett property shoreline on existing grade until it reaches Lakeside Avenue. The second alternate, S12-2 runs south from the barge canal drawbridge along the east side of the railroad right-of-way and divides into two subalternates at the Blodgett building. S12-2A turns west

ROUTE	TOTAL LENGTH (FEET)	COST ESTIMATION						Opinion of Lump Sum Probable Costs	Opinion of Probable Cost	ALTERNATE ROUTE EVALUATIONS					Asterisk Denotes Preferred Route
		Itemized Length by Section Type (Feet)								Evaluations on a 1 to 5 scale					
		Section 1 @ \$15/ft.	Section 2 @ \$30/ft.	Section 3 @ \$30/ft.	Section 4 @ \$.50/ft.	Section 5 @ \$300/ft.	Section 6 @ \$30/ft.			Aesthetics	Slope & Flow	Cost	Land	Weighted Average	
S8-1	600		600					0	18000	2	5	4	4	3.75	*
-2	600		600					0	18000	2	5	4	4	3.75	
-3	1300				700		600	0	18350	4	4	4	1	3.25	
S9-1	300				300			0	150	3.5	5	5	4	4.375	*
S10/11-1A	2400				400		2000	0	60200	5	4	5	3	4.25	*
-1B	2000				800		1200	0	30400	3.5	4	4	3	3.625	
-2	2000			2000				0	60000	3	4	5	4	4	
S12-1	3200				200	1200	1800	93750	507850	5	5	1	3	3.5	
-2A	2600		2400		200			0	72100	4.5	4.5	5	1	3.75	*
-2B	3000		2800		200			0	84100	3.5	3.5	5	2	3.5	
-3	3100			2900	200			0	87100	3	4	1	4	3	



**LEGEND**

FENCE	SPOT ELEVATION	SPOT HEIGHT	SURVEY SPOT HEIGHT
BOARD WALL	MANHOLE COVER	UTILITY POLE	TRAFFIC LIGHT
MANHOLE COVER WITH GRATE	SPOT ELEVATION WITH 'X'	MANHOLE COVER WITH 'X'	MANHOLE COVER WITH 'X'
MANHOLE COVER WITH 'X' AND 'O'	MANHOLE COVER WITH 'X' AND 'O'	MANHOLE COVER WITH 'X' AND 'O'	MANHOLE COVER WITH 'X' AND 'O'



**TOPOGRAPHIC MAP**

**CITY OF BURLINGTON, VERMONT**

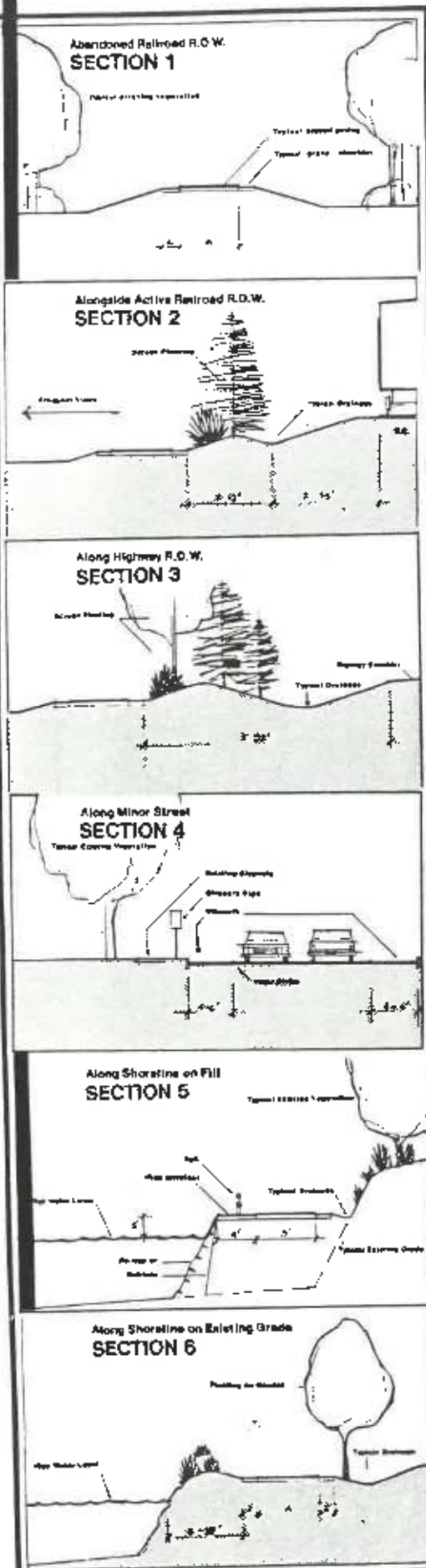
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DATE OF AERIAL PHOTOGRAPHS: 4/30/79 C.A.B. PROJECT NUMBER: C0228  
 CAMERA FOCAL LENGTH: 86.40 mm. CONTOUR INTERVAL: 5 FEET

