

GRAND MARAIS ROAD CORRIDOR IMPROVEMENT ENVIRONMENTAL STUDY REPORT

Howard Avenue to Walker Road



**Corporation of the City of Windsor
Public Works Department**

July 2000

GRAND MARAIS ROAD EAST E.S.R.

TABLE OF CONTENTS

	Page No.
ACKNOWLEDGMENTS	i
EXECUTIVE SUMMARY	ii
1.0 BACKGROUND INFORMATION	1
1.1 Introduction	1
1.2 Class E.A. Process	1
1.3 Public and Agency Consultation	4
1.4 Study Area	4
1.5 Project Team	5
1.6 Background Studies	6
1.7 Problem Definition	8
1.8 Problem Statement	8
2.0 THE ENVIRONMENT	10
2.1 Introduction	10
2.2 Natural Environment	10
2.2.1 Environmental Assessment (ESA) – Phase I.....	10
2.2.1.1. Current & Historical Site Use.....	11
2.2.1.2. Description of Buildings & Facilities.....	11
2.2.1.3. Inventory of Potential Hazardous Materials....	12
2.2.1.4. Findings & Conclusions.....	12
2.2.2 Grand Marais Drain.....	12
2.2.3 Parks.....	12
2.3 Social Environment	13
2.3.1 Residential	13
2.3.2 Recreation/Cycling/Planning Issues	13
2.3.3 Schools and Pedestrians	13
2.3.4 Heritage Resources.....	14
2.3.5 Archaeological Issues	14
2.4 Economic Environment	14
2.4.1 Commercial Environment	14
2.4.2 Institutional Environment/Industrial Environment	15
2.5 Transportation	15
2.5.1 Existing Roadway Conditions	15
2.5.2 Traffic Volumes/Collision Information.....	16
2.5.3 Public Transit	16
2.5.4 Cyclists	16
2.5.5 Pedestrians	17
2.5.6 Railway	17
2.6 Existing Infrastructure	17

TABLE OF CONTENTS (continued)

		Page No.
3.0	IDENTIFICATION AND EVALUATION OF THE ALTERNATIVE IMPROVEMENT OPTIONS	19
3.1	Identification and Evaluation of Roadway Design Options.....	19
3.1.1	Identification of Roadway Design Options	19
3.1.2	Evaluation of Roadway Design Options.....	20
3.1.3	Selection of the Recommended Roadway Design	21
3.2	Identification and Evaluation of Ancillary Options for Traffic Congestion Problems.....	21
3.2.1	Identification of Ancillary Options.....	22
3.2.2	Evaluation of Ancillary Options.....	23
3.2.3	Selection of Ancillary Options.....	24
3.3.	Identification and Evaluation of a Bikeway System.....	24
3.3.1	Identification of Bikeway Route Options.....	25
3.3.2	Evaluation of Bikeway Options.....	26
3.3.3.	Selection of Recommended Bikeway Route Options.....	26
3.4	Infrastructure Improvements	27
3.5	Streetscape Improvements	27
3.6	Property Issues	27
4.0	PREFERRED DESIGN	28
4.1	Detailed Description of the Preferred Design	28
4.1.1	Preferred Road Design	28
4.1.1.1	Howard Avenue to Parent Avenue.....	28
4.1.1.2.	Parent Avenue to Turner Road	29
4.1.1.3.	Turner Road to Walker Road	30
4.1.2	Storm Water Drainage	30
4.1.3	Sanitary Drainage	31
4.1.4	Utilities	31
4.1.4.1	Watermains	31
4.1.4.2	Hydro	32
4.1.4.3	Gas	32
4.1.4.4	Bell Canada	32
4.1.4.5	Cogeco Cable	32
4.1.5.	Traffic Control Signals & Improvements	33
4.2	Walker Road E.S.R.....	33
4.3	Walker Road/Railway Crossing.....	33
4.4	Construction Issues & Phasing	34
4.5	Preliminary Cost Estimates	34
4.6	Pavement Design.....	35

TABLE OF CONTENTS (continued)

		Page No.
4.7	Potential Environmental Conditions and Mitigating Measures	35
4.7.1	Short Term Environmental Impacts	35
4.7.2	Long Term Environmental Impacts	35
4.7.3	Property Requirements	36
4.8	E.A. Process.....	36
4.9	Future Activities.....	37

LIST OF FIGURES

<u>No.</u>	<u>Title</u>	<u>After Page</u>
1.0	Planning & Design for Municipal Road Projects	9
1.1	Study Area Map	9
2.0	Existing Land Use Official Plan	18
3.0	Option 1: Do Nothing (Existing Conditions)	27
3.1	Option 2: 7.32m Wide Pavement + 3m Bike Lanes Option 3: 8.53m Wide Pavement + 3m Bike Lane Option 4: 8.53m Wide Pavement + 3m Bike Lanes	27
3.2	Option 5: 9.00m Wide Pavement – No Bike Lane Option 6: 10.36m Wide Pavement - Shared Use Option 7: 10.36m Wide Pavement + 3m Bike Lanes	27
4.0	Preferred Design	37

LIST OF TABLES

<u>No.</u>	<u>Title</u>	<u>After Page</u>
1.0	Study Team Membership	5
2.0	Summary of Existing Infrastructure.....	17
3.0a	Evaluation Summary of Alternative Designs	20
3.0b	Evaluation Summary of Alternative Designs Continued	20
4.0	Summary of Preliminary Cost Estimates	34

LIST OF APPENDICES

<u>No.</u>	<u>Title</u>
Appendix A	- Public Notification
Appendix B	- Public Information Centres
Appendix C	- Public Comment
Appendix D	- Transportation Assessment
Appendix E	- Detailed Cost Estimates

ACKNOWLEDGEMENTS

As the first Environmental Study Report completed completely in-house by the Public Works Department, we are thankful to the Commissioner of Works, Mr. Gord Harding, P. Eng, for allowing us to proceed with this interesting and challenging assignment. In completing this planning exercise, numerous levels of participation by individuals aided in achieving the end result.

In appreciation of the effort and expertise provided towards this project, we would like to offer our thanks and acknowledge the following individuals.

Study Team

Mr. T.W. Szalay, P. Eng., Public Works Department
Mr. Mark Winterton, P. Eng., Public Works Department
Mr. Antonio Bietola, P. Eng., Public Works Department
Mr. Sebastian Martincic, Public Works Department, (Co-op Student)
Mr. Paul Mourad, Public Works Department, (Co-op Student)
Miss Krystal Kalbol, Public Works Department (Co-op Student)
Mr. James Abbs, Public Works Department - Drafting
Mrs. Silvana Svizzero, Public Works Department
Ms. Faye Langmaid, Parks & Recreation Department
Ms. Jan Wilson, Parks & Recreation Department
Mr. John Tofflemire, P. Eng., Traffic Engineering Department
Mr. Wes Hicks, P. Eng., Traffic Engineering Department
Mr. Steve Bittner, Traffic Engineering Department
Mr. Michael Palanacki, P. Eng., Traffic Engineering Department
Mr. Rajindra Varma, MPIC, Planning Department
Mr. Mike Stamp, Property Department

Community Groups, Agencies, and Support Staff

Mr. Jim Trofin, Windsor Bicycle Committee
Mr. Barry Horrobin, Windsor Police Services

EXECUTIVE SUMMARY

GRAND MARAIS ROAD E.S.R.

As part of the City of Windsor's ongoing roadway system improvement, the section of Grand Marais Road from Howard Avenue to Walker Road has been identified in the Windsor Area Long Range Transportation Study (WALTS) as needing operational and capacity improvements. The purpose of this study is to evaluate alternative solutions for the identified transportation problems in the study area, leading to the selection of a preferred solution and ultimately a preferred design. This report was prepared in accordance with the requirements of the Class Environmental Assessment for Municipal Roads Projects. The following problem statement was developed early in the planning process based on input received from the public and the requirements of the Official Plan, W.A.L.T.S., and Bicycle Policies for the City of Windsor:

“Proposed development in the City of Windsor has contributed towards the need to review the function of Grand Marais Road. To define the function and potential improvements to Grand Marais Road as defined in the Central Corridor Study, the City of Windsor is undertaking a Class Environmental Assessment of the section of Grand Marais Road from Howard Avenue to Walker Road addressing the social, economic, and environmental issues.”

The problems along the corridor can be classified in three general categories:

1. Structural deficiencies of existing pavements;
2. Capacity deficiencies at intersections and mid-block locations;
3. Unsafe conditions, due to narrow pavements.

The problem statement was supported by the Study Team and presented to affected agencies and the public at the first public information meeting.

In accordance with the Class Environmental Assessment process, public and agency consultation was a vital part of the process. They are:

Phase 1 - The Initiation of the Class E.A. Process - Invitation for Public Comment (mandatory).

Public Information Centre No. 1 – Wednesday, January 26, 2000 (discretionary Phase 1)

Phase 2 - Identification of the Problem and Alternative Solutions (mandatory)

Public Information Centre No. 2 – Wednesday, May 3, 2000, Phase 2 & 3 (mandatory)

Phase 4 - Public Review Upon Completion of the Project (mandatory) - Notice of Completion – Saturday, August 12, 2000

In addition to the above, numerous meetings and telephone discussions were held with the Study Team, City of Windsor Departments, the public, and affected agencies. Following the consultation processes the preferred solution of a 10.4 metre wide road approximately centered within the right-of-way and a preferred design with the following key design elements:

- 10.4 metre (34 foot) wide pavement approximately centered within existing right-of-way
- Two vehicle travel lanes of 3.65 metres wide
- Two bicycle lanes of 3.05 metres wide (total)
- Two 1.2 metre wide sidewalks on both sides of the road for the entire length
- Closure of Grand Marais Road at Walker Road
- Proposed all-way stops at corners of Parent Avenue and Grand Marais Road and at South Pacific Avenue and Grand Marais Road
- Property required for widening of right-of-way to 20 metres

The cost to complete the works is approximately 5 million dollars based on 2000 estimates. It is recommended that this project be completed in phases to allow for greater budget flexibility.

Suggested phasing and estimated costs are as follows:

Grand Marais Road East - Howard Avenue to Walker Road

Construction Estimates (based on 2000 dollars)

Concrete

Phase 1 – Parent Avenue to Slater Street	\$1,947,411.09 + GST
Phase 2 – Slater Street to Walker Road	\$1,713,425.92 + GST
Phase 3 – Howard Avenue to Parent Avenue	<u>\$1,502,849.51 + GST</u>
Total Project Cost for Concrete Pavement:	\$5,163,686.52 + GST

GRAND MARAIS ROAD CORRIDOR IMPROVEMENT **ENVIRONMENTAL STUDY REPORT**

Howard Avenue to Walker Road

1.0 BACKGROUND INFORMATION

1.1 Introduction

As part of the City of Windsor's ongoing roadway system improvements, a section of Grand Marais Road East from Howard Avenue to Walker Road has been identified in the Windsor Area Long Range Transportation Study (WALTS), as needing operational and capacity improvements. These improvements may involve roadway upgrading and widening for additional traffic lanes and/or bicycle lanes, and associated traffic control improvements at key intersections for traffic calming. The purpose of this study is to evaluate alternative solutions for the identified transportation problems in the study area, leading to the selection of a preferred solution and ultimately a preferred design.

1.2 Class Environmental Assessment Process

In recent years, the need to involve the public in the decision making process for public projects was recognized and in some cases demanded by the public. The Environmental Assessment Act (EA Act) was passed in 1975 by the Province of Ontario to provide a mechanism for public participation in public projects. The EA Act has provided that an Environmental Assessment must be prepared for all warranted municipal roads projects meeting certain criteria.

The EA Act recognized that certain municipal undertakings occur frequently, are small in scale, have a generally predictable range of effects or have a relatively minor environmental significance. To ensure that a degree of standardization in the planning process is followed throughout the province for these types of projects, a process known as a Class Environmental Assessment has been approved for use by municipalities for use on projects which require approval under the Act but which are not considered to be major environmental works. These procedures were developed by the Municipal Engineers Association (MEA) and are contained in a document called "Class

Environmental Assessment for Municipal Road Projects, June 1993". It is a self-assessment process and the responsibility rests with the proponent, the City of Windsor, to ensure that the requirements of the Class EA process are met. Projects which follow this process do not require any further approvals under the Environmental Assessment Act. This process applies to Grand Marais Road East from Howard Avenue to Walker Road to alleviate structural capacity and safety deficiencies.

