

R. 946

FINAL REPORT

THE CORPORATION OF THE
CITY OF WINDSOR



TECUMSEH ROAD WEST CORRIDOR MASTER PLAN



EXECUTIVE SUMMARY

E1 INTRODUCTION

Roadway conditions along Tecumseh Road West, between Janette Avenue on the east and Everts Avenue/Curry Avenue on the west, have been the subject of study by the City of Windsor for over 30 years. Due primarily to the cost of the improvements required and to the lack of funding availability, these works have been held in abeyance by the City of Windsor.

The City of Windsor has now received a funding commitment from the Federal and Provincial governments for those improvements required to eliminate problems associated with the substandard subway located on Tecumseh Road West, west of Wellington Avenue.

With the passage of time since the completion of the Tecumseh Road West Feasibility Study in January 1974, it is necessary to reassess alternative solutions to those problems identified in the Tecumseh Road West Corridor, in compliance with the environmental assessment requirements of the funding commitment.

E2 PURPOSE OF CLASS ENVIRONMENTAL ASSESSMENT

Though previous studies have identified the need for improvements in the Tecumseh Road West Corridor, the improvements require approval under the Environmental Assessment Act (EAA).

Tecumseh Road West Corridor Master Plan

Improvements to the Tecumseh Road West Corridor are required to address traffic safety concerns as well as to increase roadway traffic efficiency. The need for improvements in the Corridor were first identified in the Windsor Area Transportation Study, completed in 1963, and has been supported by numerous subsequent studies.

Before municipal road improvements such as grade separations can be undertaken, approval is required under the EAA. The Minister of the Environment and Energy, has approved the "Class Environmental Assessment for Municipal Road Projects" (Class EA) as the process by which municipalities can obtain EAA approval for improvements such as those required to address the problems identified in the Tecumseh Road West Corridor. The Master Plan process is described in the Class EA process document as being preferential where there are multiple problems in a study area, and where improvements are to be implemented over an extended period of time.

A description of the Master Planning process is provided in Subsection 1.1 of the Master Plan report.

E3 NEED FOR IMPROVEMENTS TO THE TECUMSEH ROAD WEST CORRIDOR

Existing problems in the Tecumseh Road West Corridor include: the frequent blockage of the road for extended periods by trains; difficult turning movements for vehicles at the two intersections of Tecumseh Road West and Crawford Avenue; and, substandard clearance and road width under the subway on Tecumseh Road West just west of Wellington Avenue. This latter problem has resulted in numerous accidents involving trucks that become lodged in the subway opening.

**E4 PUBLIC CONSULTATION WAS USED
TO DEVELOP THE MASTER PLAN**

Input received from the public, agencies and government offices has been an important and integral part of the environmental assessment planning process.

The public consultation process allowed for the exchange of information, views and ideas between the public/agencies and the project team. At each step in the study process, the study findings were presented for review and comment. This allowed the project team to identify key issues, obtain input on the information presented, and to respond to specific concerns.

Points of Contact

1. **Notice of Invitation for Public Comment:** At the start of the study a notice for public comment was published in the Windsor Star on October 1, 1994. This notice identified three major deficiencies in the corridor and acknowledged that public input into the planning and design of the project was welcome. A copy of this notice was also mailed to affected agencies, government offices and railway companies.
2. **Public Information Centre:** Held on December 6, 1994. The format was an open house from 3:00 p.m. to 9:00 p.m. at the Moose Lodge, 777 Tecumseh Road West. The purpose of this information centre was to present the identified problems and alternative solutions to those problems, and to obtain public comment on them. Notice of the Public Information Centre was advertised on three separate occasions in the Windsor Star.

*Tecumseh Road West Corridor
Master Plan*

3. **Ongoing Consultation:** Meetings with concerned groups, agencies, individuals, and the project team were held upon request. In many instances specific project issues were discussed.

In that the Master Plan fulfils Phases 1 and 2 of the 5 phase Class EA process, further project specific public consultation will occur, including consultation on project design alternatives and the filing of Environmental Study Reports for the specific projects.

E5 DESCRIPTION OF THE PREFERRED SOLUTION

The preferred solution to address the three problems identified in the Tecumseh Road West Corridor as further supported by the public consultation process, is to provide grade separations (subways) at the three railway crossing locations on Tecumseh Road West and realignment of the connecting length of existing Crawford Avenue. The preferred system is as shown on Figure 9, which follows Page 43 of this report.

The preferred system was identified as the recommended system at the Public Information Centre. Public and agency comment received confirmed that the recommended system should also be the preferred system.

TABLE OF CONTENTS

* * * * *

	<u>Page No.</u>
1.0 INTRODUCTION AND BACKGROUND	1
1.1 The Master Planning Process	3
1.2 Study Purpose	4
1.3 Background Studies	5
1.4 Study Area	8
1.5 Project Objectives	9
1.6 Public and Agency Consultation Program	10
2.0 PROBLEM STATEMENT	12
2.1 Description of the Problem	12
2.2 Justification for the Project	13
3.0 THE ENVIRONMENT	14
3.1 Social Environment	14
3.1.1 Heritage Resources	15
3.1.2 Recreation	15
3.2 Natural Environment	16
3.3 Economic Environment	18
3.3.1 Railway Operations	18
3.3.2 Industrial Establishments	19
3.3.3 Commercial Establishments	19
3.4 Traffic and Engineering Conditions	20
4.0 ALTERNATIVE SOLUTIONS	21
4.1 Identification of Alternative Solutions	21
4.1.1 Evaluation of Alternative Solutions	23
4.1.2 Recommended Solutions	28
4.2 Identification of Alternative Systems	29
4.2.1 Evaluation of Alternative Systems	30
4.2.2 The Recommended System	32
4.3 Public and Agency Input	32
4.3.1 Public Input	32
4.3.2 Agency Input	38
5.0 THE PREFERRED SOLUTION	43

**TABLE OF CONTENTS
(Continued)**

APPENDICES

- "A" - PUBLIC NOTICES - PROJECT INITIATION
AND PUBLIC INFORMATION CENTRE NO. 1
- "B" - CANDIDATE NATURAL HERITAGE SITES
- "C" - PUBLIC INPUT FROM PROJECT INITIATION NOTICE
- "D" - COMPLETED SIGN-IN SHEETS AND COMMENT SHEETS
- PUBLIC INFORMATION CENTRE NO. 1
- "E" - LIST OF AGENCIES AND LETTERS TO AGENCIES
- "F" - AGENCY RESPONSES
- "G" - LETTERS TO AND RESPONSES FROM RAILWAY COMPANIES

LIST OF FIGURES

	<u>Following Page No.</u>
FIGURE 1	LOCATION MAP 1
FIGURE 2	CLASS EA PROCESS CHART 4
FIGURE 3	STUDY AREA MAP 8
FIGURE 4	PROBLEM AREAS MAP 12
FIGURE 5	LAND USE MAP 14
FIGURE 6	NATURAL AREAS AND CITY PARKS MAP 16
FIGURE 7	OFFICIAL PLAN MAP 19
FIGURE 8	ALTERNATIVE SYSTEM SOLUTIONS 21
FIGURE 9	PREFERRED SYSTEM 43

LIST OF TABLES

	<u>Page No.</u>
TABLE 1	PROBLEM 1 - EVALUATION OF ALTERNATIVE SOLUTIONS 24
TABLE 2	PROBLEM 2 - EVALUATION OF ALTERNATIVE SOLUTIONS 25
TABLE 3	PROBLEM 3 - EVALUATION OF ALTERNATIVE SOLUTIONS 26
TABLE 4	EVALUATION OF ALTERNATIVE SYSTEMS 31

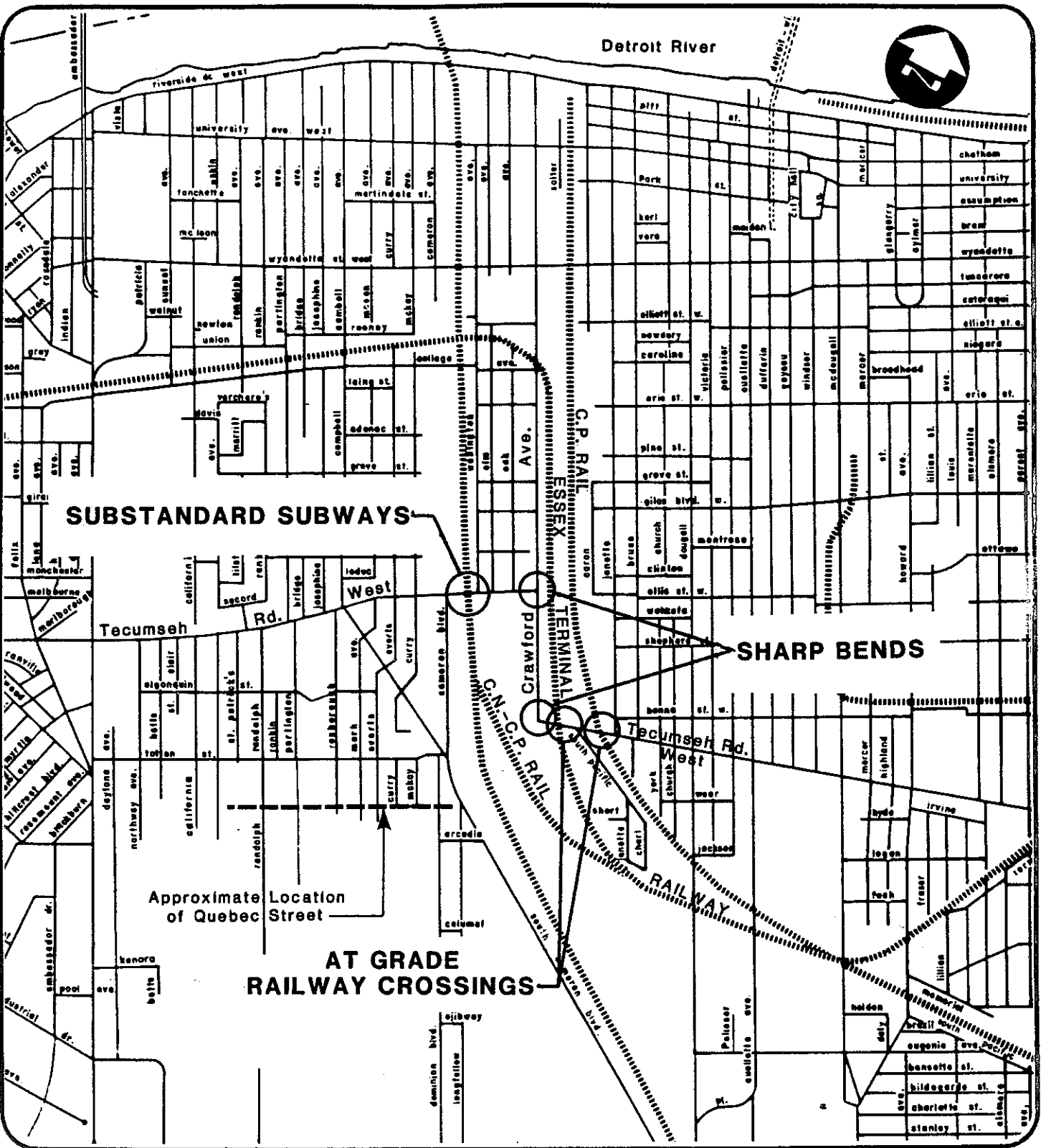
1.0 INTRODUCTION AND BACKGROUND

Tecumseh Road is perhaps Windsor's best known east-west arterial road, and until the construction of the E.C. Row Expressway was the area's most heavily travelled. The smooth flow of traffic on Tecumseh Road West is interrupted at the CP Rail and the Essex Terminal Railway (ETR) tracks, and is restricted by two sharp bends at Crawford Avenue, and includes a substandard subway just west of Wellington Avenue, refer to Figure 1.

The disjointed nature of Tecumseh Road West, as shown on Figure 1, has been a source of frustration for Windsor motorists throughout the City's history. Existing problems in this section of road include: frequent blockage of the road by trains at the C.P. Rail and Essex Terminal Railway at grade crossings; difficult turning movements for vehicles at the intersections of Tecumseh Road West and Crawford Avenue; and, substandard clearance and road width under the subway on Tecumseh Road West just west of Wellington Avenue, which has resulted in numerous accidents involving trucks that become lodged in the opening.

The need for grade separation at the level railway crossings and other improvements along Tecumseh Road West have previously been identified in the following studies:

- The Windsor Area Transportation Study, prepared by M.M. Dillon Limited in 1963.
- The Windsor Railway Grade Crossing Study, prepared by M.M. Dillon Limited in 1968.
- Phase I of the Windsor Urban Transportation Study (WUTS), prepared by De Leuw Cather Limited in 1972.



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TECUMSEH ROAD WEST CORRIDOR
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LOCATION MAP

FIGURE 1

In April 1973, the City of Windsor retained M.M. Dillon Limited to prepare a Feasibility Study to identify solutions which would address problems in the Tecumseh Road West Corridor. The alternative solutions identified in the study report included three alternative routes for a new Tecumseh Road as follows: realignment with Totten Street; realignment with Quebec Street; and, an overpass route through the CP Railway yard. From an evaluation of the alternatives, the overpass connecting Tecumseh Road West was recommended in the study report.

