5.0 PREFERRED DESIGN

5.1. Description of the Preferred Design

In Chapter 4, alternative design concepts were developed and evaluated and after a review of the public and agency comments, the recommended design was adopted as the Preferred Design for future implementation.

This chapter identifies the key elements of the Preferred Design, the property requirements, a construction staging strategy and a summary of cost by stage. Also provided are sketches indicating areas where intra-parcel access is currently available and would be appropriate to mitigate negative access impacts.

5.1.1 Roadway Design

The Preferred Design is shown in plan on Figures 5.1(a)-(k). The key elements of the design are:

5.1.1.1 Tecumseh Road East

- 3 through lanes in both directions from west of Jefferson Boulevard to east of Banwell Road.
- Left turn storage lanes at all intersections.
- Raised median 5 m wide left turn storage lane developed in median area to maintain through lanes as straight as possible.
- Basic 36 m right-of-way.
- All intersections signalized and interconnected for synchronization.
- Most signals will have advance green arrows (this will facilitate turnarounds at intersections).
- 1.5 m sidewalk on both sides throughout potentially wider in areas of heavy traffic or bus bays.
- Level crossing of the CNR spur track.
- Widening of existing bridge over Little River
- New pedestrian/cyclist pedestrian overpass at Little River.
- Bus bays appropriate to existing and future conditions.
- intra-parcel/service road access facilitated wherever possible.



During the public comment part of Phase 3, one property owner who leases commercial property west of Jefferson Boulevard on Tecumseh Road E. expressed concerns about being able to re-lease his properties in light of the need to acquire his buildings for right-of-way purposes. An interim construction stage was agreed to and is shown on Figure 5.1(a). This allows property negotiations to proceed when mutually agreeable conditions exist, but also allows the City to proceed with its capital works program.

5.1.1.2 Jefferson Boulevard

- 2 through lanes in both directions from just south of Empress Street to south of Rose Avenue.
- 4 m two-way-left-turn lane to provide access to abutting properties without restricting through traffic.
- 1.5 m sidewalks on both sides
- Northbound/southbound left turn lanes at Rose Avenue.
- Existing bus bays maintained and new bays where appropriate

5.1.1.3 Lauzon Road

- 2 through lanes in both directions from south of the CNR to the McDonald's service road south of Tecumseh Road East.
- Northbound/southbound left turn lanes provided at entrance to Tecumseh Mall and Eastown Mall.
- Dedicated bikelane provided for both directions.
- The unsignalized mail entrances on both sides have no left turn in or out which will reduce accidents and congestion.
- Existing bus bays maintained and new bus bays where appropriate.

5.1.2 Intersections

All existing intersections will be signalized when reconstructed, including interconnection of signals to facilitate synchronization and therefore better traffic flow. As shown in the Traffic Analysis and Planning Report, pedestrian walk cycles typical for 7 lanes of pavement have been included in the signal timing analysis. The medians at intersections will serve as a pedestrian safety area for those unable to cross the full pavement width in one signal cycle.

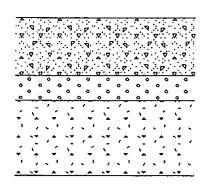


The intersection configuration shown on Figures 5.1(a)-(k) are based on typical dimensions/locations for crosswalks, stop bars and raised median bullnoses. During final design truck turning templates should be applied to appropriate intersections to confirm the geometry.

5.1.3 Pavement Design

The report prepared by Golder Associates Ltd. for this project included alternative pavement designs. Although the matter will need confirmation during final design, for purposes of this study the concrete pavement option was adopted. Cost estimates should therefore be conservatively high. The following sketch shows the proposed concrete pavement design.

PAVEMENT DESIGN



230 mm CONCRETE PAVEMENT

100 mm CLEAR STONE DRAINAGE LAYER

300 mm GRANULAR 'A'

This pavement design was added to the typical design cross sections as shown on Figure 5.2.

5.1.4 Bus Bays

The Traffic Engineering and Public Works Departments of the City of Windsor with Transit Windsor, routinely examine the need for additional bus bays to improve transit service and traffic flow. Existing bus stops and bus bays will be maintained and Figures 5.1(a)-(k) schematically show proposed stops and bays. These locations will be reviewed during final design regarding overall feasibility and exact location.



5.1.5 Property Acquisition

Generally, the additional property required for the new basic 36 m right-of-way consists of narrow strips immediately adjacent to the existing right-of-way.

The property requirements are shown on Figure 5.3(a)-(k).

Property acquisition will begin immediately in areas where development is proceeding or where affected properties are being sold. Part of property requirements in development areas may be acquired through the Site Plan Control process. Otherwise, a negotiated sale will be required.

As the Staging Plan is implemented, the City will initiate negotiations to purchase the necessary properties based on the City's appraised value. If necessary, the City will provide for up to two additional independent appraisals to establish property values.

Following adoption of this report by Council, it is recommended that the City proceed with preparation of a legal property plan to identify and protect the right-of-way.

5.2. Construction Staging and Costs

The project involves approximately 4.5 km of 6 lane divided roadway and 1.3 km of 4 lane roadway. Such a large project must be broken down into stages which will be financially feasible for the City. An upper limit for new construction was set in the order of \$2.5 million.

5.2.1 Costing Approach

5.2.1.1 New Construction

The cost estimates used in this study were based on unit prices derived from consideration of the City's 1995 Construction Price List and averages from recent City contracts tendered by LCBA. Those unit prices for major Items are shown in Appendix D.

Cost estimates per meter of roadway were estimated based on the typical cross-sections and the above unit prices.



For planning purposes storm drainage costs have been estimated based on providing four catch basins and 30 metres of connecting pipe every 65 m. For Lauzon Road and Jefferson Boulevard which are planned for only two through lanes, the spacing was increased to 75 m.

West of Little River, existing trunk sewers will receive the storm runoff. No additional allowance was made for local collector sewers. East of Little River, a storm sewer system exists on the south side of the right-of-way which currently drains the right-of-way from about Robinet Lane back to Little River and is deemed to be adequate for the future widening. East of Robinet Lane, new storm sewers will be required to drain the right-of-way.

The unit price allowed for each set of traffic signals assumes that new equipment is required. There may be salvage value in the existing equipment for other signals in the City, but no discount was included.

5.2.1.2 Utilities

Discussions with the various utility companies and service providers regarding their infrastructure located within the right-of-way yielded preliminary relocation and/or expansion plans for the respective systems as noted.

Windsor Utilities Commission - Water Division

In a review of the preferred design it was indicated by WUC - Water Division that a substantial amount of upgrading to the existing water distribution system would be desirable.

West of Little River, it is proposed to abandon the existing 6" and 12" watermains under the existing pavement in favour of two 200 mm (8") mains, one on each side of Tecumseh Road East. This would facilitate new development in the area and improve fire protection by avoiding the need to run hoses across Tecumseh Road East. East of Little River, the proposal was to provide a new 300 mm (12") watermain.

To simplify estimation of costs, an all-inclusive cost of \$325/m (\$100/ft.) for 200 mm (8") watermain and \$400/m (\$120/ft.) for 300 mm (12") watermain was provided by WUC. These



unit costs were applied on a stage-by-stage basis for budgeting purposes. Where feasible, necessary work in more than one stage may be carried out.

Windsor Utilities Commission - Hydro Division

As noted earlier, the current location of hydro distribution poles along the corridor is such that any form of roadway widening would cause impacts. The preferred design was reviewed with WUC - Hydro Division to ascertain the affected areas. Unit costs for budgeting purposes were provided as follows:

•	Primary line	- \$230/m (\$70/ft.)		
•	Transformer relocation	- \$ 5,500 ea.		
•	Lateral poles	- \$10,000 ea.		

The cost to construct new street lighting is included under New Construction.

Bell Canada and Shaw Cable

The aerial plant of these companies is located on WUC - Hydro poles. Therefore, if hydro poles are relocated, telephone and cable equipment will also require relocation. Budgeting costs provided by Bell Canada are:

•	new aerial cable	- \$15/m
•	new underground cable	- \$20/m

Costs provided by Shaw Cable are:

•	aerial cable	- \$15/m
•	underground cable	- \$30/m

Union Gas

Where Union Gas plant exists under the existing roadway, cover was assumed to be adequate. In boulevard areas where widening of Tecumseh Road East is required, existing cover is assumed to be not adequate and those sections were identified for relocation



The unit costs used for budgeting purposes are:

250 mm (10") - \$350/m
 200 mm (8") - \$300/m
 150 mm (6") - \$250/m
 75 mm (3") - \$175/m

5.2.1.3 Property

Unit prices for various classifications of raw land were provided by the Property Department as part of the evaluation of alternative design concepts. Lump sum costs were also provided for situations where parking and/or buildings are affected. The property requirements associated with the Preferred Design are shown on Figures 5.3(a)-(k) relative to the various construction stages.

The unit costs were applied to the areas shown on Figure 5.3 (a)-(k) and are summarized by construction stage in Table 5.1.

5.2.2 Preliminary Construction Staging

The portion of Tecumseh Road E. from Jefferson Road to Lauzon Road serves the function of distributing north/south traffic, as well as the obvious east/west travel needs. This results from the lack of north/south roads crossing the CNR between Jefferson Boulevard and Lauzon Road and the lack of continuous east/west roads north of the CNR.

In selecting the first construction stage for this project, future traffic flows (Figures 3.7 A-G) and accident rates (Tables 3.5 and 3.6) were examined. Two main candidate areas are evident - the Jefferson Boulevard intersection and the Lauzon Road intersection. Because improvements at the Lauzon Road intersection would also improve the north/south distribution problem noted above, a major upgrade at the Lauzon Road/Tecumseh Road E. was selected as the first construction stage, as shown on Figure 5.4. It will also have a substantial contract value (\$2.7 million) as improvement of a considerable length of Lauzon Road is included.



Selection of the next construction stage is important from the aspect of maximum improvement to the overall network. Maximum benefit would be achieved through the linking of stages, rather than carrying out a number of spot improvements throughout the project with little or no benefit to the overall network.

in this study, it was assumed that Lauzon Parkway has been extended across the CNR to merge with Lauzon Road at Tranby Avenue and the traffic assignments and turning movements reflect that assumption. Based on the above, Stage 2 was selected to continue westerly from the first stage. After completion of Stage 2, the length of continuous 3-lane section in the critical eastbound direction will be substantially increased.

At the outset of the discussion on construction staging, it was noted that the need for improvements at Jefferson Boulevard ranked very close to Lauzon Road. Accordingly, improvements in that area should be carried out as Stage 3.

The above stages would take between 4 - 5 years to complete. During that time, it is assumed that development in the East Riverside Community has continued and there will be increasing pressure to improve the Banwell Road/Tecumseh Road E. intersection. Therefore, it may be necessary to interrupt the completion of the 6-laning west of Little River. However, the certainty of needing 6 lanes on the west section as soon as possible outwelghed considerations for Banwell Road and Stage 4 was selected as an easterly continuation of Stage 3. At the end of Stage 4, 3 continuous lanes in the eastbound direction would be available throughout the westerly section of the project. Even though the section of Tecumseh Road E. between Roseville Gardens and Lauzon Parkway is not yet included in the staging plan, that section already has a median to control left turns and has 3 lanes in the east bound direction.

By the end of Stage 4, it is assumed that improvements will be definitely needed at Banwell Road and construction in that area was identified as Stage 5.

Beyond Stage 5, selection of construction stages becomes more difficult because of the variabilities involved in development in the area. The remaining stages are shown on Figure 5.4 and the limits identified below.



Stage ! - Complete Lauzon Road improvements

Tecumseh Road E. improvements from about Sta. 2+730 to about Sta. 3+120.

Stage 2 - Tecumseh Road E. Improvements from about Sta. 2+310 to about Sta. 2+730.

- Includes connections at Annie St./Tecumseh Mall and Lauzon Parkway.

Stage 3 - Tecumseh Road E. improvements from Sta. 1+000 to about Sta. 1+330.

Jefferson Boulevard improvements from north limit to about 190 m south of Tecumseh Road E. (including reconstruction of railway crossing)

Stage 4 - Tecumseh Road E. Improvements from about Sta. 1+330 to about Sta. 1+800.

Stage 5 - Tecumseh Road E. Improvements from about Sta. 5+220 to about Sta. 5+680.

