8.0 Revisiting Alternative Solutions (Phase 2)

8.1 Alternative Solution Strategies

It is a requirement of the Class Environmental Assessment process, that the study team is required to revisit a completed Phase if it is determined that the alternatives that emerged from that Phase were insufficient to solve the problem statement. Due to the public opposition against the five-lanes plus bike lanes alternative brought forth at PIC #3, the study team revisited Phase 2 of the study and developed roadway designs that were "tailored" to the technical and social needs of the Cabana-Division Road Corridor. These tailored solutions considered the following design factors:

- Reduce the number of lanes from the technically optimal five-lane cross section to a four-lane cross section in order to reduce pavement width, while ensuring provision of sufficient roadway capacity for the future;
- Measures to improve drainage and reduce open ditches;
- Measures to address natural environment concerns, including the preservation of valuable oak trees;
- Measures to address the social-cultural and economic environment concerns; and
- Provision of bicycle lanes.

8.2 Identification of the New Alternative Design Solutions

8.2.1 Tailored Solutions for Cabana Road West of Provincial Road

The public expressed a desire for alternative road edge treatments during PIC #3, and the study team took these issues into consideration when preparing the tailored road solutions for Cabana-Division Road.

Table 8.1 provides a description of the five alternative designs presented to the public at PIC #4 for Cabana Road west of Provincial Road.

Table 8.1: Roadway Designs for West of Provincial Road

Right-of-way Characteristics (30 metres throughout)		West of Provincial				
		A	**B**	**C**	**D**	**E**
Pavement Configuration	Number of through lanes	2	2	4	4	4
	Centre two-way left turn lane	Yes	Yes	No	No	No
	Bike Lanes	Yes	Yes	Yes	Yes	Yes
Edge Treatment	Paved Shoulder (soft edge)	Yes	No	No	No	Yes
	Curb and gutter (hard edge)	No	No	No	Yes	No
Roadway Width	Total pavement width (m)	19.0	14.0	16.4	16.4	21.4

Options A and B proposed 3 motor vehicle lanes, while Options C, D and E proposed 4 motor vehicle lanes. All of the options presented at PIC #4 provided for bike lanes. Options A and E have paved shoulders ("soft edge"), with only Option D having a curb and gutter (hard edge).

Typical sections of the design solutions are provided in **Figure 8.1** and **Figure 8.2. Figure 8.3** illustrates two typical "hard-edge" cross-sections of Cabana Road with a three-lane and a four-lane configuration. Each sample describes a "minimum" right-of-way treatment. Detailed plan drawings of the three-lane "soft edge" solutions are provided in **Figures 8.4a to 8.4e**, and detailed plan drawings of the four-lane "hard edge" solutions are provided in **Figures 8.5a to 8.5e**. The lane widths in both the three-lane "soft edge" and the four-lane "hard edge" solution are 3.35m. The shared centre left turn lane would be 4.35m in width for the three-lane "soft edge" solution. Bike lanes in all solutions would be 1.5m in width.

Three-lane configurations were included only for the section of Cabana Road west of Provincial Road but not east of Provincial Road since this section has considerably fewer cross streets and private driveways. Thus a four-lane treatment was appropriate for the easterly segment of the corridor.

To the west of Provincial Road, a three-lane cross section was presented to the attendees of PIC #4. This was done despite the fact that this roadway configuration is not expected to be able to adequately operate under projected future traffic volumes.

8.2.2 Tailored Solutions for Cabana-Division Road East of Provincial Road

The following table provides a description of the three design solutions presented to the public for Cabana-Division Road east of Provincial Road.

Table 8.2: Roadway Designs for East of Provincial Road

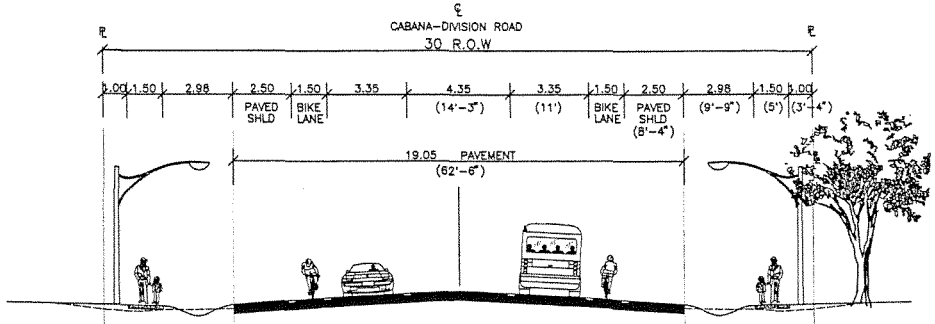
Right-of-way Characteristics (30 metres throughout)		**East of Provincial**		
		1	**2**	**3**
Pavement Configuration	Number of through lanes	4	4	4
	Centre two-way left turn lane	No	No	No
	Bike Lanes	Yes	Yes	Yes
Edge Treatment	Paved Shoulder (soft edge)	No	No	Yes
	Curb and gutter (hard edge)	No	Yes	No
Roadway Width	Total pavement width (m)	16.4	16.4	21.4

Option 1 proposed a four-lane configuration with bike lanes. Option 2 proposed a four-lane configuration with bike lanes and a hard edge. Option 3 proposed a four-lane configuration with bike lanes and a paved shoulder.

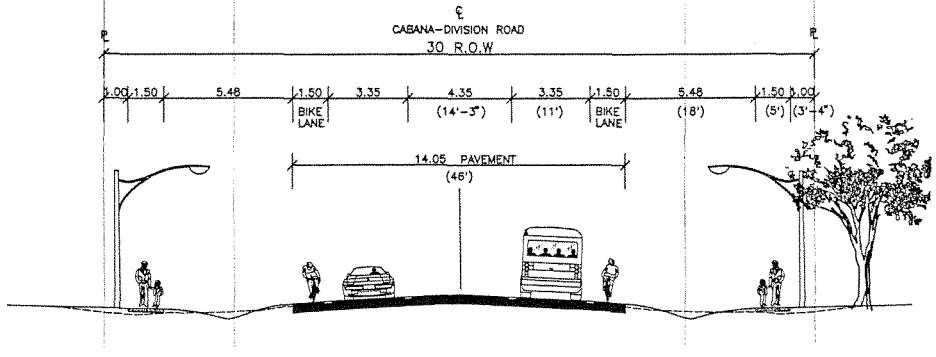
Typical sections of the design solutions are provided in Figure 8.2. Detailed plan drawings of the four-lane "hard edge" solutions are provided in Figure 8.5 d and 8.5e. The lane widths for both the three-lane "soft edge" and four-lane "hard edge" solution are 3.35m. The shared centre left turn lane would be 4.35 m in width for the three-lane "soft edge" solution. Bike lanes in all solutions would be 1.5 m in width.

3 LANE "SOFT EDGE"
TYPICAL SECTIONS

OPTION A



OPTION B



Marshall Macklin Monaghan

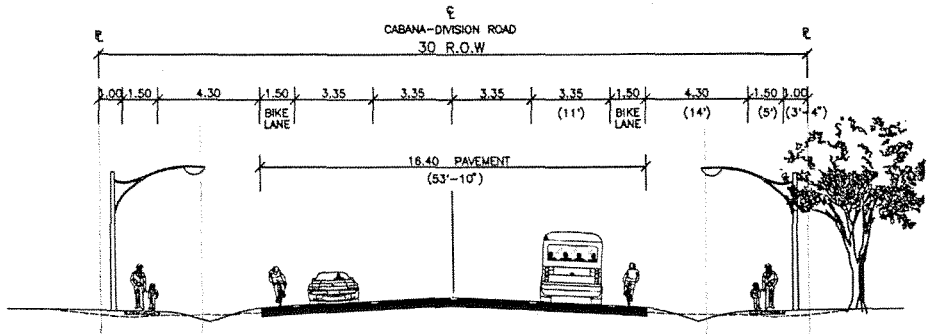
Golder Associates

Archaeologix Inc.
Gerry Waldron

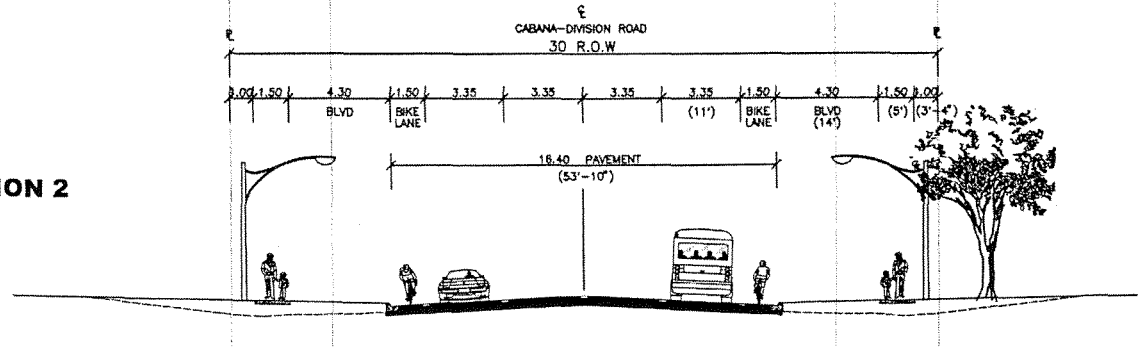
Figure 8.1

4 LANE
TYPICAL SECTIONS

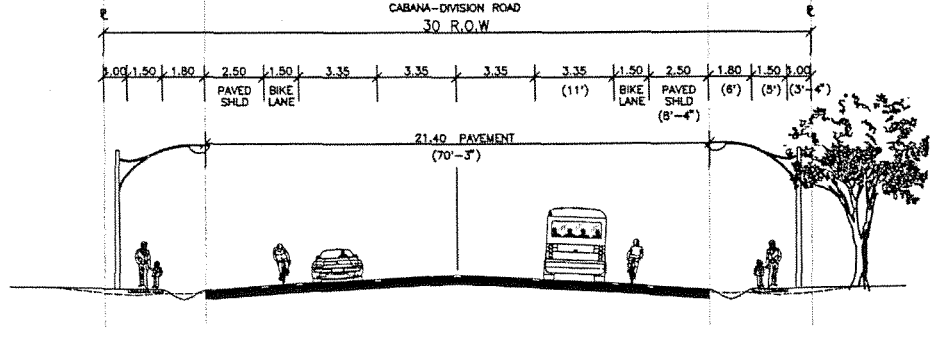
OPTION C AND OPTION 1



OPTION D AND OPTION 2



OPTION E AND OPTION 3



Marshall Macklin Monaghan

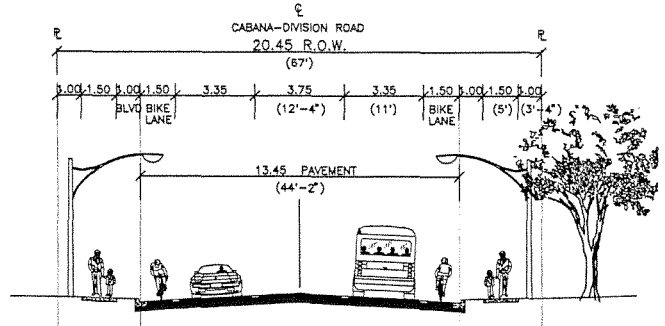
Golder Associates

Archaeologix Inc.
Gerry Waldron

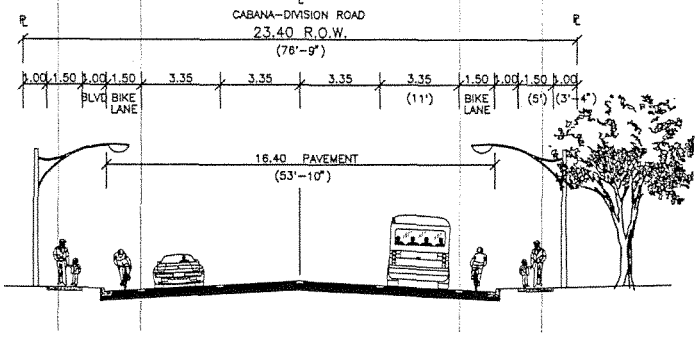
Figure 8.2

"HARD EDGE" TYPICAL SECTIONS WITH MINIMUM R.O.W.