The Class EA process involves a sequence of activities which guide a proponent in the planning of a project such that the requirements of the Environmental Assessment Act have been met. That process involves five basic principals:

1. Parties potentially affected by the project should be involved early and throughout the process in a cooperative planning and design process.
2. Consider a reasonable range of alternative solutions and alternative designs for the preferred solution including the "do nothing" option.
3. Identify the effects of the alternative solutions on appropriate elements of the environment, consistent with the importance of that element.
4. Conduct a systematic evaluation of alternative solutions identifying advantages and disadvantages, leading to a determination of net environmental impacts.
5. Provide clear and complete documentation of the process to allow "traceability" of the decision making process.

The above principals are applied in a five phase process leading to the preparation of an Environmental Study Report (ESR) and construction of the project, as shown in Figure 1.0, this ESR will cover the first four of those phases as follows:

Phase 1 - Identify problem/deficiency

- Phase 2
 - Identify alternative solutions taking into consideration important elements of the environment
 - Evaluate alternative solutions
 - Review with public and affected/interested agencies
 - Select preferred solution

- Phase 3
 - Develop alternative designs for preferred solution
 - Evaluate alternatives and identify environmental impacts
 - Review with public and agencies
 - Resolve concerns/investigate environmental impacts
 - Identify residual environmental affects
 - Select preferred design alternative

- Phase 4
 - Prepare ESR to document above process
 - Place report on the public record and advertise completion of the study

The guidelines for conducting a Class EA define three categories of increasing involvement:

- Schedule A
 - Projects of limited scope with minimal adverse impacts.
 - Considered approved without further review

- Schedule B
 - Larger projects with adverse impacts in limited areas
 - “Screening” of issues to determine if any concerns exist

- Schedule C
 - Projects have the potential for significant environmental effects and concerns
 - Must prepare an Environmental Study Report (ESR)

The range and potential impacts of alternatives being considered to improve Grand Marais Road East from Howard Avenue to Walker Road in view of the perceived problem has led to the decision to designate this project as a Schedule C project. This decision is confirmed at the end of Phase 2.

If there are unresolved concerns regarding the Class EA process, affected individuals or agencies may request that a Schedule C undertaking be “bumped-up” to an individual environmental assessment.

1.3 Public and Agency Consultation

In accordance with the Class EA document, Schedule “C” undertakings require two mandatory points of public notification and two points of mandatory consultation. They are:

- Phase 1 - The initiation of the Class EA process (Mandatory notification).
- Phase 2 - Identification of the problem and alternative solutions
 (Mandatory consultation).
- Phase 3 - Review by interested parties and those directly affected by the
 project (Mandatory consultation).
- Phase 4 - Public review upon completion of the project (Mandatory
 notification).

For the Grand Marais Road East Class Environmental Assessment, five formal points of public contact occurred, (see Appendix A).

- Project Initiation Notice, Windsor Star, Saturday, January 15, 2000.
- Project Initiation Notice, Windsor Star, Saturday, April 22, 2000.
- Public Information Centre #1, Wednesday, January 26, 2000.
- Public Information Centre #2, Wednesday, May 3, 2000.
- Notice of Completion, Windsor Star, Saturday, August 12, 2000.

In addition to the above, meetings and telephone discussions were held with the study team, the affected City of Windsor Departments, the public and affected agencies. A list of these agencies are also included in Appendix A.

The sign-in sheets for the Public Information Centres are included as Appendix B. The public and affected agencies were invited to submit comments based on the presentations prepared for the Public Information Centres. All comments received were reviewed and evaluated in the context of the study. Comments received are included as Appendix C.

1.4 Study Area

Figure 1.1 defines the project study area bounded by Canadian Pacific Railway (C.P.R.) on the north, on the west by Howard Avenue, on the east by Walker Road and on the south by E. C. Row Expressway.

Also shown in this figure is the Improvement Corridor Area, Grand Marais Road East. The study area was examined for overall impacts created by the alternative solutions. The corridor area along Grand Marais Road East is comprised of residential, commercial, institutional and industrial land uses. Grand Marais Road East is classified as a Class I Collector according to the Windsor Official Plan (Transportation Section).

1.5 Project Team

A study team was established by the City of Windsor at the beginning of the Class EA process. The study team consisted of senior representatives of affected City Departments. The role of the team was to provide guidance and assistance regarding matters within their jurisdiction as required during the study period. Members of the Study Team also attended the Public Information Meetings to answer any agency or public questions as they relate specifically to their Department. The Study Team members and their departments are listed in the following table. (Table 1.0)

Table 1.0

STUDY TEAM MEMBERSHIP

City Department	Staff
Public Works Department	T.W. Szalay, P. Eng.
	Mark Winterton, P. Eng.
	Antonio Bietola, P. Eng.
	Sebastian Martincic
	Paul Mourad
	Krystal Kalbol
Parks and Recreation Department	Faye Langmaid, FCSLA, MCIP
Traffic Engineering	John Tofflemire, P. Eng
	Mike Palanacki, P. Eng
	Wes Hicks, P. Eng
	Steve Bittner
Planning Department	Rajindra Varma, MCIP
Property Department	Mike Stamp

1.6 Background Studies

The background studies given consideration for the Grand Marais Road East are as follows:

City of Windsor Official Plan, 1999, by the City of Windsor

The Official Plan provides guidance for the physical development of the City of Windsor over a 20 year period through to 2019 while taking into consideration important social, economic and environmental matters.

Windsor Area Long Range Transportation Study (WALTS) - Final Report, August, 1999, by Stantec Consulting Group Ltd.

The purpose of this study was to provide a master plan to guide future development of transportation services in the Windsor area through the year 2016.

Grand Marais Drain from Howard Avenue to Walker Road: Environmental Study Report to the City of Windsor, March 1992, by MacLaren Engineers.

This report documents the planning and design phase of the Grand Marais Drain. It includes a discussion of the purpose of the project approach, the existing natural and socio-economic conditions along the drain, the planning alternatives and alternative design options considered, and the construction requirements associated with the implementation of the project.

Grand Marais Drain from Howard Avenue to Walker Road: Functional Design Report to the City of Windsor, December 1991, by MacLaren Engineers.

This report identifies a permanent location for the proposed underground transmission line between Howard Avenue and Walker Road, a scope of improvements for this reach of the Grand Marais Drain and a linear park and bicycle path development for this length of the Drain.

Grand Marais Drain: Functional Study and Environmental Study Report, September 1991, by MacLaren Engineers.

The purpose of this study was to develop and locate an improved Grand Marais Drain cross-section between Howard Avenue and Walker Road, to identify a preferred route 40 meters (130 ft.) easement alongside the future improved Grand Marais Drain for Ontario Hydro's future underground transmission line and City bikeway and to integrate the above within the proposed linear park.

Geotechnical Investigation: Grand Marais Road East Reconstruction from Howard Avenue to Walker Road, July 1990, by Golder Associates.

The purpose of this report is to determine the existing pavement structure and sub-surface soil and groundwater conditions along the roadway. This was used to provide geotechnical engineering recommendations for the design of the proposed roadway reconstruction.

Bicycle Use Development Study (BUDS), December 1990, by Victor Ford and Associates, Lafontaine, Cowie, Buratto and Associates, E. Fearnly and Blair Martin.

The purpose of this study is to provide recommendations for technical promotion, education, planning and development for bicycle use in the City of Windsor.

Functional Report: Grand Marais Road East from Howard Avenue to Walker Road, April 1984, by the Public Works Department.

This report addresses the requirements for future road improvements on Grand Marais Road East for the given limits.

Functional Report for Grand Marais Road East from Howard Avenue to Walker Road, August 1982, by the Public Works Department.

This study defines the need for reconstruction of Grand Marais Road East for the given limits.

Design Report for the Grand Marais Drain for the City of Windsor August 1969, by M.M. Dillon Limited.

This study outlines investigations and recommendations for the improvement and/or diversions to the Grand Marais Drain.

1.7 Problem Definition

The overall planning strategy of the Windsor Area Long Range Transportation Study (WALTS) in conjunction with the Central Corridor Study is to guide the growing transportation needs of the city. In the Windsor area, the success of the Transportation Plan is primarily dependent upon adjusting the level-of-service, and on improving and increasing the roadway system capacity. The deficiencies identified on Grand Marais Road East was the ability of the existing roadway to handle current and future capacity demands and geometric deficiencies.

1.8 Problem Statement

For the purpose of this study, the following problem statement was developed.

Proposed development in the City of Windsor has contributed towards the need to review the function of Grand Marais Road East. To define the function and potential improvements to Grand Marais Road East as defined in the Windsor Area Long Range Transportation Study (WALTS), the City of Windsor is undertaking a Class Environmental Assessment of a section of Grand Marais Road East from Howard Avenue to Walker Road addressing the social, economic and environmental issues.

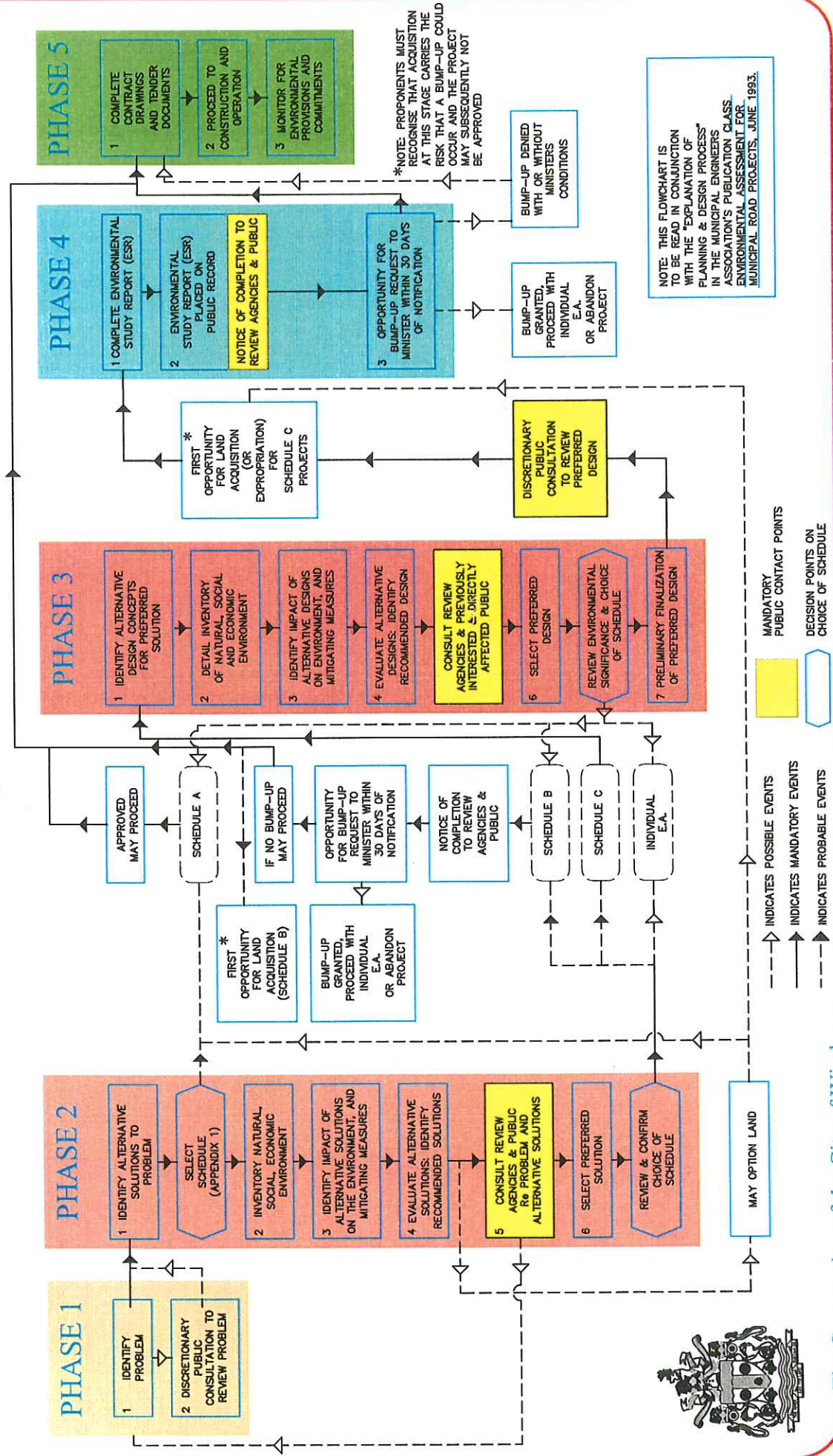
The problems along the corridor can be classified in three general categories:

- (i) Structural deficiencies of existing pavements
- (ii) Capacity deficiencies at intersections and mid-block locations
- (iii) Unsafe conditions due to narrow pavement

The problem statement was supported by the study team and presented to affected agencies and the public at the first public information meeting.