- Includes connection to Banwell Road north and south.

Stage 6 - Tecumseh Road E. improvements at Forest Glade Drive from about Sta. 3+970 to about sta. 4+270

includes connection at Forest Glade Drive.

Stage 7 - Tecumseh Road E. improvements from about Sta. 1+800 to about Sta. 2+310.

 Includes connections to Roseville Garden Drive and East Park Centre Drive.

Stage 8 - Jefferson Boulevard improvement from about 190 m south of Tecumseh Road E. to about 100 m south of Rose Avenue.

- Includes connections to Rose Avenue and Roseville Garden Drive.



Stage 9 - Tecumseh Road E. improvements from about Sta. 4+610 to about Sta. 5+220.

- Includes connection to Robinet Lane and Clover Street,

Stage 10 - Tecumseh Road E. improvements from about Sta. 4+278 to about Sta. 4+610.

Stage 11 - Tecumseh Road E. Improvements from about Sta. 3+490 to about Sta. 3+970.

Stage 12 - Tecumseh Road improvements from about Sta. 3+120 to about Sta. 3+490.

- Includes widening of bridge over Little River and new pedestrian overpass.

It is noted that some of the stages have new construction costs which are less than the \$2.5 million threshold. If funding permits, some of the contracts may be combined to advance the overall completion date.

All construction stages are shown on Figure 5.3 with approximate station limits.

5.2.3 Cost Summary

Based on the above construction staging strategy and the previously developed unit costs, a cost summary was developed as shown in Table 5.1. Added to the cost was our allowance for contingencies (15%) and engineering (10%). Quality assurance during construction was not included.

The estimated total utility relocation costs are also shown by stage. Application of cost sharing formulas will be done prior to or during final design.

5.3 Completion of the EA Process

Following adoption of these recommendations by the City, a Notice of Completion was published in the Windsor Star on December 17th, 1996 which provided information



regarding the 30 day review period and provsions contained in the Class EA process to allow the public and/or review agencies an opportunity to make for bump-up requests regarding objections to the recommendations made on the ESR or to request additional information. Also on December 17, 1996 this ESR was filed with the Clerk of the City of Windsor and placed on the public record to commence the 30 day review period. If reasonable concerns are raised, the proponent (the City of Windsor) is required to attempt to resolve those issues with the party raising them. If no concerns are raised within the 30 day period, the project may be considered approved.

5.4 Future Activities

Upon completion of the Class EA process, the City may proceed to the last phase of the Class EA process - Phase 5. Phase 5 involves the completion of contract drawings and specifications, tendering of contracts and monitoring of construction activities. These monitoring activities ensure that the transportation objectives of the contract are met as well as the commitments made in the ESR to provide measures to mitigate environmental impacts. Those measures were identified in Chapter 4 and samples are provided in the Appendices.



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COST SUMMARY TECUMSEH RD. E. CLASS EA

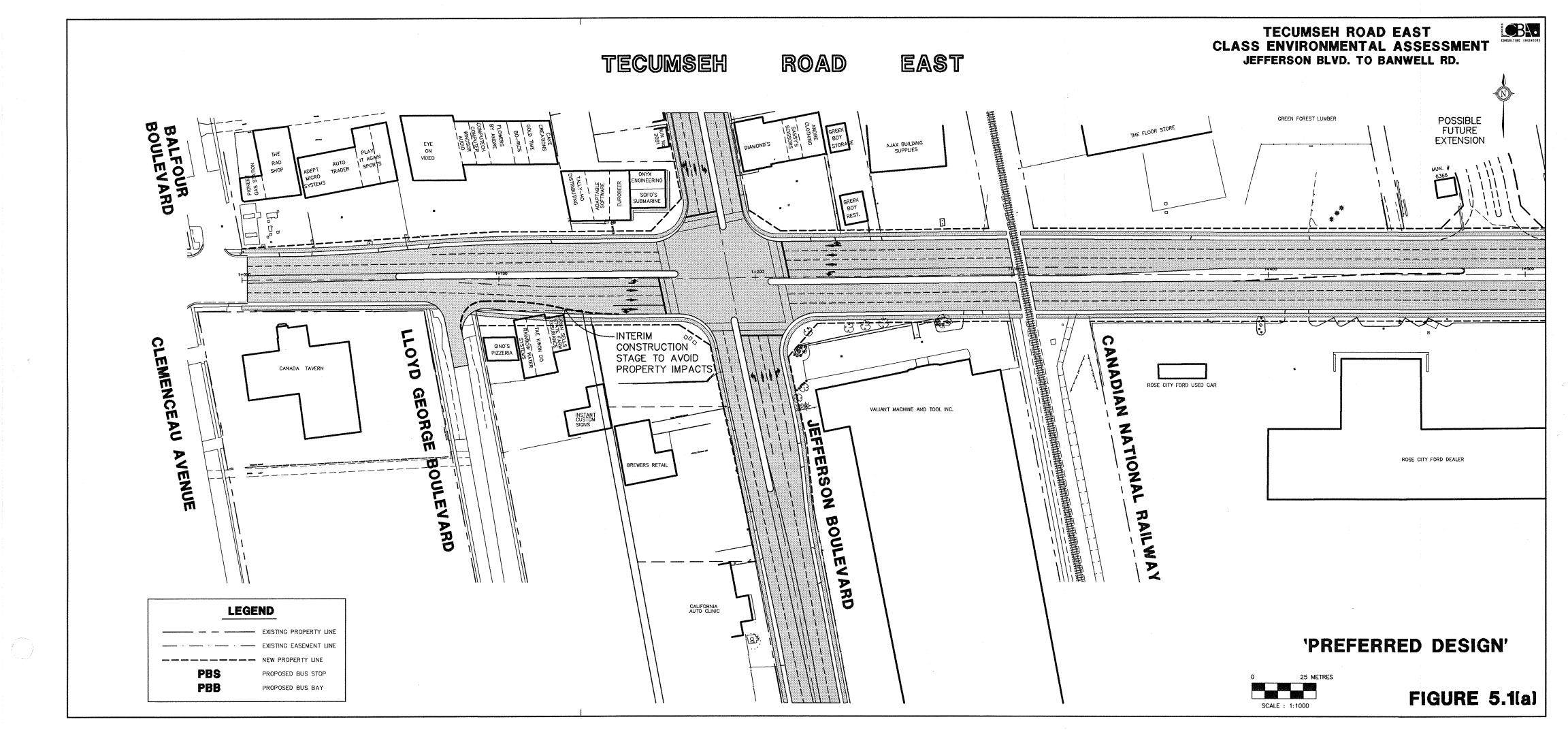
JEFFERSON BLVD. TO BANWELL RD. (\$ MILL.)

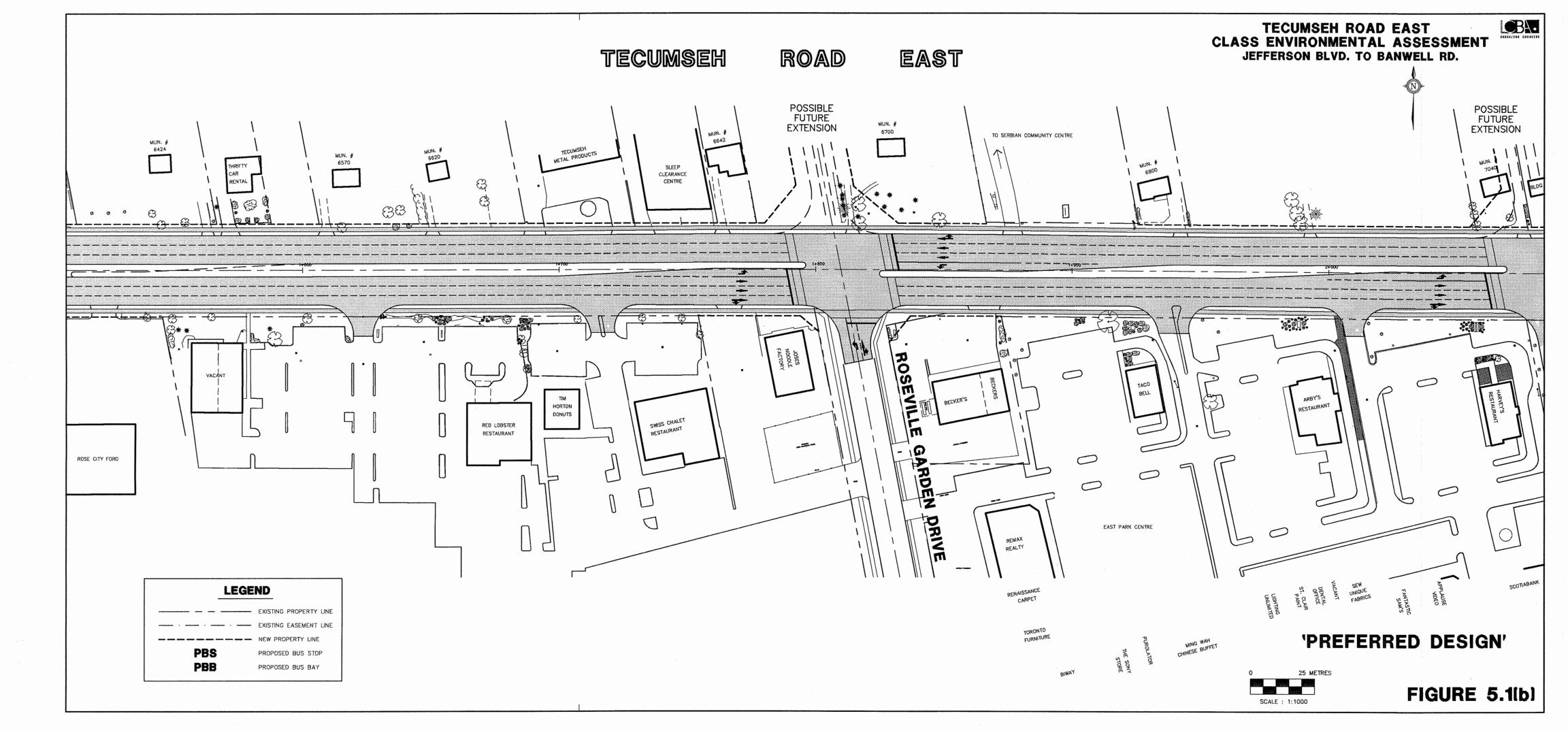
	NEW CONSTRUCTION	PROPERTY	ENGINEERING AND CONTINGENCIES(1)	TOTAL COST	UTLITY RELOCATION COST(2)
STAGE 1	\$2.70	\$0.06	\$0.68	\$3.43	\$0.62
STAGE 2	\$1.90	\$0.03	\$0.48	\$2.40%	\$0.58
STAGE 3	\$2.20	\$0.74	\$0.55	\$3.49	\$0.52
STAGE 4	\$1.60	\$0.09	\$0.40	\$2.09	\$0.46
STAGE 5	\$1.80	\$0.06	\$0.45	\$2.31	\$0.40
STAGE 6	\$1.10	\$0.02	\$0.28	\$1.39	\$0.31
STAGE 7	\$2.00	\$0.03	\$0.50	\$2.530	\$0.52
STAGE 8	\$1.20	***	\$0.30	\$1.50	
STAGE 9	\$2.50	\$0.06	\$0.63	\$3.18	\$0.57
STAGE 10	\$1.30	\$0.01	\$0.33	\$163	\$0.29
STAGE 11	\$1.80	\$0.09	\$0.45	\$2.343	\$0.44
STAGE 12	\$1.90		\$0.48	\$2.38	\$0.08
	\$22.00	\$1.17	\$5.50	\$28.67	\$4.80

