TORONTO
North York Civic Centre

CONSULTING ENGINEERING SERVICES FOR THE CITY OF TORONTO
NORTH YORK OFFICE – TRANSPORTATION DEPARTMENT

DOWNTOWN PLAN SOUTH OF SHEPPARD AVENUE

ENVIRONMENTAL STUDY REPORT ADDENDUM

TRANSPORTATION INFRASTRUCTURE REQUIREMENTS

April, 1998

TABLE OF CONTENTS

TABLE OF EXHIBITS

APPENDICES

1.0 INTRODUCTION

1.1 PURPOSE OF THIS ADDENDUM

The purpose of this Environmental Study Report Addendum is to document changes to the Environmental Study Report, dated September 1996, and entitled "Downtown Plan South of Sheppard Avenue - Transportation Infrastructure Requirements". These changes reflect the decision handed down by the Ontario Municipal Board (OMB) on September 29, 1997. The OMB decision is included as Appendix A.

1.2 THE ONTARIO MUNICIPAL BOARD DECISION

The decision changed the plan boundary, development levels and made specific recommendations as to the transportation infrastructure location and requirements. This addendum to the Environmental Study Report (ESR) entitled "Downtown Plan South of Sheppard Avenue - Transportation Infrastructure Requirements" should be considered the final chapter in a lengthy planning and environmental assessment process. This section contains an overview of recent events leading to the requirement of this Environmental Study Report Addendum.

In September of 1996, the ESR was completed and filed with the City Clerk of the former City of North York to satisfy the required 30 day public review provision of the Class Environmental Assessment process. The purpose of the ESR was to identify the transportation infrastructure needed to support the land use and development levels associated with the City's Official Plan Amendment No. 393 (OPA 393) of the Downtown Plan, south of Sheppard Avenue, and within the context of the ultimate development of the North York Centre.

In a letter dated November 29, 1996, the Minister of the Environment advised the City Clerk of being in receipt of several bump-up requests of the ESR, but he decided to reserve his decision on the grounds of prematurity. This letter is included as Appendix B. It was his position that the land uses associated with OPA 393 must first be resolved by the Ontario Municipal Board (OMB).

The OMB hearing commenced on April 29, 1997 and concluded on June 5, 1997, with the Board's decision released on September 29, 1997. The need for a hearing was initiated by a request for a referral to the OMB by Wittington Properties Limited, however the City took the lead role at the hearing in order to set the planning context of the City's proposed OPA 393. The Official Plan Amendment, zoning amendment and plan of subdivision applications on behalf of Wittington Properties Limited were considered, as well as the proposed Official Plan Amendment and zoning applications on behalf of Anndale Properties Limited and Crestview Investment Corporation (referred to in the OMB decision and in this document as "Oakburn Apartments").

With land use issues now resolved, this Environmental Study Report Addendum is prepared specifically in response to the decision handed down by the OMB (D.L. Santo, Vice-Chair on September 29th, 1997). The decision changed the Downtown boundary, set new development levels, and directed in part, the location of certain road infrastructure. It also approved the applications for Wittington Properties Limited and Oakburn Apartments. As a result of the decision, the transportation infrastructure requirements as outlined in the September 1996 ESR had to be re-designed.

In essence, there are four principal areas within the ESR which require further consideration as a result of the OMB decision:

1) The infrastructure requirements to support interim development levels;

2) The alignment of the east service road;

3) The alignment of the "arm" of the service road from Poyntz Avenue along to Anndale Drive, and;

4) The network configuration (number of lanes and intersection configuration) required to support new development levels outlined in the revised OPA 393.

The first point results from page 15 of the OMB decision:

> *"However, I would truly expect that given the extension to the east of the Downtown Boundary, any widening of Avondale would be taken from both north and south sides of the allowance".*

In the ESR, the widening of Avondale Avenue was taken from the south side, as most of these properties had already been assembled by Wittington Properties Limited. The properties on the north side of Avondale Avenue, east of Bales Avenue, were not contained within the plan boundary (OPA 393). Consequently, the improvements required along Avondale Avenue to support Wittington's development could occur without displacing and purchasing existing stable residential homes on the north side of the street. The timing for the widening of Avondale Avenue was unimportant, as it would occur in phases in relation to the development stages of the Wittington development.

However, based on the Board's intent that the widening of Avondale Avenue should occur about the centreline, properties on the north side of Avondale Avenue may now be significantly impacted. This however must be considered as a short-term impact, as in the long-term these properties have the opportunity to assemble for development purposes making the ultimate right-of-way available. For these reasons, it can be seen that the interim infrastructure requirements are now an important consideration.

The second point results from page 13 of the OMB decision:

"The service road shall follow the Avondale and Tradewind existing road allowances as much as possible to intersect at Sheppard to provide as safe and as efficient a linking with Doris Avenue to the north as possible but recognizing that some curvature in the alignment will be necessary".

The Tradewind alignment, while previously considered, was not selected as the preferred corridor in the ESR. The costs and impacts of constructing the east service road in this location must now be considered in more detail and appropriately documented. In particular, details of the alignment must be confirmed based on moving the Downtown boundary to the east. Consistent with the Board's decision, the existing Tradewind Avenue and Bonnington Place roads can now be used as part of the road network as both are now within the limits of the Downtown boundary. For this reason, it is important to understand the merits and limitations of a staggered intersection between Bonnington Place and Doris Avenue at Sheppard Avenue.

Point number 3 results from page 13 of the OMB decision:

"Therefore a second arm of the service road shall be designated using the Poyntz alignment to meet the Anndale Road allowance then to link with the Tradewind N-S alignment".

This second arm requires justification based on traffic need, the generation of a preliminary design, construction costs and the assessment impacts.

Point number 4 results from the enlargement of the Downtown area as identified on page 13 of the OMB decision, and the increase in density as identified on page 14. The change in the land use and the assigned density alters predicted traffic demand and alters traffic patterns within the boundary of the plan. Therefore, the traffic study supporting the 1996 ESR had to be revised with new traffic assignments for an interim development level to ensure that Wittington and Oakburn developments can be accommodated and that ultimate development scenarios can be accommodated for the full build-out of the North York Centre Plan.

1.3 PLANNING BACKGROUND

In October of 1992, Council of the former City of North York made a commitment to process the Secondary Plan and Class Environmental Assessment for the South Downtown Area concurrently in a Master Plan process. The approach avoids duplication regularly encountered in sequential processes and also allows the public to better understand the implications and relationship between land use planning and transportation infrastructure.

The process was well advanced in July 1995, when the infrastructure which was being considered consisted of new ramps to Highway 401, east and west service roads, the realignment of Yonge Street and other road improvements. As the contemplated transportation infrastructure was revealed through the Environmental Assessment to be too costly, Council directed staff to re-evaluate the long-term development objectives for the South Downtown Area and the supporting

road requirements. This re-evaluation resulted in Official Plan Amendment No. 393 (OPA 393), which proposes a more modest level of development as an initial strategy. Council approved OPA 393 in principle on July 10, 1996. The earlier work of 1995 is summarized in the Status Report dated October 1995. Since that time the ESR in support of OPA 393 was completed and filed, and the OMB decision was been handed down.

1.4 LIMITATIONS OF THE STUDY

This Environmental Study Report Addendum is not a new study but complementary work required to complete the Environmental Assessment process as outlined in the Class Environmental Assessment for Municipal Road Projects. Approval will enable construction of a road network in support of proposed development levels that have been approved through the established planning process pursuant to the Planning Act.

This addendum is necessary not only to complete the Class EA requirements, but also to provide additional and revised information for the Minister of the Environment and his staff in considering the earlier bump-up requests now that the OMB has resolved land use issues.

As an adjunct, it should be remembered that while the Official Plan sets the City's policies and planning objectives, the pace of development relies on the private sector. Consequently, while there are certain key features of the undertaking which are addressed in the ESR, there are other elements such as timing of the project, construction phasing and scheduling, and development charges, all of which are directly associated with and relevant to development, which must be addressed over time.

1.4.1 Other Considerations – Leona Drive Closure

Throughout the planning process leading up to the OMB hearing, one of the principal concerns of the Avondale Ratepayers Association was not only the current transient traffic on the local roads within the community to the east, but the potential for this traffic to increase as a result of increased development and density levels. Evidence was introduced at the OMB hearing in this regard.

While the Board's decision does not specifically address measures to mitigate the potential increase in non-related traffic in the adjacent residential area, staff have been sensitive to this concern and have met with the community representatives to discuss the impact of the decision.

The most effective manner to curb the transient traffic in this community is to close Leona Drive south of Sheppard Avenue. This action was taken into account in the transportation modelling with the results reflected in the traffic report.

1.5 PROJECT STUDY AREA

For the purposes of this report, the overall study area is depicted in ***Exhibit 1.1***. The study area encompasses areas that might potentially be directly impacted by the roadway infrastructure alternatives.

1.6 RELATED STUDIES AND DOCUMENTATION

This Environmental Study Report Addendum is written as an addendum to the Environmental Study Report dated September 1996 and entitled "Downtown Plan South of Sheppard Avenue Transportation Infrastructure Requirements". It is not intended as a stand-alone document and must be read in conjunction with the above named report.

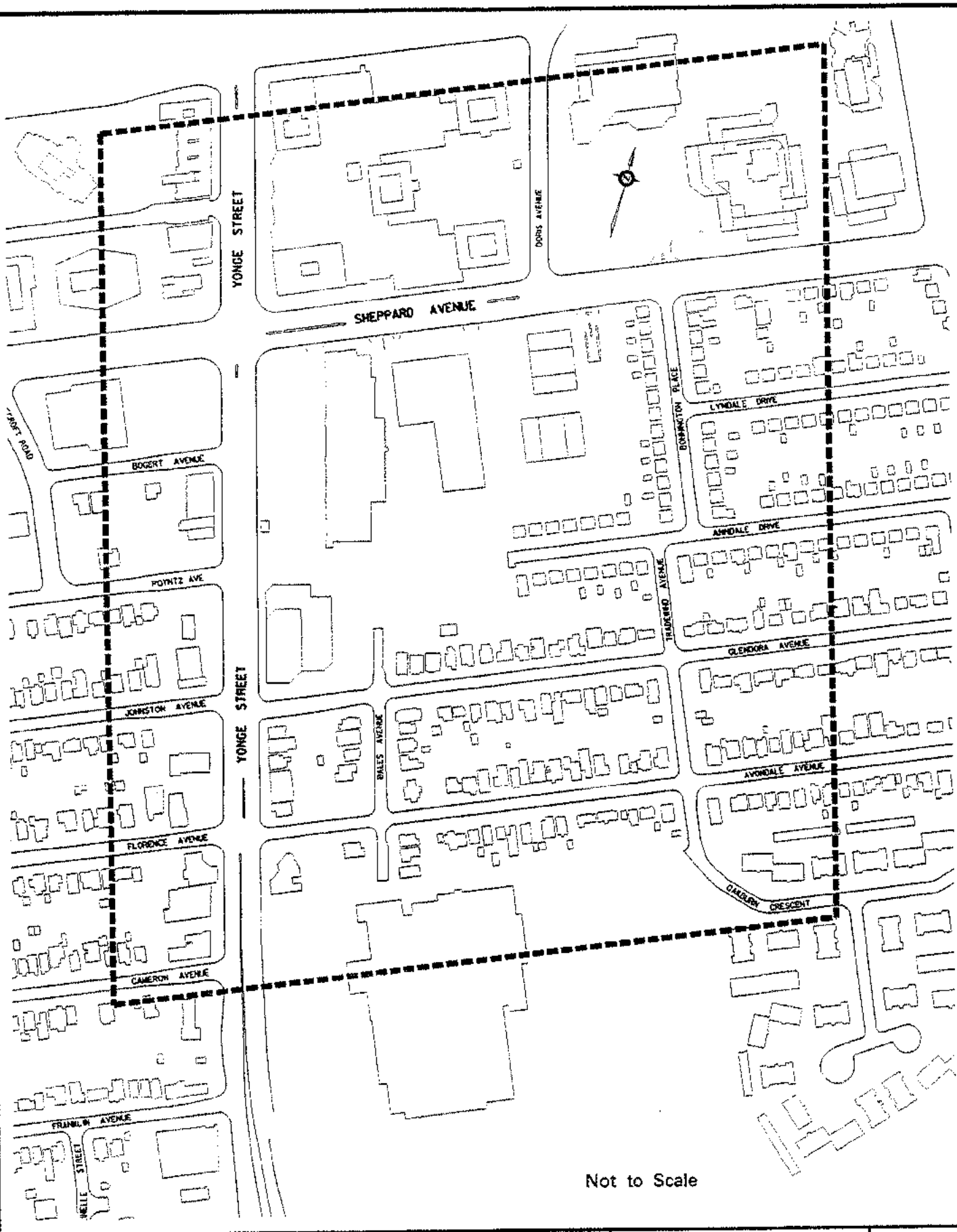
1.7 ENVIRONMENTAL STUDY REPORT ADDENDUM

Individuals that are interested in the final outcome of this planning process should review the OMB decision, OPA 393 and the September 1996 ESR in conjunction with this Addendum report.

The documentation of the planning and design process followed for a Schedule "C" project is a mandatory requirement of the Class EA process. Schedule "C" projects, therefore, carry the requirement for the preparation of a formal Environmental Study Report (ESR).

The ESR was completed in September of 1996 and placed with the City Clerk for inspection by the public, government agencies, and private agencies for a period of 30 calendar days. During this 30 day review period the Minister of the Environment received a number of "bump-up" requests. The Minster reserved making a decision regarding these requests until an OMB hearing was held (see letter, Appendix B).

Upon completion of this Environmental Study Report Addendum, the City of Toronto is required to place the Addendum with the City Clerk for inspection by the public, government agencies, and private agencies for a period of 30 calendar days. Any person/party objecting to the contents or the conclusion of this report is required to bring those concerns to the attention of the City. Should the issues be of such a nature that they cannot be resolved to mutual satisfaction, then the person/party may, in that 30 day period, request the Minister of the Environment to "bump-up" the project to an individual environmental assessment. The Minister shall consider both sides of the argument and make a decision.



TORONTO North York Civic Centre	COLE, SHERMAN	North York Downtown South of Sheppard Avenue Class Environmental Assessment Study Addendum	Project Study Area	Exhibit Number 1.1

1.8 STUDY TEAM

The ESR and Environmental Study Report Addendum for the Downtown Area south of Sheppard Avenue were prepared by Cole, Sherman & Associates Ltd., on behalf of the proponent, the former City of North York (now the City of Toronto). The study team consists of the consultant plus staff from North York Transportation and Planning Departments. Cole, Sherman has expertise in the fields of transportation and roadway engineering and environmental planning/consultation.

In the areas of noise and air quality assessment, the Study Team retained the services of the following sub consultants:

- *S.S. Wilson & Associates* - Noise Assessment
- *Rowan Williams Davies & Irwin Inc. (RWDI)* - Air Quality Assessment

Where appropriate the Study Team received input from the following:

- *City of Toronto, North York Office*
  - Public Works Department
  - Recreation Department
  - Legal Department
  - Finance and Property Departments
  - Planning Department
  - Transportation Department
- *City of Toronto, Metro Hall Office* - Transportation Department
- *Ontario Ministry of Transportation*

2.0 GENERATION OF INTERIM AND ULTIMATE DESIGNS

2.1 INTRODUCTION

The OMB decision changed the location of the downtown boundary, development densities within the boundary and the designated permitted uses in the Downtown plan, south of Sheppard Avenue. The land use changes affect the projected traffic flows and patterns. In addition, the OMB decision made specific recommendations relating to the composition of the road network and its location.

As a component of the addendum, interim requirements have been considered and may be deemed as those improvements necessary to support approved development. This includes the development levels approved by the OMB on both the Wittington Properties Limited and Oakburn Apartment sites.

The addendum primarily considers four items as a result of the OMB decision (as explained in Section 1.2).

1) The interim infrastructure requirements;
2) The alignment of the east service road along Tradewind Avenue;
3) The new road link from Poyntz Avenue to Anndale Drive, and;
4) Network configuration details (number of lanes and intersection configuration) required to support new development levels outlined in the revised OPA 393.

2.2 TRAFFIC STUDY

Resulting from the OMB decision, there are specific changes which have a direct impact on forecasted traffic volumes and travel patterns. Consequently, and in recognition that OPA 393 forms the southerly geographic area of the North York Centre Plan, those changes had to be re-evaluated through transportation modelling of the whole Centre. Acknowledging that OPA 447 (a review of the North York Centre Plan) had also been approved by the former North York Council on September 18, 1997, and that the Board's decision on OPA 393 must then be reflected in OPA 447, further modelling of the Centre was required to ascertain the traffic effects of both the Board's decision as well as the land use and density changes in OPA 447. Through the modelling process, a worse case scenario was determined and used for the appropriate traffic evaluation.

Subsequently, a new traffic study was undertaken for the roads directly affected by the Board's decision, generally within the southeast quadrant of Yonge Street and Sheppard Avenue. The traffic study used the intersection turning movements and link volumes as developed through transportation modelling. The traffic study can be seen in Appendix C. The following recommendations have been made for the interim and the ultimate scenarios.

2.2.1 Interim Traffic Requirements

The following is a summary of the key recommendations for the transportation infrastructure required to support interim levels of development (all currently approved development).

- Peak hour traffic volumes on Avondale Avenue are estimated to approach 1000 vehicles per direction - a four-lane cross-section will be provided.
- Westbound double left turn lanes are required on Avondale Avenue at Yonge Street. The storage length requirements for this heavy turning movement may extend east beyond Bales Avenue. Appropriate turn restrictions at Bales Avenue may be implemented as warranted.
- The intersection of Bonnington Place and Sheppard Avenue can continue to operate as an unsignalized intersection in the interim. Northbound to westbound and westbound to southbound left turn traffic may experience delays but not in excess of those observed today.
- The signalized intersection of Sheppard Avenue and Doris Avenue will continue to operate under capacity. No improvements are required on Doris Avenue but for the purposes of this study it was assumed that Sheppard Avenue would be widened to six through lanes. Restoration of Sheppard Avenue, associated with the Sheppard Subway construction will provide for this improvement in the near future.
- Traffic volumes on Tradewind Avenue can be accommodated in two lanes with a jog at Anndale Drive as existing. No road improvements are required on Tradewind Avenue or Bonnington Place in the interim.
- The intersection of Avondale Avenue and Tradewind Avenue will operate well, with a two-way stop-sign control where northbound and southbound traffic is stopped (a four-way stop will not operate well).

With the above improvements, all intersections except Sheppard Avenue and Bonnington Place will operate at a Level of Service D or better (all movements experience minimal delays). Sheppard Avenue and Bonnington Place will not experience delays in excess of those observed today.

2.2.2 Ultimate Traffic Requirements

The following is a summary of the key recommendations for the transportation infrastructure required to support ultimate levels of development (build-out at maximum density of all potential development sites).

- The East Service Road, south of Sheppard Avenue, must be established along the Tradewind Avenue corridor having a four lane cross section and designed to align with Doris Avenue through the reconfiguration of the intersection.

- The intersection of Tradewind Avenue and Avondale Avenue will be signalized, particularly to handle eastbound to northbound left turn movements. Actual signalization will occur when the warrants are satisfied.
- A new two-lane connection between Anndale Drive and Poyntz Avenue will be required for access to new development. This link will ease traffic operations within the southeast quadrant of Yonge and Sheppard by providing a second access to a signalized intersection on Yonge Street (Yonge and Poyntz).
- Based on the AM and PM peak hour volumes that were modelled, the new four-leg intersection between Anndale Drive and Tradewind Avenue (Service Road) will have to be signalized, particularly to accommodate eastbound to northbound turning movements. Actual signalization will occur when the warrants are satisfied.

With the above improvements in place, most intersections operate at a Level of Service D or better. The intersection of Yonge Street and Poyntz Avenue shows the eastbound right turn as a critical movement. A volume of 695 vehicles was assigned to this movement in the PM peak hour. This high eastbound volume is affected by the amount of green time assigned to the through movement and Yonge Street reducing the capacity for this right turn demand.

However, this volume can be accommodated by operating the intersection in a three-phase signal cycle allowing for double right turns. All east/west pedestrian movement must be restricted to the north side of the intersection. The approved ESR for the "Downtown Service Road and Associated Road Network" allowed for an improved and widened intersection at Poyntz and Yonge, and therefore accommodates the intersection redesign required by this addendum.

The intersection and its operations should be monitored and the necessary improvements implemented when appropriate.

2.3 INTERIM ROAD DESIGN

Based on the results of the traffic study, interim infrastructure requirements were considered and designed. It was determined that the only improvement necessary to support interim development is the widening of Avondale Avenue. First to four lanes and later, possibly to five lanes. In recognition of the Board's approval of Wittington Properties Limited and Oakburn Apartments application, the construction detail for the widening of Avondale Avenue should first proceed with the establishment of the south curb. During the interim stage, the north boulevard width may have to be maintained at less than current standards, so as to minimize displacement of existing homes. Over time, the homes on the north side of Avondale Avenue between Yonge Street and Tradewind Avenue will be assembled into development blocks as these lands are now contained within the

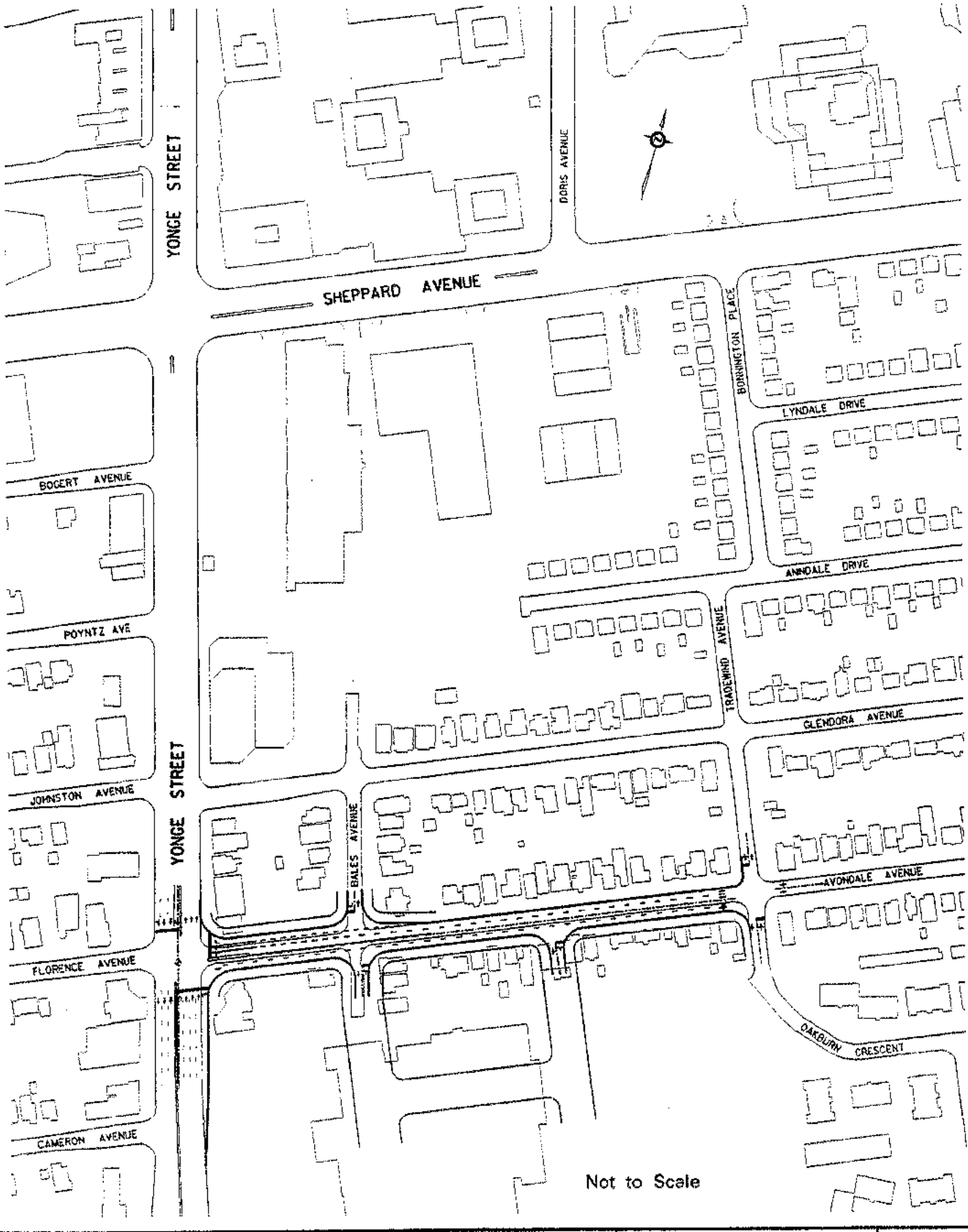
boundary of the Downtown Plan. Given this, it is reasonable to widen Avondale Avenue about the centreline, which is also in keeping with the recommendations of the OMB.

Two phases of interim improvements may be required. The first phase is based on short-term development aspirations, as planned by Wittington Properties Limited and Oakburn Apartments. The second phase is full interim improvements based on all currently approved development in the North York Centre.