3 LANE OPTION



4 LANE OPTION

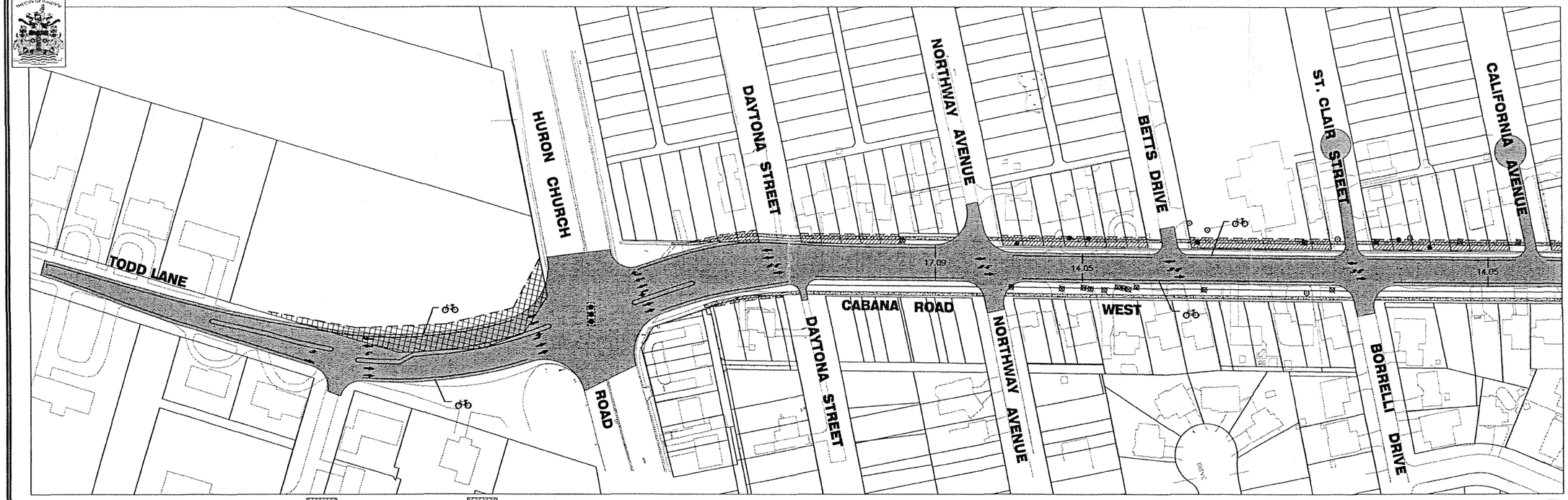


Marshall Macklin Monaghan

Golder Associates

Archaeologix Inc.
Gerry Waldron

Figure 8.3



Marshall Macklin Monaghan | AECOM | Golder Associates

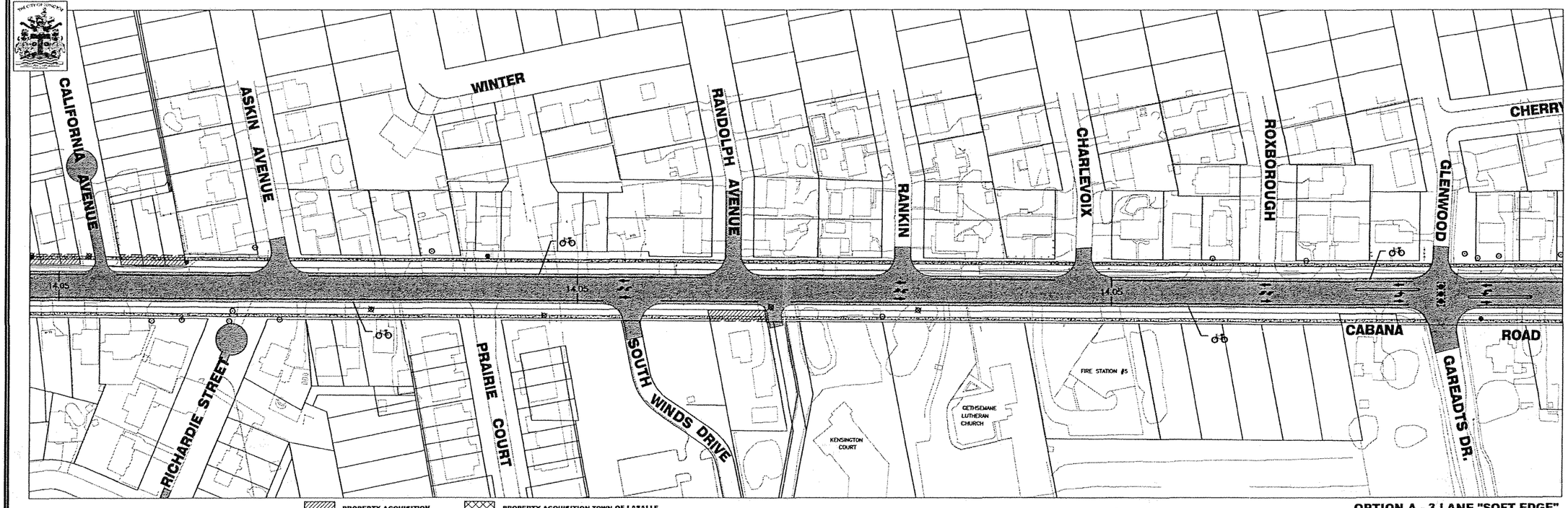
Archaeologix Inc.
Gerry Waldron

PROPERTY ACQUISITION
WIDENED ROADWAY PAVEMENT
PROPERTY ACQUISITION TOWN OF LASALLE
PAVED SHOULDER

SCALE

EXISTING TRAFFIC SIGNAL

OPTION A - 3 LANE "SOFT EDGE"
Huron Church Road - California Avenue



Marshall Macklin Monaghan | AECOM | Golder Associates

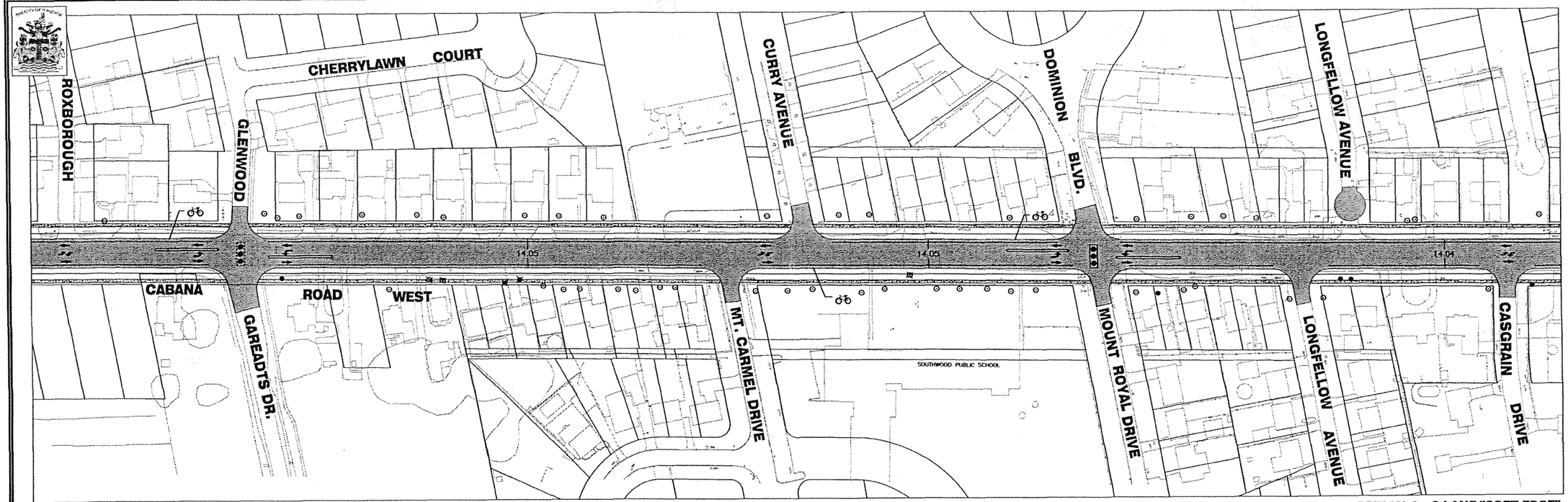
Archaeologix Inc.
Gerry Waldron

PROPERTY ACQUISITION
WIDENED ROADWAY PAVEMENT
PROPERTY ACQUISITION TOWN OF LASALLE
PAVED SHOULDER

SCALE

EXISTING TRAFFIC SIGNAL

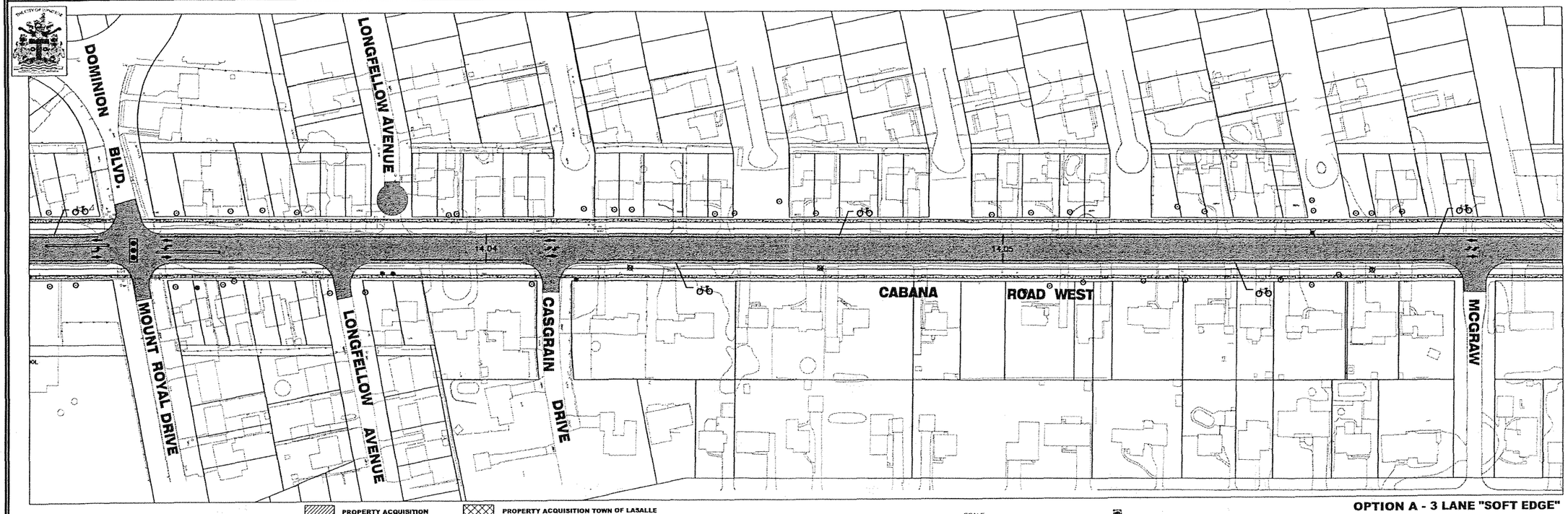
OPTION A - 3 LANE "SOFT EDGE"
California Avenue - Glenwood Avenue
Figure 8.4a



Marshall Macklin Monaghan | Golder Associates | Archaeologix Inc. Gerry Waldron

PROPERTY ACQUISITION | PROPERTY ACQUISITION TOWN OF LASALLE | WIDENED ROADWAY PAVEMENT | PAVED SHOULDER | SCALE | EXISTING TRAFFIC SIGNAL

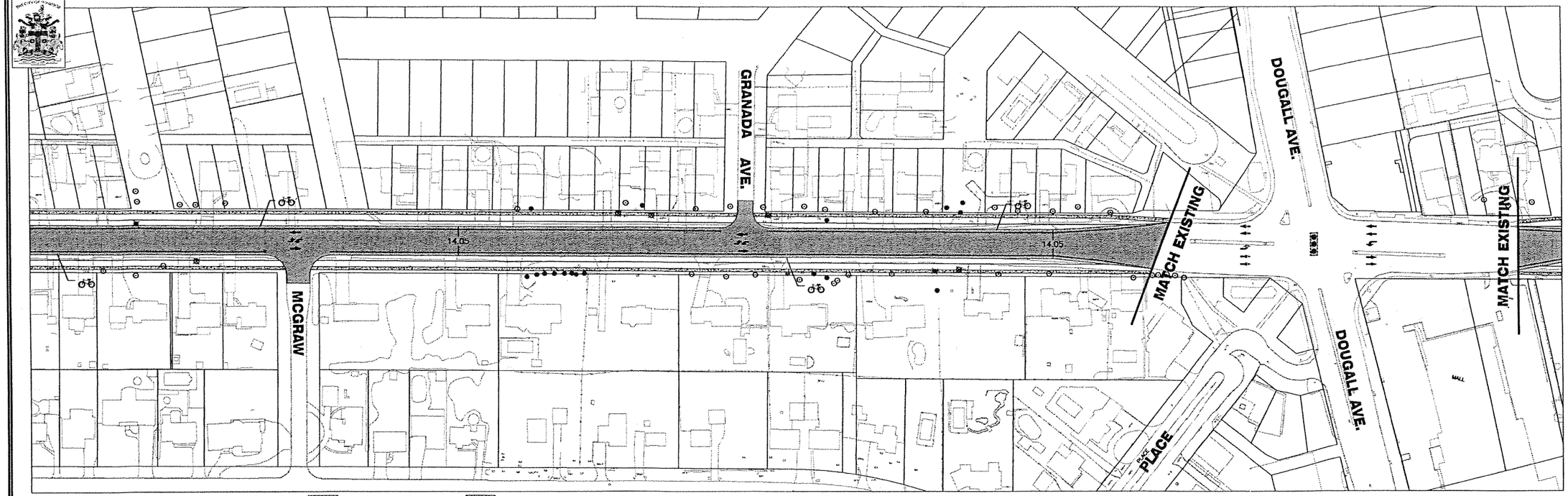
OPTION A - 3 LANE "SOFT EDGE"
Glenwood Avenue - Dominion Boulevard



Marshall Macklin Monaghan | Golder Associates | Archaeologix Inc. Gerry Waldron

PROPERTY ACQUISITION | PROPERTY ACQUISITION TOWN OF LASALLE | WIDENED ROADWAY PAVEMENT | PAVED SHOULDER | SCALE | EXISTING TRAFFIC SIGNAL

OPTION A - 3 LANE "SOFT EDGE"
Dominion Boulevard - McGraw Avenue
Figure 8.4b



Marshall Macklin Monaghan | Golder Associates

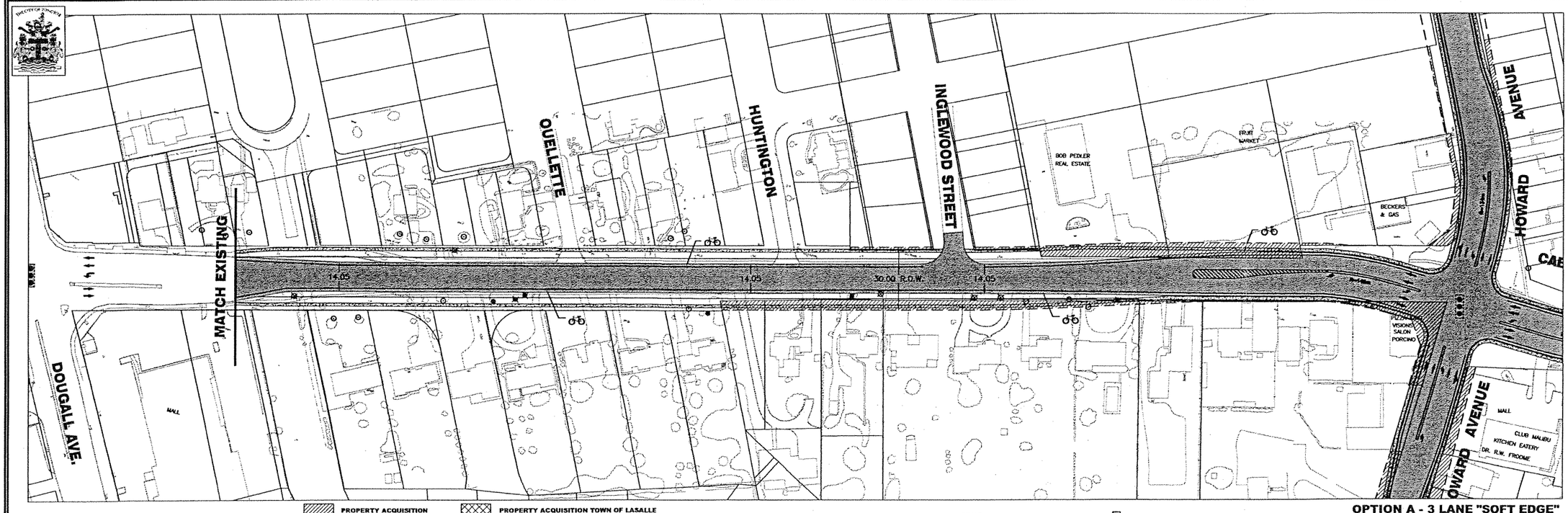
Archaeologix Inc.
Gerry Waldron

PROPERTY ACQUISITION
WIDENED ROADWAY PAVEMENT
PROPERTY ACQUISITION TOWN OF LASALLE
PAVED SHOULDER

SCALE

EXISTING TRAFFIC SIGNAL

OPTION A - 3 LANE "SOFT EDGE"
McGraw Avenue - Dougall Avenue



Marshall Macklin Monaghan | Golder Associates

Archaeologix Inc.
Gerry Waldron

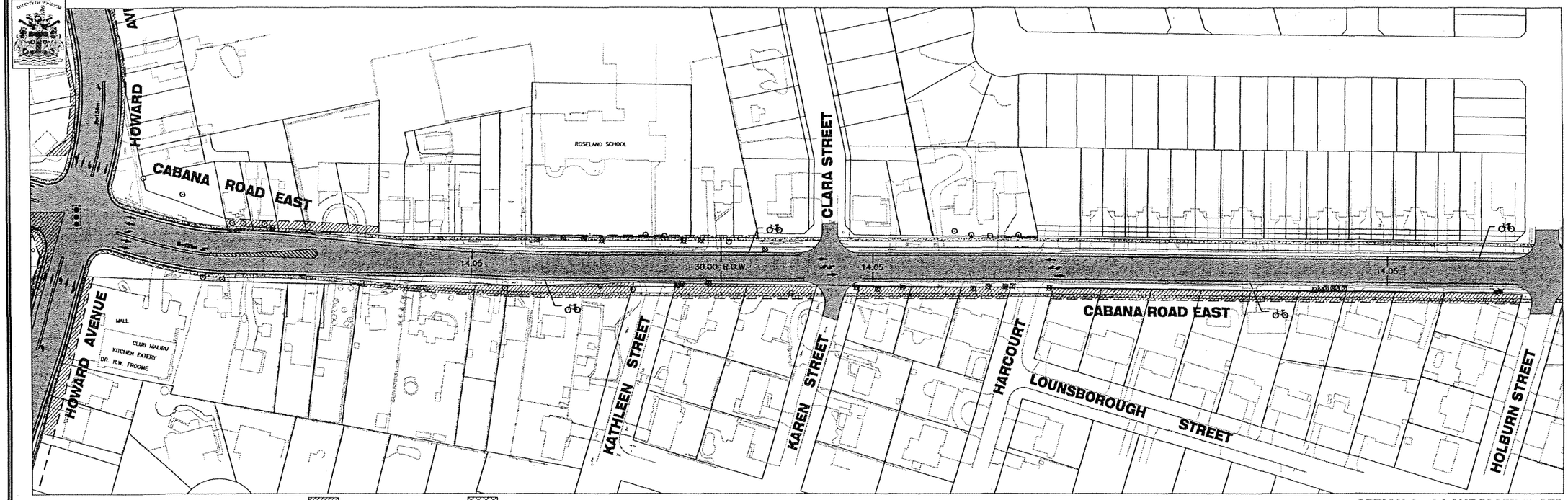
PROPERTY ACQUISITION
WIDENED ROADWAY PAVEMENT
PROPERTY ACQUISITION TOWN OF LASALLE
PAVED SHOULDER