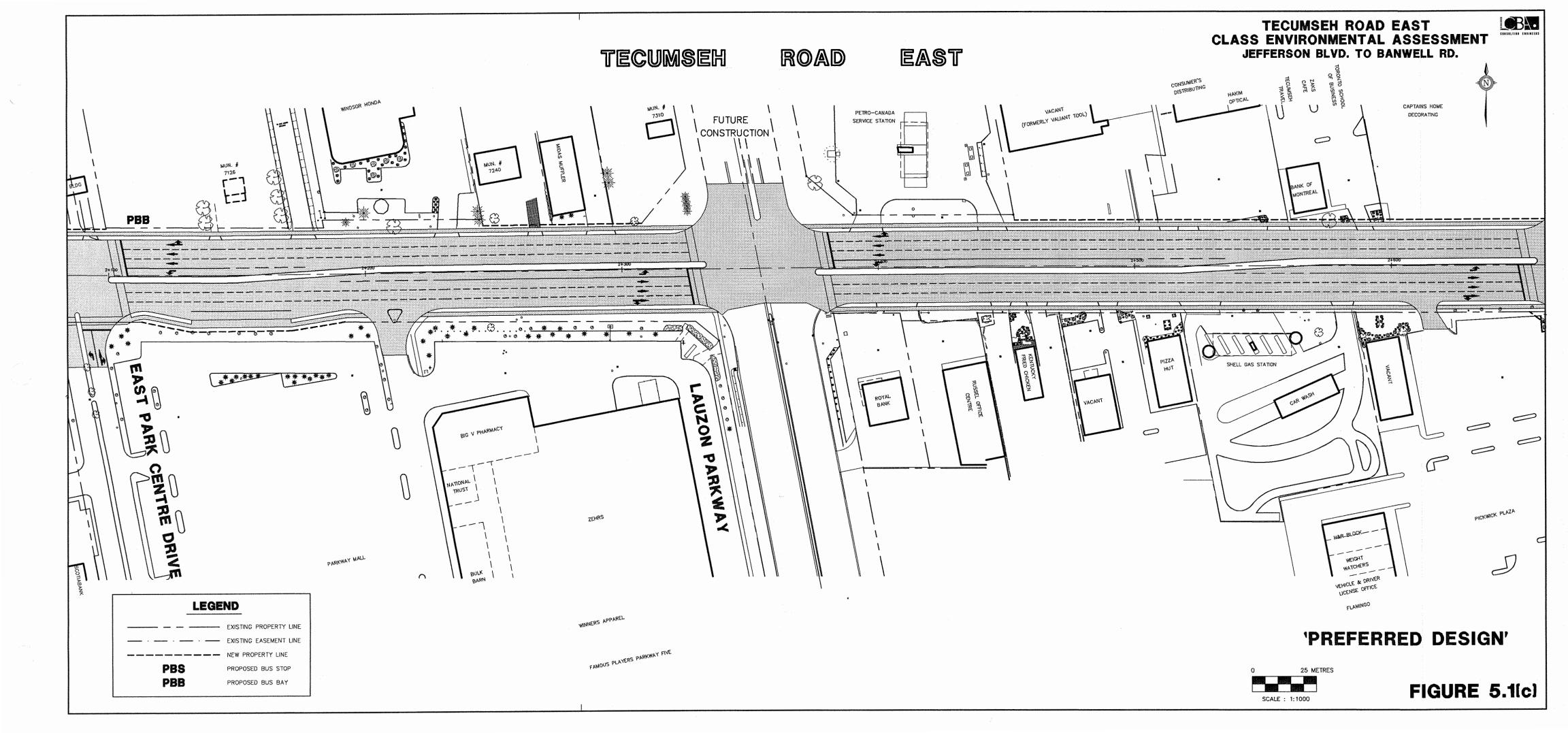
^{(1) 10%} of total represents estimated engineering costs, 15% of total represents a contingency allowance.

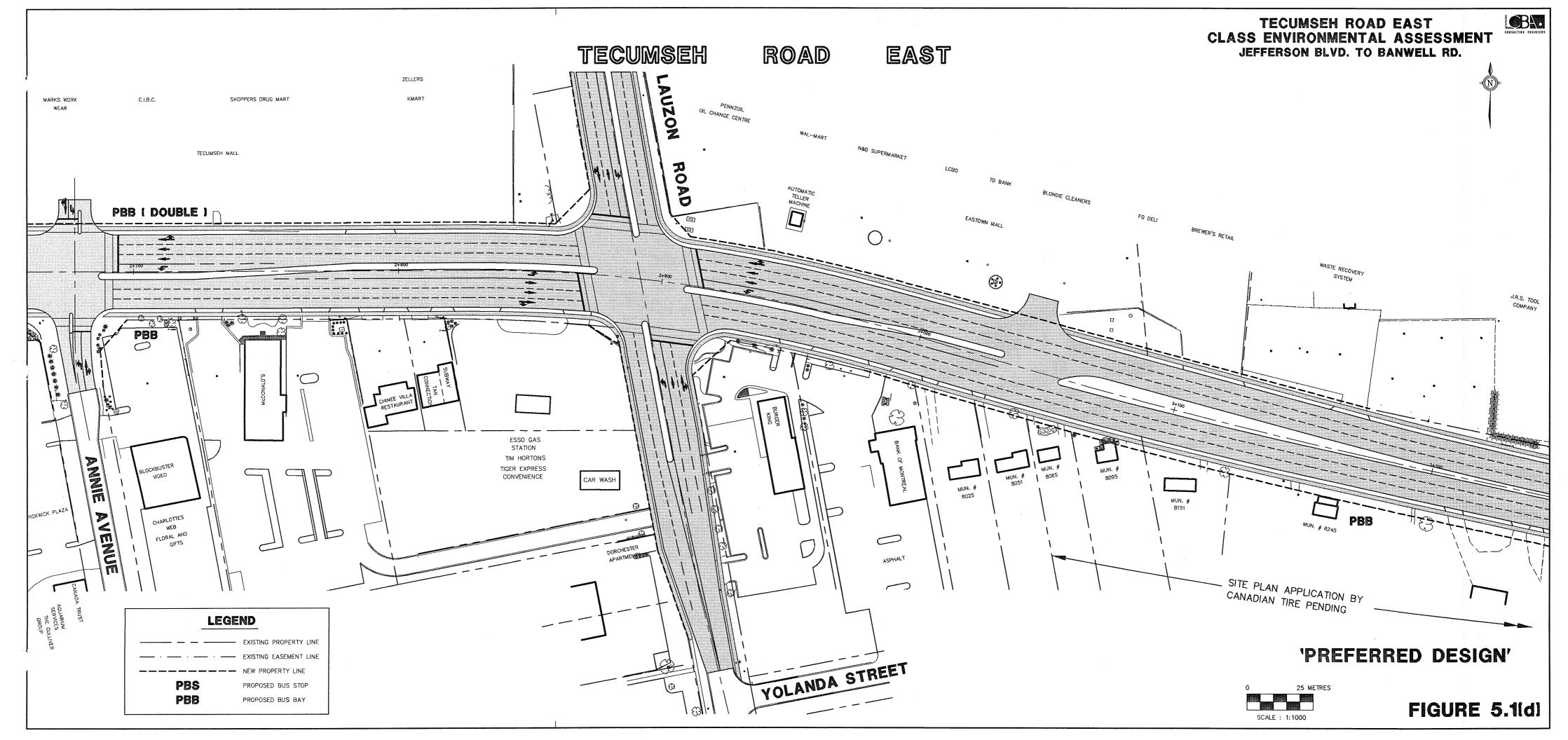
⁽²⁾ No application of cost sharing formulas has been made at this time.

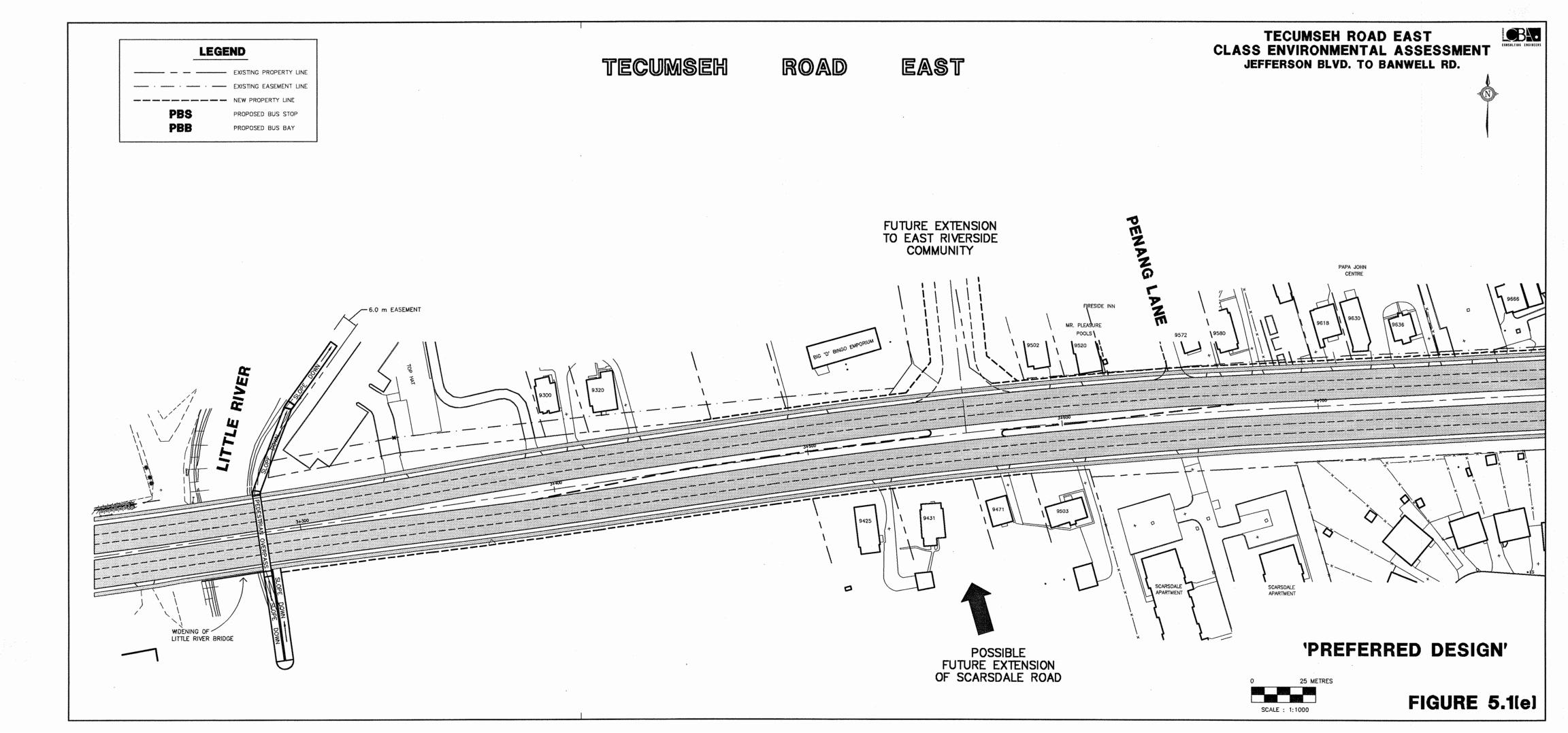
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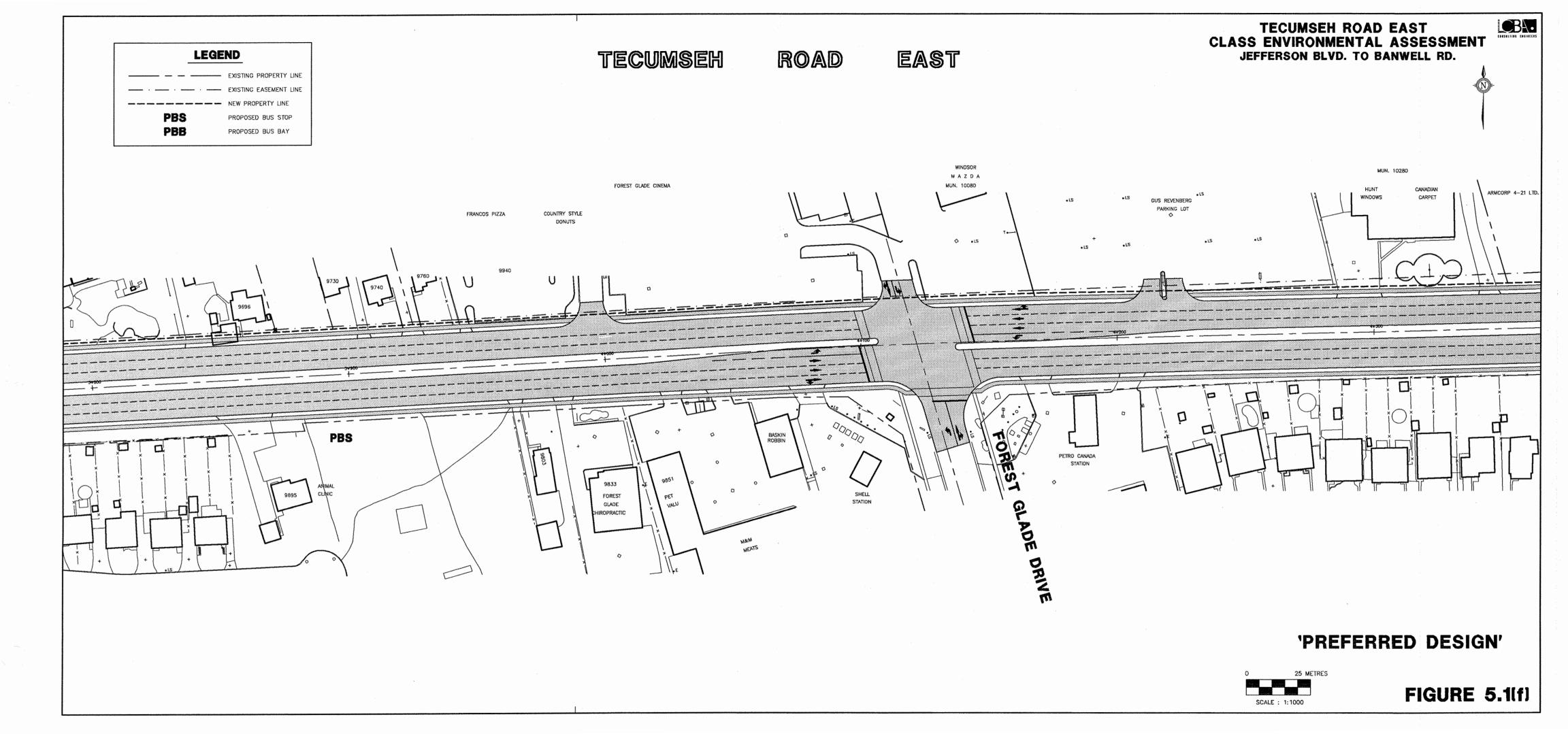