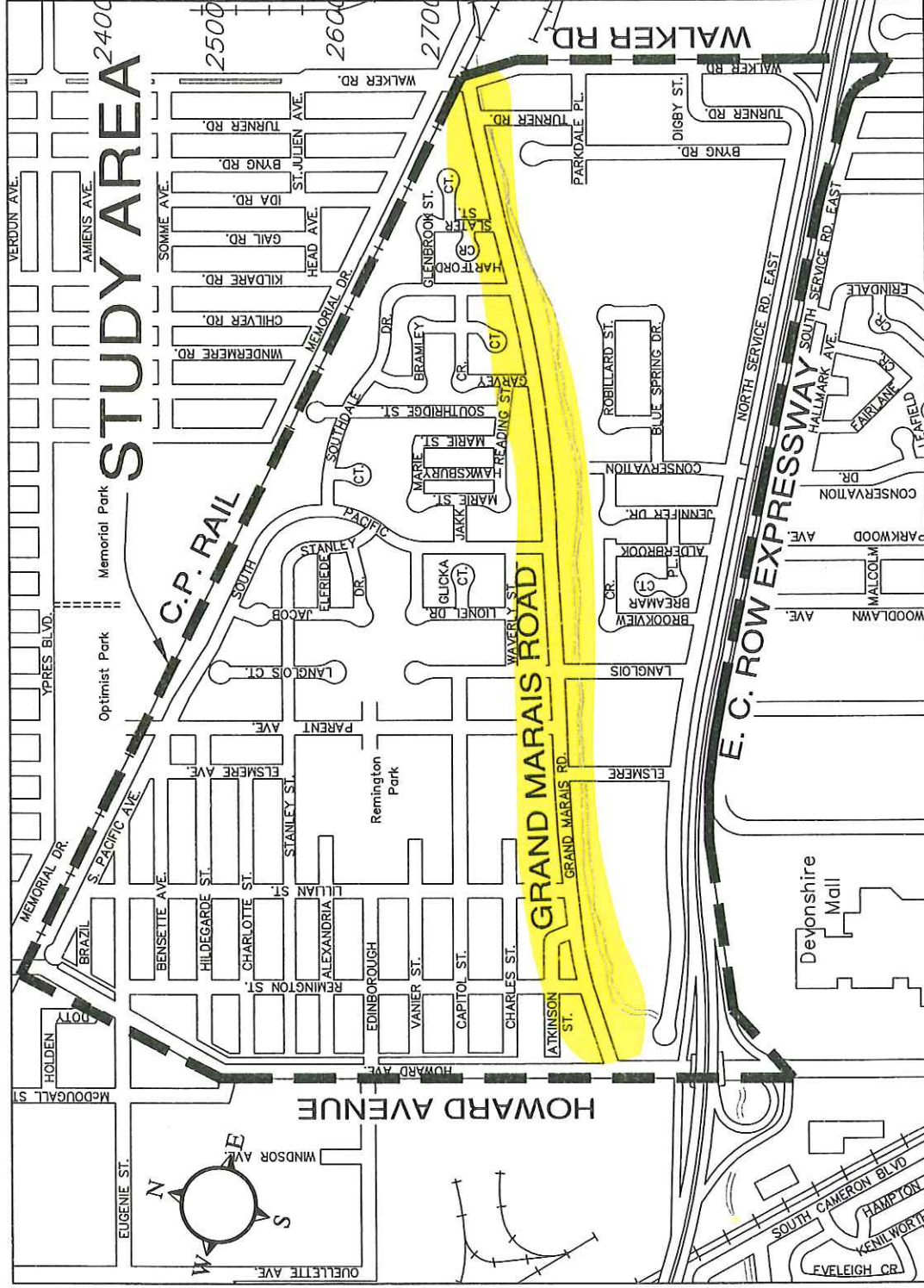
PLANNING AND DESIGN FOR MUNICIPAL ROAD PROJECTS

Grand Marais Road East Corridor Improvements - Class Environmental Assessment



Study Area

Grand Marais Road Corridor Improvement - Class Environmental Assessment



Not to Scale

CORRIDOR AREA



2.0 THE ENVIRONMENT

2.1 Introduction

The study area is an urbanized environment paralleled on each side by the Class I Arterial Roads, Howard Avenue and Walker Road. The Canadian Pacific Railway lies to the north of the study area, while E. C. Row Expressway lies to the south of the study area.

There are several land uses within this corridor as shown in Figure 2.0 which include:

- Commercial
- Institutional
- Recreational/Open Space/Park
- Residential
- Industrial
- Mixed Use

However, the majority of land use is residential. The commercial and industrial land uses lie mainly south of Grand Marais Road East along North Service Road abutting the E. C. Row Expressway.

2.2 Natural Environment

Several significant trees (i.e. Oak, Walnut, etc.) exist along the Grand Marais Road corridor which may be impacted by the proposed solutions. A detailed assessment by the City Forester should be conducted prior to final design of the proposed project.

2.2.1 Environmental Site Assessment (ESA) – Phase I

The Environmental Site Assessment-Phase I is used to identify any actual or potential site contamination related to current or historical land use within the proposed construction area, along Grand Marais Road East from Howard Avenue to Walker Road. This assessment follows MOEE guidelines and is responsible for ensuring that the site(s) that pose any environmental concern be suitable for intended use or reuse with the property owner and those undertaking the work.

There have been two areas of potential concern that may pose an environmental hazard in the process of construction. These areas include:

- Windsor Metal & Batteries located at 2801 Walker Road
- Hydro Sub-station located 940 Grand Marais Road between Parent and Langlois

The submission requirements are as follows:

2.2.1.1 Current and Historical Site Use

The current use of the Windsor Metal & Batteries facility is a salvage yard operation for the exclusive collection, sorting, crushing, or recovery of non-ferrous scrap metal for resale or manufacturing and the sale of new and used batteries. This property was rezoned in May 1990. It was noted on the permit that outdoor storage is not permitted. The previous owners of this site are Clibea Investments Ltd and Clay-Mill Enterprises Ltd.

The Fred Meyers Hydro Substation is currently owned by Windsor Utilities Commission and has been under this private ownership since 1967. It is not accessible to the public. It was constructed as a blind for the hydro equipment concealed within.

2.2.1.2 Description of Buildings and Facilities

Windsor Metal & Batteries is located on the southwest corner of Walker Road and Grand Marais Road E. and spans 0.97 acres, lying along the Grand Marais Drain. The building occupies 60 m² of the property.

The Hydro Sub-station is located on Grand Marais Road and spans 8362.00 square feet. The exterior is brick and the existing condition requires no need for routine maintenance or repairs. This building is situated between two residential buildings and lies on a main road with a residential area to the north. To the south, is the E.C. Row Expressway and the Devonshire Mall in addition to the commercial area of Devon Park.

2.2.1.3 Inventory of Potential Hazardous Materials

Possible chemical contamination may be a factor with the Windsor Metal & Batteries site. Contamination could include sulfuric acid (H_2SO_4) and lead (Pb).

2.2.1.4 Findings & Conclusions

The findings for the ESA-Phase I resolve that potential soil contamination may have occurred and will have to be addressed in connection with the ESR for the proposed Grand Marais Road East future construction project.

The result of Phase I ESA concludes that these areas of concern will warrant a Phase II ESA adjacent to the site when preparation for construction is determined.

2.2.2 Grand Marais Drain

The most prominent topographical feature within the study area is the Grand Marais Drain. The Grand Marais Drain is a water course, extending 2.1 km from Howard Avenue to Walker Road. The drain remains in a naturalized state except for minor improvements undertaken for agricultural purposes prior to 1970.

Numerous studies have been carried out in recent decades to try to alleviate existing flooding and drainage problems in the area. Currently, areas adjacent to the drain between Howard and Walker would be prone to flooding from a 1:100 year storm event. The existing drain has little in the way of vegetation, although periodic cleaning of the drain is required. Along the north and south banks the ground cover consists of lawns and short grasses with very few scattered trees.

2.2.3 Parks

The study area consists of many parks and open spaces. In the mid-western section of the study area lies the most prominent park which is Remington Park. It is a very large park spanning roughly four blocks. It has an outdoor pool, three

baseball diamonds, soccer field, tennis court, playground, and an existing bike/walking trail which extends eastward through Langlois Park to Southdale Park. Just south of Grand Marais Road East near Howard Avenue lies Howard Park, which is open space. Just south and adjacent to the Grand Marais Drain, lies Brookview, Jennifer and Udine Park. These neighbourhood parks are mainly open grass, playground areas and trees.

2.3 Social Environment

2.3.1 Residential

The residential zone is highly centralized in the north-half of the study area. Low-density single detached dwellings characterize nearly all the residences. The residential environment on the western section of the study area was well established since the post-war era. Newer subdivisions were established east of Langlois Avenue and north of Grand Marais Road East, as well as to the south of Grand Marais Drain, lying between North Service Road and Grand Marais Road.

2.3.2 Recreation/Cycling/Planning Issues

As noted in 2.2.3., Remington Booster Park is the primary component for recreational activity within the study area. The parks and their adjoining bike lane/walking trail provides a recreational outlet for both children and adults.

There is also a proposed bike lane/walking trail south of the Grand Marais Drain between Howard Avenue and Walker Road which utilizes Howard, Brookview, Jennifer and Udine Parks, and inter-connect the residential community.

2.3.3 Schools and Pedestrians

Our Lady of Perpetual Help Elementary School located at 775 Capital, is the only educational institution in the study area. It is a Catholic elementary school with a student population of approximately 435 pupils. Of particular interest to this report is the construction of sidewalks on both sides of Grand Marais Road East to allow school children safe passage to and from the school area.

2.3.4 Heritage Resources

There are two proposed heritage structures located in the study area. One structure, located at 610 Grand Marais Road East, is the St. Amour two storey log cabin built in 1853. The age of the building is not apparent from its present appearance due to the installation of white aluminum siding in 1968 and a front porch in 1975. The other structure is the old Windsor Utilities Commission (now called ENWIN), Fred Meyers, Hydro Sub-station, built in 1968. This structure has an architectural significance due to its unique contemporary design which is composed of convex and concave masonry sections.

2.3.5 Archaeological Issues

The City of Windsor is currently undertaking an archaeological master plan. In reviewing this corridor with the City's consultant, it was viewed that due to the proximity of the corridor to the Grand Marais Drain, that an Archaeological Assessment should be completed prior to construction commencing on the Grand Marais Road.

2.4 Economic Environment

The Economic Environment of the study area is concentrated south of the Grand Marais Drain and west of Elsmere Avenue. This segment of the Study Area is almost exclusively industrial and commercial zoning that occupies approximately 78 hectares.

2.4.1 Commercial Environment

The commercial environment provides a balance between the industrial and residential development.

Commercial use in the Study Area includes the following:

- Retail
- Personal/Business Services,
- Hospitality Services (Fogolar Furlan, Royal Marquis)

Commercial use within the study area is integrated with the industrial environment south of the Grand Marais Drain.

2.4.2 Institutional Environment/Industrial Environment

The City of Windsor, Parks and Recreation Department, occupies a portion of the institutional land within the Study Area. The remaining institutional land uses are divided between Our Lady of Perpetual Help Catholic Elementary School and the various churches in the area. They include Our Lady of Perpetual Help Roman Catholic Church, St. Luke In The Fields Anglican Church and Kingdom Hall of Jehovah's Witness. The industrial lands lie to the southwest quadrant of the study area.

2.5 Transportation

Grand Marais Road East is currently classified as a Class 1 Collector Road between two adjacent arterial roads, Howard Avenue and Walker Road. It services the surrounding residential development and functions as a connector between the two arterial roads. A transportation study was carried out by the City of Windsor, Traffic Engineering Department, in March of 2000. It was recommended that the best solution would be as follows: Grand Marais Road East as a 2-lane cross-section with a cul-de-sac at Walker Road. Traffic would use Turner Road and Parkdale Place to access Walker Road, which would be signalized. Grand Marais Road East is currently part of a Transit Windsor bus route between Slater Street and Langlois Avenue. The bus route continues on Howard Avenue to Eugenie Street, to Southdale Drive, to Slater Street, west on Grand Marais Road to Langlois Avenue, then south to North Service Road and continue east to Walker Road.

In addition, the truck route for Grand Marais Road East is restricted from Howard Avenue to Elsmere Avenue, then south to North Service Road, then westerly.