SCALE

EXISTING TRAFFIC SIGNAL

OPTION A - 3 LANE "SOFT EDGE"
Dougall Avenue - Howard Avenue
Figure 8.4c

Cabana - Division Road Corridor Class Environmental Assessment



Marshall Macklin Monaghan | Golder Associates

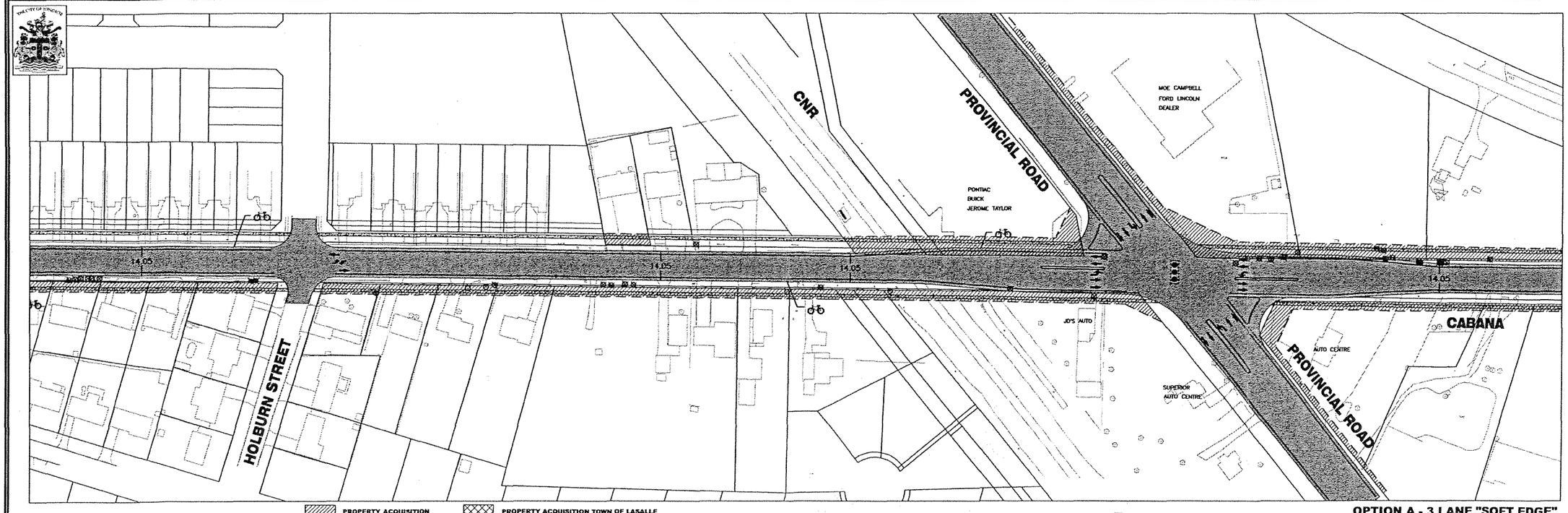
Archaeologix Inc.
Gerry Waldron

PROPERTY ACQUISITION
WIDENED ROADWAY PAVEMENT
PROPERTY ACQUISITION TOWN OF LASALLE
PAVED SHOULDER

SCALE

EXISTING TRAFFIC SIGNAL

OPTION A - 3 LANE "SOFT EDGE"
Howard Avenue - Holburn Street



Marshall Macklin Monaghan | Golder Associates

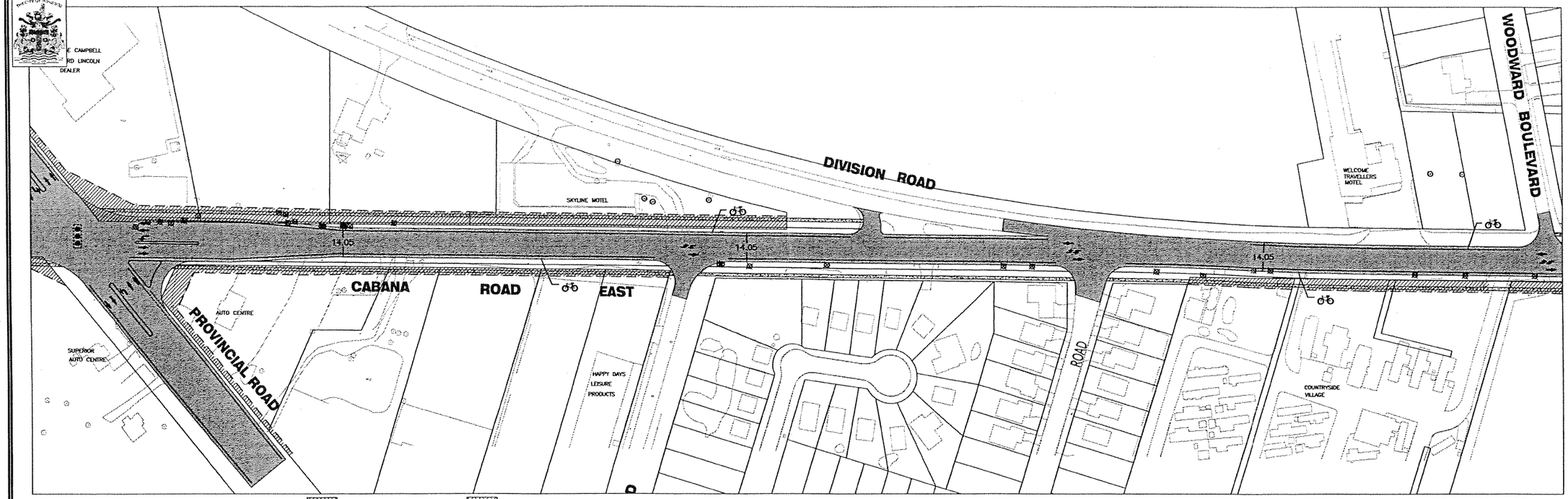
Archaeologix Inc.
Gerry Waldron

PROPERTY ACQUISITION
WIDENED ROADWAY PAVEMENT
PROPERTY ACQUISITION TOWN OF LASALLE
PAVED SHOULDER

SCALE

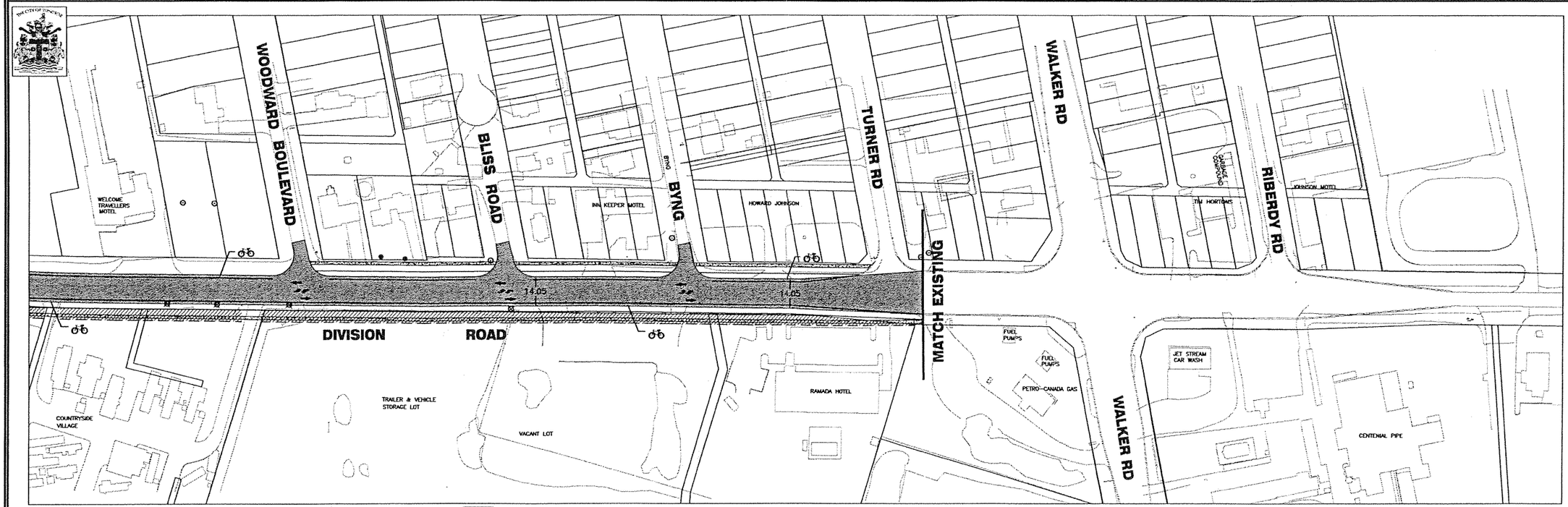
EXISTING TRAFFIC SIGNAL

OPTION A - 3 LANE "SOFT EDGE"
Holburn Street - Provincial Road
Figure 8.4d



Marshall Macklin Monaghan | Golder Associates | Archaeologix Inc. Gerry Waldron

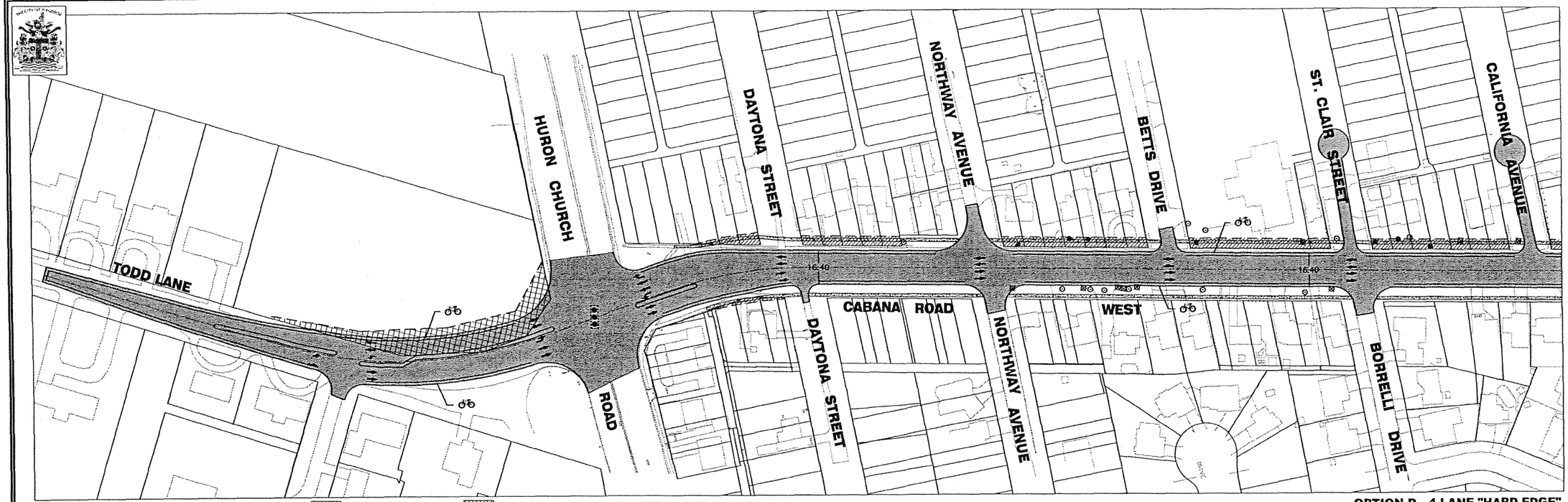
OPTION A - 3 LANE "SOFT EDGE"
Provincial Road - Woodward Boulevard



