Environmental Study Report

Speers Road Class Environmental Assessment Study

From Bronte Road to Kerr Street,
Town of Oakville

SEPTEMBER 2009

TN-1340-TNA00

Executive Summary

The Town of Oakville has completed a Class Environmental Assessment (EA) for the section of Speers Road from Bronte Road to Kerr Street in the Town of Oakville. In developing a preferred design, consideration was given to technical requirements of the Town (e.g. address capacity and safety requirements), needs/concerns of the local community, as well as local environmental and economic constraints. This project was classified as a Schedule "C" Study under the EA Act and completed in accordance with the *Municipal Class Environmental Assessment, October 2000, as amended in 2007.*

Study Purpose

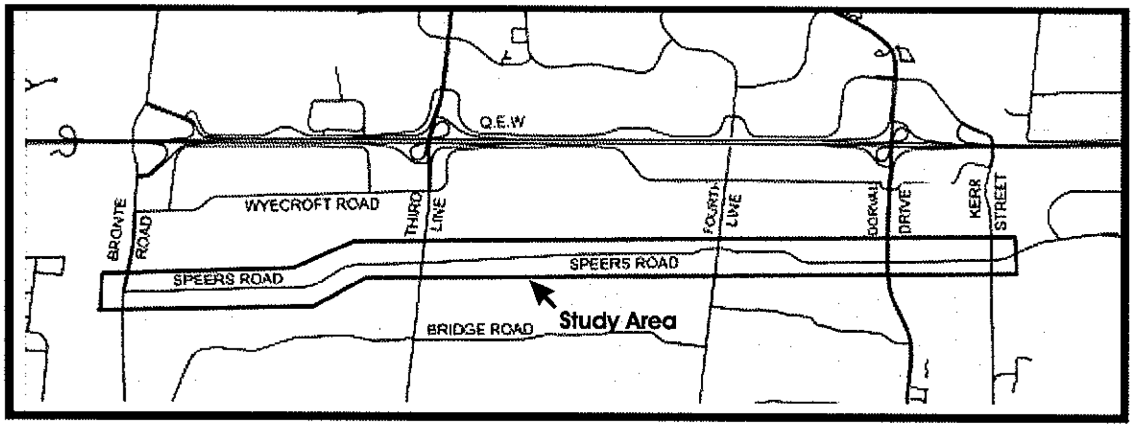
The purpose of the Study was to address various issues along the subject portion of Speers Road including, but not limited to:

- Existing and future travel demand
- Land servicing needs
- Inadequate pedestrian, cycling and transit facilities
- Operational and infrastructure deficiencies
- Approved and proposed changes in land use

Study Area

Speers Road originates in the west end at Bronte Road and extends to Cross Avenue. East of Cross Avenue, the corridor is renamed Cornwall Road that extends to Ford Drive in the east. The study area extends from Bronte Road in the west to Kerr Street in the east (see **Figure ES-1**) and is designated as a multi-purpose arterial under the jurisdiction of the Town of Oakville. Speers Road forms a portion of the QEW West Employment District and primarily consists of commercial and light industrial land uses.

Figure ES-1 – Study Area



Problem Statement

Under Phase 1 of the Schedule "C" Class EA process a "Problem Statement" is prepared which identifies the various issues to be addressed by the study. Based on a review of various background documents (e.g. traffic analysis, road safety analysis), the Terms of Reference, site visits, and consultation with key stakeholders, technical agencies and members of the public, the following issues were identified as having to be addressed in the Speers Road Class EA Study, thus comprising the Study Problem Statement:

- Existing/future traffic capacity deficiencies
- Need for improved public transit service
- Need for safety improvements
- Inadequate cyclist and pedestrian facilities
- Structural deficiencies and deteriorating pavement conditions
- Streetscape aesthetics/landscaping requirements
- Roadway drainage.

Recommended Solution

Under Phase 2 of the Class EA process, all reasonable solutions to the problem (i.e. planning alternatives) are identified and evaluated, including the "Do Nothing" alternative as a benchmark. For the Speers Road study, 6 planning alternatives were identified and evaluated based on traffic operations / safety, aesthetics / community character, socio-economic environment and costs / feasibility of implementation.

Based on the evaluation of the alternative solutions, the preferred planning solution for the Speers Road corridor was identified as follows:

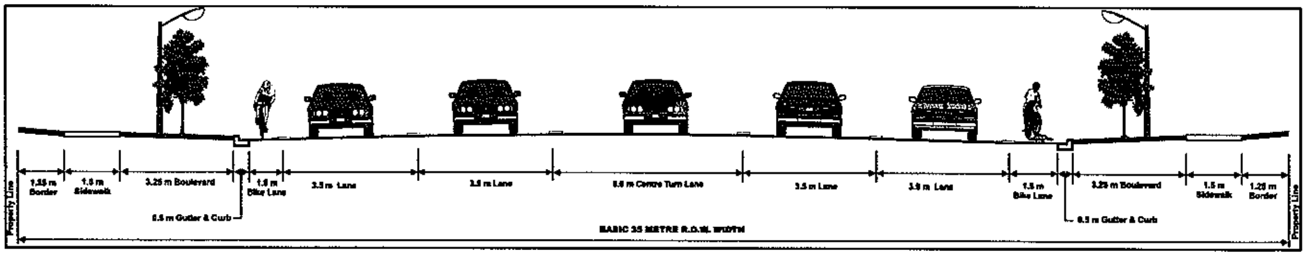
Increase traffic capacity along Speers Road through the addition of through / turn lanes and help alleviate congestion through the accommodation of transit users, cyclists, and pedestrians and the implementation of non-structural improvements including better signage and traffic control.

Recommended Design Concept for the Preferred Solution

Subsequent to the identification of the preferred solution, a number of design alternatives (potential methods of implementing the preferred solution) were identified, evaluated and presented to the public and technical agencies. Ultimately, the design alternatives were developed to address the problem(s) identified in the first phase of the EA.

Based on the evaluation of the alternative design concepts against various criteria representing the broad definition of the environment (as described in the *EA Act)*, Design Alternative 1 – Reconstruct Speers Road to 5 lanes throughout (4 through and 1 centre turn lane) plus auxiliary turn lanes at major intersections as required, with dedicated bike lanes, boulevards and sidewalks along both sides of the corridor, was selected as the preferred design (see **Figure ES-2**).

Figure ES-2 – Preferred Design



Additional features of the preferred design include:

- Roadway drainage to be accommodated via curb and gutter on each side of the road.
- Reconstruction of the existing road surface to address deteriorating pavement conditions.
- Widening of the Fourteen Mile Creek and McCraney Creek bridge structures to accommodate roadway widening and sidewalks.
- Streetscape improvements along the corridor (to be developed during detail design).

Although transit queue jump lanes are not recommended at this time, designated right turn lanes provided in the preferred design plans at all key intersections along the Speers Road corridor could be converted into transit queue jump lanes in the future, if required.

Key Impacts Associated with the Preferred Design

Based on an assessment of the potential impacts resulting from construction of the preferred design, the proposed improvements to Speers Road from Bronte Road to Kerr Street is not anticipated to result in any significant environmental impacts provided adequate mitigation measures are employed. Key impacts that have been identified as a result of implementing the preferred design (during and post construction) may include:

- *Potential disruption to vehicular traffic (travelling public and commercial vehicles).* Traffic disruption shall be minimized as much as possible during construction. At least one lane (under the control of flagmen) shall remain open at all times. A construction staging and traffic management plan will be developed during the detailed design phase of the project.
- *Potential access restrictions to adjacent property driveways.* Access to adjacent properties may be disrupted by a day or two.
- *Property required implementing the preferred design.* The preferred cross section will be reviewed at the detail design stage and reduced, where possible, to minimize impact on properties. Where the purchase of property is required, the property owner will be contacted directly by the Town of Oakville during the detail design phase of the project.
- *Potential impacts on the terrestrial environment (i.e. roadside vegetation and mature trees).* Trees requiring removal will be replaced via a tree planting plan to be developed during detail design.
- *Potential surface water impacts resulting from erosion and sedimentation.* During the detail design stage, the detailed location of bridge abutments and their relative proximity to the edge of the creek will be confirmed as well as bridge extension requirements (i.e. required excavation levels and impacts on edge of creek). Following this, silt fencing and other control measures such as steel sheet piling shall be considered.
- *Relocation of existing utilities to accommodate the preferred design.* It is anticipated that a number of utilities will require relocation to accommodate the recommended roadway design.
- *Future noise impacts resulting from increased traffic volumes.* The increase in traffic volumes will produce increased noise levels of less than 1dBA which according to MTO/MOE noise protocols is considered insignificant and therefore, no noise mitigation is required for this project.

Additional Work Required & Monitoring

Additional works to be completed during the detail design phase of the project, prior to construction, include but are not limited to, the following:

- Develop streetscape plan for Speers Road in accordance with *Section 7.1.7* of this report.
- Undertake a Stage 2 Archaeological Assessment in accordance with the recommendations of the Stage 1 Assessment.
- Develop a tree planting plan to address:
  - Compensation for vegetation requiring removal
  - Planting of new street trees to improve the aesthetics of the streetscape
  - Restoration of disturbed boulevard landscaped areas.
- Complete detailed property requirements and begin negotiations with affected property owners to acquire property to implement the preferred design.
- Adjust preferred design where possible to minimize property impacts.
- Further investigate stormwater management opportunities, specifically pertaining to those outlined in *Section 6.1.2* of this report.
- Develop a construction staging and traffic management plan to maintain access to and from the existing driveways along Speers Road and the existing side streets.
- Determine detailed locations of all buried utilities and gas lines.
- Review the condition and capacity of the sanitary, storm sewer and watermain works within the limits of the study area to determine if any replacements or upgrades are necessary.
- Should there be a need to enter into the woodland east of the Bronte Road/Speers Road intersection (to be identified during detail design), complete an assessment of the woodland to determine potential impacts of the reconstruction works and associated mitigation measures.
- Complete detailed habitat mapping for each creek crossing location. Mapping to include:
  - longitudinal slopes of the creek;
  - bankfull channel width measurements;
  - low flow channel width measurements; and
  - locations of all riffles, runs, pools, undercut banks and any other instream and riparian structure/cover that may be present.
- Determine feasibility to create low flow channels through each of the bridge crossings to improve fish passage during low flow conditions.
- Consider feasibility of replacing Gabion Baskets along the north side of the Fourteen Mile Creek crossing and southeast side of the bridge with a more environmentally friendly measure (e.g. vegetated geogrid).
- Secure the following approvals:
  - Fill permit under the *Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation* (Ontario Regulation 150/06)
  - Work permit under the *Lakes and Rivers Improvement Act*
  - Authorization under Section 35(2) of the *Fisheries Act* to permit in-water work.
  - Obtain Certificate of Approval from the Ministry of Environment for storm sewer works.
  - A Permit to Take Water will be required from the MOE if dewatering exceeds 50,000 litres per day.

  - A Permit under the *Endangered Species Act* will be required by the Ministry of Natural Resources, particularly regarding any in-water work or the transport of groundwater where Redside Dace (Endangered status) are present.

Mitigation measures identified in this report shall be written into the contract specifications. During construction, the contract administrator will ensure that full-time monitoring/inspection of the project works is undertaken to ensure that all environmental commitments identified in the Environmental Study Report are adhered to by the contract team. After a period of one year following completion of construction (i.e. post construction), a final inspection will be undertaken to ensure the effectiveness of the identified mitigation measures

Public Consultation

Public consultation is a key feature of EA planning and therefore was a principal component of the Speers Road Study. Key features of the consultation program undertaken as part of this study included:

- Notice of Study Commencement published in the *Oakville Beaver* on March 19th and 26th, 2008. The notice was also mailed to property/business owners, area residents and technical agencies.
- Two Public Information Centres held on May 1, 2008 and December 17, 2008.
- Two Stakeholder Group meetings held on April 17, 2008 and December 11, 2008.
- Two Technical Agency Committee meetings held on April 17, 2008 and December 11, 2008.
- A Notice of Study Completion to be published in the *Oakville Beaver* and mailed to property/business owners, area residents and technical agencies.
- 30 day public review of the Environmental Study Report.

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1.0 INTRODUCTION AND BACKGROUND

This Environmental Study Report (ESR) documents the Class Environmental Assessment (EA) process undertaken for the section of Speers Road from Bronte Road to Kerr Street in the Town of Oakville. The purpose of the Study was to address various issues including, but not limited to:

- Existing and future travel demand
- Land servicing needs
- Inadequate pedestrian, cycling and transit facilities
- Operational and infrastructure deficiencies
- Approved and proposed changes in land use

In developing a preferred design, consideration was given to technical requirements of the Town (e.g. address capacity and safety requirements), needs/concerns of the local community, as well as local environmental and economic constraints. This project was classified as a Schedule "C" Study under the EA Act and completed in accordance with the *Municipal Class Environmental Assessment, October 2000, as amended in 2007.*

1.1 The Class Environmental Assessment Process

The Class EA embodies a planning process that can be applied to projects that display important common characteristics (i.e. projects that are similar in nature and/or limited in scale; exhibit a predictable range of environmental effects; and responsive to mitigating measures). The Class EA process provides municipalities with a procedure approved under the EA Act to plan and undertake municipal road projects that exhibit such characteristics.

Under the Class EA process, municipal road projects are categorized according to their environmental significance and the effects they may impose on the environment. These categories, described by specific Class EA "schedules", prescribe planning methodologies for each category. At present, there are three schedule classification types including Schedule A, B and C. The main difference between each of the schedule types is the degree to which each project may adversely affect the existing environment. Schedule A projects have minimal adverse affects while Schedule C projects have the potential for significant environmental affects and must proceed under the full planning and documentation procedures specified under the Class EA document. Projects are also classed according to their relative financial costs in addition to their significant environmental impacts. For example, some types of road projects by their vary nature may be relatively large in terms of their total cost, whereas their environmental impact may or may not be significant.

In addition to providing municipalities with a planning procedure approved under the EA Act for municipal road projects, the Class EA also serves as a public statement of the decision making process under which municipalities plan and implement road projects. The Class EA process provides various opportunities for public involvement and review. Public consultation is a key feature of environmental assessment planning. One of the principal aims of public consultation is to achieve resolution of differing points of view, thus reducing or avoiding controversy and, ultimately, avoiding the "Part II Order" process. If concerns are raised by the public during EA process that are related to anticipated negative environmental impacts and the concerns cannot be resolved in discussion between the proponent and the public, then the party raising the concern may request from the Ministry of the Environment that the project undergo part two of the EA Act (i.e. upgrade to an individual environmental assessment). If significant negative net environmental impacts are anticipated, the municipality will undertake an individual environmental assessment of the project.

1.2 Project Team Organization

The Town of Oakville retained Delcan Corporation as their Prime Consultant to undertake this Class EA Study on their behalf. The "Project Team" consisted of members from the Town of Oakville, Delcan Corporation and specialized subconsultants needed to address specific requirements of the project. The Project Team is identified as follows:

Town of Oakville

- Irfan Arab, Project Leader
- Erik Zutis, Program Manager
- Enrico Scalera, Program Manager
- Scott McMillan, Traffic Specialist/Advisor
- Darnell Lambert, Project Sponsor

Delcan Corporation

- Manoj Dilwaria, Project Management/Transportation Engineering/Safety Review
- Nick Palomba, Quality Control/ Transportation Engineering
- Steve Brant, Preliminary Design
- Rick Bonato, Preliminary Design
- Andrew McGregor, Environmental Planning/Public Consultation
- Brent Archibald, Structural Engineering
- Andre Poirier, Drainage/Stormwater Management

Archaeological Services Inc.

- Robert H. Pihl, Stage 1 Archaeological Assessment

McWilliam & Associates

- James McWilliam, Vegetation Inventory/Streetscape Analysis

Callon Dietz Inc.

- Suda & Maleszyk, Topographic Survey

Valcoustics Canada Ltd.

- John Emeljanow, Noise Assessment

Terraprobe

- Garry Muckle, Geotechnical Investigation

Urban & Environmental Management Inc.

- Ana Gall, Collision Analysis/Safety Review

1.3 Data Collection

A major component of the study involved the collection and review of existing information to determine the need for potential improvements to Speers Road within the identified study limits in order to develop and evaluate alternative solutions and design concepts.

As part of the data collection phase, stakeholder consultation was undertaken throughout the Class EA process. Target participants included property owners within the study area, the general public, technical agencies and stakeholder/interest groups. Information related to land use, traffic operations, the natural and social environment, existing utilities and other engineering related components was gathered. Details regarding the data collection phase of this study are included in *Section 2.0 – Existing & Future Conditions*. For ease of reference, the details pertaining to the public and agency consultation that was undertaken throughout the study is provided in *Section 9.0 – Public and Agency Consultation*.

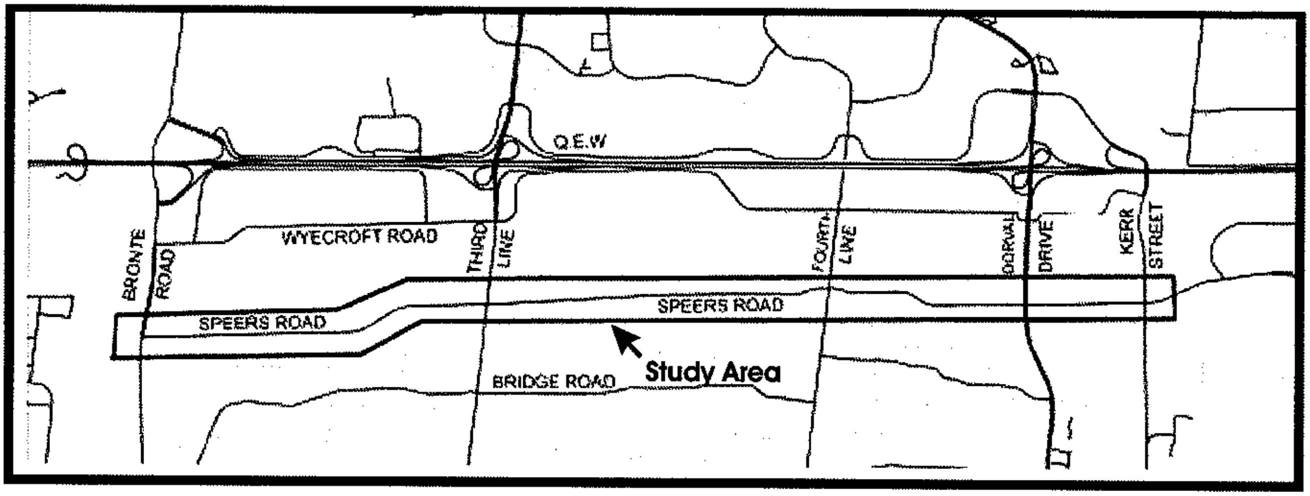
A list of background documents that were used in the development of the study recommendations and preparation of the Speers Road Environmental Study Report are identified as follows:

- *Dorval Drive Class Environmental Study Report, June 2005*
- *Environmental Study Report – Fourth Line Class Environmental Assessment (Speers Road to North Service Road, June 2004*
- *High Occupancy Vehicle (HOV) Opportunities on Speers Road – Cornwall Road Corridor, November 2007*
- *Kerr Street Area Traffic Study, October 2008*
- *Region of Halton Guidelines for the Use of Synchro Version 6, August 2004*
- *Municipal Class Environmental Assessment, October 2000, as amended in 2007*
- *Town of Oakville Official Plan, September 2006*
- *The Plan for Kerr Village (Draft Report), April 2009*
- *Town of Oakville Transportation Master Plan, March 2007*
- *The Physiography of Southern Ontario, 1984*
- *14 Mile Creek – McCraney Creek System Flood Damage Reduction Preliminary Engineering Study, Interim Report, July 1985*
- *Fourteen Mile Creek, McCraney Creek Watershed Planning Study, February 1992*
- *Sixteen Mile Creek Watershed Plan, February 1996*
- *Glen Oak Creek Subwatershed Study, 1993*
- *14 Mile Creek Assessment Study, 2000*
- *14 Mile Creek Watershed Planning Study, 1992*
- *Tree Protection Specifications for Construction Near Trees, June 2003*
- *Town of Oakville 2008-2017 Capital Forecast, March 2008*
- *HOV (High Occupancy Vehicle) Lane Opportunities on Cornwall Road, November 2007*

1.4 Study Area

Speers Road is an east-west arterial roadway that plays a key role in the Town's overall transportation system. Speers Road originates in the west end at Bronte Road and extends to Cross Avenue. East of Cross Avenue, the corridor is renamed Cornwall Road that extends to Ford Drive in the east. The study area extends from Bronte Road in the west to Kerr Street in the east and is designated as a multi-purpose arterial under the jurisdiction of the Town of Oakville. Speers Road forms a portion of the QEW West Employment District and primarily consists of commercial and light industrial land uses. A key plan of the study area is provided in **Figure 1.1**.

Figure 1.1– Study Area



2.0 EXISTING & FUTURE CONDITIONS

The sections below describe the study area in terms of the existing natural, socio-economic, cultural heritage, transportation and engineering environments.

2.1 Natural Environment

2.1.1 Physiography and Soils

The study corridor is situated within the Iroquois Plain physiographic region of southern Ontario. The Iroquois Plain comprises lacustrine deposits along the western end of Lake Ontario that were created by glacial Lake Iroquois. In most areas, the old shoreline is clearly visible. The plain extends from the Niagara River to the Trent River, a length of 300 km, varying from a few hundred metres to thirteen kilometres in width. Across the Regional Municipality of Halton, the Iroquois Plain has a very constant pattern with the old shoreline marked by bluffs or gravel bars. The land is generally level and the coarse sandy soil is often poorly drained. The soils of the area generally consist of clay loams derived from the underlying Ordovician red shale of the Queenston Formation.

2.1.2 Aquatic Ecosystems (Surface Water, Ground Water & Fish Community)

Surface Water

The Speers Road study area is located within four watersheds: Bronte Creek, Fourteen Mile Creek, McCraney Creek and Sixteen Mile Creek. The project involves two regulated watercourse crossings, Fourteen Mile Creek and McCraney Creek, as well as an unregulated crossing of a Bronte Creek Tributary and a crossing of a piped section of McCraney Creek.

The text below briefly describes the watersheds, particularly in terms of their ability to provide for aquatic habitat.

Bronte Creek – The Bronte Creek watershed is located at the Western end of Lake Ontario and covers portions of Wellington County, the City of Hamilton, Burlington, Oakville and Milton, encompassing a total area of 304 square kilometres. The main branch of Bronte Creek is 48 kilometres long and there are 12 primary subwatersheds that feed into the creek. Above the Escarpment, most tributaries are relatively small, shallow, and slow moving. Lower sections of the creek follow a deep, narrow valley downstream to Lake Ontario.

The headwaters of Bronte Creek and many of its tributaries contain a significant number of wetland areas that hold large quantities of rainwater which is released to the creeks throughout the year. This flow is supplemented by groundwater that contributes a significant flow of cold water.

Species inhabiting Bronte Creek include resident wild brown trout and native brook trout (char) populations, smallmouth bass, carp, wild and hatchery migratory rainbow trout, wild migratory brown trout, as well as wild and hatchery chinook and coho salmon. Bronte Creek also contains two provincially vulnerable minnow species, redside dace and silver shiner.

Within the vicinity of the study area, Bronte Creek flows north-south approximately 300 metres west of the westerly study limit.

Fourteen Mile Creek – The Town of Oakville's *Fourteen Mile Creek and McCraney Creek Watershed Planning Study (1992)* identifies the headwater area of Fourteen Mile Creek as consisting of intermittent tributaries draining land that is primarily agricultural, except for a golf course upstream of the study area. Stream alterations and channelization in the vicinity of the QEW and to the south include storm sewer outfalls, gabion walls and concrete channels. This reach of the stream is subject to warm summer temperatures, high turbidity, lack of riparian and in-stream cover and benthic invertebrates. While fish habitat is severely degraded in the lower reaches of Fourteen Mile Creek, significant fish production is still possible, particularly at the mouth of Fourteen Mile Creek. Lake Ontario forage fish species, such as smelt, alewife and spot tail shiners may use the lower reaches as spawning and nursery habitat.

Fourteen Mile Creek is habitat for a number of warm water minnow species common to urban streams and Redside Dace (*Clinostomus elongatus*), an "endangered" fish species as listed by the Ontario Ministry of Natural Resources and "special concern" by the Committee on the Status of Endangered Wildlife in Canada. This fish species is currently being assessed for listing under the Federal Species at Risk Act.

Within the vicinity of the study area, Fourteen Mile Creek crosses Speers Road approximately 500 metres east of York Street.

McCraney Creek – McCraney Creek is classified as a warm water stream in the *Fourteen Mile Creek and McCraney Creek Watershed Planning Study (1992)*. Upstream, at the Upper Middle Road area, this creek is a minor drainage channel with intermittent seasonal flow only. A survey completed in 1990 identified no sportfish in this portion of McCraney Creek. South of the QEW, McCraney Creek is diverted to the southwest and drains into Fourteen Mile Creek. Stream alterations and channelization in the vicinity of the QEW and to the south on McCraney Creek include storm sewer outfalls, gabion walls and concrete channels. This reach of the stream is subject to warm summer temperatures, high turbidity, lack of riparian and in-stream cover and benthic invertebrates. While fish habitat is severely degraded in the lower reaches of McCraney Creek, significant fish production is still possible, particularly at the mouth of Fourteen Mile Creek. Lake Ontario forage fish species, such as smelt, alewife and spot tail shiners may use the lower reaches as spawning and nursery habitat.

Within the vicinity of the study area, McCraney Creek crosses Speers Road approximately 135 metres east of Fourth Line.

Sixteen Mile Creek – The Sixteen Mile Creek watershed encompasses an area of about 1070 hectares and is composed of three broad drainage basins which converge below the Niagara Escarpment to flow south into Lake Ontario through Oakville Harbour. In the vicinity of the Speers Road study area, Sixteen Mile Creek is classified as a warm water stream by the Ministry of Natural Resources. The *Fourteen Mile Creek and McCraney Creek Watershed Planning Study (1992)* indicates that a stream survey completed upstream of Highway 5 in 1973 identified only warm water forage fish species.

Within the vicinity of the study area, Sixteen Mile Creek flows south approximately 380 metres east of the easterly study limit.

Groundwater

Based on the *Preliminary Geotechnical Investigation & Pavement Design Report* completed as part of this study (see **Appendix A**), groundwater was encountered 2.7 and 3.0 metres below the existing road surface at two locations. It should be noted that groundwater levels will vary due to seasonal effects and precipitation conditions. It is likely that during construction, some groundwater seepage may occur as a result of the construction works.

Land uses along the corridor are serviced via a watermain running the entire length of the study area and are therefore not dependant on groundwater resources for drinking water.

Fish Habitat

Fourteen Mile Creek is habitat for a number of warm water minnow species common to urban streams and Redside Dace (*Clinostomus elongatus*), a "threatened" fish species as listed by the Ontario Ministry of Natural Resources and "special concern" by the Committee on the Status of Endangered Wildlife in Canada.

According to the *Fourteen Mile Creek and McCraney Creek Watershed Planning Study*, fish habitat is severely degraded in the lower reaches of McCraney Creek, however, fish production is still possible, particularly at the mouth of Fourteen Mile Creek. Lake Ontario forage fish species, such as smelt, alewife and spot tail shiners may use the lower reaches as spawning and nursery habitat.

In the vicinity of the Speers Road study area, Sixteen Mile Creek is a warm water stream containing warmwater forage fish species similar to McCraney Creek.

Species inhabiting Bronte Creek include resident wild brown trout and native brook trout (char) populations, smallmouth bass, carp, wild and hatchery migratory rainbow trout, wild migratory brown trout, as well as wild and hatchery chinook and coho salmon. Bronte Creek also contains two provincially vulnerable minnow species, redside dace and silver shiner.

2.1.3 Terrestrial Ecosystems (Vegetative Communities)

A Street Tree Inventory was completed as part of the study identifying the trees located along the corridor within the existing road allowance. The inventory details the location, size, health and general condition of the trees.

Of the trees identified within the study corridor, their general condition was assessed as follows:

• Good	424 units
• Fair to good	4 units
• Fair	7 units
• Poor to fair	0 units
• Poor	0 units
• Dead	2 units

There were no rare or endangered species identified in the study area. A summary of the vegetation inventory, as it applies to the existing conditions, is provided below.

Bronte Road to 3rd Line

115 trees were identified along this section of Speers Road, with the dominant species including Honey Locust (*Gleditsia triacanthos inermis*) Norway Maple (*Acer platanoides*), White Spruce (*Picea glauca*) and Austrian Pine (*Pinus nigra*).

Most trees are in the 50 – 300mm caliper range (young-immature). There are a few larger trees ranging from 300-600mm caliper. These trees are typically remnant specimens preserved when the area was developed. The most significant mature tree is a Weeping Willow (*Salix alba*) located on the north side of Speers Road near the Bronte Road intersection. Most trees are set well back from the roadway. In the eastern part of this section where the sidewalks extend along both sides of the road, there is a row of boulevard trees (located between the road and the sidewalk) on the north side of Speers Road. These trees are mostly Norway Maples ranging from 100 to 200 mm caliper.

3rd Line to 4th Line

A total of 199 trees are located along this section of Speers Road. The dominant species include: Honey Locust (*Gleditsia triacanthos inermis*) Norway Maple (*Acer platanoides*), White Spruce (*Picea glauca*) and Green Ash (*Fraxinus pennsylvanica*).

Most trees are in the 100 – 300mm caliper range (young-immature). There are a few (approximately 12) larger trees ranging from 300-600mm caliper. There is a discontinuous row of scattered boulevard trees located along the north side of Speers Road. The trees typically located between the sidewalk and the road are mostly Honey Locust, Norway Maple, and Green Ash ranging from 100 to 200 mm caliper.

4th Line to Dorval Drive
99 trees were identified along this section of Speers Road, with the dominant species being Honey Locust (*Gleditsia triacanthos inermis*), Norway Maple (*Acer platanoides*), Crab Apple (*Malus sp.*), and Austrian Pine (*Pinus nigra*). Most trees are in the 150 – 300mm caliper range (young-immature) and set well back from the roadway. Along the north side of Speers Road there are some areas where scattered rows of street trees have been planted in the boulevard strip (located between the road and the sidewalk). These trees are mostly Norway Maples Crab Apple and Green Ash ranging from 100 to 200 mm caliper.

Dorval Drive to Kerr Street
24 trees were identified located along this section of Speers Road. The dominant species is Honey Locust (*Gleditsia triacanthos inermis*). Most trees are in the 150 – 300mm caliper range (young-immature). There is one significant specimen tree, a White Oak (*Quercus alba*) 1000mm caliper, located on the south side of the road immediately west of St. Augustine Drive.

The complete *Street Tree Inventory* is provided in **Appendix B**.

2.1.4 Natural Heritage Features

Based on the Town of Oakville Official Plan, there are no Environmentally Sensitive Areas or Areas of Natural and Scientific Interest location within the project limits.

A wetland greater than two hectares in size is present north of Speers Road, near Bronte Road. This wetland is regulated by Conservation Halton pursuant to Ontario Regulation 162/06. This wetland has not been designated as a Provincially Significant Wetland. A Significant Woodland has been identified by Conservation Halton, north of Speers Road, near Bronte Road. Both the wetland and woodlot are located beyond the limits of the project and are not anticipated to be impacted as a result of the reconstruction to the roadway corridor.

The Town of Oakville Official Plan identifies both the Fourteen Mile Creek and McCraney Creek crossings as "Valleylands/Watercourse", as are Bronte Creek and Sixteen Mile Creek (located west and east of the study area, respectively). It is intended that Natural Areas such as those designated "Valleylands/Watercourse" serve to protect and enhance the natural ecosystem and to maintain biological diversity within Oakville.

2.2 Socio-Economic Environment

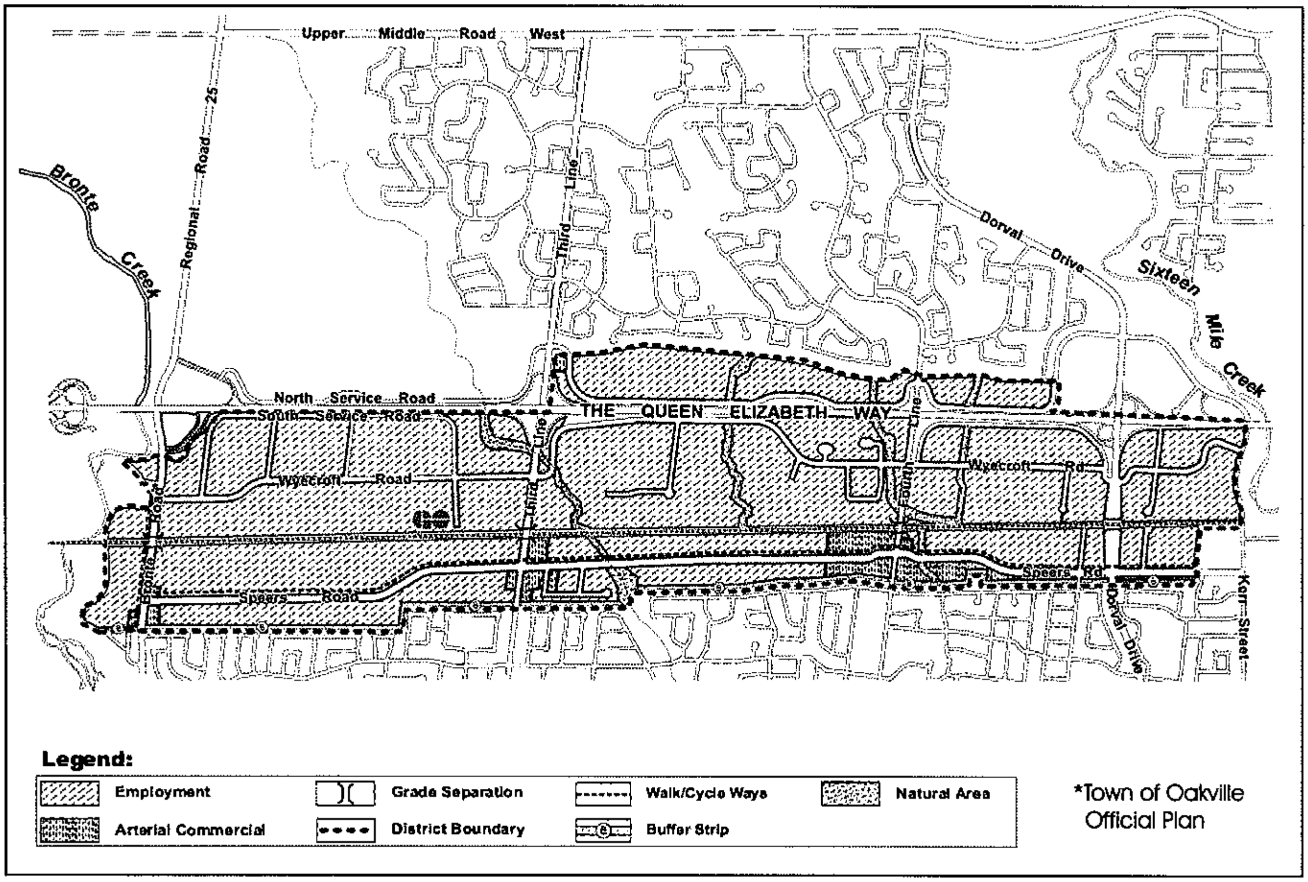
2.2.1 Existing Land Use

Land use surrounding the subject portion of Speers Road is primarily light industrial and commercial and forms a portion of the "QEW West Employment District", which is ultimately bounded by the QEW and Glen Abbey Community on the north, Bronte Community on the south, Kerr Street and the westerly limits of the existing Oaktown Plaza/Oakville Mews commercial designation on the east, and the Bronte Creek and Parkway Belt West lands on the west. **Figure 2.1** illustrates the primary land use comprising the study area.

In general, the study area is comprised of one to two story light industrial and commercial buildings, most of which are set well back from the roadway with parking lots separating the buildings from the street. Most industrial complexes have a strip of landscaping along the street frontage, providing a visual buffer between parking and the street. East of Fourth Line to Kerr Street, the set back distance separating the commercial establishments from the road is reduced on the south side.

With the exception of the residential units siding onto Speers Road at Augustine Drive, residential units are primarily situated further south, outside of the study area boundary.

Figure 2.1 – Land Use Within the QEW West Employment District

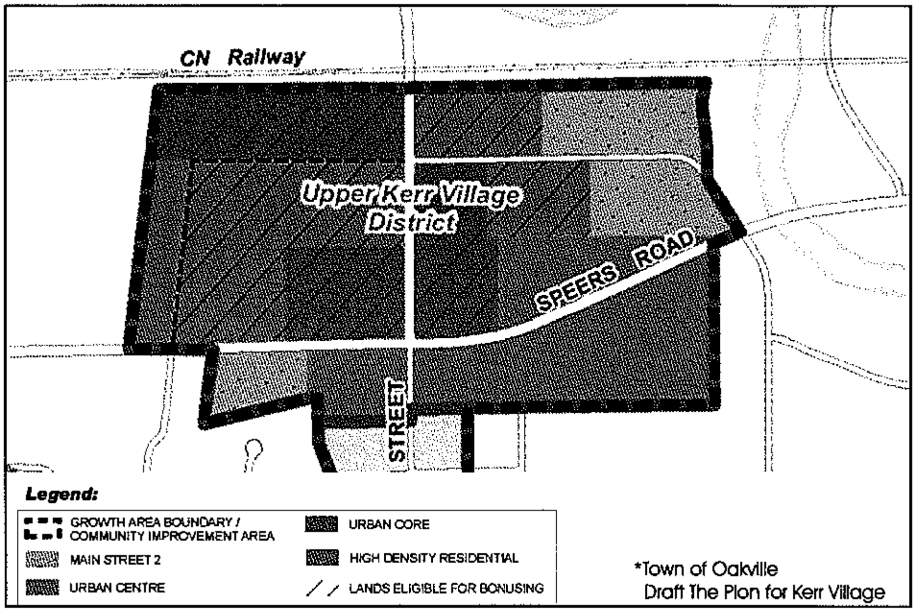


2.2.2 Planned Land Use & Development

The Town of Oakville Planning Department has identified that, with the exception of the Speers Road/Kerr Street intersection, there is no projected change in land use designations for the Speers Road corridor. Planned land use designations and development within the vicinity of the study area includes the following:

- Speers Road/Kerr Street intersection
  - The north gateway for Kerr Village will generally be comprised of high density mixed-use and residential designations supporting transit-oriented development. This area will provide large scale commercial uses focused at the community level (e.g. grocery store and pharmacy). **Figure 2.2** illustrates the Town of Oakville's draft plan for the Upper Kerr Village District.
- As part of a recent OMB settlement, there are plans for 10 and 14 storey residential towers on the north east corner of Speers Road/Kerr Street intersection, with underground parking (development plans could change based on the Town's Draft *The Plan for Kerr Village*).

Figure 2.2 - Draft Plan For The Upper Kerr Village District



*Town of Oakville
Draft The Plan for Kerr Village

- Southerly expansion of the Bronte GO Transit station within the next 1-2 years.
- 20 acre Mancor development at the north west corner of Speers Road and Bronte Street.

2.3 Cultural Heritage Environment

A Stage 1 Archaeological Assessment completed as part of the EA study determined that 40 archaeological sites have been registered within two kilometres of the study corridor, none of which are located immediately adjacent to the Speers Road ROW. A review of the general physiography and local nineteenth century land use of the study corridor suggests that it has potential for the identification of Aboriginal and Euro-Canadian archaeological sites.

Specifically, archaeological potential exists at two locals along the study corridor. These areas have remained relatively undisturbed, and exhibit archaeological site potential. The assessment recommends that, should road improvements encroach upon undisturbed land with archaeological potential beyond the disturbed ROW, a Stage 2 assessment should be conducted.

The complete *Stage 1 Archaeological Assessment* is provided in **Appendix C**.

2.4 Transportation Conditions

2.4.1 Road Network

Speers Road – Speers Road is an important east-west arterial roadway and plays a key role in the Town's overall transportation system. The road extends from Bronte Road to Kerr Street and is designated as a multi-purpose arterial under the jurisdiction of the Town of Oakville. Speers Road forms a portion of the QEW West Employment District and primarily consists of commercial and light industrial land uses.

Speers Road has a rural two-lane cross-section from Bronte Road to approximately 500m east of Bronte Road where it changes to a three lane rural cross-section (with a centre two-way left turn lane). Approximately 1 kilometre west of Third Line it transitions from three lanes to a four-lane urban cross-section; Speers Road has turn lanes at major intersections. The posted speed limit along Speers Road throughout the study area is 60 km/h. The *Halton Regional Plan (1995) OPA 23*, identifies Speers Road as requiring a 35 metre right-of-way.

Bronte Road – Bronte Road is under the Town of Oakville's jurisdiction south of Speers Road; in 2004 the section between the southern most QEW ramp and Speers Road was transferred to the Region of Halton. It is classified as a major arterial north of Speers Road and a minor arterial south of Speers Road. Bronte Road has a four-lane cross-section to the north and immediately south of Speers Road; it gradually reduces to a two-lane cross-section to the south. It links with the Town of Milton and points further north and has a full access QEW interchange; it links with Lakeshore Road to the south. Immediately to the west of Bronte Road is Bronte Creek with its many associated parks; it is one of four major north-south valleys and waterways, located within the Town of Oakville, that drain into Lake Ontario. The posted speed limit on Bronte Road is 60 km/h north of Speers Road and 50 km/h south of Speers Road.

Third Line – Third Line is classified as a minor arterial under the jurisdiction of the Town that links to Highway 5 (Dundas Street) to the north, has a full access QEW interchange and intersects with Lakeshore Road to the south (ends to the south at Lake Ontario). Third Line has a four-lane cross-section with turn lanes north and immediately south of Speers Road; further south the cross-section gradually reduces to a two-lane cross-section with turn lanes. The posted speed limit on Third Line is 60 km/h north of Speers Road and 50 km/h south of Speers Road.

Fourth Line - Fourth Line is classified as a minor arterial north of Speers Road that is under the jurisdiction of the Town. It links Lakeshore Road to the south and terminates at Highway 5 (becomes Nottinghill Gate between North Service Road and Upper Middle Road). It does not have access on or off the QEW. Presently, Fourth Line has a two-lane cross-section with turn lanes at Speers Road. The posted speed limit on Fourth Line is 50 km/h in the vicinity of Speers Road.

Morden Road - Morden Road is a relatively short Town of Oakville roadway that dead-ends north of Speers Road and terminates at Lakeshore Road to the south. Morden Road has a two-lane cross-section with turn lanes on either side of Speers Road. The main function of Morden Road is to provide an important connection between the residential properties to the south and the Speers Road commercial/industrial properties. The posted speed limit on Morden Road in the vicinity of Speers Road is 50 km/h.

Dorval Road – Dorval Road is a regionally controlled major arterial between Lakeshore Road and Upper Middle Road (transferred back to Region of Halton in 2004) that provides a key link between the Oakville Town Centre (located just north of the QEW), Speers Road businesses and Lakeshore Road to the south; it has a full access interchange with the QEW. Dorval Road has a four-lane divided cross-section with turn lanes on either side of Speers Road. The posted speed limit on Dorval Road in the vicinity of Speers Road is 60 km/h.

Kerr Street – Kerr Street is under the jurisdiction of the Town of Oakville and is classified as a multi-purpose arterial north of Speers Road and a minor arterial north of Wyecroft Road that ends just north of the QEW at the North Service Road; it intersects with Lakeshore Road to the south and terminates at Lake Ontario at Waterworks Park. It has limited access from the QEW with a westbound off-ramp accessing the North Service Road. Kerr Street has a four-lane cross-section immediately north of Speers Road that gradually reduces to two lanes; it has a two-lane cross-section south of Speers Road (turn lanes at Speers Road). Kerr Street does not have posted speed limit signs near Speers Road, which indicates that the speed limit is 50 km/hr.

2.4.2 Transit

The Town's Official Plan (OP) outlines the Town's Transit Service Concept. As a part of that concept, Speers Road is designated to provide 'Secondary Transit Corridor Service' which should:

- Provide a high level of service;
- Operate on a grid network of streets; and
- Provide cross-boundary connections.