It is understood that Wittington Properties Limited and Oakburn Apartments have short-term (within five years) development aspirations for their site. Traffic analysis confirmed that the roadway improvements required to support this growth can be limited to widening Avondale Avenue to four lanes between Tradewind Avenue and Bales Avenue and five lanes between Bales Avenue and Yonge Street. In addition, a northbound right turn lane is required on Yonge Street at Avondale Avenue. This widening may displace one residential home on the northeast corner of Avondale Avenue and Bales Avenue. Notwithstanding, it is possible, and appropriate, to hold the north curb line through this section of Avondale Avenue and provide adequate pavement width and lane configuration to the south to accommodate all of the traffic requirements associated with the approved Wittington Properties Limited and Oakburn Apartment developments. Evidence accepted by the OMB established that an interim lane configuration was feasible which would operate with a five-lane cross section immediately east of Yonge Street, tapering to four lanes at Bales Avenue. The design takes into account Wittington Properties Limited, limited ownership of the lands on the south side of Avondale Avenue and the availability of widening.

The existing residential homes on the north side of Avondale Avenue between Bales Avenue and Tradewind Avenue are generally owner occupied. For this reason, the short-term interim widening of Avondale Avenue will attempt to hold the north curb line. This will minimize the impacts to these properties until they have been assembled for redevelopment. The south curb line is set at the location of the ultimate widening of Avondale Avenue about the centreline. Because the north and the south curb locations are basically set, there are no alternatives for the interim improvements. It should be noted that with the above constraints, the lane widths for this four-lane section will be 3.4 metres. This width is reasonable as an interim condition.

In summary, the short-term development aspirations of Wittington Properties Limited and Oakburn Apartments can proceed with a four lane Avondale Avenue while holding the north curb line. This is important as it allows more time for the assembly of the homes on the north side of Avondale Avenue. The preferred interim infrastructure requirements can be seen in ***Exhibit 2.1.***



TORONTO North York Civic Centre	COLE, SHERMAN	North York Downtown South of Sheppard Avenue Class Environmental Assessment Study Addendum	Preferred Interim Infrastructure Requirements	Exhibit Number 2.1

The complete interim infrastructure requirements were considered based on the build-out of all approved development applications. To support these developments it may be necessary to widen Avondale Avenue to five lanes. Traffic analysis has shown that westbound left turn queues at Yonge Street and eastbound left turn queues at Tradewind Avenue could necessitate a fifth lane from Yonge Street to Tradewind Avenue. This widening would take place on the north side as the south curb line will have been constructed in its ultimate location, in most locations, to accommodate short-term interim development. There are no alternative designs to consider for the widening of Avondale Avenue to five lanes, which is consistent with the ultimate design.

2.4 ULTIMATE ROAD DESIGN

The ultimate transportation infrastructure requirements for the Downtown Area South of Sheppard Avenue have been determined by the results of future traffic modelling (based on the build-out of all possible development in the Downtown and Uptown), traffic analysis as shown in Appendix C and the specific recommendations of the OMB decision. The following sections outline the alignments of the various components of the preferred ultimate design. Details can be seen in *Exhibit 2.2*.

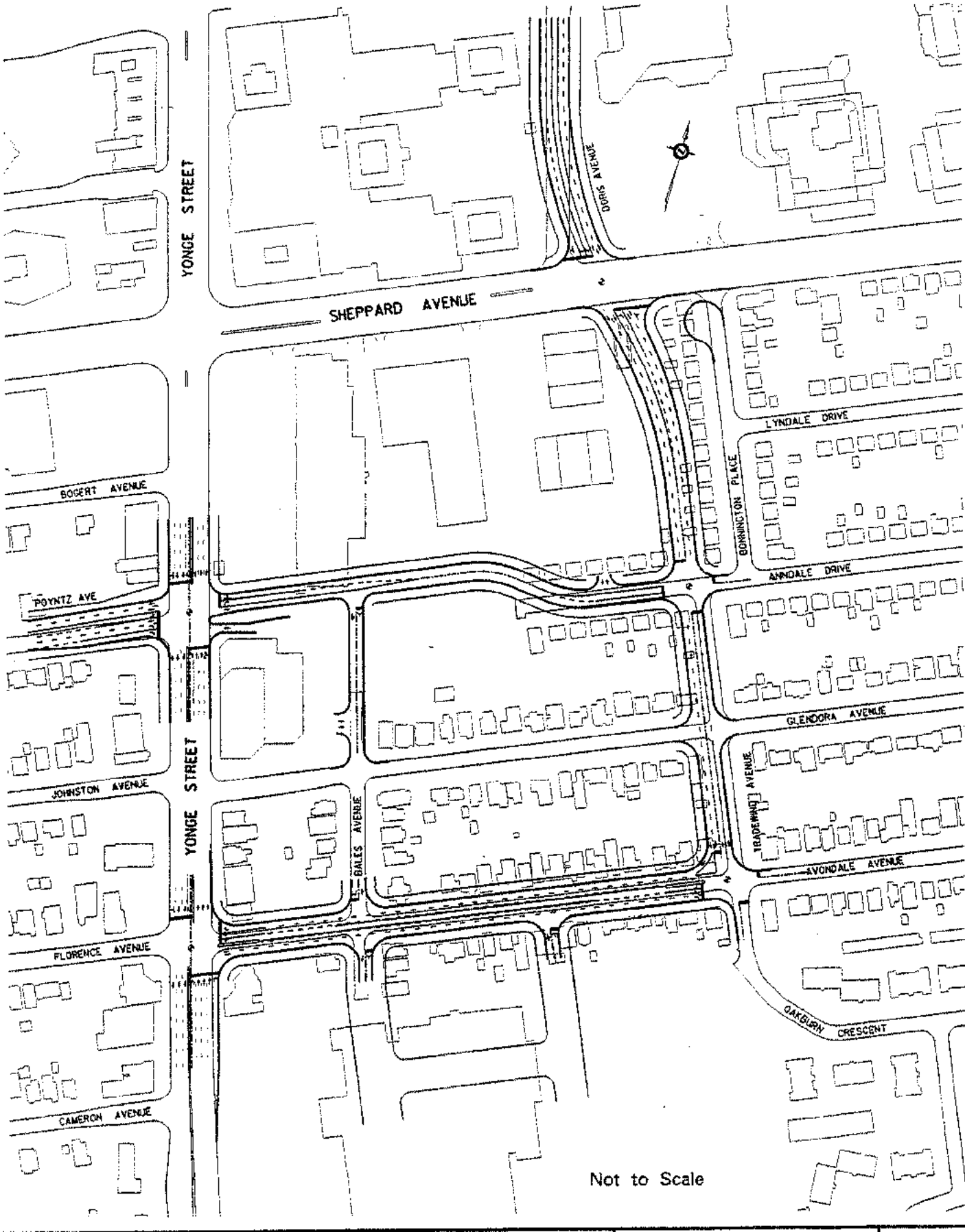
2.4.1 Avondale Avenue

The final alignment and widening of Avondale Avenue will have been constructed to support interim development levels and will remain unchanged for the ultimate. The intersection at Tradewind Avenue will have to be modified to accommodate the realigned and widened East Service Road. There are no further alternatives to consider for the widening of Avondale Avenue.

2.4.2 Tradewind Avenue (The East Service Road)

The ESR completed in September of 1996 considered two alternatives for the East Service Road: i) the Midblock Alternative and ii) the Tradewind Alternative. Both alternatives had similar costs and similar transportation characteristics, however, based on planning principles, the ESR recommended the Midblock Alternative as the preferred design for the East Service Road.

One of the major decisions of the OMB was to relocate the downtown boundary to the east side of Tradewind Avenue. Given that one of the planning principals for this area is that the service road can set the location of the boundary, it is appropriate to select the Tradewind Alternative as the new preferred East Service Road. Indeed, this is the specific recommendation of the OMB decision.



TORONTO North York Civic Centre	COLE, SHERMAN	North York Downtown South of Sheppard Avenue Class Environmental Assessment Study Addendum	Preferred Ultimate Infrastructure Requirements	Exhibit Number 2.2

It is City policy that the curb line of the service road be set 12 metres from the property line of the stable residential neighbourhood. This policy sets the easterly curb for the south section of the East Service Road. The north end of the East Service Road must align with the service road north of Sheppard Avenue, known as Doris Avenue. Given that the skew angle between Sheppard Avenue and Doris Avenue can not be less than 70 degrees (for good operations, sight lines and safety) the northern alignment of the new East Service Road is also fixed. In order to provide continuity of the service road, property is required from the Toronto Separate School Board on the northeast corner of Doris Avenue and Sheppard Avenue in order to accommodate a proper redesign of the intersection. Given the above constraints, there are no alternatives for the design of the Tradewind Avenue, East Service Road.

2.4.3 East-West Link

The OMB recommended that a link be constructed between Poyntz Avenue and Anndale Drive. Given the increase in traffic resulting from higher densities and a larger downtown, it is clearly beneficial to have two signalized intersections with Yonge Street between Highway 401 and Sheppard Avenue. This additional east-west road also sets a grid network and lends itself to more regular development parcels with improved access and increased frontage. Although not a recommendation of the previous ESR, given the predicted increase in traffic, it is clear that the addition of this link will be beneficial to the development of the Downtown Area south of Sheppard Avenue, and a benefit to the traffic operations and flow characteristics. The required property for this road will be taken at the time of development (property along Anndale Drive is also required for "North York Square" parking mitigation – see Section 3.8.1). The only impact associated with this new link is an increase in construction cost.

The west end of this link is fixed by the necessity to avoid the Proctor and Gamble building while maintaining alignment with Poyntz Avenue across Yonge Street. The east end of the link is fixed by the necessity to provide access to the relocated underground parking for North York Square, while aligning with Anndale Drive east of Tradewind Avenue. Between these fixed ends, alternative alignments were considered. Given the limits of geometric design (design speed 40 km/h – curve radius 55 metres) and the desire to create more regular development blocks only one alternative is considered reasonable, as shown in Exhibit 2.2. A third turning lane is provided within a standard 23.0 metre right-of-way, to improve operations.

3.0 THE RECOMMENDED ULTIMATE DESIGN

This chapter documents the engineering details and the associated impacts for the preferred ultimate transportation infrastructure improvements. As discussed in the previous chapter, the Tradewind corridor is the preferred alignment for the East Service Road.

The recommended ultimate infrastructure improvements include the following:

- Northbound right turn lane on Yonge Street at Avondale Avenue;
- Widening of Avondale Avenue to five lanes (about the centreline);
- Two lane link between Poyntz Avenue and Anndale Drive (with a third continuous left-turn lane);
- Realignment of Doris Avenue just north of Sheppard Avenue;
- Extension of the East Service Road south from Doris Avenue to Avondale Avenue along the Tradewind Avenue corridor.

This section of the report will serve as a forum for discussing and displaying engineering work that has been completed on the recommended infrastructure improvements. In addition, this chapter should replace Chapter 6 of the original ESR.

3.1 ROADWAY

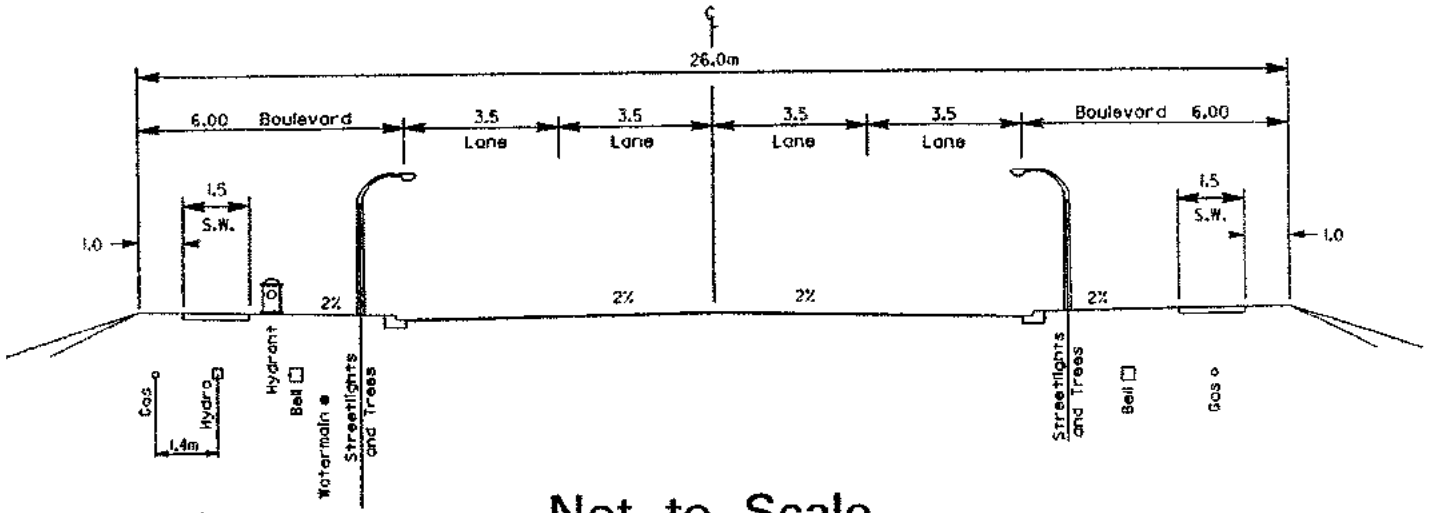
3.1.1 Cross-Section

A typical cross-section was developed for the four-lane east service road, as seen in ***Exhibit 3.1.*** This cross section includes four 3.5 metre lanes with a 6.0 metre boulevard and 1.5 metre concrete sidewalks on both sides of the street. The typical section on Avondale Avenue is the same except there is a fifth 4.5 metre continuous centre left turn lane.

The typical cross-section for the new road link between Poyntz Avenue and Anndale Drive can be seen in ***Exhibit 3.2.*** This section includes a pavement width of 11.0 metres with a 6.0 metre boulevard and concrete sidewalks on both sides of the street. The large pavement width is to allow the designation of turn lanes as necessary in order to avoid impeding the flow of through traffic.

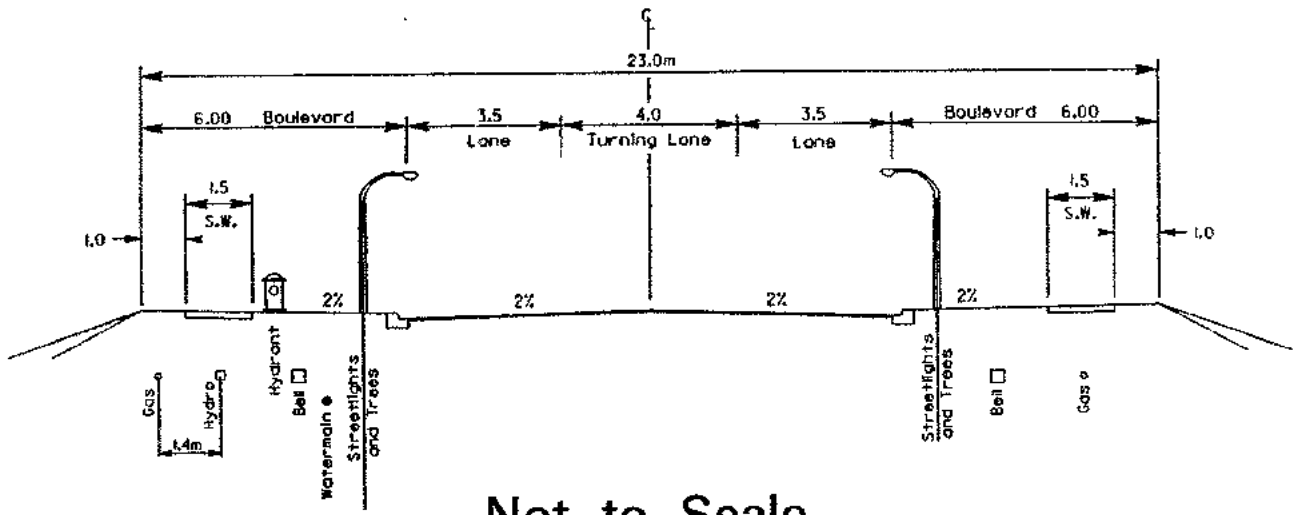
3.1.2 Horizontal Alignment

The details of the horizontal alignment for the proposed improvements can be seen in Exhibit 2.2 in Chapter 2 of this addendum.



Not to Scale

TORONTO North York Civic Centre	COLE, SHERMAN	North York Downtown South of Sheppard Avenue Class Environmental Assessment Study Addendum	Typical Cross-Section for East Service Road	Exhibit Number 3.1



Not to Scale

TORONTO North York Civic Centre	COLE, SHERMAN	North York Downtown South of Sheppard Avenue Class Environmental Assessment Study Addendum	Typical Cross-Section for Link Between Anndale & Poyntz	Exhibit Number 3.2

3.1.3 Vertical Alignment

The vertical alignment of Avondale Avenue will be unchanged from the existing. The vertical alignment of the East Service Road must meet the existing grade at Avondale Avenue/Oakburn Crescent in the south and Sheppard Avenue/Doris Avenue in the north. Between these fixed points the profile will follow closely that of existing Tradewind Avenue. The link between Poyntz Avenue and Anndale Drive must meet existing grades at Yonge Street and Anndale Drive. Between these points the profile will closely follow the existing topography. A detailed profile will be developed for all of these improvements at the time of detail design.

3.2 PROPOSED DRAINAGE SYSTEM

The drainage on all the roads within this undertaking will be by urban storm sewer and catchbasin. On Avondale Avenue the existing stormwater system will be modified to accept the widening. On the East Service Road and the link, a new storm sewer system will be constructed and connected to existing systems. The details of drainage will be finalized during the detail design of these roads.

3.3 RIGHT-OF-WAY REQUIREMENTS

On Yonge Street, the City of Toronto requires approximately 4.0 metres of property and additional daylighting for the northbound right turn lane at Avondale Avenue. The necessary land is to be provided by Wittington Properties Limited through its plan of subdivision.

On Avondale Avenue 5.2 metres of property is required from both sides of the street. Wittington Properties Limited has acquired most of the residential properties on the south side of Avondale Avenue. The properties on the north side of Avondale Avenue are expected to assemble in the future based on an increase in density and a high redevelopment potential. It is anticipated that all property dedications to the city will occur with redevelopment.

For the service road south of Anndale Drive, no property is required on the east side of the road as the existing right-of-way of Tradewind Avenue is being utilized. However, an 11.9 metre property acquisition is required on the west side. Again, it is expected that these residential properties will assemble in the future based on an increase in density. North of Anndale Drive a 26.0 metre right-of-way is required, flaring out to 30.0 metres at Sheppard Avenue. North of Sheppard Avenue, property is required from the Toronto Separate School Board in order to accommodate a proper redesign of the Doris/Sheppard intersection.

The basic right-of-way requirement for the link between Yonge/Poyntz intersection and Anndale Drive is 23.0 metres. As 'downtown' property redevelops in the future, this right-of-way will be a requirement of any development proposals. West of Yonge Street 10.0 metres of property is required from the north side of Poyntz Avenue as outlined in the approved Environmental Study

Report entitle "Downtown Service Road and Associated Road Network", dated April 1991. The actual road design of this intersection may change over time as a result of ongoing monitoring of traffic activity.

Bales Avenue will also be extended north as a continuation of the existing 20.0 metre right-of-way to intersect with the new link between Anndale and Poyntz.

Exact property requirements for this project will be determined during the detail design of the road network.

3.4 UTILITIES

The existing storm sewer system on Avondale Avenue will be modified to accommodate the widening of the road. On the east service road, a new storm sewer system will be constructed and connected to the existing systems on Avondale Avenue and Sheppard Avenue. A new storm sewer will be required to service the link between Poyntz Avenue and Anndale Drive.

It is not known at this time what the requirements are for sanitary and watermain services on the east service road or the link to support future development. This will be determined as development occurs.

On the south side of Avondale Avenue, the utility poles (bell, hydro and luminaires) will require relocation as a result of the widening.

Specific details will be supplied to each affected utility company during the detail design stage of the project to determine necessary plant relocation.

3.5 PRELIMINARY CONSTRUCTION COST ESTIMATE

Preliminary quantities and construction costs have been developed for the ultimate infrastructure improvements as described in this chapter. These include costs for every component of the infrastructure improvements excluding property acquisition, utility relocation, construction staging, and removal of residential homes. The construction cost of the preferred alternative including the Tradewind service road, the widening of Avondale Avenue, the link from Poyntz Avenue to Anndale Drive and the northbound right turn lane on Yonge Street can be seen in ***Exhibit 3.3***.

The total roadway construction cost is $2.6 million. This excludes the cost of the parking mitigation at North York Square (estimated at $1.7 million).

This construction cost is preliminary only. Detailed costing will be completed as a part of the detail design assignment.

Description	Unit	Unit Price	Preferred Ultimate Quantity	Preferred Ultimate Total
Removals				
Remove Curb and Gutter	m	$5.00	1800	$9,000
Remove Concrete Sidewalk	m^2	$5.00	1000	$5,000
Remove Asphalt	m^2	$5.00	6500	$32,500
Roadway				
Base (Granular 'A') - 200mm	t	$12.00	11000	$132,000
Sub Base (Granular 'B') - 600mm	t	$10.00	27500	$275,000
Asphalt Base - 80mm	t	$42.00	4500	$189,000
Asphalt Top - 40mm	t	$52.00	2250	$117,000
Sub Drain	m	$12.00	2000	$24,000
Concrete Curb and Gutter	m	$40.00	2700	$108,000
Sewer & Watermain				
Storm Sewer (incl., catchbasins and manholes)	m	$160.00	1200	$192,000
Sanitary Sewer	m	$125.00	900	$112,500
Watermain	m	$150.00	900	$135,000
Boulevard Treatment				
Sodding	m^2	$5.00	8900	$44,500
Trees and Landscaping	Each	$200.00	102	$20,400
Concrete Sidewalk	m^2	$40.00	3100	$124,000
Light Standards	Each	$6,000.00	40	$240,000
Traffic Lights				
Traffic Signals	Each	$80,000.00	4	$320,000
Engineering and Contingency At 25%				$519,975
Total Construction Cost				**$2,600,000**

3.6 NOISE

The engineering firm of S.S. Wilson and Associates has conducted an environmental noise impact analysis for this project.

With the Tradewind Avenue corridor being the alignment of the east service road, it changes the effect on the houses in the stable residential neighbourhood to the east. The change in the level of noise at a number of houses is considered marginally significant with noise levels increasing closer to the service road. In some instances, those houses directly abutting or adjacent to the road right-of-way may experience significant change.

The introduction of a new noise source (i.e. traffic on the east service road), particularly during rush hours, produces a noticeable increase over the existing ambient levels. Change to the ambient is one of the criteria used in evaluation of noise impacts when considering a project.

The Ministry of Environment and Energy and the Ministry of Transportation have a protocol and policy for addressing noise impacts, which establishes a 55 dBA level as desirable for new or retrofit highway projects. The protocol is general and does not distinguish between urban and suburban settings, but the policy sets guidelines whereby increases up to 5 dBA above the ambient are considered insignificant and therefore mitigation measures are not required. However, increases greater than 5 dBA, require an investigation for implementing mitigation measures within the road right-of-way. Mitigation is warranted only if the project costs are not significantly affected and if the measures are capable of producing 5 dBA or more reduction in sound exposure. Measures that produce less than 5 dBA attenuation at the first row of houses are not considered cost effective.

The North York Centre is a Major Metropolitan Centre, and its activities are more in keeping with the normal five-day business week with the highest noise levels coincident with the established peak period hours. Therefore, changes to the ambient should not be considered as the primary factor or the only factor when examining the noise impact of the east service road without reference to the absolute noise levels.

More appropriately, the absolute levels (real levels) generated by traffic during the peak hours are considered acceptable in the context of developing an "urban centre".

During the night (11:00 p.m. - 7:00 a.m.) sound exposures close to the service road are expected to be consistent with an urban residential neighbourhood and in most cases will be within the MOEE nighttime sound exposure guideline limits for new development.

Daytime (7:00 a.m. - 11:00 p.m.) sound exposures close to the east service road are expected to be similar to those experienced by residents close to a mixed-use (commercial/residential) environment.

It is important to note that the most significant changes in traffic noise will apply to a relatively small number of residences immediately adjacent to the east service road. Noise walls can effectively mitigate noise impacts; however the height of such walls would be in the range of 2 to 4 metres. Flanking the community with noise barriers is not desirable as they can create shadowing, visual intrusion, security concerns, wind activity, snow drifting and ongoing maintenance with respect to graffiti and/or malicious damage. For the above reasons, noise walls are not preferred.

Berms can be effective, but the primary concern is to provide sufficient width in the buffer area in order to achieve the necessary height. In certain cases this would require significant property acquisition. The slope of the berms would have to be in a reasonable range having a maximum grade of 4:1 to allow maintenance, reduce erosion and be conducive to planting a variety of vegetation. Whenever possible, a landscaped buffer area will be provided adjacent to the service road to lessen the visual impact and aid in the reduction of increased noise levels.

Again, it must be recognized that the road network for the Uptown Secondary Plans also had areas where noise increases were identified to be marginally significant but in comparison with the overall benefits of developing the plans, the increase in noise levels has been accepted. The highest dBA levels in the study area south of Sheppard Avenue effecting single family residential property is predicted at 66 dBA, while similarly in the Uptown Plan which has been approved, there are a number of locations where 66 dBA noise levels have been predicted and at one location, 70 dBA.

The report entitled 'Noise Impact Assessment for the Proposed East Service Road South Downtown Planning Area', dated April 19, 1996, was appended to the September 1996 ESR.

3.7 AIR QUALITY

Rowan Williams Davies and Irwin Inc. (RWDI) was retained to address air quality concerns resulting from the proposed transportation infrastructure.

Air quality concerns were addressed by numerically modelling vehicular emissions of carbon monoxide (CO) and oxides of nitrogen (NO_2) for a representative intersection along the proposed route (Doris Avenue/Tradewind service road and Sheppard Avenue).