Marshall Macklin Monaghan | Golder Associates | Archaeologix Inc. Gerry Waldron

OPTION A - 3 LANE "SOFT EDGE"
Woodward Boulevard - Walker Road
Figure 8.4e

Cabana - Division Road Corridor Class Environmental Assessment



Marshall Macklin Monaghan | Golder Associates

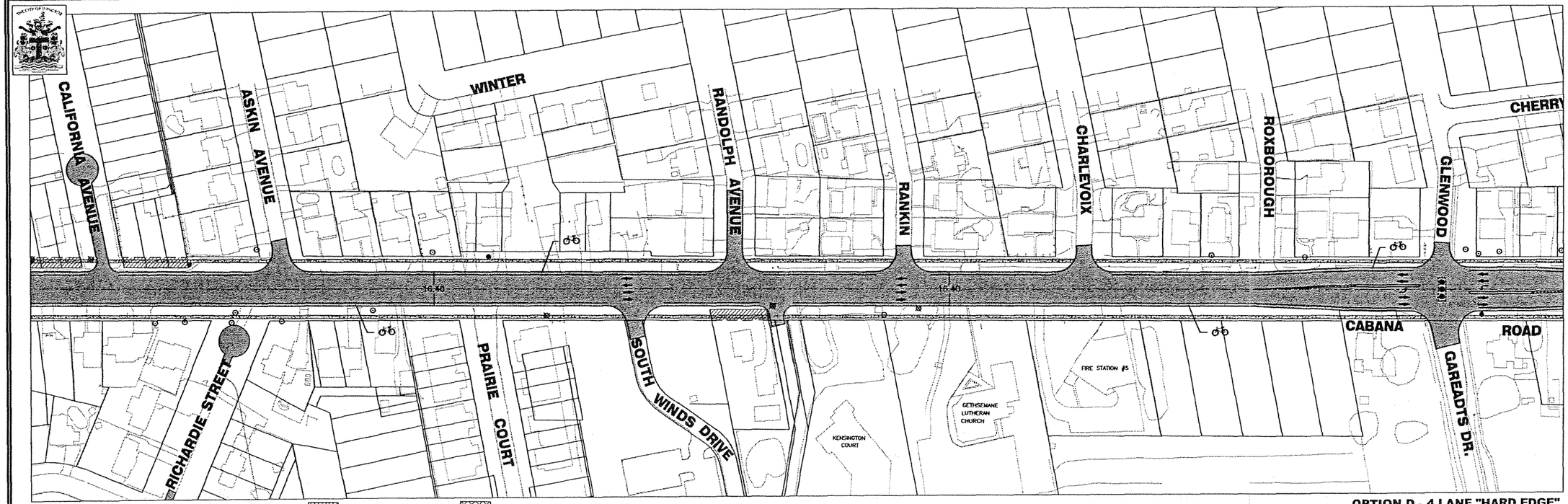
Archaeologix Inc.
Gerry Waldron

PROPERTY ACQUISITION
PROPERTY ACQUISITION TOWN OF LASALLE
WIDENED ROADWAY PAVEMENT

SCALE

EXISTING TRAFFIC SIGNAL

OPTION D - 4 LANE "HARD EDGE"
Huron Church Road - California Avenue



Marshall Macklin Monaghan | Golder Associates

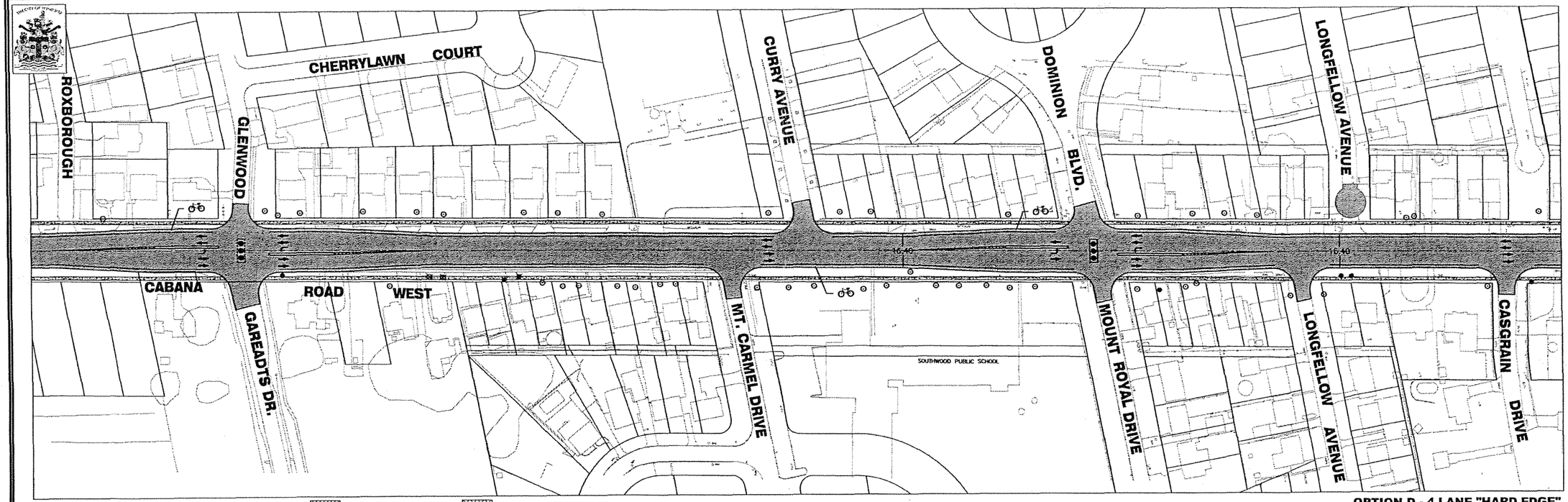
Archaeologix Inc.
Gerry Waldron

PROPERTY ACQUISITION
PROPERTY ACQUISITION TOWN OF LASALLE
WIDENED ROADWAY PAVEMENT

SCALE

EXISTING TRAFFIC SIGNAL

OPTION D - 4 LANE "HARD EDGE"
California Avenue - Glenwood Avenue
Figure 8.5a



Marshall Macklin Monaghan | Golder Associates

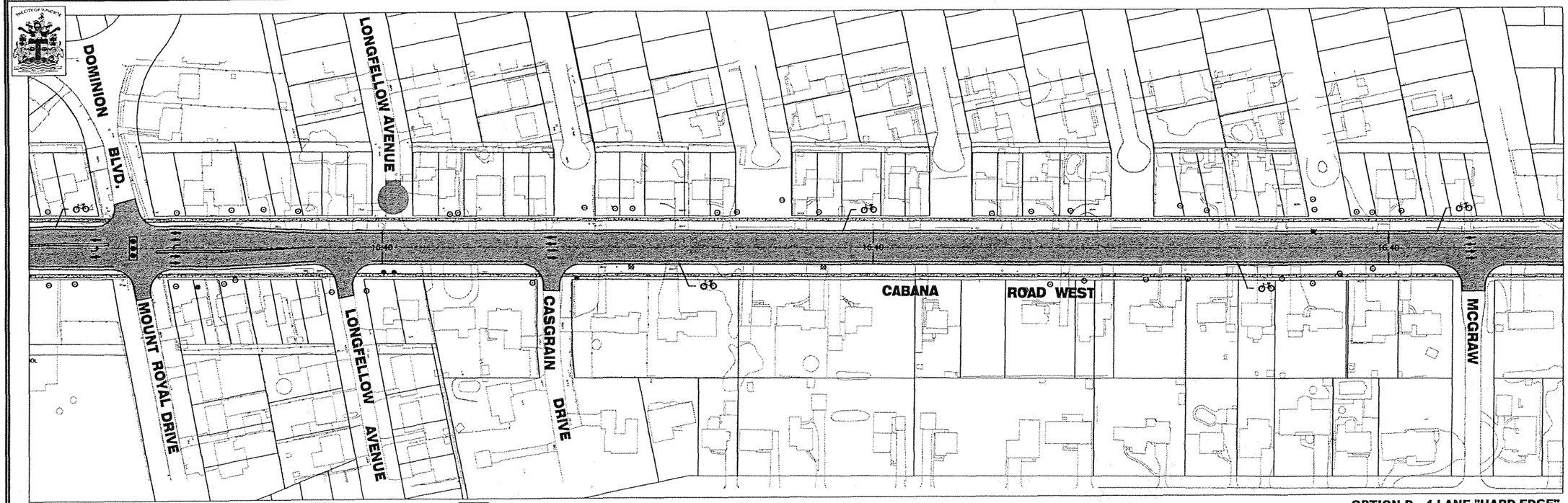
Archaeologix Inc.
Gerry Waldron

PROPERTY ACQUISITION
PROPERTY ACQUISITION TOWN OF LASALLE
WIDENED ROADWAY PAVEMENT

SCALE

EXISTING TRAFFIC SIGNAL

OPTION D - 4 LANE "HARD EDGE"
Glenwood Avenue - Dominion Boulevard



Marshall Macklin Monaghan | Golder Associates

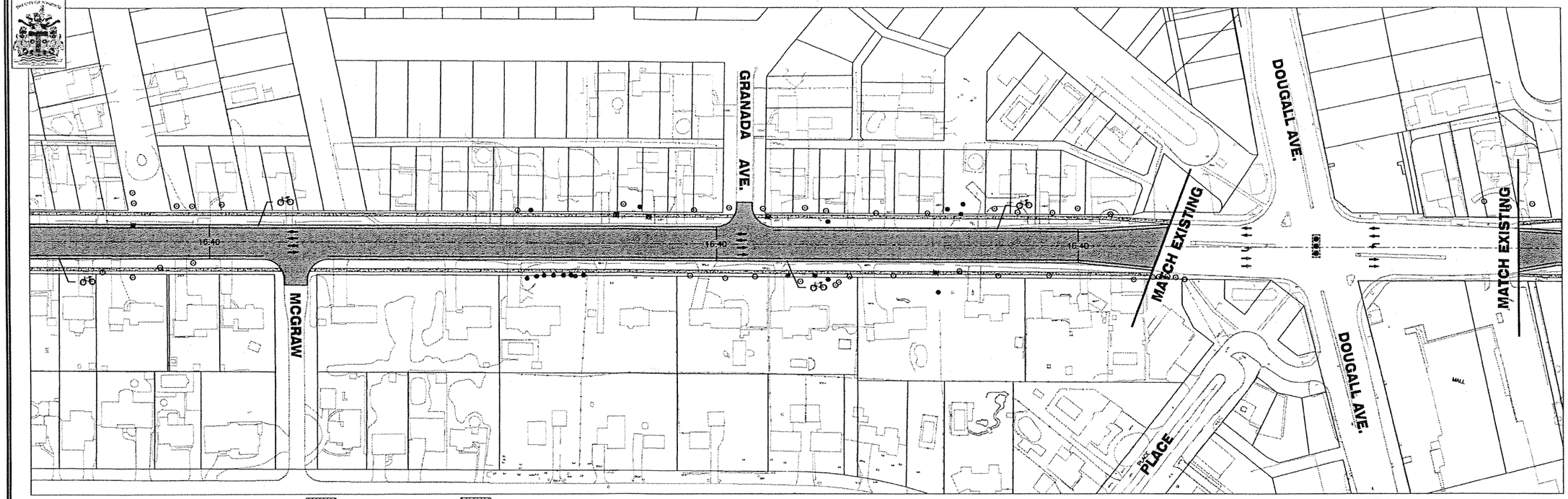
Archaeologix Inc.
Gerry Waldron

PROPERTY ACQUISITION
PROPERTY ACQUISITION TOWN OF LASALLE
WIDENED ROADWAY PAVEMENT

SCALE

EXISTING TRAFFIC SIGNAL

OPTION D - 4 LANE "HARD EDGE"
Dominion Boulevard - McGraw Avenue
Figure 8.5b



Marshall Macklin Monaghan | Golder Associates

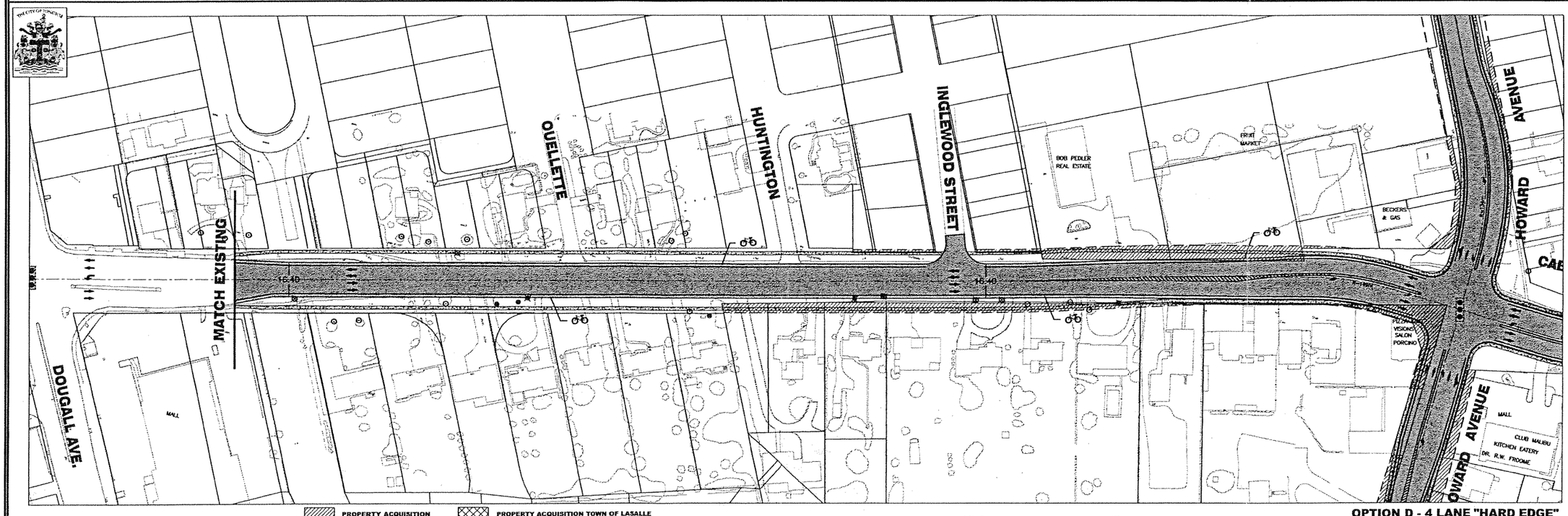
Archaeologix Inc.
Gerry Waldron

PROPERTY ACQUISITION
PROPERTY ACQUISITION TOWN OF LASALLE
WIDENED ROADWAY PAVEMENT

SCALE

EXISTING TRAFFIC SIGNAL

OPTION D - 4 LANE "HARD EDGE"
McGraw Avenue - Dougall Avenue



Marshall Macklin Monaghan | Golder Associates

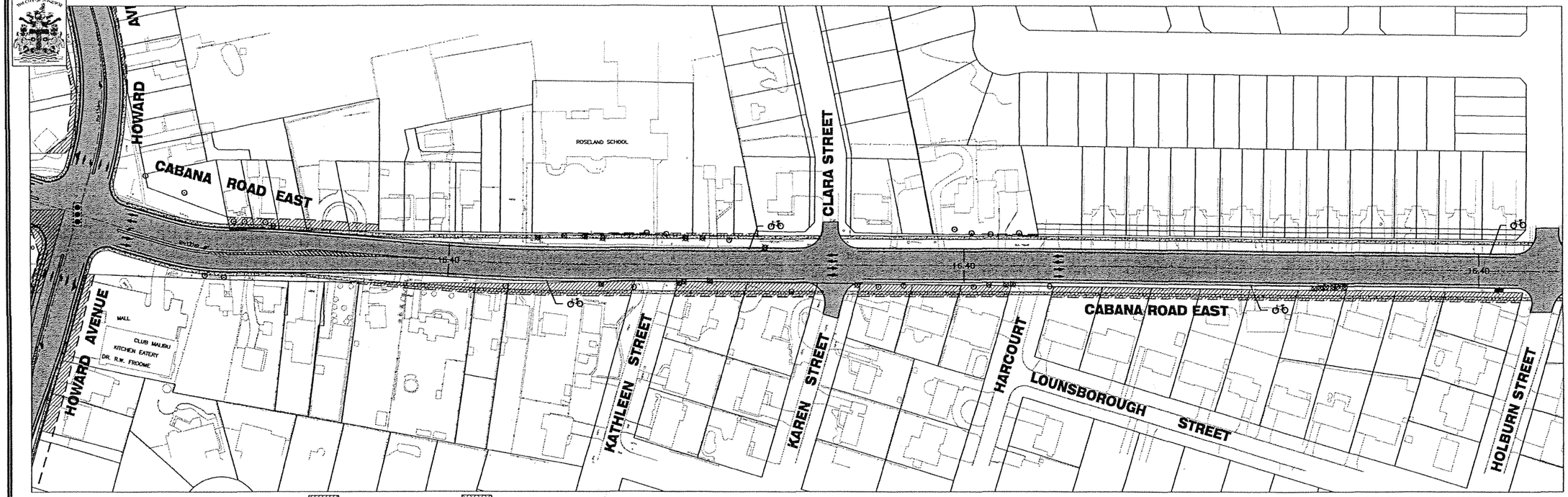
Archaeologix Inc.
Gerry Waldron

PROPERTY ACQUISITION
PROPERTY ACQUISITION TOWN OF LASALLE
WIDENED ROADWAY PAVEMENT

SCALE

EXISTING TRAFFIC SIGNAL

OPTION D - 4 LANE "HARD EDGE"
Dougall Avenue - Howard Avenue
Figure 8.5c



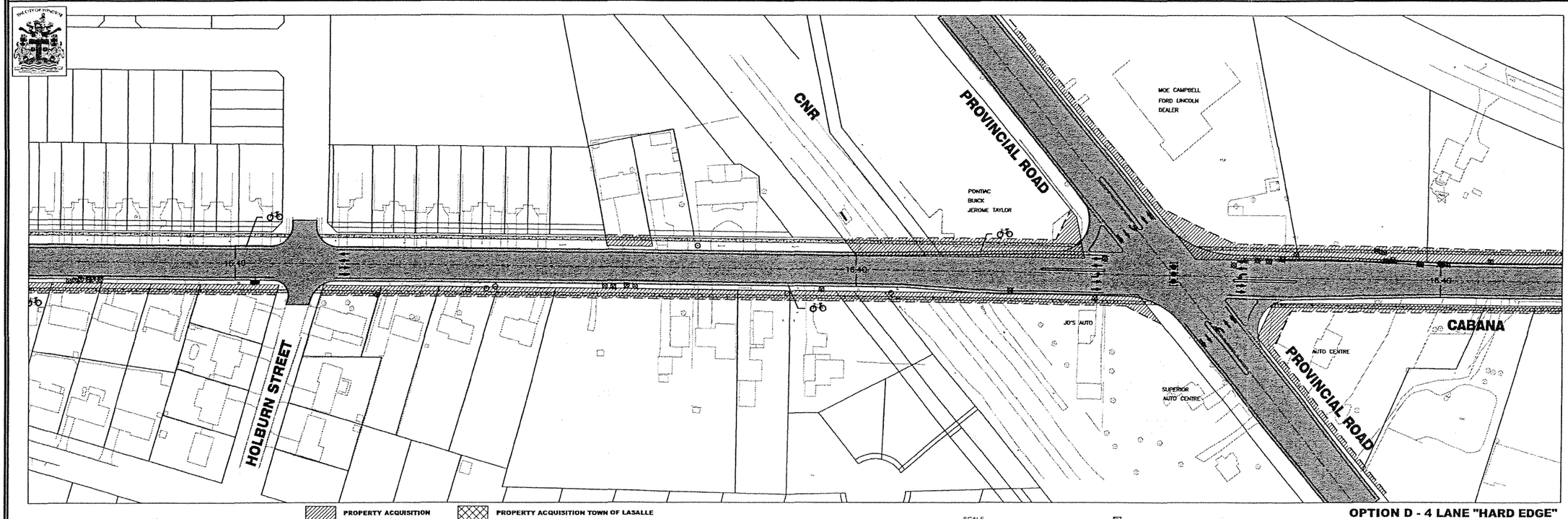
PROPERTY ACQUISITION
PROPERTY ACQUISITION TOWN OF LASALLE
WIDENED ROADWAY PAVEMENT