In April 1974, City Council approved the Feasibility Study, accepting its recommendations and authorizing Dillon to prepare a Functional Design Report. Subsequent to the preparation of the Feasibility Study, the CP Railway company indicated their reluctance to approve an overpass within their compound. In consultation with the City and the railway companies, Dillon developed a subway scheme consistent with the Feasibility Study concept of using existing Tecumseh Road West. The subway scheme met CP Rail's requirements by avoiding their compounds.

Although previous studies have been carried out to address the traffic and roadway conditions in the Tecumseh Road West Road Corridor, they have included limited public and agency consultation. The previous studies were undertaken prior to 1987 and as a result did not follow an environmental assessment planning process and meet the requirements of the Environmental Assessment Act (EAA). Public and agency consultation is a requirement of the EAA planning process. The Minister of the Environment has approved the "Class Environmental Assessment for Municipal Road Projects" (Class EA) as the process by which municipalities can obtain EAA approval. The Tecumseh Road West Corridor Master Plan was prepared according to the requirements of the "Class EA for Municipal Road Projects".

The Tecumseh Road West Corridor Master Plan study identifies the roadway's problems, identifies and evaluates alternative solutions to the problems in terms of their net environmental impacts, and identifies preferred solutions to the problems. The Master Plan study has involved the participation of the public and affected agencies.

1.1 The Master Planning Process

As mentioned, the Tecumseh Road West Corridor Master Plan was prepared as a "Master Plan" according to the "Class EA for Municipal Road Projects". The intent of Master Plans is to study larger systems prior to dealing with specific problems. Multiple traffic problems (which are discussed in Section 2 of this report) exist in the Tecumseh Road West Corridor. While the problems could be addressed on a project by project basis, the Ministry of the Environment and Energy encourages municipalities to integrate the requirements of both the EA Act and the Planning Act through the development of long range plans. The Tecumseh Road West Corridor Master Plan is consistent with this approach.

According to the Municipal Engineers Association document Class Environmental Assessment for Municipal Road Projects, June 1993, the master planning process is beneficial in cases where the overall system involves subsequent individual projects. The master plan process recognizes that there are benefits in terms of better planning when long range holistic studies are undertaken over logical planning units, such as the Tecumseh Road West Corridor.

The preparation of Master Plans should recognize the Planning and Design Process of the Class Environmental Assessment process, and should incorporate the five key principles of successful planning under the EA Act, which are:

1. Consultation with affected parties early on, such that the planning process is a cooperative venture.
2. Consideration of a reasonable range of alternatives.
3. Identification and consideration of the affects of each alternative on all aspects of the environment.

4. Systematic evaluation of alternatives in terms of their advantages and disadvantages, to determine their net environmental effects.
5. Provision of clear and complete documentation of the planning process to allow "traceability" of decision-making.

Public and agency consultation is imperative and must take place during each phase of the process. The documentation of the evaluation of alternatives should clearly state relevant assumptions and methods used in the analysis so that these can be verified by monitoring during the implementation phase.

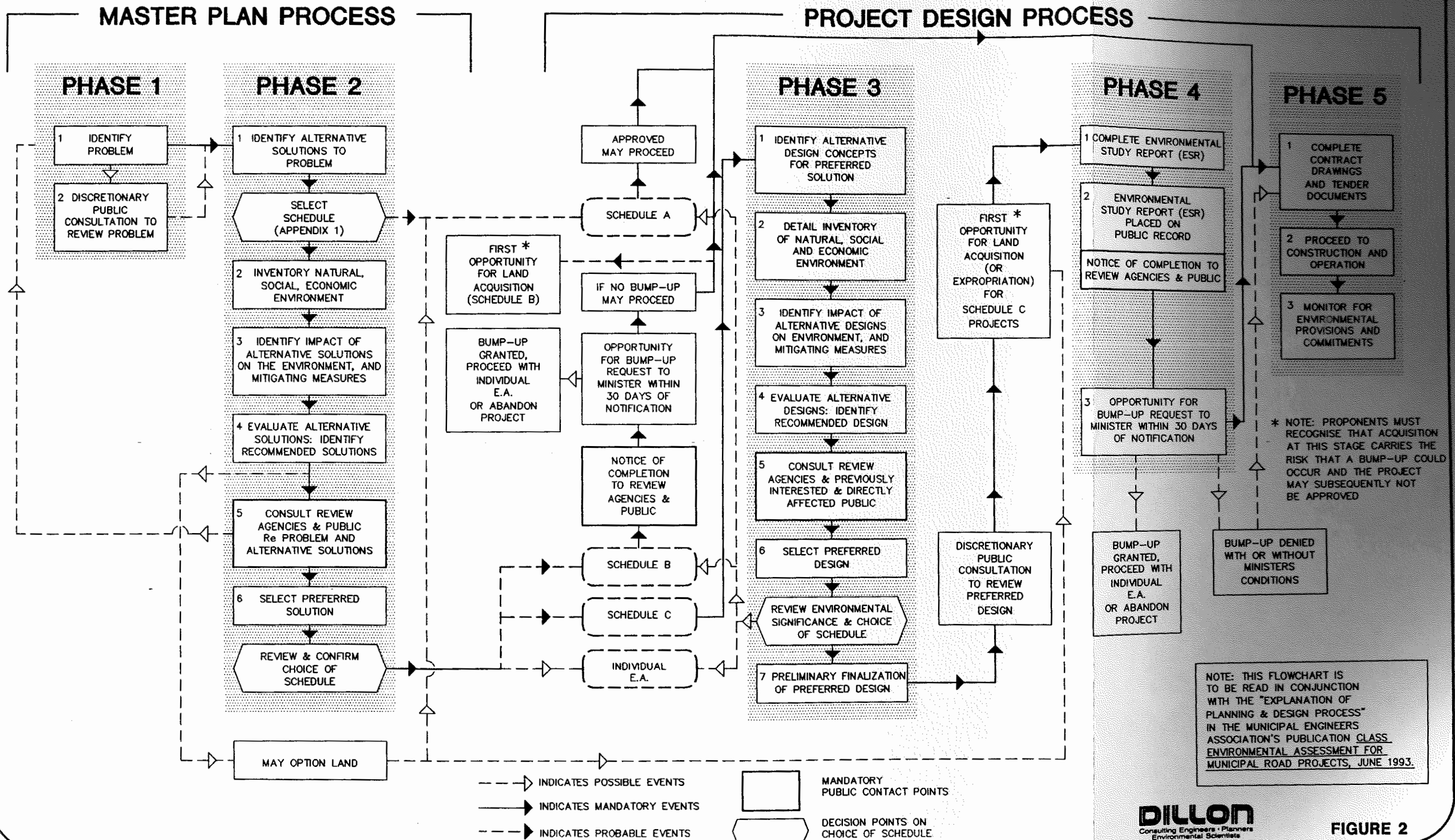
With respect to the Class EA process, a master plan is to satisfy the requirements of Phases 1 and 2, that is, problem identification and consideration of alternative solutions. For those projects which fall under Schedule "B", further planning and assessment beyond that undertaken in the Master Plan is not required. These specific projects could be implemented at any time during the 5 year period after the Master Plan has been completed and filed with the Ontario Ministry of Environment and Energy (MOEE). Those projects identified as a Schedule "C" are to proceed to Phase 3 and the preparation of an Environmental Study Report (ESR).

A flow-chart outlining the Class EA process with the Master Plan component noted, is provided as Figure 2 of this report.

1.2 Study Purpose

The purpose of this study is to identify and evaluate alternative solutions to address the problems identified in the Tecumseh Road West Corridor, which will result in the selection of a preferred solution to the problems.

MASTER PLAN AND DESIGN PROCESS FOR THE TECUMSEH ROAD WEST CORRIDOR



The study will fulfil the requirements of Phases 1 and 2 of the Class EA process for each of the individual projects. Subsequent to the preparation of the Master Plan, Phases 3, 4 and 5 of the Class EA process will be undertaken for each of the projects to address the aforementioned problems.

The Tecumseh Road West Corridor Master Plan is in keeping with a stated transportation goal in the City's Official Plan which is:

- *to provide for the safe, efficient and convenient movement of people and goods within and through the City of Windsor.*

1.3 Background Studies

As mentioned in Section 1.0 of this report, a number of studies and/or reviews have been carried out over the past 30 years regarding problems in the Tecumseh Road West Corridor. Many of the early studies were undertaken in an effort to achieve convenient access to Huron Church Road using Tecumseh Road West. The emphasis on convenient access to Huron Church Road using Tecumseh Road West has been reduced as the result of the construction of the E.C. Row Expressway. The Expressway is a four lane, east-west, controlled access highway which has become Windsor's most heavily travelled east-west route.

Although the Expressway is the City's prominent east-west roadway, Tecumseh Road remains Windsor's major commercial corridor, and is considered by many as the most convenient for short range east-west travel.

The following is a summary of various background studies that are relevant to the conditions of Tecumseh Road West.

The Windsor Area Transportation Study, 1963, identified the Tecumseh Road West CPR and ETR crossings as having a very high priority for grade separation. The Tecumseh Road West overhead and alignment was recommended for implementation during the 1963-1968 time period. This priority was based on the existing (1961) traffic demands on the major street system and the continuing increase in demand forecasted to the year 1981. Anticipating the construction of the E.C. Row Expressway, the Tecumseh Road structure and related road improvements were recommended to have a basic four lane cross-section to accommodate projected volumes.

The Windsor Railway Grade Crossing Study, 1968, was prepared in order to determine the priority for rail/roadway grade separation in the City. Current road and rail traffic volume data were obtained and the exposure factor, which is a measure of time vehicles are detained, was calculated for some 74 crossings. Tecumseh Road West presented the highest exposure which was well in excess of the urban warrant for grade separation.

The Windsor Urban Transportation Study - Phase I Concepts, 1972, presented an evaluation of alternative transportation system concepts to serve both the 1995 and the longer range system requirements. Both public transit and railway consolidation were considered in the study.

The Terms of Reference for that study specifically required the consulting firm retained for the project to:

"...confirm or modify the present concept of the Tecumseh Road West grade separations, based on the consultant's professional experience;..."

The Study concluded that:

A new grade separation over the CPR-Penn Central Corridor is required. It is recommended that this connect Tecumseh Road to Totten Street to provide maximum spacing when a grade separation is provided at Giles Boulevard. The intersection of Totten Street, Huron Church Road and Malden Road will require detailed consideration.

The Tecumseh Road West Feasibility Study, 1974 was undertaken to:

- a) Enable a route selection to be made of three basic alignments for Tecumseh Road:
 - The existing Tecumseh Road right-of-way
 - Totten Street
 - Quebec Street

- b) Provide input data for future use in the Functional Design of the preferred route.

The study concluded that all schemes would satisfy the arterial traffic requirements. However, none of the basic schemes would provide adequate vehicular access to the area between the various rail tracks. Of the alternatives evaluated, only the Tecumseh Alternative appeared to satisfy the community aspect considerations identified in the study.

The Tecumseh Road West Functional Report, November 1980, was prepared to develop to a functional level of design, the concepts of grade separation identified and approved in the Tecumseh Road West Feasibility Study, 1974, and to provide a basis for the detailed design of the project. The Functional Report was issued in draft in December 1977. The draft report was reproduced and supplemented by a comprehensive update and public information program, issued in November 1980.

The Functional Report identified the following three deficiencies and the improvements required to correct them:

- 1) The substandard subways under Conrail near Wellington Avenue. The two existing bridges permit two lanes of traffic only, have insufficient vertical clearance (2 feet below standard) and the road under the bridges has experienced flooding during rainfall events.

The proposed improvements consist of the replacement of the existing two bridges with one new structure. Tecumseh Road would have four through lanes, with a centre fifth lane on both approaches to provide left turn storage for Wellington Avenue and McKay Avenue. Flooding would be alleviated by a new pumping station.

- 2) The two right-angled turns from Tecumseh Road onto Crawford Avenue would be replaced by two properly designed curves. Crawford Avenue would meet Tecumseh Road at a signalized intersection.
- 3) The two at-grade railway crossings between Janette Avenue and Crawford Avenue represent possibly the most critical of the three deficiencies. They are blocked for an average of 3½ hours in every 24-hour period. The proposed improvement involves depressing Tecumseh Road under the existing railway crossings.

1.4 Study Area

The Tecumseh Road West Corridor Master Plan Study Area as shown on Figure 3 is bounded on:

- **North** by Pelletier/Montrose, Giles Boulevard West, and Shepherd Street West.

- **South** by the east and west productions of Arcadia Street and the Essex Terminal Railway right-of-way.
- **East** by Dougall Avenue south of Shepherd Street and Janette Avenue north of Shepherd Street.
- **West** by Huron Church Road.

The Study Area (shown on Figure 3) is that area which could potentially be affected by the alternative solutions which were considered. As shown on Figure 3, the Tecumseh Road West Corridor is located within the Study Area. The Corridor is that area which is directly affected by the problems.

1.5 Project Objectives

The Tecumseh Road West Corridor Master Plan has, as its main objective, the identification of preferred solutions to address the problems in the corridor. The following sub-objectives among others were given regard to in identifying the preferred solution:

- increased traffic safety and efficiency.
- minimize effects to area residential neighbourhoods.
- to minimize impacts on the social, economic, and natural environments.
- to minimize effects on properties within the corridor and adjacent to residential neighbourhoods.
- optimize cost/effectiveness ratio.