2.5.1 Existing Roadway Conditions

The existing roadway between Howard Avenue and Parent Avenue consists of an urban cross section complete with an 8.5m (28 foot) asphalt pavement, concrete curb and gutter, and 1.5m (5 foot) concrete sidewalk on the north side only. The pavement in this portion is in very good condition with no deterioration. The

section between Parent Avenue and Walker road is a concrete pavement circa 1940, rural cross-section with no curb and gutter, no sidewalks and open ditches. The pavement varies between 5.5m and 6.0m (18 to 20 feet) The roadway is uneven due to settlement and patchwork, and contains many transverse and longitudinal cracks. There is no parking permitted on Grand Marais Road East between Howard Avenue and Walker Road.

2.5.2 Traffic Volumes/Collision Information

The City of Windsor Traffic Engineering Department completed a traffic accident study in December of 1999 which shows total accident reports at specific locations on Grand Marais Road East for the previous five years. The results of this study are shown in Appendix D. Traffic volume data gathering was also performed using data gathered from the Fall of 1996, 1997, and 1998.

2.5.3 Public Transit

The study area is currently designated with a Transit Windsor bus route. The bus route is the Parent 14 which runs from Howard Avenue to South Pacific Avenue along Eugenie, then east to Southdale Drive, then south on Slater Street to Grand Marais Road East which travels west to Langlois Avenue, then south to North Service Road and then south on Conservation Drive to South Service Road.

2.5.4 Cyclists

Grand Marais Road East has no provisions particular to cyclists. It is the recommendation of the Bicycle Use Development Study for the City of Windsor to implement an east-west secondary recreationway along the Grand Marais Drain. Bicycles are permitted on the road in accordance with the Highway Traffic Act.

Should budget approval be forthcoming prior to the finalization of BUMP, it is recommended that the final design of the road be done in consultation with the BUMP process and subject to final approval by City Council.

Should funds not be provided for the construction of these works prior to the finalization of BUMP, the policies and recommendations of the BUMP study relevant to this undertaking be included as an addendum to this document for ultimate implementation.

2.5.5 Pedestrians

Only one sidewalk exists on Grand Marais Road East. It is located on the north side of Grand Marais East and extends from Howard Avenue to Parent Avenue. No sidewalks exist east of Parent Avenue.

2.5.6 Railway

The Canadian Pacific Railway lies on the northern boundary of the study area and, in fact, makes up the northern boundary. The railway extends east past the Walker Road/Grand Marais Road East intersection. However, it would not be an issue in the design and construction of Grand Marais Road East.

2.6 Existing Infrastructure

Table 2.0 is a summary of the existing infrastructure on Grand Marais Road East from Howard Avenue to Walker Road.

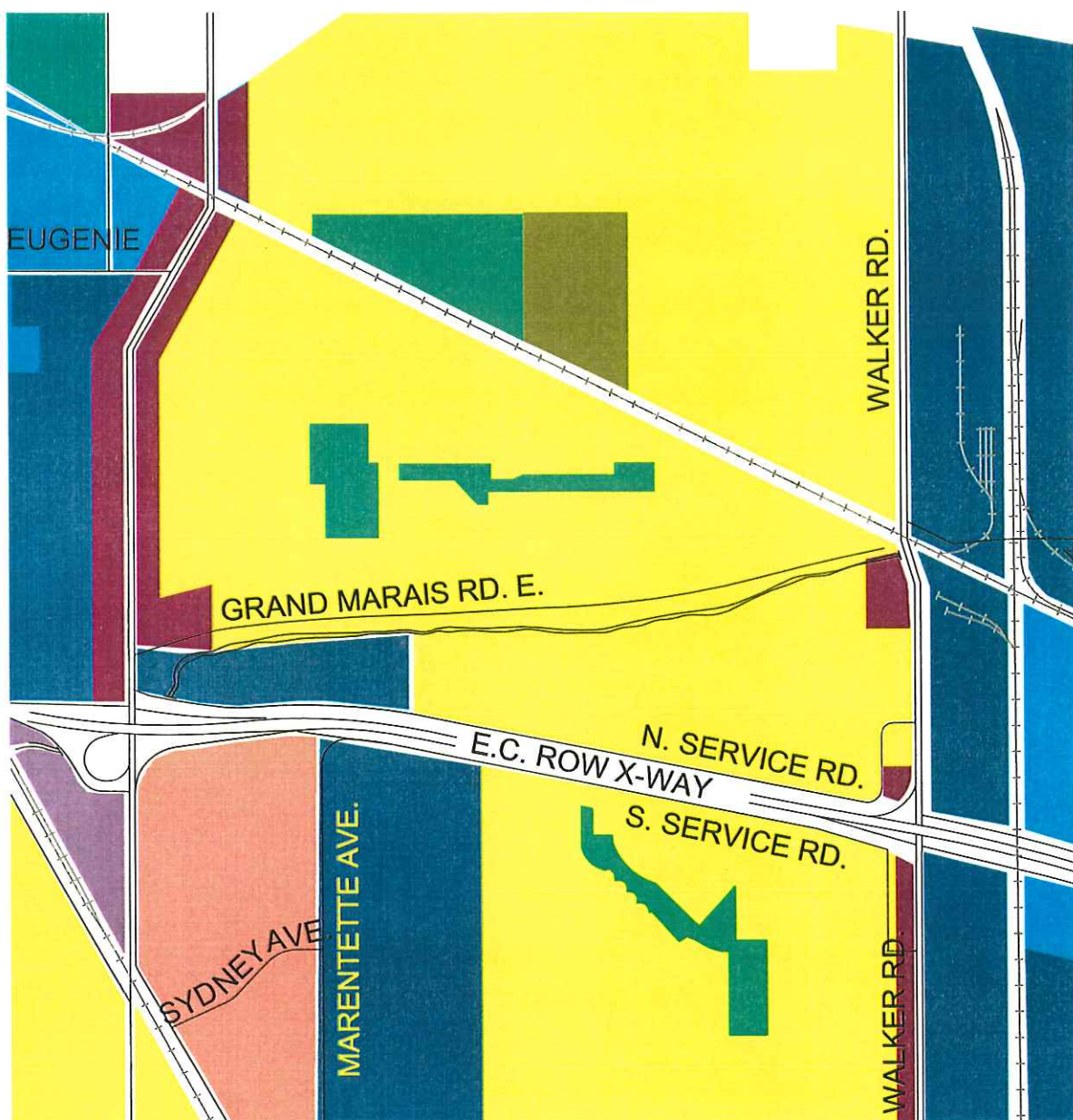
Table 2.0

SUMMARY OF EXISTING INFRASTRUCTURE

<u>Infrastructure Type</u>	<u>Description and Location</u>
Storm Sewers	900mm diameter from Langlois Ave to 113m east of Langlois Avenue 12" diameter PVC from 113m east of Langlois Avenue to South Pacific Avenue
Sanitary Sewers	60" diameter CP trunk from Howard Avenue to Walker Road 10" diameter from Howard Avenue to Langlois Avenue 8" diameter PVC from Langlois Avenue to South Pacific Avenue 250mm diameter PVC from South Pacific Avenue to Walker Road 6" diameter sanitary force main from Southdale Drive to Walker road 11" diameter abandoned sanitary force main from Southdale Drive to Walker Road.

Table 2.0 Continued

Infrastructure Type	Description and Location																
Watermain	300mm diameter PVC from Howard Avenue to Langlois Avenue 8" diameter PVC from Langlois Avenue to Walker Road																
Hydro	Overhead street lights on the south side from Howard Avenue to Turner Road.																
Gas	16" diameter from Howard Avenue to Remington Avenue 12" diameter from Remington Avenue to Walker Road 4" diameter from Parent Avenue to Langlois Court 1 ¼" diameter from Langlois Court to South Pacific Avenue 4" diameter from Howard Avenue to 35m east of Howard Avenue																
Television	Overhead fibre optic and coaxial cables on Grand Marais Road East from Howard Avenue to Walker Road Buried fibre optic and coaxial cable across Grand Marais Road east at Lillian Street. Buried fibre optic and coaxial cable across Grand Marais Road East at Parent Avenue.																
Telephone	Buried Cable from Howard Avenue to Langlois Avenue Overhead cable from approximately Langlois Avenue to Turner Road Buried cable across Grand Marais at 2900 Howard Buried cable across Grand Marais at 590 Grand Marais Buried cable across Grand Marais between 623 and 639 Grand Marais Buried cable across Grand Marais on east side of Parent Buried cable across Grand Marais west side of Langlois Buried cable across Grand Marais at 1075 Grand Marais Buried cable across Grand Marais at 1780 Grand Marais																
Traffic Control	Traffic control infrastructure on the intersection of Howard Avenue/Grand Marais Road East <u>Grand Marais Road East Signage</u> <table> <tr> <td><u>North Side</u></td><td><u>South Side</u></td></tr> <tr> <td>No Trucks</td><td>No Parking</td></tr> <tr> <td>50 km/h</td><td>Parking-this side</td></tr> <tr> <td>Caution Reduce Speed</td><td>50 km/h</td></tr> <tr> <td>No Parking</td><td>No Trucks</td></tr> <tr> <td>Bus Stop</td><td>Caution Hidden Intersection</td></tr> <tr> <td>Watch for Pedestrians</td><td>Bus Stop</td></tr> <tr> <td>Caution Hidden Intersection</td><td>Watch for Pedestrians</td></tr> </table>	<u>North Side</u>	<u>South Side</u>	No Trucks	No Parking	50 km/h	Parking-this side	Caution Reduce Speed	50 km/h	No Parking	No Trucks	Bus Stop	Caution Hidden Intersection	Watch for Pedestrians	Bus Stop	Caution Hidden Intersection	Watch for Pedestrians
<u>North Side</u>	<u>South Side</u>																
No Trucks	No Parking																
50 km/h	Parking-this side																
Caution Reduce Speed	50 km/h																
No Parking	No Trucks																
Bus Stop	Caution Hidden Intersection																
Watch for Pedestrians	Bus Stop																
Caution Hidden Intersection	Watch for Pedestrians																



Prepared by the Public Works Department - June, 2000



Grand Marais Road Corridor Improvement Class Environmental Assessment

Existing Land Use Official Plan

Not to Scale

The Corporation of the City of Windsor

Figure 2.0

3.0 IDENTIFICATION AND EVALUATION OF ALTERNATIVE IMPROVEMENT OPTIONS

This section presents the alternative roadway designs for Grand Marais Road from Howard Avenue to Walker Road. Unless otherwise mentioned, the alternative design options regarding the cross-section of the roadway will be with respect to the limits between Parent Avenue and Walker Road. The section of the corridor between Howard Avenue and Parent Avenue has been recently rehabilitated to an urban cross-section.

3.1 Identification and Evaluation of Roadway Design Options

3.1.1. Identification of Roadway Design Options

Grand Marais Road was considered for seven (7) alternative roadway design options as shown in Tables 3.0a and 3.0b. Cross sections of the alternative roadway options are shown in Figure 3.1 and Figure 3.2.