Archaeologix Inc.
Gerry Waldron

SCALE

EXISTING TRAFFIC SIGNAL

OPTION D - 4 LANE "HARD EDGE"
Howard Avenue - Holburn Street



PROPERTY ACQUISITION
PROPERTY ACQUISITION TOWN OF LASALLE
WIDENED ROADWAY PAVEMENT

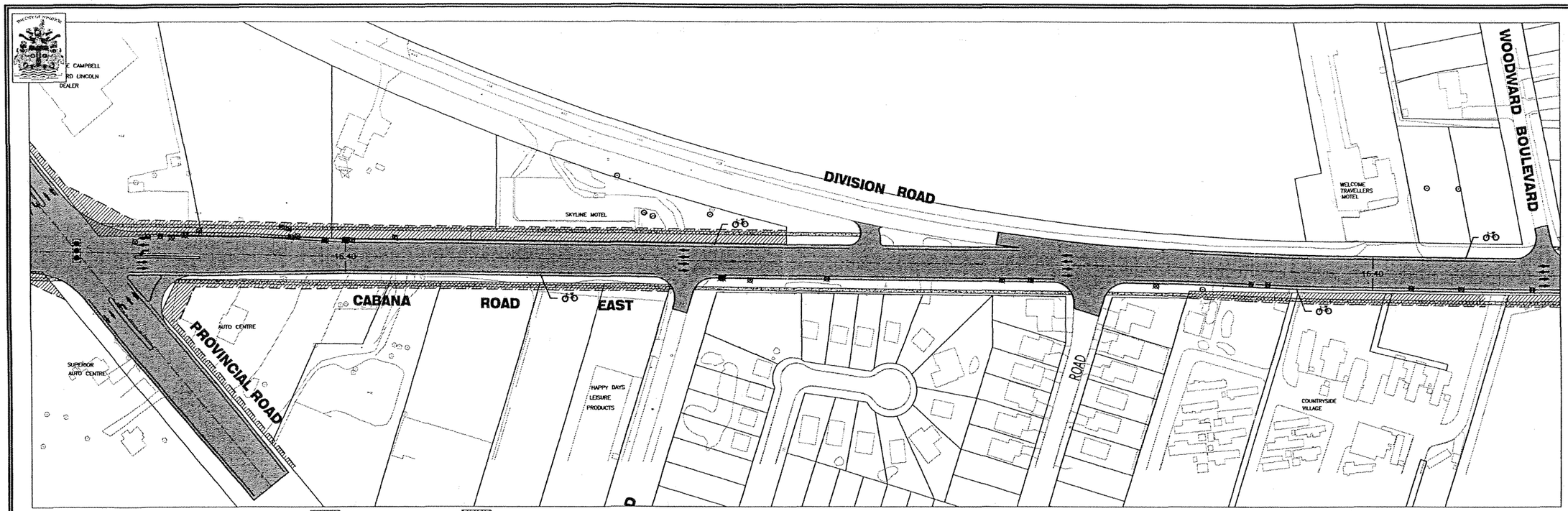
Archaeologix Inc.
Gerry Waldron

SCALE

EXISTING TRAFFIC SIGNAL

OPTION D - 4 LANE "HARD EDGE"
Holburn Street - Provincial Road
Figure 8.5d

Cabana - Division Road Corridor Class Environmental Assessment



Marshall Macklin Monaghan | Golder Associates

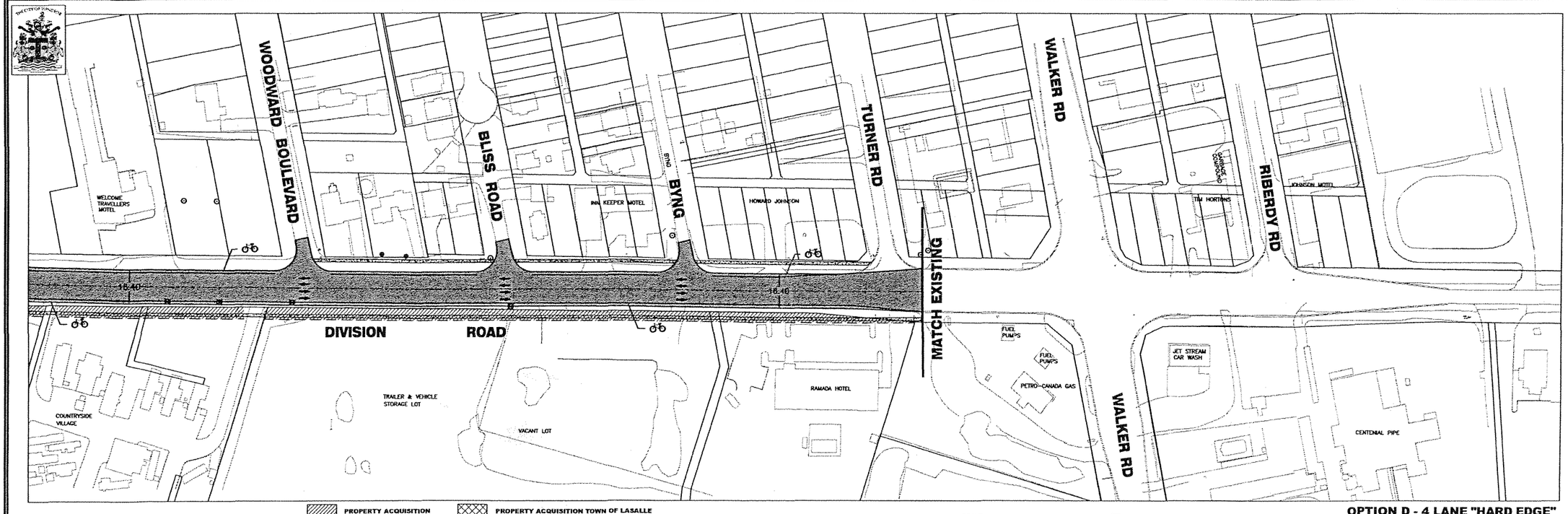
Archaeologix Inc.
Gerry Waldron

PROPERTY ACQUISITION
PROPERTY ACQUISITION TOWN OF LASALLE
WIDENED ROADWAY PAVEMENT

SCALE

EXISTING TRAFFIC SIGNAL

OPTION D - 4 LANE "HARD EDGE"
Provincial Road - Woodward Boulevard



Marshall Macklin Monaghan | Golder Associates

Archaeologix Inc.
Gerry Waldron

PROPERTY ACQUISITION
PROPERTY ACQUISITION TOWN OF LASALLE
WIDENED ROADWAY PAVEMENT

SCALE

EXISTING TRAFFIC SIGNAL

OPTION D - 4 LANE "HARD EDGE"
Woodward Boulevard - Walker Road
Figure 8.5e

8.3 Evaluation

The criteria for evaluation of the design solutions were divided into three primary categories:

- Technical Environment Factors;
- Natural Environment Factors; and
- Social-Cultural and Economic Environment Factors.

A comprehensive review of the interactive effects of each of the evaluation criteria are provided in **Table 8.3**. The options for three lanes plus bike lanes and four lanes plus bike lanes were carried over from the first part of Phase 2 in this study. The evaluation of these options has, therefore, remained unchanged.

Table 8.3: Evaluation of Interactive Environmental Effects (revisited)

Interactive Effects on the Environment	Design Alternatives				
	Option A: Three Lanes with Bike Paths, Paved Shoulder	Option B: Three Lanes with Bike Lanes	Options C and 1: Four Lanes with Bike Lanes	Options D and 2: Four Lanes plus Bike Lanes, Curb and Gutter	Options E and 3: Four Lanes with Bike Lanes, Paved Shoulder
Technical Environment Factors					
Transportation Network					
divided highways					
arterial roads					
collector roads					
local roads					
access to Cabana Road from abutting properties					
transit network					
existing traffic demands					
safety					
Existing Capacity Deficiencies					
intersection performance					
traffic operations along the Cabana-Division Road corridor					
traffic at at-grade railway crossings					
Future Transportation Needs					
projected traffic growth					
corridor performance					
horizon 2011 intersection performance					
future cross section needs					
Natural Environment Factors					
floral resources					
faunal resources					
Socio-Economic Factors					
noise					
neighbourhood impacts					
local economy					
cost					
Overall Benefit					

LEGEND

- Full Benefit
- Large Benefit
- Some Benefit
- Very Limited Benefit
- No Effect
- Verly Limited Negative Effect
- Some Negative Effect
- Large Negative Effect
- Major Negative Effect

Note: Interactive effects on the environment were evaluated in the context of a 20-year planning horizon

8.3.1 Technical Environment Factors

Three Lanes Plus Bike Lanes and Paved Shoulders
This option adds the same limited benefits to the improvement of the transportation network, capacity deficiencies and future transportation needs as other three-lane options evaluated in Section 6.3.1. The only exception is the benefit that paved shoulders would provide to residents along Cabana Road. Residents can use the paved shoulders for manoeuvring when exiting their driveways, which provides a slightly safer driving environment. These paved shoulders would also enable the City's mechanical sweepers to remove debris and litter throughout the Cabana-Division Road Corridor.

Four Lanes Plus Bike Lanes and Paved Shoulder
This option imparts the same benefits to the transportation network, capacity deficiencies and future transportation needs as the four-lane options that were evaluated in Section 6.3.1. An exception is the aforementioned benefits that paved shoulders would provide along the corridor.

Four Lanes Plus Bike Lanes and Curb and Gutter
This option imparts the same benefits to the transportation network, capacity deficiencies and future transportation needs as other four-lane options evaluated in Section 6.3.1. An exception is the benefit that a curb and gutter system provides to the aesthetics and storm drainage along the corridor. The curb and gutter system would replace the current open ditch system, which can be a physical hazard to some users of the corridor and is an inferior system for stormwater drainage. The curb also provides a defined edge to the corridor, which is more visually appealing and gives the neighbourhood a more urban appearance.

8.3.2 Natural Environment Factors

Three Lanes Plus Bike Lanes and Paved Shoulder
This three-lane option imparts the same benefits to the natural environment as those of the three-lane options evaluated in Section 6.3.2.

Four Lanes Plus Bike Lanes and Paved Shoulder
This four-lane option imparts the same benefits to the natural environment as those of the four-lane options evaluated in Section 6.3.2.

Four Lanes Plus Bike Lanes and Curb and Gutter
This four-lane option imparts additional benefits to the natural environment over the other four-lane options by facilitating drainage and reducing erosion associated with the existing open ditch system.

8.3.3 Social-Cultural and Economic Environment Factors

Three Lanes Plus Bike Lanes and Paved Shoulder
This three-lane option imparts the same benefits to the community and local economy as those of the three-lane options evaluated in Section 6.3.3.

Four Lanes Plus Bike Lanes and Paved Shoulder
This four-lane option imparts the same benefits to the community and local economy as those of the three-lane options evaluated in Section 6.3.3.

Four Lanes Plus Bike Lanes and Curb and Gutter
This four-lane option imparts additional benefits to the community and local economy over the other four-lane options because the curb provides a crisp and visually appealing edge. The curb also adds an urban element to the road and may act as a catalyst to the location of additional businesses along the corridor. The curb also provides a visual and physical limit to the road, and emphasizes to users that the City does not intend to further widen the road in the future.

8.4 Public Input

PIC participants identified Option B as the favoured design solution for west of Provincial Road, which consisted of three-lanes plus bike lanes. Many of the residents that live along Cabana Road were in favour of the three-lane plus bike lanes cross section regardless of the technical disadvantages and cost inefficiencies of building such a road.

The favoured design solution for residents and property owners east of Provincial Road was Option 1, which consisted of four-lanes with bike lanes and a paved shoulder. The details of the input from PIC #4 are found in Appendix B.

9.0 The Preferred Alternative (Phase 3)

9.1 Identification of the Preferred Alternative

The study team was required to carefully weigh the projected transportation demands of the corridor and balance these network demands with social impacts and the prevailing character of the neighbourhood. In so doing, the recommended design was identified as having four-lanes with bike lanes and curb and gutter.

It should be noted that the recommended design is not the optimal technical solution. The study team weighed the public input and technical considerations ensuing from PIC 4 and concluded the following:

- A minimum four-lane cross section is required to accommodate the projected traffic volumes for this corridor and to mitigate the impacts of motorists that slow traffic when making left turns onto the various driveways and side streets along the corridor.
- After PIC #2, which indicated that the public supported the City's plans to provide bike lanes on Cabana-Division Road corridor, the provisions for bike lanes were never removed from the tailored solutions during the technical re-examination of the design solutions.
- Curbs and gutters were chosen to replace ditches for two primary reasons: to improve drainage by removing open ditches, and to provide a visible and well defined edge to the roadway to emphasize that further road widening in the future were not contemplated.
- Public preference for a reduced pavement width was also met. It should be noted that there is a difference of only 2.4 metres in the width of pavement between the three-lane and four-lane cross sections. This has been accomplished by using lane widths of 3.35m for all through lanes rather than the standard 3.75m currently used in similar roadway designs. This lane width reduction helps balance technical demands with the strong desire of the local residents to maintain a residential character throughout the corridor.

9.2 Public Input

Prior to PIC #5 the study team met with Cabana Road residents in the form of a "kitchen table" meeting. This meeting was held on Wednesday, June 18, 2003 at the house of one of the local residents.

The purpose of this meeting was to present the design to be presented at PIC #5. Members of the study team were able to discuss the design modifications that were made from the solutions originally presented during the first rounds of public consultation, while local residents expressed their strong desire to limit pavement widths on Cabana Road.

The recommended design was presented to the general public at PIC #5. The majority of participants at PIC #5 were in favour of a three-lane cross-section rather than a four-lane cross-section, however, most of the participants opposed to the four-lane section were residents along Cabana Road. Property owners on the east end of the corridor were generally more supportive of the four-lane recommended design while residents on the west end of the corridor were less supportive. Some participants agreed with the recommended design, with others still favouring a five-lane cross section. It was made clear, however, that bike lanes and a curb and gutter edge

treatment were preferred design features. The public input received during PIC #5 is detailed in Appendix B.

10.0 The Preferred Design

10.1 Preliminary Design Criteria

The criteria for the design of the roadway are derived from the City's requirements for safe and efficient roadway design, which improve present-day and future traffic operations along with the unique concerns raised by residents along or near Cabana-Division Road. The process leading to the identification of the preferred design also revealed the following design criteria, which were then implemented in the preferred design:

- Avoid the removal of mature trees, wherever possible;
- Use design techniques that minimize the overall width of pavement and maintain the residential character of the western part of Cabana-Division Corridor;
- Minimize the need for municipal property acquisition;
- Make provisions for various modes of transportation, such as transit and cycling; and
- Allow for boulevard improvements that enhance the pedestrian environment and provide a strong aesthetic value.

10.2 Property Acquisition

The preferred alternative has been designed in a manner that minimizes the need for property acquisition. For example, the City has already acquired some property at major intersections during previous roadway improvements. The new proposed roadway has been aligned in a manner that maximizes the use of existing municipal property. A detailed economic analysis of property requirements would be necessary before any future widening of Cabana-Division Road would be completed. **Figures 10.3a to 10.3e** depict where property acquisition is required.

10.3 Roadway Characteristics

10.3.1 Cross Section

The preferred roadway configuration consists of four lanes with bike lanes, as well as curbs and gutters (hard edge) throughout the entire study area.

Since the width of pavement was a primary concern of the local residents along the corridor, reduced lane widths are recommended for the through travel lanes. For example, typical roadway lanes are 3.75 metres in width. *The Policy on Geometric Design of Highways and Streets* states, however, that in urban areas where pedestrian crossings, rights-of-way, or existing development become stringent controls, the use of 3.35 metre lanes is acceptable. Adjacent to the curb lane will be a bike lane that is 1.5 metres in width.

The boulevards have an approximate width of 4.30 m, the sidewalks have a width of 1.50 m, and the remaining public right-of-way is set back 1.0 m from the sidewalk. The option to include a median along portions of the roadway was explored as an opportunity for plantings and streetscape beautification. Medians would block access to the multitude of driveways and local roads. It is for this reason that medians were not further explored in this study.

A cross section of the preferred road configuration is shown in **Figure 10.1**. The width of the boulevards varies along the corridor to account for the meandering sidewalk needed to avoid the removal of oak trees (see Section A-A and Section B-B in Figure 10.1 and **Figure 10.2**).

10.3.2 Alignment

As illustrated in the preferred design, Figures 10.3a to 10.3e, the right-of-way has been designed in a manner that minimizes impacts to existing obstacles, such as trees and aerial utility poles. The roadway has been aligned to optimize the use of property that the City has previously acquired during roadway and intersections improvements. This was done to lower costs and to minimize the need for additional property acquisition. The sidewalk has been designed to meander around mature trees, which was a design criterion provided in Section 10.1. Consideration should be given to design options that minimize damage to the root zone of the trees, such as floating pavement, in consultation with the City Forester. As such, the preferred design illustrates how many mature trees can be retained, which has a positive impact on streetscape design. Sidewalks also meander around utility poles to avoid the need to relocate these poles and to minimize cost.

10.3.2 Right-of-Way Requirements and Land Acquisition

As outlined in the City of Windsor's Official Plan for a Class II Arterial Road, the preferred design has a right-of-way width of 30m, which is sufficient to accommodate the preferred design. It is recommended that the 30m right of way be maintained along the corridor. Land requirements are shown in detail in the preferred design in Figures 10.3a to 10.3e.

10.3.4 Intersections

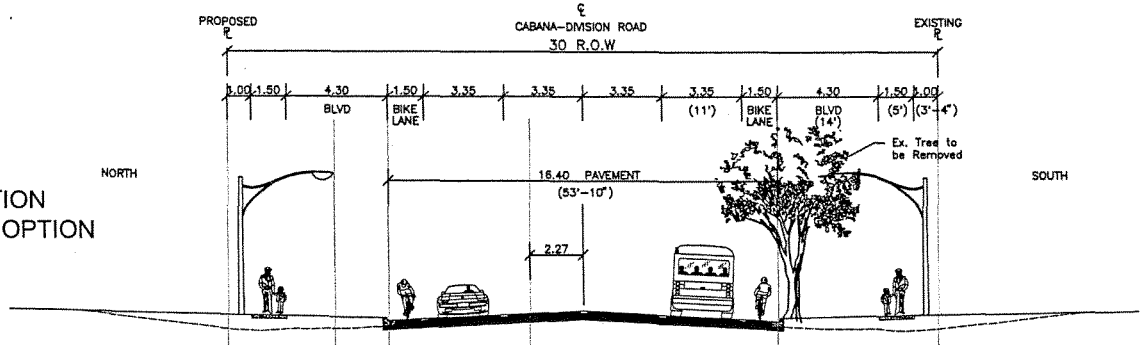
The intersection of Cabana Road at Howard Avenue was identified as a particular traffic "bottleneck", where traffic operations are currently operating at a poor level of service under present-day conditions. Detailed alternatives for the configuration of this intersection were presented during PIC #2. The preferred design for the intersection of Cabana Road at Howard Avenue has four lanes with left turn lanes along Cabana Road. The design also holds the property line on the north side of Cabana Road and calls for the acquisition of lands along the south side of Cabana Road. Refer to Figures 10.3c and 10.3d for an illustration of this preferred intersection design.