It was predicted that for the design year 2020, vehicular traffic along the proposed service road will not produce ambient levels of CO and NO_2 that exceed Ontario's Ambient Air Quality Criteria. This conclusion is based on the results of dispersion modelling under a combination of worst-case meteorological conditions, peak traffic and high background pollutant levels. It is therefore expected that the levels of CO and NO_2 at the receptors examined, as well as for the intersection as a whole, will frequently be less than the values predicted in the air quality study.

The report entitled "Air Quality Assessment for East Service Road North York, Ontario", dated April 30, 1996, was appended to the September 1996 ESR. This report was based on the Midblock service road alignment and has since been updated by letter, as seen in Appendix D.

3.8 MITIGATION AND EFFECT OF PROPERTIES WITHIN THE PLAN

3.8.1 North York Square - 45 & 47 Sheppard Avenue East

The property known as North York Square located at 45 & 47 Sheppard Avenue East will now be situated at the southwest corner of the new east service road and Sheppard Avenue. The service road will displace the existing access to the site as well as surface and underground facilities and parking. Mitigation is required to resolve these impacts.

The existing access to the site and the ramp to the underground parking will be relocated to Anndale Drive. This new entrance will provide access to the new link, better circulation and a more desirable point of access from an operations perspective.

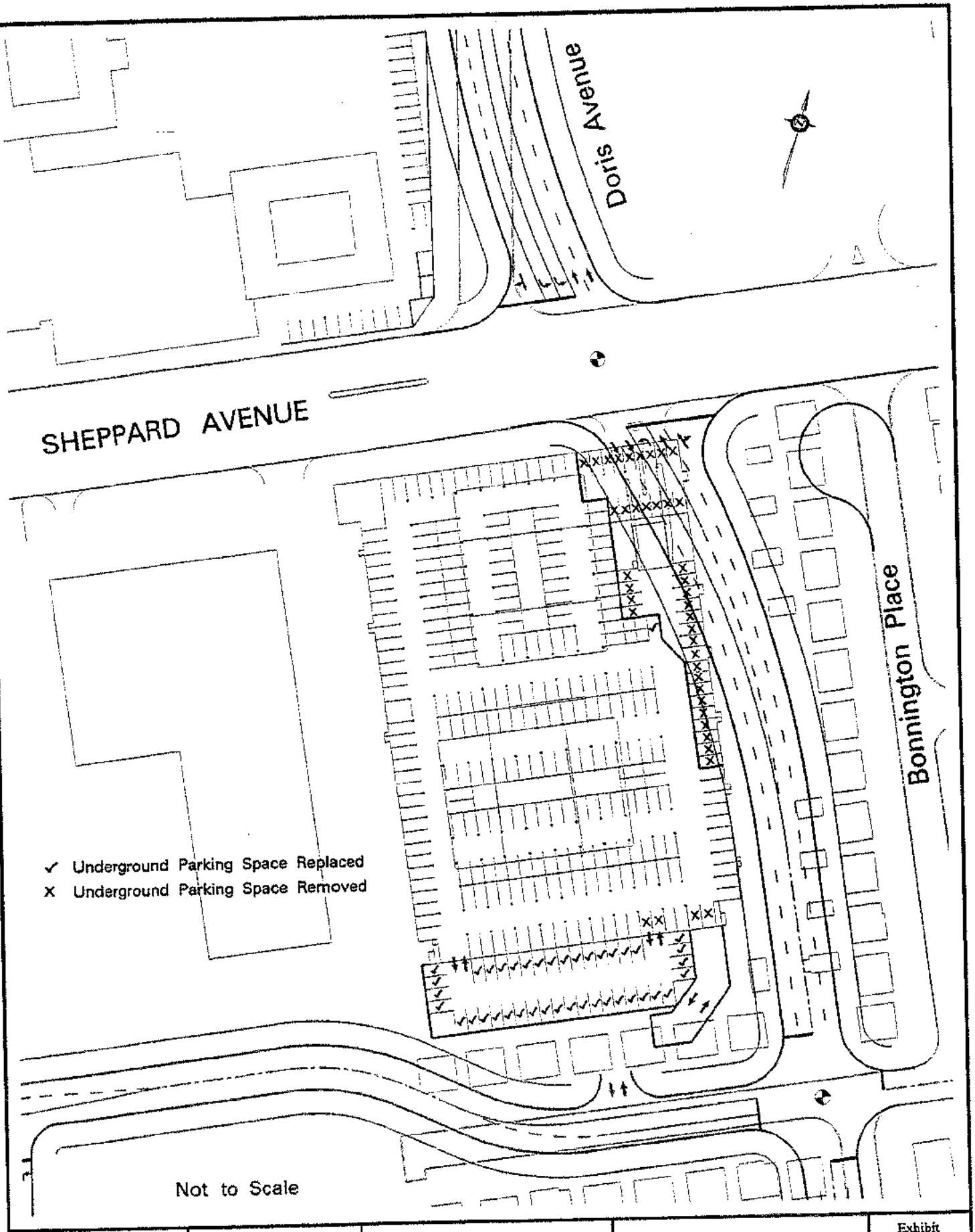
The reconfiguration of the site as a result of the new east service road will displace 41 underground parking spaces, all of which can be replaced by the construction of new underground parking at the south end of the existing facility. In order to accommodate this parking, and as a part of the mitigation, the seven properties on the north side of Anndale Avenue, south of North York Square will have to be acquired to be incorporated into the site. In addition, the newly acquired property will provide space to add new surface parking facilities and/or replace landscaped green space. Details of the above can be seen in ***Exhibit 3.4***. Underground parking spaces that are removed are shown with an "X", replaced underground spaces are shown with a "✓".

The estimated cost for this mitigation (excluding property) is $1.7 million.

3.8.2 Bonnington Place

As can be seen from Exhibit 2.2, all properties along the west side of Bonnington Place are required for the service road. While the OMB moved the boundary of the Downtown Plan to the easterly limit of Bonnington Place, it is unlikely that the residual lands after the taking for the road right-of-way have development potential.

The density from these lands can be transferred to other host sites in accordance with the policies of the Official Plan. The residual lands along Bonnington Place in all likelihood will be landscaped as a buffer area between the service road and the stable residential area to the east.



TORONTO North York Civic Centre	COLE, SHERMAN	North York Downtown South of Sheppard Avenue Class Environmental Assessment Study Addendum	Parking Reconfiguration for North York Square	Exhibit Number 3.4

3.8.3 Toronto Separate School Board (TSSB) – 80 Sheppard Avenue East

As can be seen from Exhibit 2.2, the property acquisition required from the north side of Sheppard Avenue to accommodate the reconfiguration of the Doris Avenue/Sheppard Avenue intersection, may remove frontage from the TSSB administrative offices. The detail of property acquisition and specific mitigation will be negotiated with the school board at the appropriate time.

3.8.4 Proctor and Gamble – 4711 Yonge Street

As the OMB has now moved the Downtown boundary further to the east which effectively includes Bales Avenue as a road within the Downtown plan, the previous access restrictions to Bales Avenue from the Proctor and Gamble office building no longer apply. Indeed, access to Bales Avenue has already been provided from the site as a temporary mitigation measure associated with the Sheppard Avenue Subway construction. It is now intended that this temporary access become a permanent point of access as part of mitigating the effect of the new road network proposed in this addendum report.

With the development of the Anndale Drive westerly extension to the Yonge Street/Poyntz Avenue intersection, current egress from the site will change. Further access arrangements may have to be negotiated at the appropriate time, which may include controlled egress to the new Anndale Drive westerly extension.

3.9 POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

The recommended alternative effectively mitigates any measurable environmental concerns related to this project with the exception of environmental issues perceived with the increase in transient traffic into the stable residential neighbourhood to the east. As identified earlier in the report, this can be resolved with the closure of Leona Drive, south of Sheppard Avenue.

3.10 COMMITMENTS TO FURTHER WORK

Upon approval of this study, the City of Toronto will commit to several specific actions as part of the detail design and construction of this project. It should be noted that the timing of construction of the transportation infrastructure improvements is dependent on private sector development and as such, is unknown. The specific commitments are as follows:

- Proceed with the physical closure of Leona Drive as soon as possible after the ESR Addendum has been approved;

- Detail design plans will be developed illustrating proposed stormwater management measures for review and approval by the Ministry of the Environment, the Ministry of Natural Resources and the Toronto Conservation Authority;
- The required relocation of utilities will be coordinated with each affected utility company;
- The City of Toronto, North York Office will proceed with negotiations for property acquisition and encroachment agreements with impacted owners as development proceeds and requires the need for the infrastructure. Such negotiations shall include mitigation and compensation; and,
- The City will continue to develop, in conjunction with individual property and business owners, entrance treatments for their individual driveways during and after construction.

TORONTO
North York Civic Centre

APPENDIX A

ONTARIO MUNICIPAL BOARD DECISION
(SEPTEMBER 29, 1997)

TORONTO
North York Civic Centre

APPENDIX A

ONTARIO MUNICIPAL BOARD DECISION
(SEPTEMBER 29, 1997)

to enact a proposed amendment to Zoning By-law 7625, as amended, to rezone land at the northeast corner of Yonge Street and Highway 401 to permit a mixed use development O.M.B. File No. Z950163

C O U N S E L :

C. Conrad	for	The City of North York
C. Lyons and A. Leibel	for	Westnor Limited
M. Bowman and S. Stein	for	Anndale Properties Limited and Crestview Investments Corporation (Oakburn Apartments)
P. Devine	for	789813 Ontario Limited The Cadillac Fairview Corporation Limited Seneca College of Applied Arts & Technology Sun Life Assurance Company of Canada
P. Lauwers	for	Metro Separate School Board
G. Rempe and	for	Metropolitan Toronto
P. Emmons	for	Marathon Realty Company
R. Beaman	for	North York Board of Education
M. Flynn-Guglietti	for	Estate of Marjorie Bales
D. Tang	for	Marguerite Clark
M. Chusid	for	Revenue Properties
B.H. Engell	for	Premium Properties Limited and Poyntz Developments Limited
P. Ginou	for	Ivanhoe Inc. and 888049 Ontario Inc. (Willowdale Plaza)
K. Beckman	for	576807 Ontario Inc. ("Erez") and 1229504 Ontario Inc. (South Downtown Property Owners Group)

DECISION OF THE BOARD delivered by D.L. SANTO

The Downtown of the City of North York is a linear area centred on Yonge Street running from Hwy. 401 in the south to Finch Avenue in the north. City Council has established through policy and consistent practise that the residential area outside of the Downtown shall be considered as a stable single family community once the boundary of the Downtown has been fixed. Given this fact, the boundary of the high density Downtown of the City that abuts directly on a stable low density residential community must be drawn in such a manner to provide a definite line that clearly separates the two urban uses. The line must be drawn to enhance the goals of each urban area while providing realistic stability within each area. The matters before the Board and the subject of a lengthy hearing relate to the area of the City of North York known as its South Downtown and more specifically located south of Sheppard Avenue to Hwy. 401 and east of Yonge Street. Official Plan Amendment 393 (OPA 393), which resulted after a comprehensive review of the existing Official Plan, proposes to establish a new boundary for the southeast quadrant of North York's Downtown and establish the location of the service road needed to complete the ring road that encircles the other three quadrants of the Downtown. The location of the boundary as approved by Council in the adoption of OPA 393 is supported by some of the parties especially the Yonge Street Area Ratepayers Association (Y.S.A.R.A.) and the Avondale Ratepayers Association. The proposed boundary is adamantly opposed by Mr. Erez and the South Downtown Property Owners Group (S.D.P.O.G.) whose properties lie between Bales Avenue and Tradewind, just outside the boundary and who through legal representation and professional evidence seek to have their lands included within the Downtown. Other parties like Westnor and Oakburn remained strategically neutral to the location of the boundary beyond the OPA 393 delineation as their properties are within the Downtown and each have site specific development proposals. The other matters before the Board are these site specific

applications that relate to the lands locally known as the McLean-Hunter site now owned by Westnor (also referred to as Wittington Properties, a member of the Loblaws group of companies) located adjacent to the Hwy. 401 at Yonge Street and the site of the Oakburn Apartments immediately east of the Westnor property and seeks to redevelop the existing apartment complex with high density residential development. While there is now general agreement between the City and these two latter parties, there were issues that required the Board's adjudication not only between the City and each party but between the two abutting property owners and the North York Board of Education (N.Y.B.E.) which owns the property immediately to the east of the Oakburn Apartments. Other parties such as Premium Properties, Seneca College and Sun Life Assurance Company of Canada and others were represented to achieve site specific policies only as they relate to their sites and to ensure that the densities granted to Westnor and Oakburn do not negatively impact the realization of the densities already enjoyed by their properties and these will be dealt with separately at the end of the decision. N.Y.B.E. seeks policies in OPA 393 that will ensure that the access and egress for its transportation centre and bus depot, which it now enjoys through local streets to both Yonge and Sheppard, will not be impeded. Metro Toronto Separate School Board (M.S.S.B.) seeks the reservation of a school site by way of a condition to the approval of the Westnor draft plan of subdivision which Westnor opposes. The Estate of Marjorie Bales seeks site specific policies as its site's development potential, while within the Downtown, is constrained by the location of the boundary and the plan's policies dealing with the interface of the Downtown and the stable residential area. Mr. and Mrs. Badone, owners of the Elihu Pease House, in addition to supporting the location of the boundary as adopted by Council, seek policies to protect the historic nature of their home.

The Board will deal first with the issue of the appropriate boundary for the South Downtown and the location of the new service road. Both determinations are necessary for the assignment of densities and the establishment of a meaningful boundary that will not only ensure stability but will also prevent the severe traffic infiltration that is now

occurring. In addition, many of the individual or site issues resolve themselves with the fixing of the boundary and the service road.

The Board heard extensive and detailed evidence. It conducted an evening session to convenience many local residents who were not able to attend during the day-time sittings. I have carefully reviewed and seriously considered all of the evidence and submissions. I am satisfied that all parties were competently and ably represented by legal counsel or by themselves and that no party was in any way disadvantaged in putting forth a forthright case in support of its position. The positions are complex and some diametrically opposed. Having stated this, I do not intend to record the evidence or detail each party's specific position on each issue or sub issue.

In addition, I fully recognize that there are deep emotional attachments to this residential neighbourhood which is somewhat of an enclave insulated by the 401, Yonge Street, Sheppard Avenue and the Creek and Glendora Park. It is a mature neighbourhood with its streets lined with large and gracious trees and its homes are meticulously maintained. Traffic infiltration problems have been a catalyst to bond the community against further encroachments and the desire to limit the extent of the Downtown. On the other hand, the property owners closest to Yonge Street have had to bear the largest brunt of the impacts of high density development at their doorstep and now seek to have the Downtown boundary expanded easterly to include them (S.D.P.O.G.). This has caused a rift in the community and by the time of hearing of this matter, it is very much a community divided. I recognize and fully appreciate the sentiments and sincere and emotional attachments. However, the decision I must make, is an objective planning decision that has the ability to stand the test of time. An Official Plan is a long range planning document that must not only address short term community needs and development pressures but provide direction for sound and well planned future development. In this instance, the planning of the downtown must also ensure protection and stability of the abutting low density residential community. The decision I must make, must clearly be in the public interest and here the public interest is a nebulous creature that

must somehow transcend the multifaceted and varied positions of each individual, group or public body or private interest before me. I have taken the time to carefully weigh all of the interests represented and have decided that stability of the residential community to the east can only be achieved by providing a boundary for the South Downtown that allows the area within the downtown to achieve the goals already established for its development and maximize the use of the abundant and significant public infrastructure in place at Yonge and Sheppard and Yonge at 401. That is the public interest that I must satisfy.

Boundary for South Downtown and Service Road Location

This decision will deal with the establishment of an appropriate boundary exclusively for the southeast quadrant of Yonge and Sheppard. I have not been requested nor was I provided with any evidence with regard to the southwest boundaries of the downtown.

Pre-OPA 393, the boundary was an inverted "U" shape flanking the south side of Sheppard, commencing 1 residential lot west of Bonnington Place, flanking the east side of Yonge, a mini block to the east bounded by Bales Avenue and the last arm of the "U" being the Maclean Hunter site between Avondale and Hwy. 401. The area inside the "U" is designated stable residential area.

In 1992, two events occurred. Westnor made application to amend the Official Plan and by-law to increase the mixed-use density assigned to its 10 hectare (25 acre) parcel of 1.5 f.s.i. to 4.5 f.s.i.. The City began an exercise to review the boundaries of the South Downtown.

The period between 1992 and 1995 was described as the "Big Vision" era. In participation with key land owners and community interest groups, the City explored improved ramps to the 401, a new subway station at Avondale Avenue, a grade separated intersection with Yonge through the Westnor lands. The planning and transportation exercise resulted in a vision of an enlarged Downtown with densities assigned similar to the densities already assigned and considerably developed north of Sheppard, that is 4.5

f.s.i. and a similar more regular full block depth included inside the Downtown boundary. The costs of the infrastructure improvements necessary to implement this vision was extensive. The City requested assistance from the Federal Liberal Government's infrastructure programme that was being offered at the time. Somewhat as a surprise, given the significant number of members of the government elected from the G.T.A. and the usually successful persuasive power of this Council, the Hon. Art Eggleton (Exhibit 6, Page 737) by letter dated April 5, 1995 advised, on behalf of the Federal Government, that assistance was not available as program funds had been exhausted. This decision may assist in rekindling the request under the present infrastructure programme.

Notwithstanding the announcement and ultimate commencement of construction of the Sheppard subway, development potential of the southeast quadrant is severely constrained by the existing road network and the significant amount of development lying to the north. All of the transportation experts agree that it is not only a capacity issue but the questions of access to development parcels and road circulation of traffic are key to assigning increased density in this quadrant.

North York's stated policy requires that new development pay the infrastructure improvement costs and not general revenue. As a result of the Federal Government decision it was determined that the "vision" plan was then not achievable. To use Mr. Beaman's words, the "Vision became a Blink". OPA 393 was then adopted and it changes the South Downtown boundary merely by adding the Oakburn Apartment lands located immediately east of Westnor and by assigning a density of 2.5 f.s.i. to Westnor and 2.0 f.s.i. to Oakburn. No service road alignment was shown to complete the ring road system now in place to the north (Doris Avenue). The Board notes that north of Sheppard, the ring road not only functions as a major traffic circulator but most significantly as the "hard edge" boundary separating the Downtown high density blocks (4.5 f.s.i.) from the abutting "stable low density" residential community.

The addition of Oakburn and the assignment of higher densities to both Oakburn

and Westnor further exacerbates the ability of the area contained within the open part of the inverted "U" shape to be considered as stable low density residential. Ms Beckman used more colourful language to describe the shape created by this irregular boundary. She likened it to "a bungie cord" with a bulge of development at 4.5 f.s.i. at Sheppard, thinning out to a narrow strip at 1.5 f.s.i. then bulging out again at Westnor at 2.5 f.s.i.. For ease of reference a copy of Map D.2.1, Schedule "2" to OPA 393 is attached as Schedule "A" to this decision.

Just prior to the commencement of hearing and partly as a result of intervention of a Board appointed mediator, Council adopted a resolution requesting the Board to modify OPA 393 by inserting Map D.2.5 showing the location of the south service road (attached as Schedule "B"). The route chosen is the Poyntz Avenue extension alignment which, on paper, appears to create some symmetry to complete the ring road by intersecting with the established western part of the ring road at Poyntz Avenue. However, to achieve such an alignment, the roadway would straddle the ramp leading to the underground parking garage of the existing 14 storey Procter and Gamble Building and would proceed through the middle of the present L.C.B.O., a tenant of Willowdale Plaza. It would then proceed northerly through the Seneca College lands and impact the property of the relatively recently constructed Ontario Court House located on lands owned by Marathon. The location and development of the service road in the Poyntz alignment does not realize additional densities nor does it remove the need to utilize the intersection at Yonge and Avondale for proper traffic circulation. It is the intersection at Yonge and Avondale that presently carries a high volume of traffic through the neighbourhood to avoid the intersection of Yonge and Sheppard.

The former and well respected Chair of this Board, the late J.A. Kennedy, Q.C. stated in Re Toronto Metro Centre (1971), 2. O.M.B.R. 5, at p. 9 "land use densities and transportation are two faces of the same coin. It could be said they are each part of the same face - as close together as cause and effect." I adopt his opinion and it is for this reason that I determined that the fixing of the boundary must be determined with the

location of the service road and the ultimate assignment of densities.

In addition, to put the location of the southeast quadrant into perspective and further understand the significance of this decision, I adopt the opinion of Warren Sorrensen as to apply to the entire southeast quadrant of Yonge and Sheppard and not only to the Westnor lands.

> "The Wittington lands possess a combination of attributes unusual, and perhaps unique, within central North York and the entire Metropolitan Toronto area. The site enjoys extraordinarily high visibility and prominence on two of the most significant of all roadways, whether considered at the City, metropolitan, regional or provincial level. Highway 401, from which the Wittington lands have excellent exposure, is often referred to as Ontario's main street. The lands also have extensive frontage along Yonge Street, a route which is central, both historically and functionally, to the image and identity of Toronto, North York and this general area of Southern Ontario. The lands are in relative proximity to rapid transit services, Sheppard Station is or will soon be served by both the existing Yonge subway and the Sheppard subway now under construction. In all these respects, the area benefits from a remarkable confluence of high quality transportation services." (Exhibit 56, page 2)

Within this perspective, the Erez lands, abutting the northeast extension of Bales Avenue and immediately behind the Procter and Gamble Building and to use Ms Beckman's expression "a spit away" from the Poyntz Avenue subway station, is designated stable low density residential in OPA 393 as well as the houses that front onto the east side of Bales. I find that the boundary proposed does not create stability within the context of these extraordinary transportation services and directly abutting future high density and prestigious developments with merely Bales Avenue as a separator.

With regard to the service road, I note that as a part of its OP review of this area and as background to OPA 393, the City commissioned Cole, Sherman, Consulting Transportation Engineers to undertake an "Environmental Study Report for the Transportation Infrastructure Requirements" for the Downtown plan south of Sheppard Avenue dated September 1996. It is Exhibit 16a to these proceedings. I find that section

E.5, Problems and Opportunities, to be comprehensive and perceptive. Many of the witnesses' opinions were canvassed in this regard. It is quoted below, as I adopt its findings that the objectives quoted form the need and justification for the proposed service road.

> "OPA 393 envisions higher density development along the major road frontages of Highway 401, Yonge Street and Sheppard Avenue. Traffic volumes on these roads is significant particularly during peak hours. Although implementation of the Sheppard Subway will improve transit use to the area and assist the target modal split of 60 percent transit to be achieved, more vehicular traffic will occur as development continues in the North York Centre.
>
> As stated in Section E.1, the purpose of the undertaking is to provide the transportation network in support of the development levels of the North York Downtown Plan south of Sheppard Avenue in the context of the ultimate development of the North York Centre.
>
> The road network should:
>
> i) Complete the link with respect to the Downtown service road within the southeast quadrant of Yonge/Sheppard in the North York Centre as identified in the Official Plan. This link will consist of the widening of Avondale Avenue, and the introduction of a new east service road;
>
> ii) Improve traffic circulation and provide capacity in support of recommended development;
>
> iii) facilitate the flow of traffic to and from existing and future development in the Downtown Area south of Sheppard Avenue allowing arterial roads to carry through traffic;
>
> iv) Alleviate heavy turning movements at Yonge/Sheppard, Doris/Sheppard and Avondale/Yonge;
>
> v) Create road frontage for internal development blocks in the Downtown Area south of Sheppard Avenue;
>
> vi) Provide improved access to existing and future development;
>
> vii) Help protect stable residential areas from traffic infiltration;
>
> viii) Help provide certainty in terms of how the development plans will be accommodated by delineating a boundary;
>
> ix) Not preclude possible roads and future development consistent with improved access to Highway 401; and,

x) Protect for longer term transportation capacity requirements.

The above objectives form the need and justification for this undertaking."

With the exception of objective # I), I am hard pressed to find that the Poyntz Avenue alignment satisfies these objectives. The Poyntz Service Road does not alleviate the need to improve and rely heavily upon the intersection of Avondale and Yonge. In addition, to avoid continued infiltration of traffic through the neighbourhood, an elaborate system of mazing would have to be devised such as that proposed by Exhibit 44. This mazing would in effect prevent any integration of the Westnor development with the downtown or residential community to the north and could cause a considerable circuitous routing of the N.Y.B.E. yellow buses to reach Yonge or Sheppard from its depot located south of Avondale.

The service road should provide the same benefits and opportunities that exist to the north. Doris Avenue on the east and Beecroft on the west have been successfully used to allow full potential to development parcels at 4.5 f.s.i. while acting as a barrier against traffic infiltration into the residential area. The east-west streets have been looped at the service roads preventing infiltration while maintaining good circulation for the residential community without mazing, that a grid road network provides. The service roads north of Sheppard also provide access to the development blocks. The irregular boundary of OPA 393 introduces uncertainty to downtown development parcels and raises aberrations and inconsistencies in interpretation of policies.

An example is the treatment of the Oakburn Apartment access issue onto Avondale Avenue. A policy of the OP prohibits the use of a local road outside of the Downtown for access and circulation of a development parcel inside the Downtown. A portion of Tradewind Avenue entering Oakburn Cres is a local road while Avondale is a collector. With the boundary located as proposed, at the rear of the lots on the south side of Avondale and the west side of Tradewind, the redevelopment of the Oakburn Apartment site would be prevented from using that portion of Tradewind, one lot deep, from accessing

onto Avondale. While the policy itself represents good planning, the use of it in this context highlights the inappropriateness of the location of the boundary and the service road as proposed.