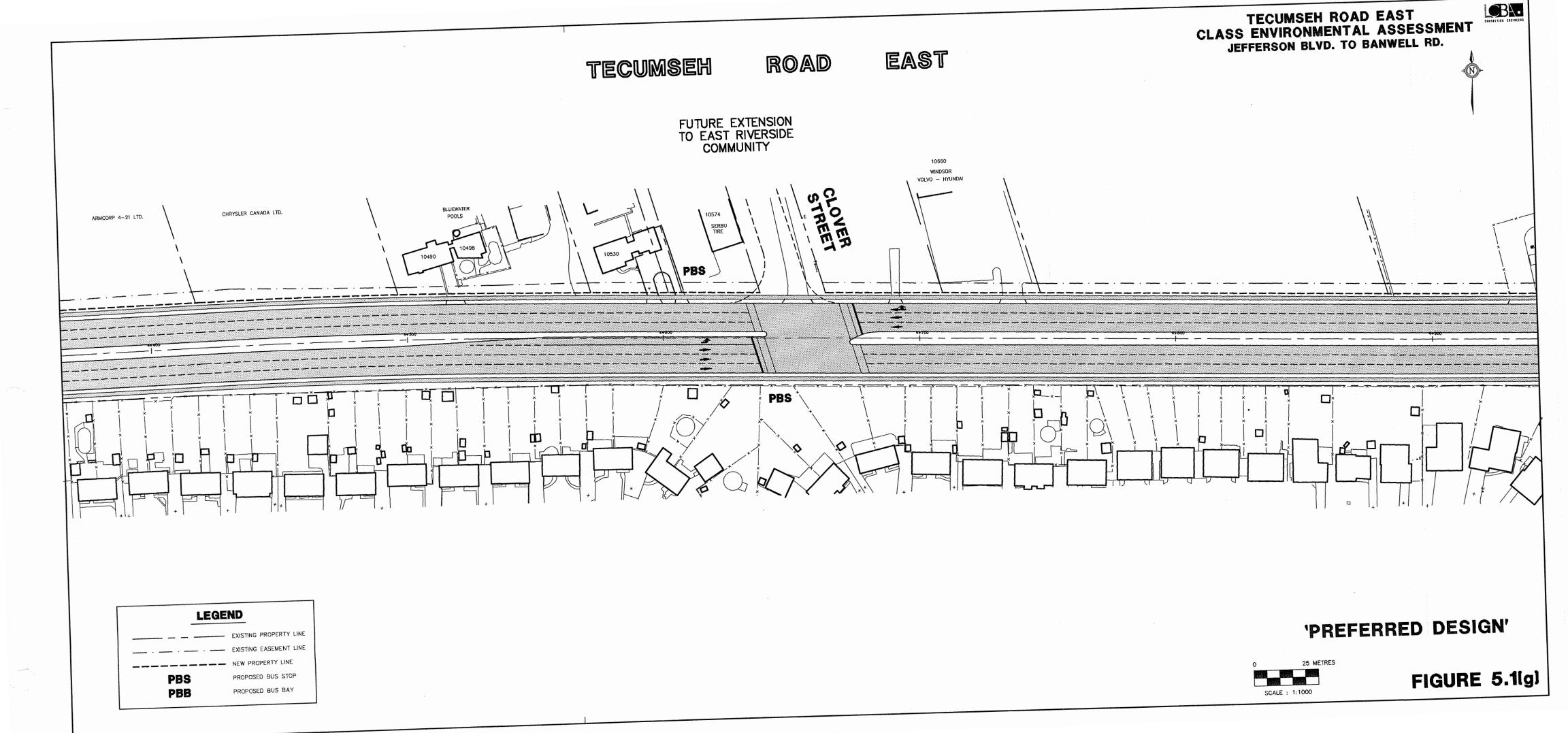


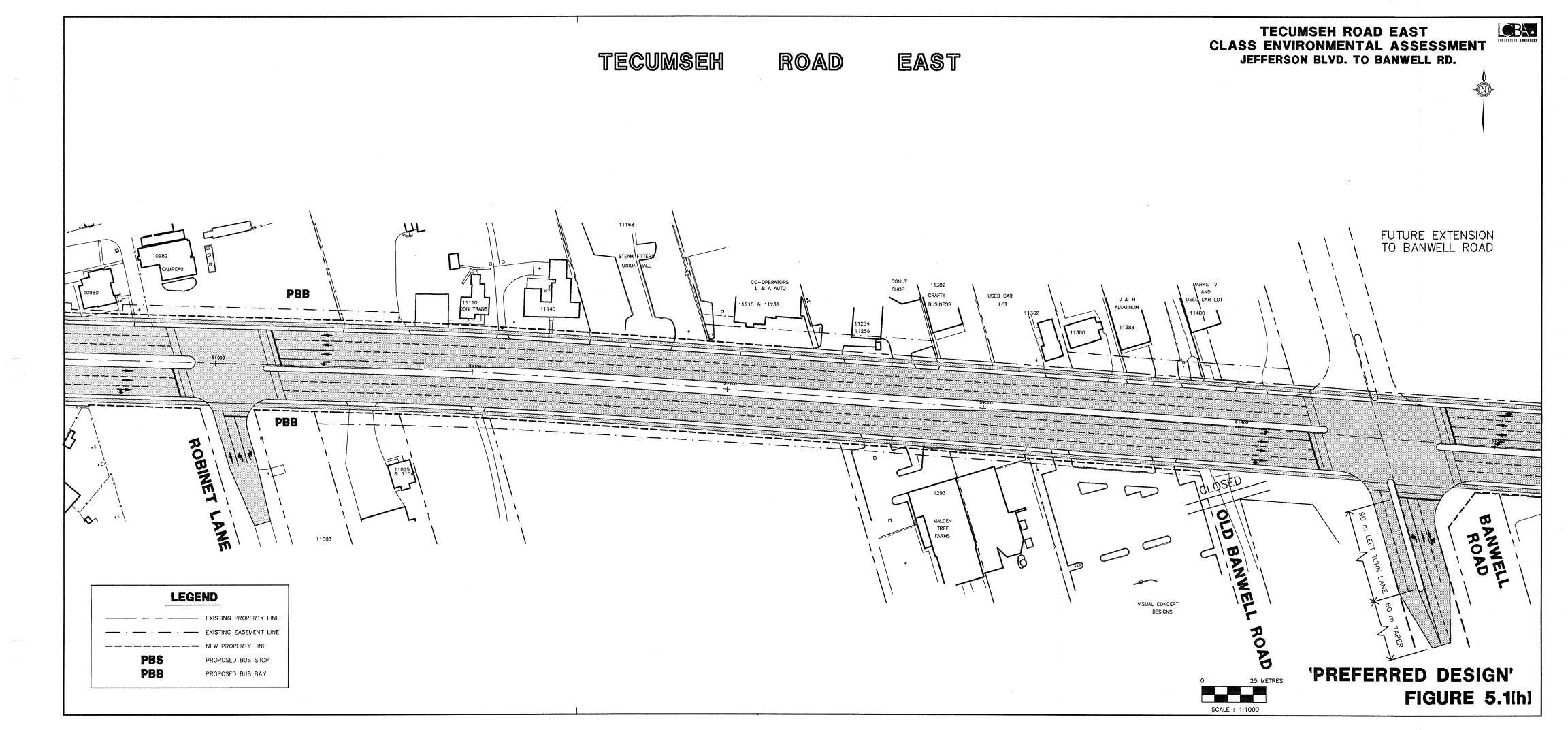












TECUMSEH ROAD EAST CLASS ENVIRONMENTAL ASSESSMENT TECUMSEH ROAD EAST JEFFERSON BLVD. TO BANWELL RD. TECUMSEH LIMITS 0. 11744 TECUMSEH PERCIBALLI POOLS SERVICE LOEB SUPER MARKET (VENDITTI) LEGEND

NEW PROPERTY LINE

PROPOSED BUS STOP

PROPOSED BUS BAY

PBS

PBB

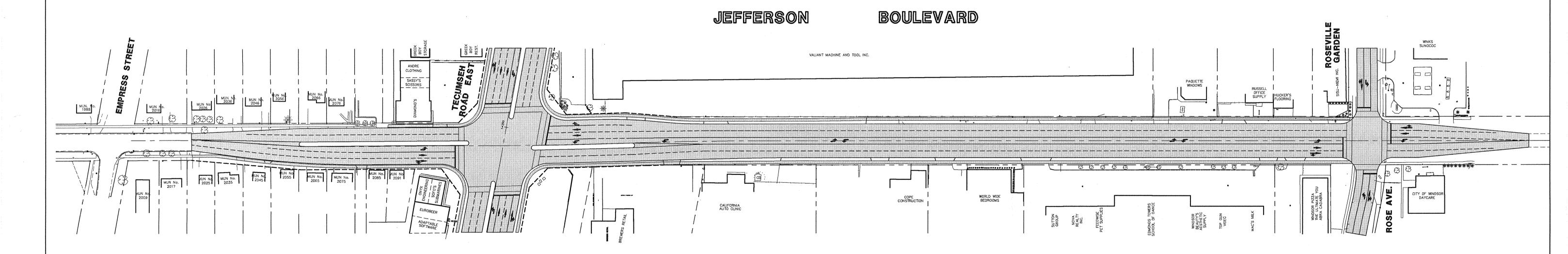
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FIGURE 5.1(1)

'PREFERRED DESIGN'

CBN.

TECUMSEH ROAD EAST CLASS ENVIRONMENTAL ASSESSMENT JEFFERSON BLVD. TO BANWELL RD.