**CHICAGO AERIAL SURVEY**  
 2115 WOLF ROAD  
 861 PLAINFIELD, ILLINOIS 62551  
 618-242-1000

THE CITY OF BURLINGTON IS THE PROPERTY OF THE CITY OF BURLINGTON, VERMONT. IT IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF THE CITY OF BURLINGTON.

SHEET 18 OF 24 SHEETS



through the Blodget property along a railroad spur, and then turns south through the Blodget parking lot and access road leading to the intersection of Lakeside Avenue and Central Avenue. Subalternate S12-2B continues along the west side of the railroad right-of-way to the trestle that crosses Lakeside Avenue, and then turns west and ramps down a slope to meet Lakeside Avenue at its intersection with Central Avenue. The third alternate, S12-3, is a continuation of S10/11-2 and is also along the west side of the Southern Connector Highway right-of-way.

Both the first and second alternate, S12-1 and S12-2, share lake views. High construction costs or land acquisition difficulties may lead to the use of alternate S12-3 along the Southern Connector which has pleasant natural area views, but which passes close to industrial sites, as well. The S12-1 route will have additional lump sum costs associated with a retaining wall along the Blodget paving.

THE PREFERRED ROUTE IS S12-2A.

The first of the final group of

alternates is S13/14-1. It continues from the Lakeside and Central intersection southwest along the shoreline on existing grade where it passes a few residential buildings and an oil tank field. The path must cross the Engelsby drainage ravine, and then continue across a parcel connected with Ledgewood Condominiums which is typically used as a public beach, and then across another small ravine to reach Flynn Avenue and the entrance to Oak Ledge Park. The second alternate, S13/14-2, proceeds along Central Avenue from Lakeside south to its end where a bridge will be required to cross Engelsby ravine. From here a subalternate, S13/14-2A, turns west and goes around the north west side of an oil tank farm. The other subalternate, S13/14-2B, continues south along a railroad siding on the east side of the oil tank farm. These subalternates then reach Flynn Avenue and Oak Ledge Park. The third alternate, S13/14-3 continues along the Southern Connector Highway from Lakeside Avenue to where the bike path turns west along Flynn Avenue heading to Oak Ledge Park.

Both the first and second alternate provide pleasant but different views

including the lake, residential area and oil tanks. The third alternate goes through mainly industrial and some natural areas. All alternatives have lump sum costs to provide a crossing over the Engelsby Ravine.

THE PREFERRED ROUTE IS S13/14-3.

The bike path continues through Oak Ledge Park on existing 8-10' asphalt paths to Austin Drive on the south side of the park.

There is no evaluation of this segment.

NOTE: Route S13/14-4 has been added after further field investigation.

COST ESTIMATION						ALTERNATE ROUTE EVALUATIONS									
ROUTE	TOTAL LENGTH (FEET)	Itemized Length by Section Type (Feet)						Lump Sum Costs	Opinion of Probable Cost	Evaluations on a 1 to 5 scale					
		Section 1 @ \$15/ft.	Section 2 @ \$30/ft.	Section 3 @ \$30/ft.	Section 4 @ \$.50/ft.	Section 5 @ \$300/ft.	Section 6 @ \$30/ft.			Aesthetics	Slope & Flow	Cost	Land	Weighted Average	Asterisk Denotes Preferred Route
S12-1	3200				200	1200	1800	93750	507850	5	5	1	3	3.5	*
-2A	2600		2400		200			0	84100	4.5	4.5	5	1	3.75	*
-2B	3000		2800		200			0	87100	3.5	3.5	5	2	3.5	
-3	3100			2900	200			0	87100	3	4	1	4	3	
S13/14-1	2600						2600	28800	106800	5	4	4	2	3.75	*
-2A	2600			1400	1200			42400	85000	4	5	5	2	4	
-2B	2700		600	300	1800			28000	55900	2.5	5	5	2	3.625	
-3	4500			2500	2000			28000	104000	1.5	4	5	4	3.625	
S15-1	2500									4.5	3.5	5	5	4.5	*