Until the adoption of OPA 393, the review and background studies lead towards a preferred boundary for the South Downtown at Tradewind Avenue. This location would line up with the depth of the Downtown to the north bounded generally by Doris Avenue. An exception is the large chunk of land included in the Downtown just north of Sheppard east to beyond Kenneth Avenue. The Cole-Sherman study concluded that there was merit in a mid-block alignment or a Tradewind alignment for further evaluation as the service road. This recommendation was predicated on the use of Tradewind as the boundary. While it preferred the mid-block, it clearly dismissed the proposed Poyntz or Bales Avenue alignments (diagram E. 2 of Exhibit 16.a.)

From all of the evidence I find that I cannot support the boundary as drawn in OPA 393 nor the proposed alignment of the Poyntz service road. It will not provide stability to the area immediately east nor will the service road as proposed alleviate the existing traffic congestion and open new opportunity to development parcels in the southeast quadrant. It does not provide the "Hard Edge" boundary the residential community needs and deserves to maintain stability. An analysis of Schedule 2, map D.2.1. of OPA 393 clearly depicts tremendous development opportunity at high densities of 4.5 f.s.i. for almost all of the development parcels contained within the South Downtown from Yonge to each of the service roads north of Sheppard. It is obvious that the a.m. northbound traffic allocations and p.m. southbound for these developments use the capacity of Yonge from 401 to Sheppard and must be factored into Traffic Certification reports. You cannot ignore these traffic volumes. However, without the provision of additional road allowances to relieve existing and planned development to the north, and financial assistance in achieving this road network, the parcels in the southeast quadrant are penalized by lower densities and reduced development opportunity because of the high cost of providing a service road mainly for the benefit of northern development parcels. While I fully support the need for

Traffic Certification reports and fully commend North York's ability to be fiscally responsible having obtained the service roads and alignments north of Sheppard without cost to the general taxpayer, the road for this quadrant cries out for assistance. This quadrant is a premium location as North York's southern gateway to its Downtown now endowed with extensive public infrastructure that should be used by the largest number of people possible.

I will therefore modify Map D.1.1. of OPA 393 to move the boundary of the Downtown easterly to the east side of Bonnington Place, then southerly following the east side of Tradewind Avenue to where it joins Oakburn Crescent. The service road shall follow the Avondale and Tradewind existing road allowances as much as possible to intersect at Sheppard to provide as safe and as efficient a linking with Doris Avenue to the north as possible but recognizing that some curvature in the alignment will be necessary. I am also convinced from the evidence that two intersections with Yonge on the east side is necessary to provide the turning movements south of Sheppard on and off of Yonge. Therefore a second arm of the service road shall be designated using the Poyntz alignment to meet the Anndale Road allowance then to link with the Tradewind N-S alignment. Map D.2.5 shall be accordingly modified. The policies of the Official Plan shall be amended to afford these newly included parcels with similar density transfer provisions to provide for the provision of these roads as was granted to the other development blocks in the plan. With these modifications, I am satisfied that all of the criteria stated necessary by Cole-Sherman for a service road have been met and that development parcels have been created that can both realize fully the stated goals and development potential of the Downtown while containing sufficient area and a hard edge treatment to provide the necessary and appropriate buffering to ensure stability to the designated low density residential community. Without such modification, the area between Bales Avenue and Tradewind would not be stable and would be considerably underdeveloped given the transit infrastructure now in place and under construction. In addition, the parcels fronting Yonge bounded by Bales Avenue within the downtown would be seriously constrained by

the adjacency of a low density residential property line (R.R.P.L.) that requires increased buffers and lower heights so that full development potential of these blocks would unlikely be achieved. The result would be the service road network, as directed by the Board, provides for development parcels with good access and traffic circulation and creates the opportunity for good urban design treatments that a grid network can offer.

The jurisdiction of this Board to extend the boundaries of an OPA by modification was not challenged or contested. I am fully satisfied that adequate public notice has been given of these proceedings and that the issue of an appropriate boundary for the Downtown was known.

I am left with the assignment of densities to those parcels owned by Erez and the S.D.P.O.G. now to be included in the Downtown. I am also somewhat perplexed at the assignment and fully understand Mr. Weston's uncomfortable truthfulness when asked to give an opinion on density for these parcels. I find that transportation analyses were confined by instructions to limit the size of the Downtown in this area. Instruction was not apparently given to develop a road network that maximizes development potential after the "vision" era ended. Therefore, full potential of the lands have not been explored. Notwithstanding, the "vision" plan, when it was pursued, assigned these parcels a density of 4.5 f.s.i. In addition, the evidence is unchallenged and supported by all transportation experts that the development of the two proposals south of Avondale, Westnor and Oakburn are not dependent on the service road and only on widenings of Avondale and intersection improvements. Therefore, given the configuration of service roads directed, I am confident on the evidence that a density of 3.5 f.s.i. is achievable and sufficient to encourage assembly. However, I direct the City to add provisions in OPA 393 for the use of a holding provision in any subsequent by-law affecting these lands pursuant to section 36 of the *Planning Act* to require the necessary Traffic Certification prior to the lifting of the "H" for these lands.

I am not persuaded at this time to increase the densities of any of the parcels

already assigned inside the Downtown on Map D.2.1. However, in this regard, I agree with Warren Sorensen that the densities assigned are minimal given the locational and infrastructure attributes and only reflect vehicular access and capacity constraints. All other attributes would recognize significantly higher densities. Therefore this decision and assignment of densities will not prejudice future applications to increase density should technology and engineering open new avenues - pardon the pun.

While I recognize that this decision represents a significant modification to OPA 393, as adopted by a duly elected municipal council, I am convinced that it is fully accountable as representing the public interest as defined earlier in this decision. I am further compelled by the Provincial Policy Statements issued in 1996 under section 3 of the *Planning Act* which directs that the following planning principles shall be regarded:

- efficient use of land and existing infrastructure is to be required.
- efficient multi-modal transportation is to be provided for, including support for public transit.
- residential intensification is to be encouraged in built up areas with existing infrastructure.

The modifications made remove the necessity to deal with access to Oakburn and removes the need to add policies to ensure continued use of the road network by the N.Y.B.E. I truly expect that the installation of the service road will remove any necessity to utilize a mazing plan as depicted in Exhibit 44 and will provide for permanent continued access along Avondale to the service road for the N.Y.B.E. The modifications made will also eliminate the need to individually deal with the parcel owned by the Bales Estate or by Mrs. Clarke. Each can now pursue independent development plans unencumbered by the R.R.P.L. or agree to an assembly with Westnor. However, I would truly expect that given the extension to the east of the Downtown Boundary, any widening of Avondale would be taken from both north and south side of the allowance.

These modifications also remove the necessity of dealing specifically with any height restriction on the Westnor lands fronting Avondale given the former proximity of the boundary and previously relevant R.R.P.L. However, I take judicial notice that the planner for Westnor, Warren Sorensen, indicated that notwithstanding interpretation or moving of the downtown boundary, a 4 storey height limitation on the residential units fronting the south side of Avondale is appropriate. I expect the by-law to retain that provision.

The decision to expand the boundary of the Downtown easterly to Tradewind Avenue, is not in any way, to be construed as criticizing the role of municipal staff during the public review process or in the giving of evidence before this tribunal. The public consultation process was exemplary. The technical review and analysis was thorough but impeded by the political decision to limit the area encompassed by the South Downtown, south of Sheppard. These staff acted truly professionally in every respect and put forth its Council's decision with integrity and conviction. At the conclusion of all of the evidence, the Board put a series of inquiries forward to counsel for the City to address in reply. Counsel and staff worked diligently to provide me with the information requested, which I have found of great assistance. That is truly the mark of a professional staff.

The Board directs the City to prepare the necessary drafting of OPA 393 to implement this decision and to incorporate into Exhibit 155, the agreed upon text of OPA 393 and circulate to the parties within 60 days of this decision. The parties will have 15 days to respond to the City. The City will have 20 days thereafter to supply the Board with the text of OPA 393 together with a synopsis of any disagreement amongst the parties.

The Board recognizes the possibility that an environmental assessment under the *Environmental Assessment Act* may be required for the service road as directed by this decision. However, the Board suggests that the appropriate authority respectfully consider the Environmental Study report by Cole-Sherman and the interrogation of such relevant matters canvassed in the open forum during these proceedings. The Board's order for those portions of OPA 393 affected by the service road will respectfully not issue until a

decision with regard to the environmental assessment of the service road is made. Such decision will not affect the approval of those portions of OPA 393 related to the lands fronting Sheppard, fronting portions of Yonge and the Westnor and Oakburn lands.

Westnor Site

The Westnor site has been included in the Downtown for some 20 years. OPA 393 confirms its former Mix-Use designation but increased its density from 1.5 to 2.5 f.s.i. The by-law and draft plan of subdivision before the Board intend to redevelop the site from its former industrial use, that of Maclean-Hunter Publishing, to a mix-use, commercial/residential complex consisting of some 2000 residential units, 500,000 square feet of commercial uses of which not more than 65,000 square feet is for retail uses. The designation and density contained in OPA 393 were agreed upon between the City and Westnor after years of negotiation. There were a number of individual matters unresolved at the commencement of hearing that were resolved during the hearing, to the credit of legal counsel for both the City and Westnor. These are all reflected in the conditions of draft plan approval filed as Exhibit 154.

The height limitation fronting Avondale has been, earlier in this decision, determined appropriate at 4 storeys.

The Plan of Subdivision lays out a road system that is a simple crescent running from north to south to north with 2 (two) accesses onto Avondale. A series of Blocks are laid out and the development scheme locates the highest densities to the Yonge Street flankage with a landmark building proposed at the corner of Yonge and Avondale. The scheme is exciting in an urban context and a certain degree of flexibility is warranted and desirable to ensure creative architectural treatment responsive to such an attractive and visible site. The conditions finally consented to in Exhibit 154, reflect an understanding of a degree of flexibility and I fully support the approach in this instance that leaves it to block plans by a site plan application to finalize the details.

An issue to be determined is a road link or links between the Westnor plan of subdivision site and the Oakburn redevelopment plan of subdivision site. The three transportation engineers called for the City, Westnor and Oakburn, agree that no linkage is necessary for strictly traffic capacity or circulation issues. Yet, all 3 agree, some linkage would be "desirable" from an urban design point of view. The planning witnesses hold the same view. However, there are differing views as to how many linkages there should be and where they or it should be located. The planner and engineer for the City believe there should be 2 linkages connecting in an east-west direction from extending the north and south roads in the Westnor draft plan of subdivision (Exhibit 147). This opinion is premised on the need to continue the grid pattern south of Avondale to integrate the new development by use of the same urban grid pattern found in the areas located to the north. The engineer and planner for Westnor support one road connection achieved through the extension of the south road. It is their view that the built form will be at its highest densities and highest proportion of commercial uses on the southerly and westerly blocks. The lowest residential densities will be located on the northeasterly blocks closest to Avondale. Therefore, it is their view that circulating traffic between the two developments would be more compatible with the uses and densities to the south. The planner and engineer for Oakburn support a northerly connection as being more appropriate to link two residential communities. The southerly connection could cause some grief with their current urban design proposals. N.Y.B.E., while it would prefer both connections, supports a northerly connection as more convenient for its buses leaving its terminal to pass through Oakburn Cres through the connection and then north to Avondale. I suspect this position is related to its fear that its ability to continue to use Avondale and local streets could be curtailed in the future. N.Y.B.E. sees this ratepayers group as very active and influential and "visible yellow buses" may at some time not be welcome to use the local streets. However, Avondale is designated a collector and the service road proposed as the Board has directed, will require a direct intersection with Oakburn Cres and the continuation of Avondale to the east. Therefore access is guaranteed for both Oakburn and N.Y.B.E.

If an integrated highly urbanized Downtown is sought, then a block and grid plan is essential as part of the urban design features. However, the grid need not be achieved solely through connecting roads. As the traffic engineering evidence confirms that there is no need for the connections between the two subdivisions from a traffic circulation perspective, I am hesitant to order 2 roads with the significant amount of land needed for a standard road allowance. The land can better be used as parts of development blocks. I find that the southerly connection would be most compatible and conducive to higher volumes of traffic than the northerly connection. Given the location of the proposed service road, there would likely be very little or no need for Westnor traffic to drive east through the Oakburn residential community but convenient for Oakburn residents to access the service Road through Westnor. In addition to the road connection from South Street, I direct that a walkway, pedestrian link, be provided between the two developments at its northern connection. Such a walkway need be no more than 20 feet wide and can be located where the proposed extension to North Street was proposed, as put to the Board.

In addition, I accept the need for two 1 foot reserves at the terminus of the south road connection. One reserve is to be held by the City and the other by Westnor. It is reasonable to assume that there may be some cost-benefit and cost-sharing negotiation between Westnor and Oakburn. Westnor has agreed to Board member arbitration should a difficulty arise in the negotiations. The conditions of draft plan approval should reflect this.

M.S.S.B. seeks to reserve a site, specifically Block 9 (Exhibit 147) for elementary school purposes. The former site of St. Edward's Elementary School has been redeveloped and is used by M.S.S.B. as Cardinal Carter Academy of the Arts. Presently, St. Edward's is located in the former Burnett Public School owned by the N.Y.B.E. and is located to the north and west of Yonge and Sheppard. It has rented and used these facilities since the mid 1980's. St. Edward's School catchment area would include the southeast quadrant of the Downtown.

The evidence is that there are some 10 properties other than St. Edward's that were formerly used as N.Y.B.E. community schools in the area of the Downtown and are still owned by N.Y.B.E. Many are leased to private schools or other organizations. In addition, N.Y.B.E. owns 10 acres adjacent the Oakburn Apartment site and in addition to its transportation depot, Glen Avon School, which formerly was a local community elementary school, remains, servicing students with special needs across the entire City.

N.Y.B.E. has written to M.S.S.B. indicating that it intends to terminate its lease arrangement with regard to the St. Edward's School site. The evidence of the professional witness representing M.S.S.B. clearly indicates that it is M.S.S.B.'s preference to continue the operation of St. Edward's School in the N.Y.B.E.'s Burnett premises. The pupil generation from the Westnor site, calculated at approximately 75 students, can be accommodated at St. Edward's. The evidence is also clear that M.S.S.B. cannot afford to purchase Block 9.

The purchase of Block 9 at market value would include the purchase of approximately 250,000 square feet of mixed use permission. To develop and construct a school with a mixed use complex on a premium block of land with direct exposure to Hwy. 401 would require M.S.S.B. to joint venture. Westnor is opposed to the reservation and would not co-develop the site. M.S.S.B. would then take on an unfamiliar role of developer/builder in a high stakes, high risk field, that normally requires great expertise and business finesse. That role is significantly far afield from that as "educator".

Counsel for M.S.S.B. put before me a number of Board decisions, many authored by myself, that strongly encourages school boards to incorporate "the school" within the high density development complex for efficient use of land and buildings in dense urban environments. I think he was trying to introduce an analogy of what the skunk said when the wind changed direction - "It's all coming back to me now." However, I am not persuaded in any way to change or shy away from the views expressed earlier. In determining whether to reserve a school site in the Westnor plan of subdivision, I have not

in any way considered these lands as an inappropriate location for a school. The form and design of the complexes could be made appropriate for a school use while located in an intense and busy urban environment. Urban living requires that.

However, I have decided not to reserve a site and I have carefully considered section 51(24) (previously S. 51(4)) of the *Planning Act*. Section 51(24) requires me to "have regard for" (j) the adequacy of school sites". In this instance, to reserve a school site by way of a condition to the approval of the draft plan, Block 9 would have to be reserved as the one requested by M.S.S.B. I have no authority to order Westnor to joint venture against its corporate wishes with M.S.S.B. Given the financial constraints that publicly funded bodies are experiencing, it would be unwise to reserve a site that a school board clearly cannot afford and that would require that board to take on a role that it was not created to fulfil especially when there is a site, publicly owned, that can fill the need. Therefore I find that Block 9 is not adequate for school purposes because the cost to acquire would represent an undue and unnecessary burden on tax revenues.

In addition, from all of the evidence proffered by the professional witnesses for Westnor and M.S.S.B. I find that not only is there an adequate supply of schools and sites in public ownership in the area, there is an abundance of sites. I agree with Ms Lyons' argument that N.Y.B.E. is acting unfairly towards M.S.S.B. in this matter. One public school body should not force out another publicly funded school board and cause it to expend additional moneys when it is clear that N.Y.B.E. has a great deal of choice and a selection of sites to fulfil its educational needs. This kind of behaviour provides a glimpse into reason behind the current school board reform and is clearly unreasonable.

I will therefore not impose a condition that Block 9 must be reserved for a school site and Condition #22 is to be deleted from Exhibit 154.

Westnor supports OPA 393 and in specific, section 3.14.18 found in Exhibit 155, which relates exclusively to Westnor. The Board will approve section 3.14.18.

With regard to the by-law for Westnor the Board allows the appeal and amends the by-law in the form of Exhibit 153 as further amended by substituting Exhibit 62 for the height map and deleting section 2(m)(iii) and 3(g)(iv). Below grade bicycle storage shall be exempt from the definition of "gross floor area".

The Board is satisfied with the evidence of Warren Sorensen that the plan of subdivision (Exhibit 147) meets the requirements of section 51(24) of the *Planning Act*. The Board approves it subject to any red line revisions necessary to implement this Decision and subject to conditions contained in Exhibit 154, revised to reflect this decision and further revised to delete "to be implemented at the owner's expense" at the end of Condition 15 and delete the second paragraph of Note 3 on page 4.

The Board directs counsel for Westnor to prepare the Board's Order disposing of all the site specific matters related to its development and file it with the Board, with the consent of counsel for North York.

The Oakburn Lands

These lands are owned by Anndale Properties Limited and Crestview Investments Corporation. The site, immediately east of Westnor is just under 10 acres, excluding roads. In 1952, 26 low-rise apartments were constructed containing some 286 units. The site is ripe for redevelopment and the inclusion of the lands into the Downtown with a density of 2.0 provides the opportunity for high density residential development. Site specific policy 3.14.19 relates to these lands.

During the "Vision" era, it sought a density of 4.0 f.s.i. However, it accepts the 2.0 f.s.i. as contained in OPA 393. Oakburn intends to pursue a draft plan of subdivision application and site specific zoning by-law to further its goal to achieve some 694 residential units and accessory retail convenience commercial. These applications are before the Board to be heard shortly after the issue of this Decision.

Many of the matters related to OPA 393 and specifically access issues have already

been dealt with and I would expect a revised plan of subdivision to accommodate an east-west link with Westnor through the extension of its "South Street". Evidence will be required with regard to the treatment of that portion of Oakburn Crescent as it intersects with Avondale and the future service road on Tradewind. There is no need to entertain the modifications put forward as this decision makes them unnecessary with the exception of referring in section 3.14.19 to a "master concept plan" and not "master site plan". As so modified, the Board will approve section 3.14.19 of OPA 393 as worded in Exhibit 155.

Premium Properties, Seneca College, Sun Life and Cadillac Fairview

These sites located on the south side of Yonge at Sheppard and Premium at Poyntz and Yonge have remained a part of the Downtown plan with densities assigned of 4.5 f.s.i. on the majority and 2.0 f.s.i. on one parcel. Site specific policies apply to each of the sites, sections 3.14.20, 3.14.21 and 3.14.22. Settlements were reached during the course of the hearing to modify the wording of each of the specific site policies to ensure clarity of interpretation. The evidence of Mr. Dolan and Mr. Couper for the City to support the wording contained in OPA 393 as modified in Exhibit 155, indicate it represents good planning and that the densities are achievable. I accept their evidence.

The Board approves sections 3.14.20, 3.14.21 and 3.14.22 as found in Exhibit 155.

Willowdale Plaza

A portion of the Willowdale Plaza is to be used for the new service road. Presently, a portion of the parking area of Willowdale Plaza and the Erez lands are being used (by temporary expropriation) by the TTC during construction of the Sheppard Subway. Concern, legitimately so, is expressed with regard to increased tenant disruptions should the service road construction proceed during the TTC occupation. Agreement was reached with the City to restrict full construction of the service road until after the leases expire sometime into the new century. Modifications in that respect are requested and the Board supports the requests. Modification (i) and (ii) in Mr. Ginou's written argument are

reflected in Exhibit 155. Section (iii) and (iv) are as follows:

> Section 3.14.21 be amended by adding the following at the end thereof:
>
> "If the City constructs, in whole or in part, the portion of the Downtown Service Road to be located on the Willowdale Plaza Lands before a rezoning amendment application for those lands is made, the following principles shall apply:
>
> (i) impacts of such road and the construction thereof will be mitigated with careful regard so as to protect the existing plaza operation and minimize such impacts, including, without limitation, those impacts relating to access to the existing plaza from Yonge Street and relating to loss of parking;
>
> (ii) access to and from the Downtown Service Road, as so constructed, from and to the existing plaza operation shall be provided:
>
> (iii) no portion of the Downtown Service Road shall be constructed on the Willowdale Plaza Lands until the Toronto Transit Commission no longer requires any portion of the Willowdale Plaza Lands for or in connection with the Sheppard Subway construction at which time construction of a one way road may commence; and
>
> (iv) construction of a full two way road on the Willowdale Plaza Lands will not commence until the tenants of the Willowdale Plaza Lands vacate the portion of such lands located on the route of the Downtown Service Road and the City has vacant possession thereof."

Elihu Pease House

Louis and Donalda Badone were faithful participants to the hearing. Attending almost daily and providing the Board with insightful opinions with regard to the development of their neighbourhood and the need to protect their historic home at 34 Avondale Avenue. I fully appreciate the severity of the traffic infiltration problem that the neighbourhood has had to endure. This problem can only be resolved with the service road and extension of the boundary as directed in this decision. However, their home will now be within the Downtown. The Board directs the City to draft a site specific policy that deals with the historic nature of the Elihu Pease House and provides policies for bonusing for its preservation within a development proposal or for the relocation of it to a suitable

location that would enhance its preservation. The Board notes that it has been moved once from its original location and consists of a portion of the original Pease Home.

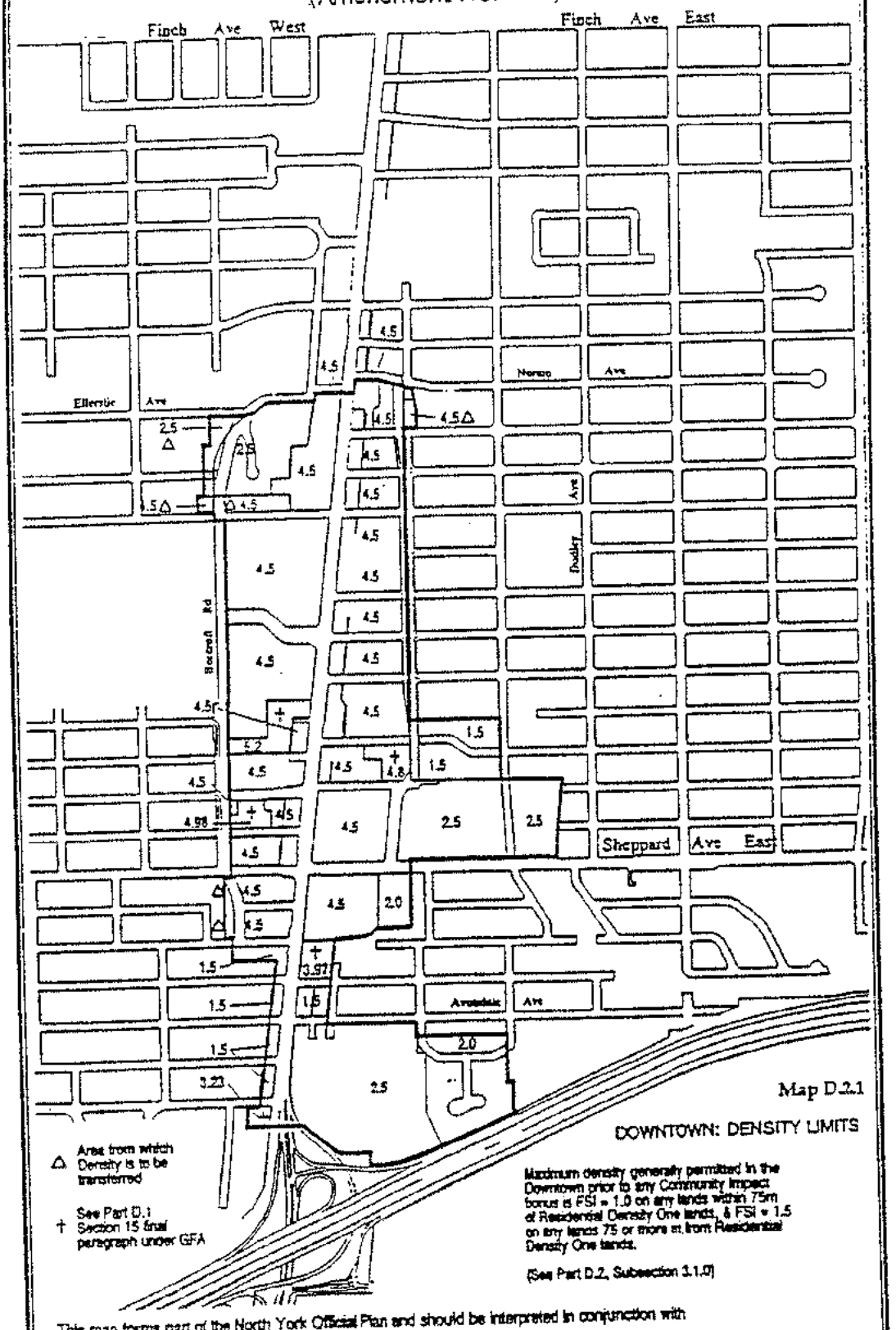
The Board is satisfied that OPA 393, subject to the modifications directed, represents good and sound planning for this area of the City of North York. The Board approves OPA 393 as found in Exhibit 155 and further modified as directed herein. The Board directs the City to prepare the fully modified version of OPA 393 for attachment to the Board's order. The Board requests the City to advise it of the appropriate sections or maps that may be required to be withheld from the Board order, related to the new service roads, pending a decision or waiving under the Environmental Assessment Act. In all other respects, OPA 393 will be approved.