Secondary Corridors are characterized by slightly lower service levels (as compared to Primary Corridors), in the 7 to 10 minute interval range, and somewhat restricted continuity, depending on the road network. The Official Plan notes that in key bottleneck areas, it will be necessary to provide additional infrastructure for transit priority in these corridors.

The OP notes that the Oakville Transit system is focused on the Oakville GO station and provides a connection for Oakville residents to the Lakeshore West Line. The OP also notes that Oakville Transit operates three routes to each of the Clarkston and Bronte GO Stations. Two routes connect the Bronte GO station to the Oakville GO station.

Oakville Transit currently operates 8 routes through the study area and has Call on Demand service during late evenings and Sundays. Oakville Transit experiences severe delays in the PM rush hour, travelling west along Speers. The Accessibility for Ontarians with Disabilities Act (AODA) requires all Oakville Transit services, and access to Oakville Transit services, to be accessible.

Consultation with Oakville Transit identified that queue jump lanes or transit priority lanes are not currently warranted along the subject portion of Speers Road within the study timeline, however they should be planned for in the event that they would be beneficial in the future (this could be accomplished by designing for right turn lanes with longer storage lengths).

2.4.3 Bicycle Facilities

Currently there is a signed off-road bicycle path on the north side of Speers Road between Third and Fourth Line, located approximately 4m from the road edge (separated from the road by a grass boulevard). The existing bicycle path is constructed of asphalt that is in poor condition; it is the approximate width of a sidewalk. According to the 2007 Oakville Transportation Master Plan, urban arterial roadways that are to be rebuilt require, at a minimum, wide outside curb lanes (minimum 4.2 m wide) to accommodate cyclists.

2.4.4 Pedestrian Facilities

Bronte Road to 3rd Line - Sidewalks are located along both sides of the road separated from the street by a grass boulevard. These sidewalks are not continuous as sections are missing on both sides at the west end of the section where the roadway cross-section is rural with soft shoulders and swales.

3rd Line to 4th Line - Sidewalks are located along both sides of the road separated from the street by a grass boulevard. These sidewalks are continuous on the south side of the road but only extend along portions of the north side of the road.

4th Line to Dorval Drive - Sidewalks are located along both sides of the road separated from the street by a grass boulevard. There is one short stretch of curb-face sidewalk located on the north side of Speers Road immediately west of Dorval Drive.

Dorval Drive to Kerr Street - Sidewalks are located along both sides of the road throughout this section of Speers Road. At the west end of this section the sidewalks are separated from the street by a grass boulevard. At the east end curb-face sidewalks are located on both the north and south sides of the street.

2.4.5 Road Safety Analysis

A *Road Safety Analysis* of Speers Road from Bronte Road to Cross Street (east of Kerr Street) was undertaken as part of the Class EA which consisted of a review of the collision experience from Jan 1, 2002 and Dec 31, 2006 and a field investigation. Collision summary data was provided by the Town for the safety analysis. The objective of this review was to identify opportunities to make the existing roadway safer and improve the preliminary design.

Of the 593 collisions were that were reported within the study area:

- 55% of all collisions were midblock (i.e. between intersections);
- Collision frequency increased where driveways are frequent and closely spaced (highest collision frequency occurred between York Street and Morden Road, a highly commercialized area with numerous driveways);
- Majority of collisions were rear-end (40%) and turning movement collisions (34%) related to turning movements at driveways; and
- Queuing in the eastbound left turn lane at Dorval Drive that extends beyond Morden Road has led to collisions.

Macro-Analysis of Collision Experience

This analysis is undertaken to understand the context in which these collisions occur and help to reduce collision experience. The following categories present a summary of the macro-analysis:

Classification - The frequency of Property Damage (PD) only collisions along Speers Road is higher than Town-wide, Halton-wide and Province-wide experience (based on collision statistics published by the Ministry of Transportation for 2002-2004). However, the frequency of Non-Fatal Injury collisions along Speers Road is lower than Town-wide, Halton-wide and Province-wide experience. The frequency of Fatal collisions along Speers Road (at 0.3%) is comparable to Provincial experience (averaged over 2002-2004).

Collision Frequency - The highest number of collisions, on an annual basis, occurred in 2003. The annual frequency decreased in the following two years but increased in 2006.

Collision Experience by Month - More collisions occur in the months of February and June. The provincial experience indicates January and December are the months with highest frequency of collisions.

Collision Experience by Season - More collisions along Speers Road occur in Spring. The provincial experience indicates Fall and Winter as being the seasons of highest collision experience.

Collision Experience by Day of Week - The majority of collisions occur on Friday, Wednesday and Monday. This is generally consistent with provincial experience (based on statistics for 2002-2004).

Weekday vs Weekend - The majority of collisions occur on weekdays. This is higher than the provincial experience of 76% collisions occurring on weekdays.

Collision by Time of Day - Nearly 22% of all collisions occur within the two-hour period from 3:00 pm to 5:00 pm. The majority of collisions (about 47%) occur during the Off-Peak period between 9:00 am and 3:00 pm. This is higher than average provincial experience of 33% during the Off-Peak period.

Light and Environmental Conditions - The majority of collisions (approximately 86%) occurred during daylight conditions. This is higher than the average provincial experience of 69% in the period from 2002-2004. The majority of collisions (approximately 77%) occurred when visibility was clear. The average provincial experience is 69% in the period from 2002-2004.

Pavement Surface Condition - The majority of collisions (approximately 70%) occurred on dry roads. This is higher than the average provincial experience of 64% in the period from 2002-2004.

Initial Impact Type - The majority of collisions (about 40%) within the study area were "rear-end" type collisions. Turning movement and sideswipe collisions account for 34% and 14% of the total collisions, respectively.

Micro-Analysis of Collision Experience

The micro-analysis of the collision experience involves an examination of collision diagrams and individual collision events to identify patterns and potential causal factors.

The frequency of collisions at the unsignalized intersections is 1.60 collisions, or less, per year in the period from January 1, 2002 to December 31, 2006. This collision frequency is not remarkable.

At the signalized intersection of Speers Road and Bronte Road, the average collision frequency is 0.40 collisions per year (based on an experience of two (2) reportable collisions during the analysis period). This collision frequency appears low given the volumes entering this intersection. The average collision frequency at the following signalized intersections exceeds 10.0 collisions per year:

- Speers Road and Third Line (13.6 collisions per year)
- Speers Road and Fourth Line (14.0 collisions per year)
- Speers Road and Kerr Street (12.4 collisions per year)

A review of the collision diagrams and individual collision events at these intersections reveals a number of patterns:

- Speers Road and Third Line (68 Collisions)
    - Nearly 12% of collisions related to left turn movements at driveways in close proximity to intersection (e.g., gas stations on corners)
    - Nearly 24% of collisions were rear-end collisions which occurring when pavement conditions were wet, slushy or snow-packed
- Speers Road and Fourth Line (70 Collisions)
    - Nearly 20% of collisions were related to turning movements at driveways in close proximity to intersection
    - About 6% of the collisions involved vehicles which deliberately violated red signal indications – more in East-West approaches
    - One (1) collision involved a cyclist that had left the sidewalk and collided with a northbound right turning vehicle

- Speers Road and Morden Road (42 Collisions)
  - 25% of collisions were related to turning movements at driveways in close proximity to intersection
  - Two (2) of the rear-end collisions occurred as a result of queues in the eastbound lanes spilling back from Dorval Drive
  - Nearly 12% of the collisions were the result of a red signal indication violation
  - One (1) collision involved a cyclist that was riding on the south sidewalk and was struck by a northbound right turning vehicle

- Speers Road and Kerr Street (62 Collisions)
  - About 11% of collisions were related to turning movements at driveways in close proximity to intersection
  - About 6% of the collisions were sideswipe collisions which may have be attributed to lane widths on Kerr Street (e.g., eastbound left turning vehicle sideswipes westbound right turning vehicle, etc)
  - About 11% were rear-end type collisions which occurred when the road pavement surface condition was other than "dry"
  - One (1) collision involved a westbound right turning vehicle that struck a pedestrian crossing Kerr Street north of Speers

The collision groups most commonly identified as a cause of concern at signalized intersections are:

- rear-end collisions,
- angle collisions,
- turning movement collisions, and
- collisions involving pedestrians and bicyclists.

A review of the collision diagrams and individual collision events within the midblock sections reveals a number of patterns:

With the exception of the sections of Speers Road between Wallace Road and York Road and between Dorval Drive and Woody Road (which are very short), the average number of collisions within the roadway sections exceeds 2.0 collisions per year. The mid-block collision experience is highest within the roadway sections between York Road and Morden Road.

- Speers Road between Bronte Road and Third Line (15 Collisions, ± 2.1 km)
  - Nearly 12% of collisions related to left turn movements at driveways (three rear-end and two turning movement collisions)
  - Nearly 24% of collisions were rear-end collisions which occurring when pavement conditions were wet, slushy or snow-packed

- Speers Road between Third Line and Wallace Road (19 Collisions, ± 1.9 km)
  - Nearly 58% of collisions related to turning movements at driveways; two rear-end collisions related to inbound left turns, seven turning movement collisions related to outbound left turns, one angle collision related to crossing movement and one sideswipe related to outbound right-turn at a driveway

- Speers Road between York Street and Fourth Line (105 Collisions, ± 1.5 km)
  - Nearly 68% of collisions related to turning movements at driveways; 30 rear-end collisions primarily related to inbound left turns, 36 turning movement collisions primarily related to outbound left turns, three (3) sideswipe collisions, one angle

collision and one SMV-other collision (triggered by turning movement at driveway)

- Speers Road between Fourth Line and 447 Speers Road (54 Collisions, ± 0.65 km)
    - About 33% of collisions related to turning movements at driveways; five rear-end collisions, 11 turning movement collisions and two sideswipe collisions
    - Nearly 13% of collisions involved a single motor vehicle event on the horizontal curve within this roadway section
    - Two of the 54 collisions were related to police pursuits
    - One of the two bicycle collisions involved a bicyclist riding on the sidewalk being struck by a vehicle exiting a driveway

- Speers Road between 447 Speers Road and Morden Road (50 Collisions, ± 0.40 km)
    - About 68% of collisions related to turning movements at driveways; nine rear-end collisions, 22 turning movement collisions and three sideswipe collisions
    - About 6% of collisions involved a single motor vehicle event

- Speers Road between Kerr Street and Cross Street (30 Collisions, ± 1.8 km)
    - About 50% of collisions related to turning movements at driveways; four rear-end collisions and 11 turning movement collisions.
    - One bicycle collision involved southbound vehicle exiting driveway striking westbound cyclist riding on the sidewalk

Recommendations

Preliminary recommendations arising from the safety assessment:

- Introduction of centre two-way left turn lane along Speers Road would result in reduced collisions as a marked number of rear-end collisions are related to stopped left turning vehicles and not congestion.
- Introduction of access management techniques such as median islands at signalized intersections will reduce frequency of turning movement collisions at driveways located in close proximity to the signalized intersections. A large number of turning movement collisions reported at the signalized intersections are actually the result of either inbound or outbound left turn movements at driveways located within close proximity to the signalized intersections
- Improvements to roadway geometrics especially around horizontal and vertical curves including improvements such as
    - Lane widenings
    - Pavement treatments
    - Cross-fall

The complete *Road Safety Analysis* is provided in **Appendix D.**

2.4.6 Existing Traffic Analysis

Existing Traffic Volumes

Existing weekday AM and PM peak hour traffic volumes were extracted from turning movement counts (TMCs) provided by the Town of Oakville to Delcan. A review of the TMC data reveals that the intersections within the study area do not peak at the same hour within the peak period at all of the study intersections. The spread for the AM peak hour varies with Bronte Road experiencing the morning peak as early as 7:15-8:15 a.m. and Dorval Drive experiencing it as late as 8:00-9:00 a.m. The PM peak period is also very spread out with the driveway (447 Speers Road) PM peak hour experienced at 3:00-4:00 p.m. and the Morden Road intersection at 4:45-5:45 p.m. Rather than selecting a common AM and PM peak hour for the study network, the peak hour traffic flows along the study corridor were balanced to account for variations due to different count dates and shifts in the peak hours. The existing (2008) Weekday AM and PM peak hour traffic volumes are illustrated in **Figure 2.3** and in **Figure 2.4**, respectively.

Existing Roadway and Intersection Configuration

In order to establish baseline transportation conditions for the current roadway network within the study area, all relevant documents were reviewed and field visits were undertaken. The existing configuration of the study intersections are shown in **Figure 2.5**.

Traffic Analysis Model

In urban areas, the quality of traffic conditions on area roadways are typically established by the operational performance of the intersections. Capacity analysis is a process that is used to describe how well an intersection will perform under various traffic conditions and the results can assist in evaluating the need for improvements. The analysis made use of the *Highway Capacity Manual (HCM)*[*] techniques evaluating the operational performance of signalized intersections as employed by the Synchro-SimTraffic software package (Version 6). A Synchro model of the area road network and the study intersections was created using the existing roadway and intersection geometry and the *Region of Halton Guidelines for the Use of Synchro Version 6 (August 2004).* The signal phasing was developed using a cycle length of 120s and was optimized using Synchro. A peak hour factor of 0.95 and a lane utilization factor of 1.00 was utilized for all traffic lanes.

Measures of Effectiveness

The HCM methodology provides Volume-to-Capacity (V/C) ratio as a key measure of effectiveness to describe the operational performance of a signalized intersection. The V/C ratio is used to describe the extent of available capacity used by vehicles either within the intersection as a whole or for specific lanes/movements. The V/C ratio is measured by a fractional value between zero and one. The overall intersection sufficiency is measured using a composite V/C ratio for the sum of the critical lanes/movements within the intersection.

Intersections with an overall Volume-to-Capacity (V/C) ratio exceeding 0.85 were identified as becoming critical. Similarly, individual movements where the V/C ratio is greater than 0.85 for through or for a shared through movement (e.g., through-left or through-right), or greater than 1.00 for an exclusive turning movement (e.g., either left turn or right turn) were identified as becoming critical.

Existing (2008) Traffic Conditions

The V/C ratios of those intersections and individual movements that are becoming critical have been highlighted and are shown in red in **Figure 2.6** and in **Figure 2.7** for the weekday AM and PM peak hours, respectively.

Based on the findings from the operational performance of the study intersections with the existing weekday AM and PM peak hour traffic volumes, the following critical intersections and movements were identified:

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[*] Highway Capacity Manual, Special Report 209. (Metric 2000 Edition, March 2000) Transportation Research Board. National Research Board, National Research Council, Washington, D.C.

SPEERS ROAD IMPROVEMENTS (F[illegible] BRONTE ROAD TO KERR STREET)
CLASS ENVIRONMENTAL ASSESSMENT STUDY

Figure 2.3 - Existing (2008) Traffic Volumes (AM PEAK HOUR)

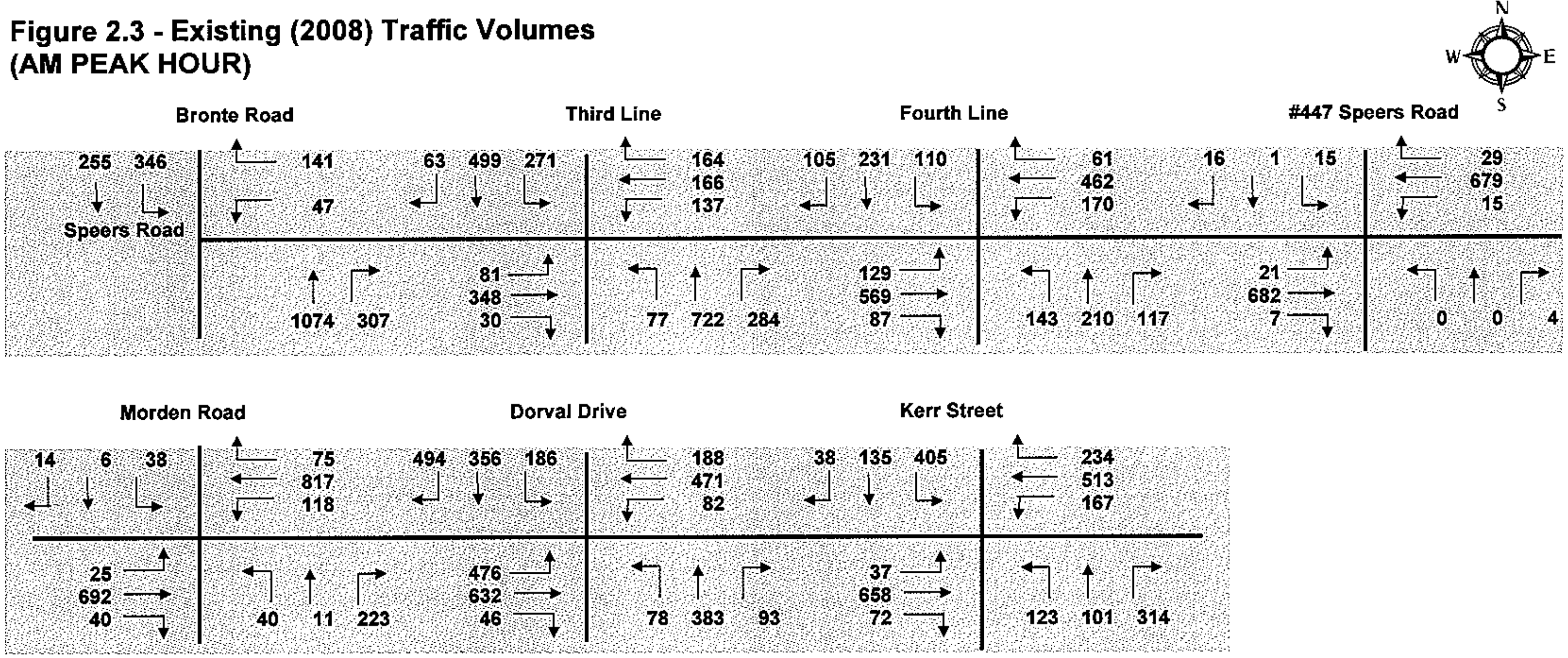

Figure 2.4 - Existing (2008) Traffic Volumes (PM PEAK HOUR)

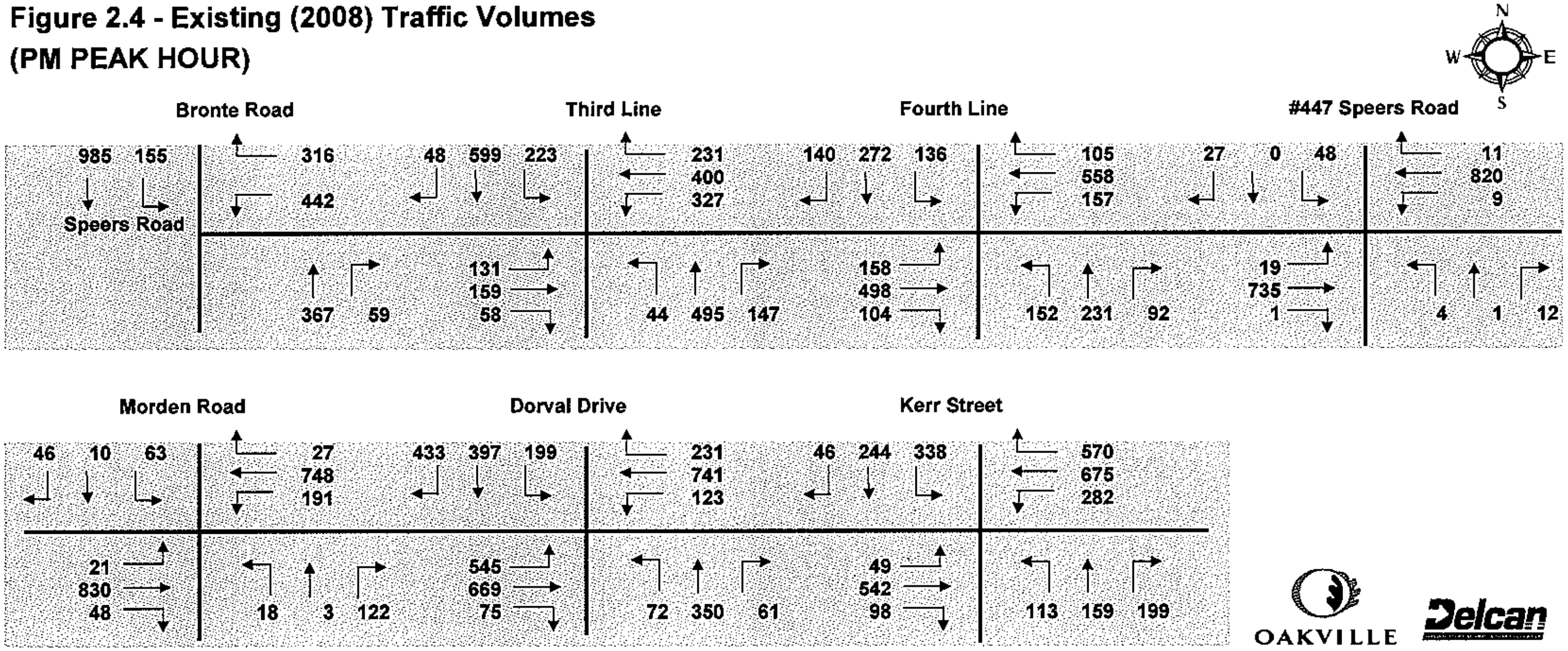

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Figure 2.5 - Existing (2008) Intersection Configuration

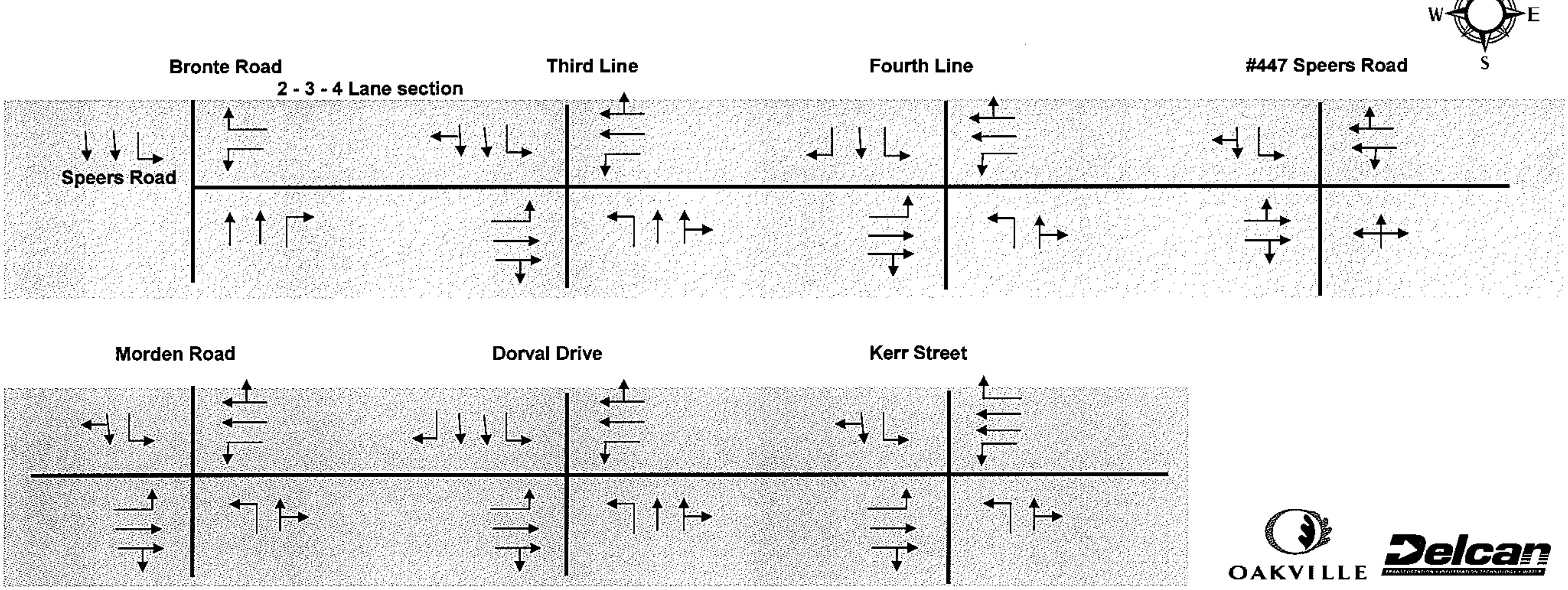
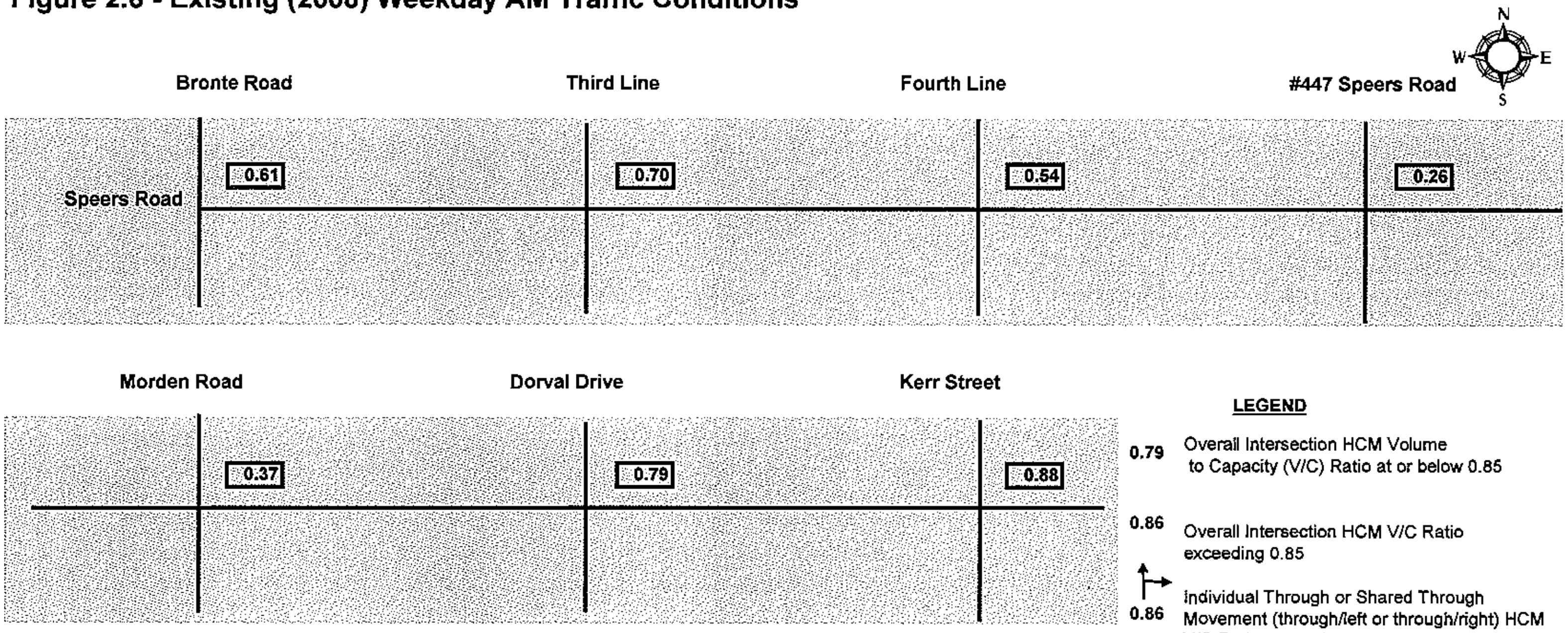


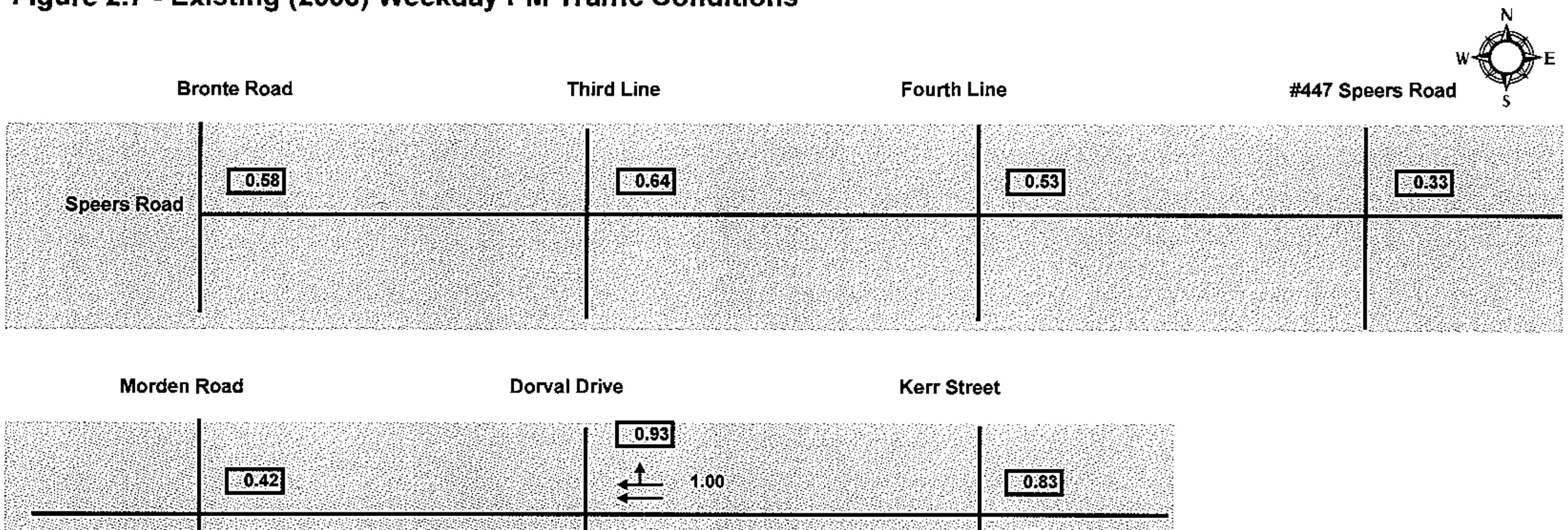
Figure 2.6 - Existing (2008) Weekday AM Traffic Conditions



LEDGEND

0.79	Overall Intersection HCM Volume to Capacity (V/C) Ratio at or below 0.85
0.86	Overall Intersection HCM V/C Ratio exceeding 0.85
↱ 0.86	Individual Through or Shared Through Movement (through/left or through/right) HCM V/C Ratio exceeding 0.85
1.05↑	Exclusive turning movement (left or right turn lane) HCM V/C Ratio exceeding 1.00

Figure 2.7 - Existing (2008) Weekday PM Traffic Conditions



Weekday AM Peak Hour

- Speers Road at Kerr Street: Overall Intersection V/C: 0.88

Weekday PM Peak Hour

- Speers Road at Dorval Drive: Overall Intersection V/C: 0.93
  - Westbound: Shared Through/Right Turn Lanes V/C: 1.00

Detailed traffic analysis worksheets for the existing traffic conditions are included in **Appendix E**.

2.4.7 Future Traffic Analysis

The objective of the future traffic analysis is to evaluate the future traffic impact within the study area in 2021 horizon year.

Traffic Forecasting Methodology

Traffic forecasting for the 2021 horizon year was completed using a spreadsheet model. Traffic volumes for 2021 were derived by applying a background traffic growth adjustment factor to the existing (2008) traffic volumes. It was determined that an annual rate of growth of 1.3% would be a suitable growth adjustment factor to project 2008 traffic volumes to 2021.

The 1.3% growth factor was derived through the use of screenline summaries generated by the Oakville Transportation Master Plan (TMP) of modeled vehicular traffic during the PM peak hour. This TMP information represented a corridor across Sixteen Mile Creek for the time period of 2001 to 2021 and this resulted in an annual rate of growth of 1.3%.

Future (2021) Traffic Volumes

An annual growth adjustment factor of 1.3% per annum was applied to existing (2008) traffic volumes. The resulting 2021 weekday AM and PM peak hour volumes at the study intersections are illustrated in **Figure 2.8** and in **Figure 2.9**, respectively.

SPEERS ROAD IMPROVEMENTS (FI BRONTE ROAD TO KERR STREET)
CLASS ENVIRONMENTAL ASSESSMENT STUDY

Figure 2.8 - Future (2021) Traffic Volumes (AM PEAK HOUR)

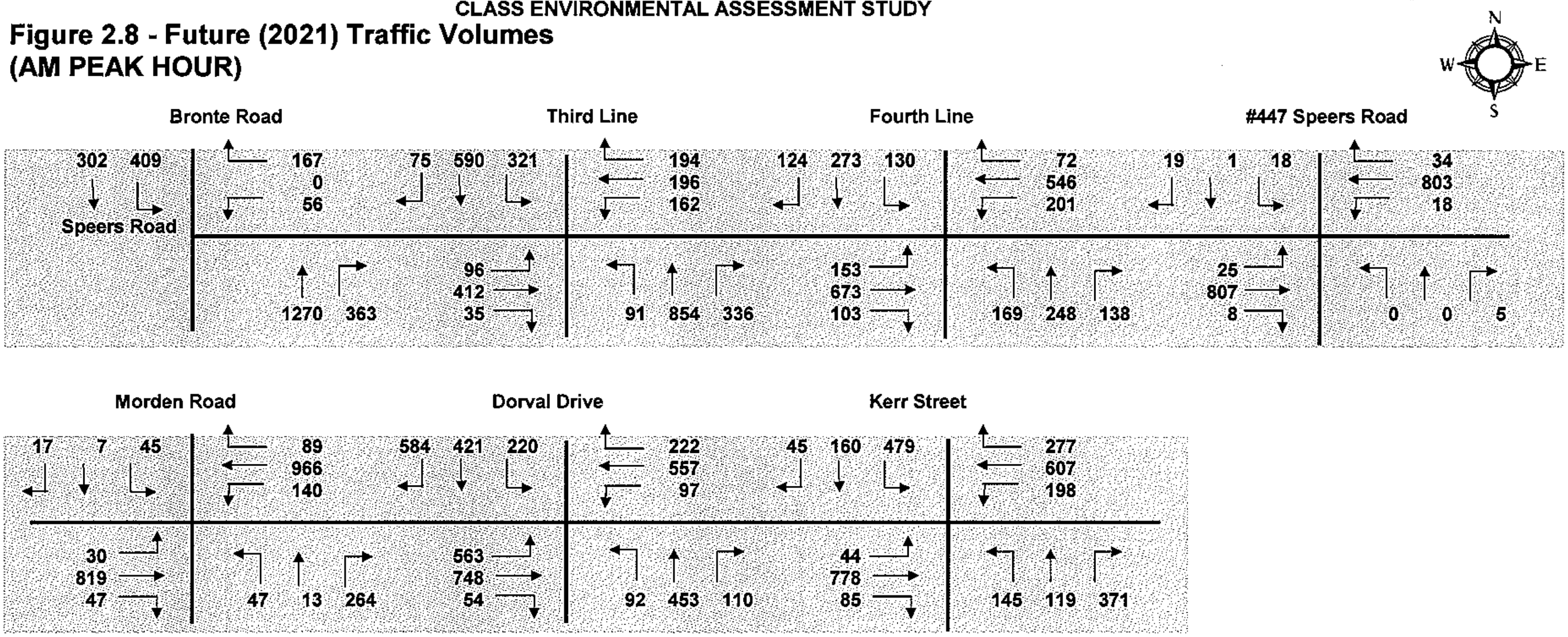
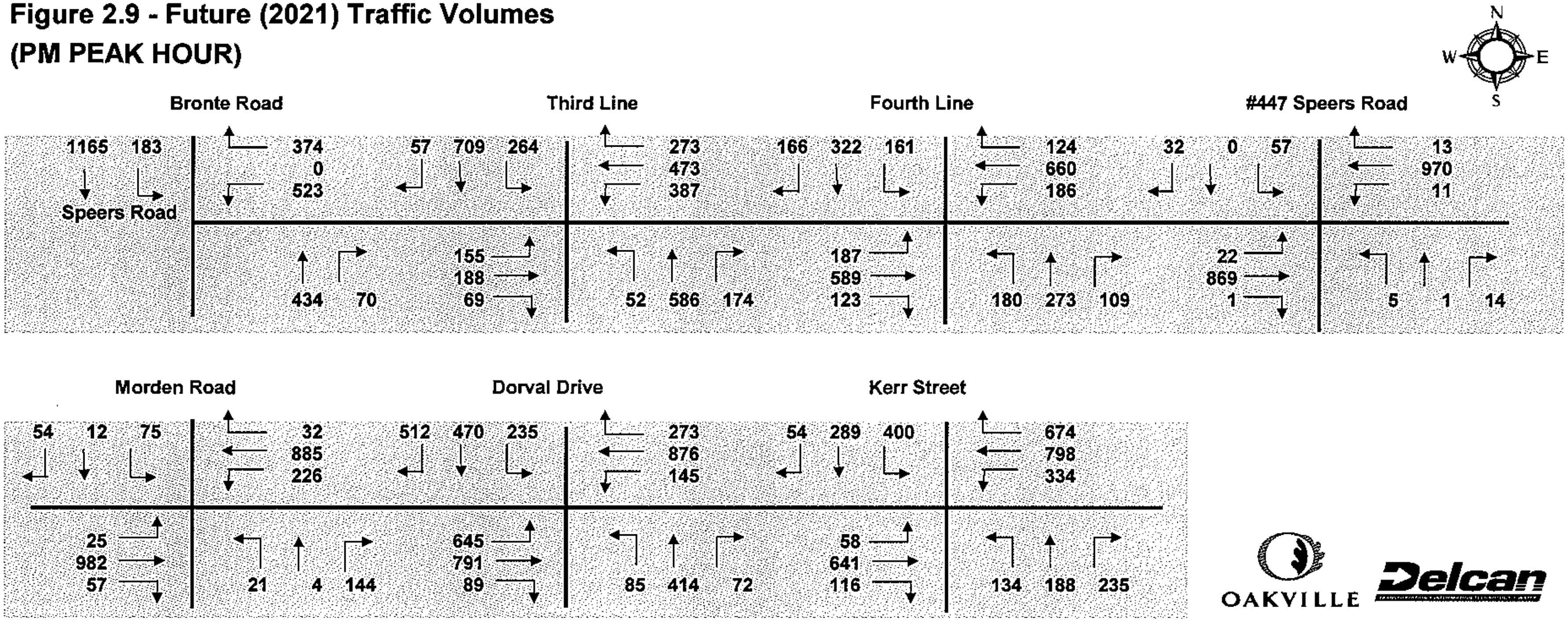


Figure 2.9 - Future (2021) Traffic Volumes (PM PEAK HOUR)



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Future (2021) Traffic Conditions – 'Do-Nothing' Scenario

The operational performance of the study intersections under 2021 traffic conditions was assessed using the assumption that all lane geometry would remain static as found under existing traffic conditions. Signal timings were optimized using Synchro. The V/C ratios of those intersections and individual movements that are becoming critical have been highlighted and are shown in red in **Figure 2.10** and in **Figure 2.11** for the weekday AM and PM peak hours, respectively.

Based on the findings from the operational performance of the study intersections with 2021 weekday AM and PM peak hour traffic volumes under a 'Do-Nothing' traffic scenario, the following critical intersections and movements were identified:

Weekday AM Peak Hour

- Speers Road at Dorval Drive: Overall Intersection V/C: 0.97
    - Westbound: Shared Through/Right Turn Lanes V/C: 1.03

- Speers Road at Kerr Street: Overall Intersection V/C: 1.01
    - Eastbound: Shared Through/Right Turn Lanes V/C: 0.98
    - Westbound: Exclusive Left Turn Lane V/C: 1.04
    - Northbound: Shared Through/Right Lane V/C: 0.93
    - Southbound: Exclusive Left Turn Lane V/C: 1.04

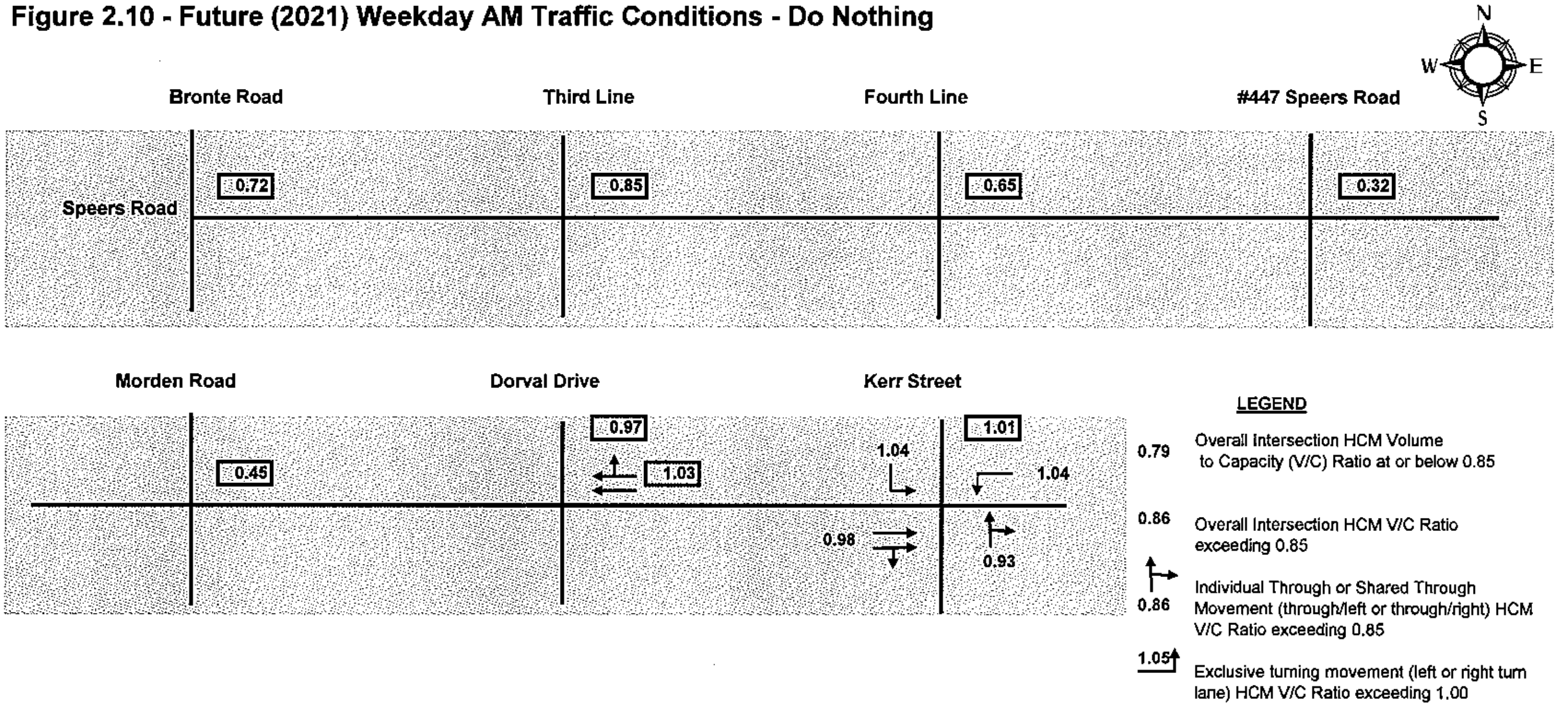
Weekday PM Peak Hour

- Speers Road at Dorval Drive: Overall Intersection V/C: 1.23
    - Eastbound: Exclusive Left Turn Lane V/C: 1.26
    - Westbound: Shared Through/Right Turn Lanes V/C: 1.15
    - Southbound: Exclusive Left Turn Lane V/C: 1.13

- Speers Road at Kerr Street: Overall Intersection V/C: 1.02
    - Eastbound: Shared Through/Right Turn Lanes V/C: 0.96
    - Westbound: Exclusive Left Turn Lane V/C: 1.02
    - Northbound: Shared Through/Right Lane V/C: 0.86
    - Southbound: Exclusive Left Turn Lane V/C: 1.06

Detailed traffic analysis worksheets for the future traffic conditions – Do nothing scenario are included in **Appendix E**.