1.6 Public and Agency Consultation Program

To ensure that the Tecumseh Road West Corridor Master Plan undertaking is truly a cooperative venture, consultation with the public and potentially affected agencies is being carried out in each of the plan's two phases:

- 1) Problem identification.
- 2) Identification and evaluation of alternative solutions.

The methods of public consultation for the Tecumseh Road West Corridor Master Plan are as follows:

Phase 1 - Problem Identification

Notice of invitation of Public and Agency comment regarding the problems was published in the Windsor Star newspaper on October 1, 1994. The notice included a description of the problems, a study area map, information regarding the Master Plan process, and contacts for further information. Also, similar notices were issued by mail to potentially affected agencies. Copies of the notices are included in Appendix "A" to this report.

Phase 2 - Identification and evaluation of alternative Solutions

A Public Information Centre was held on December 6, 1994, to present alternative solutions and a recommended solution. The Public Information Centre was advertised in the Windsor Star on three separate occasions. Notice of the Public Information Centre was mailed to potentially affected agencies.

*Tecumseh Road West Corridor
Master Plan*

In addition to the methods noted above, an ongoing consultation program was carried out through meetings with concerned agencies, groups, or individuals at their request.

Public and Agency input resulting from the consultation program is summarized in Subsection 4.3 of this report.

2.0 PROBLEM STATEMENT

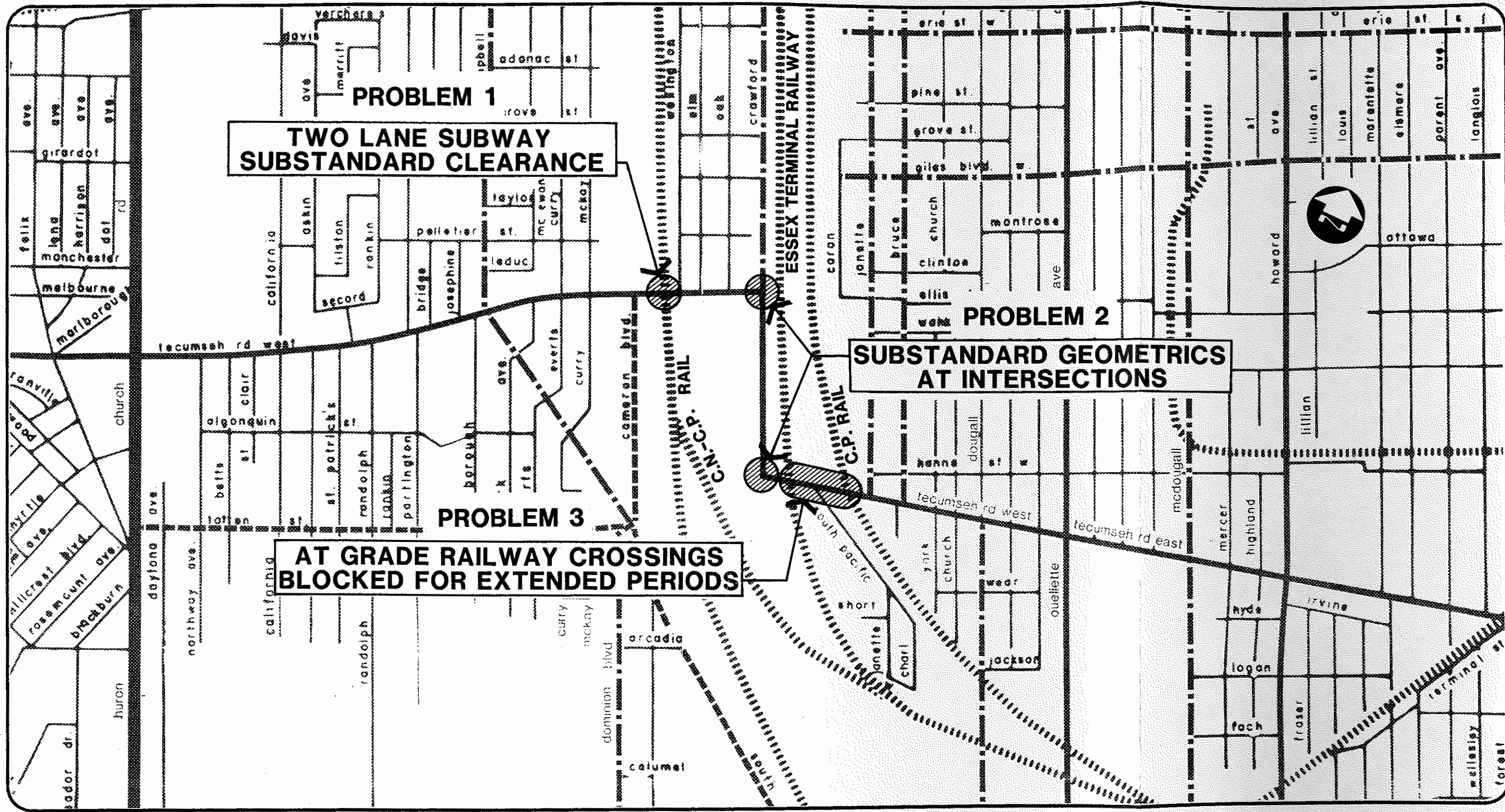
2.1 Description of the Problem

Three major deficiencies exist in the Tecumseh Road West Corridor. These deficiencies were identified in the Tecumseh Road West Functional Report, 1980 and still exist today.

They are:

- 1) The substandard subways under the railway crossings near Wellington Avenue. The existing subway permits two lanes of traffic only and has substandard headroom clearance necessitating the relocation of commercial truck traffic to adjacent major designated roads. The road under the structures has experienced flooding during rain events.
- 2) The two intersections of Tecumseh Road West and Crawford Avenue are inefficient for the volume of traffic using them. The sharp bend on the southerly intersection is particularly inefficient and hazardous.
- 3) The at-grade railway crossings between Janette Avenue and Crawford Avenue are blocked by trains for extended periods of time which contribute to further traffic inefficiency in the Tecumseh Road West Corridor.

The locations of the problems are shown on Figure 4 of this report.



LEGEND:

- CLASS 1 ARTERIAL
- CLASS 2 ARTERIAL
- CLASS 1 COLLECTOR
- CLASS 2 COLLECTOR

2.2 Justification for the Project

Justification for the Tecumseh Road West Corridor Master Plan is found in the nature of the problems identified. The substandard subways under the railway crossings near Wellington Avenue, and the two intersections of Tecumseh Road West and Crawford Avenue constitute unsafe conditions. As well, the at-grade railway crossings between Janette Avenue and Crawford Avenue, when blocked by trains for extended periods can contribute to an unsafe condition for emergency vehicles.

3.0 THE ENVIRONMENT

The following describes the existing environment in the Tecumseh Road West Corridor Master Plan Study Area. This section is to be read in conjunction with the Land Use Map provided on Figure 5 of this report.

3.1 Social Environment

The Study Area includes a number of residential neighbourhoods which are separated in the north and south direction by Tecumseh Road West, and are separated in the east and west direction by the various railway corridors. Except for the lands south of Totten Street, the residential neighbourhoods in the study area are established, substantially built-up and are relatively free from development pressures. The residential building forms found in the study area are predominantly single detached dwellings. There are a few multiple unit residential buildings in close proximity to Tecumseh Road West, west of South Cameron Boulevard. Building conditions in the study area are generally good.

The residential areas north of Tecumseh Road West are part of larger established residential neighbourhoods. The residential area south of Tecumseh Road West and west of the CP railway corridor is a separate neighbourhood often referred to as the Charl Street area. This area has a single point of access/egress to Tecumseh Road West via South Pacific Avenue.

Totten Street is a two lane collector road with residential development along its length. Residential development is complete on the north side of Totten Street and residential development is partially complete on the south side.

Quebec Street is not developed. The City of Windsor is currently preparing a development plan for the South Cameron Planning District which includes Quebec Street. It is anticipated that Quebec Street and the surrounding area will be slated for residential development in accordance with the area's Official Plan designation.



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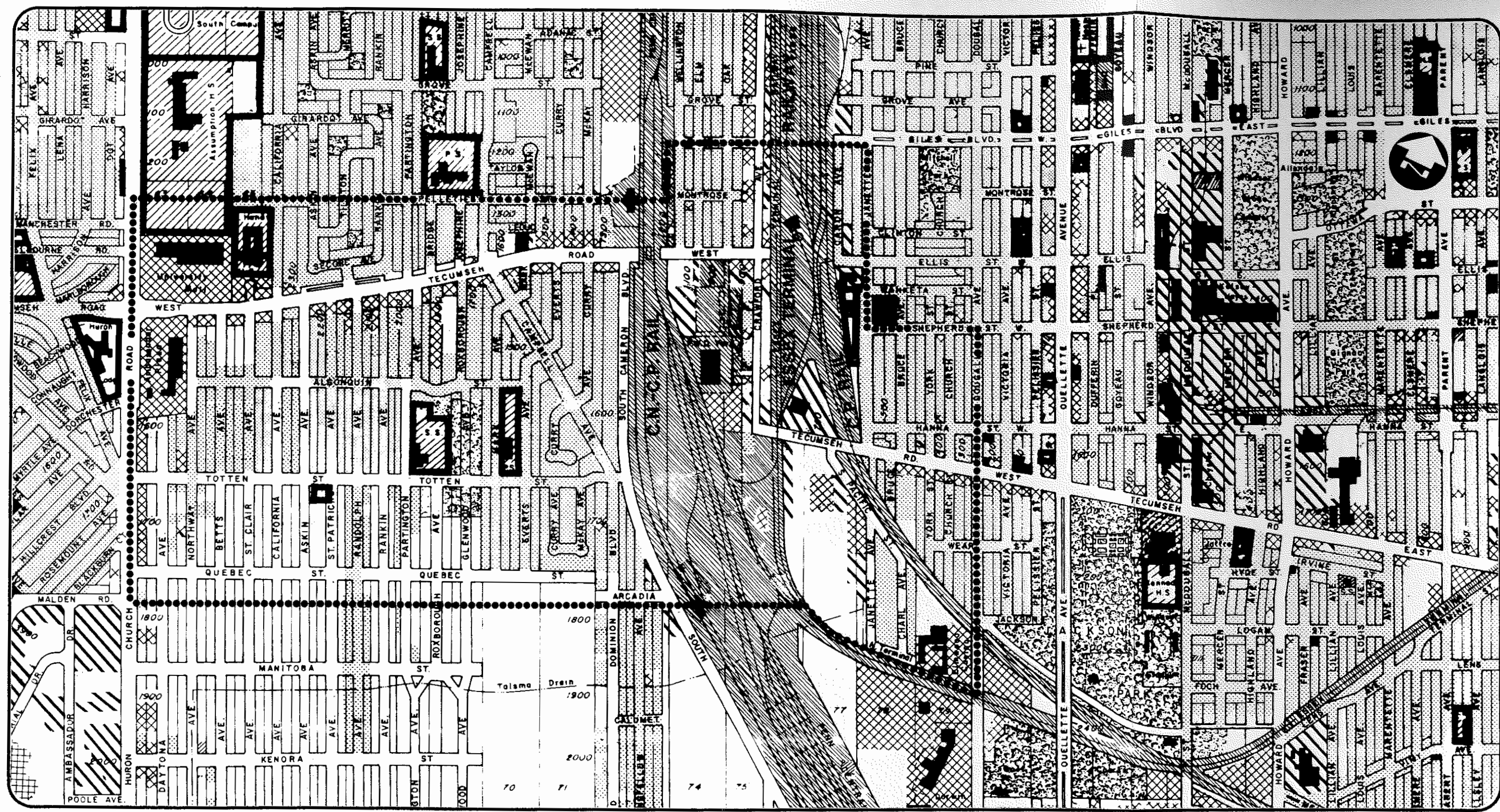
- STUDY AREA
- ▨ RESIDENTIAL
- PUBLIC & INSTITUTIONAL
- ▩ COMMERCIAL

- ▨ TRANSPORTATION & UTILITIES
- ▨ INDUSTRIAL
- ▨ PUBLIC & PRIVATE OPEN SPACE
- AGRICULTURAL & VACANT

**TECUMSEH ROAD WEST CORRIDOR
MASTER PLAN**

LAND USE MAP

FIGURE 5



3.1.1 Heritage Resources

One building of heritage significance was identified in the Study Area. The building is the Michigan Central Railroad (MCRR) station at 1300 Pelletier.

According to information provided by the City's heritage planner, the station was opened in 1911 following the completion of the Detroit River Railroad Tunnel (1910), and MCRR's leasing arrangement with the Canada Southern Railway lines (1904).

3.1.2 Recreation

City Parks located in the Study Area are shown on Figure 6 of this report.

The Elm Street Park is located on Elm Street between Montrose Street and Giles Boulevard. This park has an area of 0.96 acres which was acquired circa. 1985. The neighbourhood park is equipped with a hard surface for basketball, an assortment of playground equipment, a creative play unit, and park benches. The park is the result of a cooperative venture of the Wellington/Crawford Citizens Committee and the Provincial government.