The Board can be spoken to should problems arise in preparing the text of OPA 393, as modified by this Decision.

The City should prepare a draft Order for the Board disposing of all matters herein.

D.L. SANTO
VICE-CHAIR

Schedule "2"
(Amendment No. 393)



Map D.2.1

DOWNTOWN: DENSITY LIMITS

△ Area from which Density is to be transferred

† See Part D.1 Section 15 final paragraph under GFA

Maximum density generally permitted in the Downtown prior to any Community Impact bonus is FSI = 1.0 on any lands within 75m of Residential Density One lands, & FSI = 1.5 on any lands 75 or more m. from Residential Density One lands.

(See Part D.2, Subsection 3.1.0)

This map forms part of the North York Official Plan and should be interpreted in conjunction with the written text.

N.B. The figures on this map show the Maximum Floor Space Index (F.S.I.) assigned to lands within Downtown. Reference should be made in particular to the definitions of Gross Floor Area and Floor Space Index in Part D.1 Section 15.

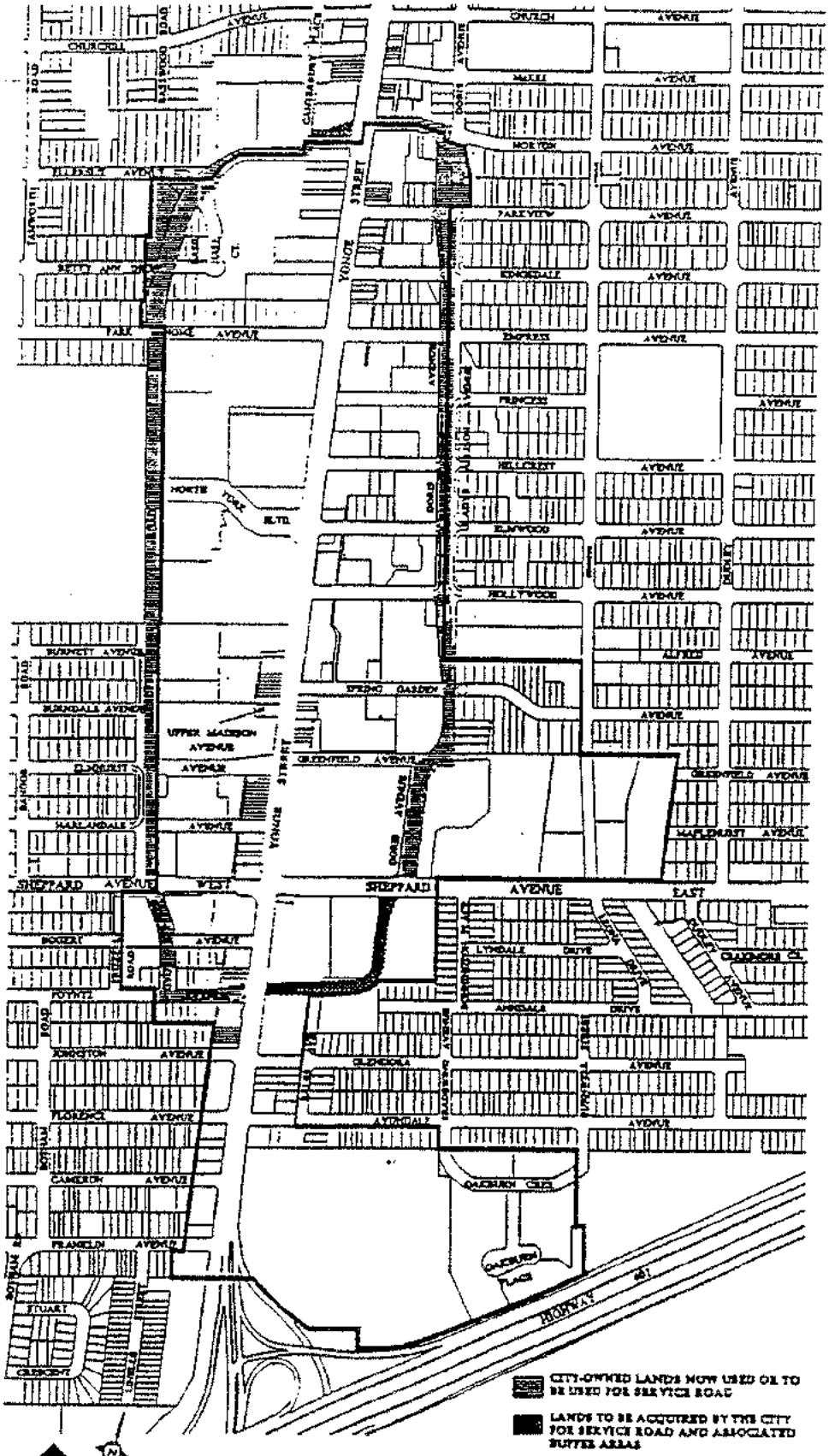
0m 100 200 300 400 500 600

North York

SCHEDULE "B"

PL957597

Schedule "4"
(Amendment No. 393)



DOWNTOWN SERVICE ROAD
MAP D.2.5

North York
PLANNING DEPARTMENT

TORONTO
North York Civic Centre

APPENDIX B

LETTER FROM MINISTER OF THE ENVIRONMENT (NOVEMBER 29, 1996)

Minister
Ministre

Ministry of Environment and Energy
Ministère de l'Environnement et de l'Énergie

135 St. Clair Avenue West
Toronto ON M4V 1P5

135, avenue St. Clair ouest
Toronto ON M4V 1P5

56595

November 29, 1996

Mr. Denis G. Kelly, City Clerk
City of North York
5100 Yonge Street
North York, Ontario
M2N 5V7

Dear Mr. Kelly:

I have reviewed several requests that the proposed infrastructure for the North York Downtown Plan South of Sheppard Avenue be bumped up from the *Municipal Roads Class Environmental Assessment* process to an individual environmental assessment.

I have decided that a decision on this matter is premature for the following reasons.

Over the past few years the City of North York, to its credit, has attempted to address the complex inter-relationship between infrastructure and land use planning through the use of a Master Plan process. This has helped all parties to recognize the tradeoffs and consequences that are a part of planning and allowed the City to develop a growth scenario and servicing strategy that work in concert with each other.

The goal of this Master Plan process was to address concerns, hopefully to the point where there would be few objections to the project.

The land use component of this Master Plan (Official Plan Amendment No 393) is before the Ontario Municipal Board and the transportation infrastructure has been referred to me for a bump-up decision. I consider it inappropriate at this time for me to decide on these bump-up requests while the land use component of this project is under review.

. . . 2

During the course of the hearing into this amendment various parties will have the opportunity to raise concerns beyond those pertaining to infrastructure. The resolution of these concerns may alter the transportation component of the land-use plan and its environmental effects.

Following a final decision by the Ontario Municipal Board in regard to the ultimate land use configuration, I will make my decision on these bump-up requests in accordance with the *Municipal Roads Class Environmental Assessment* and the *Environmental Assessment Act*. By copy of this letter, I will notify all participants of my decision.

Yours truly,

Norman W. Sterling
Minister

cc: Ms. Helen Cooper, Chair
Ontario Municipal Board

Mr. Robert Fear
South Downtown Property Owner's Group

Ms. Catherine A. Lyons
Goodman Phillips & Vineberg

Mr. Stanley B. Stein
Osler, Hoskin & Harcourt

Mr. Mike Matthews, President
Avondale Community Ratepayers Association

Donalda & Louis Badone

c. C. Filion
Planning Department
C. Couper, Transportation Department
Legal Department

TORONTO
North York Civic Centre

APPENDIX C

TRAFFIC REPORT

North York Downtown South of Sheppard Avenue
Environmental Study Report Addendum
Final Traffic Report

The following report documents the results of the traffic analysis undertaken in support the ESR Addendum for the downtown area in North York South of Sheppard Avenue. The study area is bounded by: Yonge Street, Sheppard Avenue, Tradewind Avenue/Bonnington Avenue and Avondale Road.

Two interim base networks and one ultimate horizon year base network were considered. The interim scenario considers all approved developments including the Wittington and Oakburn sites on the south side of Avondale Ave. The two interim road networks include the widening of Avondale Avenue to four lanes and providing the Tradewind/Bonnington connection with and without a jog at Doris Avenue. The ultimate scenario assumes full build out of the study area and the areas to the north and to the west. The ultimate base road network includes the alignment of the Tradewind Service Road with Doris Avenue and the Anndale-Poyntz connection.

The proposed road network, lane and intersection configurations are shown in Figures 1 and 2 for the interim and ultimate scenarios respectively. The interim scenario presented in Figure 1 shows the road network with the existing Tradewind/Bonnington connection and the offset intersection of Sheppard/ Doris/Bonnington. The traffic forecasts for both scenarios were provided by the City of Toronto – North York Office in the form of intersection turning movement counts. Figures 3 and 4 show the interim and ultimate volumes respectively.

Capacity Analysis

Intersection capacity analysis for the signalized intersections was conducted using the Synchro 3.0 software package which provides a complete implementation of the Highway Capacity Manual methodology for signalized intersections. The Synchro analysis outputs are appended to this report. Unsignalized intersection analysis was performed using the Highway Capacity Software for Unsignalized Intersections.

Intersection capacity analysis was conducted for both interim scenarios. The main difference between the two interim scenarios is the alignment of the Tradewind Service Road with Doris Avenue. The scenario with the jog at Doris Avenue is preferred because it requires less road work in the interim by making use of the existing Tradewind Avenue and Bonnington Avenue alignments. The concern with this scenario was the operation of the proposed offset intersection on Sheppard Avenue. Under existing conditions Doris/Sheppard is signalized but Bonnington/Sheppard is unsignalized. Based on discussions with City of Toronto staff and the volumes that were provided, the intersection of Bonnington/Sheppard will continue to operate as an unsignalized intersection in the interim. All signalized intersections in the study area, including the intersection of Sheppard/Doris, will continue to operate under capacity.

There is a large increase in traffic assigned to Doris Ave. A total of 1050 vehicles were assigned southbound on Doris Avenue in the PM peak hour. Approximately 18% of this southbound traffic was assigned to westbound Sheppard Avenue and 82% was assigned to eastbound Sheppard Avenue. A maximum of 34% of the eastbound Sheppard Ave. traffic may be destined to Bonnington Avenue.

The interim road network assumed that Avondale Ave. would have a 4-lane cross-section with a left turn lane provided at the approach to Yonge St. Based on the plan of approval for the Wittington site, if a fifth lane is required for the full length of Avondale Ave., it will have to be provided at that time.

The results of the intersection capacity analyses (capacities, delays and levels of service) under the interim scenarios and under the worst case ultimate scenario are summarized in Table 1. Table 2 outlines the recommended signal timings for the signalized intersections in the study area. The three signalized intersections on Yonge Street will operate under SCOOT control (Split, Cycle and Offset Optimization Technique). City of Toronto staff advised that a maximum cycle length of 144 seconds be used for the AM and PM peak hour analysis at these intersections.

A traffic signal warrant was undertaken at Tradewind/Avondale and at Tradewind/ Anndale using the Proxy Method outlined in the "Guidelines for Projected Signal Warrants" prepared by the City of Toronto Traffic Planning Section. The existing temporal traffic patterns on Poyntz Ave., west of Yonge St. were used as the proxy for these intersections. The results show that traffic signals will be warranted at the Tradewind/Avondale intersection under ultimate conditions but signals may not be warranted at the Tradewind/Anndale intersection. However, it is recommended that both intersections be protected for signals and that signals be installed when they are warranted. The peak hour unsignalized analysis of these intersections showed they both would operate with excessive delays under stop control. The proposed signal timing for these intersections is summarized in Table 2. In addition to the signalization, under ultimate conditions the intersection of Tradewind/Avondale will require double left turn lanes in the eastbound direction.

Turning movement volumes for two ultimate development scenarios (OPA 393, OPA 447) were provided by the City of Toronto but capacity analysis at each intersection was performed for the worst case scenario only. The ultimate volumes presented in Figure 4 are the worst case intersection volumes based on the OPA 393 and the OPA 447 development scenarios. All intersections are operating under capacity in the future. Some intersection improvements which are required include double left turns in the southbound direction at Doris Ave./Sheppard Ave. and double right turns in the eastbound direction at Yonge St./Poyntz Ave. However, these intersections should be monitored to determine if and when these intersection improvements will be required.

Storage Length Analysis

The storage length requirements were calculated for the interim scenario and the worst case ultimate scenario. Table 3 shows the storage lengths that will be required under the two scenarios and the distance between intersections. These storage length requirements are met in the proposed road/intersection designs.

Interim Recommendations

- The interim volumes on Avondale Avenue approach 1000 vehicles per hour per direction, therefore, a four lane cross-section should be provided.

- Westbound double left turn lanes are required on Avondale Avenue at Yonge Street. The storage length requirement for these lanes is 150 m and 130 m which will extend beyond Bales Avenue. Therefore, turn prohibitions may have to be provided for left turning traffic to/from Bales Ave. The Yonge/Avondale intersection signal timing plan could operate the east-west movements together or as split phases. With the intersection configuration provided there should be no conflict with the eastbound left turns and the westbound double left turns operating at the same time. To ensure safe operations at this intersection it is recommended that pavement makings be provided through the intersection to guide drivers and to ensure that vehicles remain in their respective lanes. It is also recommended that pedestrians be restricted to crossing on the north side only. Through volumes between Florence Ave. and Avondale Ave. will be prohibited.

- Based on the interim volumes that were provided, the intersection of Bonnington/ Sheppard can continue to operate as an unsignalized intersection in the interim. Inbound and outbound left turning traffic may experience lengthy delays but these delays are not too much longer than the existing delays.

- The signalized intersection of Sheppard/Doris will continue to operate under capacity. No improvements were provided on Doris Avenue but it was assumed that Sheppard Avenue would be widened to six lanes through the study area.

- Volumes on the Tradewind Service Road can be accommodated in two lanes with a jog at Anndale. No road improvements are required on Tradewind in the interim.

- The intersection of Avondale/Tradewind should operate with a two-way stop control where northbound and southbound traffic is stopped. The use of a four-way stop control at this intersection is not recommended because the high eastbound left turn demand would be heavily delayed.

- Under the interim scenario all intersections operate at a LOS C or better and all movements experience minimal delays.

Ultimate Recommendations

- The Tradewind Service Road will have to be constructed with a four lane cross-section and aligned with Doris Avenue under the ultimate scenario. Double left turn lanes are required southbound on Doris Ave. at Sheppard Ave. Throat widening for a five-lane cross-section are required for approaches to the intersection.

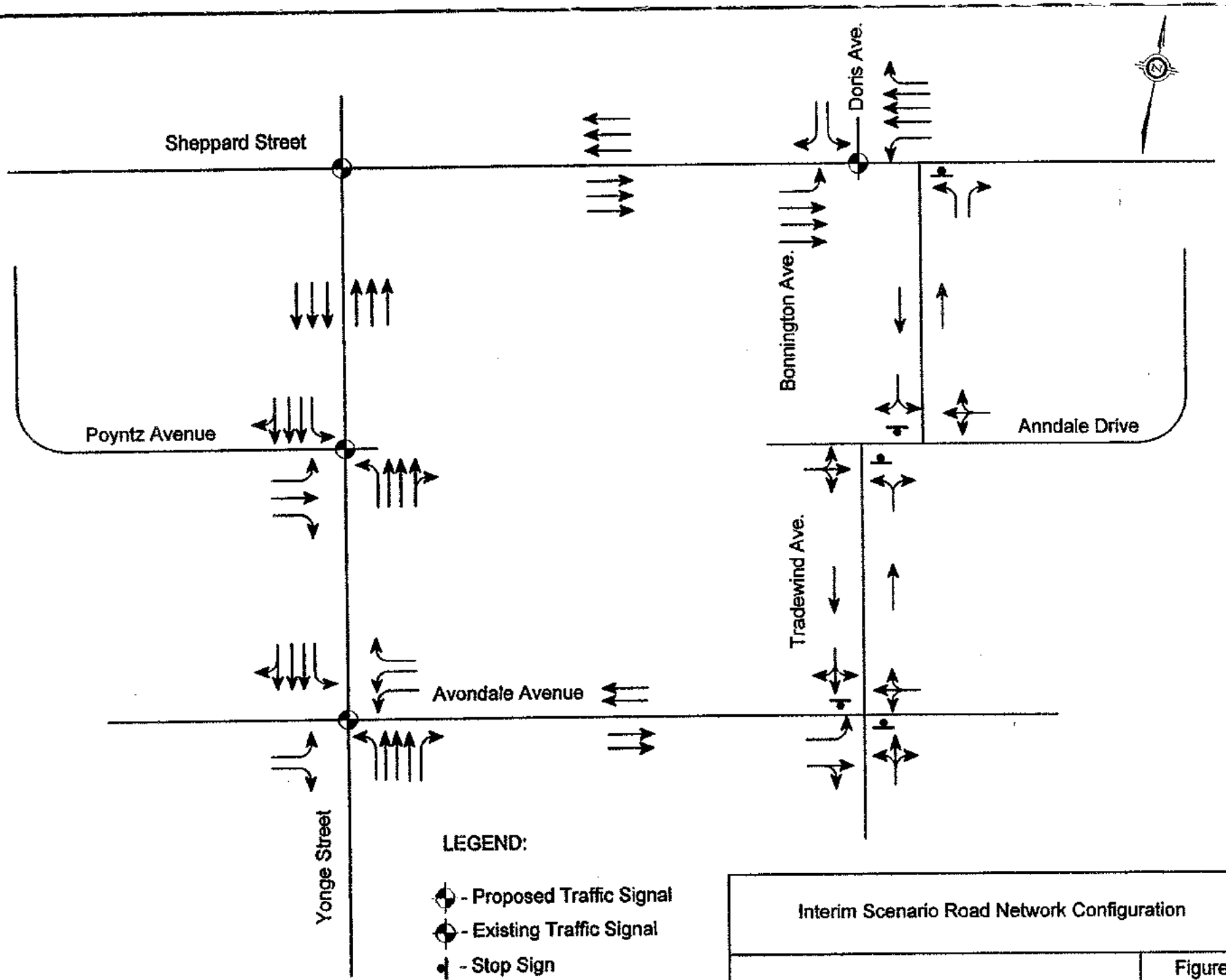
- The new connection of Anndale and Poyntz need only be two lanes to accommodate the proposed ultimate through volumes. Wider pavement width is required to accommodate turning movements.

- Based on the results of the two signal warrants, the intersection of Tradewind/Avondale will have to be signalized under the ultimate scenario. However, both Tradewind/Avondale and Tradewind/Anndale should be protected for signals and traffic signals should be provided only when they become warranted. In addition to the signalization, the intersection of Tradewind/Avondale will require 2 eastbound left turn lanes.

- The intersection of Yonge/Poyntz is operating just under capacity in the future. The eastbound right turn is assigned a volume of 695 vehicles per hour in the PM peak hour. To serve this high volume, double right turn lanes are recommended. It is also recommended that with the implementation of double right turn lanes, pavement markings be provided through the intersection and that pedestrians be restricted to crossing on the north side of the intersection.

- Under the ultimate scenario all intersections operate at a LOS D or better.