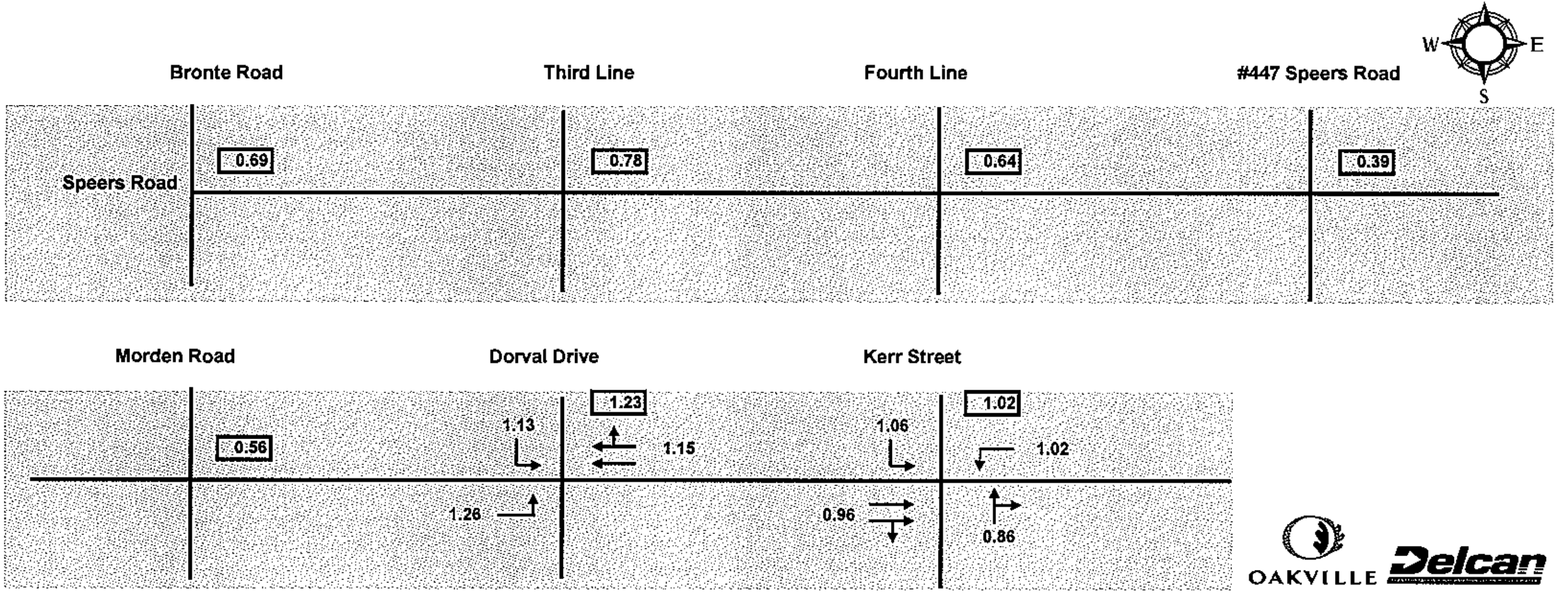
Figure 2.10 - Future (2021) Weekday AM Traffic Conditions - Do Nothing



LEGEND

0.79	Overall Intersection HCM Volume to Capacity (V/C) Ratio at or below 0.85
0.86	Overall Intersection HCM V/C Ratio exceeding 0.85
0.86	Individual Through or Shared Through Movement (through/left or through/right) HCM V/C Ratio exceeding 0.85
1.05	Exclusive turning movement (left or right turn lane) HCM V/C Ratio exceeding 1.00

Figure 2.11 - Future (2021) Weekday PM Traffic Conditions - Do Nothing



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2021 Planned Road and Intersection Improvements

A number of roadway and intersection improvements along the Speers Road study area corridor are currently planned by the Town of Oakville. These improvements are planned for completion by 2021 and are expected to result in either increased roadway and/or intersection capacity.

- Speers Road at Fourth Line (as confirmed in the Fourth Line Class EA Study)
  - Eastbound: Provision of exclusive right turn lane
  - Westbound: Provision of exclusive right turn lane
  - Southbound: Existing exclusive right turn lane modified to become shared through/right lane
  - Northbound: Provision of through lane
- Speers Road at Dorval Drive (as confirmed in the Dorval Drive Class EA Study)
  - Eastbound: Existing left turn lane modified to become dual left
  - Westbound: Provision of exclusive right turn lane
- Speers Road at Kerr Street (as provided by Town Staff based on ongoing Kerr Street Class EA Study as per planned capital projects)
  - Southbound: Existing left turn lane modified to become dual left and Provision of exclusive right turn lane
  - Northbound: Provision of exclusive right turn lane (planned capital project)

Future (2021) Recommended Improvements

A number of intersection and roadway improvements were identified as being required to resolve the capacity issues that would result under a 'Do-Nothing' scenario, beyond those already planned by the Town, to address the 2021 transportation needs within the study area. Recommended right turn lanes (listed below) have been extended in length to both improve intersection capacity and to allow for conversion to queue jump lanes should they become warranted in the future. These additional recommended improvements include:

- Speers Road between Bronte Road and Third Line
  - Urbanize cross-section and extend sidewalk to Bronte Road
- Speers Road at Third Line
  - Eastbound: Provision of exclusive right turn lane
  - Westbound: Provision of exclusive right turn lane
- Speers Road at Dorval Drive (as confirmed in the Dorval Drive Class EA Study)
  - Eastbound: Provision of exclusive right turn lane
- Speers Road at Driveway to 447 Speers Road
  - Eastbound: Provision of exclusive left turn lane
  - Westbound: Provision of exclusive left turn lane

- Speers Road at Kerr Street
  - Eastbound: Provision of exclusive right turn lane

The planned and additional recommended improvements proposed in this study, under future 2021 traffic conditions, are illustrated in **Figure 2.12**.

Future (2021) Traffic Conditions – With Recommended Improvements

The operational performance of these intersections with the planned and recommended improvements were evaluated and the findings are shown graphically in **Figure 2.13** and in **Figure 2.14** for the weekday AM and PM peak hours, respectively.

Based on the findings from the operational performance of the study intersections with 2021 weekday AM and PM peak hour traffic volumes with planned and recommended improvements, the following critical intersections and movements were identified:

Weekday AM Peak Hour

- Speers Road at Third Line: Overall Intersection V/C: 0.89
  - No critical individual traffic movements

Weekday PM Peak Hour

- No critical intersections

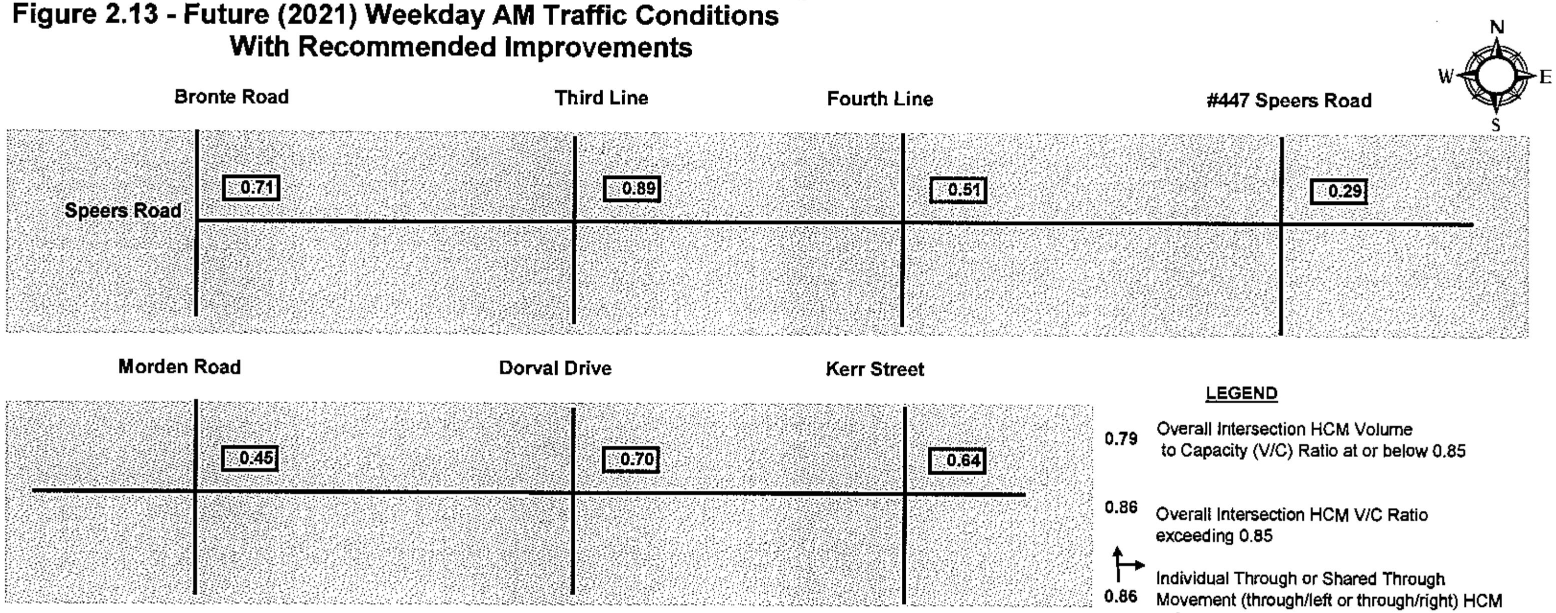
Detailed traffic analysis worksheets for the future traffic conditions – with recommended improvements are included in **Appendix E**.

Summary of Traffic Analysis- Future Conditions with Recommended Improvements

In the case of the recommended improvements to the intersection of Speers Road and Third Line, the improvements result in a weekday AM peak hour overall V/C ratio of 0.89. While this shows that the intersection would be approaching capacity, it would have no critical individual traffic movements.

All other intersections within the study area would operate satisfactorily during both the weekday AM and PM peak hours with the planned and proposed recommended improvements.

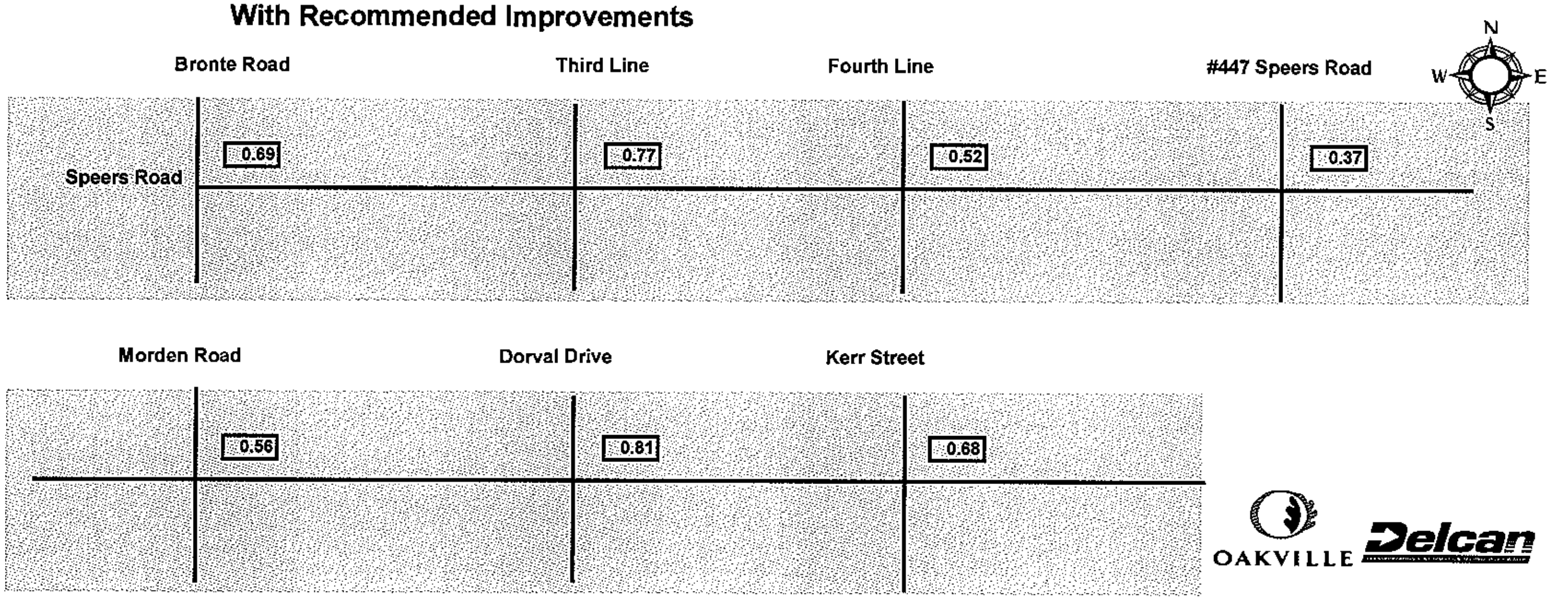
Figure 2.13 - Future (2021) Weekday AM Traffic Conditions With Recommended Improvements



LEGEND

0.79	Overall Intersection HCM Volume to Capacity (V/C) Ratio at or below 0.85
0.86	Overall Intersection HCM V/C Ratio exceeding 0.85
↱ 0.86	Individual Through or Shared Through Movement (through/left or through/right) HCM V/C Ratio exceeding 0.85
1.05↑	Exclusive turning movement (left or right turn lane) HCM V/C Ratio exceeding 1.00

Figure 2.14 - Future (2021) Weekday PM Traffic Conditions With Recommended Improvements



OAKVILLE

Delcan

2.5 Engineering Environment

2.5.1 Pavement Conditions

A *Preliminary Geotechnical Investigation & Pavement Design Report* completed as part of the study (Appendix A) provides the following information on the existing pavement condition for the subject portion of Speers Road:

Bronte Road to 1.2 km East (Fair Condition) - This section of pavement is a two lane section and the remainder is a three lane section which includes a newer lane constructed on the north side. This section of pavement is comprised of a rural type cross section with gravel shoulders and ditches. Flushing has been observed in some areas as well as intermittent longitudinal and transverse cracking.

1.2 km East of Bronte Road to 3rd Line (Fair to Good Condition) - This section of pavement comprises four lanes with an urban cross section. Moderate longitudinal cracking was observed along paving joints, and frequent slight to moderate transverse cracking was also observed. Crack sealing and patching has been carried out to maintain the serviceability of the pavement.

3rd Line to 4th Line (Fair Condition) - This section of pavement, consisting of four lanes with a centre turning lane, has numerous patches over former service cuts and other repairs, resulting in a poor riding quality.

4th Line to Morden Road (Fair to Good Condition) - This is a four lane urban section with turning lanes, characterized by frequent moderate transverse cracking, longitudinal cracking and occasional patched sections. Rutting and alligator cracking was observed at the intersection of Morden Road. There were frequent service cuts and resurfacing of some sections of the outside lanes.

Morden Road to Kerr Street (Fair to Poor Condition) - This section of pavement is of older construction with frequent transverse cracking and progressive longitudinal cracking. The north lanes are generally in worse condition and potholes were observed in some areas. As with the previous sections, patches and local overlays had been constructed over service cuts resulting in poor riding quality.

2.5.2 Structural Features

An investigation of the roadway's existing structural components within the Speers Road corridor was undertaken as part of the Class EA. The existing structures which may be an issue to roadway widening are identified below.

Retaining wall at the intersection of Speers Road and 3rd Line

There is a small retaining wall parallel to Speers Road located at the north east corner (by the Shell station) of the intersection of Speers Road and 3rd Line. The relocation of this wall would have to be addressed to accommodate road widening.

Bridge east of York Road

Bridge over Fourteen Mile Creek is a four lane concrete frame bridge with sidewalks on north and south sides of the road. Barriers on north and south sides are deteriorated. Many sections have spalls and rebar is exposed. The Bridge would require widening as it does not have sufficient clearance to allow for the proposed widening and the sidewalks. The rigid frame structure is feasible to widen to the amount required for the proposed roadway cross-section. The existing bridge abutments currently intersect the edge of the creek and thus form the boundary of the creek along the limits of the bridge. The proposed widening for this structure is anticipated to require an excavation of approximately 2 metres below the existing creek elevation and will also need to extend into the limits of the creek, similar to the existing bridge.

Retaining wall at the intersection of Speers Road and 4th Line

There is a retaining wall on the north side of Speers Road at the northwest corner of the Speers Road and 4th Line intersection. The relocation of this wall would have to be addressed to accommodate road widening.

Culvert east of 4th Line

McCraney Creek Culvert should be sufficient to carry the new roadway, however the culvert is not wide enough to allow for the inclusion 3.25m boulevards and 1.5m concrete sidewalks on both north and south sides of Speers Road. No widening or in-water work is anticipated for this structure.

The complete *Internal Site Conditions Report* containing information on the structures identified above is provided in **Appendix F**.

2.5.3 Utilities

Aerial Utilities

Existing Aerial utilities include Hydro, Bell, Cogeco and Blink Communications (Internet Service Provider). The pole line generally runs along the south side of Speers Road, in between the curb line and sidewalks. This pole line extends from Bronte Road to Morden Avenue. Along the entire portion, buried road crossings for service connections are found.

The pole line along the south side of Speers Road, from Third Line to Fourth Line has recently been installed. The age of the remaining pole lines and ducts is unknown.

Buried Utilities

East of Morden Road to Kerr Street, the utilities that were previously aerial are buried and are accessible by manholes along Speers Road.

Detailed locations of all buried utilities will need to be determined during detailed design.

Gas

Speers Road is a major gas corridor for Union Gas. Typically, gas mains run along the north and south limits of the ROW, however, there are many non-standard gas line locations. Detailed locations of all gas lines will need to be determined prior to detailed design.

2.5.4 Municipal Services (Sewers, Watermains)

Sanitary Sewer

Based on the data provided, the existing sanitary sewer system is relatively old. All sanitary sewage flows from Bronte Road to 400m east of Fourth Line flow to an existing 300mm dia. sanitary sewer flowing south. The sanitary sewage flows from 400m east of Fourth Line to Kerr Street flow to an existing 600mm dia. sanitary sewer at Morden Road, which flows south. An inventory of the existing sanitary sewer system is provided below in **Table 2.1**.

Storm Sewer

Storm water flows for Speers Road are collected by catchbasins and conveyed through a series of storm sewers to a number of connecting trunk storm sewers and outlets at various locations. From Bronte Road to approximately 1200m east, the storm drainage is collected by a series of roadside ditches, culverts and ditch inlet catchbasins. The remaining length of Speers Road utilizes curb and gutter with catchbasins to collect the stormwater flows.

Table 2.1 - Sanitary Sewer Inventory

Location	Length	Diameter	Direction of Flow	Date of Construction	Material
Bronte Road to Third Line	740m	300mm dia.	E	-	-
	500m	525mm dia.	E	-	-
	800m	300mm dia.	E	-	-
Third Line to Fourth Line	1000m	300mm dia.	E	-	-
	1100m	300mm dia.	W	1961	Vitrified Tile
Fourth Line to Morden Road	400m	300mm dia.	W	1962	Vitrified Tile
	700m	300mm dia. to 375mm dia.	E	1975	Vitrified Clay
Morden Road to Dorval Drive	175m	675mm dia.	W	-	-
Dorval Drive to Woody	175m	675mm dia.	W	-	-
Woody to St. Augustine	325m	300mm dia.	W	1963	Vitrified Tile
St. Augustine to Kerr Street	225m	200mm dia.	W	1971	Vitrified Clay

There are six different catchment areas along Speers Road, from Bronte Road to Kerr Street. They are summarized as follows:

1. Flows from 300m west of Third Line to Bronte Road flows westerly to an existing 2100mm dia. storm sewer at Bronte Road
2. Flows from 300m west of Third Line and 1040m east of Third Line flows into Fourteen Mile Creek.
3. Flows from 370m west of Fourth Line to Fourth Line flows to an existing creek.
4. Flows from Fourth Line to 470m east of Fourth Line flows to an outlet at an existing creek.
5. Flows from 525m west of Morden Road to 535m east of Morden Road flows to an existing 1200mm dia. storm sewer at Morden Road.
6. Flows from 310m west of Kerr Street to Kerr Street flows easterly to an existing 1050mm dia. storm sewer at on Speers Road that flows easterly from Kerr Street.

An inventory of the existing storm sewer components is provided **Table 2.2**.

Table 2.2 - Storm Sewer Inventory

Location	Length	Diameter	Direction of Flow	Date of Construction	Material
Bronte Road to Third Line	625m	1650mm dia.	W	1994	Conc. Class 65-D
	270m	1500mm dia.	W	1994	Conc. Class 50-D
	234m	1200mm dia.	W	1994	Conc. Class 50-D
	430m	975mm dia.	W	1981	Class 3 RC
	200m	450mm dia.	W	1981	Class 3 RC
	105m	525mm dia.	E	1978	Class 4 RC
	100m	600mm dia.	E	1978	Class 4 RC
	95m	750mm dia.	E	1978	Class 4 RC
Third Line to Fourth Line	350m	975mm dia.	E	1978	Class 4 RC
	250	1050mm dia.	E	1978	Class 4 RC
	400	1350mm dia.	W	1977	Class 4 RC
	125	1200mm dia.	W	1976	Class 3 RC
	195	1050mm dia.	W	1976	Class 3 RC
	138	975mm dia.	W	1976	Class 3 RC
	93	825mm dia.	W	1976	Class 3 RC
	80	675mm dia.	W	1976	Class 3 RC
	60	525mm dia.	E	1976	Class 3 RC
	63	600mm dia.	E	1976	Class 3 RC
	100m	675mm dia.	W	1976	Class 3 RC
	77m	600mm dia.	W	1976	Class 3 RC
	70m	525mm dia.	W	1976	Class 3 RC
Fourth Line to Morden Road	25m	375mm dia.	E	1976	Class 3 RC
	50m	525mm dia.	E	1976	Class 3 RC
	70m	600mm dia.	E	1976	Class 3 RC
	155m	750mm dia.	W	1976	Class 3 RC
	65m	675mm dia.	W	1976	Class 3 RC
	60m	600mm dia.	W	1976	Class 3 RC
	44m	450mm dia.	W	1976	Class 3 RC
	90m	600mm dia.	E	1976	Class 3 RC
	92m	675mm dia.	E	1976	Class 3 RC
	90m	750mm dia.	E	1976	Class 3 RC
	90m	825mm dia.	E	1976	Class 3 RC
	75m	900mm dia.	E	1976	Class 3 RC
	90m	975mm dia.	E	1975	Class 3 RC

Location	Length	Diameter	Direction of Flow	Date of Construction	Material
Morden Road to Kerr Street	175m	1050mm dia.	W	1976	Class 3 RC
	186m	750mm dia.	W	1976	Class 3 RC
	105m	600mm dia.	W	1976	Class 3 RC
	71m	450mm dia.	W	1976	Class 3 RC
	91m	450mm dia.	E	1976	Class 3 RC
	220m	900mm dia.	E	1975	Class 3 RC

Watermains

The existing watermains in the study area are summarized in **Table 2.3**. At intersections, the watermain is interconnected with various other existing watermains servicing the respective streets, as part of the overall water distribution network.

Table 2.3 - Watermain Inventory

Location	WM Size	Date of Construction	Material
Bronte to Third Line (North side of road)	750mm dia.	2000	Concrete Pressure Pipe CL16
	300mm dia. increasing to 400 mm dia.	300 dia.- 400 dia.-1981	-
Third Line to Fourth Line (North side of road)	750mm dia.	1976	Concrete Cylinder Pipe (A.W.W.A. C-301(L))
	300mm dia.	?	-
Fourth Line to Dorval Drive (North side of Road)	750mm dia.	1976	Concrete Cylinder Pipe (A.W.W.A. C-301(L))
	300mm dia.	-	-
Dorval Drive to Kerr Street (along centerline of road)	300mm dia.	-	PVC
	300mm dia.	-	CI
	200mm dia.	-	CI
	200mm dia.	-	CL DI

3.0 EA PHASE 1: PROBLEM STATEMENT

Under Phase 1 of the Schedule "C" Class EA process (under the Municipal Engineers Association's Municipal Class Environmental Assessment, June 2000) a "Problem Statement" is prepared which identifies, in detail, the various issues needing to be addressed by the Class EA study. In essence, the Problem Statement outlines the need and justification for the overall project and establishes the general parameters, or scope, of the study.

Based on a review of various background documents (e.g. traffic analysis, road safety analysis), the Terms of Reference, site visits, and consultation with key stakeholders, technical agencies and members of the public, the following issues were identified as having to be addressed in the Speers Road Class EA Study, thus comprising the Study Problem Statement:

- Existing/future traffic capacity deficiencies
- Need for improved public transit service
- Need for safety improvements
- Inadequate cyclist and pedestrian facilities
- Structural deficiencies and deteriorating pavement conditions
- Streetscape aesthetics/landscaping requirements
- Roadway drainage

4.0 EA PHASE 2: DEVELOPMENT & EVALUATION OF ALTERNATIVE SOLUTIONS

Under Phase 2 of the Class EA process, all reasonable solutions to the problem (i.e. planning alternatives) are identified and described, including the "Do Nothing" alternative. Once the Class EA Schedule is confirmed, general inventories of the natural, social and economic environments are prepared and potential environmental impacts are determined for each planning alternative. The net positive and negative effects of each planning alternative are then identified and the alternatives are evaluated resulting in a recommended planning solution. The recommended solution is then presented to the public and reviewing agencies to solicit input into the selection of the preferred solution.

4.1 Alternative Planning Solutions

Planning alternatives are alternative solutions to the problem or deficiency in the transportation network. Planning alternatives are identified by taking into consideration factors such as the existing environment as well as public and agency input and establishing a preferred solution. The Environmental Assessment Act requires that all reasonable planning alternatives to the undertaking be considered during the decision making process. Those solutions (except "Do Nothing") which did not address the Problem Statement in any significant way were discounted and therefore not considered for evaluation. Note that although the "Do Nothing" alternative does not address the problem statement, it serves as a "benchmark" for evaluating the relative impacts of the other alternatives.

For the Speers Road Class EA study, 6 planning alternatives were identified and evaluated:

1. *Alleviate traffic congestion along Speers Road by improving adjacent road networks (e.g. Rebecca Street)*

2. *Increase traffic capacity along Speers Road by adding through and turn lanes*

3. *Develop alternative traffic management measures through high occupancy vehicle (HOV) lanes, transit lanes and/or transit queue jump lanes*

4. *Alleviate traffic congestion along Speers Road by accommodating other modes of travel (e.g. transit, cycling, walking)*

5. *Implement various non-structural improvements (e.g. signing, traffic optimization or traffic control) along Speers Road*

6. *Do nothing*

4.2 Evaluation of Alternative Planning Solutions

Each of the identified roadway planning alternatives was comparatively evaluated against screening criteria (i.e. traffic operations / safety, aesthetics / community character, socio-economic environment and costs / feasibility of implementation). The results of the evaluation of the roadway corridor planning alternatives are provided in **Table 4.1**.

Table 4.1 – Comparative Evaluation of the Planning Alternatives

Planning Alt. 1 ***(Improve Adjacent Roads)***	**Planning Alt. 2** ***(Provide Additional Traffic Lanes)***	**Planning Alt. 3** ***(Introduce HOV Lanes, Transit Lanes)***	**Planning Alt. 4** ***(Accommodate Other Travel Modes)***	**Planning Alt. 5** ***(Non-Structural Improvements)***	**Planning Alt. 6** ***(Do Nothing)***
⇨ Would alleviate traffic congestion on Speers Road but does not address transit operations, collisions concerns, pedestrian and cyclist requirements. ⇨ Negative impacts along parallel corridors (e.g. residential infilling, negative air quality impacts). ⇨ Streetscaping /aesthetic requirements not addressed. ⇨ High cost to develop adjacent routes.	⇨ *Positive impact on overall vehicular traffic operations.* ⇨ *Transit operations would benefit from increased traffic capacity.* ⇨ Potential for significant property impacts. ⇨ *Reduction in traffic congestion could improve air quality.* ⇨ *Moderate implementation and operational costs.*	⇨ *Encourages increased transit/HOV use by enhancing transit/HOV operations.* ⇨ Potential for negative operational and safety impacts to non-HOV traffic capacity. ⇨ Potential for low usage and time savings due to low volumes of HOV vehicles in area. ⇨ High implementation and operational costs.	⇨ Does not adequately address existing/future traffic capacity deficiencies. ⇨ *Encourages increased transit use, cycling and walking.* ⇨ User safety issues due to driveway access would not be improved. ⇨ *Positive impact on air quality.* *Moderate implementation and operational costs.*	⇨ *Provides minor improvements to local traffic operations.* ⇨ Does not address pedestrian/cyclist requirements. ⇨ *Minimal socio-economic impacts.* ⇨ *Streetscaping / aesthetic improvements would be addressed.* ⇨ *Low cost to implement.*	⇨ Traffic capacity deficiencies will continue to degrade. Congestion will increase. ⇨ Does not address transit operations or pedestrian and cyclist requirements. ⇨ Does not address streetscaping/ aesthetic requirements. ⇨ Poor air quality from congestion. ⇨ High costs associated with ongoing maintenance.
Not Recommended to be Carried Forward	**Recommended to be Carried Forward**	**Not Recommended to be Carried Forward**	**Recommended to be Carried Forward**	**Recommended to be Carried Forward**	**Not Recommended to be Carried Forward**

Legend

Advantage / Disadvantage

Based on the advantages vs. disadvantages of each of the Planning Alternatives, the following alternatives were recommended to be carried forward in the study:

2. Increase traffic capacity along Speers Road by adding through and turn lanes

4. Alleviate traffic congestion along Speers Road by accommodating other modes of travel (e.g. transit, cycling, walking)

5. Implement various non-structural improvements (e.g. signing, traffic optimization or traffic control) along Speers Road

4.3 Selection of Preferred Solution

Based on the results of the evaluation of the alternative solutions, the preferred planning solution for the Speers Road corridor can be summarized as follows:

Increase traffic capacity along Speers Road through the addition of through / turn lanes and help alleviate congestion through the accommodation of transit users, cyclists, and pedestrians and the implementation of non-structural improvements including better signage and traffic control.

5.0 EA PHASE 3: ALTERNATIVE DESIGN CONCEPTS FOR PREFERRED SOLUTION

Phase 3 of the Class Environmental Assessment for a Schedule "C" project outlines a process similar to that followed in Phase 2. In Phase 3, a potential range of design concepts that might be adopted to implement the preferred solution are identified and evaluated. There are usually a number of ways in which a project can be developed and designed to implement the preferred solution. As in Phase 2, each possible design alternative is identified and described and, in the case of design alternatives, a detailed inventory of the natural, social and economic environments is prepared. The impacts of each design alternative on the environment are then established along with identified mitigating measures. Finally, the alternative design concepts are evaluated, taking into consideration all of the identified impacts and appropriate mitigating measures. Once a preliminary preferred design has been selected, it is presented to the public, review agencies and interest groups and a final selection is then confirmed for implementation.

5.1 Alternative Design Concepts

As part of the Speers Road study, a number of design alternatives were identified, evaluated and presented to the public and technical agencies. The design alternatives were developed as potential methods of implementing the preferred solution (identified under Section 5 above) and ultimately to address the problem(s) identified in the first phase of the EA. The shortlisted design alternatives identified to address the roadway deficiencies are described below and illustrated in **Figures 5.1** and **5.2**, respectively.

Design Alternative 1

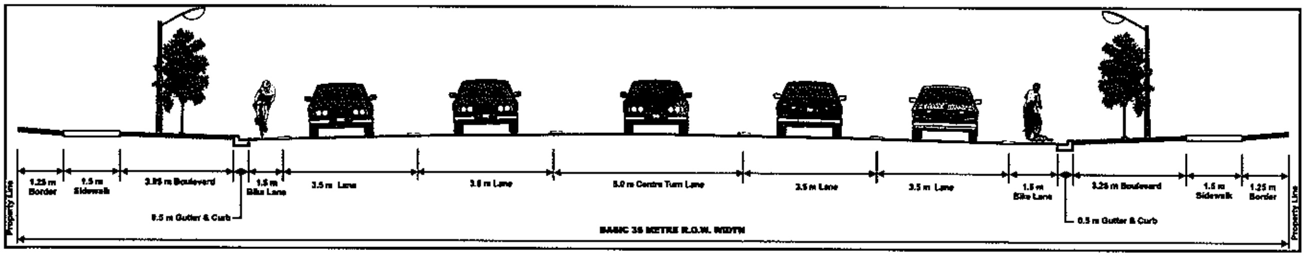
Automobile & transit accommodations: Five lanes throughout (4 through and 1 centre turn lane) plus auxiliary turn lanes at major intersections as required

Bicycle accommodations: Dedicated bike lanes on both sides

Pedestrian accommodations: Boulevards and sidewalks on both sides

Basic right of way required: 35 metres

Figure 5.1 – Design Alternative No. 1



Design Alternative 2

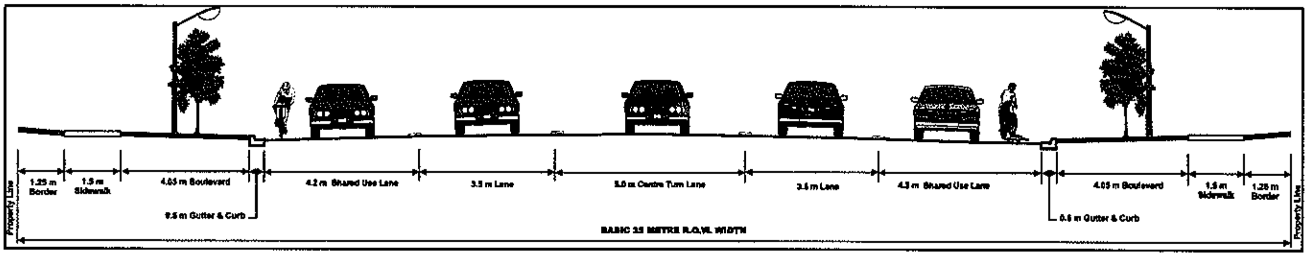
Automobile & transit accommodations: Five lanes throughout (4 through and 1 centre turn lane) plus auxiliary turn lanes at major intersections as required

Bicycle accommodations: Wide shared-use curb lanes

Pedestrian accommodations: Boulevards and sidewalks on both sides

Basic right of way required: 35 metres

Figure 5.2 – Design Alternative No. 2



Additional Features Common to Alternatives 1 and 2

With the exception of the "Do-Nothing" alternative, each of the design alternatives identified for the section of Speers Road from Bronte Road to Kerr Street includes the following additional features:

- Roadway drainage to be accommodated via curb and gutter on each side of the road.
- Reconstruction of the existing road surface to address deteriorating pavement conditions.
- Widening of the Fourteen Mile Creek and McCraney Creek bridge structures to accommodate roadway widening and sidewalks.
- Streetscape improvements along the corridor (to be developed during detail design).

5.2 HOV/Queue Jump Lane Analysis

In developing the design alternatives, consideration was also given to accommodating increased transit efficiency along the study corridor. These concepts included:

- *High occupancy vehicle (HOV) lanes (1 lane per direction)* - Road lanes restricted to use by vehicles carrying 2 or more persons.
- *Transit queue jump lanes at major intersections* - Dedicated lanes for transit vehicles at key signalized intersections only.

Following review of both options, it was determined that neither of these alternatives were viable for the Speers Road corridor for the following reasons:

- Limited travel time savings for HOVs on Speers Road corridor;
- Potential to create congestion and delay for non-HOV users; and
- Volume of HOVs in corridor too low for operational viability.

Although transit queue jump lanes are not recommended at this time, designated right turn lanes provided in the preferred design plans at all key intersections along the Speers Road corridor could be converted into transit queue jump lanes in the future, if required.

5.3 Evaluation of Alternative Design Concepts

Each of the identified roadway design alternatives was comparatively evaluated against screening criteria representing the broad definition of the environment as described in the *EA Act*. A breakdown of the screening criteria used is provided as follows:

Transportation & Safety:	How does the alternative serve the expected vehicular, transit, pedestrian and cycling traffic in terms of travel delay, safety and emergency access?
Socio-economic Environment:	How does the alternative affect the commercial properties abutting the road (driveways/access, on-site parking, property impacts, streetscaping/beautification potential)?
Natural & Cultural Heritage Environment:	How does the alternative affect fish habitat, vegetation, noise, air quality and archaeological/heritage resources?
Cost:	What is the potential cost of the alternative including the cost for road construction, utility and street-lighting relocations, property acquisitions, traffic signal improvements and landscaping?

Each alternative was preliminarily evaluated by the Project Team using the aforementioned criteria. All design alternatives remained under consideration and presented for public comment at the Public Information Centre held during the study. Upon receiving input from the public and technical agencies, the Project Team re-assessed the alternatives before identifying a Recommended Design Alternative for approval by Town Council. The results of the evaluation of the roadway corridor alternative design concepts are provided in **Table 5.1**.

5.4 Selection of Preferred Design

For the section of Speers Road from Bronte Road to Kerr Street, the Project Team selected Design Alternative 1 – Reconstruct Speers Road to Five lanes throughout (4 thru and 1 centre turn lane) plus auxiliary turn lanes at major intersections as required, with dedicated bike lanes, boulevards and sidewalk along both sides of the corridor, as the preferred design. Although both alternatives 1 and 2 ranked the same in terms of impacts on the socio-economic natural/cultural heritage and cost, Design Alternative 1 provides an increased level of safety to cyclists.

Table 5.1 - Comparative Evaluation of the Design Alternatives

EVALUATION CRITERIA	DESIGN ALT. 1	DESIGN ALT. 2
TRANSPORTATION & SAFETY	Safely accomodates various modes of transportation. Bike lanes provide increased level of cyclist safety.	Safely accomodates various modes of transportation.
ROW SCORE SUBTOTALS	**Good (4)**	**Fair to Good (3)**
SOCIO-ECONOMIC ENVIRONMENT	Centre turn lane provides increased access to adjacent businesses. Significant property & parking impacts.	Centre turn lane provides increased access to adjacent businesses. Significant property & parking impacts.
ROW SCORE SUBTOTALS	**Poor to Fair (1)**	**Poor to Fair (1)**
NATURAL ENVIRONMENT & CULTURAL HERITAGE	Construction-related impacts to the natural and cultural heritage environment are mitigable.	Construction-related impacts to the natural and cultural heritage environment are mitigable.
ROW SCORE SUBTOTALS	**Fair to Good (3)**	**Fair to Good (3)**
COST	Significant utility relocation and property acquisiton costs.	Significant utility relocation and property acquisiton costs.
ROW SCORE SUBTOTALS	**Fair (2)**	**Fair (2)**
OVERALL SCORE	**2.5**	**2.3**
	Carry Forward	Not Recommended for Further Consideration

Legend

Advantage / Disadvantage

6.0 DESCRIPTION OF THE PREFERRED DESIGN

This section of the report identifies the key features of the preferred design for the subject portion of Speers Road.

6.1 Main Features of the Preferred Road Design

The design drawings for the preferred design for Speers Road from Bronte Road to Kerr Street are provided in **Appendix G**.

6.1.1 Plan and Profile

Speers Road is to be widened from its current configuration to five lanes throughout (four through lanes and 1 centre turn lane) plus auxiliary turn lanes at the following intersections at Speers Road:

- Third Line
- Fourth Line
- Dorval Drive
- Kerr Street

With the exception of the eastern portion of the study limits, the horizontal alignment remains close to the existing alignment. At the eastern end of the study limits, near the Kerr Street intersection, the existing alignment has been shifted approximately 9 metres northerly to align with the section of Speers Road east of Kerr Street and to minimize property impacts to the south. The roadway alignment has been set to maximize the use of available property within the current roadway right-of-way.

6.1.2 Drainage

The reconstruction of Speers Road from Bronte Road to Kerr Street will include concrete curb and gutters (replacing existing ditches), catch basins and storm sewers outletting to existing storm sewer systems. The reconstruction of Speers Road will also include grading modifications and modified roadway elevations where feasible to improve current stormwater drainage deficiencies. Stormwater collection and drainage will be significantly improved following construction of the roadway improvements.

During the detailed design phase of the study, the following stormwater management opportunities will be investigated:

- *Upgrade the storm sewer system to meet capacity deficiencies.*
  - Preliminary review of the as-constructed drawings indicate that there is a well laid out major/minor storm sewer system under the entire road length. The existing storm sewers in the road will be reviewed for consistency with existing standards for major and minor storm drainage. Deficiencies will be addressed where it is deemed practical and economical to do so.

- *Introduce stormwater management measures to meet existing stormwater management deficiencies.*
  - There is an opportunity to introduce stormwater management such as water quality and erosion controls where they are currently not existing. Opportunities for work in the roadway are limited. While there is no space for stormwater management ponds, there is limited opportunity for underground active quality and quantity improvements such as oversized piping and hydrodynamic separation.

Infiltration measures such as pervious pavement near the curb & gutter, sidewalks or underground infiltration galleries will be considered. This will be reviewed in light of the information provided in the geotechnical report. Infiltration measures can work successfully where soils allow. In the case of very clayey soils, infiltration measures are generally not practical from an economic or maintenance stand point.

- *Improve conveyance capacity at the McCraney and Fourteen mile Creek Crossings.*
  - The capacity of the McCraney Creek and Fourteen Mile Creek Bridge/Culvert Structures, will be reviewed to ensure a that they are sized for the 25 year storm or greater. Detail design will ensure that there is no reduction in flow capacity across Speers Road.
- *Raise the road profile if necessary to mitigate flooding at McCraney Creek and Fourteen Mile Creek Crossings.*
  - Conservation Halton has identified that portions of the road at the Creek Crossings to be within the regulatory limit. Flooding potential within the road way will be reviewed during detail design to determine whether there is a need to raise the road profile at the Creek Crossings.
- *Integrate any measures required by regional stormwater management planning for McCraney, Fourteen Mile and Bronte Creek Subwatershed Planning Initiatives.*
  - A review of current subwatershed initiatives indicated that there are several outstanding concerns for both Fourteen Mile and McCraney Creeks. The concerns listed in the subwatershed studies are not affected by the proposed road improvements. During detail design, erosion control and bank stabilization measures will be considered in light of recommendations in the geotechnical report.

6.1.3 Utilities

It is anticipated that a number of utilities will require relocation to accommodate the preferred roadway design. In particular:

- Utility pole lines running on both sides of Speers Road at the intersection of Speers Road and Third Line
- Utility pole line at the northwest corner of the Fourteen Mile Creek Bridge structure
- Utility pole lines on the south side of Speers Road between West Bridge and Fourth Line
- Light poles and hydro lines adjacent to Speers Road at all corners of the Speers Road Fourth Line intersection
- Fire Hydrants along the north side of Speers Road
- Electrical box on the southwest side of the culvert east of Fourth Line
- Watermain and manhole/catch basin at NE corner of Fourteen Mile Creek Bridge
- Manhole at northwest corner of culvert east of Fourth Line
- 30 pedestals will need adjustment or relocation
- 11 Bell Manholes are in conflict with either proposed curbs or sidewalks identified in the preferred design. During detailed design, these manholes should be reviewed for potential relocation.

There are also two retaining walls, at the north east corner (by the Shell station) of the intersection of Speers Road and 3rd Line and at the northwest corner of the Speers Road and 4th Line intersection which would need to be relocated.

The exact location of buried Gas, Hydro, Bell and Cable utilities will need to be determined during detail design. It is anticipated that with the proposed road widening within the study area, a significant amount of utilities will require relocation to accommodate the preferred design.

6.1.4 Cycling Facilities

The preferred design for the subject portion of Speers Road includes the provision of 1.5 metre wide reserved on-road bike lanes along each side of the roadway. The provision of on-road bike lanes supports the *Town of Oakville Transportation Master Plan* requirements for urban corridors that are more cyclist friendly and encourage high levels of activity.

6.1.5 Pedestrian Facilities

The preferred design includes new continuous sidewalk along both sides of Speers Road from Bronte Road to Kerr Street. The sidewalk will be separated from the roadway via a varying grassed boulevard. The provision of continuous sidewalks separated by grassed boulevards supports the *Town of Oakville Transportation Master Plan* requirements for urban corridors that are more pedestrian friendly and encourage high levels of activity.