**LEGEND**

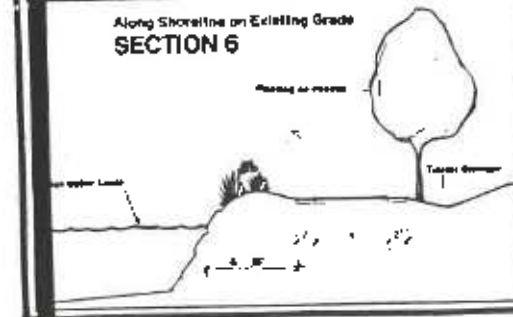
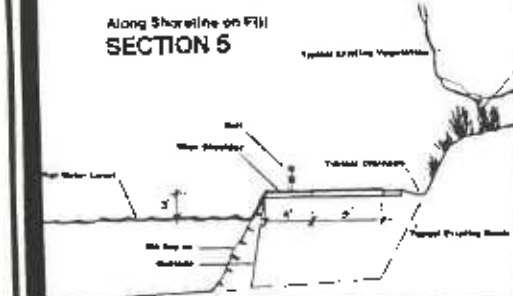
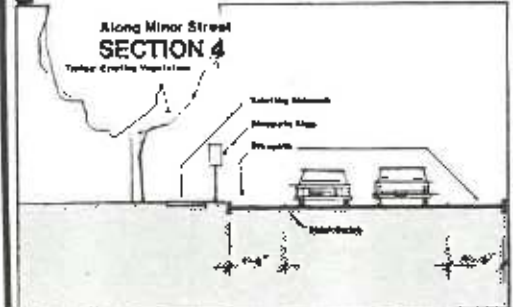
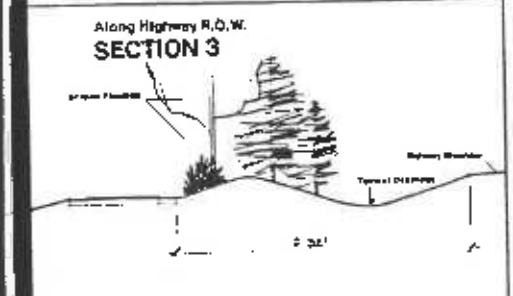
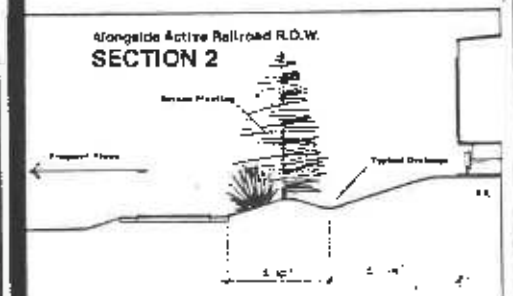
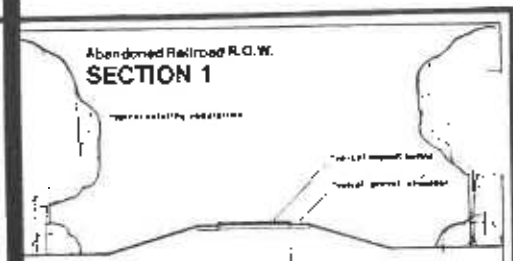