FIGURES

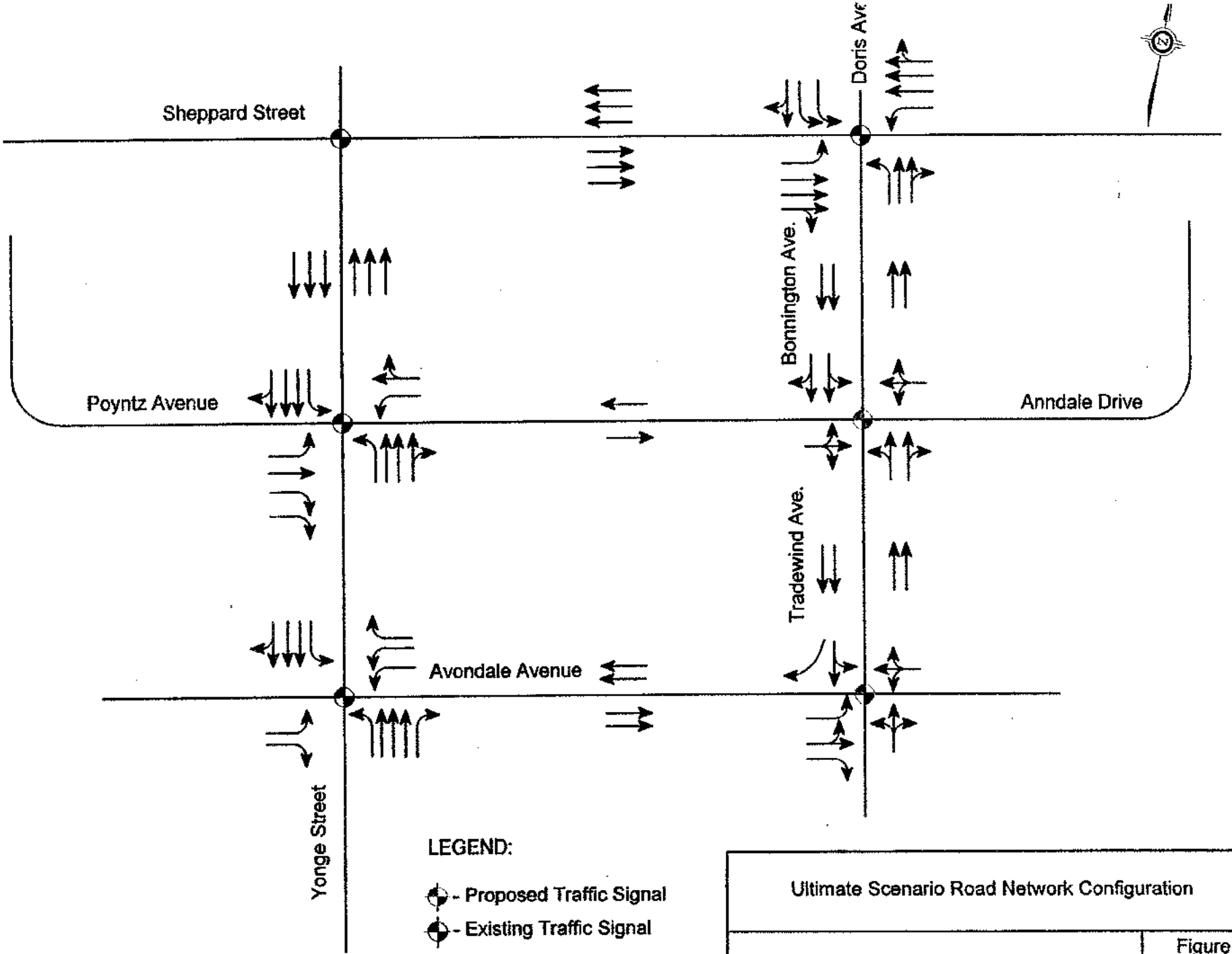


Interim Scenario Road Network Configuration

North York ESR

Figure 1

COLE, SHERMAN

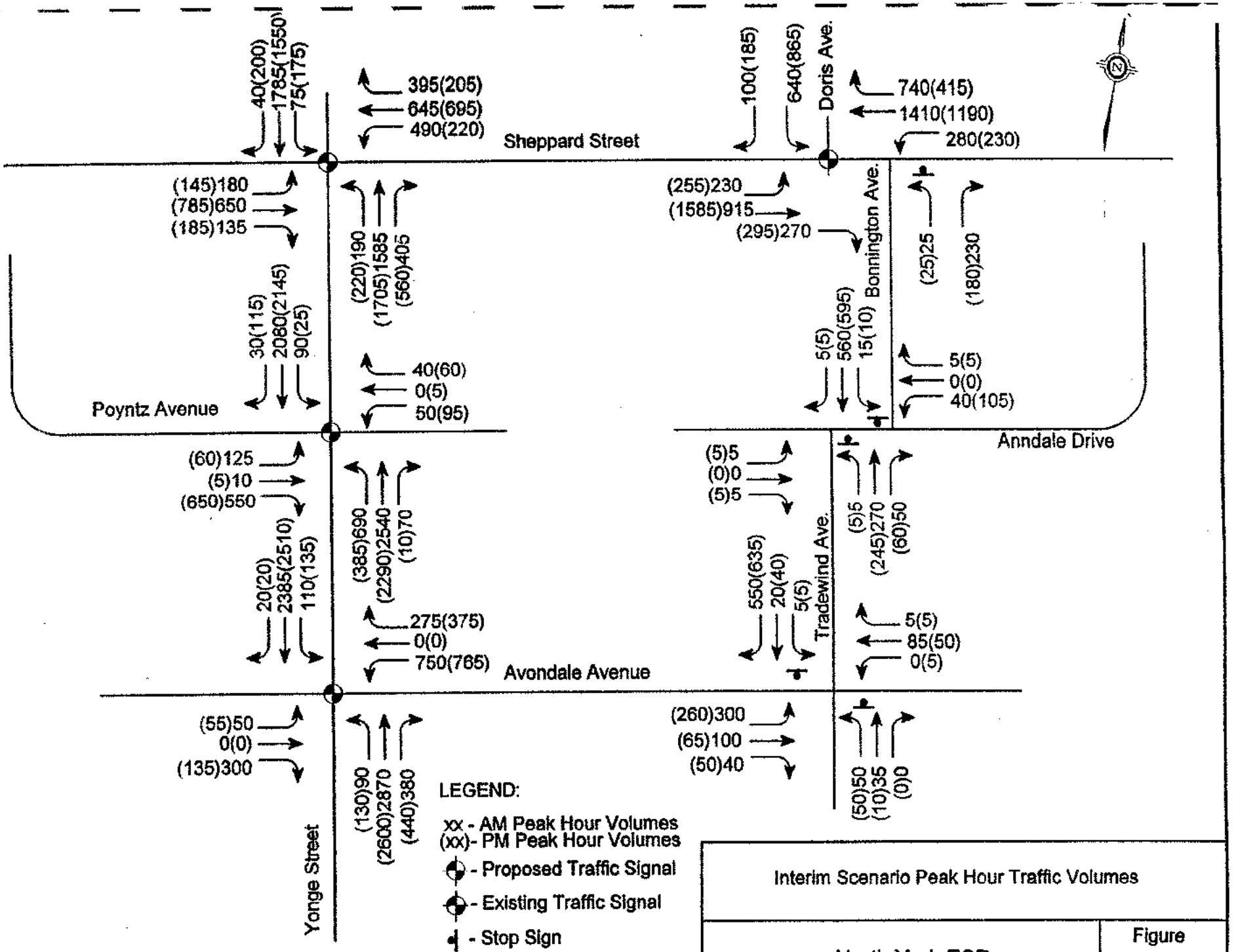


Ultimate Scenario Road Network Configuration

North York ESR

Figure 2

COLE, SHERMAN

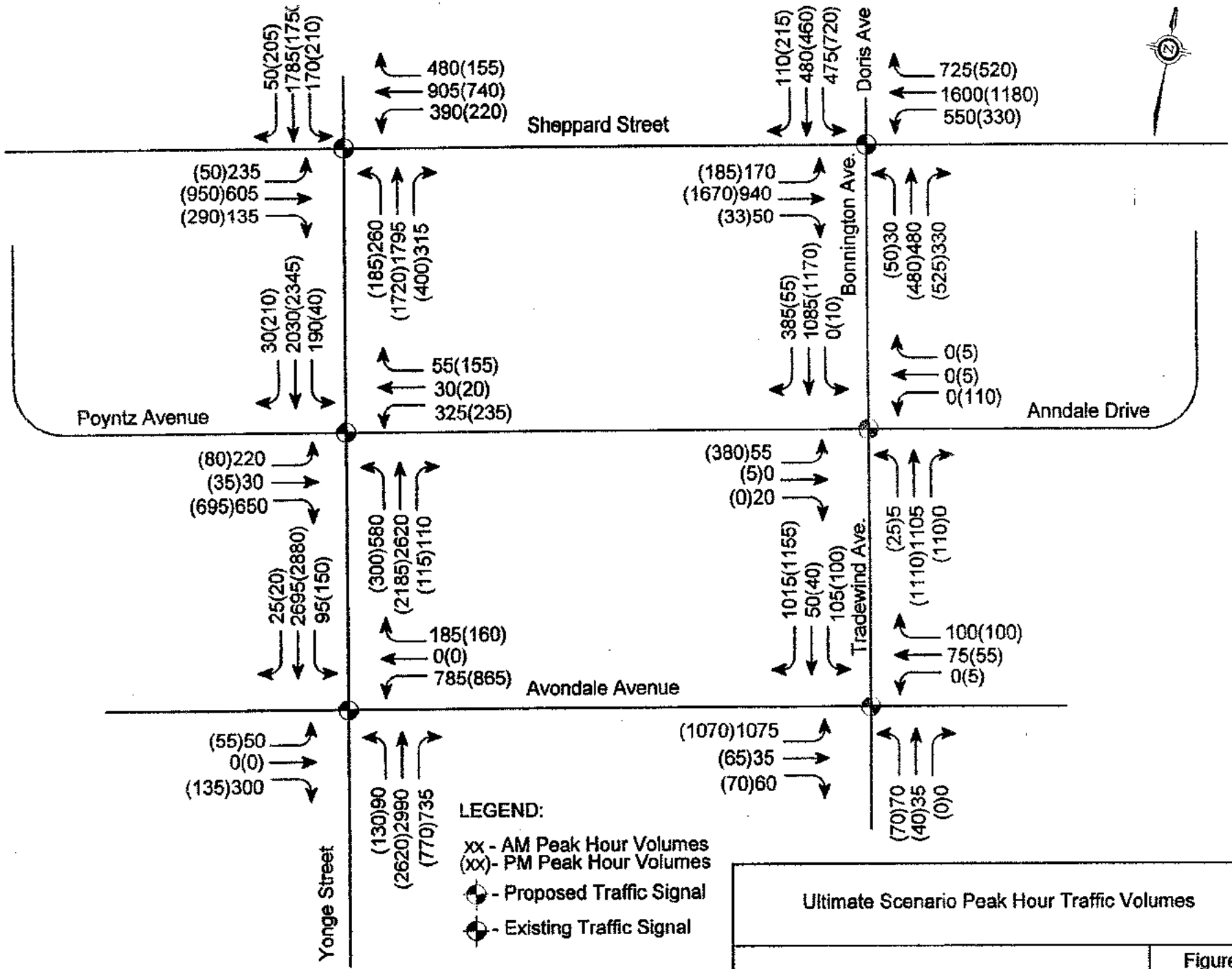


COLE, SHERMAN

Interim Scenario Peak Hour Traffic Volumes

North York ESR

Figure 3



Ultimate Scenario Peak Hour Traffic Volumes

COLE, SHERMAN

North York ESR

Figure 4

TABLES

Table 1. Intersection Analysis Summary

Interim Scenario							Ultimate Scenario			
Scenario / Intersection	4 lane Avondale Ave. with a jog at Bonnington Ave Intersection			4 lane Avondale Ave. no jog at Bonnington Ave Intersection			Intersection	Intersection		
	v/c	delay	LOS	v/c	delay	LOS		v/c	delay	LOS
AM Peak Hour							**AM Peak Hour**			
Avondale Ave./Yonge St.	0.89	21	C	0.89	21	C	Avondale Ave./Yonge St.	0.95	32	D
Avondale Ave./Tradewind Ave.	n/a	7	B	n/a	8	B	Avondale Ave./Tradewind Ave.	0.63	11	B
Tradewind Ave./Anndale Ave.*	n/a	5	A	n/a	1	A	Anndale Ave./Tradewind Ave.	0.51	5	A
Sheppard Ave./Doris Ave.	0.92	16	C	0.95	29	D	Sheppard Ave./Doris Ave.	0.91	32	D
Bonnington Ave./Anndale Ave.*	n/a	5	A	n/a	n/a	n/a	Poyntz Ave./Yonge St.	0.98	29	D
							Yonge St./Sheppard Ave.	0.94	40	D
PM Peak Hour							**PM Peak Hour**			
Avondale Ave./Yonge St.	0.84	22	C	0.90	21	C	Avondale Ave./Yonge St.	0.97	29	D
Avondale Ave./Tradewind Ave.	n/a	7	B	n/a	8	B	Avondale Ave./Tradewind Ave.	0.63	12	B
Tradewind Ave./Anndale Ave.*	n/a	5	A	n/a	4	A	Anndale Ave./Tradewind Ave.	0.88	13	B
Sheppard Ave./Doris Ave.	0.91	21	C	0.99	26	D	Sheppard Ave./Doris Ave.	0.99	34	D
Bonnington Ave./Anndale Ave.*	n/a	5	A	n/a	n/a	n/a	Poyntz Ave./Yonge St.	0.87	18	C
							Yonge St./Sheppard Ave.	0.98	38	D

* - unsignalized

Note: Delay represents average vehicle delay in seconds/vehicle.

Table 2. Revised Signal Timings

Intersection	Peak Period	Type of Intersection	Cycle Length	Phase Data	Interim Scenario Phasing NBLT	SB	WBLT	EB	SBLT	NB	EBLT	WB	Type of Intersection	Peak Period	Cycle Length	Ultimate Scenario Phasing NBLT	SB	WBLT	EB	SBLT	NB	EBLT	WB
Avondale Ave./ Yonge St.	AM	4-legged	144	Green	6	92		30	6	92		30	4-legged	AM	144	6	87	10	23	6	87		35
				Amber	2	4		4	2	4		4				2	4		4	2	4		4
				All Red	2	2		2	2	2		2				2	2	2	2	2	2		2
	PM		144	Green	7	86		35	7	86		35		PM	144	8	82	22	14	8	82		38
				Amber	2	4		4	2	4		4				2	4		4	2	4		4
				All Red	2	2		2	2	2		2				2	2	2	2	2	2		2
Avondale Ave./ Tradewind Ave.	AM	4-legged (unsignalized)		Green									4-legged	AM	80		15		33		15		14
				Amber													4		4		4		4
				All Red													2		2		2		2
	PM			Green										PM	80		19		31		19		12
				Amber													4		4		4		4
				All Red													2		2		2		2
Sheppard Ave./ Doris Ave.	AM	T-type	90	Green		32		46			9	35	4-legged	AM	100		38	26	20	13	21	5	42
				Amber		4		4				4					4	2	4	2	4	1	4
				All Red		2		2			2	2					2	2	2	2	2	2	2
	PM		90	Green		42		36			12	22		PM	100		39	13	32	20	15	13	32
				Amber		4		4				4					4	2	4	2	4	2	4
				All Red		2		2			2	2					2	2	2	2	2	2	2
Bonnington Ave./ Arndale Ave.	AM	4-legged (unsignalized)		Green									4-legged	AM	80		48		20		48		20
				Amber													4		4		4		4
				All Red													2		2		2		2
	PM			Green										PM	80		43		25		43		25
				Amber													4		4		4		4
				All Red													2		2		2		2
Yonge St./ Poyntz Ave.	AM	4-legged		Green									4-legged	AM	144	42	57	5	22	12	87		29
				Amber												2	4		4	2	4		4
				All Red												2	2	2	2	2	2		2
	PM		144	Green										PM	144	21	76	6	23	7	90		31
				Amber												2	4		4	2	4		4
				All Red												2	2	2	2	2	2		2

Table 3. Storage Length Requirements

Scenario / Intersection	INTERIM SCENARIO (4 lane Avondale Ave. a jog @ Bonnington Ave)			ULTIMATE SCENARIO		
	Movement	Storage Length	Peak	Movement	Storage Length	Peak
Avondale Ave./Yonge St.	WBL	280	PM*	WBL	~~220~~ 315	PM*
	SBL	55	PM	SBL	55	PM
	EBL	20	PM	EBL	20	PM
	NBL	50	PM	NBL	50	PM
	NBR	60	AM	NBR	50	PM
Avondale Ave./Tradewind Ave.				EBL	115	AM*
Sheppard Ave./Doris Ave.	SBL	200	PM	SBL	180	PM*
	EBL	65	PM	EBL	50	PM
				WBL	140	AM
				NBL	15	PM
Poyntz Ave./Yonge St.				WBL	120	AM
				SBL	75	AM
				EBL	80	AM
				EBR	155	PM*
				NBL	145	AM

Distances between intersections within the study area

Interim

Yonge St. - Tradewind Ave. on Avondale	305m
Avondale Ave. - Anndale Ave. on Tradewind Ave.	160m
Tradewind Ave. - Bonnington Ave. on Anndale Ave.	20m
Bonnington Ave. - Doris Ave. on Sheppard Ave.	90m
Anndale Ave. - Sheppard Ave. on Bonnington Ave.	170m

Ultimate

Yonge St. - Tradewind Ave. on Anndale	280m

Note: The above storages were provided in the proposed intersection designs.

* This is the total storage required however, two lanes are provided for this movement.

SIGNAL WARRANTS

Existing Traffic	Hour	Start	End	Variation Factor		Avondale Ave. Major Street EB Left	EB Thru	EB Right	EB Total	WB Left	WB Thru	WB Right	WB Total	Major Total	Tradewind Ave. Minor Street SB Left	SB Thru	SB Right	SB Total	NB Left	NB Thru	NB Right	NB Total	Minor Total	Total All
	1	7:00	to 8:00	0.80		858	26	45	929	0	57	79	136	1,065	82	37	811	930	53	26	0	78	1,009	2,074
	2	8:00	to 9:00	1.00	Base Hour	1073	32	56	1,161	0	71	99	170	1,331	103	46	1014	1,163	66	32	0	98	1,261	2,592
	3	9:00	to 10:00	0.71		762	23	40	824	0	50	70	121	945	73	33	720	826	47	23	0	70	895	1,840
	4	12:00	to 1:00	0.67		719	21	38	778	0	48	66	114	892	69	31	679	779	44	21	0	66	845	1,737
	5	15:00	to 16:00	0.75		800	49	50	899	4	39	74	116	1,015	74	27	863	965	50	24	0	74	1,038	2,053
	6	16:00	to 17:00	0.92		981	60	62	1,102	5	48	90	143	1,245	91	33	1059	1,183	61	29	0	90	1,273	2,518
	7	17:00	to 18:00	1.00	Base Hour	1066	65	67	1,198	5	52	98	155	1,353	99	36	1151	1,286	66	32	0	98	1,384	2,737
	8	18:00	to 19:00	0.69		736	45	46	827	3	36	68	107	934	68	25	794	887	46	22	0	68	955	1,889
			Total			6994	320	403	7717	17	401	644	1061	8779	660	267	7092	8019	432	209	0	641	8660	17439

MINIMUM VEHICULAR VOLUMES

Flow Condition 2 (1 = Free Flow) (2 = Restricted Flow)

Number of lanes per direction on Major Streets 2

Intersection Configuration 1 (1 = 4-way) (2 = TEE)

Approach Lanes / Flow Condition	1 lane Free Flow	1 lane Rest. Flow	2 lane + Free Flow	2 lane + Rest. Flow	Hour Ending 8:00	9:00	10:00	1:00	16:00	17:00	18:00	19:00	
A. All Approaches	480	720	600	900	2,074	2,592	1,840	1,737	2,053	2,518	2,737	1,889	TOTAL
100% Fulfilled					100	100	100	100	100	100	100	100	800
80% Fulfilled					0	0	0	0	0	0	0	0	0
Actual % if < 80%					0	0	0	0	0	0	0	0	0
Minimum Volume Criterium is: 900											TOTAL		800 /8 = 100 % (Sectional %)

Warrant 1	100 %	Satisfied

MINIMUM VEHICULAR VOLUMES

Approach Lanes / Flow Condition	1 lane Free Flow	1 lane Rest. Flow	2 lane + Free Flow	2 lane + Rest. Flow	Hour Ending 8:00	9:00	10:00	1:00	16:00	17:00	18:00	19:00	
B. Minor Street Both Approaches	120	170	120	170	1,009	1,261	895	845	1,038	1,273	1,384	955	TOTAL
100% Fulfilled					100	100	100	100	100	100	100	100	800
80% Fulfilled					0	0	0	0	0	0	0	0	0
Actual % if < 80%					0	0	0	0	0	0	0	0	0
Minimum Volume Criterium is: 170											TOTAL		800 /8 = 100 % (Sectional %)

Signal Warrant Sheet 1

TRAFFIC SIGNAL WARRANT - NORTH YORK SOUTH DOWNTOWN EA ADDENDUM

Total Traffic Volumes	Hour	Start	End	Major Street EB Left	EB Thru	EB Right	EB Total	WB Left	WB Thru	WB Right	WB Total	Major Total	Minor Street SB Left	SB Thru	SB Right	SB Total	NB Left	NB Thru	NB Right	NB Total	Minor Total	Total ALL
	1	7:00 to	8:00	858	26	45	929	0	57	79	136	1065	82	37	811	930	53	26	0	78	1009	2074
	2	8:00 to	9:00	1073	32	56	1161	0	71	99	170	1331	103	46	1014	1163	65	32	0	98	1261	2592
	3	9:00 to	10:00	762	23	40	824	0	50	70	121	945	73	33	720	826	47	23	0	70	895	1840
	4	12:00 to	1:00	719	21	38	778	0	48	66	114	892	69	31	679	779	44	21	0	66	845	1737
	5	15:00 to	16:00	800	49	50	899	4	39	74	116	1015	74	27	863	965	50	24	0	74	1038	2053
	6	16:00 to	17:00	981	60	62	1102	5	48	90	143	1245	91	33	1059	1183	61	29	0	90	1273	2518
	7	17:00 to	18:00	1066	65	67	1198	5	52	98	155	1353	99	36	1151	1286	66	32	0	98	1384	2737
	8	18:00 to	19:00	736	45	46	827	3	36	68	107	934	68	25	794	887	45	22	0	68	955	1889
			Total	6994	320	403	7717	17	401	644	1061	8779	660	267	7092	8019	432	209	0	641	8660	17439

Flow Condition: 2 (1 = Free Flow) (2 = Restricted Flow)

Number of lanes per direction on Major Streets: 2

Intersection Configuration: 1 (1 = 4-way) (2 = TEE)

DELAY TO CROSS STREET TRAFFIC

Approach Lanes / Flow Condition	1 lane Free Flow	1 lane Rest. Flow	2 lane + Free Flow	2 lane + Rest. Flow	Hour Ending 8:00	9:00	10:00	1:00	16:00	17:00	18:00	19:00	
A. Major Street Both Approaches	480	720	600	900	1,065	1,331	945	892	1,015	1,245	1,353	934	TOTAL
100% Fulfilled					100	100	100	0	100	100	100	100	700
80% Fulfilled					0	0	0	80	0	0	0	0	80
Actual % if < 80%					0	0	0	0	0	0	0	0	0
Minimum Volume Criterium is: 900											TOTAL		780 /8

Sectional % = 98 %

Warrant 1	98 %	Satisfied

DELAY TO CROSS STREET TRAFFIC

Approach Lanes / Flow Condition	1 lane Free Flow	1 lane Rest. Flow	2 lane + Free Flow	2 lane + Rest. Flow	Hour Ending 8:00	9:00	10:00	1:00	16:00	17:00	18:00	19:00	
B. Traffic Crossing Major Street	50	75	50	75	601	752	534	504	551	675	734	506	TOTAL
100% Fulfilled					100	100	100	100	100	100	100	100	800
80% Fulfilled					0	0	0	0	0	0	0	0	0
Actual % if < 80%					0	0	0	0	0	0	0	0	0
Minimum Volume Criterium is: 75											TOTAL		800 /8

Sectional % = 100 %

Signal Warrant Sheet 2

TRAFFIC SIGNAL WARRANT - NORTH YORK SOUTH DOWNTOWN EA ADDENDUM

MAJOR STREET: **Avondale Ave.**
MINOR STREET: **Tradewind Ave.**

INTERSECTION WARRANT		DESCRIPTION		Minimum Requirement 2 Lane Roads Free Flow	Rest. Flow	Compliance Sectional %	Compliance Entire %
1	Minimum Vehicle Volume	A	Vehicle Volume, All Approaches for Each of the Heaviest 8 Hours of an Average Day, and	600	900	100 %	100 %
		B	Vehicle Volume, Along Minor Streets for Eah of the Same 8 Hours	120	170	100 %	
2	Delay to Cross Traffic	A	Vehicle Volume, Along Major street for Each of the Heaviest 8 Hours of an Average Day, and	600	900	98 %	98 %
		B	Combined Vehicle and Pedestrian Volume Crossing the Major Street for Each of the Same 8 Hours	50	75	100 %	
3	Accident Hazard	A	Total Repod Accidents	Number 0	1	0 %	0 %
		B	Adequate Trial of Less Restrictive Remedies	Yes 0	No X	0 %	
		C	Fulfillment of Above Warrants	Yes X	No 0	100 %	
4	Combined Warrants		Two or more of the above Warrants Satisfied to 80% or More	Yes X	No 0	100 %	

Signal Warrant Sheet 3

TRAFFIC SIGNAL WARRANT - NORTH YORK SOUTH DOWNTOWN EA ADDENDUM

Existing Traffic	Hour	Start	End	Variation Factor		Tradewind Ave. Major Street SB Left	SB Thru	SB Right	SB Total	NB Left	NB Thru	NB Right	NB Total	Major Total	Poynlz Ave. Minor Street EB Left	EB Thru	EB Right	EB Total	WB Left	WB Thru	WB Right	WB Total	Minor Total	Total All
	1	7:00	to 8:00	0.80		0	868	306	1,174	1	882	0	883	2,057	41	0	13	54	0	0	0	0	54	2,110
	2	8:00	to 9:00	1.00	Base Hour	0	1085	382	1,467	1	1103	0	1,104	2,571	51	0	16	67	0	0	0	0	67	2,638
	3	9:00	to 10:00	0.71		0	770	271	1,042	1	783	0	784	1,825	36	0	11	48	0	0	0	0	48	1,873
	4	12:00	to 1:00	0.67		0	727	256	983	1	739	0	740	1,723	34	0	11	45	0	0	0	0	45	1,767
	5	15:00	to 16:00	0.75		6	877	40	923	19	832	81	932	1,854	284	1	0	285	80	1	2	83	368	2,222
	6	16:00	to 17:00	0.92		7	1075	49	1,132	23	1020	99	1,143	2,274	349	1	0	350	98	1	2	101	451	2,725
	7	17:00	to 18:00	1.00	Base Hour	8	1169	53	1,230	25	1109	108	1,242	2,472	379	1	0	380	107	1	2	110	490	2,962
	8	18:00	to 19:00	0.69		6	807	37	849	17	765	75	857	1,706	262	1	0	262	74	1	1	76	338	2,044
			Total			27	7378	1393	8798	87	7234	363	7684	16482	1436	3	51	1490	360	3	7	370	1859	18341

Flow Condition 2 (1 = Free Flow) (2 = Restricted Flow)

Number of lanes per direction on Major Streets 2

Intersection Configuration 1 (1 = 4-way) (2 = TEE)

MINIMUM VEHICULAR VOLUMES

Approach Lanes / Flow Condition	1 lane Free Flow	1 lane Rest. Flow	2 lane + Free Flow	2 lane + Rest. Flow	Hour Ending 8:00	9:00	10:00	11:00	16:00	17:00	18:00	19:00	
A. All Approaches	480	720	600	900	2,110	2,638	1,873	1,767	2,222	2,725	2,962	2,044	TOTAL
100% Fulfilled					100	100	100	100	100	100	100	100	800
80% Fulfilled					0	0	0	0	0	0	0	0	0
Actual % if < 80%					0	0	0	0	0	0	0	0	0
Minimum Volume Criterium is: 900											TOTAL		800 /8 = 100 % Sectional %

Warrant 1	66 %	Satisfied

MINIMUM VEHICULAR VOLUMES

Approach Lanes / Flow Condition	1 lane Free Flow	1 lane Rest. Flow	2 lane + Free Flow	2 lane + Rest. Flow	Hour Ending 8:00	9:00	10:00	11:00	16:00	17:00	18:00	19:00	
B. Minor Street Both Approaches	120	170	120	170	54	67	48	45	368	451	490	338	TOTAL
100% Fulfilled					0	0	0	0	100	100	100	100	400
80% Fulfilled					0	0	0	0	0	0	0	0	0
Actual % if < 80%					32	39	28	26	0	0	0	0	125
Minimum Volume Criterium is: 170											TOTAL		525 /8 = 66 % Sectional %

Signal Warrant Sheet 1

Total Traffic Volumes	Hour	Start	End	Major Street SB Left	SB Thru	SB Right	SB Total	NB Left	NB Thru	NB Right	NB Total	Major Total	Minor Street EB Left	EB Thru	EB Right	EB Total	WB Left	WB Thru	WB Right	WB Total	Minor Total	Total ALL
	1	7:00 to	8:00	0	868	306	1174	1	882	0	883	2057	41	0	13	54	0	0	0	0	54	2110
	2	8:00 to	9:00	0	1085	382	1467	1	1103	0	1104	2571	51	0	16	67	0	0	0	0	67	2638
	3	9:00 to	10:00	0	770	271	1042	1	783	0	784	1825	36	0	11	48	0	0	0	0	48	1873
	4	12:00 to	1:00	0	727	256	983	1	739	0	740	1723	34	0	11	45	0	0	0	0	45	1767
	5	15:00 to	16:00	6	877	40	923	19	832	81	932	1854	284	1	0	285	80	1	2	83	368	2222
	6	16:00 to	17:00	7	1075	49	1132	23	1020	99	1143	2274	349	1	0	350	98	1	2	101	451	2725
	7	17:00 to	18:00	8	1169	53	1230	25	1109	108	1242	2472	379	1	0	380	107	1	2	110	490	2962
	8	18:00 to	19:00	6	807	37	849	17	765	75	857	1706	262	1	0	262	74	1	1	76	338	2044
			Total	27	7378	1393	8798	87	7234	363	7684	16482	1436	3	51	1490	360	3	7	370	1859	18341

Flow Condition	2	(1 = Free Flow) (2 = Restricted Flow)
Number of lanes per direction on Major Streets	2	
Intersection Configuration	1	(1 = 4-way) (2 = TEE)

DELAY TO CROSS STREET TRAFFIC

Approach Lanes / Flow Condition	1 lane Free Flow	1 lane Rest. Flow	2 lane + Free Flow	2 lane + Rest. Flow	Hour Ending 8:00	9:00	10:00	1:00	16:00	17:00	18:00	19:00	
A. Major Street Both Approaches	480	720	600	900	2,057	2,571	1,825	1,723	1,854	2,274	2,472	1,706	TOTAL
100% Fulfilled					100	100	100	100	100	100	100	100	800
80% Fulfilled					0	0	0	0	0	0	0	0	0
Actual % if < 80%					0	0	0	0	0	0	0	0	0
											TOTAL		800 /8
Minimum Volume Criterium is: 900													Sectional % 100 %