6.1.6 Traffic Signals and Illumination

The intersection controls ultimately selected for Speers Road will be based on technical warrants to address turning volumes and safety; and these may change over time resulting in future adjustments. Further review on the actual type of intersection control will be performed during the detailed engineering design stage.

It is anticipated that signals may be required to be reconstructed once the roadway width is finalized during the detailed design stage.

Illumination will be provided in the boulevards/median of the roadway. Style and location of the signals will be determined in the detailed design stage of this project, utilizing existing illumination and poles where possible.

6.1.7 Streetscaping

Streetscaping will be provided on Speers Road in conjunction with the road improvements. The streetscaping plan, to be developed during the detailed design phase of the study, will serve to improve the overall aesthetics of the roadway corridor. Preliminary elements of the landscaping plan to be incorporated into the roadway reconstruction are provided below.

- Consideration of the recommendations of the *2004 Kerr Street Revitalization Plan* and the Town's draft *The Plan for Kerr Village* at the intersection of Speers Road and Kerr Street.
- Preservation of existing trees wherever possible.
- Provision of a landscaped boulevard strip behind the curb where space is available.
- Planting of native, salt tolerant street trees in the boulevard strip.

During detail design, the project team shall meet with members of the Stakeholders Group established during the preliminary design phase to incorporate their input into the Speers Road streetscape plan.

6.1.8 Property Requirements

In certain sections of the roadway corridor, implementation of the preferred design will require the purchase of property adjacent to the roadway. Property requirements to implement the preferred design total 19,656m^2. Preliminary details on property requirements associated with the preferred design are illustrated in the plan drawings in Appendix G. Specifics with respect to property requirements will be identified in the detailed design phase of the study.

Recognizing the significant impact of the identified property requirements on adjacent businesses within the study corridor, the project team will, where feasible, attempt to mitigate these impacts during the detail design phase of the study. This would be undertaken in consultation with the affected property owners.

6.1.9 Pavement

Based on the Preliminary Geotechnical Investigation and Pavement Design Report completed as part of this Class EA Study, the portion of Speers Road from Bronte Road to Kerr Street will require complete reconstruction to ensure continuity of pavement drainage and consistent, uniform pavement performance. The following pavement component thicknesses can be considered for the Speer Road corridor:

- Asphalt wearing surface, 40 mm
- Asphalt Binder Course, 140 mm
- Granular "A" Base, 150 mm
- Granular "B" Subbase (Type 2), 400 mm

The roadway will be reconstructed with asphalt pavement subject to thickness requirements to accommodate projected 2021 daily traffic numbers and further recommendations of the *Preliminary Geotechnical Investigation and Pavement Design Report* in Appendix A.

6.1.10 Municipal Services (Sewers and Watermains)

From Bronte Road to Dorval Drive there are two watermains running parallel for both transmission (750mm dia.) and servicing (300mm dia. to 400mm dia.). The age of these watermains vary from recently constructed to approximately 30 years old and older. The construction and condition of these watermains also varies. Comments received during the public consultation indicate that there have been a number of watermain breaks in recent years. A review of the condition of the watermain's during detailed design, as well as a review of the watermain systems capacity should be completed to assess if and where watermains should be replaced during detailed design.

The existing storm sewer system should be reviewed during detailed design for capacity and condition to identify any opportunities for system improvement.

The condition and capacity of the sanitary works within the limits of the study area is to be reviewed and any necessary replacements or upgrades will be determined and incorporated into the detail design.

6.1.11 Traffic Maintenance and Construction Staging

Traffic disruption will be minimized as much as possible during construction. It is anticipated that at least one lane (under the control of flagmen) would remain open at all times. Every effort will be made to maintain driveway access during the construction period.

Table 6.1 identifies the approximate timing of construction for Speers Road based on the Town of Oakville's 2008-2017 Capital Forecast for road and structure projects.

Table 6.1 – Speers Road Estimated Capital Cost

From	To	Improvement Type	Forecasted Timing	Estimated Cost
Bronte Road	Procor	Interim Reconstruction and Widening (3-lanes)	2010	$4,200,000
Third Line	Fourth Line	Reconstruction & Widening	2013	$10,700,000
Fourth Line	Dorval Road	Reconstruction & Widening	2015	$7,400,000
Dorval Road	Kerr Street	Reconstruction & Widening	2016	$4,400,000
Bronte Road	Third Line	Ultimate Reconstruction and Widening (5-lanes)	Beyond 10 year capital forecast	$5,400,000

6.1.12 Capital Cost Estimate

The estimated project cost for reconstructing the Speers Road corridor between Bronte Road and Kerr Street is estimated to be approximately $32.1 million. Table 6.1 above provides a breakdown of the estimated cost associated with reconstructing each section of Speers Road.

7.0 POTENTIAL IMPACTS AND PROPOSED MITIGATION MEASURES

Based on an assessment of the potential environmental impacts resulting from construction of the preferred design, the proposed improvements to Speers Road from Bronte Road to Kerr Street is not anticipated to result in any significant environmental impacts providing adequate mitigation measures are employed. **Table 7.1** and **7.2** identify the potential impacts resulting from the project works (during and post-construction) and their associated mitigation measures. The mitigation measures detailed below shall serve to avoid and / or minimize potential negative environmental impacts.

Table 7.1 - Construction-related Impacts and Mitigation

NO.	POTENTIAL IMPACT	MITIGATION MEASURES	NET IMPACT
1.0	**Transportation Environment**		
1.1	*Potential disruption to vehicular traffic (travelling public and commercial vehicles).*	• Traffic disruption shall be minimized as much as possible during construction. At least one lane (under the control of flagmen) shall remain open at all times. A construction staging and traffic management plan will be developed during the detailed design phase of the project.	• Vehicles should expect minor to moderate delays in travel time.
1.2	*Potential disruption to emergency response (i.e. ambulance, police and fire) vehicles.*	• Emergency services to be notified by contractor of construction - related activities and schedule to minimize/avoid delays during emergencies.	• Emergency response vehicles may experience negligible to minor delays in travel time during emergencies.
1.3	*Potential disruption to transit services.*	• Oakville Transit to be notified of construction – related activities and schedule to minimize/avoid delays.	• Transit vehicles should expect minor to moderate delays in travel time.
1.4	*Potential disruption to pedestrians and cyclists.*	• Safe passage shall be maintained for pedestrians and cyclists during construction.	• Pedestrian and cyclist safety will be maintained during construction.
2.0	**Socio-economic Environment**		
2.1	*Potential access restrictions to adjacent property driveways.*	• Access to commercial and industrial properties will be maintained during construction.	• Short term access restrictions to adjacent properties.
2.2	*Property required to implement preferred design.*	• The preferred cross section will be reviewed at the detail design stage, and will be reduced, where possible, to minimize impact on properties. • Where the purchase of property is required, the property owner will be contacted directly by the Town of Oakville during the detail design phase of the project.	• More detailed property requirements will be identified during the detail design stage of the study.
2.3	*Potential reduction in air quality due to dust and/or emissions from construction equipment.*	• Dust/debris control measures shall be undertaken to control roadway dust. Measures to be included in the construction plans include, but not be limited to: - application of water or non-chloride based compounds. - soil and other material storage piles to be stabilized/covered to prevent wind erosion. - fine particulate materials to be covered during transportation to and from the site.	• Negligible to minor, short term reduction in air quality providing application of identified mitigation measures.

NO.	POTENTIAL IMPACT	MITIGATION MEASURES	NET IMPACT
		• Contractor to use new or well-maintained heavy equipment and machinery, preferably fitted with fully functional emission control systems/ muffler/ exhaust system baffles and engine covers.	
2.4	*Potential noise impacts associated with construction activities.*	• All local noise control by-laws must be obeyed. Exemptions, where required, will be applied for through the municipality and should be included in the construction contract documents. • General noise control measures will be referred to, or placed into construction contract documents. The following constraints addressing construction equipment operation and maintenance should be included in the construction contract documents: - Equipment Maintenance: Equipment shall be maintained in an operating condition that prevents unnecessary noise, including but not limited to non-defective muffling systems, properly secured components and the lubrication of moving parts; - Equipment Operation: Idling of equipment shall be restricted to the minimum necessary to perform the specified work; - Additional noise constraints may be included at the discretion of the Environmental Planner. They could include, for example, the siting of the contractor's yard. • Any initial complaint from the public will require verification that the general noise control measures agreed to are in effect, any noise concerns will be investigated, and the contractor warned of any problems. • Notwithstanding compliance with the "general noise control measures", a persistent complaint will require a contractor to comply with the MOE sound level criteria for construction equipment contained in the MOE Model Municipal Noise Control By-law. Subject to the results of field investigation, alternative noise control measures will be required, where these are reasonably available.	• There will be some minor, short term noise impacts associated with roadway reconstruction.

NO.	POTENTIAL IMPACT	MITIGATION MEASURES	NET IMPACT
3.0	**Natural Environment**		
3.1	*Potential impacts on the terrestrial environment (i.e. roadside vegetation and mature trees).*	• Construction activities are to avoid damaging existing, healthy, trees located close to the ROW wherever possible. This is to be accomplished by installing suitable tree protection fencing, extending to the 'dripline' of trees designated for protection. This tree protection zone is to remain undisturbed by excavation, storage of materials and equipment, and other construction related activities. The fencing is to remain in place through the duration of construction activities. • Existing trees scheduled for removal are to be inspected to determine if transplanting is a feasible option. • A tree planting plan is to be prepared for the corridor as part of the redesign of the roadway. The plan is to address: - Compensation for vegetation requiring removal - Planting of new street trees to improve the aesthetics of the streetscape - Restoration of disturbed boulevard landscaped areas. • All tree and shrub plantings within the corridor are to be salt-tolerant, non-invasive, low maintenance, disease/pest resistant and drought tolerant. • The planting of new trees along the corridor is to be coordinated with existing and proposed utility corridors, and light standards. • Trees to be planted near overhead utilities to be selected to conform to mature height limitations (Hydro approved species). • New tree plantings are to be installed as per Town of Oakville standards.	• There were no rare or endangered species identified in the study area. • Trees requiring removal will be replaced via a tree planting plan to be developed during detail design.
3.2	*Potential impacts to the function and structure of riparian vegetation.*	• The riparian zone within the area of construction shall be revegetated immediately following cessation of construction activities. All riparian tree and shrub plantings are to be salt-tolerant, non-	• No negative impacts are anticipated provided mitigation measures are undertaken. Following construction, creek banks shall be re-vegetated.

NO.	POTENTIAL IMPACT	MITIGATION MEASURES	NET IMPACT
		invasive, disease/pest resistant and drought tolerant.	
3.3	*Potential impacts to natural heritage features within vicinity of the study area (i.e. woodland east of the Bronte Road/ Speers Road intersection).*	• N/A	• No negative impacts are anticipated, as the reconstruction works are limited to the existing road right-of-way, well outside the woodland boundaries.
3.4	*Potential surface water impacts resulting from erosion and sedimentation.*	• The following temporary erosion and sedimentation control measures shall be implemented prior to construction to mitigate negative impacts on water quality and fish habitat within and beyond the limits of this study area: - The extent and duration that soils are exposed to the elements will be kept to a minimum. - Disturbed areas will be stabilized through seeding, sodding, mulching or use of an erosion control blanket as soon as possible. - During construction, the existing creeks will be protected by silt fence barriers and straw bale check dams. - All erosion and sedimentation control measures will remain in place until soils have been restabilized. - The erosion and sedimentation control measures are to be inspected and monitored to ensure that damage to vegetation and has been minimized. - Any substrata disturbed within the creek channel shall be replaced with like material to return the area back to its present condition. • During the detail design stage, the detailed location of bridge abutments and their relative proximity to the edge of the creek will be confirmed as well as bridge extension requirements (i.e. required excavation levels and impacts on edge of creek). Following this, silt fencing and other control measures such as steel sheet piling shall be considered. • All permits for construction within and/or nearby the Creeks shall be acquired during detail design, prior to construction. Permits should include a Fill,	• No negative impacts are anticipated. Erosion and sedimentation should not have any effect on surface water quality provided these measures are installed pre-construction, maintained during construction and removed post-construction following soil restabilization. •

NO.	POTENTIAL IMPACT	MITIGATION MEASURES	NET IMPACT
		Construction and Alteration to Waterways permit, Authorization for Works or Undertakings Affecting Fish Habitat (Department of Fisheries and Oceans), Permit under the Endangered Species Act and a Work Permit (Ministry of Natural Resources).	
3.5	*Potential impacts to fish habitat resulting from in-water works associated with bridge widenings.*	• MNR's timing restrictions shall be adhered to during construction. No in-water work shall take place between March 1 and June 30. These dates are general timing criteria for the protection of warm-water fisheries. • Any substrata disturbed within the creek channel shall be replaced with like material to return the area back to its present condition. • Minimize impact to riparian habitat. • All permits for construction within and/or nearby the Creeks shall be acquired during detail design, prior to construction. Permits may include a Fill, Construction and Alteration to Waterways permit, Authorization for Works or Undertakings Affecting Fish Habitat (Department of Fisheries and Oceans) and a Work Permit (Ministry of Natural Resources).	• No negative impacts are anticipated provided mitigation measures are undertaken.
3.6	*Soil and surface/ground water contamination through spills and leaks.*	• During construction, contamination to soils caused by spills and leaks can be avoided by ensuring that fuel storage, refueling and maintenance of construction equipment are handled properly and not allowed in or adjacent to watercourses. Contingency plans shall be prepared prior to construction for the control and emergency clean up of a spill should one occur. • No refueling of any construction equipment or vehicles shall occur within 50 metres of the watercourse.	• No significant negative impacts are anticipated.
3.7	*Potential ground water quality & quantity impacts.*	• Should construction activities encounter groundwater: - A Permit to Take Water (PTTW) will be required from the MOE if dewatering exceeds 50,000 litres per day in accordance with the MOE's *Permit to Take Water Manual* (2005). - All water from dewatering operations shall be contained and discharged in a way that ensures	• It is anticipated that during construction, there may be some local groundwater seepage into open excavations. No adverse effects on groundwater resources are anticipated providing application of identified mitigation measures.

NO.	POTENTIAL IMPACT	MITIGATION MEASURES	NET IMPACT
		that water quality and quantity objectives of the receiving storm or sanitary sewer systems are met. - Temporary drainage and pumping shall be provided as necessary to keep excavations and site free from water. Erosion and siltation controls (see Item No. 3.4) will be implemented as necessary. - Water containing suspended materials will not be pumped into waterways, sewers or drainage systems. - Sewer use By-laws for the disposal of effluent water containing solid and/or liquid contaminants will be complied with. • See *Item No. 3.4* for mitigation regarding ground water contamination through spills and leaks.	
4.0	**Cultural Heritage / Archaeological Environment**		
4.1	*Archaeological resource impacts* (Results of the Stage 1 Archaeological Assessment are provided in Appendix C).	• A Stage 2 archaeological assessment should be conducted on lands determined to have archaeological potential (see Stage 1 Archaeological Assessment Report in Appendix C). This work will be done in accordance with the Ministry of Culture's (MCL) draft *Standards and Guidelines for Consultant Archaeologists (MCL 2006)*, in order to identify any archaeological remains that may be present. • It is an offence to alter any archaeological site without MCL concurrence. No grading or other activities that may result in the destruction or disturbance of an archaeological site are permitted until notice of Ministry of Culture approval has been received. • The following MCL conditions also apply: - Should deeply buried archaeological remains be found during construction activities, the Heritage Operations Unit of the Ministry of Culture should be immediately notified; and - In the event that human remains are encountered during construction, the proponent should immediately contact both the Ontario	• No negative impacts are anticipated, providing the recommendations of the Stage 1 Archaeological Assessment are undertaken.

NO.	POTENTIAL IMPACT	MITIGATION MEASURES	NET IMPACT
		Ministry of Culture and the Registrar or Deputy Registrar of the Cemeteries Regulation Unit of the Ontario Ministry of Government Services, Consumer Protection Branch at (416) 326-8404 or toll-free at 1-800-889-9768.	
5.0	**Utilities**		
5.1	*Relocation of existing utilities to accommodate the preferred design.*	• Existing utilities requiring relocation will be finalized during the detailed design stage of the study.	• It is anticipated that a number of utilities will require relocation to accommodate the recommended roadway design. See *Section 6.1.3.*
6.0	**Soil**		
6.1	*Soil removal and contamination.*	• Based on the completed *Preliminary Geotechnical Investigation & Pavement Design Report* (see Appendix A), chemical analysis of the soil indicated high concentrations of chloride, as well as elevated electrical conductivity (EC) and sodium adsorption ratios (SAR), all possibly due to the cumulative effects of road salt use. • Use of the soil on sites to which MOE Table 3 standards apply should not be considered unless the MOE has reviewed the circumstance and supports the proposal. Soil that does not meet the MOE Table 3 standards will probably have to be managed as solid nonhazardous waste. For this reason, reuse of the excavated soil on-site should be considered to the extent possible. • The above conclusions are based on limited analytical data. The actual quality of the excavated soils will vary and additional sampling and analysis may be warranted during construction, if dissimilar materials are encountered or if aesthetic impact (staining or odors) is observed. Qualitative monitoring of the excavated soil shall be considered part of the inspection tasks during construction.	• Excavated soils to be reused on-site to the extent possible. • Further analysis of soils to be managed as waste will be required in order to properly classify the soil in accordance with current legislation (this would include a TCLP leach analysis as set out in Ontario Regulation 558/00) and for acceptance at a disposal site.

Table 7.2 - Operational (Post-construction) Impacts and Mitigation

OPERATIONAL IMPACTS			
NO.	POTENTIAL IMPACT	MITIGATION MEASURES	NET IMPACT
7.0	**Socio-economic Environment**		
7.1	*Future noise impacts resulting from increased traffic volumes.*	• Mitigation measures not required to satisfy MTO/MOE protocol.	• The widening of Speers Road between Bronte Road and Kerr Street will produce insignificant (0.7 to 0.9 dBA) noise impacts.
8.0	**Natural Environment**		
8.1	*Potential for increase in stormwater quantity impacting watercourses due to widened road surface.*	• Preliminary review of the as-constructed drawings indicate that there is a well layed out major/minor storm sewer system under the entire road length. No mitigation is required due to non-existent to minor increases in hydrological impacts resulting from the proposed corridor.	• The hydrological impacts of this project are: - Negligible to minor in the road section from Bronte Road to Third Line in which an average width of 8 m of ditches on either side will be eliminated. - Non-existent in the road section from Third Line to Kerr Street, where there will be no net change in imperviousness as the land use is changing from industrial to road, and the new road area will be utilizing existing impervious areas consisting of parking lots or sidewalks.
8.2	*Potential for decrease in stormwater quality impacting watercourses due to increased runoff from widened road surface.*	• Underground infiltration measures or hydrodynamic quality control systems will be evaluated for feasibility in detail design. • The option of using pervious surfaces for sidewalks and bicycle lanes (as supported by Conservation Halton) will be investigated during detail design as a measure to mitigate degradation in stormwater quality.	• The impacts of road widening can be addressed by Regional SWM measures, or by underground infiltration measures.
8.3	*Potential capacity deficiencies at the McCraney and Fourteen Mile Creek Crossings*	• Review capacity in detail design and provide adequately sized culvert crossings.	• Potential improvement of culvert crossing.

8.0 ADDITIONAL WORK & MONITORING

Additional works to be completed during the detail design phase of the project, prior to construction, include but are not limited to, the following:

- Develop streetscape plan for Speers Road in accordance with *Section 7.1.7* of this report.
- Undertake a Stage 2 Archaeological Assessment in accordance with the recommendations of the Stage 1 Assessment.
- Develop a tree planting plan to address:
  - Compensation for vegetation requiring removal
  - Planting of new street trees to improve the aesthetics of the streetscape
  - Restoration of disturbed boulevard landscaped areas.
- Complete detailed property requirements and begin negotiations with affected property owners to acquire property to implement the preferred design.
- Adjust preferred design where possible to minimize property impacts.
- Further investigate stormwater management opportunities, specifically pertaining to those outlined in *Section 6.1.2* of this report.
- Develop a construction staging and traffic management plan to maintain access to and from the existing driveways along Speers Road and the existing side streets.
- Determine detailed locations of all buried utilities and gas lines.
- Review the condition and capacity of the sanitary works within the limits of the study area to determine if any replacements or upgrades are necessary.
- Should there be a need to enter into the woodland east of the Bronte Road/Speers Road intersection (to be identified during detail design), complete an assessment of the woodland to determine potential impacts of the reconstruction works and associated mitigation measures.
- Complete detailed habitat mapping for each creek crossing location. Mapping to include:
  - longitudinal slopes of the creek;
  - bankfull channel width measurements;
  - low flow channel width measurements; and
  - locations of all riffles, runs, pools, undercut banks and any other instream and riparian structure/cover that may be present.
- Determine feasibility to create low flow channels through each of the bridge crossings to improve fish passage during low flow conditions.
- Consider feasibility of replacing Gabion Baskets along the north side of the Fourteen Mile Creek crossing and southeast side of the bridge with a more environmentally friendly measure (e.g. vegetated geogrid).
- Secure the following approvals:
  - Fill permit under the *Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation* (Ontario Regulation 162/06)
  - Work permit under the *Lakes and Rivers Improvement Act*
  - Authorization under Section 35(2) of the *Fisheries Act* to permit in-water work.
  - Obtain Certificate of Approval from the Ministry of Environment for storm sewer works.
  - A Permit to Take Water will be required from the MOE if dewatering exceeds 50,000 litres per day.
  - A Permit under the *Endangered Species Act* will be required by the Ministry of Natural Resources, particularly regarding any in-water work or the transport of

groundwater where Redside Dace (Endangered status) are present.

Mitigation measures identified in this report shall be written into the contract specifications. During construction, the contract administrator will ensure that full-time monitoring/inspection of the project works is undertaken to ensure that all environmental commitments identified in the Environmental Study Report are adhered to by the contract team. After a period of one year following completion of construction (i.e. post construction), a final inspection will be undertaken to ensure the effectiveness of the identified mitigation measures.

9.0 PUBLIC AND AGENCY CONSULTATION

Consultation with the public, external agencies and other stakeholders was conducted in accordance with the requirements of the Schedule "C" Class EA process. Throughout the study, stakeholders were contacted via newspaper inserts, mail delivery and handout notices of study commencement, public information centre (PIC) and study completion. Local residents, businesses, property owners, external agencies and interest groups were contacted. A detailed summary of Technical Agencies notified (excluding local businesses and residents) is provided in **Table 9.1**.

Table 9.1 – Technical Agencies Contacted During the Study

Provincial Ministries/Agencies	Municipal Authorities	Utilities	Other Stakeholders
• Ministry of the Environment	• Regional Municipality of Halton Planning and Public Works	• Bell Canada	• Halton E.E.A.C.
• Ministry of Culture	• Corporation of the Town of Oakville Roads & Works Operations Department	• Union Gas	• Go Transit
• Ministry of Natural Resources	• Corporation of the Town of Oakville Planning Services Department	• Cogeco Cable	
• Ministry of Transportation	• Halton Region Emergency Medical Services	• Blink Communications	
• Halton Region Conservation Authority	• Oakville Transit	• Oakville Hydro Corporation	
• Ministry of Aboriginal Affairs	• Oakville Fire Department		
• Department of Indian and Northern Affairs	• Halton Catholic District School Board		
• Ministry of the Attorney General	• Halton District School Board		

9.1 Consultation with the Public and Review Agencies

9.1.1 Notice of Study Commencement

At the outset of the study, a _Notice of Study Commencement_ was placed in the _Oakville Beaver_ on March 19th and 26th, 2008. The newspaper Notice of Study Commencement described the project, outlined the Municipal Class EA process, requested public involvement and identified contact persons. A _Notice of Study Commencement_ letter was also mailed out to local residents and businesses, external agencies and interest groups on March 17, 2008. All Notice of Study Commencement correspondence is provided in **Appendix I-1.**

9.1.2 Technical Agencies Committee Meeting No. 1

A Technical Agencies Committee (TAC) was created at the beginning of the study to provide technical input to the Project Team and assist in the development and evaluation of alternative solutions/designs. The first Technical Agencies Committee (TAC) meeting for the study was held on April 17, 2008 and included representatives from:

- Blink Communications
- Oakville Planning

- Conservation Halton
- Oakville Traffic
- Oakville Transit
- Oakville Sustainable Transportation
- Union Gas

The purpose of the meeting was to introduce the study and outline the TAC Committee's role and to expand on the Project Team's knowledge of key problem areas, constraints, and/or any special considerations that should be addressed as part of the study. Input received from the TAC at this meeting is addressed in **Table 9.2** in *Section 9.2* below. All input received from TAC meeting No. 1 was considered in the identification and evaluation of alternative solutions.

A copy of the TAC meeting No. 1 notification material and meeting agenda is provided in **Appendix I-2**.

9.1.3 Stakeholders Group Meeting No. 1

Since the various needs of individuals and affected parties can often be successfully addressed through smaller group meetings, a Stakeholders Group was also established at the outset of the study to obtain a sense of local community values and sensitivities to be incorporated into the study. The first Stakeholders Group meeting for the study was held on April 17, 2008 and included representatives from:

- West River Residents Association
- Oakvillegreen Conservation Association
- GreenTrans
- Kerr Village BIA
- Canadian Automobile Association

Similar to the first TAC meeting, the purpose of the meeting was to introduce the study and outline the Stakeholders Group's role and to expand on the Project Team's knowledge of key problem areas, constraints, and/or any special considerations that should be addressed as part of the study. Input received from the Stakeholders Group at this meeting is addressed in **Table 9.2** in Section 9.2 below. All input received from Stakeholders Group Meeting No. 1 was considered in the identification and evaluation of alternative solutions.

A copy of the Stakeholders Group meeting No. 1 notification material and meeting agenda is provided in **Appendix I-3.**

9.1.4 Public Information Centre No. 1

A Public Information Centre (PIC) was held on May 1, 2008 to provide residents, local business owners, property owners, external agencies and interest groups an opportunity to meet the Project Team, review the study scope and discuss issues related to the study including alternative solutions, environmental considerations and preliminary evaluation criteria.

A summary of the major issues to come out of the PIC is provided below and further addressed in **Table 9.2** in Section 9.2.

- General support for adding centre turn lane to Speers Road to increase traffic capacity.
- Concern over property impact, particularly regarding adjacent parking spaces.
- Intersection improvements via additional lanes.
- Improvements to pedestrian and bicycling accommodations.

- Streetscaping improvements.

All comments and concerns submitted at the PIC were reviewed for consideration in the identification and evaluation of alternative solutions. A detailed summary of PIC No. 1 containing timing, notification, attendance, materials presented, comments received and major issues raised is provided as per the Public Information Centre No.1 Summary Report in **Appendix I-4.**

9.1.5 Technical Agencies Committee Meeting No. 2

A second TAC meeting was held on December 11, 2008. Similar to the first TAC meeting, TAC meeting No. 2 was set up as an informal workshop in which participants were encouraged to comment on the study problem statement; alternatives developed to address the problem statement; the Project Team's preliminary recommended design; evaluation process undertaken and the next steps in the study. The second TAC meeting included representatives from:

- Bell
- Oakville Planning
- Conservation Halton
- Oakville Traffic
- Oakville Transit
- Oakville Public Works

Input received from the TAC at this meeting is addressed in **Table 9.2** in Section 9.2 below. Study information received at TAC Meeting No. 2 was considered in the identification and evaluation of the preferred design for the subject portion of Speers Road.

A copy of the TAC meeting No. 2 notification material and meeting agenda is provided in **Appendix I-5.**

9.1.6 Stakeholders Group Meeting No. 2

The second Stakeholders Group meeting was held on December 11, 2008 and included representatives from:

- Mancor Development
- West River Residents Association
- GreenTrans
- Kerr Village BIA
- West Kerr Village Residents Association
- CMV

At the meeting, members of the Committee were encouraged to comment on the study problem statement; alternatives developed to address the problem statement; the Project Team's preliminary recommended design; evaluation process undertaken and the next steps in the study. Input received from the Stakeholders Group at this meeting is addressed in **Table 9.2** in Section 9.2 below. All input received from Stakeholders Group Meeting No. 2 was considered in the identification and evaluation of the preferred design for the subject portion of Speers Road.

A copy of the Stakeholders Group Meeting No. 2 notification material and meeting agenda is provided in **Appendix I-6.**

9.1.7 Public Information Centre No. 2

The second PIC was held on December 17, 2008 to provide residents, local business owners, property owners, external agencies and interest groups an opportunity to an opportunity to review and discuss the alternatives considered to address the identified deficiencies, and the Project Team's recommended design concept and evaluation process undertaken.

A summary of the major issues to come out of the PIC is provided below and further addressed in **Table 9.2** in Section 9.2.

- Of the comments received, 4 were in support of the recommended design and 4 were against. Those who were not in support of the recommended design were generally concerned over negative impacts to adjacent businesses (parking, property requirements, operational restrictions etc.).
- Take advantage of development on the north side to reduce property impacts on south side.
- Minimize impacts to existing trees (e.g. large Oak at 420 Augustine).
- Concern over property impacts to homes near Augustine.
- Against dedicated westbound left turn lane at Augustine (residents fought to reduce traffic flow on Augustine).
- Support for measures to reduce excess runoff (e.g. permeable sidewalks).
- Existing road elevation causing drainage problems.
- Recommended design must accommodate large tractor trailors at 2060 and 579 Speers Road.
- Current plans show incorrect existing asphalt at property line at 420 Augustine.

All comments and concerns submitted at the PIC were reviewed for consideration in the identification and evaluation of the preferred design for the subject portion of Speers Road. A detailed summary of the PIC containing timing, notification, attendance, materials presented, comments received and major issues raised is provided as per the Public Information Centre No.2 Summary Report in **Appendix I-7.**

9.1.8 Notice of Study Completion

A Notice of Study Completion will be placed in the *Oakville Beaver*. The newspaper Notice of Study Completion identified main features of the preferred design, the Class EA process undertaken (including the "Part II Order" request process), and details on the Environmental Study Report. Concurrent with the Notice of Study Completion, external agencies and other stakeholders were sent a final contact letter indicating that the ESR is available for review. The Notice of Study Completion is provided in **Appendix I-8.**

9.2 Stakeholder Comments Received and their Consideration in the Study

All comments received from project stakeholders were taken into account during the study. Comments and concerns received are summarized in **Table 9.2** below. Actual correspondence received from Technical Agencies is included in **Appendix I-9**.

Table 9.2 - Summary of Stakeholder Comments Received and their Consideration in the Study

Contact Name	Comment Summary	Date Received	Consideration of Comments
Union Gas	• We would like to be communicated with during all stages of this project. • There is a significant amount of large diameter gas main within the scope of this project that I expect to be in conflict with the eventual road design.	March 20, 2008 (Faxed Correspondence)	• Union Gas has been kept informed of project activities throughout the study. • The exact location of buried gas will be determined during detail design. It is anticipated that with the proposed road widening within the study area, a significant amount of utilities will require relocation.
	• Reconstruction would require extensive relocation of gas mains. • Corridor contains both standard and non-standard pipe locations. • Union Gas requires design plans 1 year ahead of construction. • Union Gas to provide Delcan with As-Built drawings.	April 17, 2008 (Technical Agency Committee Meeting #1)	• Comments noted. To be addressed in detail design. • Comments noted. To be addressed during detail design. • Design plans will be provided during early stage of detail design. • As-built drawings have not been received. Union Gas to be contacted during detail design.
Cogeco Cable	• Cogeco has cable in the area.	March 2008 (Faxed Correspondence)	• It is anticipated that a number of utilities will require relocation to accommodate the preferred roadway design. Cogeco Cable will be contacted regarding cable locates during detail design.
Oakville Fire Department	• Not interested in participating at this time but would like to kept informed.	March 26, 2008 (Faxed Correspondence)	• Comments noted.
Halton Region Emergency Medical Services	• We would like to be kept informed of any work that will limit our ability to respond to the addresses or streets located on or off the roadway corridor (i.e. lane restrictions, lane closures, detours, etc.).	March 27, 2008 (Faxed Correspondence)	• Halton Region EMS will be contacted as per *Item 1.2* in Table 7.1.
Indian and Northern Affairs Canada - Specific Claims	• No claims have been submitted by a First Nation in the area of interest. • There are First Nations in the general vicinity of your area of interest, Mississaugas of the New Credit First Nation and Six Nations of the Grand River.	March 31, 2008 (Faxed Correspondence)	• Comments noted.
Indian and Northern Affairs Canada – Comprehensive Claims Branch	• There are no comprehensive claims in the Town of Oakville, Ontario. • INAC – Comprehensive Claims Branch does not have any specific interest in the project and would request to be taken off of the mailing list.	March 31, 2008 (Mailed Correspondence)	• Comments noted.
Halton District	• As a school board we may need	March 31, 2008	• Halton District School Board will be

Contact Name	Comment Summary	Date Received	Consideration of Comments
School Board	to know about any changes /construction for the school bus transportation as we have 4 schools located just south of Speers Road between bronte Road and Kerr Street (Gladys Spears, Brookdale, Pinegrove and Oakwood.	(Faxed Correspondence)	notified of construction – related activities and schedule to minimize/avoid delays.
Oakville Planning	• 3 high rise towers planned for northeast portion of study area. • Canadian Tire store will be leaving. • Cansult/Aecom have completed a Study on the capability of the transportation system to accommodate short and long term growth and associated travel demands, and recommended an appropriate development scenario and infrastructure implementation strategy. Study was completed in April 2008.	April 17, 2008 (Technical Agency Committee Meeting #1)	• Oakville Planning has been consulted throughout the study. The identified developments have been considered in the development of the preferred design.
Conservation Halton	• There are 2 creek crossings in the study area, McCraney Creek and Fourteen Mile Creek. • Ensure proper mitigation against flooding and erosion. • Based on the Townwide Flood Study, Fourteen Mile Creek is an identified as a Medium Priority area and McCraney Creek is a High Priority area. • Both creeks are home to Redside Dace. Level 2 agreements necessary. • Wetland and woodlot located north of Speers Road at the western portion of the study area (not anticipated to be impacted by reconstruction).	April 17, 2008 (Technical Agency Committee Meeting #1)	• Comments addressed in Tables 7.1 and 7.2.
	• Extent of stormwater runoff impacts?	December 11, 2008 (Technical Agency Committee Meeting #2)	• Stormwater runoff impacts would be negligible to minor due to the amount of existing impervious surface area. See Table 7.2 for more information on Stormwater management.
	• Conservation Halton provided comments on the draft Speers Road ESR, particularly as they pertained to the following: – Natural Heritage – DFO Level II Agreement/Fish Habitat – Natural Hazards – Stormwater Management/Drainage – Mitigation and Monitoring	June 25, 2009 (Mailed Correspondence)	• Comments were reviewed and incorporated into the ESR.
Oakville Traffic	• How will the traffic modeling/forecasting be	April 17, 2008 (Technical Agency	• Traffic modeling was undertaken as per the growth rate provided by the Town to project 2008 traffic to

Contact Name	Comment Summary	Date Received	Consideration of Comments
	undertaken?	Committee Meeting #1)	2021.
	• Is a dual left turn lane at Dorval Drive necessary, given the shortened length of the second left turn lane. • Widening to 5 lanes would be a challenge to pedestrians. Consideration should be given to intersection pedestrian signals (IPS).	December 11, 2008 (Technical Agency Committee Meeting #2)	• Yes. This recommendation is also consistent with the recommendations from the Dorval Drive Class EA Study undertaken by the Region of Halton. • IPS to be installed where warranted when transit stop improvements are identified. This would be undertaken at the Detail Design stage.
Oakville Transit	• Oakville Transit operates 8 routes through the study area: - from the east, to Kerr Street - Routes 10, 15, 16, 17, 18, 28, 110 and 180 - from Kerr Street to Dorval - Routes 16, 18, 28 - from Dorval to Third Line - Route 16 - from Third Line to Bronte Road - Route 10 • The schedules for each of these routes are available on our website, but generally: - Route 10 = rush hour only, Monday to Friday - Route 15 = all day service, Monday to Saturday - Route 16 = all day service, Monday to Saturday - Route 17 = all day service, Monday to Saturday - Route 18 = rush hour only, Monday to Friday - Route 28 = all day service, Monday to Sunday - Route 110 = rush hour only, Monday to Friday - Route 180 = rush hour only, Monday to Friday • During the late evenings, and on Sundays, Oakville Transit operates Zone Express service. This is a call on demand service, and does not follow a fixed route. We operate in 4 zones in the Town - the South West (the study area) would be covered by Zone 3. Additional information on the Zone Service is also available on our website. • We have experienced severe delays in the pm rush hour, traveling west along Speers, and of course would appreciate any improvements that could be made in the corridor.	April 17, 2008 (Technical Agency Committee Meeting #1) and April 18, 2008 (Email Correspondence)	• Oakville Transit has been consulted throughout the study. Oakville Transit's issues have been adequately addressed by the study recommendations.

Contact Name	Comment Summary	Date Received	Consideration of Comments
	• Accessibility For Ontarians with Disabilities Act (AODA) requires all of our services to be accessible, and all access to our services to be accessible.		
	• Transit queue jump lanes are not currently warranted. • Oakville Transit supports the accommodation of pedestrians. • Important to protect/plan for future transit accommodations.	December 11, 2008 (Technical Agency Committee Meeting #2)	• Oakville Transit has been consulted throughout the study. Oakville Transit's issues have been addressed in the preferred design.
Oakville Sustainable Transportation	• How will the study incorporate cycling and pedestrian facilities and how will these facilities/infrastructure relate to the overall Active Transportation Master Plan?	March 25, 2008 (Faxed Correspondence)	• Cycling and pedestrian will be accommodated via 1.5 metre on-road bike lanes and 1.5 metre sidewalks.
	• Provision of on-road/off-road bikeways to consider driveway access impacts. • Consider various "soft" improvements to facilitate sustainable transportation in the area (e.g. bike racks on transit routes)	April 17, 2008 (Technical Agency Committee Meeting #1)	• Off road bicycle/multi-use paths would not provide adequate safety due to number of driveways. • To be considered as part of the Town's current Active Transportation Master Plan.
Blink Communications	• Blink Communication notes the following: - Pole structure from Morden to Bronte between sidewalk and curb. - Brand new pole line from Fourth Line to Third Line. Expensive to remove. - There is duct and manhole from Morden to eastern portion of study limits and large vaults in sidewalk. - Multiple road crossings throughout study limits. - Blink Communications, Cogeco and Bell have aerial on wood poles.	April 17, 2008 (Technical Agency Committee Meeting #1)	• It is anticipated that a number of utilities will require relocation to accommodate the preferred roadway design. Blink Communication will be contacted regarding potential relocation during detail design.
West River Residents Association	• Incorporate impacts of Empire Development (high rise towers) at northeast corner of Kerr Street/Speers, the Kerr Street Revitalization Strategy and zoning and development applications and into plans.	April 17, 2008 (Stakeholders Group Meeting #1)	• All development proposals and planning documents pertaining to the study were reviewed for their potential transportation related impacts on the roadway corridor.
	• Tree planting along corridor to improve aesthetics.		• See *Item 3.1* in Table 7.1.
Oakvillegreen Conservation Association (OCA)	• The Speers Road study area is a prime area for intensification and for providing "live-work" communities. • Rising energy costs illustrate the need for accommodating alternative modes of transportation (walking, cycling,	April 17, 2008 (Stakeholders Group Meeting #1)	• Comments noted. • The goal of the Class EA study for the subject portion of Speers Road was to better accommodate all roadway users (including vehicles,

Contact Name	Comment Summary	Date Received	Consideration of Comments
	• There is potential for 3500 new residences to be developed at the Oaktown Plaza site.		developed for in detail design by a landscape architect. • Oakville Planning has been consulted throughout the study regarding proposed developments along the Speers Road corridor. Impacts of the proposed development have been considered in the study recommendations.
	• Additional bicycle safety education programs are necessary. • Study should include Cornwall and Trafalgar corridor as well.	December 11, 2008 (Stakeholders Group Meeting #2)	• Comments to be considered as part of the Town's current Active Transportation Master Plan study.
Canadian Automobile Association	• Supports widening of the roadway to ensure safety for all road users. • Would like "Intelligent Transportation System" elements incorporated into the roadway design.	April 17, 2008 (Stakeholders Group Meeting #1)	• Comments addressed in the study recommendations. • Intelligent Transportation System components will be incorporated into the roadway design as required.
Ministry of Transportation	• The proposed works are outside the Ministry's permit control area. We have no concerns regarding this project.	April 22, 2008 (Email Correspondence)	• Comments noted.
Ministry of the Environment	• The following concerns have been identified with the undertaking: - Ecosystem protection and restoration - Surface water - Groundwater - Dust & noise - Contaminated soils - Transmission lines - Mitigation and monitoring - Planning and Policy - Class EA process - First Nation consultation	May 12, 2008 (Mailed Correspondence)	• Concerns have been addressed, as required. The MOE will receive a copy of the draft and final ESR for further review.
Oakville Planning	• With the exception of the Kerr Street area, there are no projected changes in land use along the corridor.	December 11, 2008 (Technical Agency Committee Meeting #2)	• Comments noted. Oakville Planning has been consulted throughout the study regarding proposed developments and potential changes in land use along the Speers Road corridor.
West Kerr Village Residents Association	• Question the safety of putting cyclists on the road. Support multi-use paths instead. • Support for 4 traffic lanes instead of 5. Too much emphasis on vehicular traffic.	December 11, 2008 (Stakeholders Group Meeting #2)	• Off road bicycle/multi-use paths were considered in the preliminary study alternatives but would not provide adequate safety due to the number of intersecting driveways. • 4 through and a centre turn lane (and other auxiliary lanes) are required to satisfy the future travel demands. The 5th lane (centre two way left turn lane) is also required to improve the safety on this roadway.

Contact Name	Comment Summary	Date Received	Consideration of Comments
	• There would be significant parking impacts to the Omega Restaurant. • Suggest the use of permeable sidewalks to reduce runoff impacts.		• See *Item No. 2.2* in Table 7.1 for details pertaining to property requirements. • Infiltration measures such as pervious pavement near the curb & gutter, sidewalks or underground infiltration galleries will be considered during detail design, in light of the recommendations of the completed Geotechnical Report.
GO Transit	• GO Transit is planning a station expansion at the Bronte GO Station immediately south of the existing station within the next 1-2 years and we would like to optimize station access opportunities by all modes. Therefore, we would appreciate the opportunity to coordinate our station design with the detail design work for pedestrian and cycle facilities along Speers Rd. • We have not commenced design work on this station expansion, but any provisions for flexibility for protecting for a future signalized intersection for the station should be considered.	January 23, 2009 (Email Correspondence)	• Coordination with GO Transit will be undertaken once their station design work is finalized. This would be undertaken at the Detail Design stage of the study. • Comment noted.
Mancor Canada Inc.	• We own the 28 acre parcel at the northwest corner of Speers and Bronte excluding the gas station. We are currently in the early planning stages but we expect to be developing the approximately 20 extra acres on the site that we do not use. At this point we would like to see additional lanes on Speers at the west end to better accommodate the existing traffic and to also be able to handle the additional traffic from the new construction east of us on Speers and from our future development.	May 2, 2008 (Email Correspondence)	• Comments have been addressed in the study recommendations via additional lanes.
Area Employee	• I have worked on Speers Rd for the past 6 years. The main thing is that traffic speeds along the road and turning across the flow of traffic is extremely dangerous. We witness numerous accidents each year from our office window. One thing that is desperately needed is a turning lane to be placed in the centre of the road.		• Comments have been addressed in the study recommendations via a centre turn lane.
Property Owner	• We own the property at 1090-1098 Speers Road in Oakville. Please keep us informed as to how your study and any subsequent town planning may impact our property.		• Property owner will be contacted directly by the Town of Oakville during the detail design phase of the project.