Roadway Option 1 - Do Nothing

- Figure 3.0 shows the existing conditions for this option
- No physical change to the rural cross-section nor to the alignment of the roadway
- Provide ongoing maintenance to the existing asphalt pavement

Option 2 - A 10.36 Metre (34 Feet) Wide Urban Cross Section

- Figure 3.1 illustrates the configuration for this option
- Two vehicle travelling lanes of 5.18 metres (17 feet) wide
- Two 1.20 metres (4 feet) wide sidewalks

Option 3 - A 13.36 Metre (44 Feet) Wide Urban Cross Section

- Figure 3.1 illustrates the configuration for this option
- This option provides for two vehicle traveling lanes of 5.18 metres (17 feet) wide and two bicycle lanes of 1.50 metre (5 feet) wide
- Two 1.20 metre (4 feet) wide sidewalks

Option 4 – A 10.32 Metre (34 Feet) Wide Urban Cross Section

- Figure 3.1 illustrates the configuration for this option
- This option provides for two 3.66 metre (12 feet) wide vehicle traveling lanes and two 1.50 metre (5 feet) wide bicycle lanes
- Two 1.20 metre (4 feet) wide sidewalks

Option 5 – An 11.53 Metre (38 Feet) Wide Urban Cross Section

- Figure 3.2 illustrates the configuration for this option
- This option provides for two 4.27 metre (14 feet) wide vehicle traveling lanes and two 1.50 metre (5 feet) wide bicycle lanes
- Two 1.20 metre (4 feet) wide sidewalks

Option 6 – An 8.53 Metre (28 Feet) Wide Urban Cross Section

- Figure 3.2 illustrates the configuration of this option
- This option provides for two 4.27 metre (14 feet) wide vehicle traveling lanes with 2.50 metre (8.20 feet) wide left turning lanes at specific intersections
- This option provides a 3.00 metre (9.84 feet) wide bicycle path on the north side of Grand Marais Road
- A 1.20 metre (4 feet) wide sidewalk on the south side of Grand Marais Road

Option 7 – A 9.00 Metre (29.5 Feet) Wide Urban Cross Section

- Figure 3.2 illustrates the configuration for this option
- This option provides two 4.50 metre (14.76 feet) wide lanes shared by both vehicle and bicycle traffic
- Two 1.20 metre (4 feet) wide sidewalks

3.1.2 Evaluation of Roadway Design Options

The seven alternative roadway designs were evaluated in the three problem groups identified in the problem statement; structural and geometric deficiencies of the existing pavement; capacity and traffic deficiencies at intersections and mid-block locations; unsafe conditions due to geometric deficiencies. Within each of the problem groups, the alternative roadway design features were evaluated with

**TABLE 3.0a: GRAND MARAIS ROAD CORRIDOR IMPROVEMENTS
EVALUATION SUMMARY OF ALTERNATIVE DESIGNS**

IMPACTS	1. DO NOTHING	2. 10.36m (34') PAVEMENT WITH NO BIKE LANE	3. 10.36m (34') PAVEMENT WITH 3m (10') BIKE LANE	4. 7.32m (24') PAVEMENT WITH 3m (10') BIKE LANE
SOCIAL/LAND USE IMPACTS				
Property Requirements	None	Large property requirements, especially between Parent & Walker	Largest property requirements, especially between Parent & Walker	Minor requirements, more between Parent & Walker
Effect on Neighborhoods	Confirmed unsafe, congested situation	Road closer to residents especially between Parent & Walker – safety issue	Road closer to residents, especially between Parent & Walker – safety issue; however safer pedestrian travel due to bike lane	Minor impact from existing – improved safety due to bike lanes
Effect on Cycling	Existing dangerous situation to worsen	Improvement due to wider road	Most improvement due to wide road and bike lanes	Improvement due to bike lanes
Pedestrian	Pedestrian crossing dangerous due to congestion- no new sidewalks	Improvements due to sidewalks	Improvements due to sidewalks	Improvements due to sidewalks
Visual Impacts	Existing cluttered corridor to remain	Improved corridor appearance	Improved corridor appearance	Improved corridor appearance
ECONOMIC IMPACTS				
Business Impacts	No impact	Improvements to businesses along Parkdale due to signalization at Parkdale	Improvements to businesses along Parkdale due to signalization at Parkdale	Improvements to businesses along Parkdale due to signalization at Parkdale
Access	Congestion and unsafe corridor will continue-high accident potential	Increased access	Increased access	Increased access
NATURAL ENVIRONMENTAL IMPACTS				
Trees	None	Minimal effect on trees	Minimal effect on trees	Minimal effect on trees
Natural Vegetation	No effect	No effect	No effect	No effect
Effects on Air Quality	Increased-increased traffic with frequent stop/start congestion & engine idling	Reduced – more traffic but less stop/start, congestion & engine idling	Reduced – more traffic but less stop/start, congestion & engine idling	Reduced – more traffic but less stop/start, congestion & engine idling
Noise Impacts	Increase with more traffic, more starts/stops – accidents	Increased – more traffic but less start/stop	Increased – more traffic but less start/stop	Increased – more traffic but less start/stop
ENGINEERING CONSIDERATION				
Utility Relocation	None	Major relocation of existing utilities	Major relocation of existing utilities	Major relocation of existing utilities
Pavement Structure	No improvement to existing pavement structure	Reconstruction of deficient pavement structure	Reconstruction of deficient pavement structure	Reconstruction of deficient pavement structure
Traffic Level of Service	Deficient	Will meet 20 year horizon for good level of service	Will meet 20 year horizon for good level of service	Will meet 20 year horizon for good level of service
Collision Potential	Expected to increase	Significant reduction in accident potential	Significant reduction in accident potential	Significant reduction in accident potential
COSTS				
Capital	Low	\$ 1.4 million in road construction costs	\$ 1.6 million in road construction costs	\$ 1.4 million in road construction costs
Operational	High	Low-no maintenance anticipated for greater than 10 years	Low-no maintenance anticipated for greater than 10 years	Low-no maintenance anticipated for greater than 10 years
Property Acquisition	Low	Significant	Significant – Highest level of cost	Significant
EVALUATION SUMMARY	Does little to address existing problems High ongoing maintenance cost	Addresses issues of safety, structures and capacity Does little to address cycling safety	Addresses issues of safety, structures and capacity Best at addressing safety issues	Does little to address traffic safety Does address cycling safety



The Corporation of the City of Windsor

Prepared by the Public Works Department – June, 2000

Table 3.0a

**TABLE 3.0b: GRAND MARAIS ROAD CORRIDOR IMPROVEMENTS
EVALUATION SUMMARY OF ALTERNATIVE DESIGNS CONTINUED**

IMPACTS	5. 8.53m (28') PAVEMENT WITH 3m (10') BIKE LANE	6. 8.53m (28') PAVEMENT WITH NO BIKE LANE	7. 9.00m (29.5') PAVEMENT WITH TWO 4.19m (13.75') LANES – SHARED USE.
SOCIAL/LAND USE IMPACTS			
Property Requirements	Large property requirements, especially between Parent & Walker	Minor requirements, more between Parent & Walker	Large property requirements, especially between Parent & Walker
Effect on Neighborhoods	Road closer to residents especially between Parent & Walker – safety issue; however safer pedestrian travel due to bike lane	Minor impact from existing	Road closer to residents, especially between Parent & Walker – safety issue
Effect on Cycling	Improvement due to bike lane	Minor improvement	Some improvement due to road widening
Pedestrian	Improvements due to sidewalks	Improvements due to sidewalks	Improvements due to sidewalks
Visual Impacts	Improved corridor appearance	Improved corridor appearance	Improved corridor appearance
ECONOMIC IMPACTS			
Business Impacts	Improvements to businesses along Parkdale due to signalization at Parkdale	Improvements to businesses along Parkdale due to signalization at Parkdale	Improvements to businesses along Parkdale due to signalization at Parkdale
Access	Increased access	Increased access	Increased access
NATURAL ENVIRONMENTAL IMPACTS			
Trees	Minimal effect on trees	Minimal effect on trees	Minimal effect on trees
Natural Vegetation	No effect	No effect	No effect
Effects on Air Quality	Reduced – more traffic but less stop/start, congestion & engine idling	Reduced – more traffic but less stop/start, congestion & engine idling	Reduced – more traffic but less stop/start, congestion & engine idling
Noise Impacts	Increase – more traffic but less stop/start	Increased – more traffic but less start/stop	Increased – more traffic but less start/stop
ENGINEERING CONSIDERATION			
Utility Relocation	Major relocation of existing utilities	Major relocation of existing utilities	Major relocation of existing utilities
Pavement Structure	Reconstruction of deficient pavement structure	Reconstruction of deficient pavement structure	Reconstruction of deficient pavement structure
Traffic Level of Service	Will meet 20 year horizon for good level of service	Will meet 20 year horizon for good level of service	Will meet 20 year horizon for good level of service
Collision Potential	Significant reduction in accident potential	Minor reduction in accident potential	Significant reduction in accident potential
COSTS			
Capital	\$ 1.5 million in road construction costs	\$ 1.3 million in road construction costs	\$ 1.3 million in road construction costs
Operational	Low- no maintenance anticipated for greater than 10 years	Low-no maintenance anticipated for greater than 10 years	Low-no maintenance anticipated for greater than 10 years
Property Acquisition	Significant	Significant	Significant – Highest level of cost
EVALUATION SUMMARY	Addresses issues of safety, structure and capacity, however very minor Does address cycling safety	Does little to address traffic safety Does little to address cycling safety	Addresses issues of safety, structures and capacity- however very minor



The Corporation of the City of Windsor

Prepared by the Public Works Department – June, 2000

Table 3.0b

respect to the following factor groups: Social/Land Use Impacts, Economic Impacts, Natural Environmental Impacts, Engineering Considerations, Costs. The evaluation of the alternative roadway design options using the factor groups and roadway design features are shown in Table 3.0a and 3.0b, Grand Marais Road Corridor Improvements, Evaluation Summary of Alternative Designs.

The recommended roadway design was selected using the following criteria:

- Property requirements
- Impact on existing neighborhood
- Implementation of BUDS Study
- Improved sight lines for pedestrian crossing
- Improved visual appearance of corridor
- Improved safety for both pedestrian and bicycle riders
- Relocation of existing utilities
- Reduction in accident potential
- Meets road classification of the Windsor Urban Transportation Study (WUTS) and Windsor Area Long Range Transportation Study (WALTS)

3.1.3 Selection of Recommended Roadway Design

Evaluation summary of the alternative roadway designs as detailed in Tables 3.0a and 3.0b and the considerations given to the public input led to the selection of Option 4, as the design best addressing the problem statement. This design is referred to as the preferred design (See Figure 4.0).

3.2 Identification and Evaluation of Ancillary Options for Traffic Congestion Problems

There is no one right-of-way cross-section design that will solve all the problems associated with the corridor. Therefore, a number of ancillary options have been considered to improve both pedestrian and vehicle safety.

3.2.1. Identification of Ancillary Options

Any one or all of the following options, which are shown in Figure 4.0 can be implemented with the preferred roadway design.

Ancillary Option 1 – Cul-de-Sac of Grand Marais Road at Walker Road

This option considers cutting off Grand Marais Road from Walker Road. Currently, the only movement permitted at this intersection is a southbound right-turn from Grand Marais Road onto Walker Road. The section of Grand Marais road between Turner Road and Walker Road will be used primarily to access the Union Gas and Windsor Metal & Battery properties. It also serves as the extension of the bike route. If the property owners are interested, this section of Grand Marais Road could be closed and converted to a private drive with the appropriate reciprocal easements.

Ancillary Option 2 – Traffic Calming

The most repeated comment from the public input was that traffic travelled above the posted speed limit. Other concerns include pedestrian safety throughout Grand Marais Road and cut-through traffic. The options considered to address these concerns were:

- Speed bumps
- Curved road
- Narrowing of traffic lanes
- Striped bike lanes
- Increased enforcement

Ancillary Option 3 - Cul-de-sac at east end of Atkinson Street

This option considers dead-ending Atkinson Street before intersecting with Grand Marais Road. The location of the cul-de-sac would be at the driveway located further east. This offers the elimination of an intersection, decreasing traffic conflicts and improved rationalization of land use.

3.2.2. Evaluation of Ancillary Options

Ancillary Option 1 – Cul-de-sac at Grand Marais Road at Walker Road

The purpose of this design option is to eliminate the dangerous manoeuvre of traffic from Grand Marais Road onto Walker Road. The section of Grand Marais Road between Turner Road and Walker Road is restricted to one-way traffic in the east direction because of the sudden grade changes from Walker Road to Grand Marais Road. The elimination of this intersection will not have a great impact on traffic movement, but will eliminate the dangerous and illegal movements in the west direction. This design option concurs with the ongoing Walker Road E.S.R. study. In addition, the Walker Road E.S.R. study will propose a grade separation at this location in the future which will eliminate this intersection permanently at that time.

Ancillary Option 2

Very early in the evaluation process, it was decided that speed bumps and a curved road would not be practical nor feasible. The option of speed bumps was not a practical solution because it would increase the response time for emergency vehicles. The option of a curved road was not feasible because it would require more land acquisition. Also, the corridor is substantially built up with residential dwellings, and it would be impossible to design a road with enough curve to slow traffic down.

The traffic calming device which could be implemented in this corridor are the narrowing of traffic lanes and paint striping for dedicated bike lanes. The narrowing of traffic lanes to give the driver the perception of a physically restricted pavement width can be achieved by introducing left turning lanes at the above-mentioned intersections. Grand Marais Road provides a link to two arterial roads, Howard Avenue and Walker Road, for three residential collector streets, and one commercial/industrial street, Parent Avenue, South Pacific Avenue, Southdale Drive, and Elsmere Avenue respectively. These intersections would provide the best strategic locations for left turning lanes. A dedicated bike lane

with pavement striping will also help to achieve this perception that the driver is restricted to a narrow portion of the entire pavement.

The use of traffic control devices such as stop signs and traffic signals, at the above-mentioned intersections, will also act as a deterrent to speeding traffic.

Ancillary Option 3 – Cul-de-sac at East of End of Atkinson Street

The reason why this option was considered was to eliminate the cut-through traffic to and from Remington Street. This option also provides surplus lands that the City can possibly sell provided no municipal use is identified.