The Field of Dreams Park has an area of approximately 0.3 acres and is located on Curry Avenue south of Tecumseh Road West. This neighbourhood park was developed in 1993 to address a need in the Curry Avenue area. The park was developed as a cooperative venture with the City of Windsor which provided the land, and was funded with donations from City residents and businesses. The park is equipped with a hard surface for basketball and a creative play unit.

South Tilston Park is a 0.8 acre neighbourhood park located at the corner of Rankin and Secord Avenues. Currently undeveloped, this park is not equipped with any permanently installed facilities.

Superior Park, a 19 acre community park facility is located on the north and south sides of Totten Street, west of Mark Avenue. The park is equipped with a soccer field, a softball diamond, plus an assortment of playground equipment.

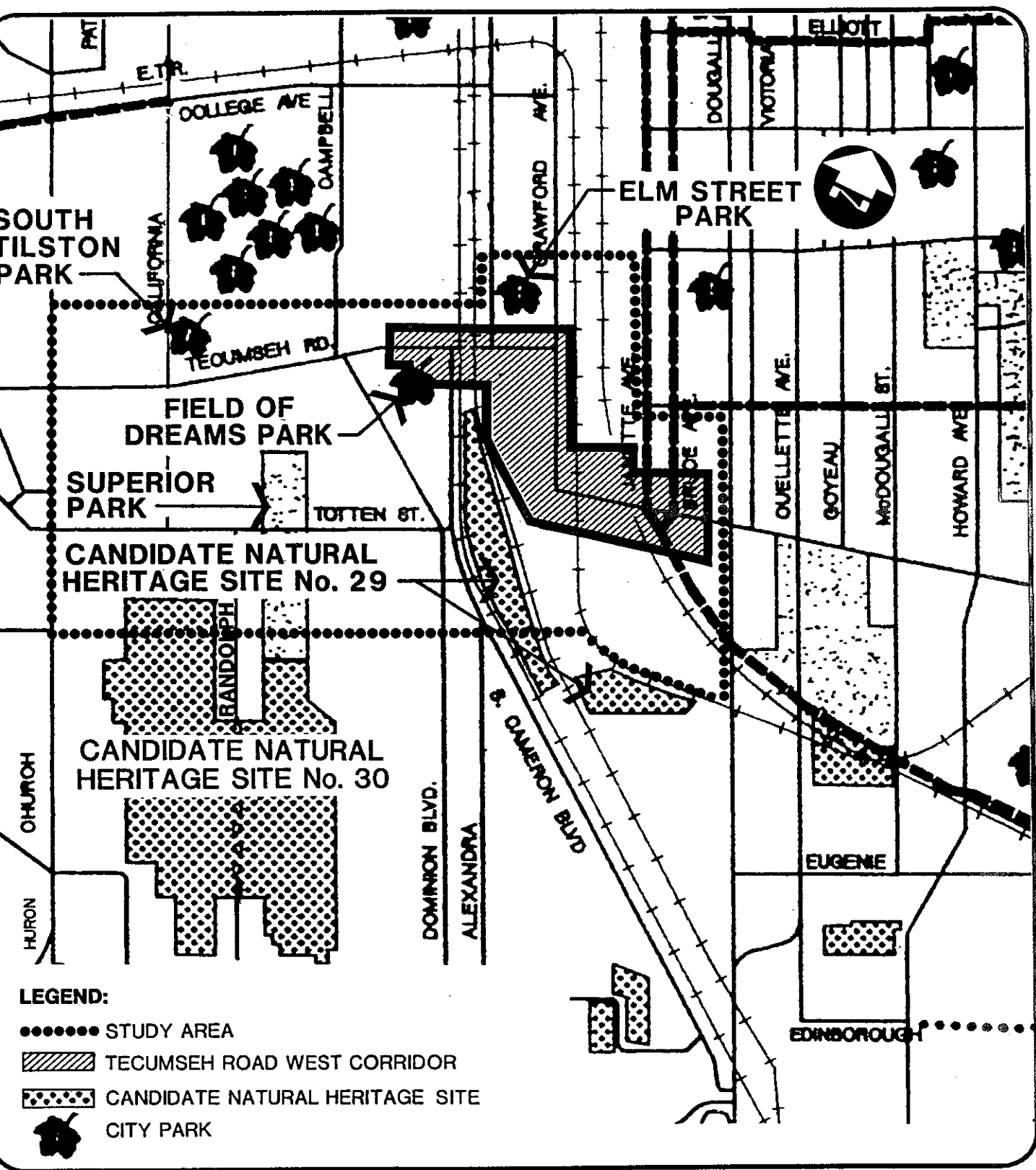
Superior Park is located in the northern section of the predominantly undeveloped South Cameron Planning District. This park currently serves the areas north and south of Totten Street. The lands south of Totten Street are primarily undeveloped lands. Once the South Cameron Planning District is developed, it is anticipated that Superior Park will service the larger South Cameron area. A detailed development plan for the South Cameron Planning District is currently being prepared by the City of Windsor.

Just west of South Pacific Avenue is the Bowlero Bowling Alley, a popular area recreational facility. West of the bowling alley is the Moose Lodge, a private social club.

3.2 Natural Environment

There are two identified Candidate Natural Heritage Sites (CNHS) within the Study Area as shown on Figure 6 of this report.

Candidate Natural Heritage Site #29 is located south of Tecumseh Road West between South Cameron Boulevard and Crawford Avenue (refer to Figure 6). According to a report prepared for the City of Windsor, this site is bisected into east and west halves by a railway. The southern portion of the east half is predominantly Hawthorn (*Crataegus* spp.) thicket with several, widely spaced, mature trees. The thicket is separated from the railway lines by invasive weeds. This area is highly disturbed with active rail traffic transecting the property. The northern portion of the property is in good condition however, the southern portion of the site shows extensive evidence of refuse dumping, placement of fill, and the disposing of scrap railway equipment.



- LEGEND:**
- STUDY AREA
 - ▨ TECUMSEH ROAD WEST CORRIDOR
 - ▤ CANDIDATE NATURAL HERITAGE SITE
 - 🍃 CITY PARK



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MASTER PLAN**

**NATURAL AREAS
AND CITY PARKS
FIGURE 6**

Candidate Natural Heritage Site #30 is located south of Totten Street in the undeveloped South Cameron Planning District (refer to Figure 6). According to a report prepared for the City of Windsor this site is described as a mosaic of deciduous woods, deciduous swamp, scrub fields, old fencerows and abandoned fields. Two thirds of this site was farmland and is now regenerating back into natural habitats, some of this being tallgrass prairie. On the east side are poorly drained soils which have young Oak (*Quercus* spp.) dominated woods with some of the wetter sites dominated by Ash (*Fraxinus* spp.) and Maple (*Acer* spp.) Pin Oak (*Q. palustris*) and Big Shellbark Hickory (*Carya laciniosa*) are also found in these wet-mesic areas. The northwest section of the site consists of a young deciduous woods with a subcanopy of Hawthorns (*Crataegus* spp.). Cottonwood (*Populus deltoides*), Red-fruited Thorn (*C. mollis*) and Ash trees dominate the old fencerows. A significant portion of the site consists of various stages of late successional fields. Some fields are dominated by Hawthorn species with a dense forb layer interspersed beneath, while others are dominated by dense thickets of Dogwood (*Cornus* spp.), often with Wild Crab (*Malus coronaria*) and Hawthorns intermixed. Throughout the late successional field are many pockets of prairie species, some extensive and diverse. Many well worn trails and a gravel road dissect the site.

According to the City of Windsor's Environmental Policy Study, Final Report, September 1994, Candidate Natural Heritage Sites are defined as:

potentially significant public and private natural areas identified by the City of Windsor, excluding parks which are not presently designated open space, that are candidates for classification as Environmental Policy Areas for their protection and conservation.

The Environmental Policy Study report recommends that development may not be permitted within a CNHS prior to the successful completion of an Environmental Evaluation Report. More detailed descriptions of the environmental features of the Candidate Natural Heritage Sites are included in Appendix "B" to this report.

3.3 Economic Environment

The economic environment of the Tecumseh Road West Corridor Study Area consists of three components:

- 1) Railway operations
- 2) Industrial establishments
- 3) - Commercial establishments

The locations of these land uses are illustrated on Figure 5.

3.3.1 Railway Operations

There are three railways that operate in the Study Area:

- CP Rail System
- Essex Terminal Railway
- Canada Southern Railway Co. (managed by CN/CP)

The locations of the respective railway operations are shown on Figure 3.

Historically, the Tecumseh Road West Corridor study area has been a hub of railway activity in the City of Windsor. Adjacent to the Study Area to the west is the Van de Water Yard which has developed as a main railway freight handling facility to complete an agreement with the City to vacate railway yards on the riverfront and in Walkerville, a Windsor residential neighbourhood. According to information obtained from Canadian National Railway, the yard is active around the clock with main line trains departing and arriving at various times throughout the day and night. The yard operations include switching and transfer movements from other railways and from other parts of the City.

The Wellington Street subway is the only route trains can use to access the rail tunnel between Windsor and Detroit.

Each of the three railway companies has been contacted about their present and future operation plans in the Study Area. Information received from the railways was used in the alternative solutions evaluation of this study, and is elaborated in Section 4.3.2 of this report.

3.3.2 Industrial Establishments

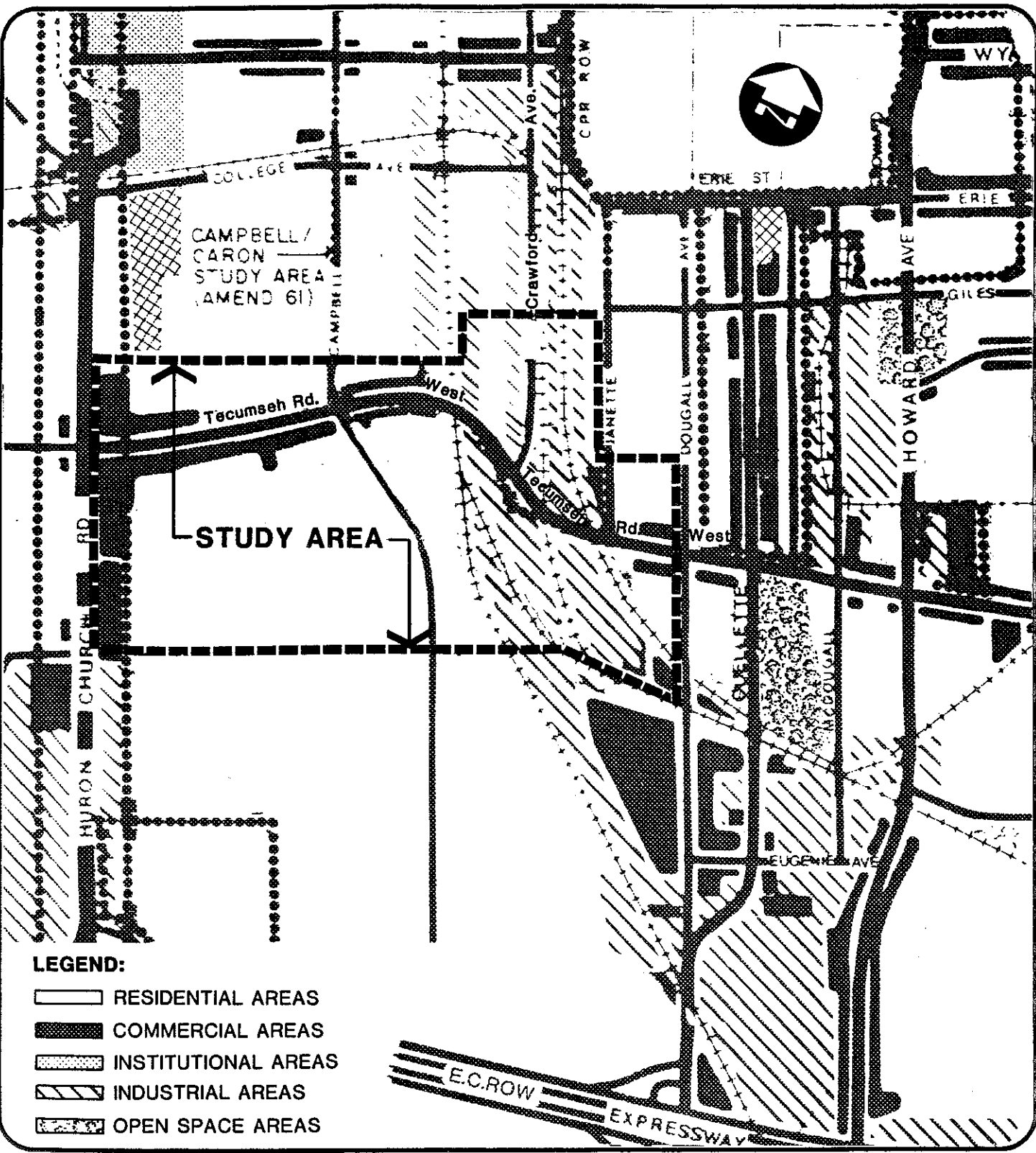
The Tecumseh Road West Corridor is attractive to industrial users due in part to the proximity of the railways and the arterial function of Tecumseh Road West. There is a concentration of industrial establishments in the central portion of the corridor on both sides of Crawford Avenue, refer to Figure 7. This contributes significantly to the amount of truck traffic in the area.