Contact Name	Comment Summary	Date Received	Consideration of Comments
PIC No. 1 Comment Summary	• General support for adding centre turn lane to Speers Road to increase traffic capacity.	May 1, 2008 (Public Information Centre No. 1)	• Comments have been addressed in the study recommendations via a centre turn lane.
PIC No. 1 Comment Summary	• Concern over property impact, particularly regarding adjacent parking spaces.	May 1, 2008 (Public Information Centre No. 1)	• Impacted property owners will be contacted directly by the Town of Oakville during the detail design phase of the project. Every effort will be made during the detail design stage to minimize property impact.
PIC No. 1 Comment Summary	• Intersection improvements via additional lanes.	May 1, 2008 (Public Information Centre No. 1)	• Comments have been addressed in the study recommendations via additional lanes at key intersections.
PIC No. 1 Comment Summary	• Improvements to pedestrian and bicycling accommodations.	May 1, 2008 (Public Information Centre No. 1)	• Comments have been addressed in the study recommendations via 1.5 metre sidewalks and 1.5 metre on-road bike lanes.
PIC No. 1 Comment Summary	• Streetscaping improvements.	May 1, 2008 (Public Information Centre No. 1)	• Comments will be addressed in the Street Tree Planting Plan to be developed in detail design.
Indian and Northern Affairs Canada – Litigation Management and Resolution Branch	• Our inventory does not include active litigation in the vicinity of this property.	June 16, 2008 (Mailed Correspondence)	• Comments noted.
PIC No. 2 Comment Summary	• Of the comments received, 4 were in support of the recommended design and 4 were against. Those who were not in support of the recommended design were generally concerned over negative impacts to adjacent businesses (parking, property requirements, operational restrictions etc.).	December 17, 2008 (Public Information Centre No. 2)	• Comments noted. Impacted property owners will be contacted directly by the Town of Oakville during the detail design phase of the project. Every effort will be made during the detail design stage to minimize property impact.
PIC No. 2 Comment Summary	• Take advantage of development on the north side to reduce property impacts on south side.	December 17, 2008 (Public Information Centre No. 2)	• Comments have been addressed in the study recommendations. The alignment in the eastern portion of the study area has been shifted to the north to minimize impacts.
PIC No. 2 Comment Summary	• Minimize impacts to existing trees (e.g. large Oak at 420 St. Augustine).	December 17, 2008 (Public Information Centre No. 2)	• See *Item 3.1* in Table 7.1.
PIC No. 2 Comment Summary	• Concern over property impacts to homes near St. Augustine.	December 17, 2008 (Public Information Centre No. 2)	• See *Item 2.2* in Table 7.1.
PIC No. 2 Comment Summary	• Against dedicated westbound left turn lane at St. Augustine (residents fought to reduce traffic flow on St. Augustine).	December 17, 2008 (Public Information Centre No. 2)	• Comments have been addressed. Dedicated westbound lane has since been removed from the preferred design.
PIC No. 2 Comment Summary	• Support for measures to reduce excess runoff (e.g. permeable sidewalks).	December 17, 2008 (Public Information Centre No. 2)	• Infiltration measures such as pervious pavement near the curb & gutter, sidewalks or underground infiltration galleries will be considered during detail design, in light of the recommendations of the

Contact Name	Comment Summary	Date Received	Consideration of Comments
	light rail transit, etc.) within the study area. • The streetscape could be improved through tree growth by providing enough room for large, mature trees. • Four travel lanes plus the provision of alternative modes of travel may be enough to sustain future traffic levels.		pedestrians, cyclists, and transit users) while realizing various constraints along the corridor. • Comments will be addressed in the Street Tree Planting Plan to be developed in detail design. • Yes. The recommended lane configuration is enough to sustain future (2021) traffic levels.
GreenTrans	• Support increased accommodation of transit (including LRT), cycling and pedestrians. • Question the impact of the project on trees along the right-of-way. • Accesses for pedestrians needed at the north and south of the study area for pedestrians in residential areas. • Delay the Speers Road Class EA Study until completion of the Infill Study and Employment Lands Study. • Provision of space and proper soils to allow adequate tree growth.	April 17, 2008 (Stakeholders Group Meeting #1)	• The need for improved public transit facilities and pedestrian and cyclist accommodations was addressed as part of the study recommendations. • See *Item 3.1* in Table 7.1. • Providing pedestrian access to the north and south portions of the study area to provide cut through access to residential areas is beyond the scope of this Study. This comment was forwarded to the Town of Oakville's Active Transportation Master Plan Study currently underway, where it will be better addressed. • Oakville Planning has been consulted throughout the study regarding proposed developments along the Speers Road corridor. Road design components should not preclude the objectives of the noted studies from being met. • Comments will be addressed in the Street Tree Planting Plan, to be developed in detail design.
	• Speers Road could be a prime area for redevelopment and infill and is well located for higher density residential and employment lands. Speers Road, planned in isolation, should not dictate the Official Plan.	April 18, 2008 (Email Correspondence)	• Oakville Planning has been consulted throughout the study regarding proposed developments along the Speers Road corridor. Policies of the Official Plan were incorporated into the study recommendations.
Kerr Village BIA	• Consider moving the study area boundary easterly to incorporate development east of Kerr Street. • The Speers Road/Kerr Street intersection will form part of the gateway to Kerr Village. Would like the design to support this. • Rebuild existing infrastructure to accommodate intensification in area and to ensure sustainable capacity. • Suggested the importance of streetscaping into the design.	April 17, 2008 (Stakeholders Group Meeting #1)	• Development east of Kerr Street was taken into consideration regarding potential transportation related impacts to the roadway corridor. However, the eastern boundary was not extended. • The study recommendations should not preclude the objectives of the Kerr Gateway from being met. • The study recommendations were developed in consideration of future planning developments in consultation with Oakville Planning.. • A streetscape plan the subject portion of Speers Road will be

Contact Name	Comment Summary	Date Received	Consideration of Comments
			completed Geotechnical Report.
PIC No. 2 Comment Summary	• Existing road elevation causing drainage problems.	December 17, 2008 (Public Information Centre No. 2)	• The reconstruction of Speers Road will include grading modifications and modified roadway elevations to improve current stormwater drainage deficiencies.
PIC No. 2 Comment Summary	• Recommended design must accommodate large tractor trailors at 2060 and 579 Speers Road.	December 17, 2008 (Public Information Centre No. 2)	• Comment noted. Further investigation will be undertaken during detail design.
PIC No. 2 Comment Summary	• Current plans show incorrect existing asphalt at property line at 420 St. Augustine.	December 17, 2008 (Public Information Centre No. 2)	• Comments noted. To be corrected in detail design.

10.0 SUBMISSION OF ENVIRONMENTAL STUDY REPORT

The Environmental Study Report will be placed on the public record for a 30-day review period. During this time, stakeholders will be encouraged to review outstanding issues with the study team.

10.1 Resolution of Outstanding Issues

In the event that there are major issues which cannot be resolved, stakeholders may request the Minister of the Environment by order to require a proponent to comply with Part II of the EA Act before proceeding with a proposed undertaking which has been subject to Class EA requirements. This is called a "Part II Order". The Minister will make one of the following decisions:

1. Deny the request (with or without conditions);
2. Refer the matter to mediation; or
3. Require the proponent to comply with Part II of the EA Act, ordering a full Environmental Assessment.

All stakeholders are urged to try to resolve issues since it is preferable for them to be resolved by the municipality in which a project is located, rather than at the provincial level. To request a Part II Order, a person must send a written request to:

Minister of the Environment
135 St. Clair Avenue West, 12th Floor
Toronto, ON M4V 1P5

The request must address the following with respect to the identified concerns:

- Environmental Impacts and specific concerns;
- Adequacy of the planning and public consultation process;
- Involvement of the person in the planning process; and
- Details of discussions held between the person and the proponent.

Appendix A

Terraprobe

Consulting Geotechnical & Environmental Engineering
Construction Materials Engineering, Inspection & Testing

PRELIMINARY GEOTECHNICAL INVESTIGATION AND PAVEMENT DESIGN REPORT
SPEERS ROAD
TOWN OF OAKVILLE, ONTARIO

Prepared For: **Delcan Corporation**
4056 Dorchester Road,
Niagara Falls, Ontario
L2E 6M9

Attention: Mr. Andrew McGregor

File No.: 7-08-3098
January 7, 2009

Distribution:
4 copies - Delcan Corporation
2 copies - Terraprobe Limited, Stoney Creek

TABLE OF CONTENTS

1.0 INTRODUCTION

This report presents the results of a preliminary geotechnical and pavement investigation carried out on the section of Speers Road between Bronte Road (Highway 25) and Kerr Street in the Town of Oakville, Ontario. The location of the section of Speers Road under consideration is shown on the Site Location Plan, Figure 1 and comprises some 6 km.

The work has been carried out in conjunction with a Class Environmental Assessment study. It is proposed to improve the Speers Road corridor to meet the needs of the Town to the year 2021. It is expected that the improvements may include pavement widening to provide a continuous centre turning lane, HOV lanes, intersection improvements and the like, replacement or modification of existing structures as well as other geometric improvements where needed.

A proposal and cost estimate to complete the investigation were provided in our letter of January 14, 2008. The work plan included investigating and reporting on the subsurface soil and ground water conditions in some twenty boreholes drilled at the site. A discussion of the geotechnical engineering aspects to be considered in the preliminary design of the proposed road improvements has been provided based on the results of the boreholes.

2.0 PROCEDURE

The subsurface investigation was completed on October 16, 17, and 18, 2008 during which time twenty boreholes were explored to depths of 1.5 to 6.1 m below the existing road surface. The approximate locations of the boreholes are shown on the Borehole Location Plans, Figures 2 to 7. The results of the boreholes are shown on the Log of Borehole sheets following the text of this report.

The boreholes were drilled using a truck mounted power auger drill rig supplied and operated by a specialist drilling contractor. The boreholes were advanced using nominal 100 mm outside diameter continuous flight augers. Standard Penetration testing and sampling were carried out at 0.76 m regular intervals of depth in each borehole using 50 mm outside diameter split spoon sampling equipment. Ground water observations were made in the boreholes during drilling. After the drilling, sampling, and logging was completed, the boreholes were backfilled with auger cuttings, commercial grade pre-bagged sand and /or bentonite sealant. The pavement surface at the borehole locations was re-instated using a commercial grade cold mix asphalt product.

Members of our engineering staff located the boreholes, arranged for underground utility clearances; and logged the boreholes. The boreholes were located in the field with respect to the existing road alignments and topographical features at approximate intervals of 200m.

All of the samples recovered in the course of the investigation were brought to our Stoney Creek laboratory for further examination and water content determinations. In addition, six soil samples were submitted to AGAT laboratories for bulk chemistry analyses to identify potential constraints on the management of excess soil that would result from the proposed construction.

3.0 PAVEMENT CONDITIONS

The following is a brief description of the condition of the existing pavement as observed at the time of our field reconnaissance. In the following discussion, Station 0 + 000 m has been arbitrarily assumed to coincide with the centerline of Bronte Road and Speers Road. The roadway can be divided into a number of sections based on the apparent age and condition of the pavement as outlined below.

Section	**General Conditions**
0 + 000 m to 1 + 200 m *Fair Condition*	0 +000 to about 0+500 was a two lane section and the remainder was a three lane section which included an apparent newer lane constructed on the north side. This section of pavement comprised a rural type cross section with gravel shoulders and with storm drainage by ditches. The pavement appeared to be in relatively fair condition. Flushing was observed in some areas as well as intermittent longitudinal and transverse cracking.
1 + 200 m to 2 + 100 m *Fair to Good Condition*	This section of roadway pavement comprises four lanes with an urban cross section. This section of pavement is generally in fair to good condition. Moderate longitudinal cracking was observed along paving joints, and frequent slight to moderate transverse cracking was observed. Crack sealing and patching has been carried out to maintain the serviceability of the pavement.
2 + 100 m to 4 + 150 m (approx btwn 3rd and 4th Line) *Fair Condition*	This section of pavement consisting of four lanes with a centre turning lane was similar to the above section however there were numerous patches over former service cuts and other repairs resulting in a poor riding quality.
4 + 150 m to 5 + 150 m 4th Line to Morden Road *Fair to Poor Condition*	This was a four lane urban section with turning lanes, characterized by frequent moderate transverse cracking, longitudinal cracking and occasional patched sections. Rutting and alligator cracking was observed at the intersection of Morden Road. There were frequent service cuts and resurfacing of some sections of the outside lanes.
5 + 150 m to 6 + 000 m Morden Road and Kerr Street *Fair to Poor Condition*	This section of pavement appeared to be of older construction with frequent transverse cracking and progressive longitudinal cracking. The north lanes were generally in worse condition and potholes were observed in some areas. As with the previous sections, patches and local overlays had been constructed over service cuts resulting in poor riding quality.

4.0 SUBSURFACE CONDITIONS

The pavement structure and near surface soil and ground water conditions encountered in the boreholes are shown on the Log of Borehole sheets following the text of this report. The stratigraphic boundaries indicated are inferred from non-continuous samples and observations of drilling resistance and typically represent a transition from one soil type to another. These boundaries should not be interpreted to represent exact planes of geological change. The subsurface conditions have been confirmed at the borehole locations only, and will vary between and beyond the borehole locations. The following discussion has been simplified in terms of the major soil strata for the purposes of geotechnical design.

4.1 Soil Conditions

4.1.1 Existing Pavement

The pavement structure penetrated in boreholes drilled within the sections of pavement described in Section 3.0 are summarized in the following table.

Pavement Section (m) (approximate)	Overall Condition	Pavement Component Thicknesses (mm)		
		Asphalt	Granular Base/subbase	Equivalent Granular Base
0+000 to 1+200 (BH 1 to 4)	Fair	125 to 175 avg. 150	225 to 350 avg. 270	500 to 650 avg. 590
1+200 to 2+050 (BH 5 to 7)	Fair to Good	125 to 150 avg. 140	50 to 450 avg. 240	350 to 750 avg. 525
2+050 to 4+150 (BH 8 to 14)	Fair	125 to 175 avg. 150	275 to > 450 avg. 400	525 to 750 avg. 700
4+150 to 5+150 (BH 15 to 17)	Fair to Poor	125 to 150 avg. 140	295 to 350 avg. 315	545 to 650 avg. 600
5+150 to 6+000 (BH 18 to 20)	Fair to Poor	125 to 150 avg. 140	175 to 450 avg. 325	425 to 750 avg. 610

4.1.2 Subgrade

Fill

Subgrade fill primarily consisting of sand and gravel fill and silty sand and gravel fill was encountered beneath the granular base and subbase in boreholes 5, 7, 9, 10, 12, and 14. The fill was fully penetrated at depths of about 2.0 to 3.25 m below ground surface in the boreholes. The sand and gravel fill in borehole 9 (at Fourteen Mile Creek) was encountered to a depth of about 3.3 m below the road surface and consisted of structure backfill. The N values as determined in the standard penetration testing carried out within the fill sand and gravel fill ranged from 5 to 68 blows per 0.3 m, but were generally in the compact range (ie 10 to 30 blows per 0.3m). The in-situ water content of the fill samples recovered from the penetration testing were in the range of about 2 to 6 percent.

Fill generally consisting of clayey silt and sandy silt were penetrated in several of the remaining boreholes to depths of generally less than 2 m. At borehole 4, however fill was encountered to a depth of about 2.7m below ground surface. The N values in the clayey silt and sandy silt fill were generally in the range of about 8 to 12 blows per 0.3 m inferring a relatively stiff consistency. The in-situ water content of the clayey silt and sandy silt fill was in the range of about 6 to 18 percent.

A thin layer of topsoil was encountered beneath the granular road base in borehole 2.

Silty Clay

Surficial soil strata generally consisting of silty clay were encountered beneath the fill in nearly all of the boreholes. The N values determined within the silty clay was generally in the range of 11 to 30 blows per 0.3 m. The natural water content of the silty clay ranged from about 8 to 25 percent with an average natural water content of about 11 percent.

Shale

As best could be practically determined, shale presumed to coincide with the bedrock surface was encountered in the boreholes at depths of about 1.1 to 4.5 m below the existing ground surface. Exploration of the bedrock was not carried out as part of this assignment, however based on sample recovered from the penetration testing, the bedrock beneath the site consisted of Queenston Formation shale. Queenston Formation shale predominantly consists of thinly bedded reddish brown calcareous shale with grey green bands of interbedded argillaceous limestone.

All of the boreholes except for boreholes 2 and 10 encountered weathered reddish brown shale, presumed to be of the Queenston Formation. A penetration resistance of greater than 100 blows per 0.3 m was typically indicated at these locations. The natural water contents of the samples of shale recovered from the penetration testing ranged from about 3 to 15 percent with an average natural water content of about 7 percent.

It should be noted that core drilling would be required to provide information on the rock mass characteristics and to access the degree of weathering of the shale.

4.2 Ground Water Conditions

Ground water was encountered during drilling at depths of 2.7 and 3.0 m below the existing road surface in boreholes 9 and 20 respectively. All of the other boreholes remained dry during and upon completion of drilling.

It should be noted that the conditions reported above may not necessarily represent stabilized conditions or the ground water conditions that will be encountered during construction. The ground water levels will vary due to seasonal effects and precipitation conditions.

5.0 DISCUSSION

The following discussion is based on our interpretation of the factual data obtained during this investigation and is intended for preliminary design consideration only. Comments made regarding the construction aspects are provided only in as much as they may impact on design considerations. Contractors bidding on or undertaking these works, should make their own assessment regarding the nature and adequacy of the factual information, as is affects their construction techniques, scheduling, equipment selection and the like.

It is expected that the project will generally consist of pavement widening and reconstruction. The Speers Road corridor is developed and changes to the alignment and profile or major grade separations are not expected. It is anticipated that some underground work including storm sewers and other relatively shallow underground plant may be required in conjunction with the road improvements.

The present program of investigation consisted of a series of shallow boreholes drilled at approximately 200 m intervals and was intended to provide information for planning and conceptual design purposes. Further subsurface investigation and geotechnical review will be needed at the final design stage.

5.1 Underground Services

The nature and extent of any underground servicing that will be required in conjunction with the road reconstruction is not known at this stage, however it is possible that relatively shallow storm sewers and possibly watermain may be required. Based on the results of the boreholes, it is expected that the excavations for the such services will generally encounter localized fill, silty clay and shale.

It is anticipated that relatively shallow cuts (ie less than 3 m) can be carried out using conventional open-cut techniques. Local experience suggests that the upper 1 to 2 m of the underlying shale is likely to be weathered and mechanical excavation is considered feasible. The use of rippers and more aggressive equipment and techniques may be required to penetrate the more intact shale expected at depth as well as to remove the more resistant limestone interbeds that are typical of this formation.

Although most of the boreholes were dry within the range of excavation depths expected, it is likely that ground water seepage into open excavations will be experienced at least locally. In such instances, measures to control ground water seepage will be required to properly bed the pipes, and to compact the bedding materials. The results of the boreholes suggest that adequate control of the ground water can probably be achieved by pumping from a series of properly filtered sumps located as required in the excavations.

All excavations must be carried out in accordance with the Occupational Health and Safety regulations under the Ontario Labour Act. In this context, the overburden at the site should generally be regarded as "Type 3 Soil", provided that effective ground water control is achieved where required and surface water is directed away from open excavations. Temporary support will be required for vertically cut trenches within the overburden.

An inventory of existing underground plant should be undertaken in order to identify any constraints or special requirements that will be needed to maintain the integrity of the services during construction. Where there are existing utilities located within the zone of influence of the excavations, temporary support may be required to minimize potential disturbance. The locations and depths of any utilities which would potentially be affected by the proposed work should be identified and the need for support assessed prior to commencing excavation.

The excavated soil will generally consist of fill and surficial soil, silty clay and shale. It is considered that for shallow services, the bedding may comprise most of the backfill and that in such cases, the remainder of the backfill should also consist of granular material consisting of existing road base or imported Type 1 Granular "B" material. Re-use of the existing granular base material as well as the overburden could be considered for backfill in deeper excavations provided that excessively wet, frozen or otherwise unsuitable soil is excluded. Use of shale as backfill can be problematic if care is not taken to thoroughly break-down the material and to adjust the placement water content to near optimum conditions for compaction. It is expected that in this case however, the shale will probably comprise a relatively low percentage of the excavated material and on this basis it need not be separated from the excavated soil to be re-used as backfill. Alternatively consideration could be given to re-using the overburden soil to the extent possible and treating the shale as surplus.

The general trench backfill should be placed and uniformly compacted in loose lift thicknesses of 300mm, to at least 95 percent of Standard Proctor maximum dry density. The upper 1m of backfill should be placed in similar lifts and uniformly compacted to 98 percent of standard Proctor maximum dry density.

5.2 Roadway Pavements

5.2.1 General

It is understood that the roadway will be widened in some sections to accommodate new lanes as well as a continuous centre turning lane. Additionally, the intersections will be widened to provide high occupancy vehicle lanes and Public Transit queue jump lanes. It is possible that some underground servicing may also be required as part of the reconstruction. It is expected that the work will be carried out in such a way that traffic flow will be maintained during construction. The actual staging of the work may have an impact on the final design.

5.2.2 Design Criteria

The traffic data that has been provided for the sections of Speers Road under consideration is summarized below. This data indicated some variation in the traffic volume as well as the nature of the traffic.

Roadway Section (Approximate chainage)	Existing AADT	2021 AADT	Percentage of Trucks	2021 DTN (HAL/lane/day)
Bronte Road to 3rd Line Stn 0+000 to 2+100m	11,000	13,000	9	580
3rd Line to 4th Line Stn 2+100 to 4+150 m	17,000	20,000	7	690
4th Line to MN 447 Stn 4+150 to 4+800 m	16,000	19,000	6	560
MN 447 to Morden Rd. Stn 4+800 to 5+150 m	17,000	21,000	5	520
Morden Rd. to Dorval Dr. Stn 5+150 to 5+350 m	25,000	30,000	4	590
Dorval Dr. to Kerr St. Stn 5+350 to 6+050 m	20,000	24,000	5	590

The DTN (Daily Traffic Number ie the number of heavy axle loads per lane per day) indicated for each pavement section has been estimated using a typical mix of urban heavy traffic and assuming 80 percent of the truck traffic is carried by the outside lanes. An average DTN of about 600 HAL per lane per day has been assumed for preliminary design purposes.

The adequacy of the existing sections of pavement has been assessed by comparing the structural equivalency of the existing pavements (determined from the pavement structure penetrated in the boreholes) to the structure needed to support the DTN projected for 2021. Structural deficiencies of in the range of about 300 to 400 mm of equivalent granular base material have been estimated for the existing pavements.

5.2.3 Pavement Component Thicknesses

The following pavement component thicknesses can be considered for the preliminary design of flexible pavements for a DTN of about 600 HAL per lane per day:

Asphalt Wearing Surface, HL1 or DFC or Superpave 12.5 FC2	40 mm
Asphalt Binder Course, HDBC or Superpave 19 Binder	140 mm
Granular "A" Base	150 mm
Granular "B" Subbase (Type 2)	400 mm

The pavement component thicknesses have been determined on the premise that routine maintenance work (ie crack sealing and the like) will be carried out to optimize the performance and serviceability of the pavement. Milling and replacement of the wearing surface would probably be required to ensure the serviceability of the pavement beyond 2021. and that a 50 mm thick overlay would be constructed after about 12 to 15 years of service.

5.2.4 Implementation

The existing granular base thickness in most of the sections typically varied from about 250 to 450 mm. Complete reconstruction will probably be required to ensure continuity of pavement drainage and consistent, uniform pavement performance. While it is not possible to confidently assess the quality of the existing granular base and subbase materials from samples recovered from boreholes, it was considered based on a visual examination, that the existing granular base was of good quality in some areas and poor in others. It is considered that, subject to further assessment, it will probably be feasible to use at least some of the existing granular base and subbase as subbase in new construction.

Topsoil and any deleterious fill material should be removed from any area of new pavement construction. Any existing ditches will need to be cleaned and then backfilled with suitable well compacted borrow. Underground services should be constructed as outlined in Section 5.1 of this report.

The final subgrade surface should be shaped and graded to promote drainage. The Granular "B" subbase and Granular "A" base and should be uniformly compacted to 98 and 100 percent of standard Proctor maximum dry density respectively. All asphaltic concrete materials should be produced and constructed consistent with the current Ontario Provincial Standard Specifications for heavy traffic conditions.

Effective drainage of the granular base material should be achieved by providing continuous sub-drains. Some adjustment to the thickness of the granular subbase material may be required depending on the condition of the subgrade at the time of the pavement construction. The need for such adjustments can be best assessed by the geotechnical engineer during construction.

5.3 Structures

It is understood that modifications to or replacement of structures at Fourteen Mile Creek and Glen Oak Creek may be required in conjunction with the proposed improvements. One borehole was drilled at each of these locations to determine the subsurface conditions and to provide information for conceptual design purposes. Further investigation will be required at both sites to provide information for final design purposes. The scope of the investigation can best be determined once the preliminary design details are available.

The results of borehole 9 indicate that the subsurface conditions at Fourteen Mile Creek consisted of fill overlying strata of silty clay and shale. Shale was encountered at a depth of about 4.5m below the existing road surface. The approximate depth of the creek bed at this location is about 3.5m below the road surface. The results of the boreholes indicate that for conceptual design purposes, it would be feasible to support the bridge abutments on spread footings bearing in shale. Alternatively, consideration could be given to support the abutments on end bearing caissons penetrating the shale. Use of integral abutments may also be feasible.

Borehole 15 was drilled adjacent to the existing culvert at Glen Oaks Creek and encountered shale at a depth of about 1.8m below ground surface. The creek invert at this location was about 3.2 m below the pavement surface. The existing structure is a rigid frame with a span of about 7 m. It is considered feasible to support structure widenings or a new structure on spread footings bearing in the weathered shale or deeper into the sound shale.

For conceptual design purposes footings constructed in the weathered shale can be proportioned using a factored geotechnical resistance at Ultimate Limit States (ULS) of 2250 kPa and a bearing resistance of 1500 kPa at Serviceability Limit States. Higher bearing resistance values may be feasible for caissons that are socketed into the underlying sound shale.

It is presumed that these structures will be designed in accordance with CHDBC 2006 CAN /CSA. Detailed discussion of the foundation design and other aspects such as earth pressures, and backfilling can be provided at the final design stage when the results of additional boreholes are available.

5.4 Soil Quality

Chemical analyses were carried out on six samples of the subgrade soil recovered from the range of excavation depths expected at the borehole locations. A Certificate of Analysis for the chemical testing is included in Appendix A. The results of these analyses have been compared with the corresponding soil property use standards listed in Table 1 (Full Depth Background Site Condition Standards) and Table 3 (Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition) in the Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (March 9, 2004). The results of the comparison are summarized in the following table.

Sample ID & Depth (m)	**Soil Type**	**Comparison with MOE Table 1 Standards**	**Comparison with MOE Table 3 Standards**
BH2 Sa2 0.76 to 1.2	Silty Clay	Exceeded Table 1 standards for EC, SAR, and chloride.	Exceeded all Table 3 standards for EC.
BH4 Sa3 1.52 to 1.98	Silty Clay Fill	Exceeded Table 1 standards for EC, SAR, and chloride.	Exceeded all Table 3 standards for EC.
BH11 Sa2 0.76 to 1.2	Silty Clay	Exceeded Table 1 standards for EC, SAR, and chloride.	Exceeded all Table 3 standards for EC.
BH13 Sa2 0.76 to 1.0	Clayey Silt Fill	Exceeded Table 1 standards for EC, SAR, and chloride.	Exceeded all Table 3 standards for EC and SAR.
BH15 Sa2 0.76 to 1.2	Sandy Silt Fill	Exceeded Table 1 standards for EC, SAR, and chloride.	Exceeded all Table 3 standards for EC and SAR.
BH17 Sa 2 0.76 to 1.2	Silty Clay	Exceeded Table 1 standards for EC, SAR, and chloride.	Exceeded all Table 3 standards for EC.

All of the samples had high concentrations of chloride, probably due to the cumulative effects of road salt use. The elevated electrical conductivity (EC) and Sodium Adsorption Ratio (SAR) are also probably due to the effects of road salt use.

Based on the above, surplus excavated soil cannot be managed as inert fill or taken to sites to which the MOE Table 1 standards apply. Further, none of the samples met the MOE Table 3 standards due to the high EC and/or SAR and use of the soil on sites to which the Table 3 standards apply should not be considered unless the MOE has reviewed the circumstances and supports the proposal. Soil that does not meet the MOE Table 3 standards will probably have to be managed as solid nonhazardous waste. For this reason, reuse of the excavated soil on site to the extent practicable, should be considered.

In all cases, a copy of the analytical data must be provided to the receiver for review. Further analyses of soils to be managed as waste will be required in order to properly classify the soil in accordance with current legislation (this would include a TCLP leach analysis as set out in Ontario Regulation 558/00 - March 31, 2001) and for acceptance at a disposal site.

The above conclusions were based on limited analytical data. The actual quality of the excavated soils will vary and additional sampling and analyses may be warranted during construction, if dissimilar materials are encountered or if aesthetic impact (staining or odors) is observed. Qualitative monitoring of the excavated soil should be considered part of the inspection tasks during construction

6.0 LIMITATIONS AND RISK

The discussion provided in this report has been based on the results of a series of widely spaced, relatively shallow boreholes and was intended for use in planning and preliminary design of the proposed improvements to the Speers Road transportation corridor. The discussion is provided on the premise that additional subsurface exploration, laboratory testing and analyses will be carried out in support of the final design.

The engineering advise and recommendations provided are based on the factual data obtained from this investigation carried out at the site by Terraprobe and is intended for use by the Town of Oakville and its retained designers in the preliminary design phase of the project. If there are changes to the project scope and features, our interpretation of the subsurface information, the geotechnical design parameters and comments relating to construction issues, may not be relevant or complete for the revised project. Terraprobe should be retained to review the implications of such changes with respect to the contents of this report.

Contractors bidding on or undertaking work on the project should be directed to draw their own conclusions as to how the subsurface conditions may affect them, based on their own investigations and their own interpretations of the factual investigation results, cognizant of the risks implicit in the subsurface investigation activities.

We trust that this report is satisfactory for your present requirements. If any point that requires further clarification, please do not hesitate to contact our office.

Yours Truly,

Terraprobe Limited

J. G. Muckle, P. Eng.
Associate

REGISTERED PROFESSIONAL ENGINEER
J. G. MUCKLE
PROVINCE OF ONTARIO

TABLE I
SUMMARY OF ANALYTICAL TESTING
SPEERS ROAD
TOWN OF OAKVILLE, ONTARIO

	Soil Type	Silty Clay	Silty Clay Fill	Silty Clay	Clayey Silt Fill	Sandy Silt Fill	Silty Clay	Table 1*	Table 3*
Parameter	units	**BH 2SA2**	**BH 4 SA3**	**BH 11 SA2**	**BH 13 SA2**	**BH 15 SA2**	**BH 17 SA2**	**All Other**	Ind'l/Comm'l
Antimony	µg/g	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	1.0	40
Arsenic	µg/g	3.4	3.6	2.6	4.1	4.6	5.7	17	40
Barium	µg/g	140	111	57.1	55.7	98.4	102	210	1500
Beryllium	µg/g	0.9	0.6	0.8	0.6	0.6	1		
Boron (Hot Water Soluble)	µg/g	0.14	0.4	0.41	0.48	0.2	0.2	-	2
Cadmium	µg/g	<0.2	<0.2	<0.2	0.3	<0.2	<0.2	1.0	12
Chromium	µg/g	25.6	16.8	23.4	18.2	16.7	25.2	71	750
Cobalt	µg/g	14.3	10.5	13.4	10.3	8.5	15.1	21	80
Copper	µg/g	7.8	17.8	32.3	24.9	30.3	11.4	85	225
Lead	µg/g	8.3	14.5	2.8	59.7	10	8	120	1000
Molybdenum	µg/g	0.5	0.5	<0.3	0.8	0.5	1	2.5	40.0
Nickel	µg/g	30.1	23	29.5	22.8	20.5	33.2	43	150
Selenium	µg/g	<0.4	<0.4	<0.4	<0.4	0.5	<0.4	1.9	10.0
Silver	µg/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.42	40
Thallium	µg/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	2.5	32
Vanadium	µg/g	34.1	22.1	27	27	25.8	42.1	91	200
Zinc	µg/g	59.0	84	65	86	43.3	59.1	160	600
Chromium, Hexavalent	µg/g	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	2.5	8
Free Cyanide	µg/g	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	0.12	100
Mercury	µg/g	<0.011	<0.011	<0.011	0.021	0.024	<0.011	0.23	10
Electrical Conductivity	mS/cm	1.84	1.53	2.00	1.42	3.18	1.81	0.57	1.4
Sodium Adsorptio Ratio		**8.30**	**3.70**	**10.4**	14.8	53.7	**5.79**	2.4	12
pH		7.75	7.90	8.26	8.47	8.46	7.95		
Chloride		1180	663	1240	647	2070	1030	330	

Notes:

1. Analyses by Maxxam see Appendix A for Certificates of Analysis.
2. "Soil, Ground Water and Sediment Standards for Use Under Part XV. I of the Environmental Protection Act", dated March 9, 2004.
3. **Table 1 exceedences in bold.**
4. Table 3 exceedences of industrial/commercial criteria are in reverse bold.
5. This table represents a summary of the data presented in the Certificate of Analysis for convenience purposes only.
6. This summary is to be used in conjunction with, not as a replacement of the laboratory C of A which contains all QA/QC information.

Terraprobe Limited
Consulting Geotechnical & Environmental Engineering
Construction Materials Engineering & Testing

ABBREVIATIONS, TERMINOLOGY, & GENERAL INFORMATION

Sampling Method
SS - split spoon
ST - shelby tube
AS - auger sample
RC - rock core

Penetration Resistance
Standard Penetration Resistance ('N' values) is defined as the number of blows by a hammer of 63.5kg mass (140lbs) falling freely for a distance of 0.76m (30 inches) required to advance a standard 50mm (2inch) diameter split spoon sampler for a distance of 0.3m (12 inches).

Dynamic Cone Penetration Resistance is defined as the number of blows by a hammer of 63.5kg mass (140 lbs) falling freely for a distance of 0.76m (30 inches) required to advance a conical steel point to 50mm diameter and with 60 degrees sides of 'A' size drill rods for a distance of 0.3m (12 inches).

Soil Description

Cohesionless Soils

Relative Density	**'N' Value**
very loose	<4
loose	4 - 10
compact	10 -30
dense	30 - 50
very dense	>50

Cohesive Soils

Consistency	**Undrained Shear Strength (kPa)**
very soft	<12
soft	12 - 25
firm	25 - 50
stiff	50 - 100
very stiff	100 - 200
hard	>200

Soil Composition	**% By Weight**
'trace' (eg. trace silt)	<10
'some' (eg. some gravel)	10 - 20
'adjective' (eg. sandy)	20 - 35
'and' (eg. sand and gravel)	35 - 50

General Information
The recommendations provided in this report are based on the factual information obtained from the boreholes and on the general information provided for the proposed project.

Site investigations by means of boreholes and/or test pit identifies subsurface conditions at the location and time of sampling only. Ground conditions at locations away from the boreholes and test pit may vary.

Recommendations are made by interpretation of this factual data for specific conditions such as size, configuration and location of the proposed project. Changes in project conditions should be reviewed by the Geotechnical consultant as they may affect the recommendations provided.

In order to identify possible changes in ground conditions between the sample locations and their effect on the project, it is recommended that site inspections be carried out during construction by qualified Geotechnical personnel.

Records of Boreholes

Terraprobe Limited

Terraprobe

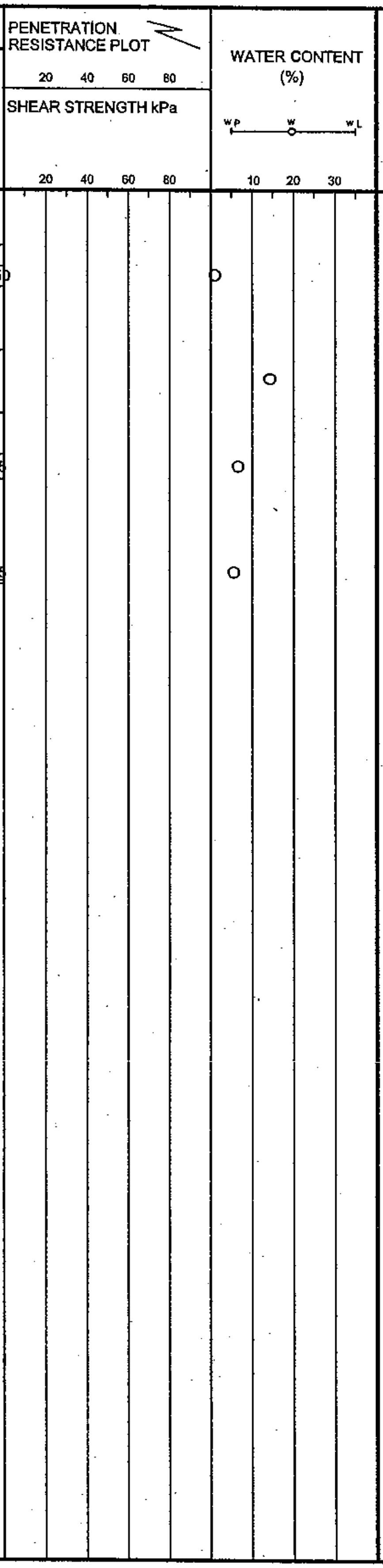
PROJECT No: 7-08-3098
CLIENT: Delcan Corporation
LOCATION: Speers Road, Oakville, Ontario
East bound lane

LOG OF BOREHOLE 1

BORING DATE: October 17, 2008
ELEVATION DATUM: N/A
SAMPLER HAMMER, 63.5kg; DROP, 760mm

BORING METHOD: CME 75 - Truck - Solid Stem Augers

DEPTH SCALE IN METRES	SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	TYPE	"N" VALUE
0	**GROUND SURFACE**		0.0			
	175mm Asphalt	■	0.0			
	(FILL) **Granular Base**	▩	0.0	1	SS	50/150
	Hard, reddish brown and grey; **SILTY CLAY**	▨	0.40			
1				2	SS	30
			0.0	3	SS	50/25
2	Reddish brown; **Weathered Shale**		1.70			
			0.0	4	SS	50/25
	END OF BOREHOLE		2.46			
3						
4						
5						
6						
7						
8						
9						



INSTALLATION INFORMATION

NOTES:
Borehole dry upon completion of drilling.

SHEET 1 OF 1

A. CUMMINGS

7-08-3098-1.DW

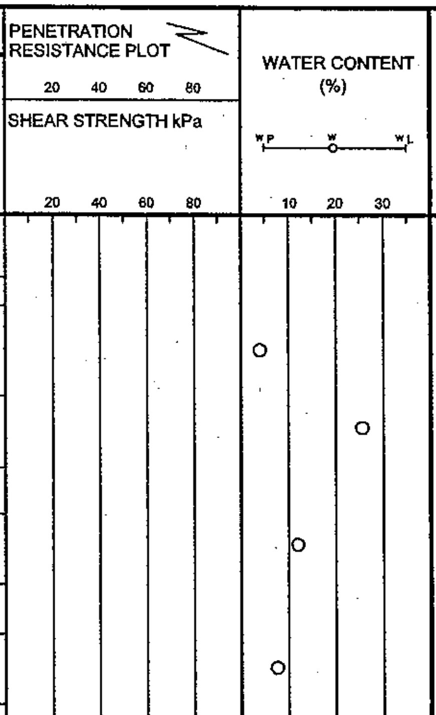
Terraprobe

PROJECT No: 7-08-3098
CLIENT: Delcan Corporation
LOCATION: Speers Road, Oakville, Ontario
West bound lane

LOG OF BOREHOLE 2

BORING DATE: October 17, 2008
ELEVATION DATUM: N/A
SAMPLER HAMMER, 63.5kg; DROP, 760mm

BORING METHOD	DEPTH SCALE IN METRES	SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUE	INSTALLATION INFORMATION
CME 75 - Truck - Solid Stem Augers		**GROUND SURFACE**		0.0				
	0	**150mm Asphalt**		0.0				
		(FILL) **50mm PCC** **Granular Base**		0.0				
		Hard, black; **CLAYEY Topsoil**		0.45 0.60	1	SS	30	
	1	Stiff to hard, reddish brown; **SILTY CLAY**			2	SS	11	
					3	SS	34	
	2			0.0	4	SS	36	
		END OF BOREHOLE		2.74				
	3							
	4							
	5							
	6							
	7							
	8							
	9							NOTES: Borehole dry upon completion of drilling.



A. CUMMINGS

7-08-3098-2.DW

SHEET 1 OF 1

Terraprobe

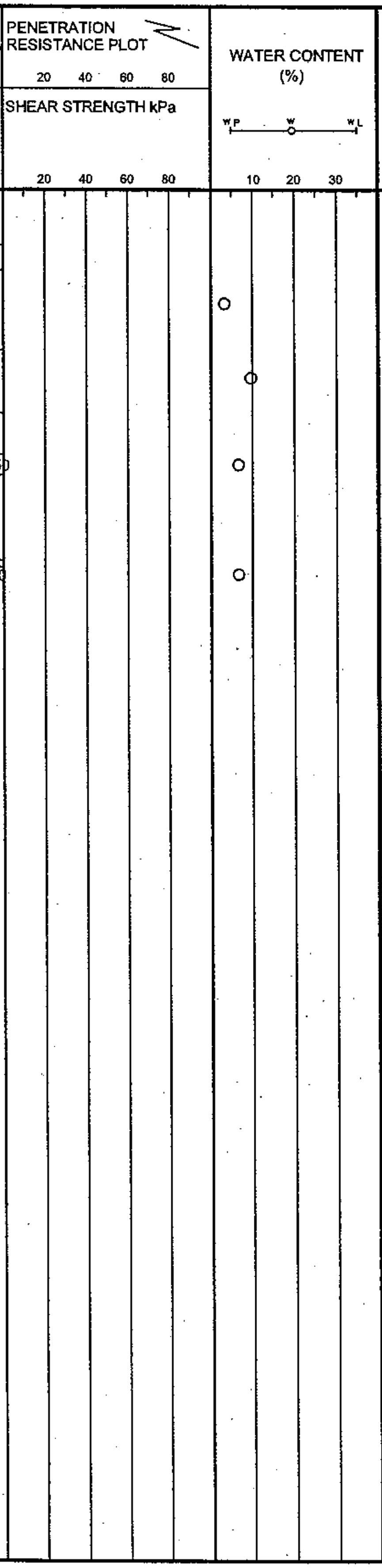
PROJECT No: 7-08-3098
CLIENT: Delcan Corporation
LOCATION: Speers Road, Oakville, Ontario
East bound lane

LOG OF BOREHOLE 3

BORING DATE: October 17, 2008
ELEVATION DATUM: N/A
SAMPLER HAMMER, 63.5kg; DROP, 760mm

BORING METHOD: CME 75 - Truck - Solid Stem Augers

Depth scale in metres	SOIL PROFILE: DESCRIPTION	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	"N" VALUE
0	**GROUND SURFACE**	0.0			
	150mm Asphalt	0.0			
	(FILL) **Granular Base**		1	SS	55
	(FILL) Compact, reddish brown; **silty sand**	0.0 0.60			
1	Stiff, reddish brown; **SILTY CLAY**	0.0 0.90	2	SS	12
2	Reddish brown; **Highly Weathered Shale**	0.0 1.50	3	SS	50/150
	END OF BOREHOLE	0.0 2.34	4	SS	50/50



INSTALLATION INFORMATION

NOTES:
Borehole dry upon completion of drilling.