EXISTING PROPERTY LINE

EXISTING EASEMENT LINE

NEW PROPERTY LINE

PROPOSED BUS STOP

PROPOSED BUS BAY

LEGEND

'PREFERRED DESIGN'

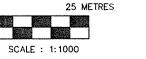
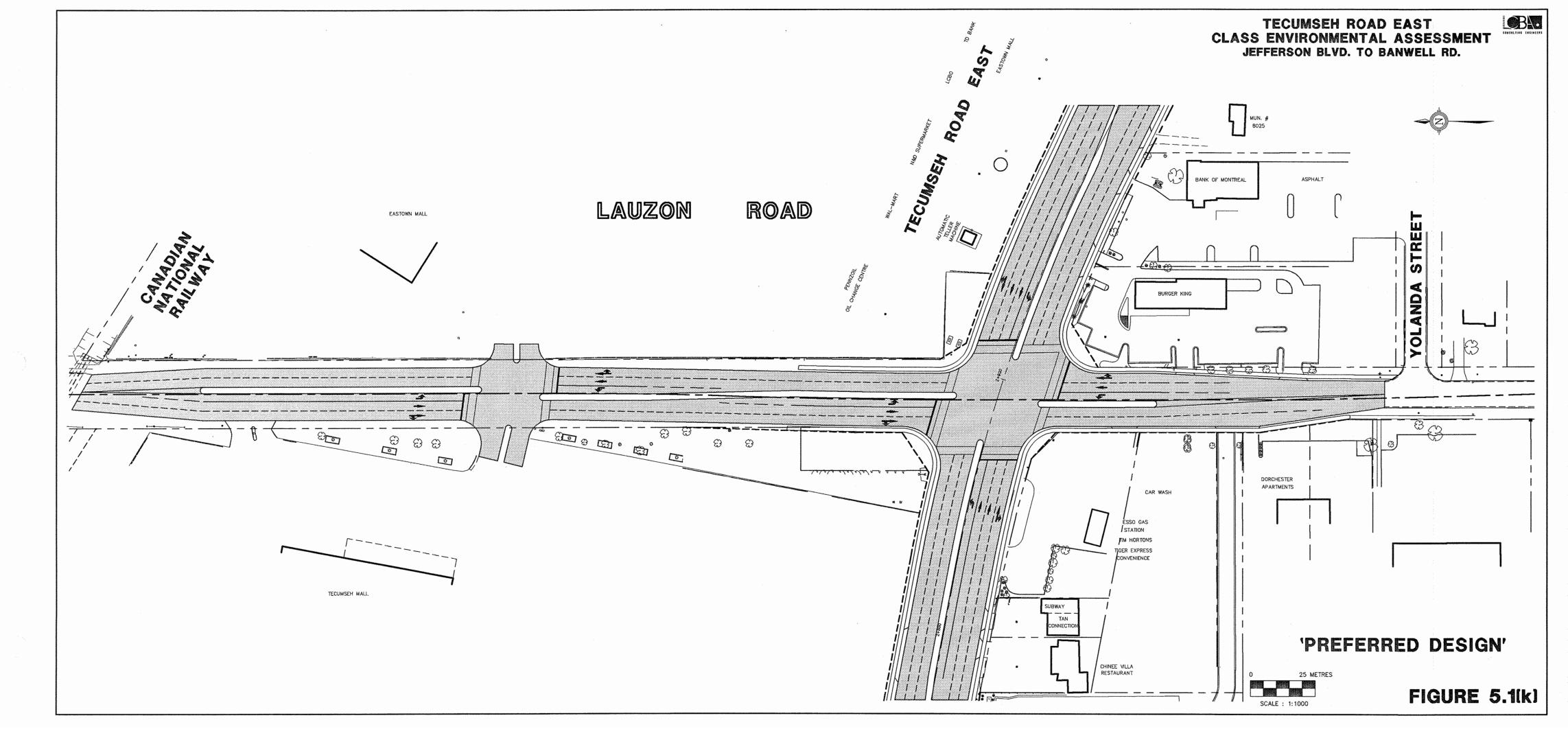
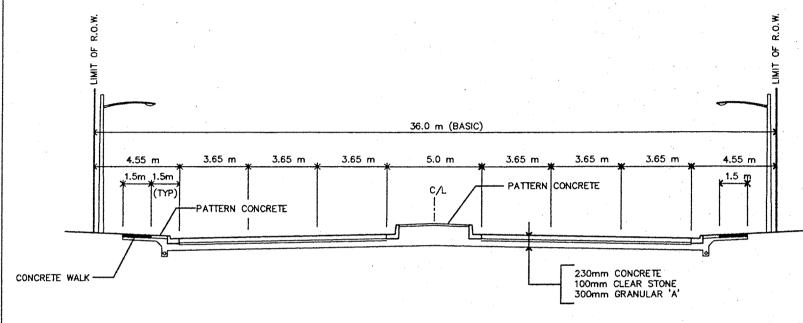
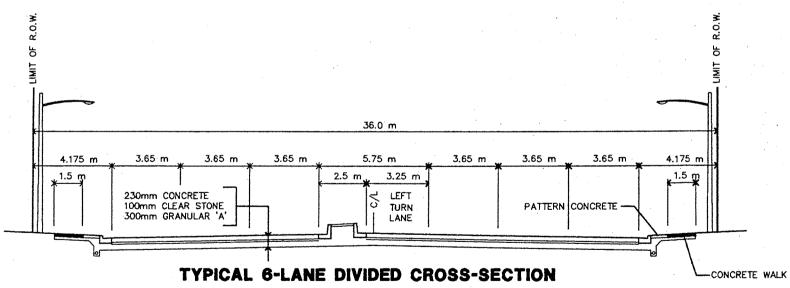


FIGURE 5.1(j)

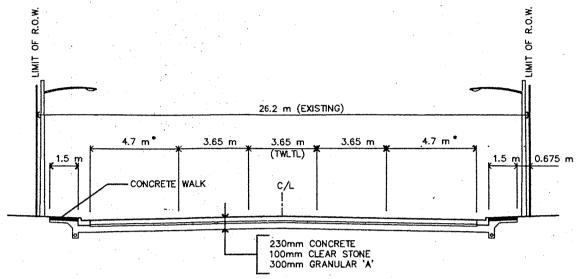






(TECUMSEH ROAD EAST - JEFFERSON BOULEVARD TO BANWELL ROAD)

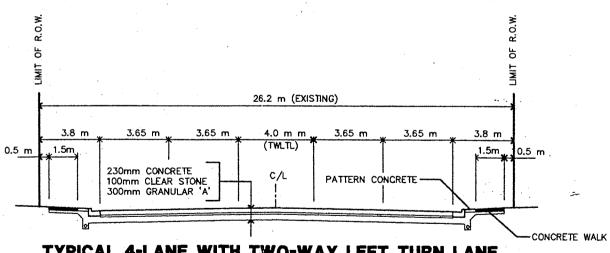
SCALE 1:200



TYPICAL 4-LANE WITH TWO-WAY LEFT TURN LANE

(LAUZON RD. - TECUMSEH RD. E. TO C.N.R.) SCALE 1:200

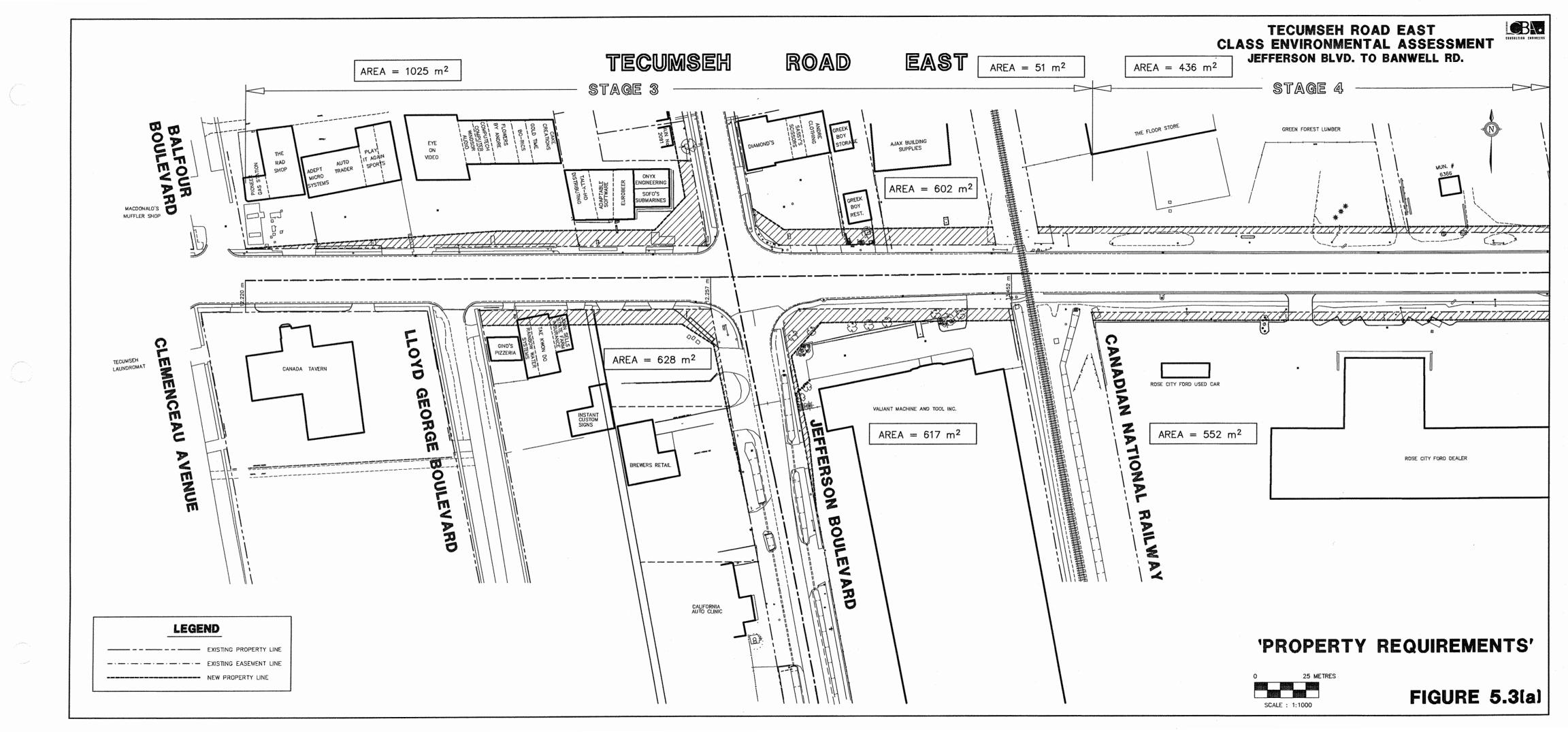
LAUZON ROAD DESIGNATED AS SECONDARY BIKEWAY (INCLUDES ALLOWANCE FOR 1.5 m EXCLUSIVE BIKE LANE)