**TOPOGRAPHIC MAP**  
**CITY OF BURLINGTON, VERMONT**

200 0 200 400 600 800 1000

DATE OF AERIAL PHOTOGRAPHS 4/30/79 C.A.B. PROJECT NUMBER C0229  
CAMERA FOCAL LENGTH 82.40mm CONTOUR INTERVAL 5 FEET

**CHICAGO AERIAL SURVEY**  
1110 N. WABASH ST. CHICAGO, ILL. 60606  
SEE PLANNING DEPARTMENT FOR MORE INFORMATION

SHEET 20 OF 84 SHEETS



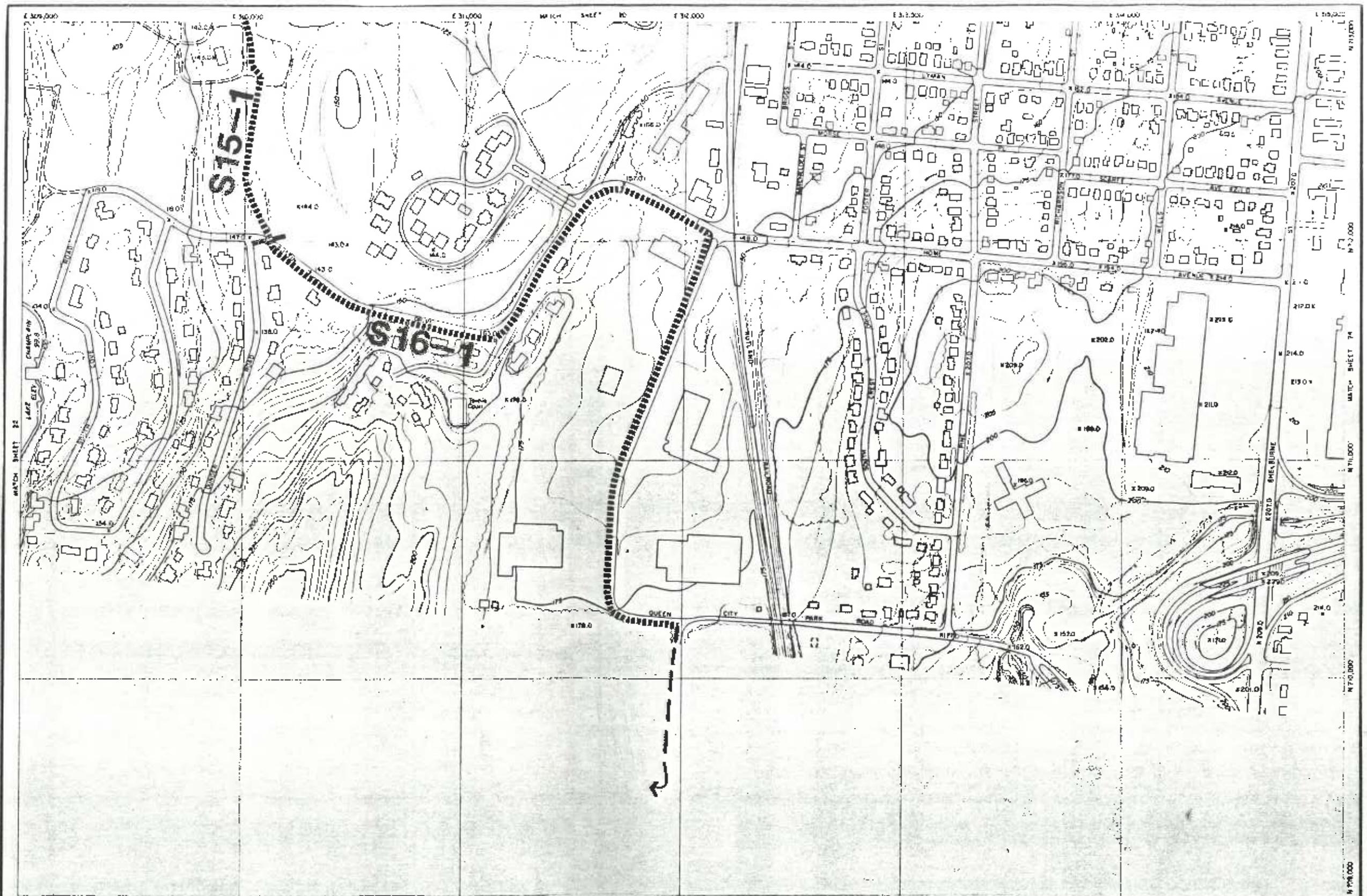
The bike path continues through Oak Ledge Park on existing 8-10' asphalt paths to Austin Drive on the south side of the park.

There is no evaluation of this segment.