SHEET 1 OF 1

A. CUMMINGS

7-08-3098-3.DW

Terraprobe

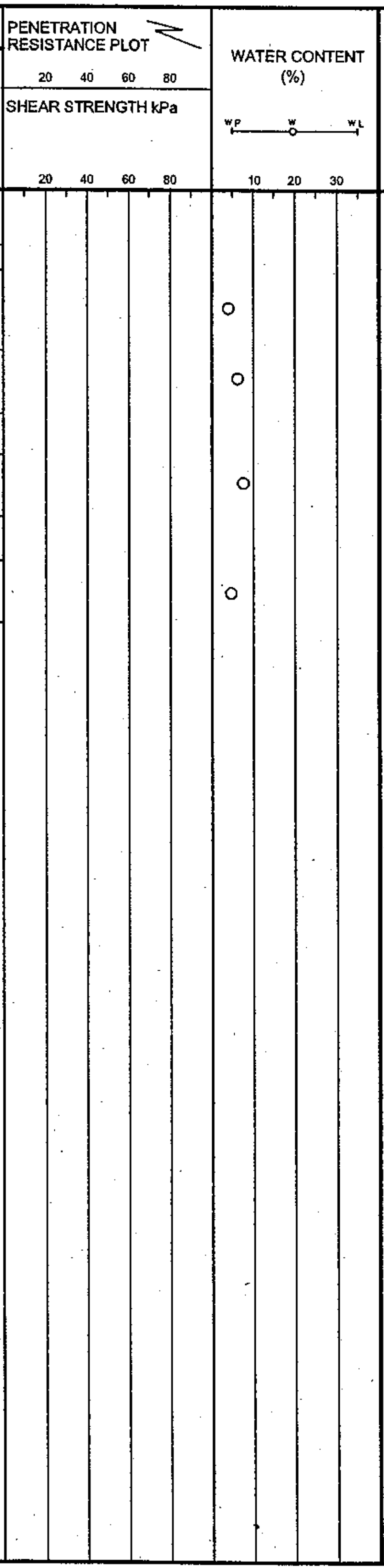
PROJECT No: 7-08-3098
CLIENT: Delcan Corporation
LOCATION: Speers Road, Oakville, Ontario
West bound lane

LOG OF BOREHOLE 4

BORING DATE: October 17, 2008
ELEVATION DATUM: N/A
SAMPLER HAMMER, 63.5kg; DROP, 760mm

BORING METHOD: CME 75 - Truck - Solid Stem Augers

SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	TYPE	"N" VALUE
GROUND SURFACE		0.0			
125mm Asphalt	■	0.0			
(FILL) **Granular Base Crusher Run Limestone**	▨	0.0 0.50	1	SS	35
(FILL) Firm to stiff, reddish brown; **clayey silt,** occasional gravel and pieces of shale	▨		2	SS	11
	▨		3	SS	8
	▨	0.0	4	SS	8
END OF BOREHOLE Auger Refusal (Possibly Shale)		2.74			



INSTALLATION INFORMATION

NOTES:
Borehole dry upon completion of drilling.

A. CUMMINGS

7-08-3098-4.DW

SHEET 1 OF 1

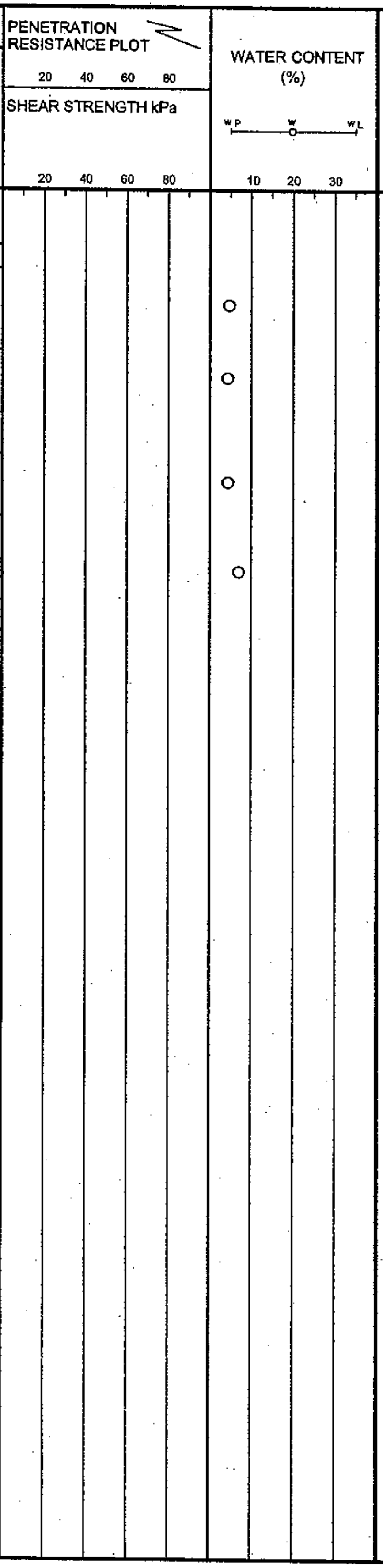
Terraprobe

PROJECT No: 7-08-3098
CLIENT: Delcan Corporation
LOCATION: Speers Road, Oakville, Ontario
East bound lane, outside lane

LOG OF BOREHOLE 5

BORING DATE: October 17, 2008
ELEVATION DATUM: N/A
SAMPLER HAMMER, 63.5kg; DROP, 760mm

BORING METHOD	DEPTH SCALE IN METRES	SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	TYPE	"N" VALUE	INSTALLATION INFORMATION
CME 75 - Truck - Solid Stem Augers	0	**GROUND SURFACE**		0.0				
		150mm Asphalt	■	0.0				
		(FILL) **Granular Base**	▨	0.0 0.60	1	SS	41	
	1	**(FILL)** Compact, brown; **sand and gravel,** trace silt, occasional pieces of shale	▨		2	SS	44	
			▨		3	SS	13	
	2	Reddish brown; **Weathered Shale**		0.0 2.10				
		END OF BOREHOLE		0.0 2.31	4	SS	50/25	
	3							
	4							
	5							
	6							
	7							
	8							
	9							



NOTES:
Borehole dry upon completion of drilling.

SHEET 1 OF 1

A. CUMMINGS

7-08-3098-5.DV

Terraprobe

PROJECT No: 7-08-3098
CLIENT: Delcan Corporation
LOCATION: Speers Road, Oakville, Ontario
West bound lane, outside lane

LOG OF BOREHOLE 6

BORING DATE: October 17, 2008
ELEVATION DATUM: N/A
SAMPLER HAMMER, 63.5kg; DROP, 760mm

BORING METHOD	DEPTH SCALE IN METRES	SOIL PROFILE			SAMPLES			PENETRATION RESISTANCE PLOT 20 40 60 80 SHEAR STRENGTH kPa 20 40 60 80	WATER CONTENT (%) wP w wL 10 20 30	INSTALLATION INFORMATION
		DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	NUMBER	TYPE	"N" VALUE			
CME 75 - Truck - Solid Stem Augers	0	**GROUND SURFACE**		0.0						
		150mm Asphalt	■	0.0 0.0						
		(FILL) **Granular Base** (Crushed Limestone)	▨	0.20	1	SS	34		○	
	1	**(FILL)** Stiff, reddish brown; **clayey silt,** some gravel	▨	0.0	2	SS	10		○	
		Hard, reddish brown; **SILTY CLAY**	▧	1.20 0.0	3	SS	85		○	
	2	Reddish brown; **Completely to Highly Weathered Shale**	☰	1.80 0.0						
		END OF BOREHOLE		2.31	4	SS	50/25		○	
	3									
	4									
	5									
	6									
	7									
	8									
	9									

A. CUMMINGS

7-08-3098-6.DV

NOTES:
Borehole dry upon completion of drilling.

SHEET 1 OF 1

Terraprobe

PROJECT No: 7-08-3098
CLIENT: Delcan Corporation
LOCATION: Speers Road, Oakville, Ontario
East bound lane, inside lane

LOG OF BOREHOLE 7

BORING DATE: October 20, 2008
ELEVATION DATUM: N/A
SAMPLER HAMMER, 63.5kg; DROP, 760mm

BORING METHOD	DEPTH SCALE IN METRES	SOIL PROFILE			SAMPLES			PENETRATION RESISTANCE PLOT 20 40 60 80 / SHEAR STRENGTH kPa 20 40 60 80	WATER CONTENT (%) WP W WL 10 20 30	INSTALLATION INFORMATION
		DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	NUMBER	TYPE	"N" VALUE			
CME 75 - Truck : Solid Stem Augers		**GROUND SURFACE**		0.0						
	0	**125mm Asphalt**	■	0.0						
		(FILL) Granular Base	⊠	0.0 0.35	1	SS	55		○	
		(FILL) Brown; **silty sand and gravel**	⊠	0.0 0.60						
	1	Hard, reddish brown; **SILTY CLAY**	▨	0.0 1.52	2	SS	50/125		○	
	2	Reddish brown; **Completely to Highly Weathered Shale**	┅	0.0 2.56	3 4	SS SS	50/75 67/280		○ ○	
		END OF BOREHOLE								
	3									
	4									
	5									
	6									
	7									
	8									
	9									NOTES: Borehole dry upon completion of drilling.

A. CUMMINGS

7-08-3098-7.DV

SHEET 1 OF 1

Terraprobe

LOG OF BOREHOLE 8

PROJECT No: 7-08-3098
CLIENT: Delcan Corporation
LOCATION: Speers Road, Oakville, Ontario
West bound lane, inside lane

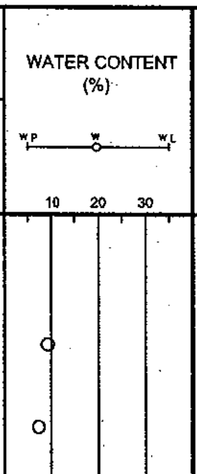
BORING DATE: October 17, 2008
ELEVATION DATUM: N/A
SAMPLER HAMMER, 63.5kg; DROP, 760mm

BORING METHOD: CME 75 - Truck - Solid Stem Augers

SOIL PROFILE			SAMPLES		
DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	NUMBER	TYPE	"N" VALUE
GROUND SURFACE		0.0			
150mm Asphalt	■	0.0			
(FILL) **Granular Base**	▦	0.0	1	SS	72
Compact, reddish brown; **SANDY SILT**	⋮	0.60 0.0	2	SS	18
END OF BOREHOLE Auger refusal (Possibly Shale)		1.50			

DEPTH SCALE IN METRES: 0 1 2 3 4 5 6 7 8 9

PENETRATION RESISTANCE PLOT 20 40 60 80
SHEAR STRENGTH kPa 20 40 60 80



INSTALLATION INFORMATION

NOTES:
Borehole dry upon completion of drilling.

SHEET 1 OF 1

A. CUMMINGS

7-08-3098-8.DV

Terraprobe

LOG OF BOREHOLE 9

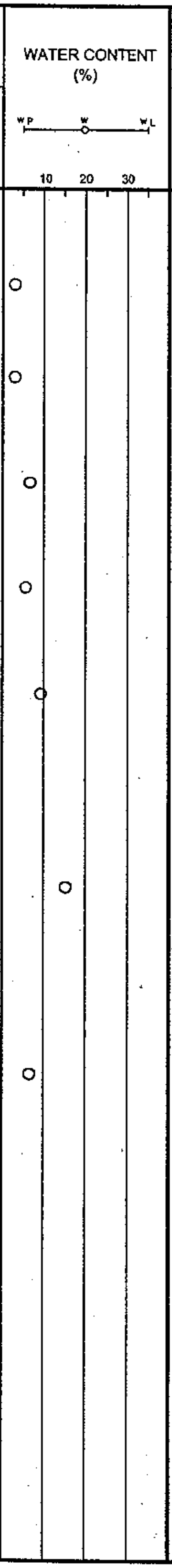
PROJECT No: 7-08-3098
CLIENT: Delcan Corporation
LOCATION: Speers Road, Oakville, Ontario
East bound lane, outside lane

BORING DATE: October 16, 2008
ELEVATION DATUM: N/A
SAMPLER HAMMER, 63.5kg; DROP, 760mm

BORING METHOD: CME 75 - Truck - Solid Stem Augers

DEPTH SCALE IN METRES	SOIL PROFILE DESCRIPTION	ELEV. DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	"N" VALUE	INSTALLATION INFORMATION
0	**GROUND SURFACE**	0.0				
	150mm Asphalt	0.0				
	(FILL) Compact to dense, brown; **sand and gravel,** trace silt, occasional cobble		1	SS	78/280	
1			2	SS	58	
2			3	SS	12	
			4	SS	20	Oct.16/08 ▼
3			5	SS	28	
	Hard, reddish brown; **SILTY CLAY**	0.0 3.25				
4						
	Reddish brown; **Weathered Shale**	0.0 4.50	6	SS	50/25	
5						
6			7	SS	50/25	
	END OF BOREHOLE	0.0 6.10				
7						
8						
9						

PENETRATION RESISTANCE PLOT: 20 40 60 80
SHEAR STRENGTH kPa: 20 40 60 80



NOTES:
Water level in open borehole a depth of 2.74m after drilling.

A. CUMMINGS

7-08-3098-9.DW

SHEET 1 OF 1

Terraprobe

PROJECT No: 7-08-3098

CLIENT: Delcan Corporation

LOCATION: Speers Road, Oakville, Ontario
West bound lane, outside lane

LOG OF BOREHOLE 10

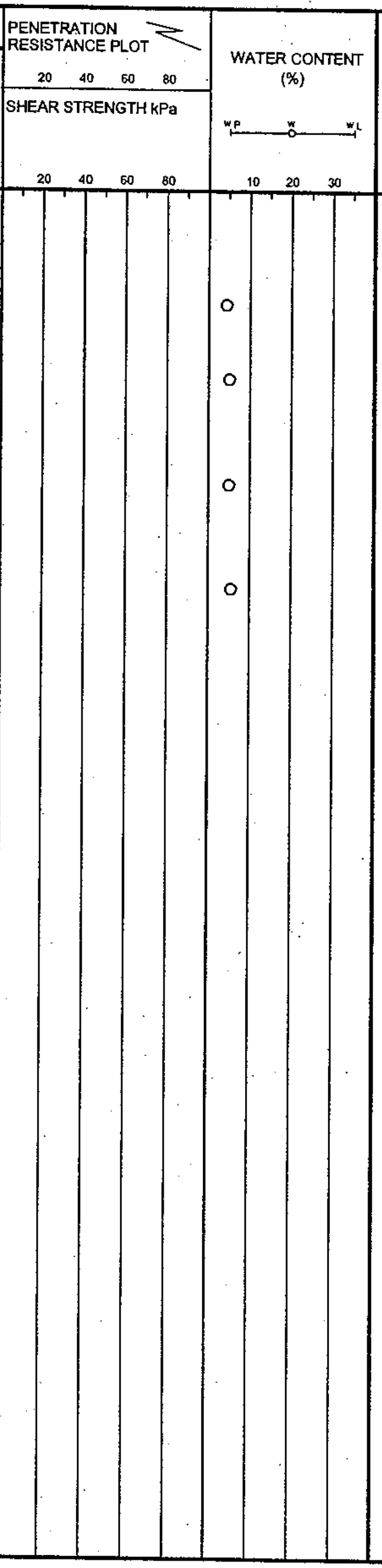
BORING DATE: October 17, 2008

ELEVATION DATUM: N/A

SAMPLER HAMMER, 63.5kg; DROP, 760mm

BORING METHOD: CME 75 - Truck - Solid Stem Augers

DEPTH SCALE IN METRES	SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	TYPE	"N" VALUE
0	**GROUND SURFACE**		0.0			
	150mm Asphalt	■	0.0			
	(FILL) **Granular Road Base**	▨	0.0 0.60	1	SS	65
1	**(FILL)** Compact, brown; **sand and gravel,** with clay lumps and pieces of shale	▨		2	SS	23
				3	SS	10
2				4	SS	20
	END OF BOREHOLE		0.0 2.74			



INSTALLATION INFORMATION

NOTES:
Borehole dry upon completion of drilling.

SHEET 1 OF 1

A. CUMMINGS

7-08-3098-10.D

Terraprobe

LOG OF BOREHOLE 11

PROJECT No: 7-08-3098
CLIENT: Delcan Corporation
LOCATION: Speers Road, Oakville, Ontario
East bound lane, outside lane

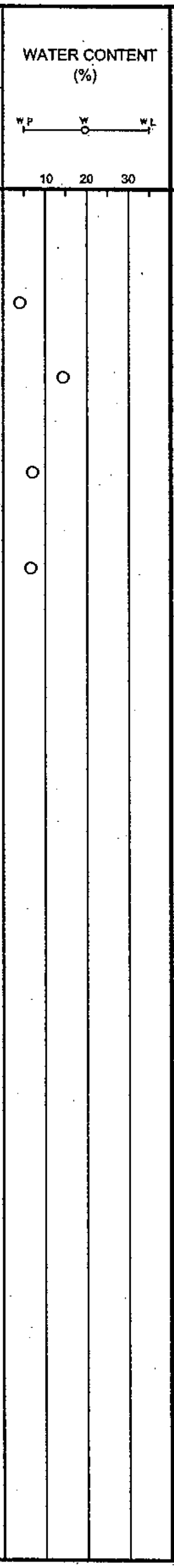
BORING DATE: October 20, 2008
ELEVATION DATUM: N/A
SAMPLER HAMMER, 63.5kg; DROP, 760mm

BORING METHOD: CME 75 - Truck - Solid Stem Augers

DEPTH SCALE IN METRES: 0 – 9

SOIL PROFILE			SAMPLES		
DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	"N" VALUE
GROUND SURFACE		0.0			
150mm Asphalt	■	0.0			
(FILL) **Granular Road Base**	⊠		1	SS	43
Very stiff, reddish brown and grey; **SILTY CLAY**	▨	0.0 0.55	2	SS	25
Reddish brown; **Completely to Highly Weathered Shale**		0.0 1.70	3	SS	75/300
END OF BOREHOLE		0.0 2.41	4	SS	50/125

PENETRATION RESISTANCE PLOT 20 40 60 80
SHEAR STRENGTH kPa 20 40 60 80



INSTALLATION INFORMATION

NOTES:
Borehole dry upon completion of drilling.

SHEET 1 OF 1

A. CUMMINGS

7-08-3098-11.D

Terraprobe

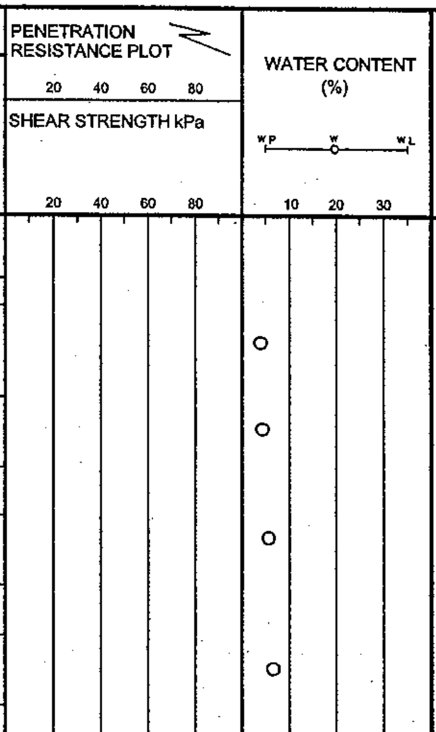
PROJECT No: 7-08-3098
CLIENT: Delcan Corporation
LOCATION: Speers Road, Oakville, Ontario
West bound lane, inside lane

LOG OF BOREHOLE 12

BORING DATE: October 17, 2008
ELEVATION DATUM: N/A
SAMPLER HAMMER, 63.5kg; DROP, 760mm

BORING METHOD: CME 75 - Truck - Solid Stem Augers

DESCRIPTION	ELEV. / DEPTH (m)	NUMBER	TYPE	"N" VALUE
GROUND SURFACE	0.0			
175mm Asphalt	0.0			
(FILL) **Granular Road Base**	0.0	1	SS	66
(FILL) Dense, brown; **sand and gravel,** trace silt	0.55	2	SS	33
		3	SS	32
Reddish brown; **Completely to Highly Weathered Shale**	0.0 2.50	4	SS	78
END OF BOREHOLE	0.0 2.74			



INSTALLATION INFORMATION

NOTES:
Borehole dry upon completion of drilling.

A. CUMMINGS

7-08-3098-12.D

SHEET 1 OF 1

Terraprobe

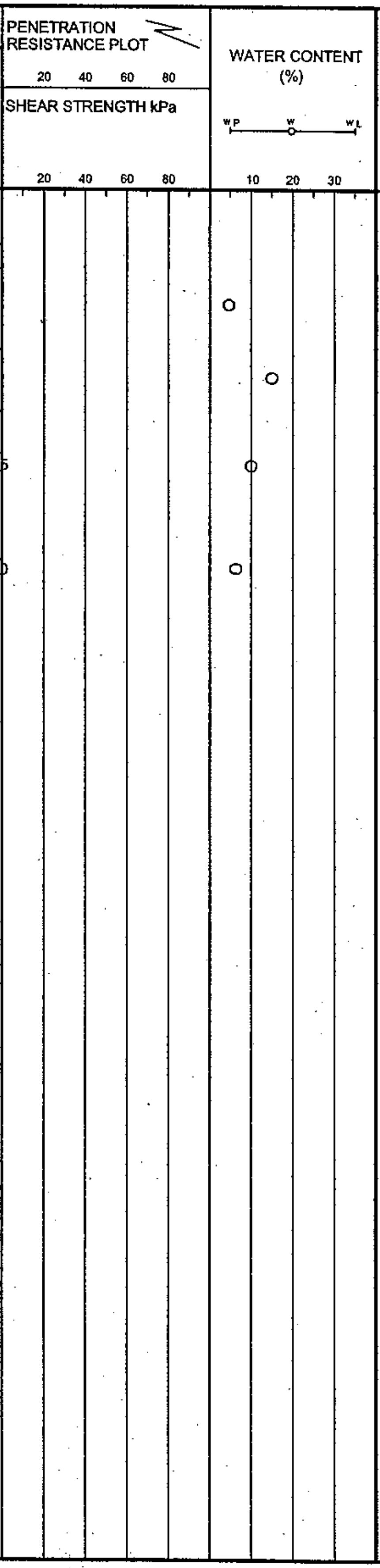
PROJECT No: 7-08-3098
CLIENT: Delcan Corporation
LOCATION: Speers Road, Oakville, Ontario
East bound lane, outside lane

LOG OF BOREHOLE 13

BORING DATE: October 16, 2008
ELEVATION DATUM: N/A
SAMPLER HAMMER, 63.5kg; DROP, 760mm

BORING METHOD: CME 75 - Truck - Solid Stem Augers

DEPTH SCALE IN METRES	SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	"N" VALUE	INSTALLATION INFORMATION
0	**GROUND SURFACE**		0.0				
	150mm Asphalt	■	0.0				
	(FILL) **Granular Road Base**	▩	0.0	1	SS	51	
	(FILL) Stiff, reddish brown; **clayey silt,** pieces of wood, occasional gravel	▩	0.60 0.0	2	SS	19	
1	Hard, reddish brown; **SILTY CLAY**	▨	1.00 0.0	3	SS	50/125	
2	Reddish brown and grey; **Highly Weathered Shale**	☰	1.65 0.0	4	SS	50/100	
	END OF BOREHOLE		2.40				



NOTES:
Borehole dry upon completion of drilling.

A. CUMMINGS

7-08-3098-13.D

SHEET 1 OF 1

Terraprobe

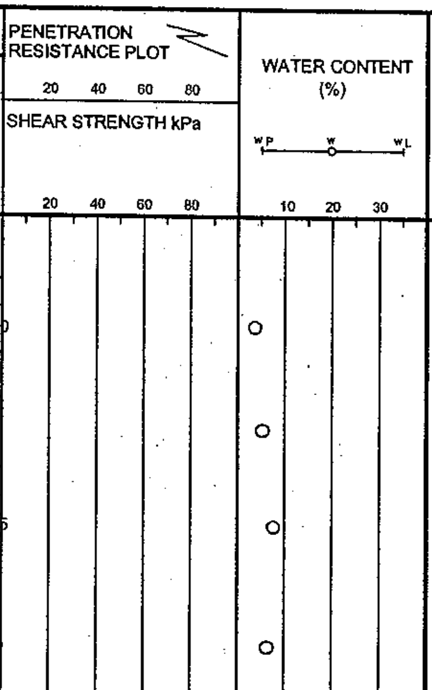
PROJECT No: 7-08-3098
CLIENT: Delcan Corporation
LOCATION: Speers Road, Oakville, Ontario
West bound lane, outside lane

LOG OF BOREHOLE 14

BORING DATE: October 16, 2008
ELEVATION DATUM: N/A
SAMPLER HAMMER, 63.5kg; DROP, 760mm

BORING METHOD: CME 75 - Truck - Solid Stem Augers

DEPTH SCALE IN METRES	SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	TYPE	"N" VALUE
	GROUND SURFACE		0.0			
0	**125mm Asphalt**	■	0.0			
	(FILL) **Granular Road Base**	▩	0.0 0.40	1	SS	80/300
	(FILL) Dense, brown; **silty sand and gravel**	▩	0.0 0.70			
1	(FILL) Compact, brown; **silty sand**	▩	0.0 1.10	2	SS	50
	Reddish brown; **Completely to Highly Weathered Shale**	☰		3	SS	50/125
2			0.0	4	SS	50/50
	END OF BOREHOLE		2.34			
3						
4						
5						
6						
7						
8						
9						



INSTALLATION INFORMATION

NOTES:
Borehole dry upon completion of drilling.

A. CUMMINGS

7-08-3098-14.D

SHEET 1 OF 1

Terraprobe

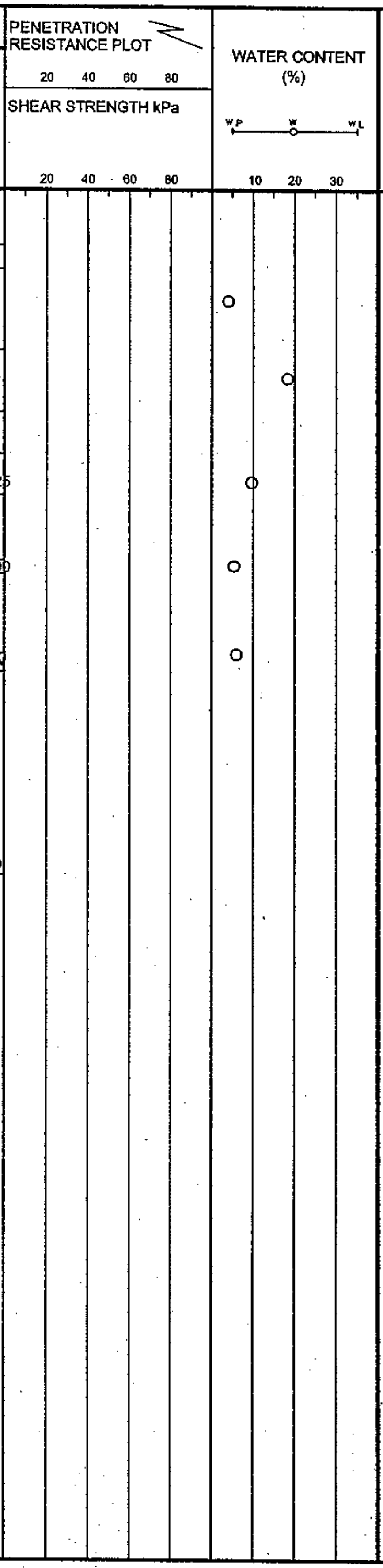
PROJECT No: 7-08-3098
CLIENT: Delcan Corporation
LOCATION: Speers Road, Oakville, Ontario
West bound lane, outside lane

LOG OF BOREHOLE 15

BORING DATE: October 16, 2008
ELEVATION DATUM: N/A
SAMPLER HAMMER, 63.5kg; DROP, 760mm

BORING METHOD: CME 75 - Truck - Solid Stem Augers

SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	TYPE	"N" VALUE
GROUND SURFACE		0.0			
125mm Asphalt	■	0.0			
(FILL) **Granular Road Base**	▨	0.0			
(FILL) Compact, brown; **sandy silt,** trace topsoil	▨	0.42	1	SS	35
			2	SS	19
Hard, reddish brown; **SILTY CLAY**	▨	0.0 1.40			
		0.0	3	SS	50/125
Reddish brown; **Weathered Shale**	▤	1.80			
			4	SS	50/100
			5	SS	50/50
		0.0	6	SS	50/0
END OF BOREHOLE		4.57			



INSTALLATION INFORMATION

NOTES:
Borehole dry upon completion of drilling.

SHEET 1 OF 1

A. CUMMINGS

7-08-3098-15.D

Terraprobe

PROJECT No: 7-08-3098

CLIENT: Delcan Corporation

LOCATION: Speers Road, Oakville, Ontario
West bound lane, outside lane

LOG OF BOREHOLE 16

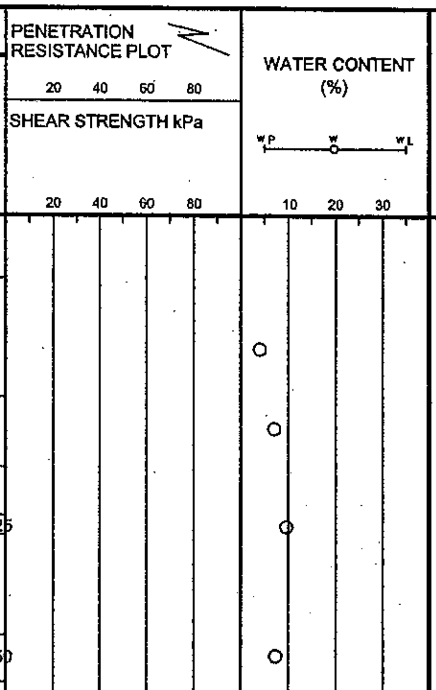
BORING DATE: October 16, 2008

ELEVATION DATUM: N/A

SAMPLER HAMMER, 63.5kg; DROP, 760mm

BORING METHOD: CME 75 - Truck - Solid Stem Augers

DEPTH SCALE IN METRES	SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	TYPE	"N" VALUE
0	**GROUND SURFACE**		0.0			
	150mm Asphalt	■	0.0			
	(FILL) **Granular Road Base**	▩	0.0 0.50	1	SS	80
1	**(FILL)** Stiff, reddish brown; **silty clay,** with pieces of shale	▩	0.0 0.90	2	SS	14
	Hard, reddish brown; **SILTY CLAY**	▨	0.0 1.50			
2	Reddish brown; **Completely to Highly Weathered Shale**	☰	0.0 2.59	3 4	SS SS	50/125 50/150
3	**END OF BOREHOLE**					



INSTALLATION INFORMATION

NOTES:
Borehole dry upon completion of drilling.

SHEET 1 OF 1

A. CUMMINGS

7-08-3098-16.D

Terraprobe

LOG OF BOREHOLE 17

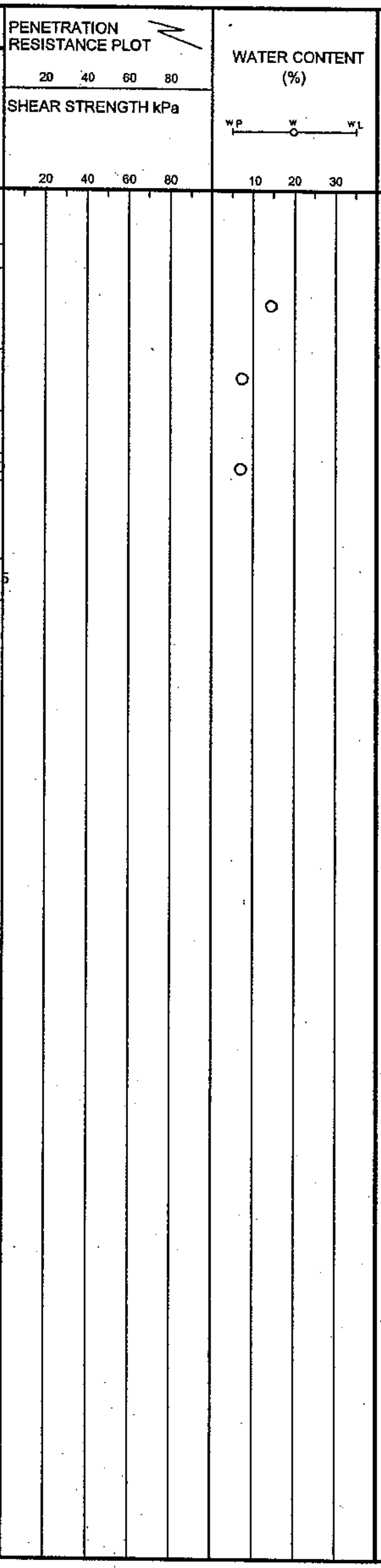
PROJECT No: 7-08-3098
CLIENT: Delcan Corporation
LOCATION: Speers Road, Oakville, Ontario
East bound lane, outside lane

BORING DATE: October 16, 2008
ELEVATION DATUM: N/A
SAMPLER HAMMER, 63.5kg; DROP, 760mm

BORING METHOD: CME 75 - Truck - Solid Stem Augers

DEPTH SCALE IN METRES: 0 – 9

SOIL PROFILE			SAMPLES		
DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	NUMBER	TYPE	"N" VALUE
GROUND SURFACE		0.0			
150mm Asphalt	■	0.0			
(FILL) **Granular Road Base**	▩	0.0	1	SS	40
Stiff to hard, reddish brown; **SILTY CLAY**	▨	0.45			
			2	SS	14
		0.0	3	SS	50/50
Reddish brown; **Highly Weathered Shale**	▤	1.65			
		0.0	4	SS	50/125
END OF BOREHOLE		2.56			



INSTALLATION INFORMATION

NOTES:
Borehole dry upon completion of drilling.

SHEET 1 OF 1

A. CUMMINGS

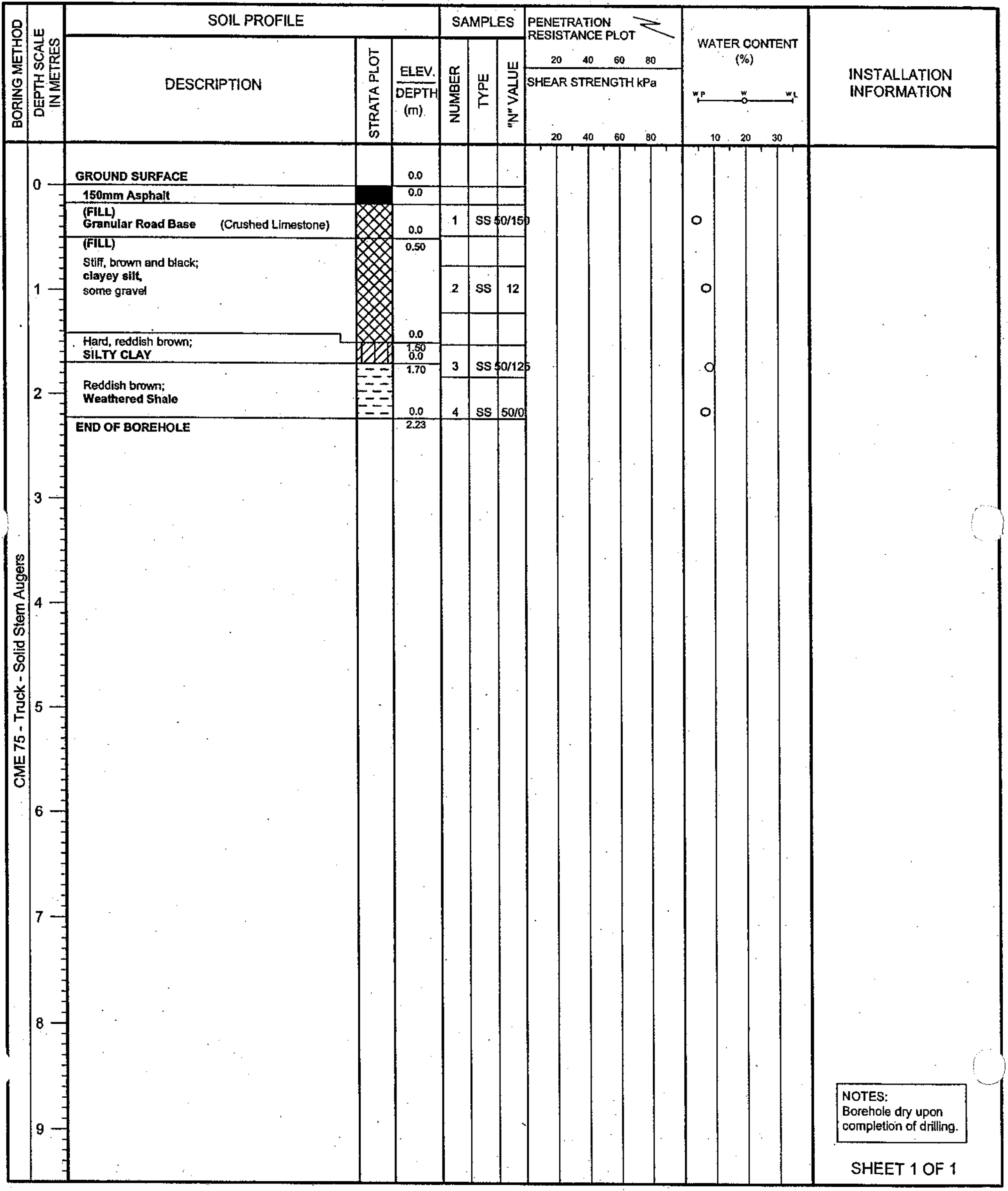
7-08-3098-17.D

Terraprobe

LOG OF BOREHOLE 18

PROJECT No: 7-08-3098
CLIENT: Delcan Corporation
LOCATION: Speers Road, Oakville, Ontario
West bound lane, outside lane

BORING DATE: October 20, 2008
ELEVATION DATUM: N/A
SAMPLER HAMMER, 63.5kg; DROP, 760mm



BORING METHOD: CME 75 - Truck - Solid Stem Augers

DEPTH SCALE IN METRES	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	"N" VALUE
	GROUND SURFACE		0.0			
0	**150mm Asphalt**	■	0.0			
	(FILL) **Granular Road Base** (Crushed Limestone)	▩	0.0	1	SS	50/150
1	**(FILL)** Stiff, brown and black; **clayey silt,** some gravel	▩	0.50 0.0	2	SS	12
	Hard, reddish brown; **SILTY CLAY**	▨	1.50 0.0			
2	Reddish brown; **Weathered Shale**	▤	1.70 0.0	3 4	SS SS	50/125 50/0
	END OF BOREHOLE		2.23			

NOTES:
Borehole dry upon completion of drilling.

SHEET 1 OF 1

A. CUMMINGS

7-08-3098-17.D

Terraprobe

LOG OF BOREHOLE 19

PROJECT No: 7-08-3098
CLIENT: Delcan Corporation
LOCATION: Speers Road, Oakville, Ontario
East bound lane, inside lane

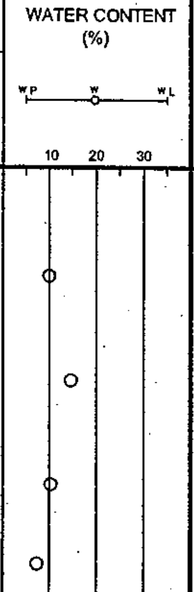
BORING DATE: October 20, 2008
ELEVATION DATUM: N/A
SAMPLER HAMMER, 63.5kg; DROP, 760mm

BORING METHOD: CME 75 - Truck - Solid Stem Augers

DEPTH SCALE IN METRES	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	"N" VALUE
0	**GROUND SURFACE**		0.0			
	150mm Asphalt	■	0.0			
	(FILL) **Granular Road Base**	▩	0.0 0.60	1	SS	50/100
1	Very stiff to hard, reddish brown; **SILTY CLAY**	▨	0.0 1.50	2	SS	25
2	Reddish brown; **Highly Weathered Shale**	☰		3	SS	90/200
			0.0 2.23	4	AS	
	END OF BOREHOLE Auger Refusal					

PENETRATION RESISTANCE PLOT: 20 40 60 80
SHEAR STRENGTH kPa: 20 40 60 80

WATER CONTENT (%)



INSTALLATION INFORMATION

NOTES:
Borehole dry upon completion of drilling.

A. CUMMINGS

7-08-3098-19.D

SHEET 1 OF 1

Terraprobe

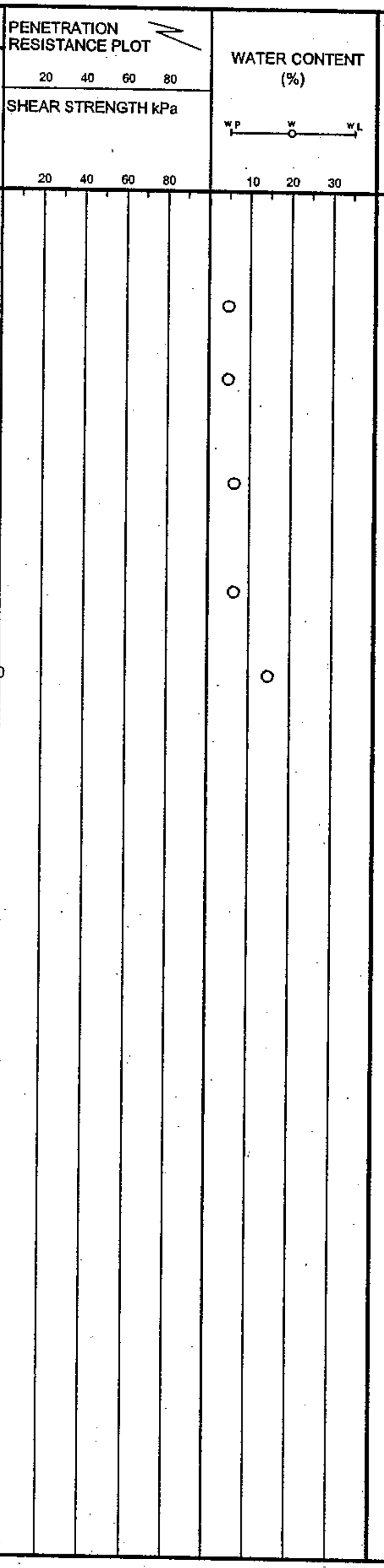
PROJECT No: 7-08-3098
CLIENT: Delcan Corporation
LOCATION: Speers Road, Oakville, Ontario
West bound lane, inside lane

LOG OF BOREHOLE 20

BORING DATE: October 20, 2008
ELEVATION DATUM: N/A
SAMPLER HAMMER, 63.5kg; DROP, 760mm

BORING METHOD: CME 75 - Truck - Solid Stem Augers

DEPTH SCALE IN METRES	SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES NUMBER	TYPE	"N" VALUE	INSTALLATION INFORMATION
0	**GROUND SURFACE**		0.0				
	125mm Asphalt	■	0.0				
	(FILL) **Granular Road Base**	▨	0.0 0.30				
	(FILL) Loose to compact, brown; **fine to medium sand,** trace silt, trace gravel	▨		1	SS	63	
1		▨		2	SS	24	
		▨		3	SS	9	
2		▨		4	SS	5	
3	Reddish brown and grey; **Weathered Shale**		0.0 2.90	5	SS	50/150	Oct.20/08 ▼
	END OF BOREHOLE Auger Refusal		0.0 3.20				



Depth scale: 0 1 2 3 4 5 6 7 8 9

A. CUMMINGS

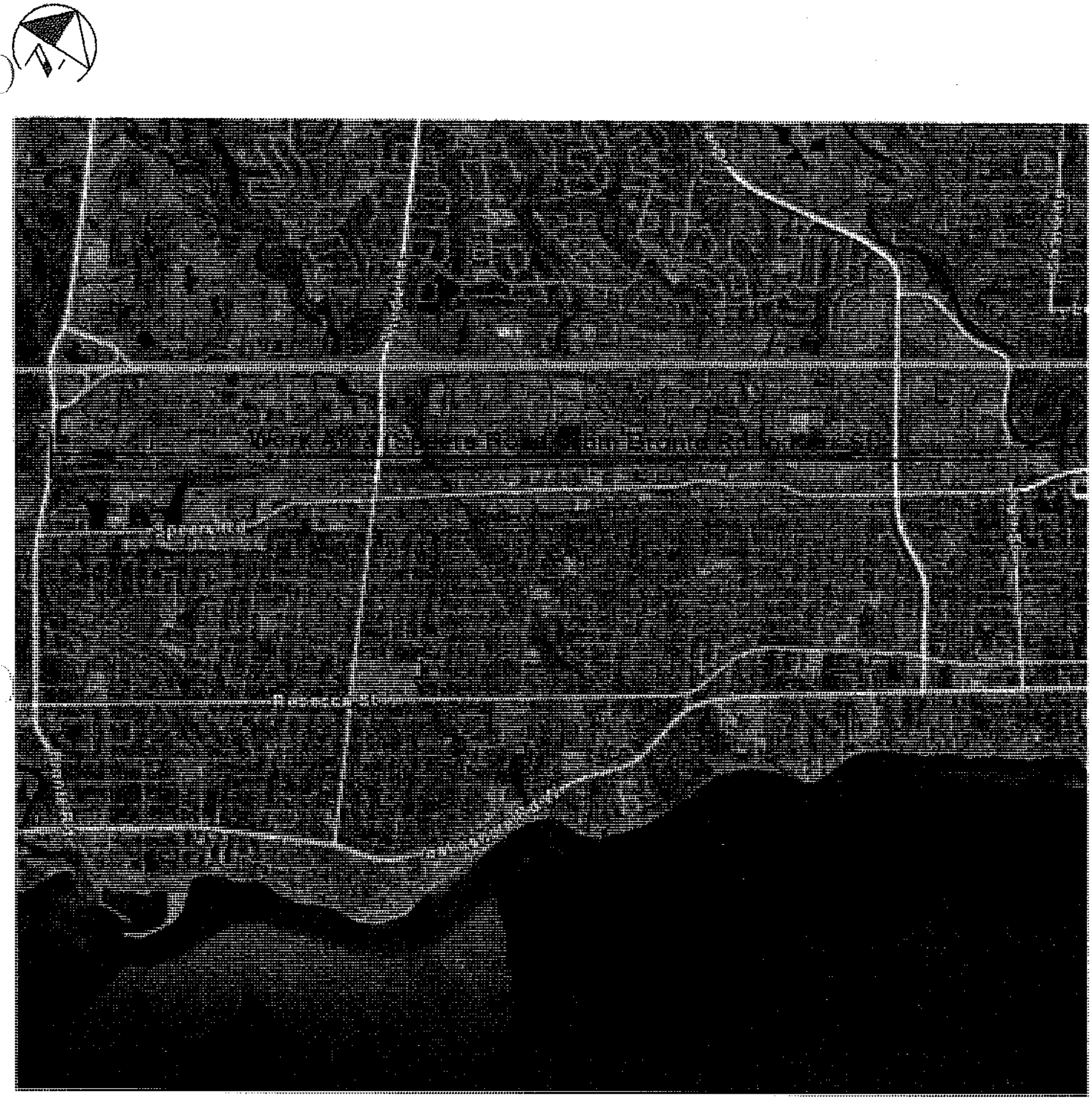
7-08-3098-20.DY

NOTES:
Water level in open borehole a depth of 3.05m after drilling.