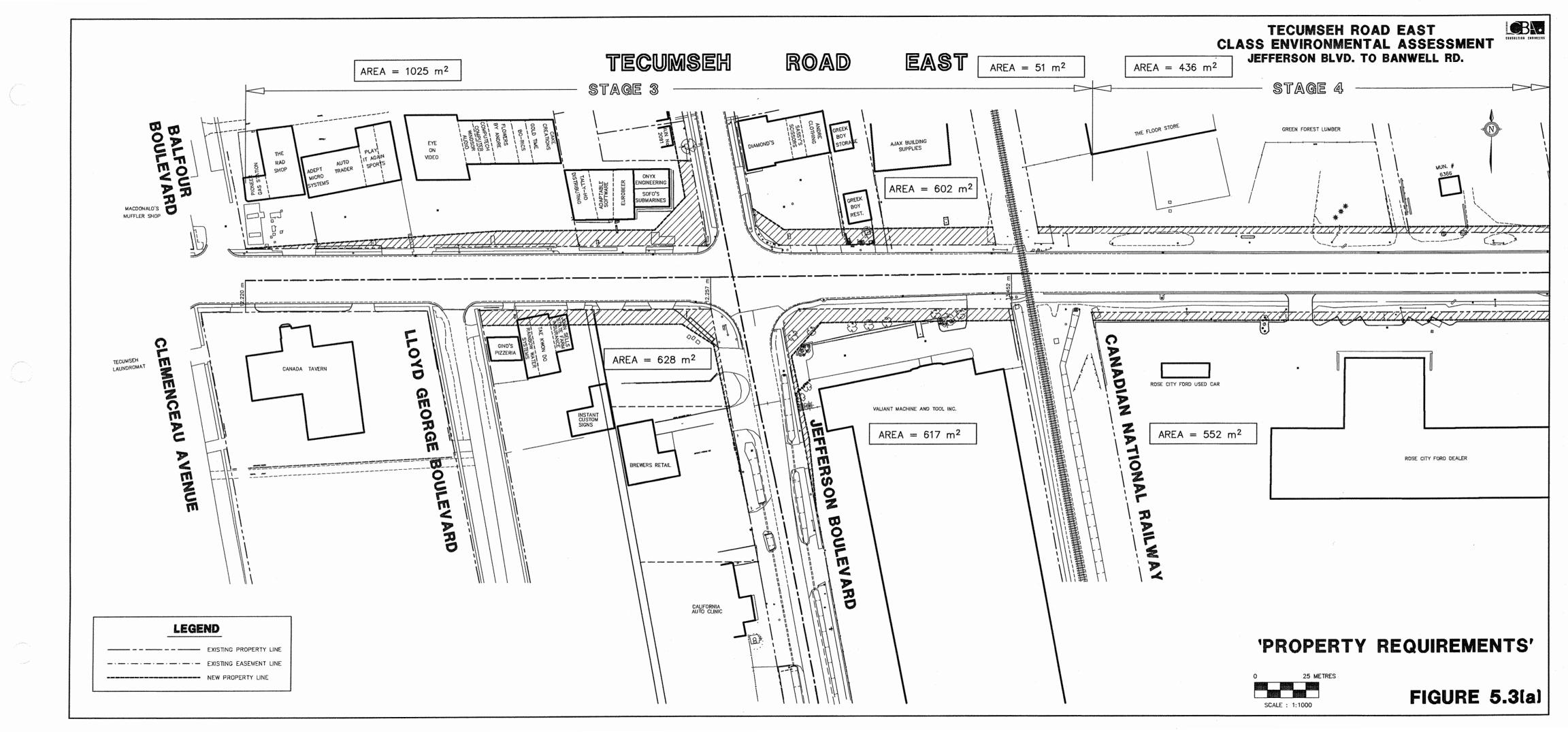


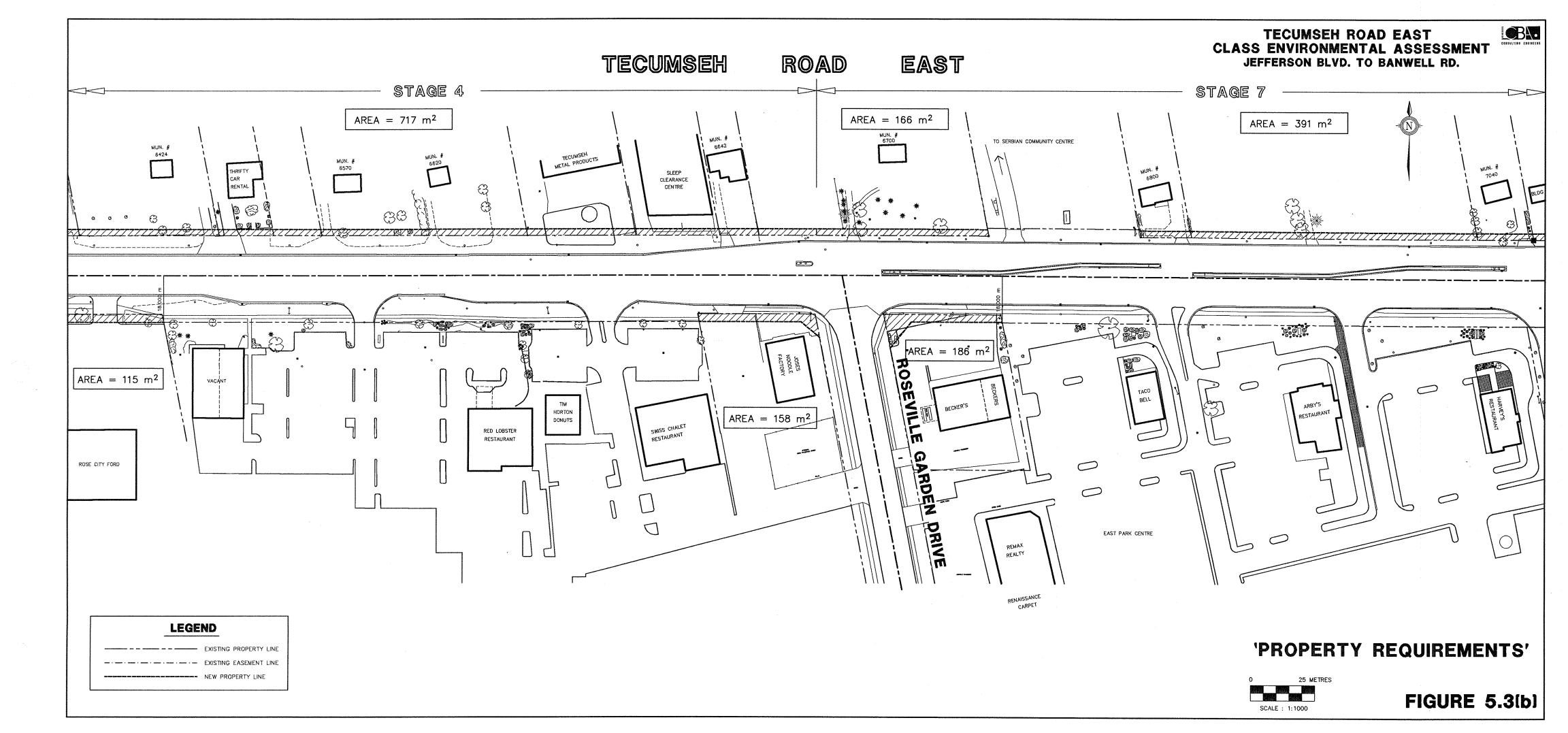
TYPICAL 4-LANE WITH TWO-WAY LEFT TURN LANE

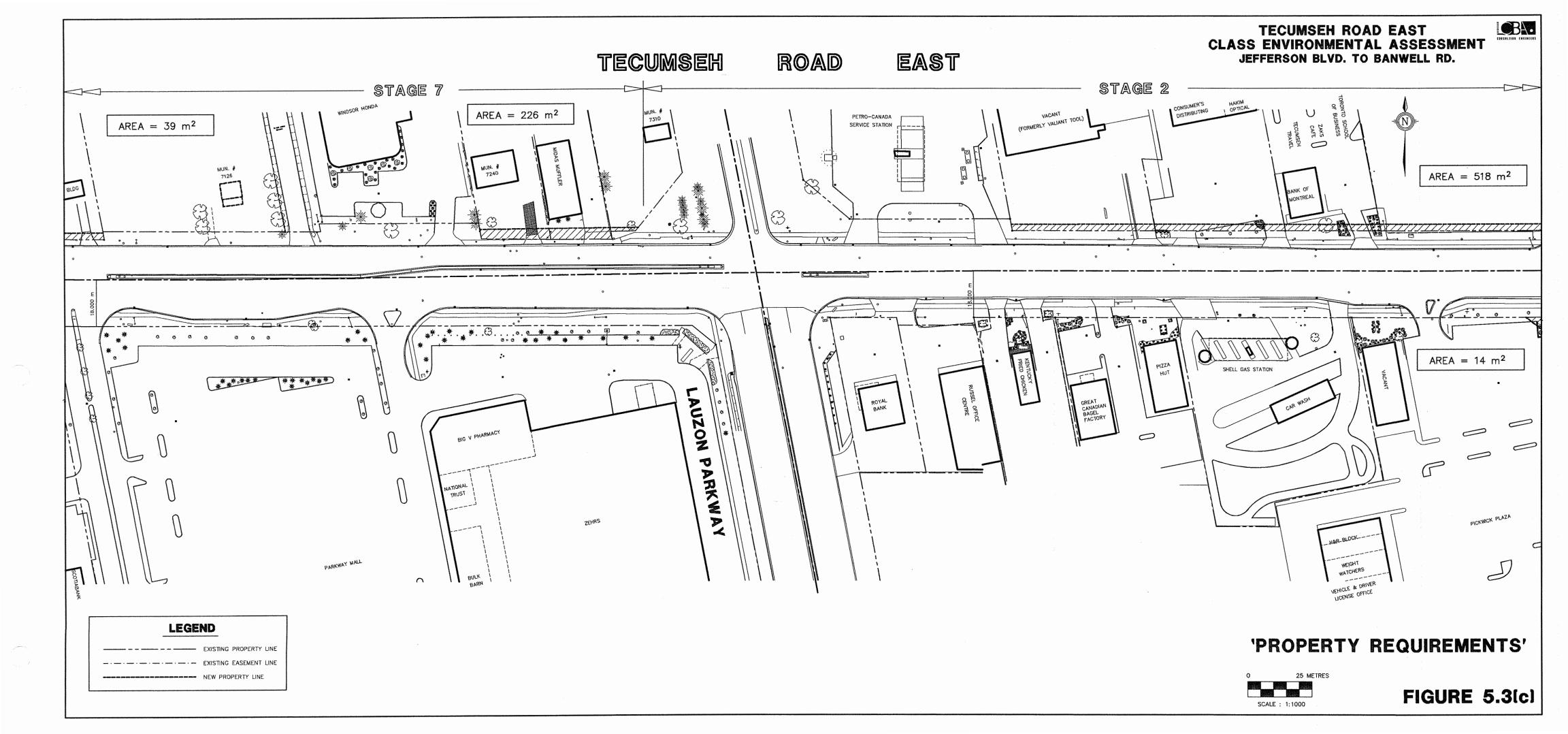
(JEFFERSON BLVD. - TECUMSEH RD. E. TO ROSEVILLE GARDEN DRIVE)