Warrant 1	77 %	Satisfied

DELAY TO CROSS STREET TRAFFIC

Approach Lanes / Flow Condition	1 lane Free Flow	1 lane Rest. Flow	2 lane + Free Flow	2 lane + Rest. Flow	Hour Ending 8:00	9:00	10:00	1:00	16:00	17:00	18:00	19:00	
B. Traffic Crossing Major Street	50	75	50	75	41	51	36	34	365	448	487	336	TOTAL
100% Fulfilled					0	0	0	0	100	100	100	100	400
80% Fulfilled					0	0	0	0	0	0	0	0	0
Actual % if < 80%					64	68	48	46	0	0	0	0	216
											TOTAL		616 /8
Minimum Volume Criterium is: 75													Sectional % 77 %

Signal Warrant Sheet 2

MAJOR STREET: **Tradewind Ave.**
MINOR STREET: **Poynz Ave.**

INTERSECTION WARRANT		DESCRIPTION		Minimum Requirement 2 Lane Roads Free Flow	Resl. Flow	Compliance Sectional %	Entire %
1	Minimum Vehicular Volume	A	Vehicle Volume, All Approaches for Each of the Heaviest 8 Hours of an Average Day, and	600	900	100 %	66 %
		B	Vehicle Volume, Along Minor Streets for Eah of the Same 8 Hours	120	170	66 %	
2	Delay to Cross Traffic	A	Vehicle Volume, Along Major street for Each of the Heaviest 8 Hours of an Average Day, and	600	900	100 %	77 %
		B	Combined Vehicle and Pedestrian Volume Crossing the Major Street for Each of the Same 8 Hours	50	75	77 %	
3	Accident Hazard			Number			
		A	Total Report Accidents	0	1	0 %	0 %
				Yes	No		
		B	Adequate Trial of Less Restrictive Remedies	0	X	0 %	
				Yes	No		
		C	Fulfillment of Above Warrants	0	X	0 %	
4	Combined Warrants		Two or more of the above Warrants Satisfied to 80% or More	Yes 0	No X		0 %

Signal Warrant Sheet 3

SYNCHRO 3.0
INTERSECTION CAPACITY ANALYSIS

INTERIM SCENARIO
AM PEAK HOUR

Volume Worksheet

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	50	0	300	750	0	275	90	2870	380	110	2385	20
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	51	0	306	765	0	281	92	2929	388	112	2434	20
Lane Util. Factor	1.00	1.00	1.00	1.03	1.00	1.00	1.00	1.10	1.00	1.00	1.10	1.10
Lane Group Flow (vph)	51	0	306	788	0	281	92	3222	388	112	2699	0

Lanes, Volumes, and Timings Summary

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	50	0	300	750	0	275	90	2870	380	110	2385	20
Adj Lane Grp Vol.	51	0	306	788	0	281	92	3222	388	112	2699	0
Lanes	1	0	1	2	0	1	1	3	1	1	3	0
Satd Flow (Prot)	1770		1583	3539		1583	1770	5588	1583	1770	5577	
Satd Flow (Perm)	1773		1494	3547		1494	110	5588	1494	78	5577	
Left Turn Type	Perm			Perm			P/P			P/P		
Right Turn Type			Pm+Ov			Pm+Ov			Perm			Perm
Phase Number		4			8		5	2		1	6	
Phase Lagging?							Lead	Lag		Lead	Lag	
Maximum Green (s)		30			30		6	92		6	92	
Yellow Time (s)		6			6		4	6		4	6	
V/C Ratio	0.13		0.71	0.97		0.65	0.53	0.87	0.39	0.74	0.73	
Platoon Factor	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	
Webster's Delay (s)	33.5		36.9	59.8		35.0	6.7	16.8	8.7	31.0	12.8	
Level of Service	D		D	E		D	B	C	B	D	B	

Cycle Length: 144
Control Type: Actuated-Coordinated
Offset: 0 (0%), Referenced to phase 2-NBT, Start of Green
Intersection V/C Ratio: 0.89
Intersection Webster Delay: 20.9
Intersection LOS: C

Splits and Phases: Avondale Ave. & Yonge St.

1	2	4
10	98	36
10	98	36
5	6	8

Cole, Sherman And Associates
Transportation Department
75 Commerce Valley Drive East
Thornhill, ON L3T79-
Ph: (905) 882-4401

Streets: (N-S) Tradewind (E-W) Avondale
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... NAA
Date of Analysis..... 2/20/98
Other Information.....Interim Scenario - AM Peak Hour
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	1
Stop/Yield			N			N						
Volumes	300	100	40	0	85	5	50	35	0	5	20	550
PHF	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95
Grade		0			0			0			0	
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10			1.10			1.10	1.10	1.10	1.10	1.10	1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	126	92
Potential Capacity: (pcph)	1195	1244
Movement Capacity: (pcph)	1195	1244
Prob. of Queue-Free State:	1.00	0.49
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	147	94
Potential Capacity: (pcph)	1459	1546
Movement Capacity: (pcph)	1459	1546
Prob. of Queue-Free State:	1.00	0.77
TH Saturation Flow Rate: (pcphpl)	1700	
RT Saturation Flow Rate: (pcphpl)	1700	
Major LT Shared Lane Prob. of Queue-Free State:	1.00	
Step 3: TH from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	536	554
Potential Capacity: (pcph)	571	559
Capacity Adjustment Factor due to Impeding Movements	0.77	0.77
Movement Capacity: (pcph)	442	433
Prob. of Queue-Free State:	0.91	0.95
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	834	552
Potential Capacity: (pcph)	348	507
Major LT, Minor TH Impedance Factor:	0.73	0.70
Adjusted Impedance Factor:	0.79	0.77
Capacity Adjustment Factor due to Impeding Movements	0.39	0.77
Movement Capacity: (pcph)	135	390

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)		Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB	L	58	135	>					
NB	T	41	442	>	190	39.1	3.2	E	39.1
NB	R	0	1195	>					
SB	L	6	390	>	423	9.1	0.1	B	
SB	T	23	433	>					6.1
SB	R	637	1244			5.9	3.4	B	
EB	L	348	1546			3.0	1.0	A	2.0
WB	L	0	1459			2.5	0.0	A	0.0

Intersection Delay = 6.5 sec/veh

Cole, Sherman And Associates
Transportation Department
75 Commerce Valley Drive East
Thornhill, ON L3T79-
Ph: (905) 882-4401

Streets: (N-S) Tradewind (E-W) Anndale Dr.
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... NAA
Date of Analysis..... 2/20/98
Other Information.....Interim Stage AM Peak Hour
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0	0	0	0
Stop/Yield			N			N						
Volumes	5	0	5	40	0	5	5	0	320			
PHF	.95	.95	.95	.95	.95	.95	.95	.95	.95			
Grade		0			0			0				
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10			1.10			1.10	1.10	1.10			

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	2	
Potential Capacity: (pcph)	1381	
Movement Capacity: (pcph)	1381	
Prob. of Queue-Free State:	0.73	

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)	5	5
Potential Capacity: (pcph)	1705	1705
Movement Capacity: (pcph)	1705	1705
Prob. of Queue-Free State:	0.97	1.00
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	0.97	1.00

Step 3: TH from Minor Street	NB	SB
Conflicting Flows: (vph)	54	
Potential Capacity: (pcph)	1022	
Capacity Adjustment Factor due to Impeding Movements	0.97	
Movement Capacity: (pcph)	991	
Prob. of Queue-Free State:	1.00	

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)	52	
Potential Capacity: (pcph)	988	
Major LT, Minor TH Impedance Factor:	0.97	
Adjusted Impedance Factor:	0.97	
Capacity Adjustment Factor due to Impeding Movements	0.97	
Movement Capacity: (pcph)	958	

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)		Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB	L	6	958	>					
NB	T	0	991	>	1371	3.6	1.3	A	3.6
NB	R	371	1381	>					
EB	L	6	1705			2.1	0.0	A	1.1
WB	L	46	1705			2.2	0.0	A	1.9

Intersection Delay = 3.4 sec/veh

Volume Worksheet

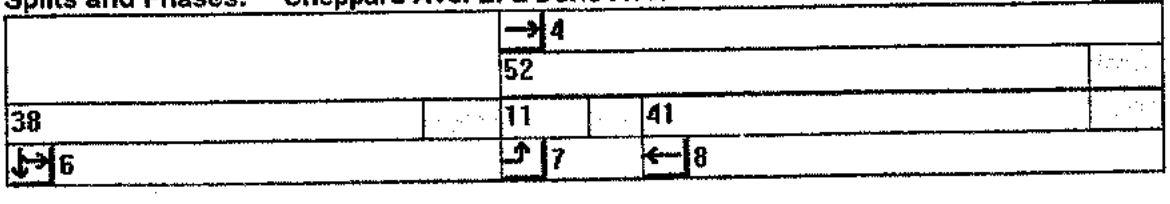
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	230	915	0	0	1410	740	0	0	0	640	0	100
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	235	934	0	0	1439	755	0	0	0	653	0	102
Lane Util. Factor	1.00	1.10	1.10	1.10	1.10	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Group Flow (vph)	235	1027	0	0	1583	755	0	0	0	653	0	102

Lanes, Volumes, and Timings Summary

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	230	915	0	0	1410	740	0	0	0	640	0	100
Adj Lane Grp Vol.	235	1027	0	0	1583	755	0	0	0	653	0	102
Lanes	1	3	0	0	3	1	0	0	0	1	0	1
Satd Flow (Prot)	1770	5588			5588	1583				1770		1583
Satd Flow (Perm)	183	5588			5588	1494				1770		1494
Left Turn Type	P/P			Perm			Split			Split		
Right Turn Type			Perm			Pm+Ov			Perm			Pm+Ov
Phase Number	7	4			8					6	6	
Phase Lagging?	Lead				Lag							
Maximum Green (s)	7	46			35					32	32	
Yellow Time (s)	4	6			6					6	6	
V/C Ratio	0.90	0.34			0.67	0.61				0.95		0.14
Platoon Factor	2.17	0.74			1.00	1.00				1.00		1.00
Webster's Delay (s)	50.9	6.5			16.5	2.4				36.7		8.4
Level of Service	E	B			C	A				D		B

Cycle Length: 90
Control Type: Pretimed
Offset: 0 (0%), Referenced to phase 2-Unused, Start of Green
Intersection V/C Ratio: 0.92
Intersection Webster Delay: 16.4
Intersection LOS: C

Splits and Phases: Sheppard Ave. E. & Doris Ave.



Cole, Sherman And Associates
Transportation Department
75 Commerce Valley Drive East
Thornhill, ON L3T79-
Ph: (905) 882-4401

Streets: (N-S) Bonnington Ave. (E-W) Anndale Dr
Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... Ilya Sher
Date of Analysis..... 2/2/98
Other Information.....PM Peak hour (interim, with a jog)
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	0	0	1	< 0	0	0	0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	245	60			105	5				10	0	595
PHF	.98	.98			.98	.98				.98	.98	.98
Grade		0			0						0	
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10									1.10	1.10	1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)		110
Potential Capacity: (pcph)		1218
Movement Capacity: (pcph)		1218
Prob. of Queue-Free State:		0.45

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)		112
Potential Capacity: (pcph)		1516
Movement Capacity: (pcph)		1516
Prob. of Queue-Free State:		0.82
TH Saturation Flow Rate: (pcphpl)		1700
RT Saturation Flow Rate: (pcphpl)		
Major LT Shared Lane Prob. of Queue-Free State:		0.81

Step 3: TH from Minor Street	NB	SB
Conflicting Flows: (vph)		420
Potential Capacity: (pcph)		657
Capacity Adjustment Factor due to Impeding Movements		0.81
Movement Capacity: (pcph)		533
Prob. of Queue-Free State:		1.00

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)		420
Potential Capacity: (pcph)		605
Major LT, Minor TH Impedance Factor:		0.81
Adjusted Impedance Factor:		0.81
Capacity Adjustment Factor due to Impeding Movements		0.81
Movement Capacity: (pcph)		491

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)		Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
SB	L	11	491	>					
SB	T	0	533	>	1189	7.0	3.9	B	7.0
SB	R	668	1218	>					
EB	L	275	1516			2.9	0.7	A	2.3

Intersection Delay = 4.8 sec/veh

INTERIM SCENARIO
PM PEAK HOUR

Volume Worksheet

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	55	0	135	765	0	375	130	2600	440	135	2510	20
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	56	0	138	781	0	383	133	2653	449	138	2561	20
Lane Util. Factor	1.00	1.00	1.00	1.03	1.00	1.00	1.00	1.10	1.00	1.00	1.10	1.10
Lane Group Flow (vph)	56	0	138	804	0	383	133	2918	449	138	2839	0

Lanes, Volumes, and Timings Summary

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	55	0	135	765	0	375	130	2600	440	135	2510	20
Adj Lane Grp Vol.	56	0	138	804	0	383	133	2918	449	138	2839	0
Lanes	1	0	1	2	0	1	1	3	1	1	3	0
Satd Flow (Prot)	1770		1583	3539		1583	1770	5588	1583	1770	5577	
Satd Flow (Perm)	1773		1494	3547		1494	84	5588	1494	84	5577	
Left Turn Type	Perm			Perm			P/P			P/P		
Right Turn Type			Pm+Ov			Pm+Ov			Perm			Perm
Phase Number		4			8		5	2		1	6	
Phase Lagging?							Lead	Lag		Lead	Lag	
Maximum Green (s)		35			35		7	86		7	86	
Yellow Time (s)		6			6		4	6		4	6	
V/C Ratio	0.12		0.27	0.84		0.76	0.81	0.84	0.49	0.84	0.82	
Platoon Factor	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	
Webster's Delay (s)	30.0		25.8	42.2		36.0	40.0	18.2	11.7	44.7	17.5	
Level of Service	D		D	E		D	E	C	B	E	C	

Cycle Length: 144
Control Type: Actuated-Coordinated
Offset: 0 (0%), Referenced to phase 2-NBT, Start of Green
Intersection V/C Ratio: 0.84
Intersection Webster Delay: 22.0
Intersection LOS: C

Splits and Phases: Avondale Ave. & Yonge St.

1	2	4
11	92	41
11	92	41
5	6	8

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75 Commerce Valley Drive East
Thornhill, ON L3T79-
Ph: (905) 882-4401

Streets: (N-S) Tradewind (E-W) Avondale
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... NAA
Date of Analysis..... 2/20/98
Other Information.....Interim Scenario - PM Peak Hour
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1 < 0		0	> 1 < 0		0	> 1 < 0		0	> 1	1
Stop/Yield			N			N						
Volumes	260	65	50	5	50	5	50	10	0	5	40	635
PHF	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95
Grade		0			0			0			0	
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10			1.10			1.10	1.10	1.10	1.10	1.10	1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	94	56
Potential Capacity: (pcph)	1241	1297
Movement Capacity: (pcph)	1241	1297
Prob. of Queue-Free State:	1.00	0.43
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	121	58
Potential Capacity: (pcph)	1501	1609
Movement Capacity: (pcph)	1501	1609
Prob. of Queue-Free State:	1.00	0.81
TH Saturation Flow Rate: (pcphpl)	1700	
RT Saturation Flow Rate: (pcphpl)	1700	
Major LT Shared Lane Prob. of Queue-Free State:	1.00	
Step 3: TH from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	432	456
Potential Capacity: (pcph)	647	629
Capacity Adjustment Factor due to Impeding Movements	0.81	0.81
Movement Capacity: (pcph)	524	509
Prob. of Queue-Free State:	0.98	0.91
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	784	434
Potential Capacity: (pcph)	372	594
Major LT, Minor TH Impedance Factor:	0.74	0.79
Adjusted Impedance Factor:	0.80	0.84
Capacity Adjustment Factor due to Impeding Movements	0.35	0.84
Movement Capacity: (pcph)	128	498

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)		Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB	L	58	128	>					
NB	T	12	524	>	147	46.3	2.7	F	46.3
NB	R	0	1241	>					
SB	L	6	498	>	508	7.9	0.3	B	
SB	T	46	509	>					6.5
SB	R	735	1297			6.4	4.2	B	
EB	L	301	1609			2.8	0.8	A	1.9
WB	L	6	1501			2.4	0.0	A	0.2

Intersection Delay = 6.7 sec/veh

Cole, Sherman And Associates
Transportation Department
75 Commerce Valley Drive East
Thornhill, ON L3T79-
Ph: (905) 882-4401

Streets: (N-S) Tradewind (E-W) Anndale Dr.
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... NAA
Date of Analysis..... 2/20/98
Other Information.....Interim Stage PM Peak Hour
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0	0	0	0
Stop/Yield			N			N						
Volumes	5	0	5	105	0	5	5	0	305			
PHF	.95	.95	.95	.95	.95	.95	.95	.95	.95			
Grade		0			0			0				
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10			1.10			1.10	1.10	1.10			

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	2	
Potential Capacity: (pcph)	1381	
Movement Capacity: (pcph)	1381	
Prob. of Queue-Free State:	0.74	

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)	5	5
Potential Capacity: (pcph)	1705	1705
Movement Capacity: (pcph)	1705	1705
Prob. of Queue-Free State:	0.93	1.00
TH Saturation Flow Rate: (pcphpl)	1700	1700
RT Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	0.93	1.00

Step 3: TH from Minor Street	NB	SB
Conflicting Flows: (vph)	124	
Potential Capacity: (pcph)	939	
Capacity Adjustment Factor due to Impeding Movements	0.92	
Movement Capacity: (pcph)	869	
Prob. of Queue-Free State:	1.00	

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)	121	
Potential Capacity: (pcph)	901	
Major LT, Minor TH Impedance Factor:	0.92	
Adjusted Impedance Factor:	0.92	
Capacity Adjustment Factor due to Impeding Movements	0.92	
Movement Capacity: (pcph)	833	

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB L	6	833 >					
NB T	0	869 >	1366	3.6	1.2	A	3.6
NB R	353	1381 >					
EB L	6	1705		2.1	0.0	A	1.1
WB L	122	1705		2.3	0.1	A	2.2

Intersection Delay = 3.2 sec/veh

Volume Worksheet

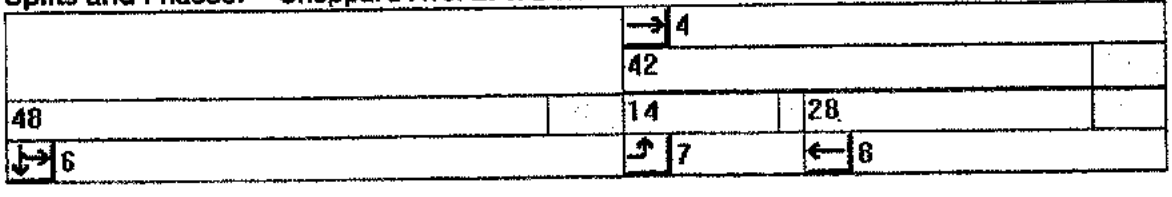
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	255	1585	0	0	1190	415	0	0	0	865	0	185
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	260	1617	0	0	1214	423	0	0	0	883	0	189
Lane Util. Factor	1.00	1.10	1.10	1.10	1.10	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Group Flow (vph)	260	1779	0	0	1335	423	0	0	0	883	0	189

Lanes, Volumes, and Timings Summary

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	255	1585	0	0	1190	415	0	0	0	865	0	185
Adj Lane Grp Vol.	260	1779	0	0	1335	423	0	0	0	883	0	189
Lanes	1	3	0	0	3	1	0	0	0	1	0	1
Satd Flow (Prot)	1770	5588			5588	1583				1770		1583
Satd Flow (Perm)	266	5588			5588	1494				1770		1494
Left Turn Type	P/P			Perm			Split			Split		
Right Turn Type			Perm			Pm+Ov			Perm			Pm+Ov
Phase Number	7	4			8					6	6	
Phase Lagging?	Lead				Lag							
Maximum Green (s)	12	36			22					42	42	
Yellow Time (s)	2	6			6					6	6	
V/C Ratio	0.82	0.73			0.86	0.35				1.00		0.20
Platoon Factor	1.06	0.80			1.00	1.00				1.00		1.00
Webster's Delay (s)	23.9	13.8			27.1	1.8				39.8		4.4
Level of Service	C	B			D	A				D		A

Cycle Length: 90
Control Type: Pretimed
Offset: 0 (0%), Referenced to phase 2-Unused, Start of Green
Intersection V/C Ratio: 0.91
Intersection Webster Delay: 21.3
Intersection LOS: C

Splits and Phases: Sheppard Ave. E. & Doris Ave.



Cole, Sherman And Associates
Transportation Department
75 Commerce Valley Drive East
Thornhill, ON L3T79-
Ph: (905) 882-4401

Streets: (N-S) Bonnington Ave. (E-W) Anndale Dr
Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... Ilya Sher
Date of Analysis..... 2/2/98
Other Information.....AM Peak hour (interim, with a jog)
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	0	0	1	< 0	0	0	0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	270	50			40	5				15	0	560
PHF	.98	.98			.98	.98				.98	.98	.98
Grade		0			0						0	
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10									1.10	1.10	1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)		44
Potential Capacity: (pcph)		1315
Movement Capacity: (pcph)		1315
Prob. of Queue-Free State:		0.52

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)		46
Potential Capacity: (pcph)		1630
Movement Capacity: (pcph)		1630
Prob. of Queue-Free State:		0.81
TH Saturation Flow Rate: (pcphpl)		1700
RT Saturation Flow Rate: (pcphpl)		
Major LT Shared Lane Prob. of Queue-Free State:		0.81

Step 3: TH from Minor Street	NB	SB
Conflicting Flows: (vph)		370
Potential Capacity: (pcph)		698
Capacity Adjustment Factor due to Impeding Movements		0.81
Movement Capacity: (pcph)		564
Prob. of Queue-Free State:		1.00

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)		370
Potential Capacity: (pcph)		647
Major LT, Minor TH Impedance Factor:		0.81
Adjusted Impedance Factor:		0.81
Capacity Adjustment Factor due to Impeding Movements		0.81
Movement Capacity: (pcph)		523

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
SB	L	17	523 >					
SB	T	0	564 >	1265	5.8	3.2	B	5.8
SB	R	628	1315 >					
EB	L	304	1630		2.7	0.8	A	2.3

Intersection Delay = 4.3 sec/veh

ULTIMATE SCENARIO
AM PEAK HOUR

Volume Worksheet

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	50	0	300	785	0	185	90	2990	735	95	2695	25
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	51	0	306	801	0	189	92	3051	750	97	2750	26
Lane Util. Factor	1.00	1.00	1.00	1.03	1.00	1.00	1.00	1.15	1.15	1.00	1.10	1.10
Lane Group Flow (vph)	51	0	306	825	0	189	92	3509	863	97	3054	0

Lanes, Volumes, and Timings Summary

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	50	0	300	785	0	185	90	2990	735	95	2695	25
Adj Lane Grp Vol.	51	0	306	825	0	189	92	3509	863	97	3054	0
Lanes	1	0	1	2	0	1	1	3	1	1	3	0
Satd Flow (Prot)	1770		1583	3539		1583	1770	5588	1583	1770	5577	
Satd Flow (Perm)	1773		1494	3305		1494	82	5588	1494	82	5577	
Left Turn Type	Perm			P/P			P/P			P/P		
Right Turn Type			Pm+Ov			Pm+Ov			Pm+Ov			Perm
Phase Number		4		3	8		5	2		1	6	
Phase Lagging?		Lag		Lead			Lead	Lag		Lead	Lag	
Maximum Green (s)		23		10	35		6	87		6	87	
Yellow Time (s)		6		2	6		4	6		4	6	
V/C Ratio	0.15		0.83	0.91		0.38	0.61	0.99	0.82	0.64	0.87	
Platoon Factor	1.00		1.00	1.00		1.00	1.00	1.00	1.00	0.85	1.87	
Webster's Delay (s)	37.2		48.3	47.2		27.5	16.1	30.3	14.2	17.4	32.4	
Level of Service	D		E	E		D	C	D	B	C	D	

Cycle Length: 144
Control Type: Actuated-Coordinated
Offset: 8 (6%), Referenced to phase 2-NBT, Start of Green
Intersection V/C Ratio: 0.95
Intersection Webster Delay: 31.3
Intersection LOS: D

Splits and Phases: Avondale Ave. & Yonge St.