As shown on Figures 10.3a to 10.3e, other existing and future signalized intersections of Cabana Road are to include left turn lanes except at Dougall Avenue which already has four lanes and left-turn lanes.

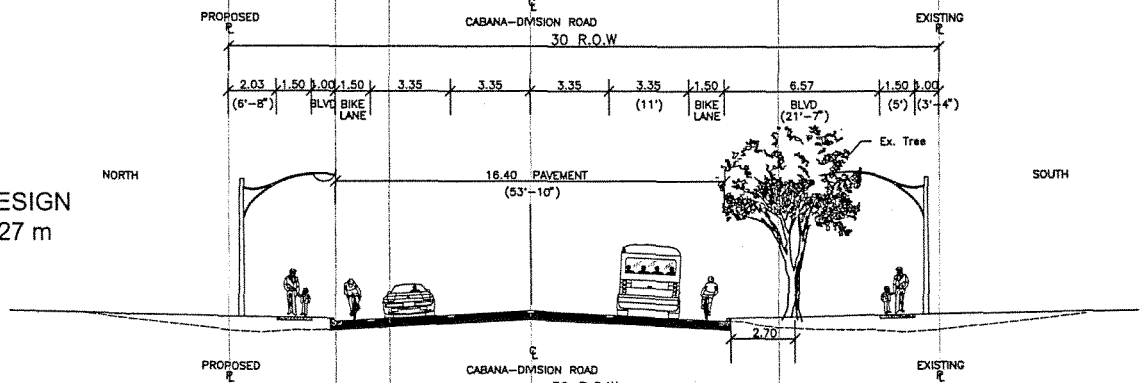
The Huron Church/Todd Lane/Cabana Road intersection is shown in the preferred design but may require further study due to alignment with the part of the intersection within the Town of LaSalle and border issues.

OAK TREES
NORTHWAY TO CALIFORNIA
TYPICAL SECTIONS

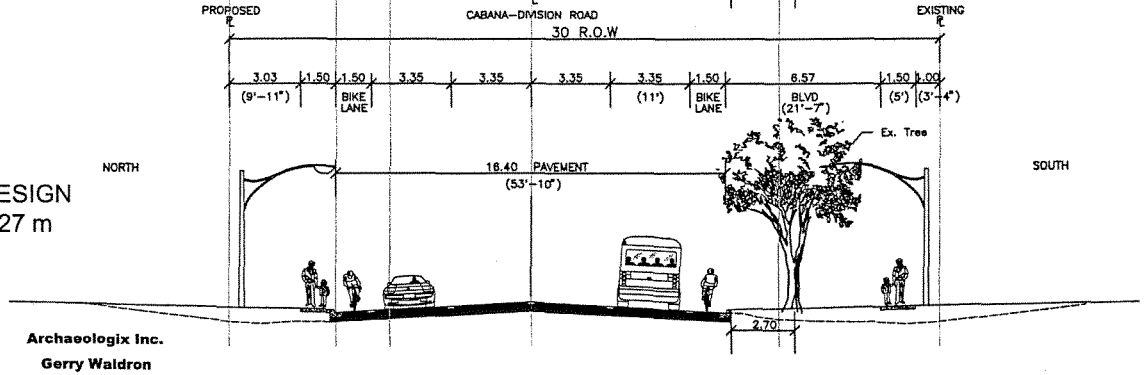
4 LANE URBAN SECTION
ORIGINAL "PREFERRED" OPTION



4 LANE "OPTIMIZED" DESIGN
℄ SHIFTED NORTH 2.27 m
(SECTION A-A)



4 LANE "OPTIMIZED" DESIGN
℄ SHIFTED NORTH 2.27 m
(SECTION B-B)



Marshall Macklin Monaghan
Golder Associates

Archaeologix Inc.
Gerry Waldron

Figure 10.1

THE CITY OF WINDSOR

LEGEND

Proposed ROW

Proposed Sidewalk

Tree to be Removed

NORTHWAY AVE

BETTS DRIVE

ST. CLAIR STREET

CALIFORNIA AVE

CABANA ROAD

NORTHWAY AVE

BORRELLI DRIVE

WEST

DRIVE

A

B

Marshall Macklin Monaghan

Golder Associates

Archaeologix Inc.

Gerry Waldron

SCALE
1 : 1000
0 10 20 30

4 LANE "OPTIMIZED" DESIGN
NORTHWAY TO CALIFORNIA
2 Trees Removed (Figure 10.2)

Cabana - Division Road Corridor Class Environmental Assessment

J:\PROJECTS\2001\16-01039 Cabana-Division Corridor EA\Acad\P I C 5\oak tree -- optimize.dwg / DATE SAVED: MAR/24/03 @ 1:46pm

PROPERTY ACQUISITION

WIDENED ROADWAY PAVEMENT

PROPERTY ACQUISITION TOWN OF LASALLE

FURTHER STUDY MAY BE REQUIRED AS A RESULT OF THE PROPOSED BORDER CROSSING IMPROVEMENTS AT HURON CHURCH ROAD

SCALE

EXISTING TRAFFIC SIGNAL

PROPOSED TRAFFIC SIGNAL

Marshall Macklin Monaghan | Golder Associates | Archaeologix Inc. | Gerry Waldron

THE PREFERRED DESIGN
Huron Church Road - California Avenue

PROPERTY ACQUISITION

WIDENED ROADWAY PAVEMENT

PROPERTY ACQUISITION TOWN OF LASALLE

FURTHER STUDY MAY BE REQUIRED AS A RESULT OF THE PROPOSED BORDER CROSSING IMPROVEMENTS AT HURON CHURCH ROAD

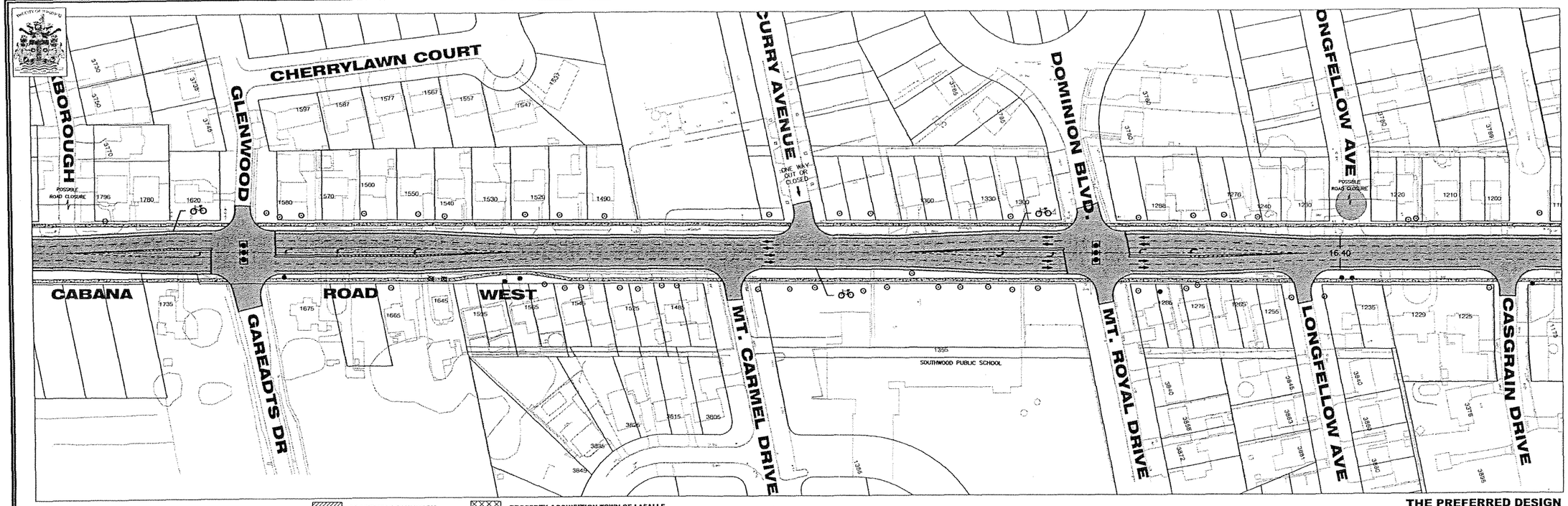
SCALE

EXISTING TRAFFIC SIGNAL

PROPOSED TRAFFIC SIGNAL

Marshall Macklin Monaghan | Golder Associates | Archaeologix Inc. | Gerry Waldron

THE PREFERRED DESIGN
California Avenue - Glenwood Avenue
Figure 10.3a



Marshall Macklin Monaghan | Golder Associates

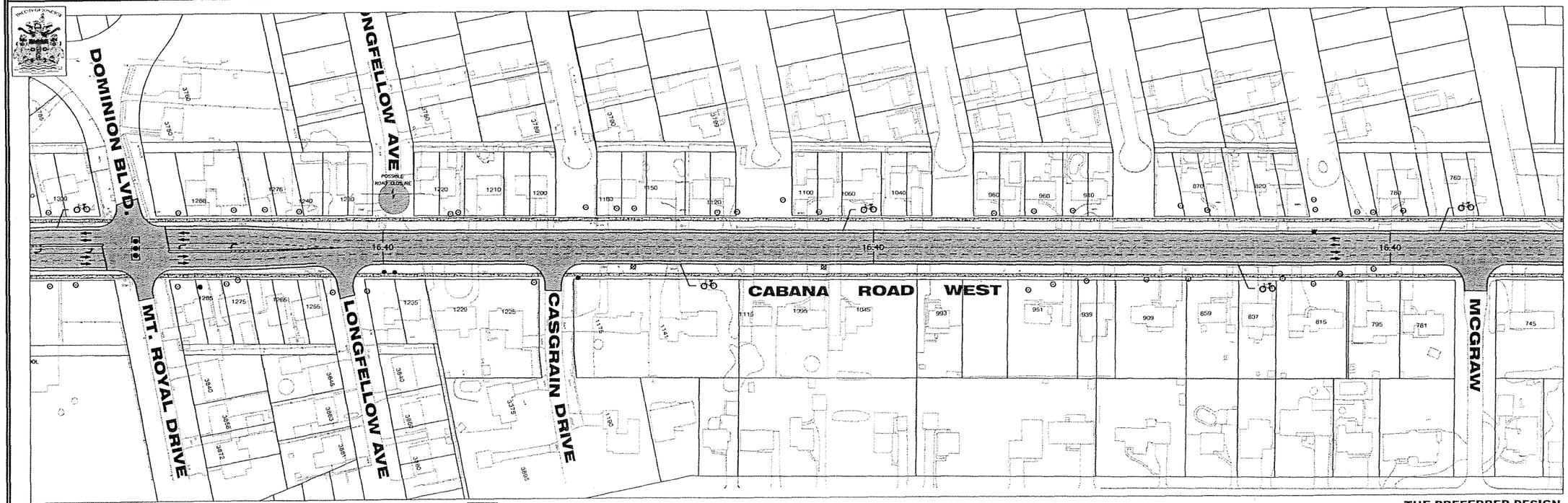
Archaeologix Inc.
Gerry Waldron

PROPERTY ACQUISITION
WIDENED ROADWAY PAVEMENT
PROPERTY ACQUISITION TOWN OF LASALLE
FURTHER STUDY MAY BE REQUIRED AS A RESULT OF THE PROPOSED BORDER CROSSING IMPROVEMENTS AT HURON CHURCH ROAD

SCALE

EXISTING TRAFFIC SIGNAL
PROPOSED TRAFFIC SIGNAL

THE PREFERRED DESIGN
Glenwood Avenue - Dominion Boulevard



Marshall Macklin Monaghan | Golder Associates

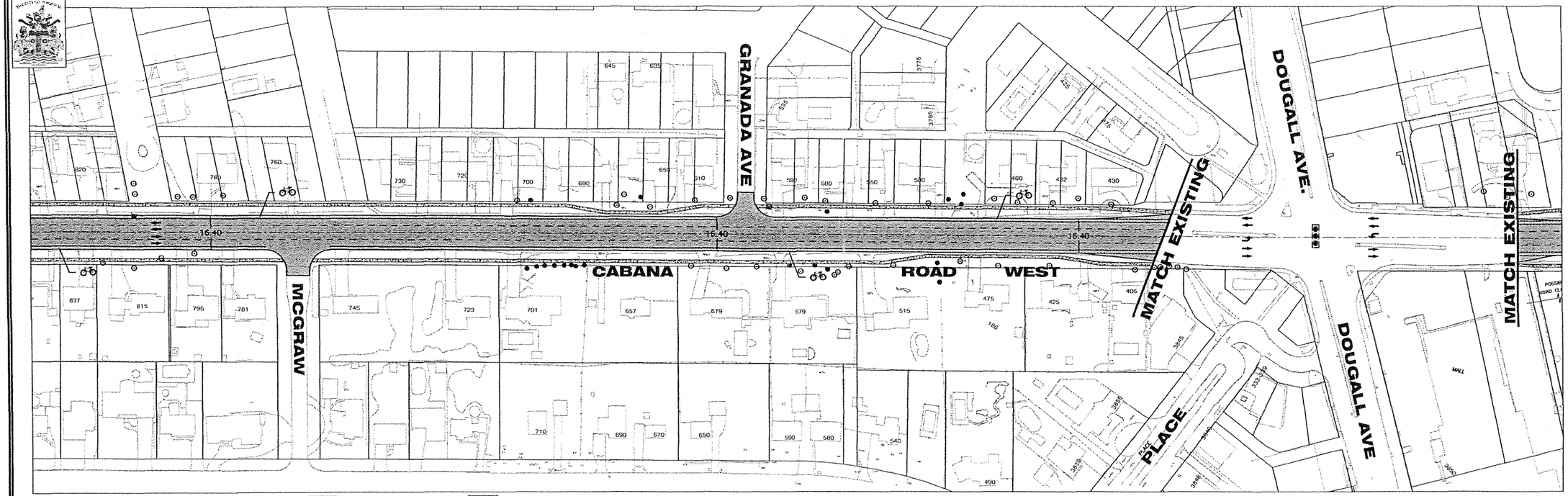
Archaeologix Inc.
Gerry Waldron

PROPERTY ACQUISITION
WIDENED ROADWAY PAVEMENT
PROPERTY ACQUISITION TOWN OF LASALLE
FURTHER STUDY MAY BE REQUIRED AS A RESULT OF THE PROPOSED BORDER CROSSING IMPROVEMENTS AT HURON CHURCH ROAD

SCALE

EXISTING TRAFFIC SIGNAL
PROPOSED TRAFFIC SIGNAL

THE PREFERRED DESIGN
Dominion Boulevard - McGraw Avenue
Figure 10.3b



Marshall Macklin Monaghan | Golder Associates

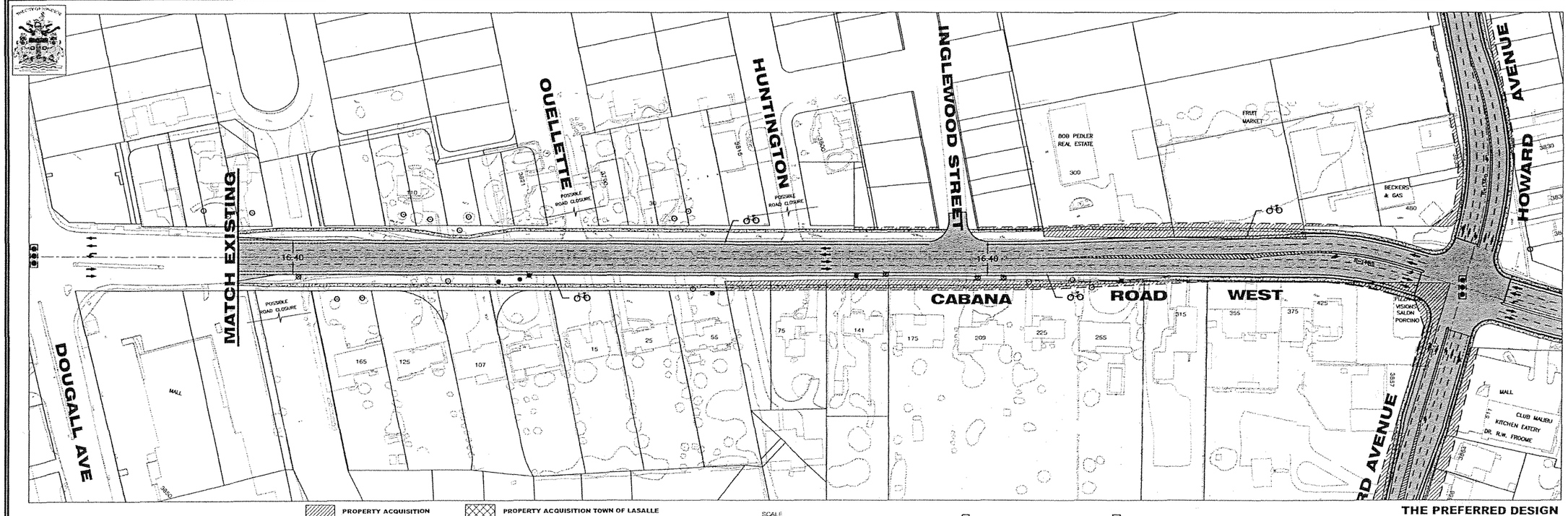
Archaeologix Inc.
Gerry Waldron

PROPERTY ACQUISITION
WIDENED ROADWAY PAVEMENT
PROPERTY ACQUISITION TOWN OF LASALLE
FURTHER STUDY MAY BE REQUIRED AS A RESULT OF THE PROPOSED BORDER CROSSING IMPROVEMENTS AT HURON CHURCH ROAD