The area's industries are primarily light industrial, including such uses as warehousing, automobile repair, mechanical contracting shops, food distribution, and various other uses. There is however, a heavier industrial use, being a foundry, located on the west side of Crawford Avenue at its intersection with the southerly portion of Tecumseh Road West. The foundry operation is owned by Domestic Foundry Ltd.

The City of Windsor operates a Public Works Department (PWD) garage and yard on lands at the rear of the properties fronting on the west side of Crawford Avenue, refer to Figure 5.

3.3.3 Commercial Establishments

Commercial establishments in the Study Area are found along Tecumseh Road West, west of Wellington Avenue and along Huron Church Road.



- LEGEND:**
-  RESIDENTIAL AREAS
 -  COMMERCIAL AREAS
 -  INSTITUTIONAL AREAS
 -  INDUSTRIAL AREAS
 -  OPEN SPACE AREAS



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**TECUMSEH ROAD WEST CORRIDOR
MASTER PLAN**

OFFICIAL PLAN MAP

FIGURE 7

Commercial establishments along Tecumseh Road West include a variety of retail stores, automotive service providers, and a host of assorted shops. Some of the older establishments are built on the front property lines and therefore do not provide on-site parking. The majority of newer stores have on-site parking.

There are larger community shopping centres located on Tecumseh Road West, at the intersection of Huron Church Road.

A community sized Lumber/Hardware store is located on the north side of Tecumseh Road West between the CP Rail System and the Essex Terminal Railway right-of-ways.

3.4 Traffic and Engineering Conditions

Tecumseh Road West is classified as a Class II Arterial according to the Official Plan for the City of Windsor. Class II Arterials are usually four lane roadways having the primary function to provide for high volumes of traffic for longer distance intra-city travel at moderate speeds.

Traffic volume information provided by the City of Windsor for the month of April, 1993, shows that between 16,500 and 21,000 vehicles travelled within the corridor in a 24 hour period.

Accident records provided by the City of Windsor show that 200 accidents were reported in the Tecumseh Road West Corridor in the period January 1, 1991 to October 4, 1994. Of the 200 accidents, 40 occurred at intersections, and 160 at mid-block locations. 80 (40%) of the 200 reported accidents occurred at the problem locations identified in this study.

4.0 ALTERNATIVE SOLUTIONS

The Class EA planning process requires that the proponent identify and describe all reasonable solutions to address problems. To identify reasonable alternative solutions to the three problems in the Tecumseh Road West Corridor a two step process was used. Step 1 was a review of alternative solutions identified to address each problem separately. Step 2 was a review of the alternative solutions using a systems approach, wherein each alternative solution was reviewed in terms of its effectiveness in solving all of the identified problems.

4.1 Identification of Alternative Solutions

The following is a description of the reasonable alternative solutions identified for each of the three problems. The reasonableness of alternative solutions was assessed based on their projected ability to meet the project objectives.

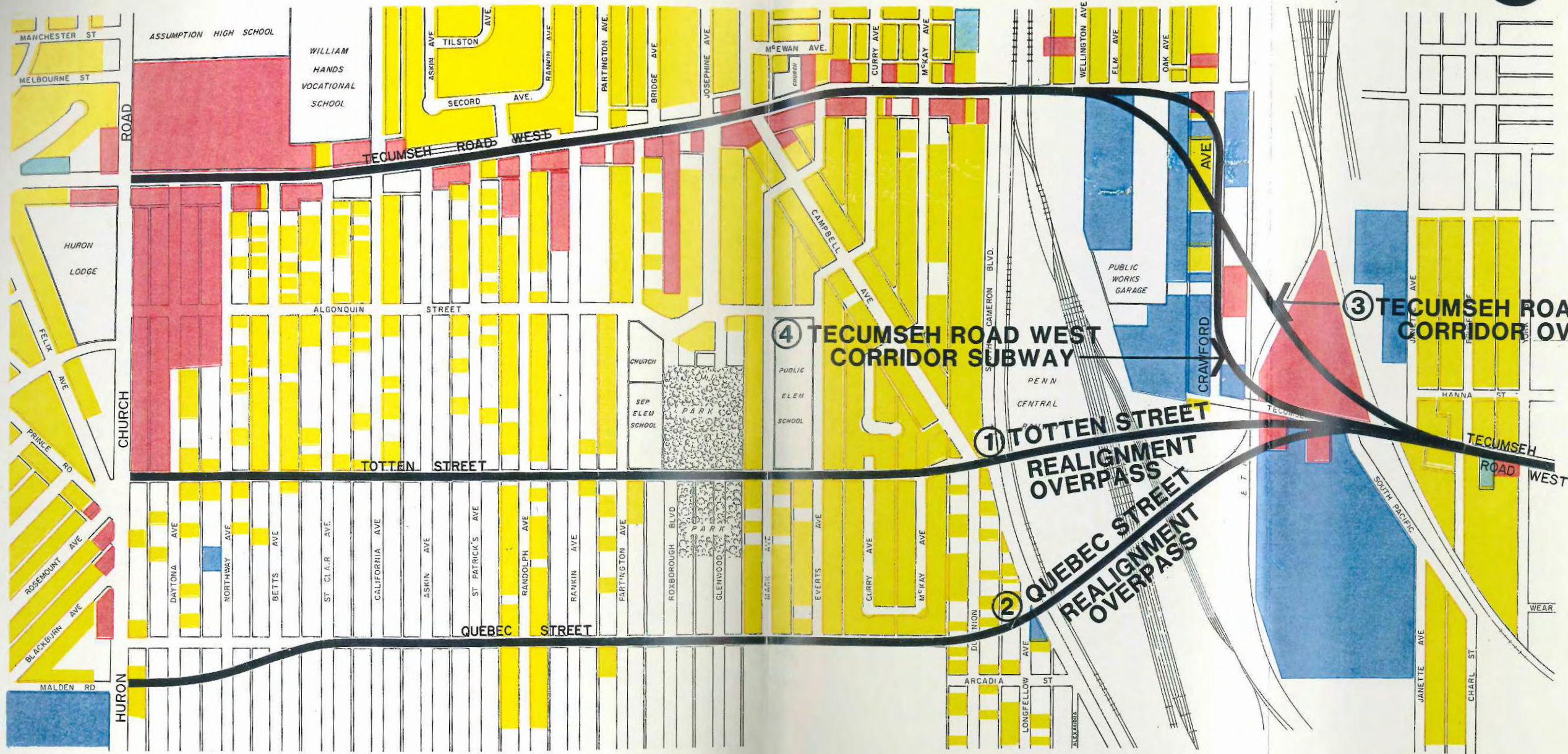
Alternative solutions involving alignment of Tecumseh Road West are shown on Figure 8.

Problem 1

The substandard subways under the railway crossing near Wellington Avenue. The existing subway permits two lanes of traffic only and has substandard vertical clearance necessitating the relocation of commercial truck traffic to adjacent major designated roads. The road under the structures has experienced flooding during rain events.

Alternative Solutions

- Do nothing.
- Increase the height and road width under the grade separation.



LEGEND:

- RESIDENTIAL-SINGLE FAMILY & SEMI-DETACHED
- RESIDENTIAL-APARTMENTS
- COMMERCIAL
- INDUSTRIAL

**TECUMSEH ROAD WEST CORRIDOR
MASTER PLAN
ALTERNATIVE SYSTEM
SOLUTIONS
FIGURE 8**

PROJ. NO. 92-8986-03



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- Provide a new road on a new alignment - Tecumseh Road West to connect to Totten Street by an overpass across railway lands.
- Provide a new road on a new alignment - Tecumseh Road West to connect to Quebec Street by an overpass across railway lands.

Problem 2

The two intersections of Tecumseh Road West and Crawford Avenue are inefficient for the volume of traffic using them. The sharp bend on the southerly intersection is particularly inefficient and hazardous.

Alternative Solutions

- Do nothing.
- Improve roadway geometrics.
- Provide a new road on a new alignment - Totten Street overpass.
- Provide a new road on a new alignment - Quebec Street overpass.
- Divert traffic to other existing roadways.

Problem 3

The at-grade railway crossings between Janette and Crawford are blocked for extended periods which contribute to further traffic inefficiency in the Tecumseh Road West Corridor.

Alternative Solutions

- Do nothing.
- Provide a grade separation - Tecumseh Road West alignment subway.
- Provide a grade separation - Tecumseh Road West alignment overpass.
- Provide a new road on a new alignment - Totten Street overpass.
- Provide a new road on a new alignment - Quebec Street overpass.
- Divert traffic to other existing roadways.

4.1.1 Evaluation of Alternative Solutions

Alternative solutions to each of the problems were evaluated based on the following factor groups:

- Arterial Traffic Service
- Social/Land Use Impacts
- Economic Impacts
- Property Acquisition
- Natural Environment Impacts
- Project Cost

The evaluation factors selected are intended to address traffic considerations, the full range of environments, property acquisition requirements and project costs.

A comparative evaluation of the alternative solutions based on the factor groups is provided for each of the problems in Tables 1, 2 and 3.

PROBLEM 1

The substandard subways under the railway crossing near Wellington Avenue. The two existing bridges permit two lanes of traffic only and have substandard headroom clearance necessitating the relocation of commercial truck traffic to adjacent major designated roads. The road under the bridges has experienced flooding during rain events.

ALTERNATIVE SOLUTIONS**1. DO NOTHING****2. INCREASE HEIGHT AND ROAD WIDTH UNDER GRADE SEPARATION****3. PROVIDE A NEW ROAD ON A NEW ALIGNMENT
TOTTEN STREET OVERPASS****4. PROVIDE A NEW ROAD ON A NEW ALIGNMENT
QUEBEC STREET OVERPASS****FACTOR GROUPS/
FACTORS****ARTERIAL TRAFFIC SERVICE**

- Level of Service
- Safety Improvement

- No change in Level of Service.
- Does not address vehicular safety concerns associated with the subway.

- Will increase Level of Service.
- Will provide increased safety for vehicles.

- Will increase Level of Service.
- Does not address vehicular safety concerns associated with the subway.

- Impacts similar to Alternative 3.

SOCIAL/LAND USE IMPACTS

- Impact on Existing and Proposed Land Uses
- Impact on Adjacent Neighbourhoods
- Visual Impacts
- Noise Impacts

- No change in Social/Land Use factors.
- Future growth may be restricted without improvements.

- Traffic volumes may increase which will contribute to increased accessibility to residential areas.
- Noise levels may increase with additional traffic.
- Visual impacts will be minimal.

- Will have minimal impact on existing residential areas in the Tecumseh Road West Corridor. However, will have significant negative impacts to properties along and in proximity to Totten Street.

- Will have minimal impact on existing residential areas in the Tecumseh Road West Corridor. However, may have significant negative impact on the development of the undeveloped South Cameron Planning area.

ECONOMIC IMPACTS

- Disruption of Businesses
- Improvement to Business Environment - Local
- Improvement to Business Environment - Regional

- No disruption of existing businesses.
- Without improvements, the potential for industrial growth in the area may be reduced.

- Disruption of businesses during construction.
- Improvement to businesses, both local and regional, may result from increased traffic.
- Public transit will be better facilitated.

- Diversion of arterial traffic will have negative impacts on existing business along Crawford Avenue and Tecumseh Road West, west of Crawford Avenue.
- May contribute to pressures for new business areas along Totten Street.

- Diversion of arterial traffic will have negative impacts on existing business along Crawford Avenue and Tecumseh Road West, west of Crawford Avenue.
- May contribute to pressures for new business areas along Quebec Street.

PROPERTY ACQUISITION

- Property Requirements

- No private property required.

- Private property will be required for road widening purposes.

- Private property for right-of-way purposes will be required.

- Private property for right-of-way purposes will be required.

NATURAL ENVIRONMENT IMPACTS

- Impact on Natural Features

- No impact on Natural Vegetation.

- No impact on Natural Vegetation.

- This new alignment may negatively affect an identified natural area containing: a mesic lowland woods; a wet meadow; and a peripheral wetland community.

- This new alignment may negatively affect an identified natural area containing: a mesic lowland woods; a wet meadow; and a peripheral wetland community.

PROJECT COST

(Capital Cost, Utility Relocation Cost, and Property Acquisition Cost)

- Low

- Moderate

- High

- High

SUMMARY

The recommended solution is the one that best addresses the project objectives, and has the least negative environmental impacts.

- Does not address level of service for vehicular traffic, or traffic safety concerns.
- Social, economic, and natural environments are not impacted.
- Costs are relatively low.

- Increased Level of Service and safety.
- Increased noise levels impact primarily on industrial uses. Increased noise to residences is a negative impact.
- The relatively modest cost is a positive impact for the proponent.
- **THIS IS THE RECOMMENDED SOLUTION.**

- Will increase Level of Service, however does not address the vehicular safety concerns.
- Negative impacts to businesses along Tecumseh Road West, together with the disturbance of a natural area.
- Costs are relatively high.

- Will increase Level of Service, however does not address the vehicular safety concerns.
- Negative impacts to businesses along Tecumseh Road West, together with the disturbance of a natural area.
- Costs are relatively high.



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**TABLE 1
TECUMSEH ROAD WEST CORRIDOR
MASTER PLAN**

PROBLEM 1 - EVALUATION OF ALTERNATIVE SOLUTIONS

PROBLEM 2
The two intersections of Tecumseh Road West and Crawford Avenue are inefficient for the volume of traffic using them. The sharp bend on the southerly intersection is particularly inefficient and hazardous.