1	2	3	4
10	93	12	29
10	93	41	
5	6	8	

Volume Worksheet

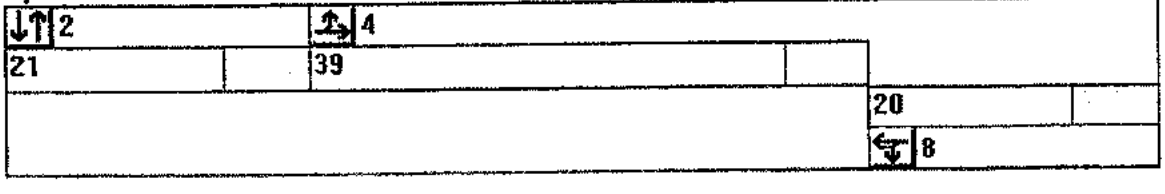
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	1073	32	56	0	71	99	66	32	0	103	46	1014
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	1095	33	57	0	72	101	67	33	0	105	47	1035
Lane Util. Factor	1.05	1.05	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Group Flow (vph)	591	594	57	0	173	0	0	100	0	0	152	1035

Lanes, Volumes, and Timings Summary

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	1073	32	56	0	71	99	66	32	0	103	46	1014
Adj Lane Grp Vol.	591	594	57	0	173	0	0	100	0	0	152	1035
Lanes	1	1	1	0	1	0	0	1	0	0	1	1
Satd Flow (Prot)	1770	1779	1583		1529			1803			1801	1583
Satd Flow (Perm)	1770	1779	1583		1529			1319			1367	1583
Left Turn Type	Split			Split			Perm			Perm		
Right Turn Type			Perm			Perm			Pm+Ov			Free
Phase Number	4	4		8	8			2			2	
Phase Lagging?												
Maximum Green (s)	33	33		14	14			15			15	
Yellow Time (s)	6	6		6	6			6			6	
V/C Ratio	0.74	0.74	0.08		0.53			0.34			0.49	0.65
Platoon Factor	1.00	1.00	1.00		1.00			1.00			1.05	99.00
Webster's Delay (s)	16.4	16.4	9.5		22.6			20.0			22.5	0.7
Level of Service	C	C	B		C			C			C	A

Cycle Length: 80
Control Type: Pretimed
Offset: 0 (0%), Referenced to phase 2-NBSB, Start of Green
Intersection V/C Ratio: 0.63
Intersection Webster Delay: 11.1
Intersection LOS: B

Splits and Phases: Avondale Ave. & Tradewind Ave.



Volume Worksheet

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	51	0	16	0	0	0	1	1103	0	0	1085	382
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	52	0	16	0	0	0	1	1126	0	0	1107	390
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.05	1.05	1.05	1.05	1.05	1.05
Lane Group Flow (vph)	52	16	0	0	0	0	0	1183	0	0	1572	0

Lanes, Volumes, and Timings Summary

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	51	0	16	0	0	0	1	1103	0	0	1085	382
Adj Lane Grp Vol.	52	16	0	0	0	0	0	1183	0	0	1572	0
Lanes	1	1	0	0	1	0	0	2	0	0	2	0
Satd Flow (Prot)	1770	1583			1863			3725			3580	
Satd Flow (Perm)	1773	1583			1863			3509			3580	
Left Turn Type	Perm			Perm			Perm			Perm		
Right Turn Type			Perm			Perm			Perm			Perm
Phase Number		2			6			8			4	
Phase Lagging?												
Maximum Green (s)		20			20			48			48	
Yellow Time (s)		6			6			6			6	
V/C Ratio	0.10	0.04						0.53			0.69	
Platoon Factor	1.00	1.00						0.18			1.00	
Webster's Delay (s)	15.9	15.6						1.3			7.8	
Level of Service	C	C						A			B	

Cycle Length: 80
Control Type: Pretimed
Offset: 0 (0%), Referenced to phase 2-EBT and 6-WBT, Start of Green
Intersection V/C Ratio: 0.51
Intersection Webster Delay: 5.2
Intersection LOS: B

Splits and Phases: Anndale Ave. & Tradewind Ave.

→ 2	↓ 4
26	54
26	54
← 6	↑ 8

Volume Worksheet

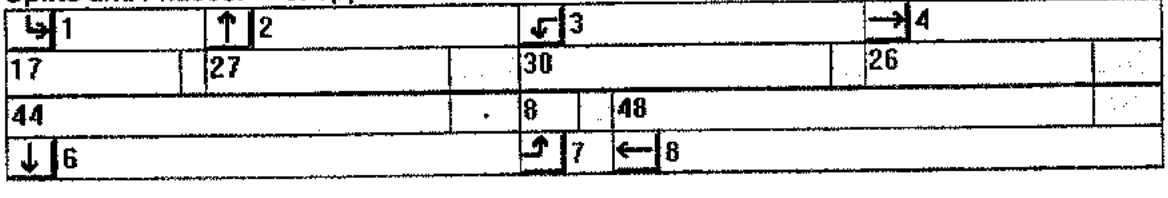
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	170	940	50	550	1600	725	30	480	330	475	480	110
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	173	959	51	561	1633	740	31	490	337	485	490	112
Lane Util. Factor	1.00	1.10	1.10	1.00	1.05	1.00	1.00	1.05	1.00	1.03	1.00	1.00
Lane Group Flow (vph)	173	1111	0	561	1715	740	31	515	337	500	602	0

Lanes, Volumes, and Timings Summary

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	170	940	50	550	1600	725	30	480	330	475	480	110
Adj Lane Grp Vol.	173	1111	0	561	1715	740	31	515	337	500	602	0
Lanes	1	3	0	1	2	1*	1	2	1**	2	1	0
Satd Flow (Prot)	1770	5544		1770	3725	1583	1770	3725	1583	3539	1794	
Satd Flow (Perm)	324	5544		287	3725	1494	311	3725	1583	3539	1794	
Left Turn Type	P/P			P/P			Perm			Prot		
Right Turn Type			Perm			Pm+Ov			Pm+Ov			Pm+Ov
Phase Number	7	4		3	8			2		1	6	
Phase Lagging?	Lead	Lag		Lead	Lag			Lag		Lead		
Maximum Green (s)	5	20		27	42			21		15	38	
Yellow Time (s)	3	6		3	6			6		2	6	
V/C Ratio	0.96	0.87		0.98	1.02	0.81	0.42	0.58	0.41	0.94	0.82	
Platoon Factor	0.85	0.85		0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	
Webster's Delay (s)	53.0	28.8		42.3	41.1	12.8	22.9	22.3	8.5	45.6	22.0	
Level of Service	E	D		E	E	B	C	C	B	E	C	

Cycle Length: 100
Control Type: Semi Act-Uncoord
Offset: 16 (16%), Referenced to phase 2-NBT, Start of Green
Intersection V/C Ratio: 0.91
Intersection Webster Delay: 31.2
Intersection LOS: D

Splits and Phases: Sheppard Ave. E. & Doris Ave.



* This is a shared through-right lane that was coded as a defacto right-turn lane.

** This was coded as a short right turn lane (15m) to account for the extra wide shared through/right lane that is provided.

Volume Worksheet

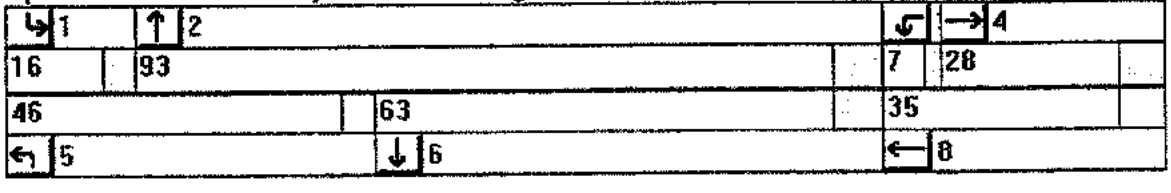
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	220	30	650	325	30	55	567	2620	110	190	2030	30
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	224	31	663	332	31	56	579	2673	112	194	2071	31
Lane Util. Factor	1.00	1.00	1.13	1.00	1.00	1.00	1.00	1.10	1.10	1.00	1.10	1.10
Lane Group Flow (vph)	224	31	749	332	87	0	579	3063	0	194	2312	0

Lanes, Volumes, and Timings Summary

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	220	30	650	325	30	55	567*	2620	110	190	2030	30
Adj Lane Grp Vol.	224	31	749	332	87	0	579	3063	0	194	2312	0
Lanes	1	1	2	1	1	0	1	3	0	1	3	0
Satd Flow (Prot)	1770	1863	3167	1770	1682		1770	5555		1770	5577	
Satd Flow (Perm)	1354	1863	3167	1427	1682		117	5555		125	5577	
Left Turn Type	Perm			P/P			P/P			P/P		
Right Turn Type			Pt+Ov			Pm+Ov			Pm+Ov			Perm
Phase Number		4		3	8		5	2		1	6	
Phase Lagging?		Lag		Lead			Lead	Lag		Lead	Lag	
Maximum Green (s)		22		5	29		42	87		12	57	
Yellow Time (s)		6		2	6		4	6		4	6	
V/C Ratio	0.95	0.10	0.49	0.98	0.23		0.98	0.88		0.87	0.99	
Platoon Factor	1.00	1.00	1.00	1.00	1.00		0.92	0.79		1.04	0.48	
Webster's Delay (s)	78.0	38.0	18.2	75.1	35.0		52.7	15.7		53.9	28.5	
Level of Service	F	D	C	F	D		E	C		E	D	

Cycle Length: 144
Control Type: Actuated-Coordinated
Offset: 48 (33%), Referenced to phase 2-NBT, Start of Green
Intersection V/C Ratio: 0.98
Intersection Webster Delay: 28.4
Intersection LOS: D

Splits and Phases: Poyntz Ave. & Yonge St.



*assumes 2.5 streetcars per cycle

Volume Worksheet

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	235	605	135	390	905	480	250	1795	315	170	1785	50
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	240	617	138	398	923	490	255	1832	321	173	1821	51
Lane Util. Factor	1.00	1.10	1.10	1.00	1.10	1.10	1.00	1.10	1.10	1.00	1.10	1.10
Lane Group Flow (vph)	240	831	0	398	1032	522	255	2368	0	173	2059	0

Lanes, Volumes, and Timings Summary

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	235	605	135	390	905	480	250	1795	315	170	1785	50
Adj Lane Grp Vol.	240	831	0	398	1032	522	255	2368	0	173	2059	0
Lanes	1	3	0	1	2	1*	1	3	0	1	3	0
Satd Flow (Prot)	1770	5387		1770	3714	1583	1770	5421		1770	5560	
Satd Flow (Perm)	276	5387		248	3714	1494	121	5421		127	5560	
Left Turn Type	P/P			P/P			P/P			P/P		
Right Turn Type			Pm+Ov			Pm+Ov			Pm+Ov			Pm+Ov
Phase Number	7	4		3	8		5	2		1	6	
Phase Lagging?	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Maximum Green (s)	15	24		29	38		17	64		9	56	
Yellow Time (s)	3	6		3	6		3	6		3	6	
V/C Ratio	0.97	0.82		0.95	0.98	0.98	0.93	0.94		0.99	0.90	
Platoon Factor	1.00	1.00		1.00	1.00	1.00	1.77	0.45		1.00	1.00	
Webster's Delay (s)	66.2	46.6		54.1	55.2	57.5	82.2	18.3		77.1	34.3	
Level of Service	F	E		E	E	E	F	C		F	D	

Cycle Length: 144
Control Type: Actuated-Coordinated
Offset: 59 (41%), Referenced to phase 2-NBT, Start of Green
Intersection V/C Ratio: 0.94
Intersection Webster Delay: 39.5
Intersection LOS: D

Splits and Phases: Sheppard Ave. W. & Yonge St.

1	2	3	4
12	70	32	30
20	62	18	44
5	6	7	8

* This is a shared through-right lane which is analyzed as a defacto right turn lane.

ULTIMATE SCENARIO
PM PEAK HOUR

Volume Worksheet

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	55	0	135	865	0	180	130	2620	770	150	2880	20
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	56	0	138	883	0	184	133	2673	786	153	2939	20
Lane Util. Factor	1.00	1.00	1.00	1.03	1.00	1.00	1.00	1.10	1.00	1.00	1.10	1.10
Lane Group Flow (vph)	56	0	138	909	0	184	133	2940	786	153	3255	0

Lanes, Volumes, and Timings Summary

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	55	0	135	865	0	180	130	2620	770	150	2880	20
Adj Lane Grp Vol.	56	0	138	909	0	184	133	2940	786	153	3255	0
Lanes	1	0	1	2	0	1	1	3	1	1	3	0
Satd Flow (Prot)	1770		1583	3539		1583	1770	5588	1583	1770	5583	
Satd Flow (Perm)	1773		1494	3018		1494	88	5588	1494	88	5583	
Left Turn Type	Perm			P/P			P/P			P/P		
Right Turn Type			Pm+Ov			Pm+Ov			Pm+Ov			Perm
Phase Number		4		3	8		5	2		1	6	
Phase Lagging?		Lag		Lead			Lead	Lag		Lead	Lag	
Maximum Green (s)		14		22	38		8	82		8	82	
Yellow Time (s)		6		2	6		4	6		4	6	
V/C Ratio	0.27		0.50	0.97		0.35	0.81	0.89	0.71	0.93	0.99	
Platoon Factor	1.00		1.00	1.00		1.00	1.00	1.00	1.00	0.90	0.89	
Webster's Delay (s)	44.1		39.7	55.0		25.1	39.6	21.9	8.3	60.2	29.4	
Level of Service	E		D	E		D	D	C	B	F	D	

Cycle Length: 144
Control Type: Actuated-Coordinated
Offset: 0 (0%), Referenced to phase 2-NBT, Start of Green
Intersection V/C Ratio: 0.97
Intersection Webster Delay: 28.5
Intersection LOS: D

Splits and Phases: Avondale Ave. & Yonge St.

1	2	3	4
12	88	24	20
12	88	44	
5	6	8	

Volume Worksheet

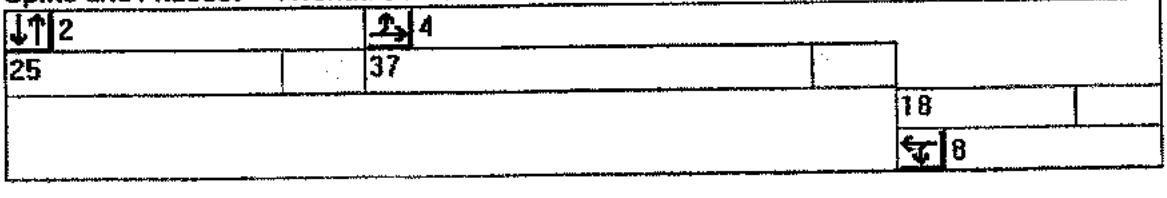
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	1066	65	67	5	52	98	66	32	0	99	36	1151
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	1088	66	68	5	53	100	67	33	0	101	37	1174
Lane Util. Factor	1.10	1.10	1.10	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Group Flow (vph)	599	671	75	0	158	0	0	100	0	0	138	1174

Lanes, Volumes, and Timings Summary

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	1066	65	67	5	52	98	66	32	0	99	36	1151
Adj Lane Grp Vol.	599	671	75	0	158	0	0	100	0	0	138	1174
Lanes	1	1	1	0	1	0	0	1	0	0	1	1
Satd Flow (Prot)	1770	1783	1583		1515			1803			1798	1583
Satd Flow (Perm)	1770	1783	1583		1515			1373			1395	1583
Left Turn Type	Split			Split			Perm			Perm		
Right Turn Type			Perm			Perm			Pm+Ov			Free
Phase Number	4	4		8	8			2			2	
Phase Lagging?												
Maximum Green (s)	31	31		12	12			19			19	
Yellow Time (s)	6	6		6	6			6			6	
V/C Ratio	0.77	0.86	0.11		0.52			0.25			0.34	0.74
Platoon Factor	1.00	1.00	1.00		1.00			1.00			1.03	99.00
Webster's Delay (s)	17.9	22.2	10.1		23.0			16.7			17.8	1.3
Level of Service	C	C	B		C			C			C	A

Cycle Length: 80
Control Type: Pretimed
Offset: 0 (0%), Referenced to phase 2-NBSB, Start of Green
Intersection V/C Ratio: 0.63
Intersection Webster Delay: 12.3
Intersection LOS: B

Splits and Phases: Avondale Ave. & Tradewind Ave.



Volume Worksheet

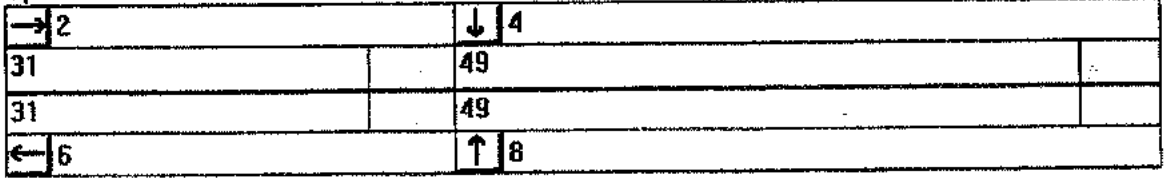
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	379	1	0	107	1	2	25	1109	108	8	1169	53
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	387	1	0	109	1	2	26	1132	110	8	1193	54
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.05	1.05	1.05	1.05	1.05	1.05
Lane Group Flow (vph)	387	1	0	0	112	0	0	1332	0	0	1318	0

Lanes, Volumes, and Timings Summary

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	379	1	0	107	1	2	25	1109	108	8	1169	53
Adj Lane Grp Vol.	387	1	0	0	112	0	0	1332	0	0	1318	0
Lanes	1	1	0	0	1	0	0	2	0	0	2	0
Satd Flow (Prot)	1770	1863			1596			3673			3703	
Satd Flow (Perm)	1354	1863			1591			2739			3233	
Left Turn Type	Perm			Perm			Perm			Perm		
Right Turn Type			Perm			Perm			Perm			Perm
Phase Number		2			6			8			4	
Phase Lagging?												
Maximum Green (s)		25			25			43			43	
Yellow Time (s)		6			6			6			6	
V/C Ratio	0.88	0.00			0.22			0.88			0.74	
Platoon Factor	1.00	1.00			1.00			0.29			1.00	
Webster's Delay (s)	32.1	13.7			14.9			8.2			11.6	
Level of Service	D	B			B			B			B	

Cycle Length: 80
Control Type: Pretimed
Offset: 0 (0%), Referenced to phase 2-EBT and 6-WBT, Start of Green
Intersection V/C Ratio: 0.88
Intersection Webster Delay: 12.8
Intersection LOS: B

Splits and Phases: Anndale Ave. & Tradewind Ave.



Volume Worksheet

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	185	1670	33	330	1160	520	50	480	525	720	460	215
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	189	1704	34	337	1184	531	51	490	536	735	469	219
Lane Util. Factor	1.00	1.10	1.10	1.00	1.05	1.00	1.00	1.05	1.00	1.03	1.00	1.00
Lane Group Flow (vph)	189	1911	0	337	1243	531	51	515	536	757	688	0

Lanes, Volumes, and Timings Summary

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	185	1670	33	330	1160	520	50	480	525	720	460	215
Adj Lane Grp Vol.	189	1911	0	337	1243	531	51	515	536	757	688	0
Lanes	1	3	0	1	2	1*	1	2	1**	2	1	0
Satd Flow (Prot)	1770	5571		1770	3725	1583	1770	3725	1583	3539	1745	
Satd Flow (Perm)	212	5571		212	3725	1494	414	3725	1583	3539	1745	
Left Turn Type	P/P			P/P			Perm			Prot		
Right Turn Type			Perm			Pm+Ov			Pm+Ov			Pm+Ov
Phase Number	7	4		3	8			2		1	6	
Phase Lagging?	Lead	Lag		Lead	Lag			Lag		Lead		
Maximum Green (s)	13	32		13	32			15		20	39	
Yellow Time (s)	4	6		4	6			6		4	6	
V/C Ratio	0.55	0.98		0.97	0.95	0.61	0.68	0.77	1.03	0.97	0.94	
Platoon Factor	0.85	0.85		0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	
Webster's Delay (s)	9.8	32.7		47.8	31.7	9.0	39.4	28.9	58.8	44.0	32.3	
Level of Service	B	D		E	D	B	D	D	E	E	D	

Cycle Length: 100
Control Type: Semi Act-Uncoord
Offset: 24 (24%), Referenced to phase 2-NBT, Start of Green
Intersection V/C Ratio: 0.99
Intersection Webster Delay: 33.8
Intersection LOS: D

Splits and Phases: Sheppard Ave. E. & Doris Ave.

1	2	3	4
24	21	17	38
45		17	38
6		7	8

* This is a shared through-right lane that was coded as a defacto right-turn lane.

** This was coded as a short right turn lane (15m) to account for the extra wide shared through-right lane that is provided.

Volume Worksheet

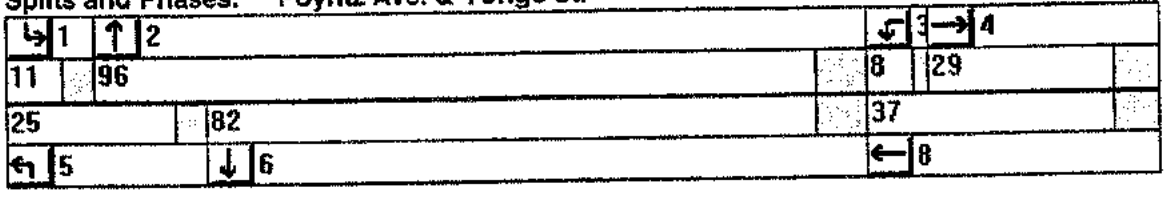
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	80	35	695	235	20	155	300	2185	115	40	2345	210
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	82	36	709	240	20	158	306	2230	117	41	2393	214
Lane Util. Factor	1.00	1.00	1.13	1.00	1.00	1.00	1.00	1.10	1.10	1.00	1.10	1.10
Lane Group Flow (vph)	82	36	801	240	178	0	306	2582	0	41	2867	0

Lanes, Volumes, and Timings Summary

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	80	35	695	235	20	155	300	2185	115	40	2345	210
Adj Lane Grp Vol.	82	36	801	240	178	0	306	2582	0	41	2867	0
Lanes	1	1	2	1	1	0	1	3	0	1	3	0
Satd Flow (Prot)	1770	1863	3167	1770	1615		1770	5544		1770	5521	
Satd Flow (Perm)	1039	1863	3167	1410	1615		91	5544		142	5521	
Left Turn Type	Perm			P/P			P/P			P/P		
Right Turn Type			Pm+Ov			Pm+Ov			Pm+Ov			Perm
Phase Number		4		3	8		5	2		1	6	
Phase Lagging?		Lag		Lead			Lead	Lag		Lead	Lag	
Maximum Green (s)		23		6	31		21	90		7	76	
Yellow Time (s)		6		2	6		4	6		4	6	
V/C Ratio	0.44	0.11	0.74	0.67	0.47		0.91	0.72		0.23	0.95	
Platoon Factor	1.00	1.00	1.00	1.00	1.00		1.57	0.15		0.48	0.57	
Webster's Delay (s)	41.0	37.5	32.2	40.9	36.6		72.9	2.4		2.7	18.7	
Level of Service	E	D	D	E	D		F	A		A	C	

Cycle Length: 144
Control Type: Actuated-Coordinated
Offset: 8 (6%), Referenced to phase 2-NBT, Start of Green
Intersection V/C Ratio: 0.87
Intersection Webster Delay: 18.1
Intersection LOS: C

Splits and Phases: Poyntz Ave. & Yonge St.



Volume Worksheet

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	50	950	290	220	740	155	185	1720	400	210	1750	205
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	51	969	296	224	755	158	189	1755	408	214	1786	209
Lane Util. Factor	1.00	1.10	1.10	1.00	1.10	1.10	1.00	1.10	1.10	1.00	1.10	1.10
Lane Group Flow (vph)	51	1392	0	224	1005	0	189	2380	0	214	2195	0

Lanes, Volumes, and Timings Summary

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	50	950	290	220	740	155	185	1720	400	210	1750	205
Adj Lane Grp Vol.	51	1392	0	224	1005	0	189	2380	0	214	2195	0
Lanes	1	3	0	1	3	0	1	3	0	1	3	0
Satd Flow (Prot)	1770	5331		1770	5398		1770	5381		1770	5471	
Satd Flow (Perm)	197	5331		177	5398		114	5381		114	5471	
Left Turn Type	P/P			P/P			P/P			P/P		
Right Turn Type			Pm+Ov			Pm+Ov			Pm+Ov			Pm+Ov
Phase Number	7	4		3	8		5	2		1	6	
Phase Lagging?	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Maximum Green (s)	6	36		14	44		12	64		12	64	
Yellow Time (s)	3	6		3	6		3	6		3	6	
V/C Ratio	0.37	0.99		0.95	0.58		0.88	0.97		0.99	0.88	
Platoon Factor	1.00	1.00		1.00	1.00		1.62	0.70		1.00	1.00	
Webster's Delay (s)	22.6	56.4		61.8	31.5		66.4	28.4		76.7	29.5	
Level of Service	C	E		F	D		F	D		F	D	

Cycle Length: 144
Control Type: Actuated-Coordinated
Offset: 13 (9%), Referenced to phase 2-NBT, Start of Green
Intersection V/C Ratio: 0.98
Intersection Webster Delay: 37.5
Intersection LOS: D

Splits and Phases: Sheppard Ave. W. & Yonge St.

1	2	3	4
15	70	17	42
15	70	9	50
5	6	7	8

TORONTO
North York Civic Centre

APPENDIX D

AIR QUALITY LETTER FROM RWDI
(OCTOBER 27, 1997)

Please note that we have not examined detailed plans of the roadway re-alignment. However, a shift of the roadway 100m east will result in the roadway moving closer to residences fronting on Bonnington Place. In the original analysis, the worst-case pollutant levels were predicted to occur at a location approximately 6m from the edge of the intersection of East Service Road and Sheppard Avenue. These pollutant levels are expected to remain less than the AAQC's, and therefore it is expected that shifting the intersection will result in similar findings. However, it is our understanding that some of the houses fronting on Bonnington Place are to be demolished.

Based on the information provided by Cole Sherman in our telephone conversation, it is our opinion that there would be no significant change to the results of our original report. It is anticipated that the new proposed East Service Road alignment will not cause an exceedance of the AAQC's for CO and NO_2 at receptor locations, including residences fronting on Bonnington Place.

We hope that the information contained in this letter is beneficial to the design team. If you have any questions concerning the above, please feel free to contact either of the undersigned.

Yours very truly,

ROWAN WILLIAMS DAVIES & IRWIN Inc.

David Chadder, Hon. B.Sc., QEP
Project Manager/Principal

MB/jt

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