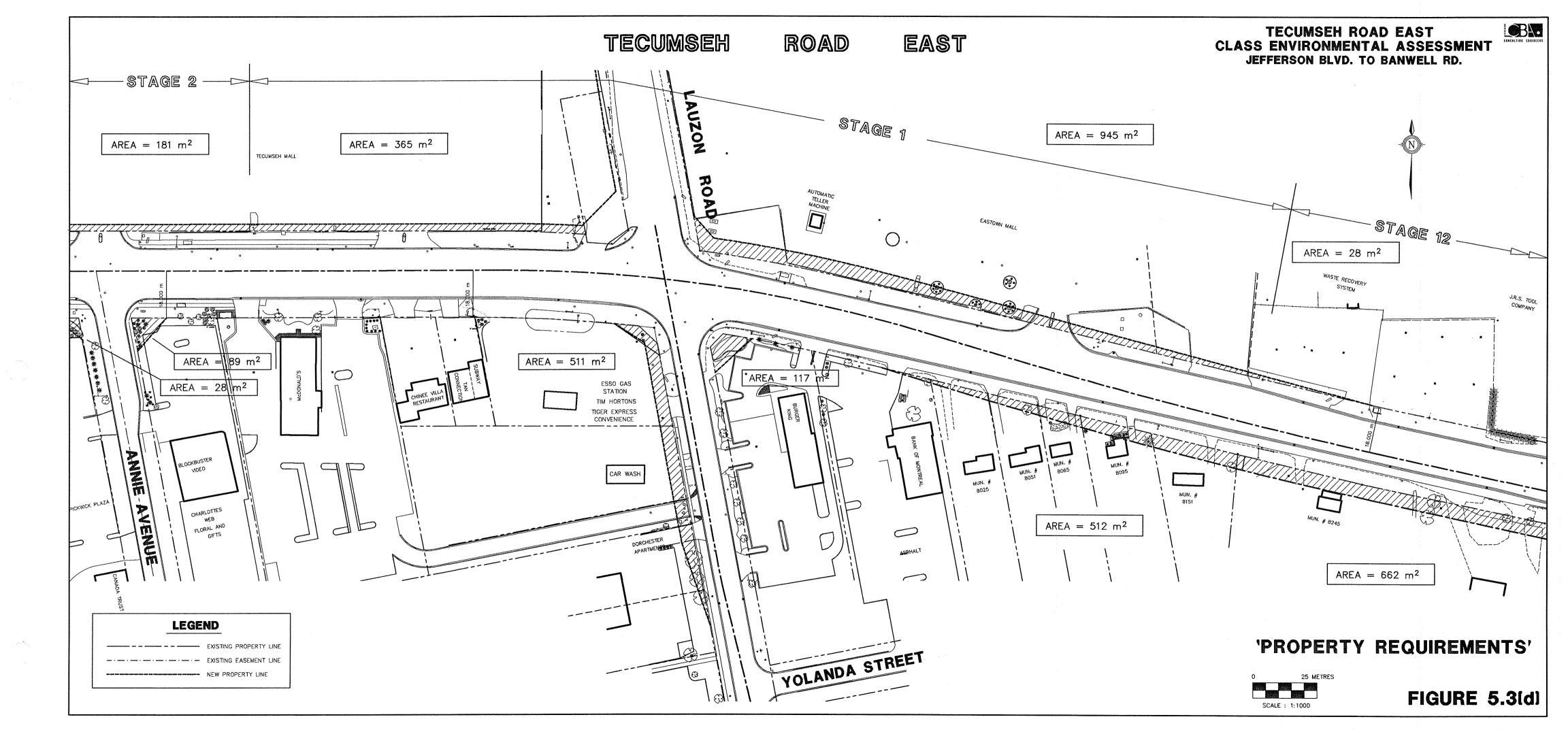
SCALE 1: 200

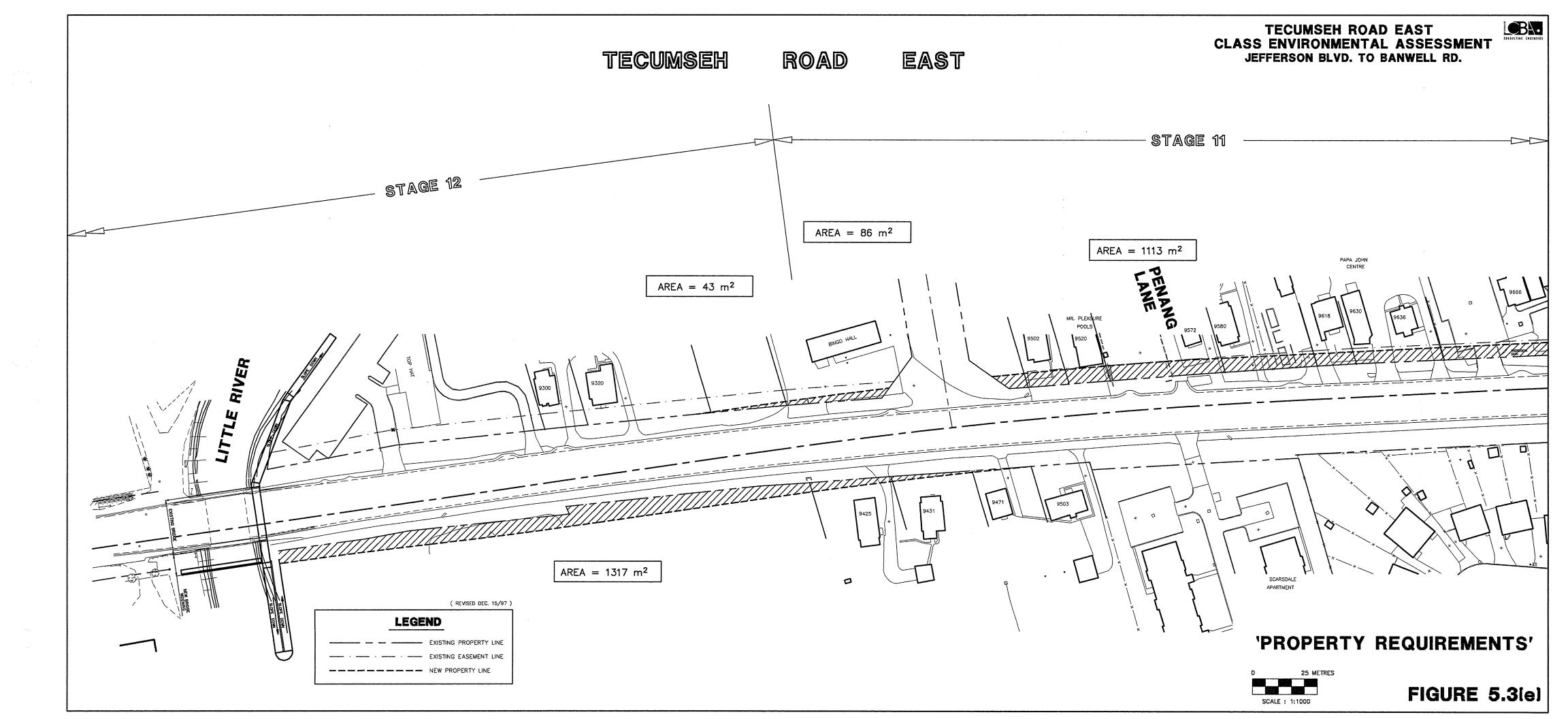


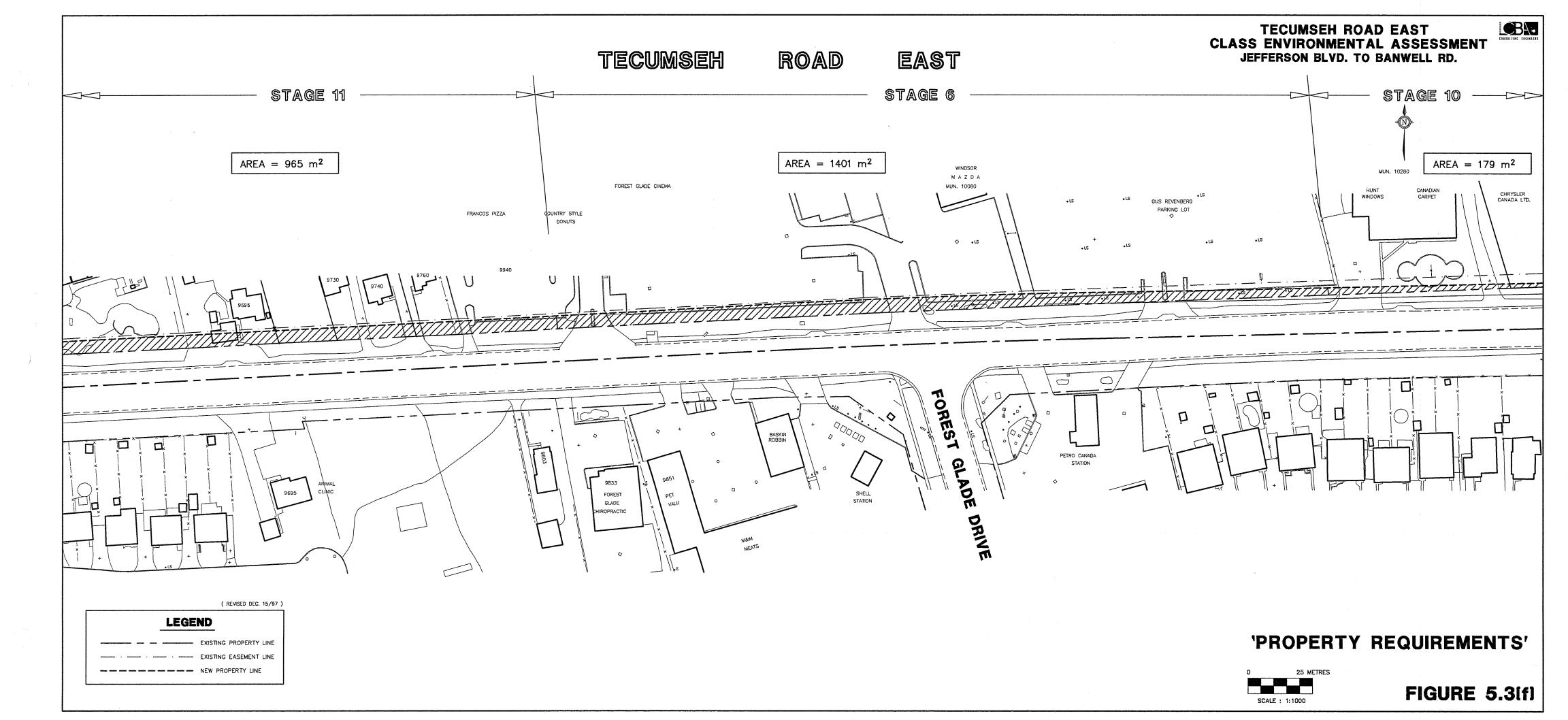


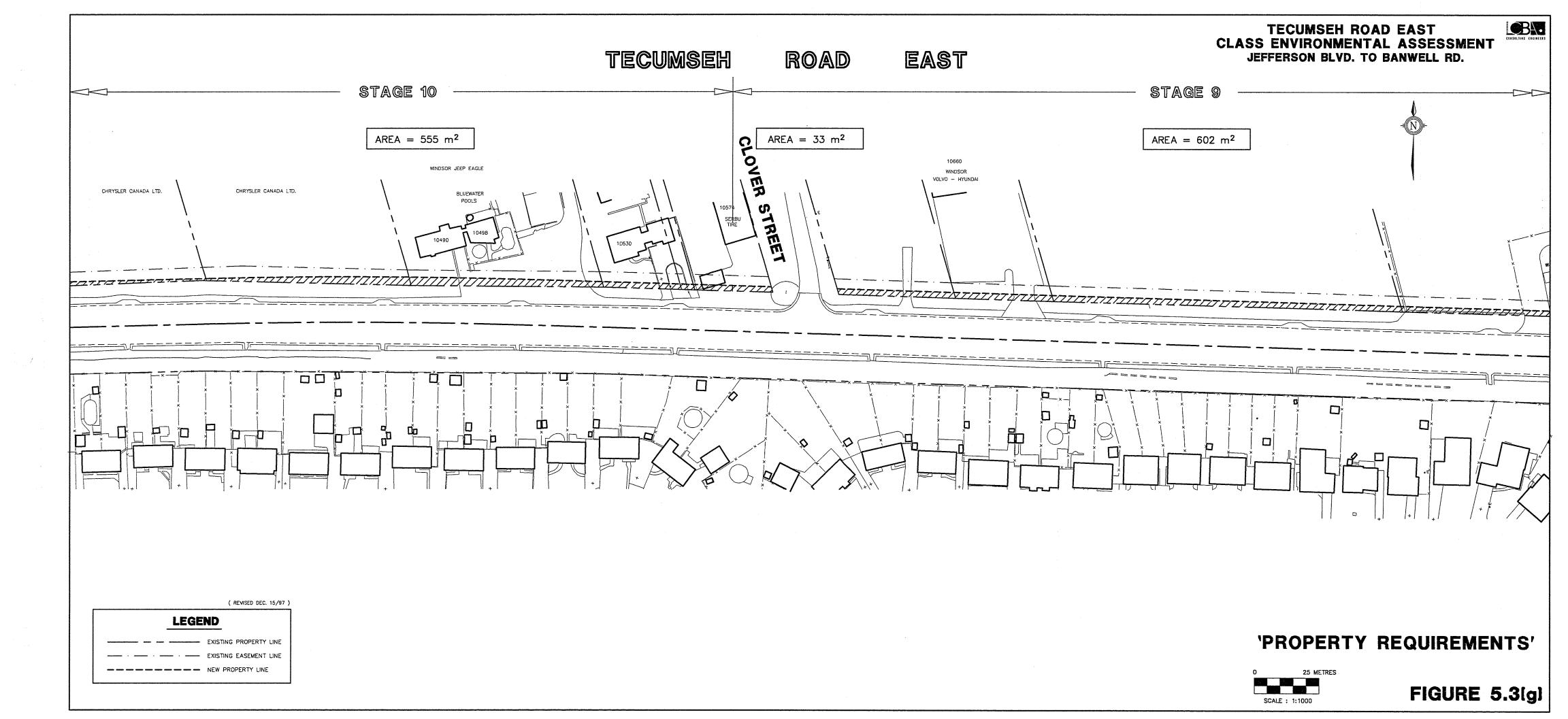


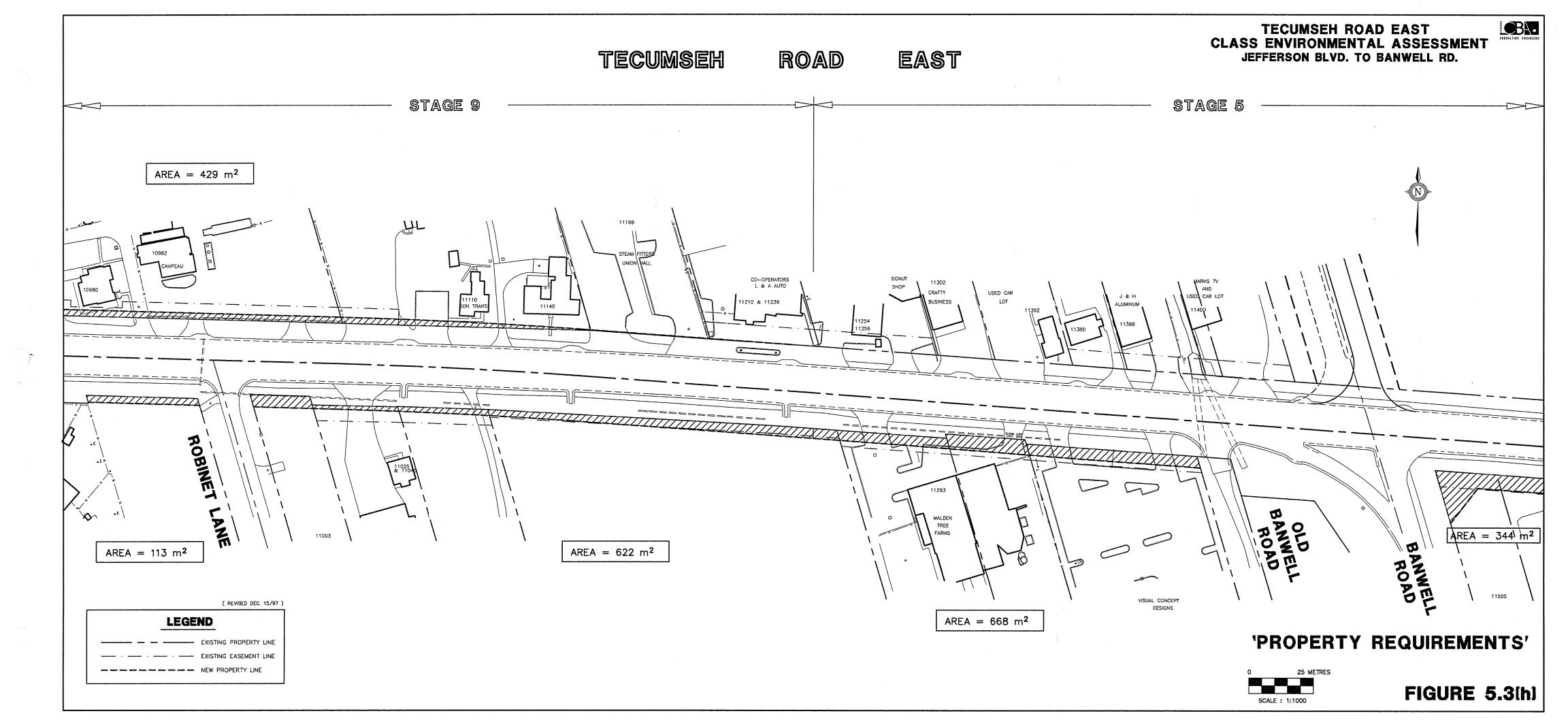








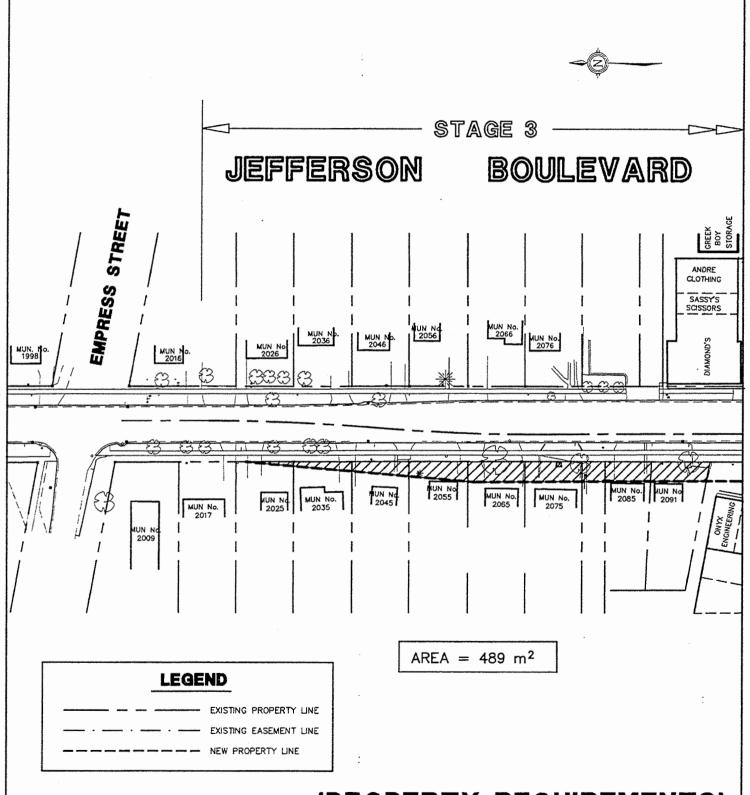




TECUMSEH ROAD EAST CLASS ENVIRONMENTAL ASSESSMENT ROAD TECUMSEH EAST JEFFERSON BLVD. TO BANWELL RD. STAGE 5 D. 11646 TECUMSEH PERCIBALLI SERVICE $AREA = 629 m^2$ LOEB SUPER MARKET (VENDITTI) (REVISED DEC. 15/97) **LEGEND** 'PROPERTY REQUIREMENTS' **FIGURE 5.3(1)**