ALTERNATIVE SOLUTIONS

1. DO NOTHING

2. IMPROVE ROADWAY GEOMETRICS

3. PROVIDE A NEW ROAD ON A NEW ALIGNMENT
TOTTEN STREET OVERPASS

4. PROVIDE A NEW ROAD ON A NEW ALIGNMENT
QUEBEC STREET OVERPASS

5. DIVERT TRAFFIC TO OTHER EXISTING ROADWAYS

FACTOR GROUPS/FACTORS

ARTERIAL TRAFFIC SERVICE
• Level of Service
• Safety Improvement

- No change in the Level of Service.
- Does not address vehicular safety concerns associated with the intersections.

- Will increase Level of Service.
- Will address the vehicular safety concerns.

- Will increase Level of Service.
- Will provide increased safety for vehicles.

- Impacts similar to Alternative 3.

- No change in the Level of Service.
- Does not address vehicular safety concerns associated with the intersections.

SOCIAL/LAND USE IMPACTS
• Impact on Existing and Proposed Land Uses
• Impact on Adjacent Neighbourhoods
• Visual Impacts
• Noise Impacts

- No change in Social/Land Use factors.
- Future growth may be restricted without improvements.

- Traffic volumes may increase which will contribute to increased accessibility to residential areas.
- Noise levels will increase with additional traffic.
- Visual impacts will be minimal.

- Will have minimal impact on existing residential areas in the Tecumseh Road West Corridor. However, will have significant negative impacts to properties along and in proximity to Totten Street.

- Will have minimal impact on existing residential areas in the Tecumseh Road West Corridor. However, may have significant negative impacts on the development of the undeveloped South Cameron Planning area.

- May result in positive impacts for neighbourhoods in terms of noise and visual factor due to less traffic.

ECONOMIC IMPACTS
• Disruption of Businesses
• Improvement to Business Environment - Local
• Improvement to Business Environment - Regional

- No disruption of existing businesses.
- Without improvements, the potential for industrial growth in the area may be reduced.

- Disruption of businesses during construction.
- Improvement to businesses, both local and regional, may result from increased traffic.

- Diversion of the arterial traffic will have negative impacts on the existing businesses along Crawford Avenue and Tecumseh Road West, west of Crawford.
- May contribute to pressures for new business areas along Totten Street.

- Diversion of the Arterial traffic will have negative impacts on the existing business along Crawford Avenue and Tecumseh Road West, west of Crawford.
- May contribute to pressures for new business areas along Quebec Street.

- The diversion of traffic to other existing roadways will have a negative impact on both existing and future businesses in the Corridor as a result of less vehicular traffic.

PROPERTY ACQUISITION
• Property Requirements

- No private property required.

- Private property would be required to accommodate improved roadway geometrics.

- Private property for right-of-way purposes will be required.

- Private property for right-of-way purposes will be required.

- No private property would be required.

NATURAL ENVIRONMENT IMPACTS
• Impact on Natural Features

- No impact on Natural features.

- No impact on Natural features.

- This new alignment may negatively affect an identified natural area containing: a mesic lowland woods; a wet meadow; and a peripheral wetland community.

- This new alignment may negatively affect an identified natural area containing: a mesic lowland woods; a wet meadow; and a peripheral wetland community.

- No impact on Natural features.

PROJECT COST
(Capital Cost, Utility Relocation Cost, and Property Acquisition Cost)

- Low

- Moderate

- High

- High

- Low

SUMMARY

The recommended solution is the one that best addresses the project objectives, and has the least negative environmental impacts.

- Does not impact Level of Service or address safety concerns.
- No impact on Social, Economic, or natural environments.
- Costs are relatively low.

- Will increase the Level of Service and address safety concerns.
- Social impacts are minimal.
- Local and regional business development may result.
- No impact on natural environment.
- **THIS IS THE RECOMMENDED SOLUTION**

- Will increase Level of Service, however does not address the vehicular safety concerns.
- Negative impacts to businesses along Tecumseh Road West, together with the disturbance of a natural area.
- Costs are relatively high.

- Will increase Level of Service, however does not address the vehicular safety concerns.
- Negative impacts to businesses along Tecumseh Road West, together with the disturbance of a natural area.
- Costs are relatively high.

- Does not impact Level of Service or address safety concerns.
- Potential positive impacts for residential areas.
- Negative impacts will result for businesses in the corridor and along Tecumseh Road West.
- No property required or natural area disturbance.
- Relatively low cost.



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TABLE 2
TECUMSEH ROAD WEST CORRIDOR
MASTER PLAN

PROBLEM 2 - EVALUATION OF ALTERNATIVE SOLUTIONS

PROBLEM 3 The at-grade railway crossings between Janette and Crawford are blocked for extended periods which contribute to further traffic inefficiency in the Tecumseh Road West Corridor.	ALTERNATIVE SOLUTIONS	1. DO NOTHING	2. PROVIDE A GRADE SEPARATION TECUMSEH ROAD WEST ALIGNMENT SUBWAY	3. PROVIDE A GRADE SEPARATION TECUMSEH ROAD WEST ALIGNMENT OVERPASS	4. PROVIDE A NEW ROAD ON A NEW ALIGNMENT TOTTEN STREET OVERPASS	5. PROVIDE A NEW ROAD ON A NEW ALIGNMENT QUEBEC STREET OVERPASS	6. DIVERT TRAFFIC TO OTHER EXISTING ROADWAYS
FACTOR GROUPS/FACTORS							
ARTERIAL TRAFFIC SERVICE <ul style="list-style-type: none"> Level of Service Safety Improvement 	<ul style="list-style-type: none"> No change in the Level of Service. Does not address vehicular safety concerns associated with the at-grade railway crossings. 	<ul style="list-style-type: none"> Will increase Level of Service. Will contribute to increased safety for pedestrians and vehicles. 	<ul style="list-style-type: none"> Will increase Level of Service. Will contribute to increased safety for pedestrians and vehicles. 	<ul style="list-style-type: none"> Will increase Level of Service. Does not fully address vehicular safety concerns associated with the at grade railway crossings. 	<ul style="list-style-type: none"> Impacts similar to Alternative 3. 	<ul style="list-style-type: none"> No change in the Level of Service. Does not fully address vehicular safety concerns associated with the at grade railway crossings. 	
SOCIAL/LAND USE IMPACTS <ul style="list-style-type: none"> Impact on Existing and Proposed Land Uses Impact on Adjacent Neighbourhoods Visual Impacts Noise Impacts 	<ul style="list-style-type: none"> No change in Social/Land Use factors. Future growth may be restricted without improvements. 	<ul style="list-style-type: none"> Traffic volumes may increase as a result of increased accessibility to residential areas. Noise levels may be reduced. Visual impacts would be minimal. 	<ul style="list-style-type: none"> Traffic volumes may increase as a result of increased accessibility to residential areas. Noise levels may be reduced. Visual impacts would be minimal. 	<ul style="list-style-type: none"> Will have minimal impact on existing residential areas in the Tecumseh Road West Corridor. However, will have significant impacts on properties along and in proximity to Totten Street. 	<ul style="list-style-type: none"> Will have minimal impact on existing residential areas in the Tecumseh Road West Corridor. However, may significantly impact the development of the undeveloped South Cameron Planning area. 	<ul style="list-style-type: none"> May result in positive impacts for neighbourhoods in terms of reduced noise and visual factor due to less traffic. 	
ECONOMIC IMPACTS <ul style="list-style-type: none"> Disruption of Businesses Improvement to Business Environment - Local Improvement to Business Environment - Regional 	<ul style="list-style-type: none"> No disruption of existing businesses. Without improvements, the potential for industrial growth in the area may be reduced. 	<ul style="list-style-type: none"> Disruption to businesses during construction. Direct access to some businesses would be lost. Vehicular traffic increases may stimulate business in the area. 	<ul style="list-style-type: none"> Disruption to businesses during construction. Direct access to some businesses would be lost. Vehicular traffic increases may stimulate business in the area. Negative impact to railway facilities. 	<ul style="list-style-type: none"> Diversion of the arterial traffic will have negative impacts on the existing businesses along Crawford Avenue and Tecumseh Road West, west of Crawford. May contribute to pressures for new business areas along Totten Street. 	<ul style="list-style-type: none"> Diversion of the arterial traffic will have negative impacts on the existing businesses along Crawford Avenue and Tecumseh Road West, west of Crawford. May contribute to pressures for business areas along the new route. 	<ul style="list-style-type: none"> The diversion of traffic to other existing roadways will have a negative impact on both existing and future businesses in the Corridor as a result of less vehicular traffic. 	
PROPERTY ACQUISITION <ul style="list-style-type: none"> Property Requirements 	<ul style="list-style-type: none"> No private property required. 	<ul style="list-style-type: none"> Private property acquisitions would be necessary. 	<ul style="list-style-type: none"> Private property acquisitions would be necessary. 	<ul style="list-style-type: none"> Private property for right-of-way purposes will be required. 	<ul style="list-style-type: none"> Private property for right-of-way purposes will be required. 	<ul style="list-style-type: none"> No private property would be required. 	
NATURAL ENVIRONMENT IMPACTS <ul style="list-style-type: none"> Impact on Natural Features 	<ul style="list-style-type: none"> No impact on Natural features. 	<ul style="list-style-type: none"> No impact on Natural features. 	<ul style="list-style-type: none"> No impact on Natural features. 	<ul style="list-style-type: none"> This new alignment may negatively impact an identified natural area containing: a mesic lowland woods; a wet meadow; and a peripheral wetland community. 	<ul style="list-style-type: none"> This new alignment may negatively impact an identified natural area containing: a mesic lowland woods; a wet meadow; and a peripheral wetland community. 	<ul style="list-style-type: none"> No impact on Natural features. 	
PROJECT COST (Capital Cost, Utility Relocation Cost, and Property Acquisition Cost)	<ul style="list-style-type: none"> Low 	<ul style="list-style-type: none"> High 	<ul style="list-style-type: none"> High 	<ul style="list-style-type: none"> High 	<ul style="list-style-type: none"> High 	<ul style="list-style-type: none"> Low 	
SUMMARY The recommended solution is the one that best addresses the project objectives, and has the least negative environmental impacts.	<ul style="list-style-type: none"> Does not impact Level of Service or address safety concerns. No impact on Social, Economic, or natural environments. Costs are relatively low. 	<ul style="list-style-type: none"> Will increase the Level of Service and address safety concerns. Social impacts are minimal. Some disruption to business due to construction and the removal of direct roadway access. Service roads are anticipated. Property acquisition impacts are less due to the City's past acquisition program relative to this alternative being preferred in the Tecumseh road West Feasibility Study, January 1974. Relatively high cost. THIS IS THE RECOMMENDED SOLUTION. 	<ul style="list-style-type: none"> Will increase the Level of Service and address safety concerns. Social impacts are minimal. Some disruption to business due to construction and the removal of direct roadway access. Service roads are anticipated. Negative impact to railway facilities. No impact on the natural environment. Relatively high cost. 	<ul style="list-style-type: none"> Will increase Level of Service, however does not address the vehicular safety concerns. Negative impacts to businesses along Tecumseh Road West, together with the disturbance of a natural area. Costs are relatively high. 	<ul style="list-style-type: none"> Will increase Level of Service, however does not address the vehicular safety concerns. Negative impacts to businesses along Tecumseh Road West, together with the disturbance of a natural area. Costs are relatively high. 	<ul style="list-style-type: none"> Does not impact Level of Service or address safety concerns. Potential positive impacts for residential areas. Negative impacts will result for businesses in the corridor and along Tecumseh Road West. No property required or natural area disturbance. Relatively low cost. 	



TABLE 3
TECUMSEH ROAD WEST CORRIDOR
MASTER PLAN

PROBLEM 3 - EVALUATION OF ALTERNATIVE SOLUTIONS

Following is a description of how the evaluation was conducted on the basis of each factor group:

Arterial Traffic Service

- This factor addressed the anticipated impact on the Level of Service and on safety improvement at the problem location.

Social/Land Use Impacts

- Social/land use impacts were evaluated by reviewing how the alternative solutions affected existing and proposed land uses, adjacent neighbourhoods, visual impacts and noise impacts on residential areas. The anticipated noise and visual impacts of the alternative solutions were addressed in a qualitative manner.

Economic Impacts

- Economic impacts include disruption to existing businesses, and potential improvements to the business environment, both local and regional, which may result from implementation of the alternative solutions. Improvements to the business environment were considered in that some alternatives are viewed as contributing to conditions that would be conducive to an improved business environment.

Property Acquisition

- Property acquisition impacts were evaluated with respect to whether or not private property was required to implement the alternative solution and the use for which the property acquisition is required.

Natural Environment

- Natural environment impacts of the alternative solutions were evaluated on the basis of disruption to natural environment areas which may result from implementation of alternative solutions.

Project Cost

- Evaluation of alternative solutions in terms of project cost involved the consideration of projected capital cost of construction, utility relocation cost and property acquisition cost. Costs were estimated and compared relatively between the various alternative solutions. The relative terms low, moderate and high were used for comparative purposes.

As shown on Tables 1, 2 and 3, the alternative solutions were evaluated and summarized on the basis of each criteria group for each problem.