3.2.3 Selection of Ancillary Options

The preferred design will incorporate all three of the ancillary options. Grand Marais will be cul-de-saced at the east end to eliminate the intersection at Walker Road and Atkinson Street will be cul-de-saced at its east end to eliminate the intersection at Grand Marais Road. The use of stop signs and traffic signals along with pavement markings for left turns and dedicated bike lanes will be used as traffic calming devices.

3.3. Identification and Evaluation of a Bikeway System

The current Bicycle Use Development Study, (BUDS), December, 1991 identifies the Grand Marais Road/Grand Marais Drain as an east-west bicycle route for the City of Windsor. BUDS is currently being updated and being renamed the Bicycle Use Master Plan (BUMP). The following discussion is related to BUDS.

At the time this report was prepared, Parent Avenue was the only established bike route connected to Grand Marais Road. The following options will consider creating a bikeway within this corridor to connect to Parent Avenue and also connecting to sites to the south, east and west.

3.3.1. Identification of Bikeway Route Options

Bikeway Route Option 1

The bikeway route on Parent Avenue, north of Grand Marais Road, is on road and therefore, this option will consider on road bike route on Grand Marais Road from Howard Avenue to Walker Road. The Parent Avenue bikeway route is considered a shared use system in which both motor vehicle and bicycle share the pavement without designated markings. This option considers both the shared use system and the designated bike lane system for Grand Marais Road. The designated bike lane would be 1.5 metres (5') wide and run along each curb line.

Bikeway Route Option 2

The greater front yard setback of houses along Grand Marais Road between Langlois and Walker Road provides for the opportunity to place an off-road bike path. This 3.00 metre (10') wide bike path would exist off of the pavement in the north boulevard with designated markings to allow two-way bicycle traffic. The bike route west of Parent Avenue would remain on road.

Bikeway Route Option 3

This option considers removing the bike route off of Grand Marais Road and onto the Grand Marais Drain right-of-way. Along the south side of the Grand Marais Drain, there exists a hydro easement along the full length of the drain between Howard Avenue and Walker Road. It has been proposed by the Parks & Recreation Department to place an asphalt bike path over this hydro easement. Currently, there is no hydro plant within the easement and there has been no confirmation as to when hydro will be installing their underground lines. This option will include a pedestrian/bicycle crossing from the south side of the drain to the north side of the drain to line up with the Parent Avenue right-of-way. This option also makes a direct link to the Udine Park at the east end of the Grand Marais Drain right-of-way.

3.3.2 Evaluation of Bikeway Options

Bikeway Route Option 1

Grand Marais Road is being reconstructed entirely between Parent Avenue and Walker Road which allows the opportunity to provide an on road bicycle route. The designated bike lanes would allow a greater level of safety for the cyclists as opposed to the shared use unmarked pavement.

Bikeway Route Option 2

This option which considers an on-road bike route and an off-road bike route is not recommended by BUDS. The reason for this is that introducing off-road to on-road transition creates a concern of safety, particularly for the motor vehicle adjusting to the on-road shared use within the pavement. The off-road option would also create a greater safety concern with driveway conflicts.

Bikeway Route Option 3

This off-road option creates the safest scenario for the cyclist because it almost entirely eliminates any potential conflict with motor vehicles.

3.3.3 Selection of Recommended Bikeway Route Options

The bikeway route Option 3 provides for the safest movement of bicycles which is the preferred design option but because Hydro has not placed their plant and it is unknown when they will be installing their cables, it would not make economic sense to place a bikeway at this time and then a year or two from now have it dug up and reinstated. If Hydro does, in fact, install the cables within the easement prior to Grand Marais Road commencing reconstruction then this bikeway route Option 3 remains the preferred option. If the above has not developed at the time of construction, then Bikeway Route Option 1 would become the preferred design. The designated bike lanes would then be incorporated into the reconstruction of Grand Marais Road.

3.4 Infrastructure Improvements

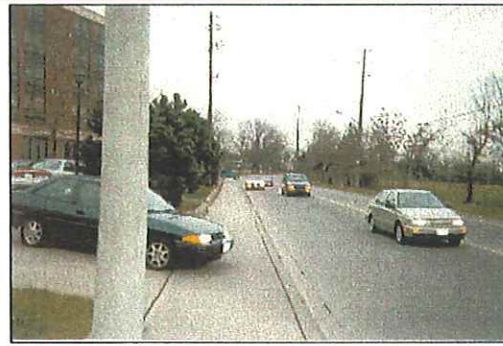
The proposed options for roadway improvements impacts only the hydro poles that exist on both sides of Grand Marais Road. It will be recommended that the hydro distribution poles be relocated to one side of Grand Marais Road with alternating streetlight poles on the opposite side which can act as service support poles. Union Gas is the only underground infrastructure that has indicated plans to replace their plant at the time of road reconstruction. The remainder of the underground infrastructure should be evaluated at the time of the preparation of engineering design drawings.

3.5 Streetscape Improvements

With the proposed new Grand Marais Road right-of-way alignment, the options for streetscape design is very limited. A treatment between the curb and sidewalk could include the stamped coloured concrete as an option. The Parks & Recreation Department should be consulted for additional streetscaping options along this corridor improvement.

3.6 Property Issues

The City of Windsor owns, at various locations along this corridor, substantial lands beyond the required 20 metre (66') wide right-of-way. It is recommended that the City of Windsor sell these additional properties to either the adjacent property owners or as separate parcels to the private sector as a method of off-setting the cost of improvements to this Grand Marais Road corridor.



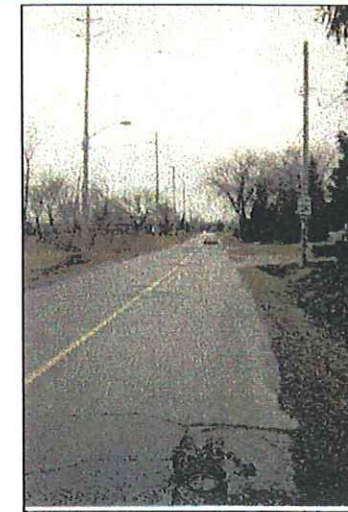
East of Howard Avenue,
Looking East



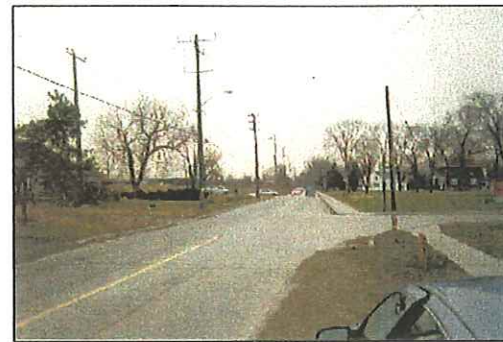
On Langlois Avenue,
South of Grand Marais Drain
Looking East



East of "Conservation Drive"
right of way, Looking West



West of Turner Road,
Looking West



At Parent Avenue, Looking West



At South Pacific Avenue,
Looking West



At Southdale Drive,
Looking West



At Turner Road, Looking East
(Walker Road)



At Parent Avenue, Looking East



At "Conservation Drive" right of way,
Looking South

Existing Conditions (East of Parent Avenue)

- No Sidewalks
- Unsafe for both pedestrian and bicycle use
- Roadside ditches & poor drainage
- Substandard road & shoulders
- Utility poles very close to pavement edge
- Pavement failures
- Variable Right of Way Width (partly substandard)

Prepared by the Public Works Department — January 2000



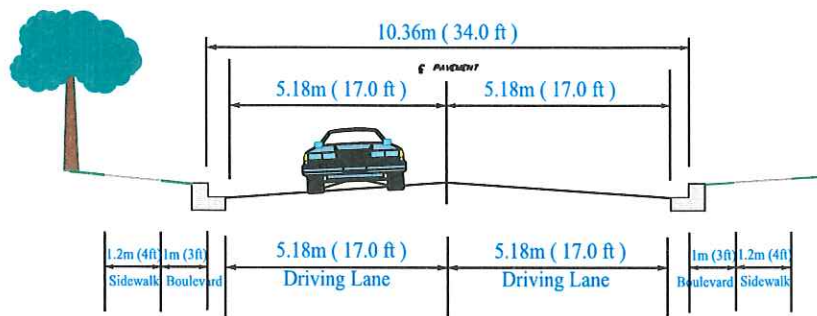
The Corporation of the City of Windsor

Grand Marais Road Corridor Improvement Class Environmental Assessment

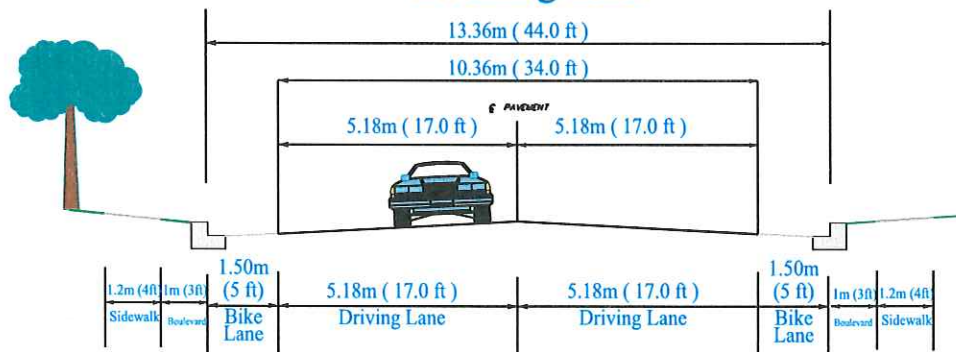
Existing Conditions - East of Parent Avenue



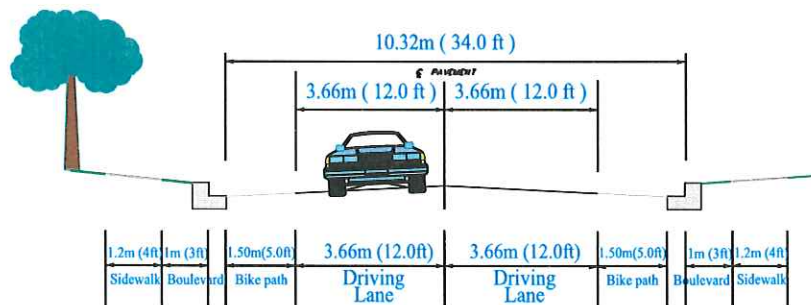
Figure 3.0



**Cross Section for 10.36m Wide Pavement
(No Bike Path)
Looking East**



**Cross Section for 10.36m Wide Pavement
(With Bike Path)
Looking East**



**Cross Section for 7.32m Wide Pavement
(With Bike Path)
Looking East**

Prepared by the Public Works Department - June, 2000



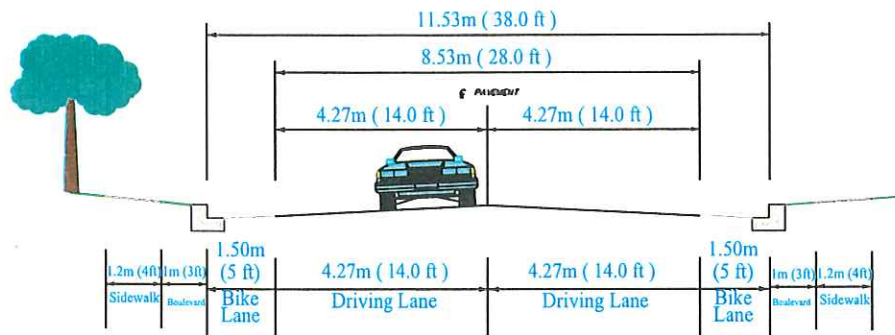
**Grand Marais Road Corridor Improvement
Class Environmental Assessment**

Typical Cross-Sections of Pavement Widths

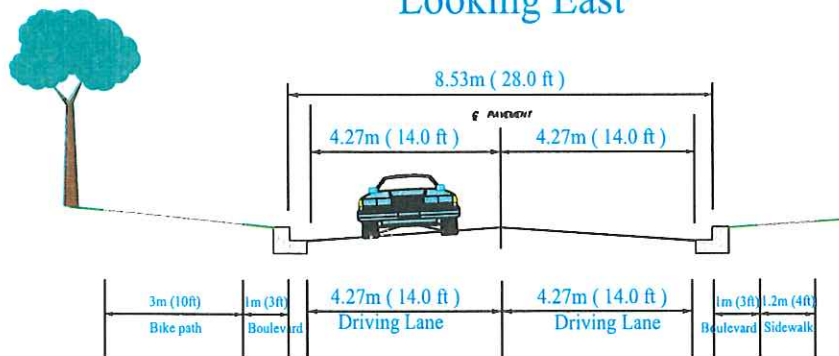
Not to Scale

The Corporation of the City of Windsor

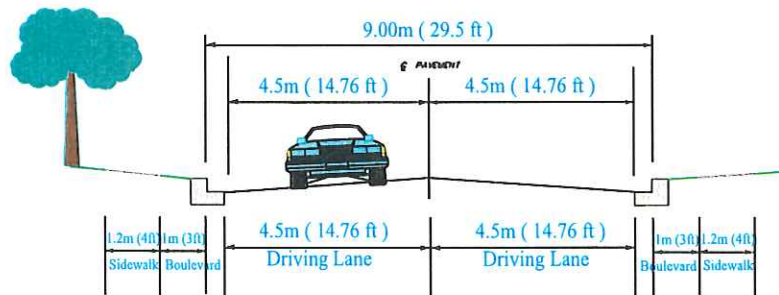
Figure 3.1



Cross Section for 8.53m Wide Pavement
(With Bike Path)
Looking East



Cross Section for 8.53m Wide Pavement
(With Bike Path)
Looking East



Cross Section for 9.00m Wide Pavement
(No Bike Path)
Looking East

Prepared by the Public Works Department - June, 2000



Grand Marais Road Corridor Improvement
Class Environmental Assessment

Typical Cross-Sections of Pavement Widths

Not to Scale

The Corporation of the City of Windsor

Figure 3.2

4.0 PREFERRED DESIGN

4.1 Detailed Description of the Preferred Design

Chapter 3 described the Identification and Evaluation of the Alternative Improvement Options and provided the criteria for the selection of the preferred design. This resulted from the evaluation of various alternative roadway design options, review of these options with the public and responses from public input regarding these options.