From Oak Ledge Park to Red Rocks Park in South Burlington, the route labeled S16-1 follows Austin Drive east to Queen City Park Road where it turns south passing several industrial sites and comes to the entrance of the park.

See the rating evaluation, below.

COST ESTIMATION						ALTERNATE ROUTE EVALUATIONS								
ROUTE	TOTAL LENGTH (FEET)	Itemized Length by Section Type (Feet)						Lump Sum Costs	Opinion of Probable Cost	Evaluations on a 1 to 5 scale				
		Section 1	Section 2	Section 3	Section 4	Section 5	Section 6			Aesthetics	Slope & Flow	Cost	Land	Weighted Average
S15-1	2500							EXISTING	4.5	3.5	5.0	5.0	4.5	*
S16-1	5400				5400			2700	1	1	4.0	5.0	3.75	*



TOPOGRAPHIC MAP					
CITY OF BURLINGTON, VERMONT					
DATE OF AERIAL PHOTOGRAPH: 4/30/79			C.A.S. PROJECT NUMBER: C1025		
CAMERA FOCAL LENGTH: 62.40 mm			CONTOUR INTERVAL: 5' FOOT		
<small>           CHICAGO AERIAL SURVEY            214 WEST ROAD            205 PLAINFIELD, ILLINOIS 60549            312 784 1000         </small>					
<small>           SHEET 27 OF 24 SHEETS         </small>					

**LEGEND**




Burlington Bicycle Path  
Burlington, Vermont

COMPOSITE ROUTE EVALUATION SUMMARY SHEET FOR  
THE PREFERRED ROUTE

COST  
ESTIMATION

ALTERNATE  
ROUTE  
EVALUATIONS

ROUTE	TOTAL LENGTH (FEET)	Itemized Length by Section Type (Feet)						Lump Sum Costs	Opinion of Probable Cost	Evaluations on a 1 to 5 scale					Asterisk Denotes Preferred Route
		Section 1	Section 2	Section 3	Section 4	Section 5	Section 6			Aesthetics	Slope & Flow	Cost	Land	Weighted Average	
		@ \$15/FT.	@ \$30/ft	@ \$30/ft	@ \$.50/ft	@ \$300/ft	@ \$30/ft								
S1-1	6800							0	EXISTING	4.5	5	5	5	4.875	*
S2-1	4600							0	EXISTING	4	5	5	5	4.75	*
S3-1	5500	5500						0	82500	4	5	5	3	4.25	*
S4-1	2600	2600						28600	67600	3.5	5	4	3	3.875	*
S5/6-1	4000		1300		2700			0	43050	2	5	5	4	4	
-2	4500				800		3700	0	111400	4	4	5	4	4.25	*
S7-1	2000			2000				0	60000	2	5	4	4	3.75	*
S8-1	600			600				0	18000	2	5	4	4	3.75	*
-2	600			600				0	18000	2	5	4	4	3.75	
-3	1300	600			700			0	9350	4	4	4	1	3.25	
S9-1	300				300			0	150	3.5	5	5	4	4.375	*
S10/11-1A	2400				400		2000	0	60200	5	4	5	3	4.25	*
-1B	2000	400			800		800	0	30400	3.5	4	4	3	3.625	
-2	2000			2000				0	60000	3	4	5	4	4	
S12-1	3200				200	1200	1800	93750	507850	5	5	1	3	3.5	
-2A	2600		2400		200			0	72100	4.5	4.5	5	1	3.75	*
-2B	3000		2800		200			0	84100	3.5	3.5	5	2	3.5	
-3	3100			2900	200			0	87100	3	4	1	4	3	
S13/14-1	2600						2600	28800	106800	5	4	4	2	3.75	*
-2A	2600			1400	1200			42400	85000	4	5	5	2	4	
-2B	2700		600	300	1800			28000	55900	2.5	5	5	2	3.625	
-3	4500			2500	2000			28000	104000	1.5	4	5	4	3.625	
S15-1	2500							0	EXISTING	4.5	3.5	5	5	4.5	*
S16-1	5400				5400			0	2700	1	4	5	5	3.75	*
Total	34800														
									WEIGHTING	1	1	1	1		