4.1.2 Recommended Solutions

Resulting from the evaluation of alternative solutions, a recommended solution for each problem has been identified by the proponent. The recommended solution to each problem was selected based on its foreseen ability to effectively address the problem, and also on its environmental impacts. The recommended solutions identified, in the opinion of the proponent, strike the most favourable balance between effectiveness and environmental impact. The recommended solution to each problem is identified in the summary section of each of the evaluation Tables 1, 2 and 3. Following is a compilation of the recommended solutions.

The recommended solution to address problems associated with the substandard subways at the railway crossing near Wellington (Problem 1), is to increase the height and road width under the existing subway.

The recommended solution to address problems at the two intersections of Tecumseh Road West and Crawford Avenue (Problem 2), is to improve roadway geometrics at these locations.

The recommended solution to address the problems at the at-grade crossings between Janette and Crawford Avenues (Problem 3), is to provide a grade separation (subway) on the Tecumseh Road West alignment.

4.2 Identification of Alternative Systems

As some of the alternative solutions identified in the preceding subsection could address all three problems at once, a second evaluation was undertaken to determine whether any of these solutions were preferable when considered in a "systems" context.

For the purposes of this report, a system is defined as a solution which will address all three problems identified in the Tecumseh Road West corridor comprehensively.

This evaluation used the same evaluation factors that were used in the problem specific evaluation.

The four alternative systems are:

1. A new road on a new alignment with Totten Street using an overpass to traverse railway lands.
2. A new road on a new alignment with Quebec Street using an overpass to traverse railway lands.
3. A modified Tecumseh Road West Corridor route using an overpass to traverse railway lands and a new subway at the railway crossing located west of Wellington Avenue.

4. Tecumseh Road West alignment employing subways at the three existing railway crossings and realignment of the connecting length of existing Crawford Avenue.

The four system alternative solutions are illustrated on Figure 8 of this report.

4.2.1 Evaluation of Alternative Systems

The four alternative systems identified were evaluated based on the following factor groups:

- Arterial Traffic Service
- Social/Land Use Impacts
- Economic Impacts
- Property Acquisition
- Natural Environment Impacts
- Project Cost

These factor groups are the same as those used in the evaluation of alternative solutions, and relate directly to the project objectives. A description of how the evaluation of systems was conducted on the basis of each of the factor groups is provided in Subsection 4.1.1 of this report.

A comparative evaluation of the systems based on the factor groups is provided in Table 4.

**TECUMSEH ROAD WEST CORRIDOR MASTER PLAN
EVALUATION OF ALTERNATIVE SYSTEM SOLUTIONS**

Factor Grouping	Alternative 1 Totten Street Realignment	Alternative 2 Quebec Street Realignment	Alternative 3 Tecumseh Road West Overpass	Alternative 4 Tecumseh Road West Subway
ARTERIAL TRAFFIC SERVICE <ul style="list-style-type: none"> Level of Service Safety Improvement 	<ul style="list-style-type: none"> Increased level of service and safety for the new Tecumseh Road West arterial. Does not address vehicular safety concerns associated with the subway near Wellington or the northerly intersection of Tecumseh Road West and Crawford Avenue. 	<ul style="list-style-type: none"> Increased level of service and safety for the new Tecumseh Road West arterial. Does not address vehicular safety concerns associated with the subway near Wellington or the northerly intersection of Tecumseh Road West and Crawford Avenue. 	<ul style="list-style-type: none"> Increased level of service and safety for the Tecumseh Road West arterial. 	<ul style="list-style-type: none"> Increased level of service and safety for the Tecumseh Road West arterial.
SOCIAL/LAND USE IMPACTS <ul style="list-style-type: none"> Impact on Existing and Proposed Land Uses Impact on Adjacent Neighbourhoods Visual Impacts Noise Impacts 	<ul style="list-style-type: none"> Will have minimal impact on existing residential areas in the Tecumseh Road West Corridor. Will have significant impact on the residential areas along Totten Street which is currently classified as a Class 2 Collector in the City's Official Plan. Noise impacts to existing residential areas would be reduced. Visual impacts would be minimal. 	<ul style="list-style-type: none"> Will have minimal impact on existing residential areas in the Tecumseh Road West Corridor. May have significant impact on development of the undeveloped South Cameron Planning area. Noise impacts to existing residential areas would be reduced. Visual impacts would be minimal. 	<ul style="list-style-type: none"> Traffic volumes may increase as a result of increased accessibility to residential areas. Noise levels may be reduced. Visual impacts would be minimal. 	<ul style="list-style-type: none"> Traffic volumes may increase as a result of increased accessibility to residential areas. Noise levels may be reduced. Visual impacts would be minimal.
ECONOMIC IMPACTS <ul style="list-style-type: none"> Disruption of Businesses Improvements to Business Environment - Local Improvements to Business Environment - Regional 	<ul style="list-style-type: none"> Diversion of the arterial traffic will have negative impacts on the existing businesses along Crawford Avenue and Tecumseh Road West, west of Crawford Avenue. May contribute to pressures for new business areas along Totten Street. 	<ul style="list-style-type: none"> Diversion of the arterial traffic will have negative impacts on the existing businesses along Crawford Avenue and Tecumseh Road West, west of Crawford Avenue. May contribute to pressures for new business areas along Quebec Street. May contribute to pressures for new business areas in the South Cameron Planning Area along the new route. 	<ul style="list-style-type: none"> Disruption to businesses during construction. Direct access to Tecumseh Road West would be removed for some businesses. Vehicular traffic increases may stimulate business in the area. Significant negative impact to railway facilities. 	<ul style="list-style-type: none"> Disruption to businesses during construction. Direct access to Tecumseh Road West would be removed for some businesses. Vehicular traffic increases may stimulate business in the area.
PROPERTY ACQUISITION <ul style="list-style-type: none"> Property Requirements 	<ul style="list-style-type: none"> Private property for right-of-way purposes is required. Property acquisition, or right of easement, over railway properties is required. 	<ul style="list-style-type: none"> Private property for right-of-way purposes is required. Property acquisition, or right of easement, over railway properties is required. 	<ul style="list-style-type: none"> Private property for right-of-way purposes is required. Property acquisition, or right of easement, over railway properties is required. 	<ul style="list-style-type: none"> Private property for right-of-way purposes is required.
NATURAL ENVIRONMENT <ul style="list-style-type: none"> Impact on Natural Features 	<ul style="list-style-type: none"> A negative impact is that this new alignment traverses an identified natural area containing: a mesic lowland woods; a wet meadow; and a peripheral wetland community. 	<ul style="list-style-type: none"> A negative impact is that this new alignment traverses an identified natural area containing: a mesic lowland woods; a wet meadow; and a peripheral wetland community. In addition, this new alignment traverses a second natural area in the South Cameron Planning Area. The qualities in this natural area are currently under review by the City. 	<ul style="list-style-type: none"> No impact on natural features. 	<ul style="list-style-type: none"> No impact on natural features.
PROJECT COST (Capital Cost, Utility Relocation Cost, and Property Acquisition Cost)	<ul style="list-style-type: none"> High Moderate Moderate 	<ul style="list-style-type: none"> High Moderate Moderate 	<ul style="list-style-type: none"> Moderate High High 	<ul style="list-style-type: none"> Moderate High High
SUMMARY The recommended system solution is the one that best addresses the project objectives, and has the least negative environmental impacts.	<ul style="list-style-type: none"> Will improve the level of service for a new Tecumseh Road West arterial. Does not improve safety at subway near Wellington. Significant negative impact to residential areas along Totten. Negatively impacts existing businesses on Tecumseh Road West. Negatively impacts a natural area. High Capital cost. 	<ul style="list-style-type: none"> Will improve the level of service for a new Tecumseh Road West arterial. Does not improve safety at subway near Wellington. Significant negative impact on development of South Cameron Planning area. Negatively impacts existing businesses on Tecumseh Road West. Negatively impacts two natural areas. High capital cost. 	<ul style="list-style-type: none"> Will improve the level of service for Tecumseh Road West arterial and increased vehicular safety at the subway near Wellington. Negatively impacts railway operation. High utility relocation and property acquisition cost. 	<ul style="list-style-type: none"> Will improve the level of service for Tecumseh Road West arterial and increased vehicular safety at the subway near Wellington. High utility relocation and property acquisition cost. THIS IS THE RECOMMENDED SYSTEM SOLUTION.



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Environmental Scientists

**TABLE 4
TECUMSEH ROAD WEST CORRIDOR
MASTER PLAN**

EVALUATION OF ALTERNATIVE SYSTEMS

4.2.2 The Recommended System

From the evaluation of systems in Table 4, the recommended system is:

Grade separations (subways) at the three railway crossing locations on Tecumseh Road West and realignment of the connecting length of existing Crawford Avenue.

The recommended system selected best addressed the objectives of the project in terms of traffic safety and efficiency, minimal environmental impacts, and least amount of property acquisition and project cost.

4.3 Public and Agency Input

For the purposes of this section, the public is defined as those persons, businesses and corporations who are considered by the proponent to have, or have expressed an interest in the Tecumseh Road West Corridor Master Plan process. Agencies are defined as those governmental departments, utility companies, railway companies and environmental interest groups, which are considered by the proponent to have an interest in the Tecumseh Road West Corridor Master Plan process.

4.3.1 Public Input

The initial point of contact with the public was the publication of a notice inviting public comment. The notice was published in the Windsor Star on October 1, 1994. A copy of this notice is included in Appendix "A" of this report. The initial notice identified three major deficiencies in the corridor and stated that public input into the planning and the design of the project would be received by the City and the consultant.

Written comments received included:

- A suggestion to extend Crawford Avenue southerly through existing railway lands to connect to Dougall Avenue.
- A suggestion to construct a pedestrian bridge across the railway lands, as existing conditions for pedestrian movements are poor.
- Replacement of the via duct at Tecumseh Road West and Wellington should be considered to be a high priority for public safety.
- Property value for commercial use without the access to Tecumseh Road is greatly diminished.
- Easy and safe access for truck traffic is important.

In addition to receiving written comments, two property owners responded to the initial notification by telephone to the consultant. The consultant met with the two property owners. Concerns expressed by the property owners included:

- the taking of property at the front of lands on Crawford Avenue would leave a remnant piece of land with insufficient depth for development.
- loss of access to Tecumseh Road will necessitate purchase of those properties.

All written comments received as a result of the initial public notification were acknowledged by the proponent with a responding letter. Copies of letters received, and minutes of meetings with the public and the proponents' responses are included in Appendix "C" of this report.

*Tecumseh Road West Corridor
Master Plan*

The second point of public contact was as a Public Information Centre. Notice of the Information Centre was provided by the publication of a notice in the Windsor Star on three separate occasions, November 22 and 29, and December 2, 1994.

A Public Information Centre to present and receive public input regarding the problems in the Tecumseh Road West Corridor and alternative solutions thereto, was held on Tuesday, December 6, 1994, from 3:00 p.m. to 9:00 p.m. at the Moose Lodge, 777 Tecumseh Road West.

The following individuals were in attendance to provide information and obtain public input:

Mr. T.W. Szalay	-	City of Windsor, Public Works Department
Mr. Glen Adams	-	City of Windsor, Public Works Department
Mr. Mike Palanacki	-	City of Windsor, Traffic Engineering Department
Mr. Mike Stamp	-	City of Windsor, Property Department
Mr. Raj Varma	-	City of Windsor, Planning Department
Mr. John Zangari	-	M.M. Dillon Limited, Consultant
Mr. Harold Kersey	-	M.M. Dillon Limited, Consultant

The following presentation materials were on display for public information:

- A Project Status Report board which provided a brief history of the project.
- A Class Environmental Assessment process flow chart which identified where the project was relative to the five stage class assessment process. This board also indicated that the Master Plan process follows Phases 1 and 2 of the five phase process, with the three remaining phases being project component specific.
- A Location Map which illustrated the boundaries of the Tecumseh Road West Corridor and the project Study Area.

- A Problem Statement board which explained the three identified problems in the Tecumseh Road West Corridor.
- A Problem Identification board which showed the specific locations of the identified problems. This board also included three photographs of the problem areas.
- Three separate Alternative Solution Evaluation Charts, one for each of the three identified problems. These charts showed the evaluation of alternative solutions in terms of the impacts on the natural, social and economic environment as well as associated factors.
- A Land Use Map which used colour to depict the various Land Uses in the Study Area. The alternative solutions were shown on this map.
- Boards showing four alternative solution routes:
 - Realignment of Tecumseh Road West with Totten Street using an overpass.
 - Realignment of Tecumseh Road West with Quebec Street using an overpass.
 - An overpass across railway lands generally following the Tecumseh Road West Corridor.
 - A subway within the Tecumseh Road West Corridor.

The subway alternative within the Tecumseh Road West Corridor was identified as the Recommended Solution.

Attendees were asked to sign the record of attendance upon entering the display area. The record shows fifty-eight persons signed the attendance sheet. We estimate that the actual attendance was somewhat higher (possible 75 to 85 persons) given that some people did not sign in, and often one signature represented multiple attendees.

Attendees were greeted upon arrival and informed that the centre was a walk-through format with City and consultant representatives available to address questions and record comments.

Individual comment sheets were provided for attendees. Fourteen comment sheets were filled out. The following is a summary of the comments received.