SCALE

EXISTING TRAFFIC SIGNAL
PROPOSED TRAFFIC SIGNAL

THE PREFERRED DESIGN
McGraw Avenue - Dougall Avenue



Marshall Macklin Monaghan | Golder Associates

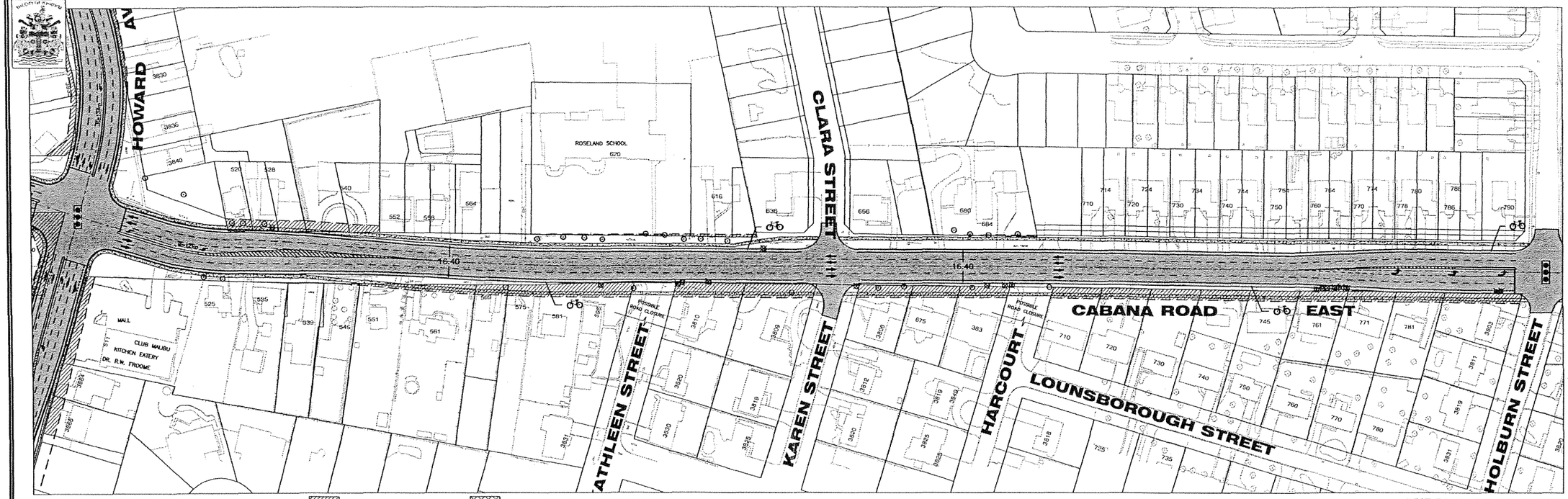
Archaeologix Inc.
Gerry Waldron

PROPERTY ACQUISITION
WIDENED ROADWAY PAVEMENT
PROPERTY ACQUISITION TOWN OF LASALLE
FURTHER STUDY MAY BE REQUIRED AS A RESULT OF THE PROPOSED BORDER CROSSING IMPROVEMENTS AT HURON CHURCH ROAD

SCALE

EXISTING TRAFFIC SIGNAL
PROPOSED TRAFFIC SIGNAL

THE PREFERRED DESIGN
Dougall Avenue - Howard Avenue
Figure 10.3c



Marshall Macklin Monaghan | AECOM | Golder Associates

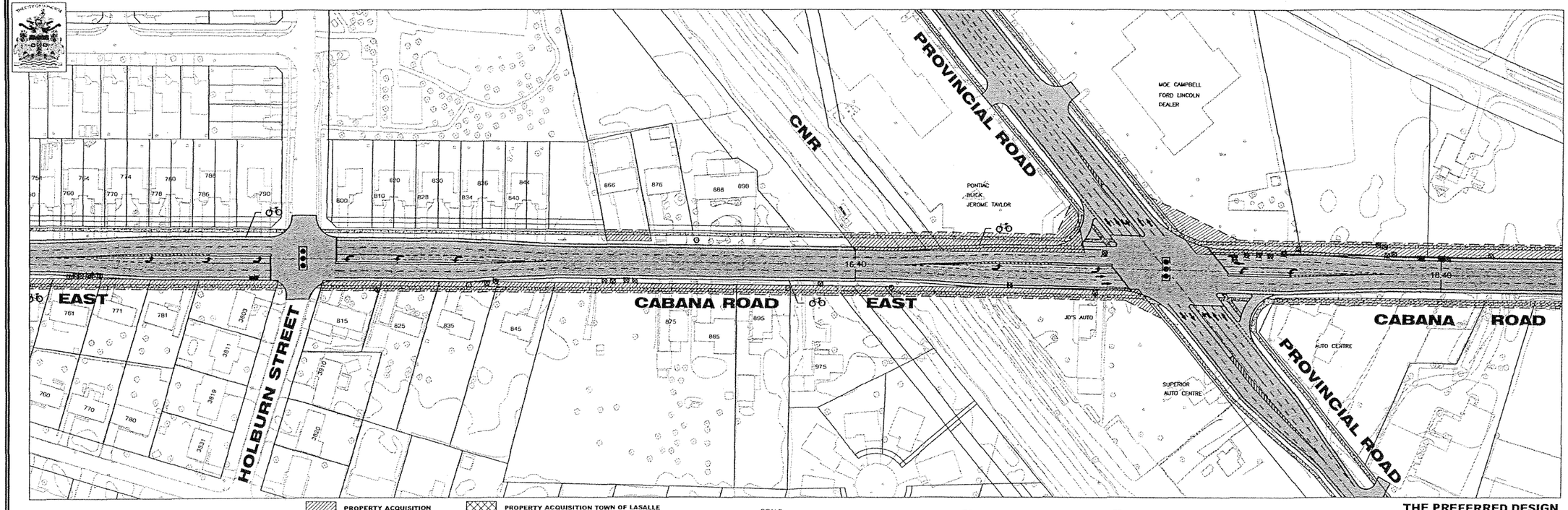
Archaeologix Inc.
Gerry Waldron

PROPERTY ACQUISITION
WIDENED ROADWAY PAVEMENT
PROPERTY ACQUISITION TOWN OF LASALLE
FURTHER STUDY MAY BE REQUIRED AS A RESULT OF THE PROPOSED BORDER CROSSING IMPROVEMENTS AT HURON CHURCH ROAD

SCALE

EXISTING TRAFFIC SIGNAL
PROPOSED TRAFFIC SIGNAL

THE PREFERRED DESIGN
Howard Avenue - Holburn Street



Marshall Macklin Monaghan | AECOM | Golder Associates

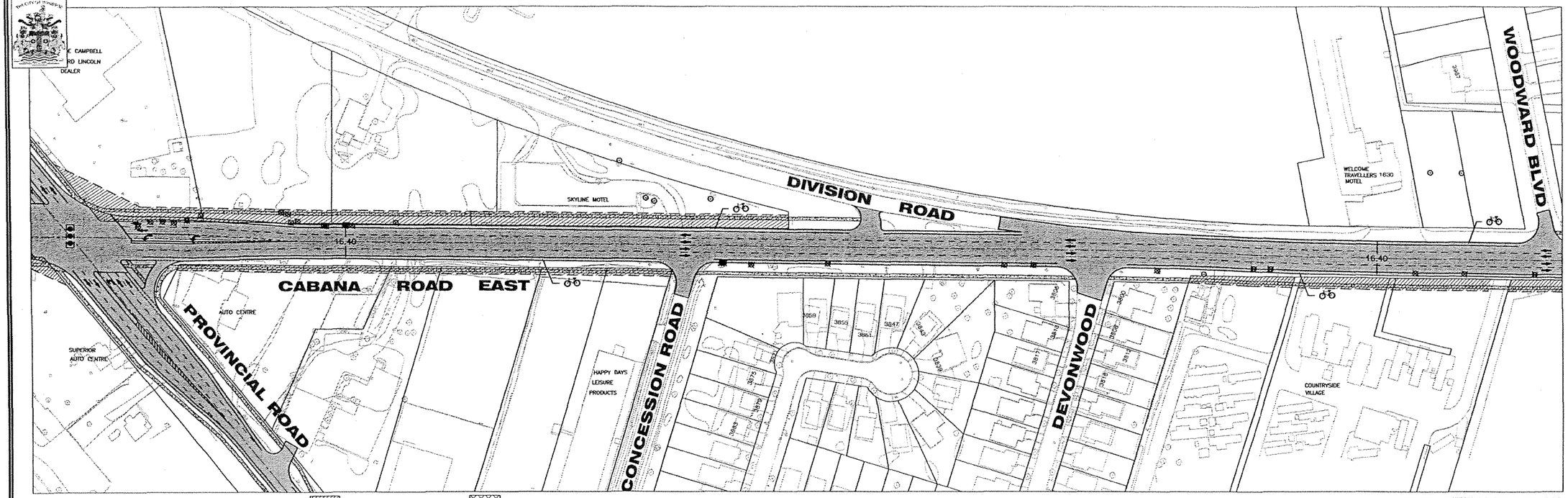
Archaeologix Inc.
Gerry Waldron

PROPERTY ACQUISITION
WIDENED ROADWAY PAVEMENT
PROPERTY ACQUISITION TOWN OF LASALLE
FURTHER STUDY MAY BE REQUIRED AS A RESULT OF THE PROPOSED BORDER CROSSING IMPROVEMENTS AT HURON CHURCH ROAD

SCALE

EXISTING TRAFFIC SIGNAL
PROPOSED TRAFFIC SIGNAL

THE PREFERRED DESIGN
Holburn Street - Provincial Road
Figure 10.3d



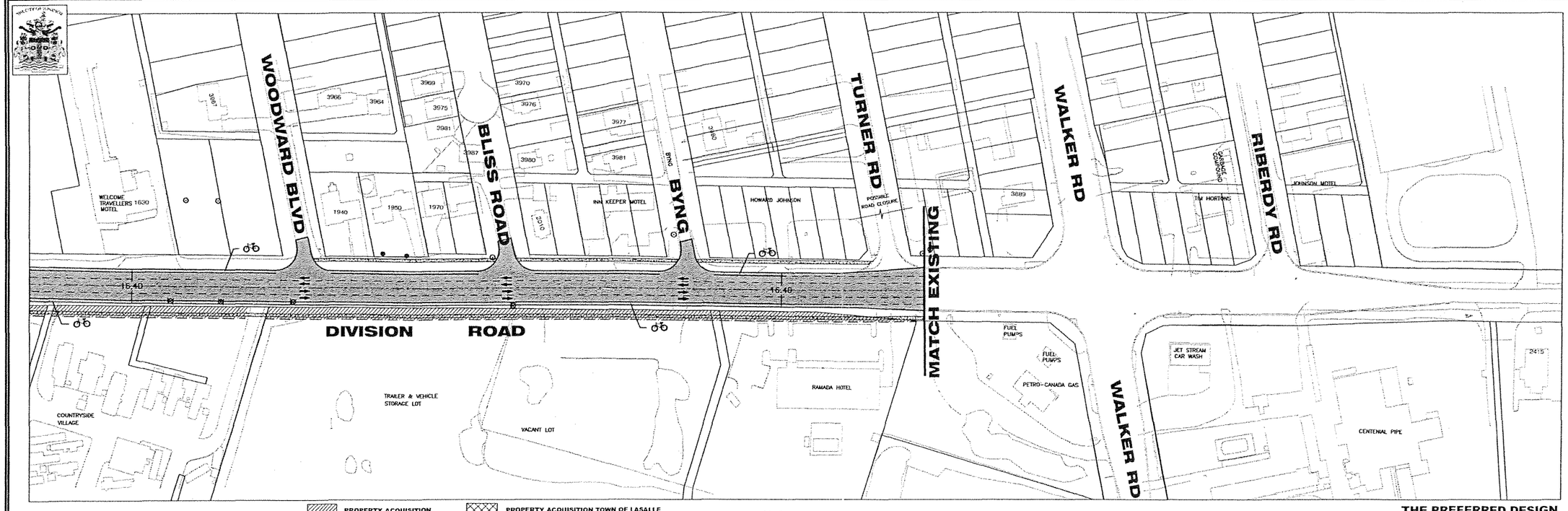
PROPERTY ACQUISITION
WIDENED ROADWAY PAVEMENT
PROPERTY ACQUISITION TOWN OF LASALLE
FURTHER STUDY MAY BE REQUIRED AS A RESULT OF THE PROPOSED BORDER CROSSING IMPROVEMENTS AT HURON CHURCH ROAD

SCALE

EXISTING TRAFFIC SIGNAL
PROPOSED TRAFFIC SIGNAL

Marshall Macklin Monaghan
Golder Associates
Archaeologix Inc.
Gerry Waldron

THE PREFERRED DESIGN
Provincial Road - Woodward Boulevard



PROPERTY ACQUISITION
WIDENED ROADWAY PAVEMENT
PROPERTY ACQUISITION TOWN OF LASALLE
FURTHER STUDY MAY BE REQUIRED AS A RESULT OF THE PROPOSED BORDER CROSSING IMPROVEMENTS AT HURON CHURCH ROAD

SCALE

EXISTING TRAFFIC SIGNAL
PROPOSED TRAFFIC SIGNAL

Marshall Macklin Monaghan
Golder Associates
Archaeologix Inc.
Gerry Waldron

THE PREFERRED DESIGN
Woodward Boulevard - Walker Road
Figure 10.3e

10.3.5 Potential Road Closures

The option of closing access or restricting certain movements, namely left-turns to and from these roads, was presented to the public for input at PIC #2. Potential road closures, which will require further investigation as described below, are shown in the preferred design in Figures 10.3a to 10.3e. The potential road closures are at Richardie Street, Roxborough Boulevard, Curry Avenue, Longfellow Ave, Ouellette Avenue, Huntington Avenue, Kathleen Street, Harcourt Street, and Turner Road. The possible road closure marked on the south side of Cabana Road east of Dougall Avenue is currently a right-of-way owned by the developer. Due to its proximity to Dougall Avenue no road access will be constructed here.

Public sentiment with regard to possible road closures was mixed, depending on where a particular individual lived and the resulting impact on the accessibility of their home. While eliminating or reducing access to local roads would reduce unwanted traffic infiltration, this may also restrict access for emergency services personnel and inconvenience residents in the immediate vicinity of the closure/restriction.

Accordingly, any road closures will need to be examined more thoroughly at the detailed design stage, complete with a more exhaustive public participation process for the individual streets that are being considered for closure.

10.3.6 Access

All existing driveways and points of access along the Cabana-Division Road Corridor will be retained. There may be opportunities to consolidate or refine some of the commercial driveways onto Cabana/Division Road, and this will be confirmed during the detailed design process. In some cases, where median islands are proposed to at signalized intersections, existing driveways that are very close to the intersection, usually within 30 metres, may need to be restricted to right in/right out movements only. Again, this will be established at the detailed design stage, through consultation with the affected property owners.

10.3.7 Railway Crossings / DRTP Corridor

The C.N. Rail lines that cross Cabana Road at-grade are part of the DRTP corridor. The DRTP has expressed their intention to grade separate all existing railway level crossings. These grade separations would impact Cabana Road; however, they would be funded by others including more senior levels of government.

10.3.8 Utilities

The option to bury existing aerial utilities was explored. Enwin functions as an aerial utility and would be unwilling to fund the burial of utility lines along the corridor. They have also indicated that tenants of the utility poles along the corridor, such as Bell Canada and Cogeco, would have to be accommodated if the burial of utilities was explored as an option. The entire cost to bury these utility lines would be at the City's expense. This option was not carried in the preferred design, therefore, because it is viewed as cost prohibitive.

The existing storm water drainage system is described in Appendix G. It is expected that stormwater underground utilities would be added to the length of roadway east of Provincial Road to the eastern study area limits, when this segment is reconstructed. Currently, an open-ditch system is in use for this segment of roadway, which is aesthetically unpleasing as well as an inadequate method of stormwater management.