TOTAL PROBABLE COST FOR PREFERRED ROUTE.....\$581,450

# APPENDIX

ROUTE EVALUATIONS AESTHETICS ONLY						
Evaluations on a 1 to 5 scale						
ROUTE	Aesthetics	Slope & Flow	Cost	Land	Weighted Average	Asterisk Denotes Preferred Route
S1-1	4.5	5	5	5	4.5	*
S2-1	4	5	5	5	4	*
S3-1	4	5	5	3	4	*
S4-1	3.5	5	4	3	3.5	*
S5/6-1	2	5	4	4	2	
-2	4	4	5	4	4	*
S7-1	2	5	4	4	2	*
S8-1	2	5	4	4	2	
-2	2	5	4	4	2	
-3	4	4	4	1	4	*
S9-1	3.5	5	5	4	3.5	*
S10/11-1A	5	4	5	3	5	*
-1B	3.5	4	4	3	3.5	
-2	3	4	5	4	3	
S12-1	5	5	1	3	5	*
-2A	4.5	4.5	5	1	4.5	
-2B	3.5	3.5	5	2	3.5	
-3	3	4	1	4	3	
S13/14-1	5	4	4	2	5	*
-2A	4	5	5	2	4	
-2B	2.5	5	5	2	2.5	
-3	1.5	4	5	4	1.5	
S15-1	4.5	3.5	5	5	4.5	*
S16-1	1	4	5	5	1	*
WEIGHTING	1	0	0	0		

TOTAL PROBABLE COST FOR PREFERRED AESTHETIC ROUTE.....\$1,008,550

ROUTE EVALUATION COST ONLY						
Evaluations on a 1 to 5 scale						
ROUTE	Aesthetics	Slope & Flow	Cost	Land	Weighted Average	Asterisk Denotes Preferred Route
S1-1	4.5	5	5	5	5	*
S2-1	4	5	5	5	5	*
S3-1	4	5	5	5	5	*
S4-1	3.5	5	4	3	4	*
S5/6-1	2	5	5	4	2	*
-2	4	4	5	4	5	
S7-1	2	5	4	4	4	*
S8-1	2	5	4	4	4	
-2	2	5	4	4	4	
-3	4	4	4	1	4	*
S9-1	3.5	5	5	4	5	*
S10/11-1A	5	4		3		
-1B	3.5	4	4	3	4	
-2	3	4		4		
S12-1	5	5	1	3	1	
-2A	4.5	4.5	5	1	5	*
-2B	3.5	3.5	5	2	5	
-3	3	4	1	4	1	
S13/14-1	5	4	4	2	4	
-2A	4	5	5	2	5	
-2B	2.5	5	5	2	5	*
-3	1.5	4	5	4	5	
S15-1	4.5	3.5	5	5	5	*
S16-1	1	4	5	5	5	*
WEIGHTING	0	0	1	0		

TOTAL PROBABLE COST FOR PREFERRED COST EFFECTIVE ROUTE.....\$423,750

# CONCLUSION

The potential exists to develop this bicycle path for the full length of the corridor. Issues which must be addressed in the next phase of the project development include:

## Land Acquisition

The City has contracted with the Ottawaquechee Land Trust to provide technical support in assessing the potential for land acquisition, and to negotiate acquisition with individual owners. As actual availability of land is determined, the information should be input to the route evaluation system to determine the preferred alternate route.

## Funding

The City Community and Economic Development Office is pursuing State, Federal, and private funding sources. Again, this information may be used in weighting the cost index in the evaluation system, to choose a fundable route.

## Permits

In addition to review by City Agencies and Boards, review under the State Act 250 Land Use Law will also be required. Other State review will include review by the Agency of Environmental Conservation for storm water discharge associated with drainage, and for land underlying public waters, and review by the Department of Labor and Industry for access for the handicapped. Federal review will be required by the Corps of Engineers who, in turn, coordinate the review by the Environmental Protection Agency, the Department of Fish and Wildlife, National Marine Fisheries, and the National Oceanographic and Atmospheric Administration.

## Network

The lakeshore corridor should be coordinated with other existing and proposed bike paths in the city. In

addition, other traffic generators and travel destinations, such as public parks, industries, and schools, should be identified and provisions for interfacing with these facilities should be considered.

This report is intended as a preliminary assessment which should be used as the framework for further input and evaluation.