- Consider signals at the City Public Works Yard entrance on Crawford.
- 1305 Tecumseh Road West Alternative access to Tecumseh Road is not acceptable.
- Domestic Foundry, 1595 Crawford, needs access to old Intercity Truck Building.
- Install a four way stop at Elliott Street and Bruce Avenue.
- Pedestrian and bicycle access should be considered.
- Do not agree with alternative alignments due to disruption to natural areas.
- Separate bikes, pedestrians and cars through subway.
- Pollution and noise a concern as a result of truck traffic on Tecumseh Road West.
- Totten or Quebec Street alternatives would provide a more efficient east-west corridor.
- Subways are too expensive.

Verbal comments made included:

- This project has long history without action and many were sceptical that any action would occur from this new process.

- Many expressed agreement with the identified problems and agreement with the recommended solutions.

Landowners present were most interested in how the project affected their property. Mr. Stamp of the City's Property Department located properties on a property acquisition plan pursuant to a previously prepared subway alternative, and indicated that the property acquisition process would continue if the subway alternative is selected as the preferred alternative.

It was expressed to those in attendance that improvements to the substandard subway west of Wellington Avenue would be undertaken to address the safety and flooding problems at that location. A few landowners on the west side of the subway were not in agreement with alternative access to Tecumseh Road West for their properties, which would result from the subway improvement.

City Councillors, Ms. Margaret Williams and Mr. Dan Allen attended the Public Information Centre and were informed of the project issues by the City and consultant representatives.

Input received from the public regarding the alternative solutions to the problems, and the alternative systems solutions, provided an additional evaluative factor. The proponent was also interested in the level of agreement or otherwise from the public regarding the recommended solutions to the problems, and the recommended system solution. The level of public input received in the Master Plan process is indicated in Section 5, The Preferred Solution, of this report.

Copies of the Record of Attendance and Public Comment sheets are included in Appendix "D" of this report.

4.3.2 Agency Input

A list of agencies to be consulted was put together at the beginning of the Master Plan process. A copy of the agency list is included in Appendix "E" of this report.

Agencies on the list were mailed invitations for comment on the study problems on September 30, 1994. These agencies were also mailed notice of the Public Information Centre on November 22, 1994. Copies of letters to agencies on the list are included in Appendix "E" of this report.

The following table summarizes responses from the agencies consulted. Copies of letters received from the agencies are included in Appendix "F" of this report.

Agency Consultation		
Agency	Response	Comments
National Transportation Agency	Letter October 17, 1994	-Provided Railway Grade Separation Regulations and Federal E.A. process information.
Transport Canada	Facsimile September 29, 1994	-Note regulations respecting the filing of affidavits on the Completion of Railway works.
Environment Canada	No response	---
Ontario Ministry of Environment & Energy - Windsor	No response	---
Ontario Ministry of Environment & Energy - Toronto	No response	---
Ministry of Culture, Tourism and Recreation	Letter October 21, 1994	No concerns
Ministry of Transportation of Ontario - London	Letter October 7, 1994	No concerns
Ministry of Transportation of Ontario - Chatham	No response	---
Essex Region Conservation Authority	Letter October 25, 1994	No concerns

*Tecumseh Road West Corridor
Master Plan*

Agency Consultation		
Agency	Response	Comments
Corporation of the City of Windsor Department of Public Works -Roads Engineering	No response	---
Corporation of the City of Windsor Department of Public Works -Sewers Engineering	No response	---
Corporation of the City of Windsor Planning Department	Letter October 4, 1994	1. Note future bikeway locations. 2. Pedestrian movements to be planned for. 3. Note Environmental Policy Study shows a "greenway" in the Corridor.
Board of Education	No response	---
Separate School Board	No response	---
Metro Windsor-Essex County Health Unit	Letter October 12, 1994	-agrees with stated problems. -concerned only with the detection of contaminated soil and method of disposal if encountered.
City of Windsor Police Services	Letter dated October 12, 1994	-note major deficiencies in terms of traffic safety and operational functionality. -would like to be included in design of solutions.
City of Windsor Fire Department	No response	---
Windsor Utilities Commission	No response	---

*Tecumseh Road West Corridor
Master Plan*

Agency Consultation		
Agency	Response	Comments
Transit Windsor	Letter November 1, 1994	-note interruptions to bus service due to flooding. -substandard Wellington underpass restricts bus traffic. -at grade rail crossings also restrict bus traffic.
Ontario Hydro	No response	---
Union Gas Limited	No response	---
Bell Canada	Letter October 12, 1994	-note major underground system in the study area. -require involvement with design process.
Trillium Communications Limited	No response	---
Windsor-Essex County & Pelee Island	No response	---
Windsor-Essex County Development Commission	No response	---
Essex Terminal Railway	Letter October 3, 1994	-note truck traffic damages rail lines. -information on ETR rail traffic in the study area.
CP Rail System - Windsor	Letter October 25, 1994	-provides train frequency information.
CP Rail System - Agincourt	No response	---

Agency Consultation		
Agency	Response	Comments
Canadian National Railway	No response	---
Citizens Environmental Alliance	No response	---
Windsor Environmental Advisory Committee (WEAC)	No response	---
Windsor Air Quality Committee	No response	---
Windsor Bicycling Committee	Letter November 3, 1994	a) overpasses are an impediment to bicycling. b) link South Windsor to Downtown. c) abandoned railways should be viewed as north/south route options.
Binational Public Advisory Committee	No response	---
Environmental Awareness Association	No response	---
Windsor Architectural Conservation Advisory Committee	No response	---

The three railway companies that operate in the study area, Canadian National Railway, CP Rail System, and the Essex Terminal Railway were each contacted by letter dated September 28, 1994 to inquire about the following aspects of their operations:

- train movement schedule for crossings, including times and number of cars;
- information regarding any future plans for crossings in the area; and,
- any other information regarding railway operations in the study area which may be of interest to the study.

Copies of the letters to the railways are included in Appendix "G" of this report.

The President of the Essex Terminal Railway noted in his response that the "unrealistic volume of heavy, long, multi-axle trucks" in the study area cause damage to the rails and should be restricted to alternate routes. The letter from the Essex Terminal Railway noted "train time is anytime!" and that volumes are a factor of demand.

A letter of response from the CP Rail System noted that some 19 to 25 trains per day travel in the study area. The letter notes that times and train lengths vary daily. The letter indicated that CP Rail is unable to provide realistic information regarding any future plans for crossings in the study area. The letter included a train movement schedule. Copies of the letters received from the railways are included in Appendix "G" of this report.

5.0 THE PREFERRED SOLUTION

The **preferred solution** to address the three problems identified in the Tecumseh Road West Corridor as further supported by the public consultation process, is to provide grade separations (subways) at the three railway crossing locations on Tecumseh Road West and realignment of the connecting length of existing Crawford Avenue, Refer to Figure 9.

This **preferred solution** is supported by the evaluations conducted in both a problem specific context and systems context. The problems and preferred solution for each are as follows:

PROBLEM 1

The substandard subways under the railway under the grade crossing near Wellington Avenue. The existing subway permits two lanes of traffic only and has a substandard headroom clearance necessitating the relocation of commercial truck traffic to adjacent major designated roads. The road under the structures has experienced flooding during rain events.

PREFERRED SOLUTION

Increase the height and road width under the grade separation.

Install a new storm sewer to address the flooding problem.

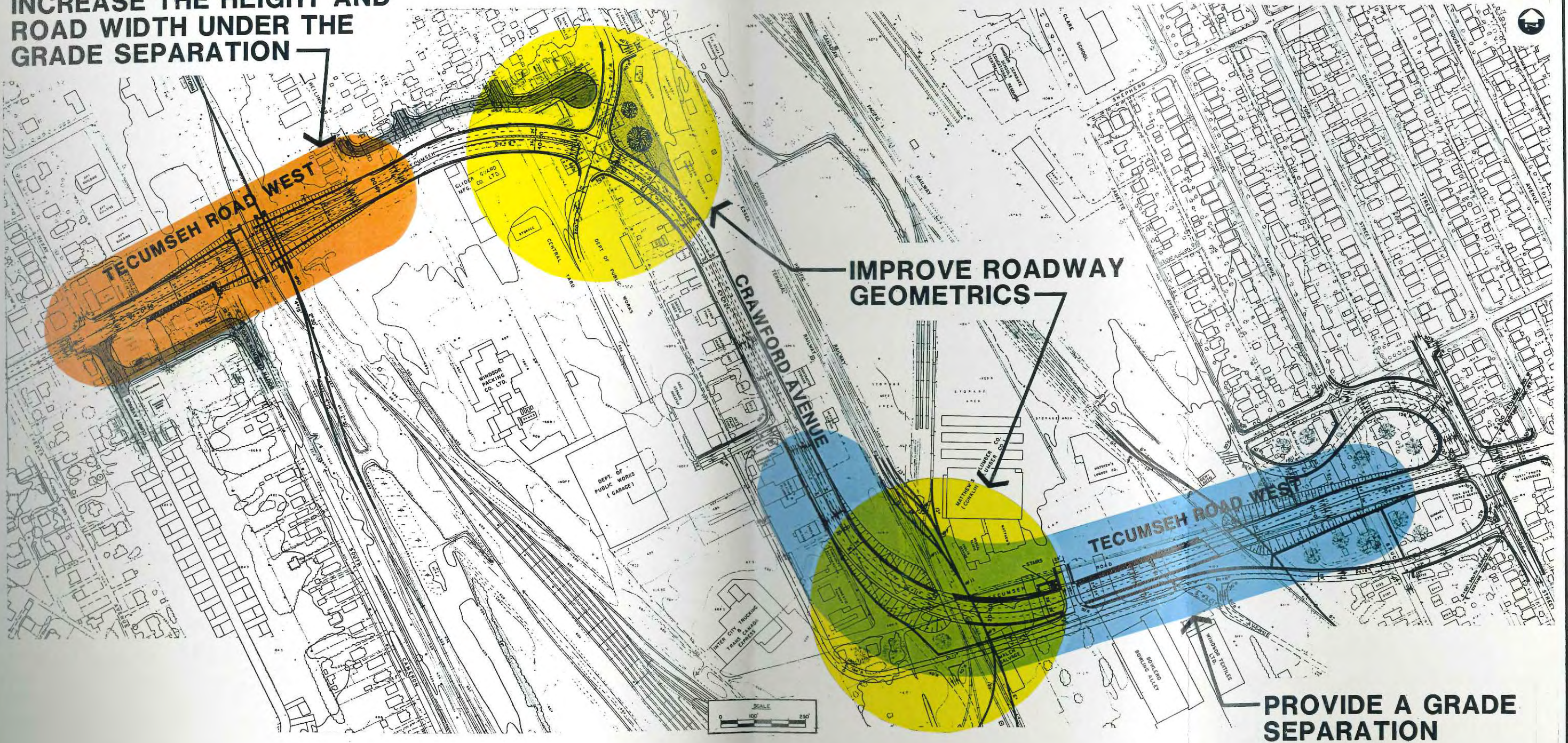
PROBLEM 2

The two intersections of Tecumseh Road West and Crawford Avenue are inefficient for the volume of traffic using them. The sharp bend on the southerly intersection is particularly inefficient and hazardous.

PREFERRED SOLUTION

Improve roadway geometrics.

INCREASE THE HEIGHT AND ROAD WIDTH UNDER THE GRADE SEPARATION



IMPROVE ROADWAY GEOMETRICS

PROVIDE A GRADE SEPARATION

PROJ. NO. 92-8986-03



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**TECUMSEH ROAD WEST CORRIDOR
MASTER PLAN
PREFERRED SYSTEM**

FIGURE 9

PROBLEM 3

The at-grade railway crossings between Janette and Crawford are blocked for extended periods of time which contribute to further traffic inefficiency in the Tecumseh Road West Corridor.

PREFERRED SOLUTION

Provide a grade separation within the Tecumseh Road West alignment. The separation should occur as a subway.

The **preferred solution** was identified as the recommended system through an evaluation of alternative systems. Public and agency comment received, confirmed that the recommended system is also the preferred system.

Input received from a few land owners of properties located on Tecumseh Road West, just west of the Wellington Street subway, indicated dissatisfaction with their direct access being removed from Tecumseh Road West. Their specific concerns will be further addressed in the selection of a preferred design for the Wellington Street subway improvements, which will occur in Phase 3 of the Class Environmental Assessment planning and design process for that specific project.

As noted previously in this report, the Master Plan fulfils the requirements of Phases 1 and 2 of the five phase planning and design process outlined in the Municipal Engineers Association document **Class Environmental Assessment for Municipal Road Projects, June 1993.** To fulfil the requirements of Phases 3, 4 and 5 of the Class EA process, the proponent must undertake further study for each of the projects which are to address the problems identified in the Tecumseh Road West Corridor. For each project, phases 3, 4, and 5 will involve:

- **PHASE 3** - Identification and evaluation of alternative design concepts and selection of a preferred design.

- **PHASE 4** - Completion of an Environmental Study Report which documents the Class EA process.

- **PHASE 5** - Completion of contract documents, construction of the project, and monitoring for environmental provisions and commitments.

Mitigation of any negative environmental impacts associated with the preferred solution will be identified and elaborated on in Phase 3 of the Class EA process for each of the projects that will follow the Master Plan process. These mitigation measures can be better articulated and more specific when dealing with project design solutions, therefore will be addressed in the project ESR's.