SHEET 1 OF 1

Figures

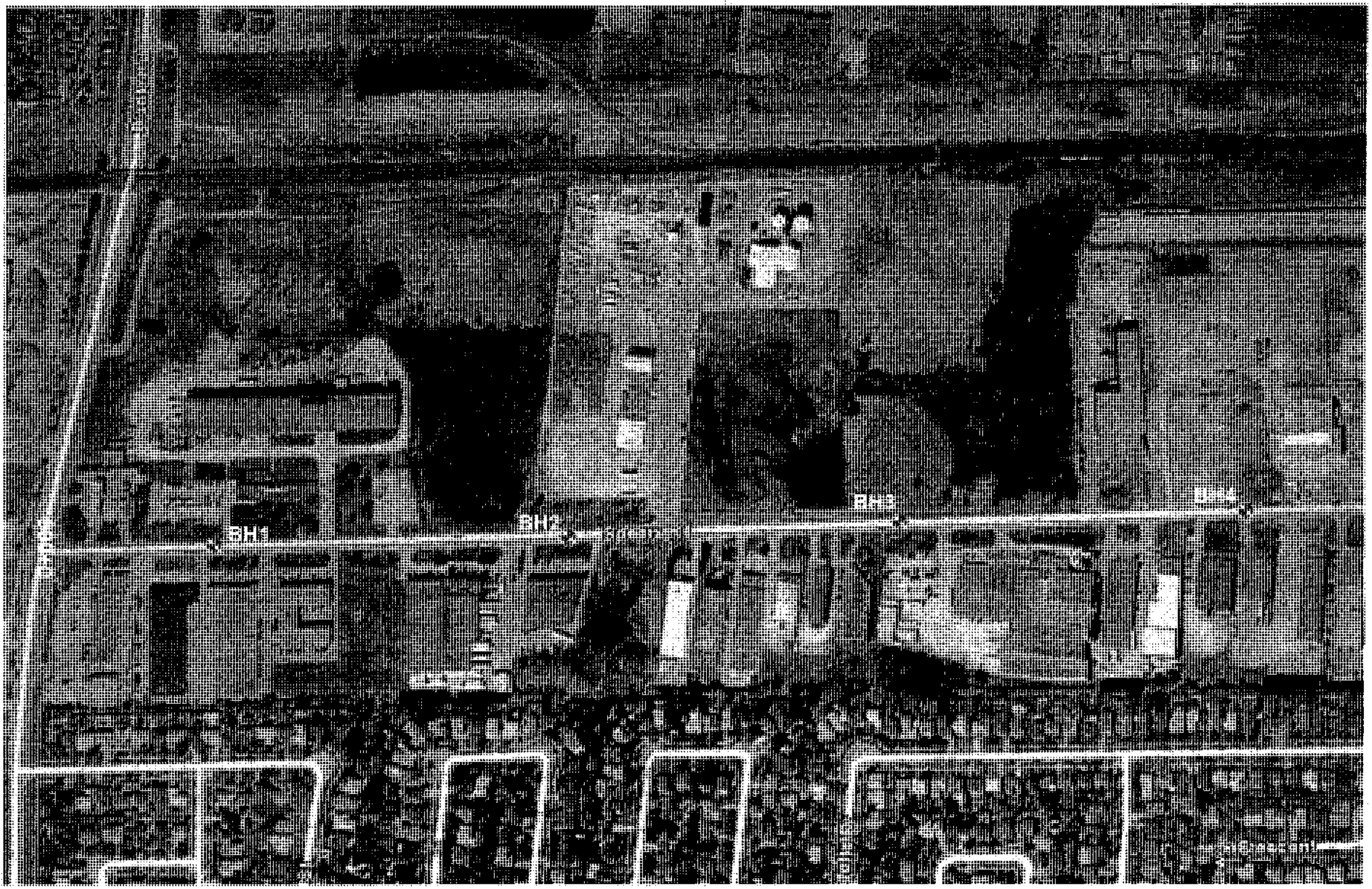
Terraprobe Limited



Site Location Plan
Speers Road
Oakville, Ontario

Terraprobe
903 Barton Street, Unit 22
Stoney Creek, Ontario, L8E 5P5
(905) 643-7560 / Fax (905) 643-7559

Drawn By: A.C.	**Scale:** N.T.S.	**Project No.:** 7-08-3098
Checked By: G.M.	**Date:** Dec. 2008	**Figure No.:** 1

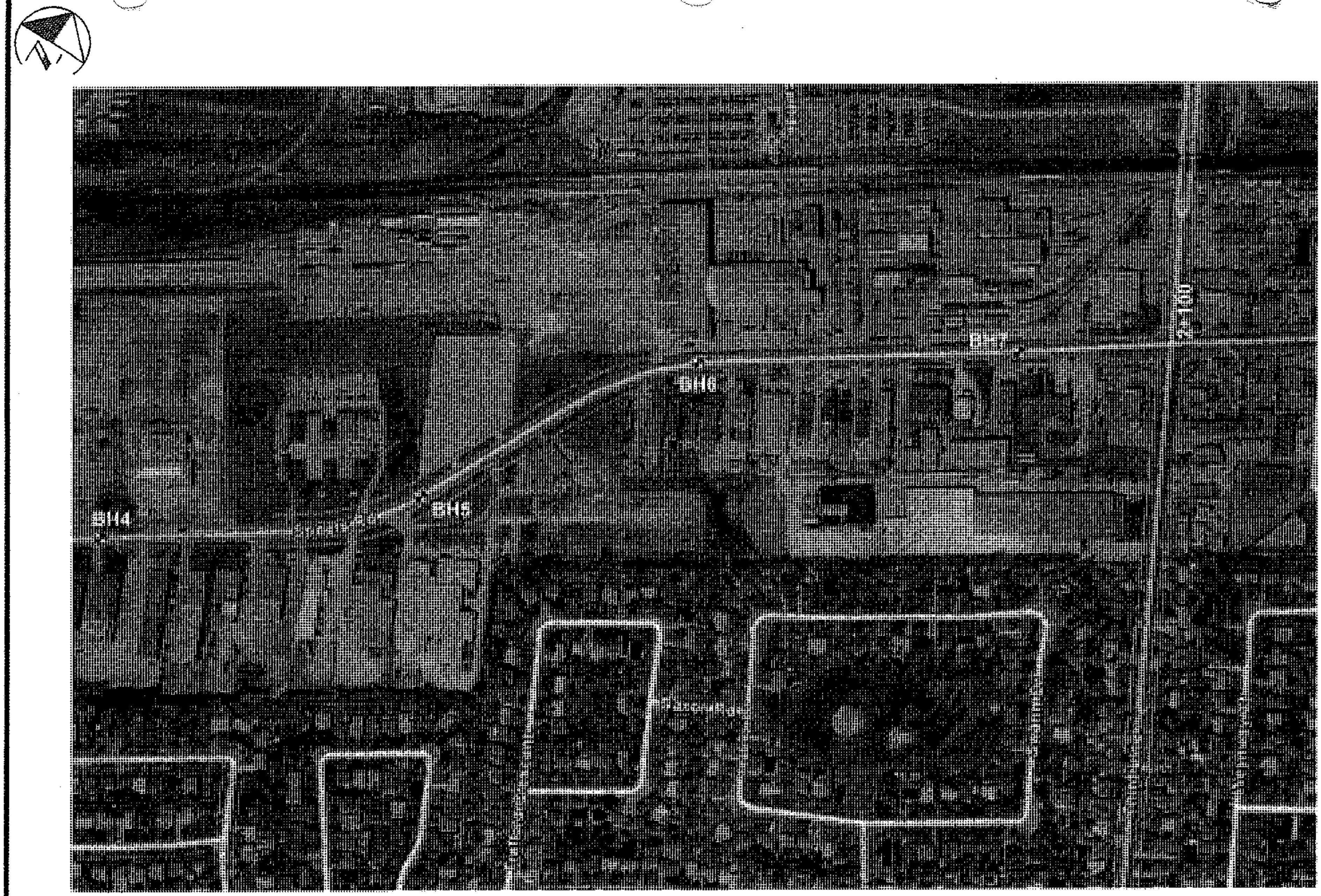


LEGEND

⌖ Location of Borehole

All locations and scales are aproximate.

Borehole Location Plan **Oakville, Ontario**		**Terraprobe** 903 Barton Street, Unit 22 Stoney Creek, Ontario, L8E 5P5 (905) 643-7560 Fax (905) 643-7559
Drawn By: A.C.	**Scale:** 1:5000	**Project No.:** 7-08-3098
Checked By: G.M.	**Date:** Dec. 2008	**Figure No.:** 2

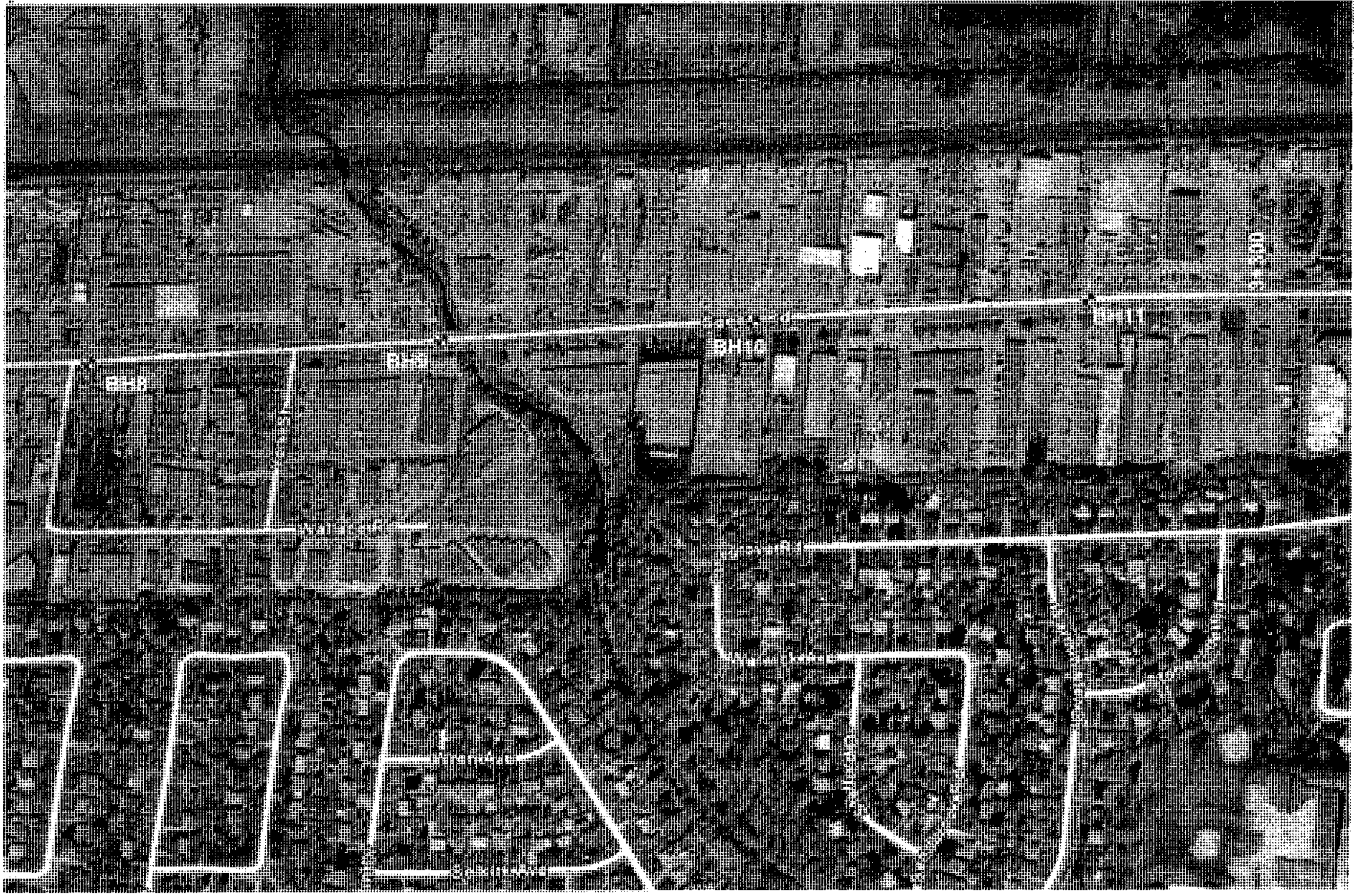


LEGEND

- ⌖ Location of Borehole

All locations and scales are aproximate.

Borehole Location Plan Oakville, Ontario		**Terraprobe** 903 Barton Street, Unit 22 Stoney Creek, Ontario, L8E 5P5 (905) 643-7560/Fax (905) 643-7559
Drawn By: A.C.	**Scale:** 1:5000	**Project No.:** 7-08-3098
Checked By: G.M.	**Date:** Dec. 2008	**Figure No.:** 3



LEGEND

✦ Location of Borehole

All locations and scales are approximate.

Borehole Location Plan
Oakville, Ontario

Terraprobe
[illegible], Unit 22
[illegible], Ontario, L8E 5P5
[illegible] Fax (905) 643-7559

Drawn By: A.C.

Scale: [illegible]

Project No.: T-[illegible]098

Checked By: S.M.

Date: Dec. [illegible]

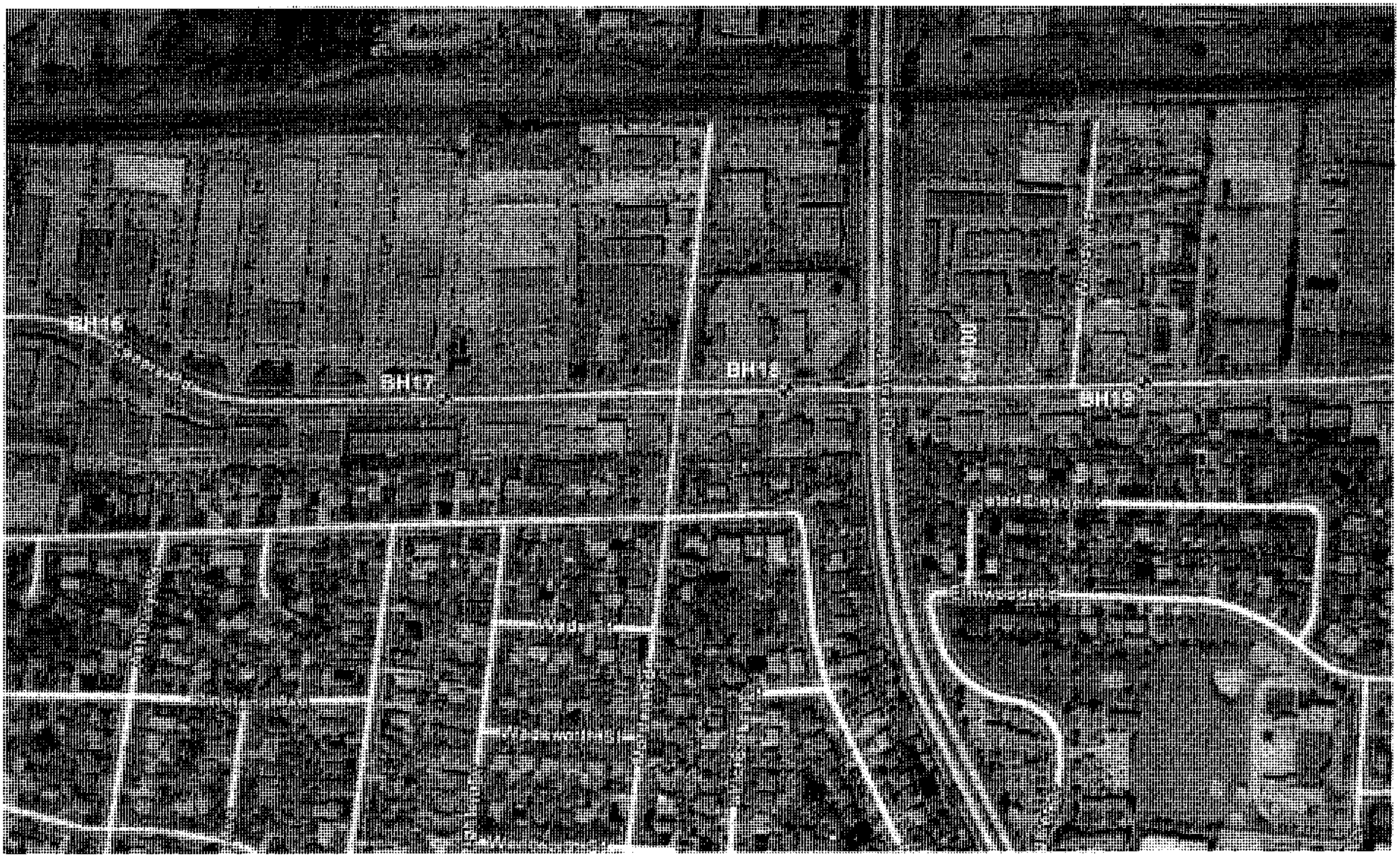
Figure No.: 4

LEGEND

-◆- Location of Borehole

All locations and scales are aproximate.

Borehole Location Plan **Oakville, Ontario**		**Terraprobe** 903Barton Street, Unit 22 Stoney Creek, Ontario, L8E 5P5 (905) 643-7560/Fax (905) 643-7559
Drawn By: A.C.	**Scale:** 1:5000	**Project No.:** 7-08-3098
Checked By: G.M.	**Date:** Dec. 2008	**Figure No.:** 5



LEGEND

⌖ Location of Borehole

All locations and scales are aproximate.

Borehole Location Plan
Oakville, Ontario

Terraprobe
903 Barton Street, Unit 22
Stoney Creek, Ontario, L8E 5P5
(905) 643-7560/Fax (905) 643-7559

Drawn By: A.C.	**Scale:** 1:5000	**Project No.:** 7-08-3098
Checked By: G.M.	**Date:** Dec. 2008	**Figure No.:** 6

LEGEND

⊕ Location of Borehole

All locations and scales are aproximate.

Borehole Location Plan **Oakville, Ontario**		**Terraprobe** 903Barton Street, Unit 22 Stoney Creek, Ontario, L8E 5P5 (905) 643-7560/Fax (905) 643-7559
Drawn By: A.C.	**Scale:** 1:5000	**Project No.:** 7-08-3098
Checked By: G.M.	**Date:** Dec. 2008	**Figure No.:** 7

Certificates of Analysis

APPENDIX A

Terraprobe Limited

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
L4Z 1Y2

AGAT® Laboratories

TEL: (905) 712-5100
FAX: (905) 712-5122
www.agatlabs.com

CLIENT NAME: TERRAPROBE
903 Barton Street
Stoney Creek, ON L8E5P5

ATTENTION TO: Garry Muckle

PROJECT NO: 7-08-3098

AGAT WORK ORDER: 08H300839

SOIL ANALYSIS REVIEWED BY: Elizabeth Polakowska, MSc (Animal Sci), PhD (Agri Sci), Inorganic Lab Supervisor

DATE REPORTED: Nov 04, 2008

PAGES (INCLUDING COVER): 4

Should you require any information regarding this analysis please contact your client services representative at (905) 712 5100, or at 1-800-856-6261

**NOTES*

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT® Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
L4Z 1Y2

TEL: (905) 712-5100
FAX: (905) 712-5122
www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 08H300839
PROJECT NO: 7-08-3098

CLIENT NAME: TERRAPROBE

ATTENTION TO: Garry Muckle

O. Reg. 153 Metals & Inorganics in Soil - Table 1

DATE SAMPLED: Oct 17, 2008 DATE RECEIVED: Oct 27, 2008 DATE REPORTED: Nov 04, 2008 SAMPLE TYPE: Soil

	Unit	G / S	RDL	BH 2 SA2 1128039	BH 4 SA3 1128063	BH 11 SA2 1128064	BH 13 SA2 1128065	BH 15 SA2 1128066	BH 17 SA2 1128067
Antimony	µg/g		0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g		0.3	3.4	3.6	2.6	4.1	4.6	5.7
Barium	µg/g		0.2	140	111	57.1	55.7	98.4	102
Beryllium	µg/g		0.2	0.9	0.6	0.8	0.6	0.6	1.0
Boron (Hot Water Extractable)	µg/g		0.10	0.14	0.40	0.41	0.48	0.20	0.20
Cadmium	µg/g		0.2	<0.2	<0.2	<0.2	0.3	<0.2	<0.2
Chromium	µg/g		0.3	25.6	16.8	23.4	18.2	16.7	25.2
Cobalt	µg/g		0.2	14.3	10.5	13.4	10.3	8.5	15.1
Copper	µg/g		0.2	7.8	17.8	32.3	24.9	30.3	11.4
Lead	µg/g		0.3	8.3	14.5	2.8	59.7	10.0	8.0
Molybdenum	µg/g		0.3	0.5	0.5	<0.3	0.8	0.5	1.0
Nickel	µg/g		0.3	30.1	23.0	29.5	22.8	20.5	33.2
Selenium	µg/g		0.4	<0.4	<0.4	<0.4	<0.4	0.5	<0.4
Silver	µg/g		0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	µg/g		0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Vanadium	µg/g		0.2	34.1	22.1	27.1	26.7	25.8	42.1
Zinc	µg/g		0.2	59.0	83.6	65.0	86.3	43.3	59.1
Chromium, Hexavalent	µg/g		0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Cyanide, Free	µg/g		0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Mercury	µg/g		0.011	<0.011	<0.011	<0.011	0.021	0.024	<0.011
Electrical Conductivity (2:1)	mS/cm		0.002	1.84	1.53	2.00	1.42	3.18	1.81
Sodium Adsorption Ratio (2:1)	N/A		N/A	8.30	3.70	10.4	14.8	53.7	5.79
pH (2:1)	N/A		N/A	7.75	7.90	8.26	8.47	8.46	7.95
Chloride (2:1)	µg/g		20	1180	663	1240	647	2070	1030

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

1128039-1128067 EC, SAR, pH and Chloride were determined on the extract obtained from the 2:1 extraction (2 parts DI water:1 part soil).

Certified By: Elizabeth Rolakowska

Quality Assurance

CLIENT NAME: TERRAPROBE
PROJECT NO: 7-08-3098

AGAT WORK ORDER: 08H300839
ATTENTION TO: Garry Muckle

Soil Analysis

RPT Date: Nov 04, 2008			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153 Metals & Inorganics in Soil - Table 1															
Antimony (µg/g)	1	1128067	< 0.8	< 0.8	0.0%	< 0.8	109%	90%	110%	82%	70%	130%	82%	70%	130%
Arsenic (µg/g)	1	1128067	5.7	5.5	3.6%	< 0.3	101%	90%	110%	90%	90%	110%	92%	70%	130%
Barium (µg/g)	1	1128067	102	98.0	4.0%	< 0.2	107%	90%	110%	88%	80%	120%	93%	70%	130%
Beryllium (µg/g)	1	1128067	1.0	1.0	0.0%	< 0.2	101%	80%	120%	85%	80%	120%	87%	70%	130%
Boron (Hot Water Extractable) (µg/g)	1	1128064	0.41	0.42	2.4%	< 0.10	100%	90%	110%	105%	90%	110%	107%	80%	120%
Cadmium (µg/g)	1	1128067	< 0.2	< 0.2	0.0%	< 0.2	100%	90%	110%	90%	80%	120%	95%	70%	130%
Chromium (µg/g)	1	1128067	25.2	24.6	2.4%	< 0.3	93%	90%	110%	92%	90%	110%	92%	70%	130%
Cobalt (µg/g)	1	1128067	15.1	14.6	3.4%	< 0.2	115%	80%	120%	90%	90%	110%	96%	70%	130%
Copper (µg/g)	1	1128067	11.4	11.0	3.6%	< 0.2	94%	90%	110%	93%	90%	110%	88%	70%	130%
Lead (µg/g)	1	1128067	8.0	7.8	2.5%	< 0.3	101%	90%	110%	90%	90%	110%	84%	70%	130%
Molybdenum (µg/g)	1	1128067	1.0	1.0	0.0%	< 0.3	95%	90%	110%	90%	90%	110%	98%	70%	130%
Nickel (µg/g)	1	1128067	33.2	32.5	2.1%	< 0.3	106%	90%	110%	90%	90%	110%	92%	70%	130%
elenium (µg/g)	1	1128067	< 0.4	< 0.4	0.0%	< 0.4	91%	90%	110%	89%	80%	120%	91%	70%	130%
Silver (µg/g)	1	1128067	< 0.2	< 0.2	0.0%	< 0.2	100%	90%	110%	85%	80%	120%	97%	70%	130%
Thallium (µg/g)	1	1128067	< 0.2	< 0.2	0.0%	< 0.2	96%	90%	110%	80%	80%	120%	92%	70%	130%
Vanadium (µg/g)	1	1128067	42.1	41.3	1.9%	< 0.2	98%	90%	110%	93%	90%	110%	94%	70%	130%
Zinc (µg/g)	1	1128067	59.1	57.6	2.6%	< 0.2	97%	90%	110%	99%	90%	110%	90%	70%	130%
Chromium, Hexavalent (µg/g)	1	1128067	< 0.40	< 0.40	0.0%	< 0.40	95%	80%	120%	97%	80%	120%	94%	80%	120%
Cyanide, Free (µg/g)	1		< 0.08	< 0.08	0.0%	< 0.08	107%	90%	110%	97%	90%	110%	109%	80%	120%
Mercury (µg/g)	1	1128039	< 0.011	< 0.011	0.0%	< 0.011	103%	90%	110%	102%	90%	120%	105%	70%	130%
Electrical Conductivity (2:1) (mS/cm)	1	1128065	1.42	1.39	2.1%	< 0.002	99%	90%	110%						
Sodium Adsorption Ratio (2:1) (N/A)	1	1128065	14.8	14.8	0.0%	N/A									
pH (2:1) (N/A)	1	1128065	8.47	8.48	0.1%	N/A	100%	90%	110%						
Chloride (2:1) (µg/g)	1	1128065	647	637	1.6%	< 2.0	103%	80%	120%	93%	80%	120%	95%	80%	120%

Certified By: Elizabeth Rotokowska

Method Summary

CLIENT NAME: TERRAPROBE
PROJECT NO: 7-08-3098

AGAT WORK ORDER: 08H300839
ATTENTION TO: Garry Muckle

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET 1003	EPA SW-846 3050B & 6020	ICP-MS
Arsenic	MET 1003	EPA SW-846 3050B & 6020	ICP-MS
Barium	MET 1003	EPA SW-846 3050B & 6020	ICP-MS
Beryllium	MET 1003	EPA SW-846 3050B & 6020	ICP-MS
Boron (Hot Water Extractable)	MET 1004	EPA SW 846 6010; MSA, Part 3, Ch.21	ICP/OES
Cadmium	MET 1003	EPA SW-846 3050B & 6020	ICP-MS
Chromium	MET 1003	EPA SW-846 3050B & 6020	ICP-MS
Cobalt	MET 1003	EPA SW-846 3050B & 6020	ICP-MS
Copper	MET 1003	EPA SW-846 3050B & 6020	ICP-MS
Lead	MET 1003	EPA SW-846 3050B & 6020	ICP-MS
Molybdenum	MET 1003	EPA SW-846 3050B & 6020	ICP-MS
Nickel	MET 1003	EPA SW-846 3050B & 6020	ICP-MS
Selenium	MET 1003	EPA SW-846 3050B & 6020	ICP-MS
Silver	MET 1003	EPA SW-846 3050B & 6020	ICP-MS
Thallium	MET 1003	EPA SW-846 3050B & 6020	ICP-MS
Vanadium	MET 1003	EPA SW-846 3050B & 6020	ICP-MS
Zinc	MET 1003	EPA SW-846 3050B & 6020	ICP-MS
Chromium, Hexavalent	INOR 1029	SM 3500 B; MSA Part 3, Ch. 25	SPECTROPHOTOMETER
Cyanide, Free	INOR 1052	MOE CN-3015 & E 3009 A;SM 4500 CN	TECHNICON AUTO ANALYZER
Mercury	MET 1001	EPA SW 846 7471A, 245.5	CVAAS
Electrical Conductivity (2:1)	INOR 1036	McKeague 4.12 & SM 2510 B	EC METER
Sodium Adsorption Ratio (2:1)	INOR 1007	McKeague 4.12 & 3.26 & EPA SW-846 6010B	ICP/OES
pH (2:1)	INOR 1031	McKeague 4.12 & SM 4500-H+ B	pH METER
Chloride (2:1)	INOR 1005	McKeague 4.12 & SM 4110 B	ION CHROMATOGRAPH

AGAT® Laboratories

CHAIN OF CUSTODY RECORD

5835 Co Avenue
Mississauga, Onta L4Z 1Y2
Phone: 905-712-5100; Fax: 905-712-5122
Toll free: 800-856-6261
www.agatlabs.com http://webearth.agatlabs.com

LA RAT US NLY
Arrival Condition: ☐ Good ☐ Poor (com "notes")
Arrival Temperature: 21.1 AGAT WO#: 08T300859
Notes:

Terraprobe Limited
903 Barton Street, Unit 22
Stoney Creek, Ontario L8E 5P5
Ph.: (905)643-7560 **Fax:** (905)643-7559
Contact: Garry Muckle

Phone: Fax:
Project: 1-08-3098 PO:
AGAT Quotation #:

Please note, if quotation number is not provided, client will be billed full price for analysis.

Invoice To Same as Above? Yes/No (circle)
Company:
Contact:
Address:
Phone: Fax:

Report Information - reports to be sent to:
1. Name:
Email:
2. Name:
Email:

Regulatory Requirements
☑ Regulation 153 Table 1 (Indicate one)
☐ Ind/Com
☐ Res/Park
☐ Agriculture
Soil Texture (check one) ☐ Coarse ☒ Med/Fine
☐ Sewer Use Region (Indicate one)
☐ Sanitary
☐ Storm
☐ Regulation 558
☐ CCME
☐ Other (indicate)
☐ Prov. Water Quality Objectives (PWQO)
☐ Drinking Water (circle one) 170/243/252

☐ ☐

Report Format
☐ Single Sample per page
☑ Multiple Samples per page
☐ Results by fax

Turnaround Time (TAT) Required*
Regular TAT:
☑ 5 to 7 Working Days
Rush TAT: (please provide prior notification)
Rush Surcharges Apply
☐ 3 to 5 Working Days
☐ 1 to 3 Working Days
☐ 1 Working Day
OR
DATE REQUIRED (Rush surcharges may apply):

*TAT is exclusive of weekends and statutory holidays

Sample Identification	Date Sampled	Time Sampled	Sample Matrix	# of Containers	Comments – Site/Sample Information	Metals and Inorganics	Metal Scan (exclud. Hg, B, Cr6)	CCME Fractions 1 to 4	VOCs	PAHs	PCBs	TCLP Metals/Inorganics	TCLP	Storm Sewer Use	Sanitary Sewer Use							LABORATORY USE ONLY LAB SAMPLE ID
BH2 Sa 2	Oct 17		Soil	1		✓																
BH4 Sa 3				1		✓																
BH11 Sa 2				1		✓																
BH 13 Sa 2				1		✓																
BH 15 Sa 2				1		✓																
BH 17 Sa 2			↓	1		✓																

Samples Relinquished By (print name & sign)	Date/Time	Samples Received By (print name & sign) Chris [illegible]	Date/Time Oct 27 2:59pm	Pink Copy - Client	PAGE ____ of ____
Samples Relinquished By (print name & sign)	Date/Time	Samples Received By (print name & sign)	Date/Time Oct 28 10:50	Yellow Copy - AGAT White Copy - AGAT	NO: 127120

Appendix B

McWilliam & Associates Landscape Architecture, Environmental Planning

September 30, 2008

Andrew McGregor
Delcan Corporation
4056 Dorchester Road
Niagara Falls, Ontario L2E 6M9

Dear Sir

Re: Speers Road Environmental Assessment, Oakville, ON
Street Tree Inventory Report

INTRODUCTION

The study area includes Speers Road from Bronte Road in the west to Kerr Street in the east. It extends a distance of approximately 6.0 kilometers in an east-west direction south of and parallel to the Queen Elizabeth Way in the Town of Oakville.

The roadway passes through an area of light industrial buildings, typically one to two stories high. In the vicinity of the Kerr Street intersection the land uses change from industrial to commercial. The major cross streets include 3rd Line, 4th Line, and Dorval Drive. The study area passes through an area of relatively flat topography

The roadway is to be upgraded and widened. The road improvements will have an impact on some of the existing street trees located along the road corridor.

This report identifies the trees that are located along the corridor, within the existing road allowance. It provides information on the location, size, health and general condition of the trees.

The survey was conducted by James McWilliam, BES, BLA, OALA on September 23 and 24, 2008.

SURVEY RESULTS

The following table identifies the trees that are located along the road allowance through the study area. The location of the trees is identified on the accompanying mapping.

Tree Survey, Speers Road, Oakville

ID #	Botanical Name	Common Name	Size	Condition	Comments
1	Malus sp.	Crab Apple	100mm cal.	good	
2	*Quercus alba*	White Oak	300mm cal.	good	
3	*Salix alba*	Weeping Willow	1000mm cal.	good	
4	*Fraxinus pennsylvanica*	Green Ash	300mm cal.	good	
5	*Fraxinus pennsylvanica*	Green Ash	300mm cal.	good	
6	*Pinus nigra*	Austrian Pine	300mm cal.	good	

7	*Pinus nigra*	Austrian Pine	300mm cal.	good	
8	*Pinus nigra*	Austrian Pine	300mm cal.	good	
9	*Pinus nigra*	Austrian Pine	300mm cal.	good	
10	*Pinus nigra*	Austrian Pine	300mm cal.	good	
11	*Pinus nigra*	Austrian Pine	300mm cal.	good	
12	*Gleditsia triacanthos inermis*	Honey Locust	300mm cal.	good	
13	*Gleditsia triacanthos inermis*	Honey Locust	250mm cal.	good	
14	*Gleditsia triacanthos inermis*	Honey Locust	200mm cal.	good	
15	*Gleditsia triacanthos inermis*	Honey Locust	200mm cal.	good	
16	*Gleditsia triacanthos inermis*	Honey Locust	200mm cal.	good	
17	*Malus sp.*	Crab Apple	300mm cal.	good	
18	*Tilia cordata*	Little Leaf Linden	450mm cal.	good	
19	*Gleditsia triacanthos inermis*	Honey Locust	400mm cal.	good	
20	*Pinus nigra*	Austrian Pine	300mm cal.	good	
21	*Pinus nigra*	Austrian Pine	300mm cal.	good	
22	*Cotinus sp.*	Smoketree	100mm cal.	good	
23	*Betula papyrifera*	Paper Birch	50mm cal.	good	
24	*Acer plantanoides*	Norway Maple	400mm cal.	good	
25	*Pinus nigra*	Austrian Pine	300mm cal.	good	
26	*Pinus nigra*	Austrian Pine	300mm cal.	good	
27	*Acer plantanoides*	Norway Maple	100mm cal.	good	
28	*Fraxinus pennsylvanica*	Green Ash	50-400mm cal.	good	
29	*Acer plantanoides*	Norway Maple	50mm cal.	good	
30	*Fraxinus pennsylvanica*	Green Ash	200mm cal.	good	
31	*Fraxinus pennsylvanica*	Green Ash	300mm cal.	good	
32	*Acer plantanoides*	Norway Maple	50mm cal.	good	
33	*Pinus nigra*	Austrian Pine	80mm cal.	good	
34	*Acer plantanoides*	Norway Maple	300mm cal.	good	
35	*Fraxinus pennsylvanica*	Green Ash	300-400mm cal.	good	
36	*Picea glauca*	White Spruce	100mm cal.	good	
37	*Picea glauca*	White Spruce	100mm cal.	good	
38	*Pinus nigra*	Austrian Pine	400mm cal.	good	
39	*Fraxinus pennsylvanica*	Green Ash	600mm cal.	fair-good	
40	*Fraxinus pennsylvanica*	Green Ash	300mm cal.	good	
41	*Picea glauca*	White Spruce	180mm cal.	good	
42	*Tilia cordata*	Little Leaf Linden	200-300mm cal.	good	
43	*Fraxinus pennsylvanica*	Green Ash	200-300mm cal.	good	
44	*Fraxinus pennsylvanica*	Green Ash	200mm cal.	good	
45	*Picea glauca*	White Spruce	300mm cal.	good	
46	*Picea glauca*	White Spruce	80mm cal.	good	
47	*Picea glauca*	White Spruce	80mm cal.	good	
48	*Picea glauca*	White Spruce	300mm cal.	good	
49	*Acer negendo*	Manitoba Maple	200mm cal.	good	

50	*Fraxinus pennsylvanica*	Green Ash	60mm cal.	good	
51	*Fraxinus pennsylvanica*	Green Ash	60mm cal.	good	
52	*Pinus nigra*	Austrian Pine	100mm cal.	good	
53	*Pinus nigra*	Austrian Pine	400mm cal.	good	
54	*Picea pungens glauca*	Colorado Blue Spruce	200-300mm cal.	good	
55	*Acer plantanoides*	Norway Maple	50mm cal.	good	
56	*Acer plantanoides*	Norway Maple	50mm cal.	good	
57	*Acer plantanoides*	Norway Maple	50mm cal.	good	
58	*Picea glauca*	White Spruce	50mm cal.	good	
59	*Acer plantanoides*	Norway Maple	50mm cal.	good	
60	*Malus sp.*	Crab Apple	75mm cal.	good	
61	*Malus sp.*	Crab Apple	75mm cal.	good	
62	*Picea glauca*	White Spruce	50mm cal.	good	
63	*Picea glauca*	White Spruce	50mm cal.	good	
64	*Acer plantanoides*	Norway Maple	50mm cal.	good	
65	*Gleditsia triacanthos inermis*	Honey Locust	400mm cal.	good	
66	*Fraxinus pennsylvanica*	Green Ash	400mm cal.	good	
67	*acer saccharum*	Sugar Maple	300mm cal.	good	
68	*Thuja occidentalis*	White Cedar	300mm cal.	good	
69	*Acer plantanoides*	Norway Maple	350mm cal.	good	
70	*Acer plantanoides*	Norway Maple	350mm cal.	good	
71	*Gleditsia triacanthos inermis*	Honey Locust	300mm cal.	good	
72	*Gleditsia triacanthos inermis*	Honey Locust	100mm cal.	good	
73	*Acer plantanoides*	Norway Maple	300mm cal.	good	
74	*acer saccharum*	Sugar Maple	200mm cal.	good	
75	*Gleditsia triacanthos inermis*	Honey Locust	150mm cal.	good	
76	*Acer plantanoides*	Norway Maple	200mm cal.	good	
77	*Acer plantanoides*	Norway Maple	250mm cal.	good	
78	*Acer plantanoides*	Norway Maple	300mm cal.	good	
79	*Acer plantanoides*	Norway Maple	200mm cal.	good	
80	*Acer plantanoides*	Norway Maple	200mm cal.	good	
81	*Acer plantanoides*	Norway Maple	150mm cal.	good	
82	*Acer plantanoides*	Norway Maple	150mm cal.	good	
83	*Acer plantanoides*	Norway Maple	200mm cal.	good	
84	*Acer plantanoides*	Norway Maple	150mm cal.	good	
85	*Acer plantanoides*	Norway Maple	150mm cal.	good	
86	*Acer plantanoides*	Norway Maple	200mm cal.	good	
87	*Acer plantanoides*	Norway Maple	150mm cal.	good	
88	*Acer plantanoides*	Norway Maple	100mm cal.	good	
89	*Gleditsia triacanthos inermis*	Honey Locust	50mm cal.	good	
90	*Acer plantanoides*	Norway Maple	300mm cal.	good	
91	*Acer plantanoides*	Norway Maple	300mm cal.	good	
92	*Acer plantanoides*	Norway Maple	300mm cal.	good	
93	*Tilia cordata*	Little Leaf Linden	100mm cal.	fair	
94	*Tilia cordata*	Little Leaf Linden	150mm cal.	good	
95	*Tilia cordata*	Little Leaf Linden	175mm cal.	good	
96	*Pinus nigra*	Austrian Pine	300mm cal.	good	
97	*Pinus nigra*	Austrian Pine	300mm cal.	good	