In this Chapter, the Preferred Design is discussed in detail, including requirements for underground infrastructure, property requirements, construction staging as well as costs associated with the project.

4.1.1 Preferred Road Design

The Preferred Design Option 4 is shown in Figure 4.0. No profiles are offered in this report, as only minor alteration of the grade is proposed with the possible exception of the northwest corner of Grand Marais Road at South Pacific Avenue (M.B.# 1595 South Pacific Avenue). For purposes of description, the road is divided into three sections listed as follows:

4.1.1.1 Howard Avenue to Parent Avenue

The key design elements of this section are as follows:

- 10.4m (34 foot) wide pavement with curb and gutter approximately centered within 20m right-of-way which includes two 1.5m (5 ft.) bike lanes and two 3.64m (12 ft.) wide vehicular lanes.
- No on-street parking. - Limited Property required. Close Atkinson Street and rationalizing land use of surplus lands.
- Sidewalks on both sides of road;
- Existing 8.5m cross-section to be maintained until future maintenance required

- Possible connection with Grand Marais Drain bikeway on City-owned lands at Howard Avenue and possible connection to future Parent Avenue bike lane from Grand Marais Drain
- Maintain truck route from Elsmere to Howard Avenue
- Elimination of on-street parking
- Preservation of majority of trees
- New all-way stop at Parent Avenue

4.1.1.2 Parent Avenue to Turner Road

- Land acquisition necessary to achieve uniform 20m (66 ft.) right-of-way centered on right-of-way where possible, but may be reduced in these areas of high impact
- Maintain existing bus route from Slater Street to Langlois Court
- New 1.2m (4 foot) wide sidewalk on both sides of Grand Marais Road East
- 10.9m (34 foot) wide pavement with curb and gutter approximately centered within 20m right-of-way (can be modified to reduce impact), which includes two 1.5m bike lanes and two 3.64m wide vehicular lanes
- Elimination of on-street parking
- Transition to off-road bike path at east end for connection to City bike system
- Closure of Grand Marais Road East at Walker Road
- Cul-de-sac and provide service lane access to MB's 2801 Walker and 2184 Grand Marais, as well as Union Gas yard
- Rationalization of surplus City lands to create potential new building lots
- Retaining wall at northwest corner of South Pacific Avenue and Grand Marais Road East, to protect adjacent residential property
- Elimination of roadside ditches

- Relocation and consolidation of utility poles and services
- Possible future bike/pedestrian connection via bridge/culvert to south side of Grand Marais Drain at Conservation Drive extension and Udine Park
- New all-way stop sign at South Pacific Avenue at Grand Marais Road

4.1.1.3 Turner Road to Walker Road

- New 8.4m (28 ft.) wide pavement with curb and gutter approximately centered within existing 20m right-of-way
- New storm sewer to drain Turner Road and Parkdale Place
- No on-street parking
- Re-construct Grand Marais Drain crossing with new bridge or culvert in accordance with Grand Marais Drain – Howard Avenue to Walker Road – ESR (McLaren, March 1992)
- Access to future residential development on Turner Road south of Parkdale Place (including “emergency” access to Digby).
- New curvilinear alignment to connect Turner Road to Grand Marais Road designed to appropriate standards for 50 km/hr. speed limit or less
- New traffic signal at Walker Road with accommodation for left turns from Parkdale Place to northbound Walker Road (compatible with the Walker Road E.S.R. preferred plan).

4.1.2 Storm Water Drainage

Sections 4.1.1.1 and 4.1.1.2 can accommodate storm drainage through the use of existing outlets to the Grand Marais Drain. Where necessary, local storm sewers may be required to extend to these existing outlets.

Section 4.1.1.3 (Turner Road and Parkdale Place) require a new road drainage storm sewer. This work should be co-ordinated with the Walker Road improvements where possible.

It is strongly recommended that upgrades to the Grand Marais Drain be completed in accordance with the Grand Marais Drain – Howard Avenue to Walker Road ESR (MacLaren 1992), to relieve drainage concerns in this study area and allow for the removal of the existing stormwater retention ponds located throughout the study area as recommended.

4.1.3 Sanitary Drainage

All properties within the corridor area are serviced by existing sanitary sewers. As a result of a condition survey completed for this project, it was determined that the existing sanitary sewers are in good condition. Prior to construction, a CCTV inspection should be completed to determine any maintenance needs.

4.1.4 Utilities

4.1.4.1 Watermains

Currently there is a 300mm watermain from Remington Street easterly, changing to an 8 inch main at Lillian Street (approximately 50 years old), under the pavement of Grand Marais Road approximately 1.5 metres below existing grade. The Windsor Utilities Commission (WUC) had indicated that this main is in poor condition and does require an upgrade. Also, 24 inch and 8 inch mains are located under the existing pavement of Turner Road.

It is strongly recommended that prior to the implementation of the preferred design, that a “test dig” be conducted to determine the depth and condition of the existing watermain. Also, in accordance with WUC policy, any lead services to individual properties should be upgraded to copper services by WUC.

4.1.4.2 Hydro

There currently exists a variety of poles and services along this route. It is advisable that Hydro consolidate these services to one pole line where possible. An upgrade to existing lighting levels to achieve the collector road requirement of 1 ft. candle should also be completed with the road construction. Enwin Powerlines has estimated the cost to relocate the hydro lines and replace all wood poles with concrete poles to be \$ 500,000.00.

4.1.4.3 Gas

Union Gas has sub-stations at both the east and west limits of the corridor. A 12 inch main S.B. (Steel Bare) is located in the north boulevard for the entire corridor. Several local services cross the street and run along the south boulevard.

Union Gas has indicated their plan to install a new 10 inch I.P. line between Howard Avenue and Walker Road. Due to time limitations and the property requirements, Union Gas will be advised to consider the use of the Ontario Hydro easement along the Grand Marais Drain.

4.1.4.4 Bell Canada

Bell service is provided by a variety of aerial and buried services. With the possible exception of aerial consolidation with Hydro, relocation of Bell plant should not be necessary. Bell should consider conversion to buried cable as part of the road reconstruction project.

4.1.4.5 Cogeco Cable

Cogeco Cable is primarily aerial cable located in the south boulevard. Consolidation and possible relocation to underground should be considered with the road reconstruction.

4.1.5 Traffic Control Signals and Improvements

The City of Windsor Traffic Engineering Department maintains a traffic signal at the Howard Avenue/Grand Marais Road intersection. No adjustments are being recommended for this signal. The upgrade to the Walker/Parkdale intersection will require the installation of a new traffic signal. This signal should be co-ordinated with the existing signals and railway crossing at Walker/Grand Marais and the existing signal at Walker Rd./Digby intersection.

It is recommended that all-way stops be installed at the intersections of South Pacific and Parent Avenues, and that the City Administration prepare the necessary by-laws to reflect these changes.

In addition, this report is recommending the construction of designated on-road bike lanes. To accommodate this, the City Administration will be required to prepare the necessary by-law to authorize this new feature to Windsor roadways.

4.2 Walker Road Environmental Study Report

Concurrent to this study, the City of Windsor is undertaking an Environmental Study Report for Walker Road from Riverside Drive East to City Limits. The corridor for this study intersects with the corridor for the Grand Marais Road Study. Prior to any implementation, it is recommended that issues such as construction co-ordination, timing and utility issues be co-ordinated.

4.3 Walker Road/Railway Crossing

Based on the existing warrants, the Walker Road /C.P.R. crossing requires a grade separation. Due to the cost, an interim solution may be required prior to the ultimate cross-section. Both of these improvements will have an impact on the planned improvements to the Grand Marais Road. The prepared bike path from Grand Marais Road east of Walker Road connects to the Memorial Drive and future easterly and westerly bike connections.

4.4 Construction Issues & Phasing

Logistically, this project may be restricted due to budget constraints and therefore, a 3 phase implementation strategy is recommended. The phase limits are:

- Parent Avenue easterly to Slater Street
- Slater Street to Walker Road including cul-de-sac at Walker Road, including reconstruction of Turner/Parkdale and storm sewer
- Parent Avenue westerly to Howard Avenue

A combination of these works may be considered, however, the primary factor driving the strategy should relate to safety of pedestrians, vehicles and bicycles. The Parent to Howard section is presently in good condition and should only be reconstructed when warranted by regular maintenance. In addition, the acquisition of the land as noted in this report, Section 4.7.3, must be secured prior to work commencing.

4.5. Preliminary Cost Estimates

The preliminary costs associated with this project are represented by construction phases for concrete pavement design in Table 4.0. A detailed estimate, including sewer works, traffic signals, roadworks, engineering and contingencies, utility relocations and land acquisition costs are shown in Appendix E for both concrete and asphalt pavement.

These costs are estimates based on 2000 construction values.

Table 4.0

SUMMARY OF CAPITAL COST ESTIMATES FOR GRAND MARAIS ROAD CORRIDOR IMPROVEMENTS

Limits	Cost Per Item + GST		Total Cost Per Phase + GST
<u>Phase 1 – Parent Avenue to Slater Street</u> Concrete Pavement	Total Construction Cost	\$1,409,678.85	\$1,947,411.09
	Total Property Acquisition	\$ 176,966.28	
	Total Engineering Cost	\$ 60,765.96	
<u>Phase 2 – Slater Street to Walker Road</u> Concrete Pavement	Total Construction Cost	\$1,278,211.32	\$1,713,425.92
	Total Property Acquisition	\$ 143,230.83	
	Total Engineering Cost	\$ 291,983.77	
<u>Phase 3 – Howard Avenue to Slater Street</u> Concrete Pavement	Total Construction Cost	\$1,087,870.12	\$1,502,849.51
	Total Property Acquisition	\$ 136,570.94	
	Total Engineering Cost	\$ 78,408.45	

Table 4.0 Continued

<u>Total Project Breakdown Cost for Concrete Pavement:</u>	
Total Construction Cost	\$3,775,759.26
Total Property Acquisition Cost	\$ 456,770.67
Total Engineering Cost	\$ 931,156.59
Total Project Cost for Concrete Pavement:	\$5,163,686.52* + GST

*Note: Estimates do not include adjustments for life cycle cost analysis.

4.6 Pavement Design

Either flexible or rigid pavement designs can be considered acceptable for this project. It should be noted that the majority of the road is either a truck route or bus route and therefore, the design should accommodate these uses. The selection should be confirmed during final design based on a recommendation from a detailed geotechnical investigation including life cycle cost analysis. Continuous sub-drains (150mm diameter) on each side of the road are also recommended.

4.7 Potential Environmental Conditions and Mitigating Measures

4.7.1 Short Term Environmental Impacts.

During construction, care must be taken to preserve and/or relocate the line of trees located along the boulevard of Grand Marais Road. The City forester should be consulted to provide recommendations regarding preservation of trees. Best management practices are recommended throughout the construction of the project.