The City of Windsor will also have to explore the option of adding sanitary sewers to the various segments of roadway west of Provincial Road that currently do not have sanitary sewer facilities. The City must consider whether future development east of Provincial Road will necessitate a complete connection from Provincial Road to the eastern study boundary.

Existing signalized intersections will remain signalized in the preferred design. Any additional signalization will be based on future traffic volumes and the satisfaction of warrant criteria at the detailed design stage. All future signalized intersections should include underground ductwork.

Based on the information obtained from local utilities, there will be no upgrades required to Enwin, Bell, or Cogeco.

10.3.9 Transit

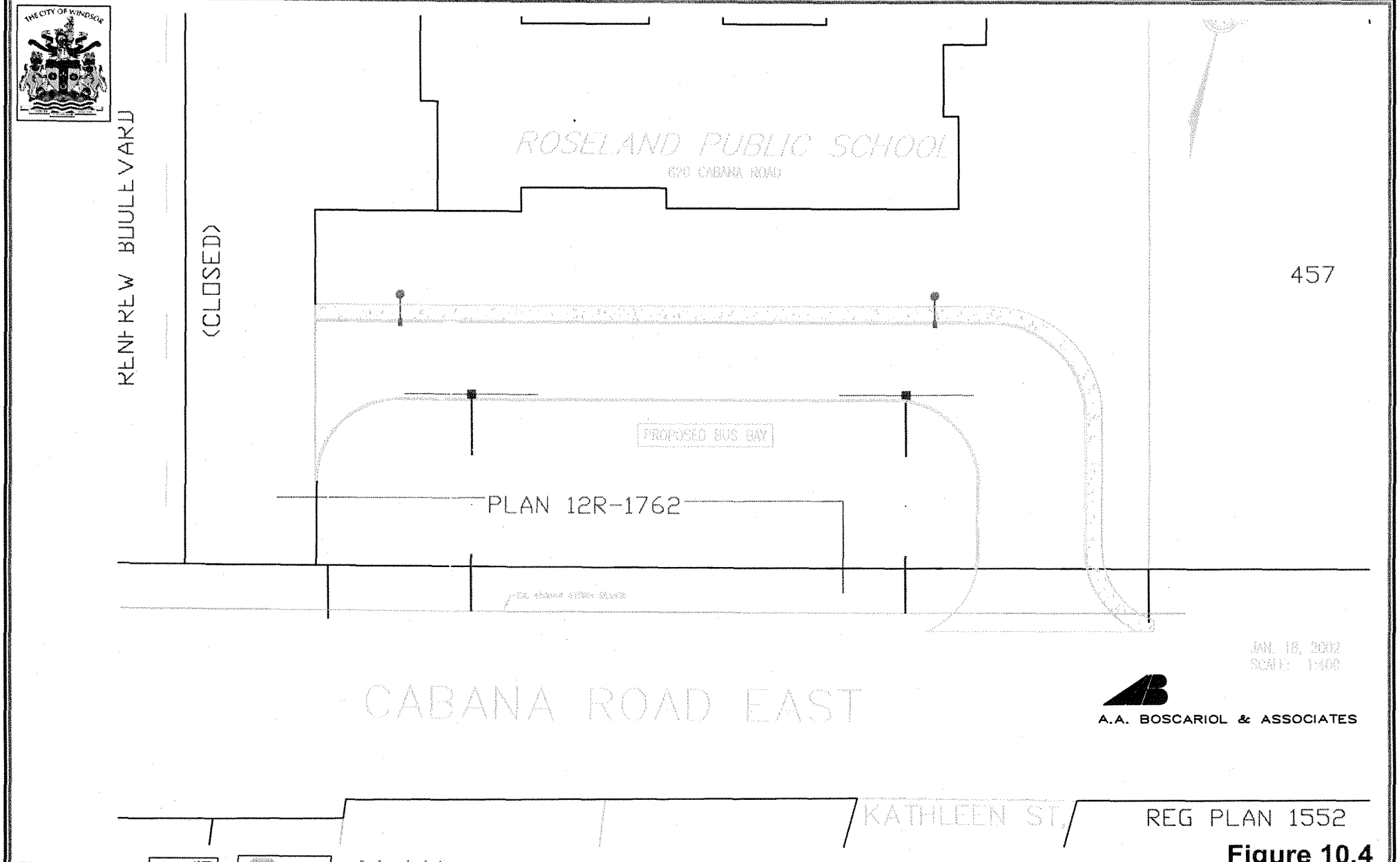
All existing bus stops will be retained. The possibility of additional bus stops being added in the future will be dependent on input from Transit Windsor during the detailed design stage. Buses along the existing bus route will be required to stop in the curb lane. The preferred road design does not provide lay-bys for buses at any of the existing bus stops.

10.3.10 School Access Improvements

Discussions with the school board relative to Roseland and Southwood Schools revealed the need for exclusive school bus loops to be located off the roadway. These bus loops would serve the dual function of improving traffic operations along Cabana Road while greatly improving safety for school children. Refer to **Figure 10.4** and **Figure 10.5** for an illustration of the preliminary design of these off street bus loading/unloading facilities. The design of these facilities would be finalized and funded by the school board.

10.3.11 Bicycle and Pedestrian Facilities

In accordance with the Bicycle Use Master Plan (BUMP) and as described in the Bikeway Traffic Control Guidelines (Transportation Association of Canada, December 1998: 50), 1.50 m bicycle lanes have been included as part of the preferred design. These bicycle lanes are paved and form part of the roadway structure along the northern and southern edges of the traveled area, however, they are separated from the motor vehicle lanes using solid white 100 mm wide pavement markings. These lanes would greatly improve cyclist safety since they will no longer have to travel in mixed traffic.

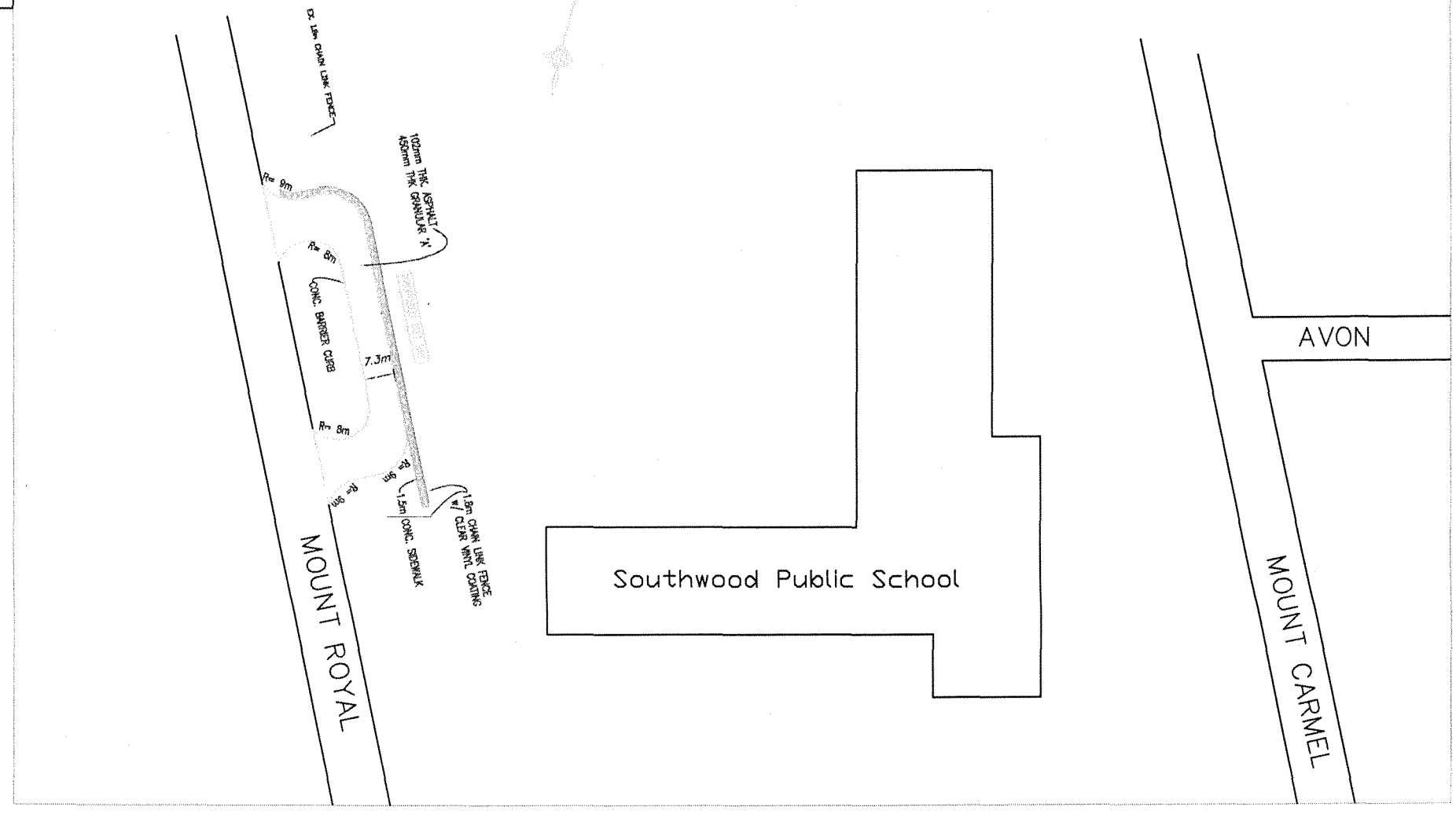


Marshall Macklin Monaghan

Golder Associates

Archaeologix Inc.
Gerry Waldron

Figure 10.4
Roseland Public School Driveway



Marshall Macklin Monaghan

Golder Associates

Archaeologix Inc.
Gerry Waldron

Figure 10.5
Southwood Public School Driveway

10.3.12 Corridor Design Elements

Any possible roadway improvements in the Cabana-Division Road Corridor should enhance the public right-of-way using landscaping, fixtures, boulevard and median treatments. Division Road has been designated as a Civic Way in the City of Windsor Official Plan. The detailed design should contain design elements that enhance the aesthetic significance of this stretch of roadway.

There will be no net loss of trees along the corridor (this report recommends the planting of at least two new trees for every one removed) and, where sufficient width exists, there may be an opportunity for consideration of additional plantings. Boulevards along the corridor should be lined with grass, except at strategic pedestrian locations where impressed or coloured concrete should be used to provide a visible contrast as well as a landing area for pedestrians and additional room for snow storage. A minimum separation of 0.5 m should be maintained between the sidewalk and back of curb to act as a splash area for pedestrian protection and snow storage. Lighting should be to arterial road standards.

10.4 Construction Phasing

The analyses of traffic conditions and demands have revealed that the key traffic "bottlenecks" are the major intersections along the Cabana-Division Road corridor. The first phase of construction should focus on improvements to the major signalized intersections, such as Huron Church Road, Dominion Boulevard, Provincial Road, and Glenwood Avenue. Subsequent phases of construction should focus on roadway improvements between major intersections in a manner that optimizes costs and minimizes traffic impacts due to construction constraints.

10.5 Cost Estimate

Due to financial constraints, it is expected that any road improvements in the Cabana-Division Road Corridor would have to be done in a phased approach with priority intersections or segments identified as having the greatest need for improvements being done first. A preliminary cost estimate was carried out for the preferred design that emerged from PIC #5 and is shown below in **Table 10.1**. The estimate was carried out using the assumption provided by City of Windsor staff that each contract would be valued at approximately $3,500,000. Contract #1 represents the Cabana Road and Howard Avenue intersection improvements. This contract is not included in the table because it is already under construction.

Table 10.1
Preliminary Cost Estimate
Preferred Design: Options D and 2

Contract	Location	Cost
2	Cabana Rd & Provincial Rd Intersection	$ 3,438,800
3	Cabana Rd & Huron Church Rd Intersection	$ 2,785,100
4	Cabana Rd & Dominion Blvd Intersection	$ 1,565,800
5	Dominion Blvd to Dougall Ave	$ 3,159,000
6	Dougall Ave to Howard Ave	$ 1,795,800
7	Huron Church Rd to Dominion Blvd *	$ 2,536,200
8	Howard Ave to Provincial Rd	$ 2,965,300
9	Provincial Rd to Walker Rd	$ 2,965,300
	GRAND TOTAL	**$ 21,211,300**

* Includes the Cabana Road and Glendwood Avenue intersection improvements

It must be noted that the cost of the contract to re-construct the intersection of Cabana Road at Howard Avenue was not included in this preliminary cost estimate, as Stantec Consulting Limited carried out this assignment as part of a separate study. The estimate for the construction of this intersection is $1,985,000.

The prices included in Table 10.1 do not reflect the cost of any necessary property acquisition, utility relocation, or taxes, which will be examined further at the detail design portion stage.

10.6 Natural Environmental Factors

10.6.1 Floral and Faunal Effects

The sidewalk has been designed to meander around existing mature trees in order to preclude their removal. The centreline of the road has also been slightly shifted to avoid significant trees and to minimize property acquisition, which is shown in Figure 10.1.

The removal of trees along the corridor for the purpose of improving the roadway will negatively impact the streetscape. In order to mitigate this problem, the study team has proposed to replant at least 2 trees for each tree that is removed so that no net loss of trees will occur along the corridor. *Thus, a minimum of two trees will be planted for each removed.*

10.6.2 Social-Cultural and Economic Environment Effects

The preferred design will have a great benefit on the community, including:

- Greater access to transit;
- The ability to safely travel by bicycle;
- The ability for children to safely ride bicycles or walk to and from school;
- Improved safety for residents when exiting their driveways directly onto Cabana Road;
- Improved flow of consumers and goods along this vital corridor that serves important commercial areas in the southeast portion of the City; and
- Improved traffic operations for commuters, customers and visitors to the City of Windsor

By modifying the original four-lane roadway designs from lane widths of 3.75m to 3.35 m, and by selecting the "hard edge" options for the perimeter of the roadway, it is expected that the residential character of the western portion of the study area will be maintained. The preferred design solution has a total roadway width of 16.4m (4 through lanes 3.35m wide, 2 bike lanes 1.5m wide), which is only 2.4m wider than the three-lanes with bike lanes solution having the same width of through lanes (2 through lanes 3.35m, 1 CTWLTL 4.35m, 2 bike lanes 1.5m wide).

The preferred road design will have positive effects on the economic conditions of the community. A reduction in traffic congestion may encourage consumers to use businesses along the corridor due to greater ease of access. This road section will also benefit commuters with a decrease in the delays that motorist currently face. Similarly, bike lanes and improved transit access may contribute to the local economy by providing access to local businesses to a broader spectrum of consumers and employees.

The local economy may also benefit from the location of additional businesses along the corridor. Greater personal vehicle, transit and bicycle access may be incentives for additional businesses to locate along the corridor, which would benefit the local economy and the municipality by providing additional employment opportunities.

A Noise Impact Study concluded that the existing noise sensitive land uses along the Cabana-Division Road corridor will not be impacted by future traffic resulting from the proposed widening of Cabana Road. Future noise level increases associated with the widening will be less than 5 decibels. In addition, the improved traffic flow along Cabana Road is expected to reduce the noise impacts of the corridor, since there will be fewer stops and starts.

Similarly, the improved traffic flow along Cabana Road is expected to reduce the air quality impacts, since there will be fewer stops, starts and idling vehicles.

10.6.3 Construction Related Environmental Effects

There will be a requirement during the detailed design phase of this project to specify the necessary mitigation measures such as preserving driveway access to all homes, businesses and institutional land uses along the corridor during construction. Further, it will be necessary to provide erosion and sedimentation controls, a tree protection/preservation plan, a traffic management plan and a property protection plan prior to construction. In addition, approvals will be required from the M.O.E. for storm sewer connections, and a Board Order will be necessary from Transport Canada for the widening of the existing railway level crossings.

10.7 Environmental Mitigation

10.7.1 Summary of Mitigation Measures

The following is a summary of the mitigation measures considered during the development of the preferred design:

- Sidewalks meander around existing mature trees to avoid their removal, wherever possible;
- Reduced lane widths have been recommended to reduce the overall width of pavement and maintain the residential character of the western part of Cabana Road;
- The preferred road was designed in a manner that minimizes the need for property acquisition;
- Provisions were made for various types of transportation, such as transit and bicycling; and
- The impact of the road widening was mitigated through allowance for boulevard improvements that enhance the pedestrian environment;
- Due to the results of a Noise Impact Study, it is not expected that the road widening will require noise mitigation measures; and
- There will be no deterioration in air quality as a result of this road widening. In fact, there should be a net improvement in the quality of the ambient air in this corridor.