TECUMSEH ROAD EAST CLASS ENVIRONMENTAL ASSESSMENT JEFFERSON BLVD. TO BANWELL RD.





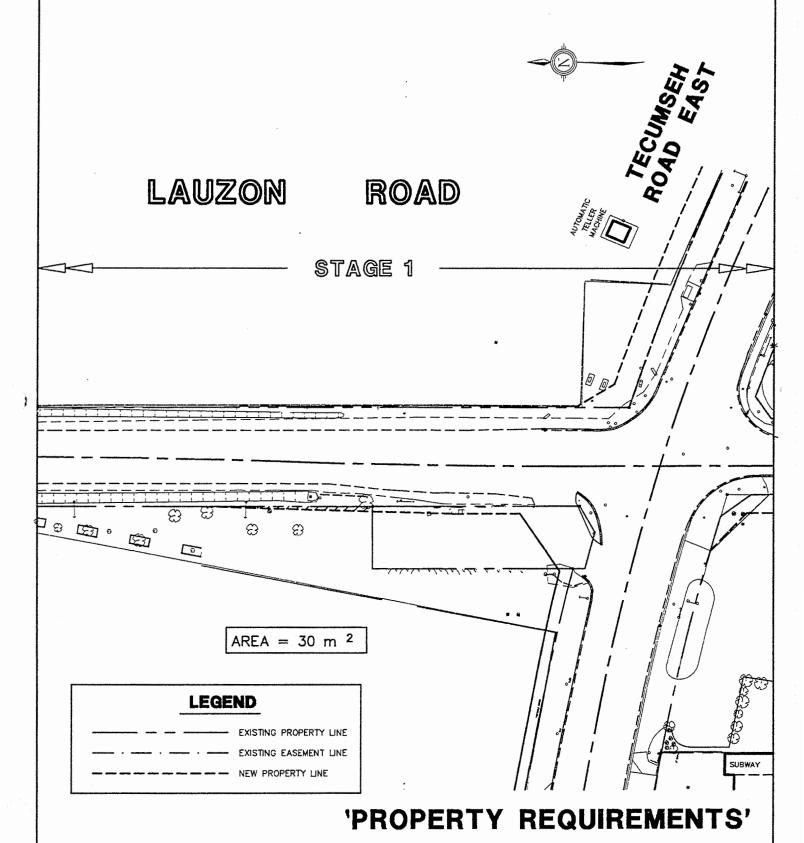
'PROPERTY REQUIREMENTS'



FIGURE 5.3(j)

TECUMSEH ROAD EAST CLASS ENVIRONMENTAL ASSESSMENT JEFFERSON BLVD. TO BANWELL RD.

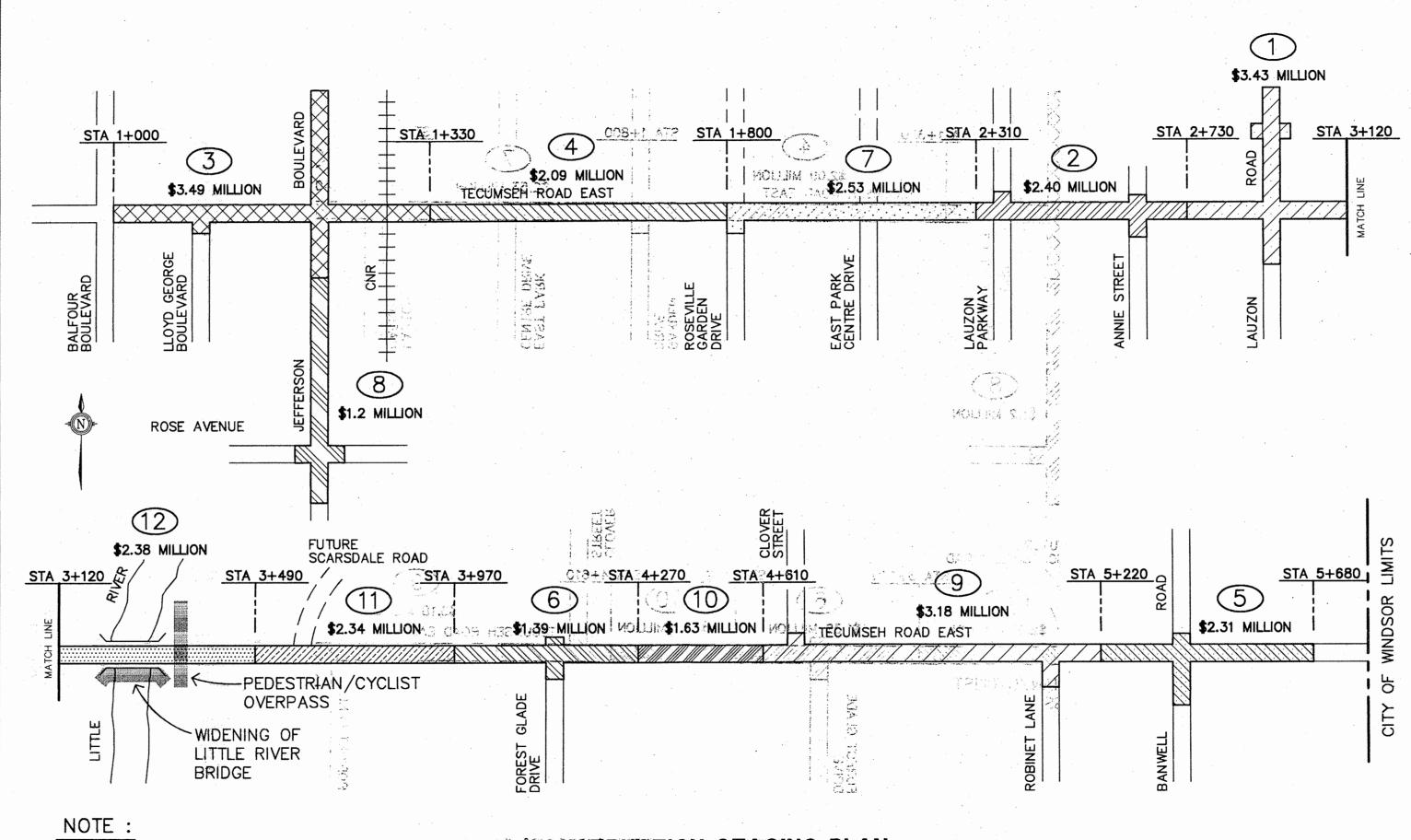




25 METRES

SCALE: 1:1000

FIGURE 5.3(k)



1200

COSTS INCLUDE NEW CONSTRUCTION, PROPERTY, ENGINEERING AND CONTINGENCIES. NO FINANCING OR

TAXES INCLUDED.

CONSTRUCTION STAGING PLAN

FIGURE 5.4