Throughout construction, access must be maintained to all homes, businesses and institutions as well as appropriate signage to facilitate access.

4.7.2 Long Term Environmental Impacts

As noted in the review of the various options and alternatives, the long term impacts of the implementation of the preferred design include expected increased traffic volumes which will in turn cause additional noise and air pollution in the immediate area. The trees are primarily being spared and additional areas added,

therefore, this will have a positive aesthetic and air quality impact on the long term environment.

In addition, new sidewalks and wider travel lanes will increase safety dramatically in the area for all forms of transportation. The implementation of an east-west bikeway through this section will further promote healthy life styles within the City of Windsor.

The addition of the new curb and gutter along Grand Marais Road will increase the protection to the adjacent properties from the associated negatives of standing water.

4.7.3 Property Requirements

Generally, the additional property required for the standard 20 metre (66 foot) right-of-way, consists of the acquisition of up to a 3.2 metre wide strip of land along both sides of Grand Marais with impact exceptions.

The specific property requirements are shown on Figure 4.0. Should the City of Windsor be unable to acquire the lands gratuitously via re-zonings, site plan control, or other redevelopment processes, it is recommended that the City negotiate to purchase the necessary properties based on the City's appraised values. A survey plan should be registered for the year 2001 with consideration of funding approved in the same Budget year.

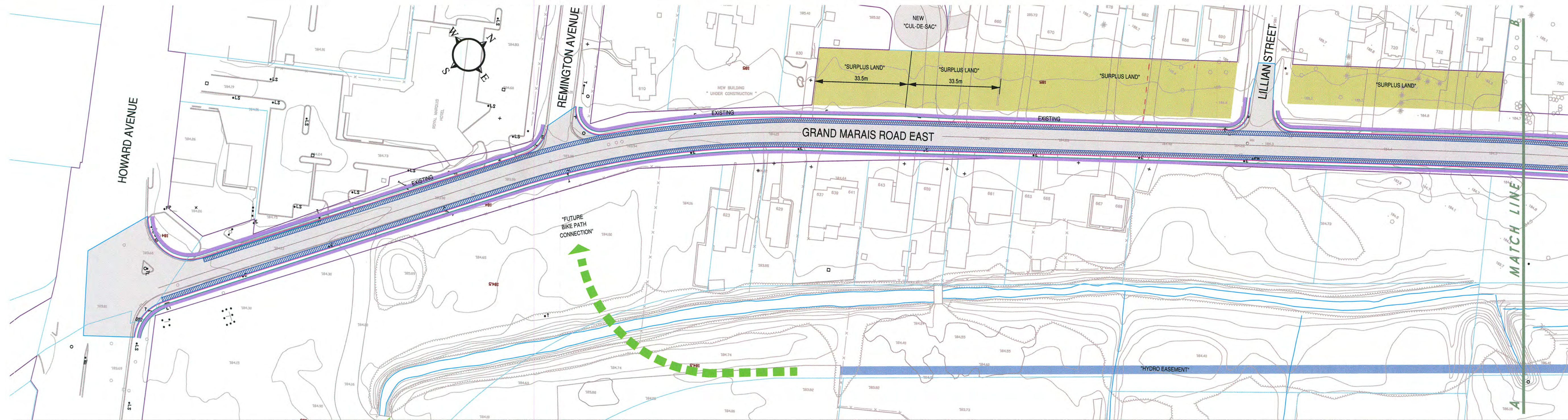
4.8 E.A. Process

Following adoption of these recommendations by City Council, a Notice of Completion was published in the Windsor Star on Saturday, August 12, 2000. This provided information on the Preferred Design for a thirty (30) day review period, and provisions contained in the Class E.A. process to allow the public and/or review agencies an opportunity to comment or make bump up requests regarding objections to the recommendations made in the ESR, or to request additional information. On Wednesday, August 9, 2000, this ESR was filed with the Clerk of the City of Windsor and placed on

record to commence the thirty day review period. If reasonable concerns are raised, the City of Windsor is required to attempt to resolve those issues with the party objecting. If no concerns are raised within the thirty-day period, the project is considered approved and may proceed to construction.

4.9 Future Activities

Upon completion of the Class E.A. Process, the City may proceed to the last phase of the Class E.A. process, Phase 5. Phase 5 involves a completion of the contract drawings and specifications, tendering of contracts, and monitoring of construction activities. These monitoring activities ensure that the transportation objectives of the contract are met, as well as commitment made in the ESR to provide measures to mitigate environmental impacts. Those measures were identified in Chapter 3 and samples are provided in appendices.



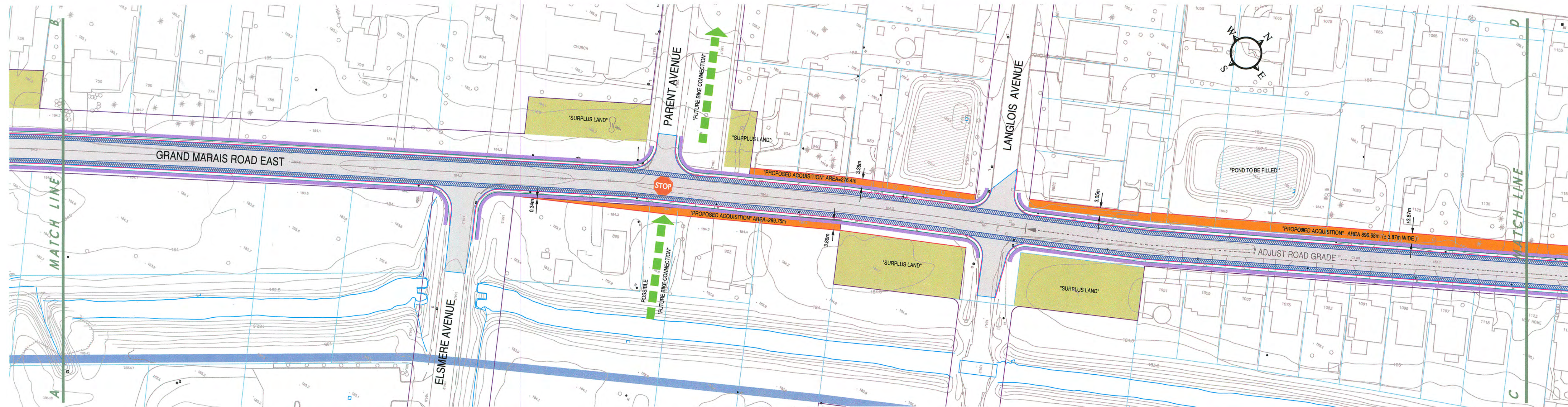
Grand Marais Road East Corridor Grand Marais Road East Corridor Improvement - Class Environmental Assessment

Scale 1:750



The Corporation of the City of Windsor

- | | | | |
|--|-------------------------------|-----------------|------------------|
| Future Pavement | Existing property lines | Sidewalk (1.2M) | Land Acquisition |
| Hydro Easement (3.048m) | 20m (66') wide Road Allowance | Bike Lane | Surplus Lands |
| Existing Road Allowance (width varies) | Pavement | | |



Grand Marais Road East Corridor

Grand Marais Road East Corridor Improvement - Class Environmental Assessment

Scale 1:750



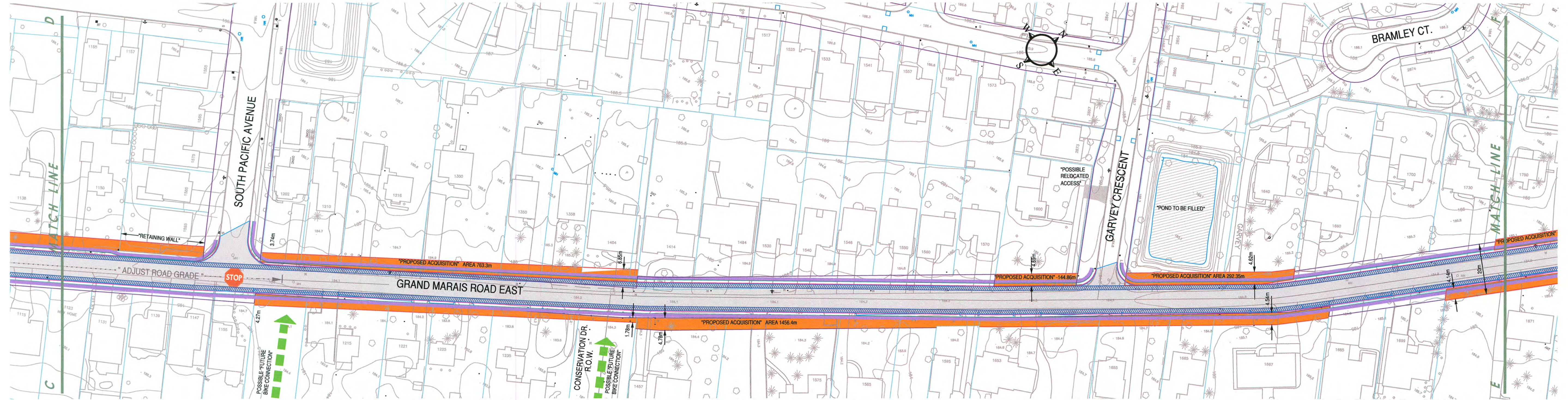
The Corporation of the City of Windsor

Future Pavement
Hydro Easement (3.048m)

Existing property lines
20m (66') wide Road Allowance
Existing Road Allowance (width varies)

Sidewalk (1.2M)
Bike Lane
Pavement

Land Acquisition
Surplus Lands



Grand Marais Road East Corridor **Grand Marais Road East Corridor Improvement - Class Environmental Assessment**

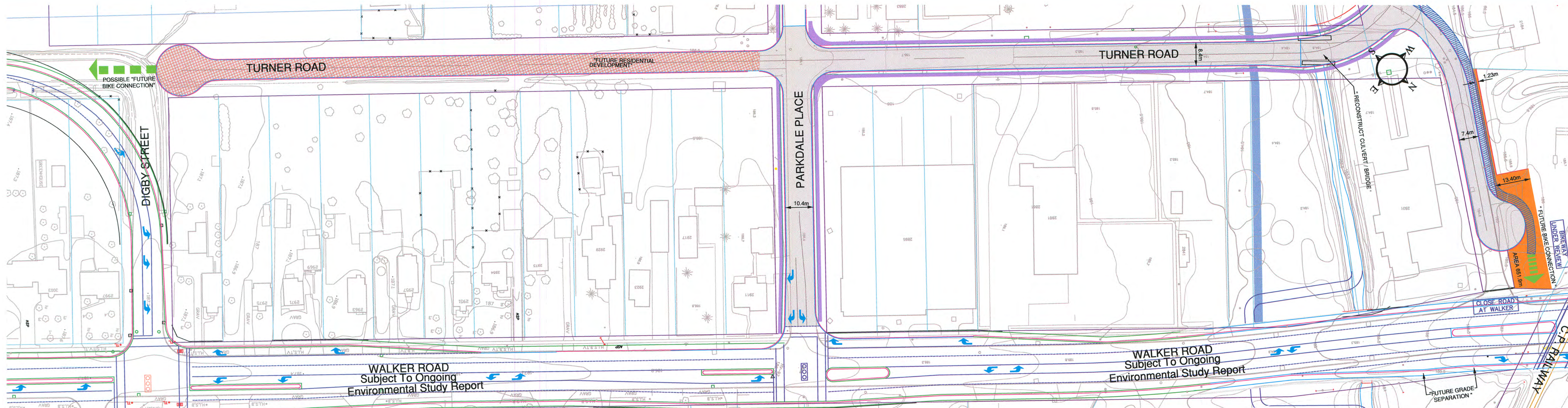
Scale 1:750

- | | | | |
|---------------------------|--|-----------------|------------------|
| Future Pavement | Existing property lines | Sidewalk (1.2M) | Land Acquisition |
| Hydro Easement (3.048m) | 20m (66') wide Road Allowance | Bike Lane | Surplus Lands |
| | Existing Road Allowance (width varies) | Pavement | |



The Corporation of the City of Windsor

Figure 4.0



Grand Marais Road East Corridor Grand Marais Road East Corridor Improvement - Class Environmental Assessment Scale 1:750



The Corporation of the City of Windsor

- | | | |
|--|-------------------------------|------------------|
| Future Pavement | Existing property lines | Sidewalk (1.2M) |
| Hydro Easement (3.048m) | 20m (66') wide Road Allowance | Bike Lane |
| Existing Road Allowance (width varies) | Pavement | Land Acquisition |
| | | Surplus Lands |

Figure 4.0