98	*Gleditsia triacanthos inermis*	Honey Locust	60mm cal.	good	
99	*Prunus virginiana*	Choke Cherry	150mm cal.	fair	
100	*Acer saccharinum*	Silver Maple	100mm cal.	good	
101	*Malus sp.*	Crab Apple	60mm cal.	good	
102	*Picea glauca*	White Spruce	300mm cal.	fair	
103	*Acer plantanoides*	Norway Maple	200mm cal.	good	
104	*Malus sp.*	Crab Apple	60mm cal.	good	
105	*Celtis occidentalis*	Hackberry	130mm cal.	good	
106	*Malus sp.*	Crab Apple	60mm cal.	good	
107	*Celtis occidentalis*	Hackberry	60mm cal.	good	
108	*Celtis occidentalis*	Hackberry	150mm cal.	good	
109	*Pinus nigra*	Austrian Pine	250mm cal.	good	
110	*Pinus nigra*	Austrian Pine	250mm cal.	good	
111	*Malus sp.*	Crab Apple	60mm cal.	good	
112	*Malus sp.*	Crab Apple	60mm cal.	good	
113	*Gleditsia triacanthos inermis*	Honey Locust	120mm cal.	good	
114	*Acer plantanoides*	Norway Maple	400mm cal.	good	
115	*Gleditsia triacanthos inermis*	Honey Locust	400mm cal.	good	
116	*Fraxinus pennsylvanica*	Green Ash	300mm cal.	good	
117	*Gleditsia triacanthos inermis*	Honey Locust	150mm cal.	good	
118	*Gleditsia triacanthos inermis*	Honey Locust	150mm cal.	good	
119	*Gleditsia triacanthos inermis*	Honey Locust	150mm cal.	good	
120	*Gleditsia triacanthos inermis*	Honey Locust	200mm cal.	good	
121	*Gleditsia triacanthos inermis*	Honey Locust	200mm cal.	good	
122	*Acer plantanoides*	Norway Maple	200mm cal.	good	
123	*Gleditsia triacanthos inermis*	Honey Locust	200mm cal.	good	
124	*Gleditsia triacanthos inermis*	Honey Locust	200mm cal.	good	
125	*Acer plantanoides*	Norway Maple	200mm cal.	good	
126	*Gleditsia triacanthos inermis*	Honey Locust	200mm cal.	good	
127	*Gleditsia triacanthos inermis*	Honey Locust	200mm cal.	good	
128	*Gleditsia triacanthos inermis*	Honey Locust	200mm cal.	good	
129	*Gleditsia triacanthos inermis*	Honey Locust	200mm cal.	good	
130	*Gleditsia triacanthos inermis*	Honey Locust	200mm cal.	good	
131	*Prunus virginiana*	Choke Cherry	60mm cal.	good	
132	*Caragana sp.*	Pea Shrub	80mm cal.	good	
133	*Malus sp.*	Crab Apple	200mm cal.	good	
134	*Fraxinus pennsylvanica*	Green Ash	50mm cal.	good	
135	*Pinus nigra*	Austrian Pine	400mm cal.	good	
136	*Pinus nigra*	Austrian Pine	400mm cal.	good	
137	*Gleditsia triacanthos inermis*	Honey Locust	200mm cal.	good	
138	*Pinus nigra*	Austrian Pine	400mm cal.	good	
139	*Pinus nigra*	Austrian Pine	400mm cal.	good	

140	*Gleditsia triacanthos inermis*	Honey Locust	200mm cal.	good	
141	*Acer plantanoides*	Norway Maple	300mm cal.	good	
142	*Gleditsia triacanthos inermis*	Honey Locust	100mm cal.	good	
143	*Gleditsia triacanthos inermis*	Honey Locust	150mm cal.	good	
144	*Gleditsia triacanthos inermis*	Honey Locust	250mm cal.	good	
145	*Acer plantanoides*	Norway Maple	300mm cal.	dead	
146	*Gleditsia triacanthos inermis*	Honey Locust	250mm cal.	good	
147	*Gleditsia triacanthos inermis*	Honey Locust	50mm cal.	good	
148	*Gleditsia triacanthos inermis*	Honey Locust	100mm cal.	good	
149	*Pinus nigra*	Austrian Pine	300mm cal.	good	
150	*Pinus nigra*	Austrian Pine	300mm cal.	good	
151	*Gleditsia triacanthos inermis*	Honey Locust	300mm cal.	good	
152	*Fraxinus pennsylvanica*	Green Ash	200mm cal.	good	
153	*Fraxinus pennsylvanica*	Green Ash	200mm cal.	good	
154	*Pinus nigra*	Austrian Pine	300mm cal.	good	
155	*Acer plantanoides*	Norway Maple	200mm cal.	good	
156	*Acer plantanoides*	Norway Maple	50mm cal.	good	
157	*Gleditsia triacanthos inermis*	Honey Locust	100mm cal.	fair-good	
158	*Malus sp.*	Crab Apple	150mm cal.	good	
159	*Pinus nigra*	Austrian Pine	200mm cal.	good	
160	*Malus sp.*	Crab Apple	150mm cal.	good	
161	*Gleditsia triacanthos inermis*	Honey Locust	100mm cal.	good	
162	*Quercus rubra*	Red Oak	100mm cal.	good	
163	*Pinus nigra*	Austrian Pine	300mm cal.	good	
164	*Pinus nigra*	Austrian Pine	300mm cal.	good	
165	*Gleditsia triacanthos inermis*	Honey Locust	100mm cal.	good	
166	*Malus sp.*	Crab Apple	150mm cal.	good	
167	*Gleditsia triacanthos inermis*	Honey Locust	100mm cal.	good	
168	*Malus sp.*	Crab Apple	200mm cal.	dead	
169	*Gleditsia triacanthos inermis*	Honey Locust	100mm cal.	good	
170	*Malus sp.*	Crab Apple	150mm cal.	fair	
171	*Pinus nigra*	Austrian Pine	300mm cal.	good	
172	*Gleditsia triacanthos inermis*	Honey Locust	50mm cal.	good	
173	*Pinus nigra*	Austrian Pine	300mm cal.	good	
174	*Acer plantanoides*	Norway Maple	300mm cal.	good	
175	*Acer plantanoides*	Norway Maple	300mm cal.	good	
176	*Pinus nigra*	Austrian Pine	200mm cal.	good	
177	*Pinus nigra*	Austrian Pine	200mm cal.	good	
178	*Acer plantanoides*	Norway Maple	300mm cal.	good	
179	*Picea glauca*	White Spruce	200mm cal.	good	
180	*Acer plantanoides*	Norway Maple	150mm cal.	good	
181	*Fraxinus pennsylvanica*	Green Ash	300mm cal.	good	
182	*Gleditsia triacanthos inermis*	Honey Locust	100mm cal.	good	

183	*Pinus nigra*	Austrian Pine	300mm cal.	good	
184	*Quercus rubra*	Red Oak	350mm cal.	good	
185	*Picea glauca*	White Spruce	150mm cal.	good	
186	*Fraxinus pennsylvanica*	Green Ash	50mm cal.	good	
187	*Tilia cordata*	Little Leaf Linden	200mm cal.	good	multi-stem
188	*Tilia cordata*	Little Leaf Linden	300mm cal.	good	
189	*Acer plantanoides*	Norway Maple	180mm cal.	good	
190	*Tilia cordata*	Little Leaf Linden	300mm cal.	good	
191	*Tilia cordata*	Little Leaf Linden	200mm cal.	good	
192	*Fraxinus pennsylvanica*	Green Ash	100mm cal.	good	
193	*Malus sp.*	Crab Apple	250mm cal.	good	
194	*Malus sp.*	Crab Apple	200mm cal.	good	
195	*Fraxinus pennsylvanica*	Green Ash	600 mm cal.	fair	
196	*Acer plantanoides*	Norway Maple	100mm cal.	fair-good	
197	*Gleditsia triacanthos inermis*	Honey Locust	150mm cal.	good	
198	*Gleditsia triacanthos inermis*	Honey Locust	150mm cal.	good	
199	*Acer plantanoides*	Norway Maple	70mm cal.	good	
200	*Gleditsia triacanthos inermis*	Honey Locust	150mm cal.	good	
201	*Malus sp.*	Crab Apple	200mm cal.	good	
202	*Gleditsia triacanthos inermis*	Honey Locust	200mm cal.	good	
203	*Acer plantanoides*	Norway Maple	250mm cal.	good	
204	*Gleditsia triacanthos inermis*	Honey Locust	150mm cal.	good	
205	*Gleditsia triacanthos inermis*	Honey Locust	150mm cal.	good	
206	*Acer plantanoides*	Norway Maple	300mm cal.	good	
207	*Gleditsia triacanthos inermis*	Honey Locust	200mm cal.	good	
208	*Gleditsia triacanthos inermis*	Honey Locust	150mm cal.	good	
209	*Gleditsia triacanthos inermis*	Honey Locust	200mm cal.	good	
210	*Acer plantanoides*	Norway Maple	250mm cal.	good	
211	*Pinus nigra*	Austrian Pine	250mm cal.	good	
212	*Thuja occidentalis*	Cedar	200mm cal.	good	
213	*Pinus nigra*	Austrian Pine	300mm cal.	good	
214	*Fraxinus pennsylvanica*	Green Ash	400mm cal.	good	
215	*Pinus nigra*	Austrian Pine	250mm cal.	good	
216	*Acer plantanoides*	Norway Maple	300mm cal.	good	
217	*Fraxinus pennsylvanica*	Green Ash	400mm cal.	good	
218	*Malus sp.*	Crab Apple	250mm cal.	good	
219	*Prunus x cistena*	Sandcherry	200mm cal.	good	
220	*Prunus x cistena*	Sandcherry	100mm cal.	good	
221	*Fraxinus pennsylvanica*	Green Ash	50mm cal.	good	
222	*Prunus x cistena*	Sandcherry	200mm cal.	good	
223	*Fraxinus pennsylvanica*	Green Ash	300mm cal.	good	
224	*Tilia cordata*	Little Leaf Linden	100mm cal.	good	
225	*Acer plantanoides*	Norway Maple	150mm cal.	good	
226	*Acer plantanoides*	Norway Maple	150mm cal.	good	

227	*Acer plantanoides*	Norway Maple	150mm cal.	good	
228	*Acer plantanoides*	Norway Maple	150mm cal.	good	
229	*Acer plantanoides*	Norway Maple	150mm cal.	good	
230	*Fraxinus pennsylvanica*	Green Ash	250mm cal.	good	
231	*Fraxinus pennsylvanica*	Green Ash	250mm cal.	good	
232	*Acer plantanoides*	Norway Maple	100mm cal.	good	
233	*Acer saccharinum*	Silver Maple	200mm cal.	good	
234	*Pinus nigra*	Austrian Pine	300mm cal.	good	
235	*Acer plantanoides*	Norway Maple	150mm cal.	good	
236	*Acer plantanoides*	Norway Maple	150-250mm cal.	good	12 units
237	*Elaeagnus angustifolia*	Russian Olive	250mm cal.	good	
238	*Acer plantanoides*	Norway Maple	150mm cal.	good	
239	*Acer saccharinum*	Silver Maple	300mm cal.	good	
240	*Amelanchier canadensis*	Serviceberry	50mm cal.	good	
241	*Pinus nigra*	Austrian Pine	300mm cal.	good	
242	*Pinus nigra*	Austrian Pine	200mm cal.	good	
243	*Acer plantanoides*	Norway Maple	150mm cal.	good	
244	*Acer plantanoides*	Norway Maple	100mm cal.	good	
245	*betula papyrifera*	Birch	150mm cal.	good	
246	*Acer saccharinum*	Silver Maple	200mm cal.	good	
247	*Acer plantanoides*	Norway Maple	150mm cal.	good	
248	*Acer plantanoides*	Norway Maple	150mm cal.	good	
249	*Pinus nigra*	Austrian Pine	300mm cal.	good	
250	*Pinus nigra*	Austrian Pine	300mm cal.	good	
251	*Acer plantanoides*	Norway Maple	200mm cal.	good	
252	*Juniperus sp.*	Juniper	200mm cal.	good	
253	*Acer plantanoides*	Norway Maple	200mm cal.	good	
254	*Acer saccharinum*	Silver Maple	150mm cal.	good	
255	*Acer plantanoides*	Norway Maple	200mm cal.	good	
256	*Acer plantanoides*	Norway Maple	150mm cal.	good	
257	*Fraxinus pennsylvanica*	Green Ash	300mm cal.	good	
258	*Gleditsia triacanthos inermis*	Honey Locust	200mm cal.	good	
259	*Acer plantanoides*	Norway Maple	150mm cal.	good	
260	*Acer plantanoides*	Norway Maple	150mm cal.	good	
261	*Acer plantanoides*	Norway Maple	400mm cal.	good	
262	*Fraxinus pennsylvanica*	Green Ash	350mm cal.	good	
263	*Acer plantanoides*	Norway Maple	400mm cal.	good	
264	*Fraxinus pennsylvanica*	Green Ash	200mm cal.	good	
265	*Acer plantanoides*	Norway Maple	100mm cal.	good	
266	*Quercus robur fastigiata*	Pyramid English Oak	100mm cal.	good	5 units
267	*Acer plantanoides*	Norway Maple	100mm cal.	good	
268	*Malus sp.*	Crab Apple	100mm cal.	good	
269	*Elaeagnus angustifolia*	Russian Olive	150mm cal.	good	clump
270	*Pinus nigra*	Austrian Pine	300mm cal.	good	
271	*Prunus x cistena*	Choke Cherry	200mm cal.	good	
272	*Fraxinus pennsylvanica*	Green Ash	450mm cal.	good	

273	*Elaeagnus angustifolia*	Russian Olive	50mm cal.	good	
274	*Prunus x cistena*	Choke Cherry	150mm cal.	good	
275	*Acer plantanoides*	Norway Maple	200mm cal.	good	2 trunks
276	*Gleditsia triacanthos inermis*	Honey Locust	100mm cal.	good	
277	*Fraxinus pennsylvanica*	Green Ash	150mm cal.	good	
278	*Acer plantanoides*	Norway Maple	150mm cal.	good	3 units
279	*Acer plantanoides*	Norway Maple	100-250mm cal.	good	6 units
280	*Gleditsia triacanthos inermis*	Honey Locust	300-400mm cal.	good	6 units
281	*Pinus nigra*	Austrian Pine	250mm cal.	good	
282	*Pinus nigra*	Austrian Pine	450mm cal.	good	
283	*Gleditsia triacanthos inermis*	Honey Locust	150mm cal.	good	8 units
284	*Fraxinus pennsylvanica*	Green Ash	100-300mm cal.	good	2 units
285	*Gleditsia triacanthos inermis*	Honey Locust	300mm cal.	good	
286	*Gleditsia triacanthos inermis*	Honey Locust	300mm cal.	good	
287	*Malus sp.*	Crab Apple	200mm cal.	good	
288	*Pinus nigra*	Austrian Pine	250mm cal.	good	
289	*Acer plantanoides*	Norway Maple	300mm cal.	good	
290	*Acer plantanoides*	Norway Maple	300mm cal.	good	
291	*Pinus nigra*	Austrian Pine	150-400mm cal.	good	6 units
292	*Malus sp.*	Crab Apple	100-200mm cal.	good	4 units
293	*Acer plantanoides*	Norway Maple	400mm cal.	fair	
294	*Malus sp.*	Crab Apple	150mm cal.	good	
295	*Malus sp.*	Crab Apple	400mm cal.	good	
296	*Gleditsia triacanthos inermis*	Honey Locust	300mm cal.	good	
297	*Malus sp.*	Crab Apple	150mm cal.	good	
298	*Acer plantanoides*	Norway Maple	200mm cal.	good	
299	*Gleditsia triacanthos inermis*	Honey Locust	150mm cal.	good	
300	*Malus sp.*	Crab Apple	150mm cal.	good	
301	*Malus sp.*	Crab Apple	200mm cal.	good	
302	*Picea glauca*	White Spruce	200mm cal.	good	5 units
303	*Prunus x cistena*	Sand Cherry	100mm cal.	good	
304	*Acer plantanoides*	Norway Maple	300mm cal.	good	
305	*Malus sp.*	Crab Apple	150mm cal.	good	
306	*Acer plantanoides*	Norway Maple	300mm cal.	good	
307	*Acer plantanoides*	Norway Maple	100mm cal.	good	
308	*Gleditsia triacanthos inermis*	Honey Locust	50-200mm cal.	good	10 units
309	*Acer plantanoides*	Norway Maple	150mm cal.	good	
310	*Fraxinus pennsylvanica*	Green Ash	300mm cal.	fair-good	
311	*Pinus nigra*	Austrian Pine	250mm cal.	good	
312	*Pinus nigra*	Austrian Pine	250mm cal.	good	
313	*Gleditsia triacanthos inermis*	Honey Locust	300mm cal.	good	
314	*Pinus nigra*	Austrian Pine	300mm cal.	good	
315	*Pinus nigra*	Austrian Pine	300mm cal.	good	poor
316	*Acer plantanoides*	Norway Maple	300mm cal.	good	

317	*Pinus nigra*	Austrian Pine	350mm cal.	good	
318	*Acer plantanoides*	Norway Maple	250mm cal.	good	
319	*Acer plantanoides*	Norway Maple	200mm cal.	good	
320	*Gleditsia triacanthos inermis*	Honey Locust	200-300mm cal.	good	3 units
321	*Acer plantanoides*	Norway Maple	250mm cal.	good	
322	*Acer plantanoides*	Norway Maple	300mm cal.	good	
323	*Gleditsia triacanthos inermis*	Honey Locust	100mm cal.	good	
324	*Fraxinus pennsylvanica*	Green Ash	150mm cal.	good	
325	*Acer plantanoides*	Norway Maple	200mm cal.	good	
326	*Acer plantanoides*	Norway Maple	200mm cal.	good	
327	*Acer plantanoides*	Norway Maple	300mm cal.	good	
328	*Fraxinus pennsylvanica*	Green Ash	350mm cal.	good	3 units
329	*Fraxinus pennsylvanica*	Green Ash	150-300mm cal.	good	10 units
330	*Gleditsia triacanthos inermis*	Honey Locust	100mm cal.	good	
331	*Pinus nigra*	Austrian Pine	300mm cal.	good	
332	*Fraxinus pennsylvanica*	Green Ash	300mm cal.	good	
333	*Fraxinus pennsylvanica*	Green Ash	200mm cal.	good	
334	*Acer plantanoides*	Norway Maple	200-400mm cal.	good	4 units
335	*Acer plantanoides*	Norway Maple	60mm cal.	good	
336	*Gleditsia triacanthos inermis*	Honey Locust	100mm cal.	good	
337	*Gleditsia triacanthos inermis*	Honey Locust	300mm cal.	good	
338	*Acer plantanoides*	Norway Maple	100mm cal.	good	
339	*Gleditsia triacanthos inermis*	Honey Locust	100mm cal.	good	
340	*Acer plantanoides*	Norway Maple	60mm cal.	good	
341	*Gleditsia triacanthos inermis*	Honey Locust	300mm cal.	good	13 units
342	*Acer plantanoides*	Norway Maple	200mm cal.	good	
343	*Quercus alba*	White Oak	1000mm cal.	good	
344	*Fraxinus pennsylvanica*	Green Ash	300mm cal.	good	
345	*Pinus nigra*	Austrian Pine	300mm cal.	good	
346	*Ulmus fulva*	Slippery Elm	200mm cal.	good	
347	*Betula papyrifera*	Paper Birch	400mm cal.	fair	
348	*Pinus nigra*	Austrian Pine	300mm cal.	good	

The general analysis of the trees located along the Speers Road right-of-way, as noted in the above survey, has been split into 4 sections, reflecting the four major blocks extending between arterial cross streets, including:

Section 1:	Bronte Road to 3rd Line
Section 2:	3rd Line to 4th Line
Section 3:	4th Line to Dorval Drive
Section 4:	Dorval Drive to Kerr Street

The following sections describe the general character of the streetscape and an analysis of the existing trees located within the right-of-way.

Section 1: Bronte Road to 3rd Line

This most westerly section of the study area extends approximately 2.0 km through an area of light industrial buildings. Most of these industrial buildings are set well back from the roadway with parking lots located between the buildings and the street. Most industrial complexes have a strip of landscaping along the street frontage, providing a visual buffer between parking and the street.

Sidewalks are located along both sides of the road separated from the street by a grass boulevard. These sidewalks are not continuous as sections are missing on both sides at the west end of the section where the roadway cross-section is rural with soft shoulders and swales.

The survey identifies a total of 115 trees located along this section of Speers Road. The dominant species include: Honey Locust (*Gleditsia triacanthos inermis*) Norway Maple (*Acer platanoides*), White Spruce (*Picea glauca*) and Austrian Pine *(Pinus nigra*).

Most trees are in the 50 – 300mm caliper range (young-immature). There are a few larger trees ranging from 300-600mm caliper. These trees are typically remnant specimens preserved when the area was developed. The most significant mature tree is a Weeping Willow (*Salix alba*) located on the north side of Speers Road near the Bronte Road intersection.

Most trees are set well back from the roadway. In the eastern part of this section where the sidewalks extend along both sides of the road, there is a row of boulevard trees (located between the road and the sidewalk) on the north side of Speers Road. These trees are mostly Norway Maples ranging from 100 to 200 mm caliper.

Section 2: 3rd Line to 4th Line

This section of the study area extends approximately 2.0 km through an area of light industrial buildings. Most of these industrial buildings are set well back from the roadway with parking lots located between the buildings and the street. Most industrial complexes have a strip of landscaping along the street frontage, providing a visual buffer between parking and the street.

Sidewalks are located along both sides of the road separated from the street by a grass boulevard. These sidewalks are continuous on the south side of the road but only extend along portions of the north side of the road.

The survey identifies a total of 199 trees located along this section of Speers Road. The dominant species include: Honey Locust (*Gleditsia triacanthos inermis*) Norway Maple (*Acer platanoides*), White Spruce (*Picea glauca*) and Green Ash (*Fraxinus pennsylvanica*).

Most trees are in the 100 – 300mm caliper range (young-immature). There are a few (approximately 12) larger trees ranging from 300-600mm caliper.

There is a discontinuous row of scattered boulevard trees located along the north side of Speers Road. These trees typically located between the sidewalk and the road are mostly Honey Locust, Norway Maple, and Green Ash ranging from 100 to 200 mm caliper.

Section 3: 4th Line to Dorval Drive

This section of the study area extends approximately 1.25 km through an area of light industrial buildings. Most of these industrial buildings are set well back from the roadway with parking lots located between the buildings and the street. Most industrial complexes have a strip of landscaping along the street frontage, providing a visual buffer between parking and the street.

Sidewalks are located along both sides of the road separated from the street by a grass boulevard. There is one short stretch of curb-face sidewalk located on the north side of Speers Road immediately west of Dorval Drive.

The survey identifies a total of 99 trees located along this section of Speers Road. The dominant species include: Honey Locust (*Gleditsia triacanthos inermis*) Norway Maple (*Acer platanoides*), Crab Apple (*Malus sp.*), and Austrian Pine *(Pinus nigra)*.

Most trees are in the 150 – 300mm caliper range (young-immature).

Most trees are set well back from the roadway. Along the north side of Speers Road there are some areas where scattered rows of street trees have been planted in the boulevard strip (located between the road and the sidewalk). These trees are mostly Norway Maples Crab Apple and Green Ash ranging from 100 to 200 mm caliper.

Section 4: Dorval Drive to Kerr Street

This section of the study area extends approximately 0.75 km through an area of light industrial and commercial buildings.

Sidewalks are located along both sides of the road throughout this section of Speers Road. At the west end of this section the sidewalks are separated from the street by a grass boulevard. At the east end curb-face sidewalks are located on both the north and south sides of the street.

The survey identifies a total of 24 trees located along this section of Speers Road. The dominant species is Honey Locust (*Gleditsia triacanthos inermis*).

Most trees are in the 150 – 300mm caliper range (young-immature). There is one significant specimen tree, a White Oak (Quercus alba) 1000mm caliper, located on the south side of the road immediately west of St. Augustine Drive.

CONCLUSIONS:

As noted in the Tree Survey Table, a total of 448 trees were identified within the road corridor in the study area. This number includes all specimen trees and a few groupings of immature trees that were considered as significant vegetation units.

It was noted that of the 448 trees included in this inventory, their general condition was assessed as:

- Good = 435 units
- Fair to good = 4 units
- Fair = 7 units
- Poor to fair = 0 units
- Poor = 0 units
- Dead = 2 units

There were no rare or endangered species identified in the study area.

RECOMMENDATIONS

The following recommendations relate to the existing trees and future street tree plantings that are to be implemented along this portion of the Speers Road corridor.

Mitigation During Construction:

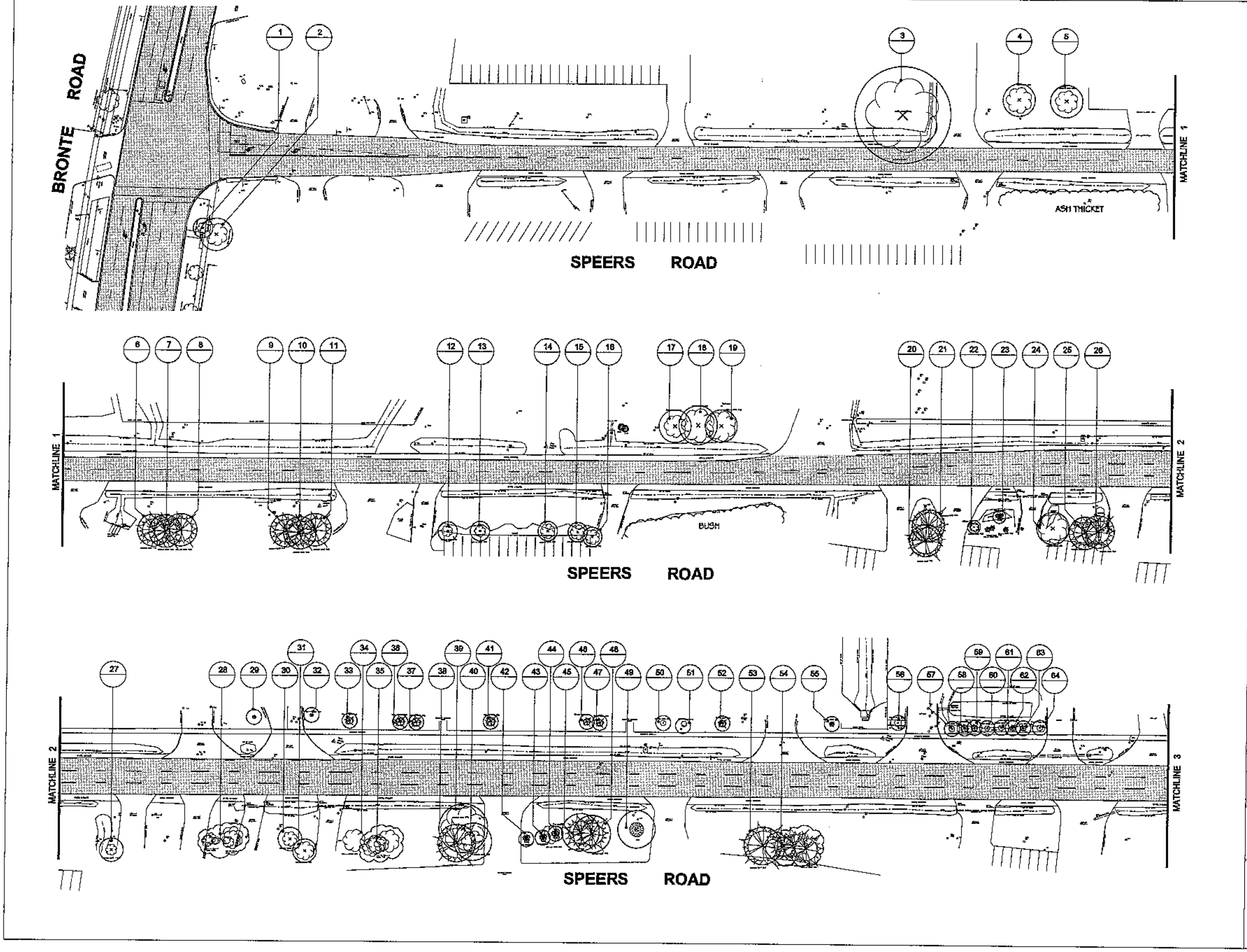
- Construction activities are to avoid damaging existing, healthy, trees located close to the ROW wherever possible. This is to be accomplished by installing suitable tree protection fencing, extending to the 'dripline' of trees designated for protection. This tree protection zone is to remain undisturbed by excavation, storage of materials and equipment, and other construction related activities. The fencing is to remain in place through the duration of construction activities.
- Existing trees scheduled for removal are to be inspected to determine if transplanting is a feasible option.

Street Tree Planting:

- A tree planting plan is to be prepared for the corridor as part of the redesign of the roadway. The plan is to address:
    - Compensation for vegetation requiring removal
    - Planting of new street trees to improve the aesthetics of the streetscape
    - Restoration of disturbed boulevard landscaped areas.
- All tree and shrub plantings within the corridor are to be salt-tolerant, non-invasive, low maintenance, disease/pest resistant and drought tolerant.
- The planting of new trees along the corridor is to be coordinated with existing and proposed utility corridors, and light standards.
- Trees to be planted near overhead utilities to be selected to conform to mature height limitations (Hydro approved species).
- New tree plantings are to be installed as per Town of Oakville standards.

Report Prepared by:

James McWilliam, BES. BLA, OALA, CSLA,
McWilliam & Associates



NO.	DESCRIPTION	DATE

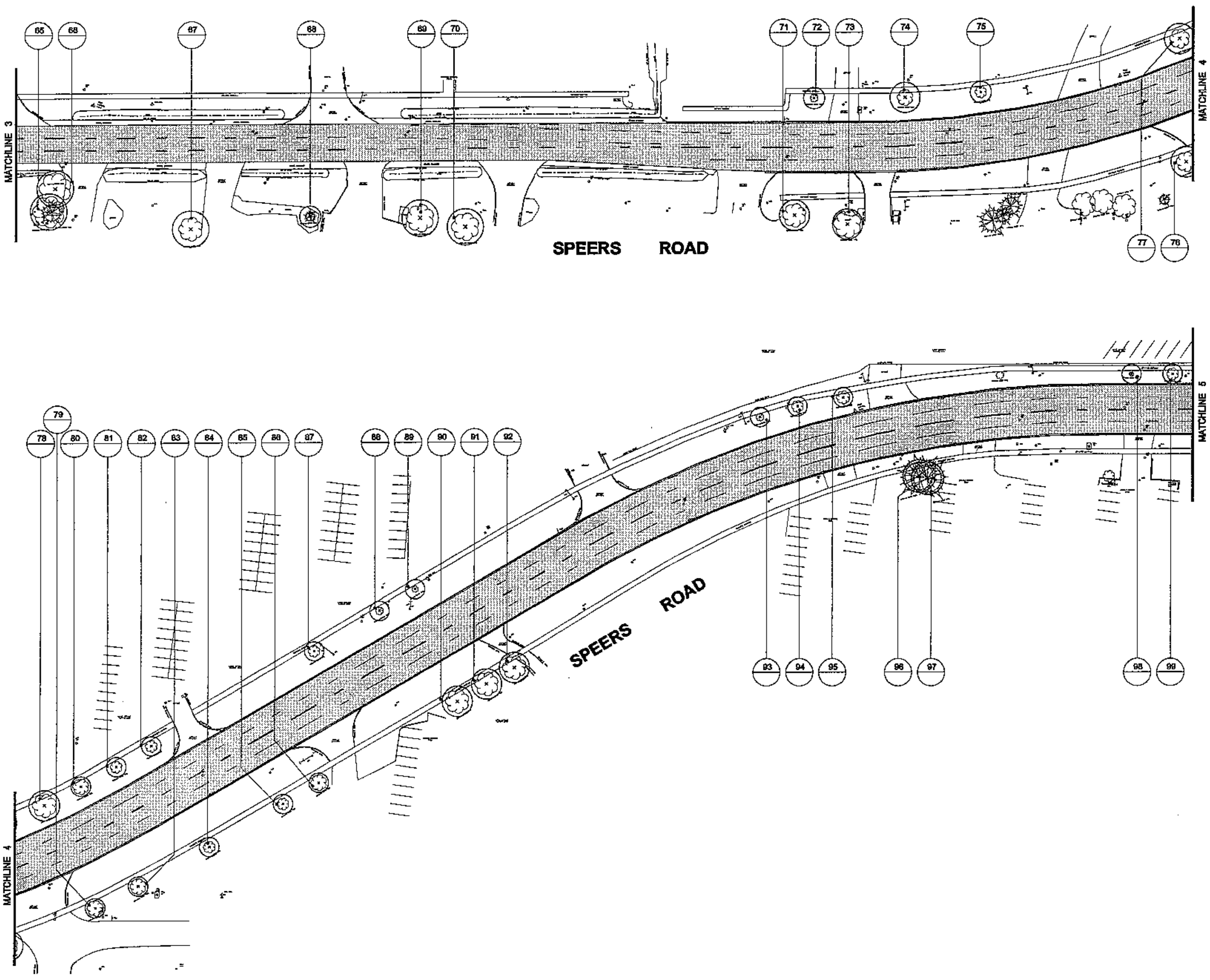
JAMES McWILLIAM
LANDSCAPE ARCHITECT
27 Bayview Drive, St.Catharines, ON, L2N 4Y3
Phone: 905-937-8666, Fax: 905-938-9959

PROJECT
SPEERS ROAD
(BRONTE ROAD TO KERR STREET)
OAKVILLE, ONTARIO

DRAWING
TREE SURVEY PLAN

NORTH

SCALE: 1:500
DATE: OCTOBER 2008
DESIGN BY: J.S.M.
DRAWN BY: T.F.G.
SHEET: L-1



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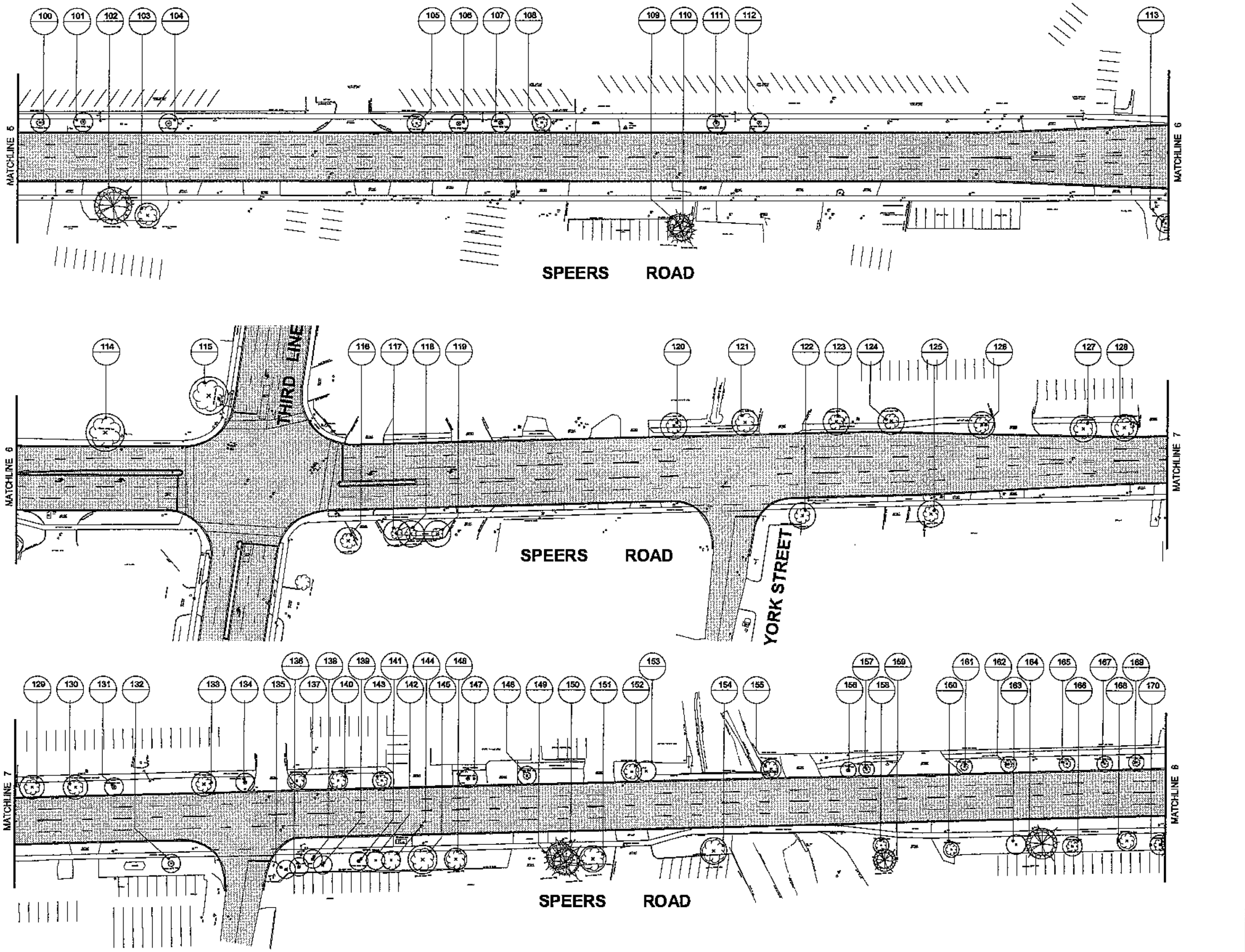

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27 Bayview Drive, St.Catharines, ON, L2N 4Y3
Phone: 905-937-8666, Fax: 905-938-9959

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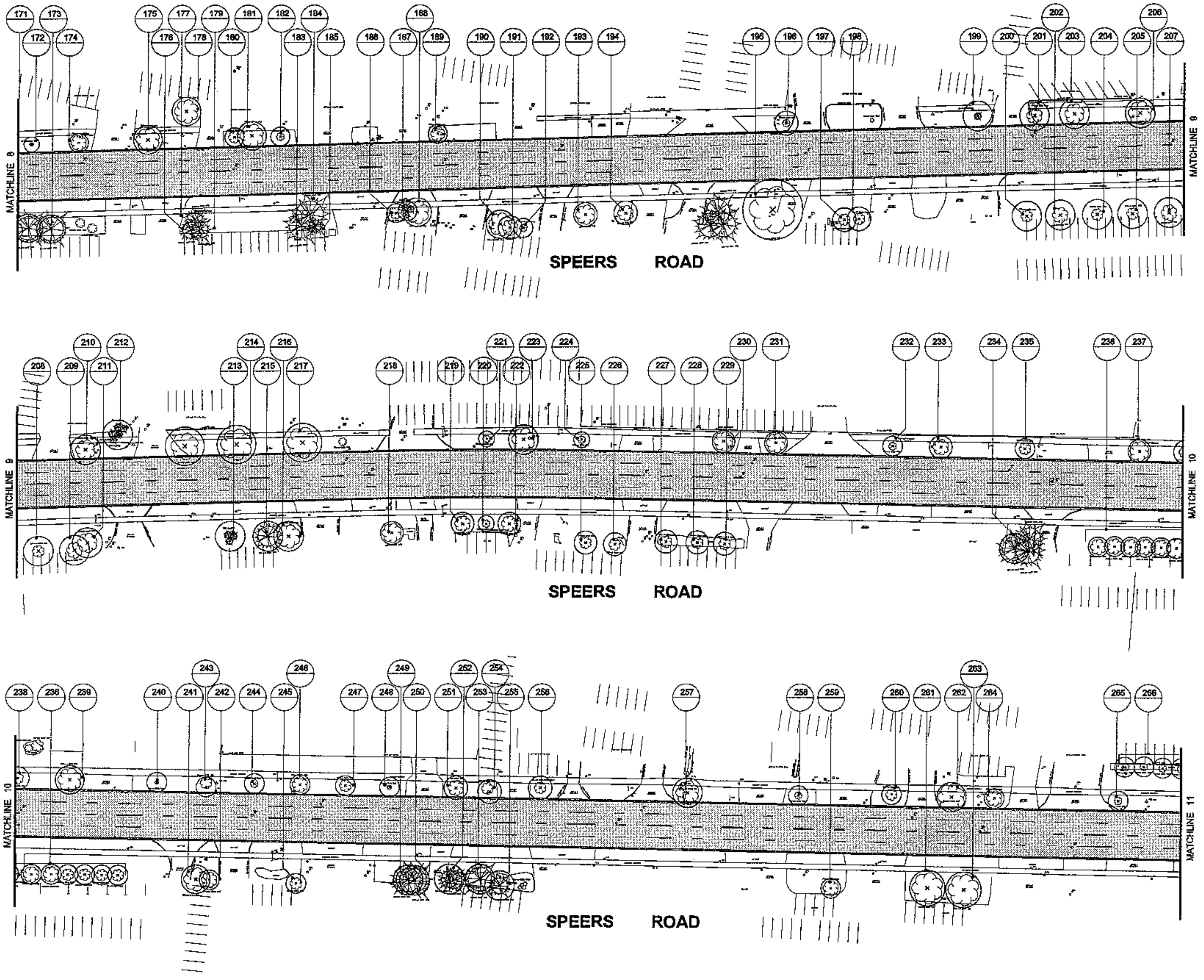

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27 Bayview Drive, St.Catharines, ON, L2N 4Y3
Phone: 905-937-8666, Fax: 905-938-9959

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NORTH

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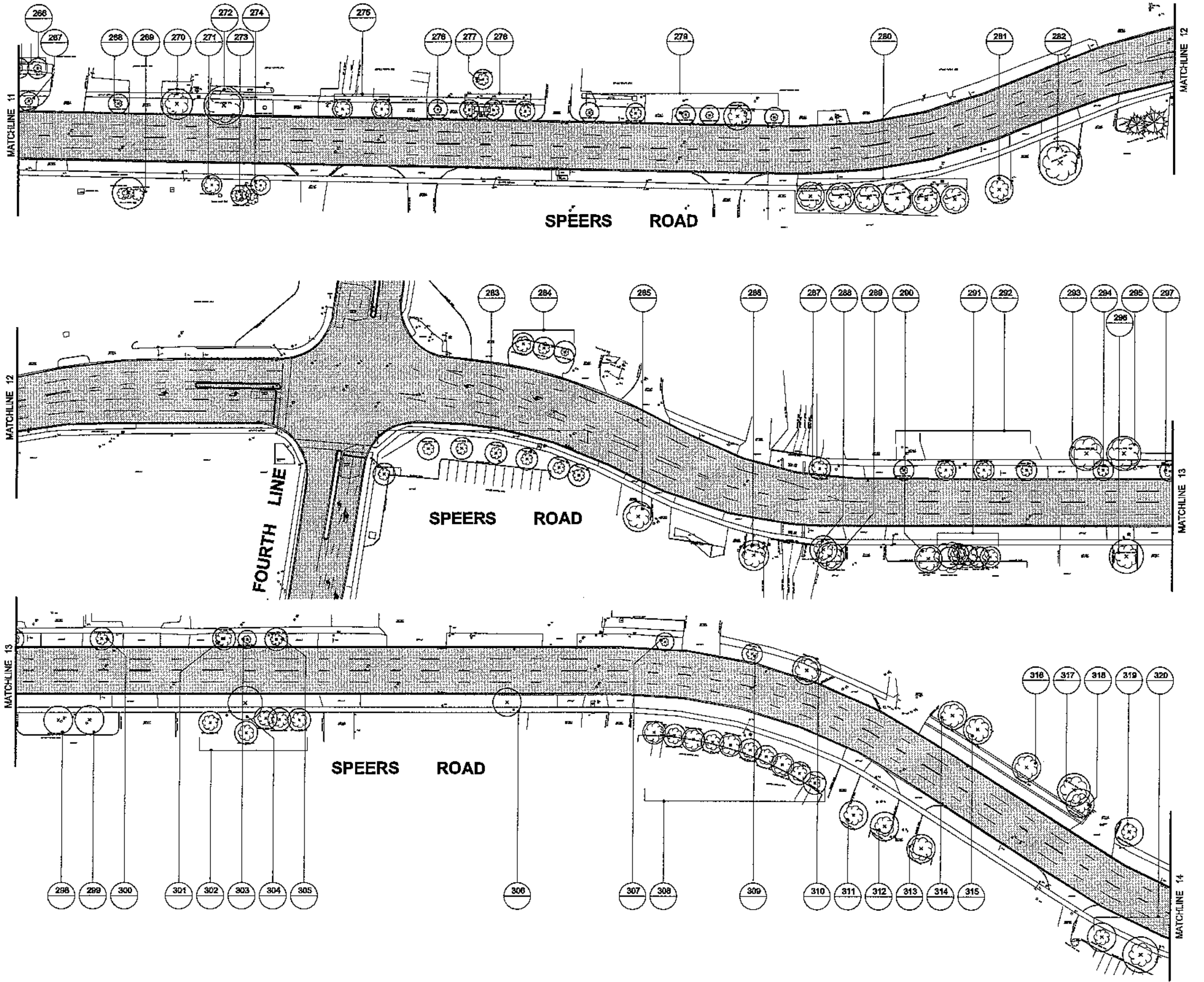

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JAMES McWILLIAM
LANDSCAPE ARCHITECT
27 Bayview Drive, St.Catharines, ON, L2N 4Y3
Phone: 905-937-8666, Fax: 905-938-9959

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NORTH

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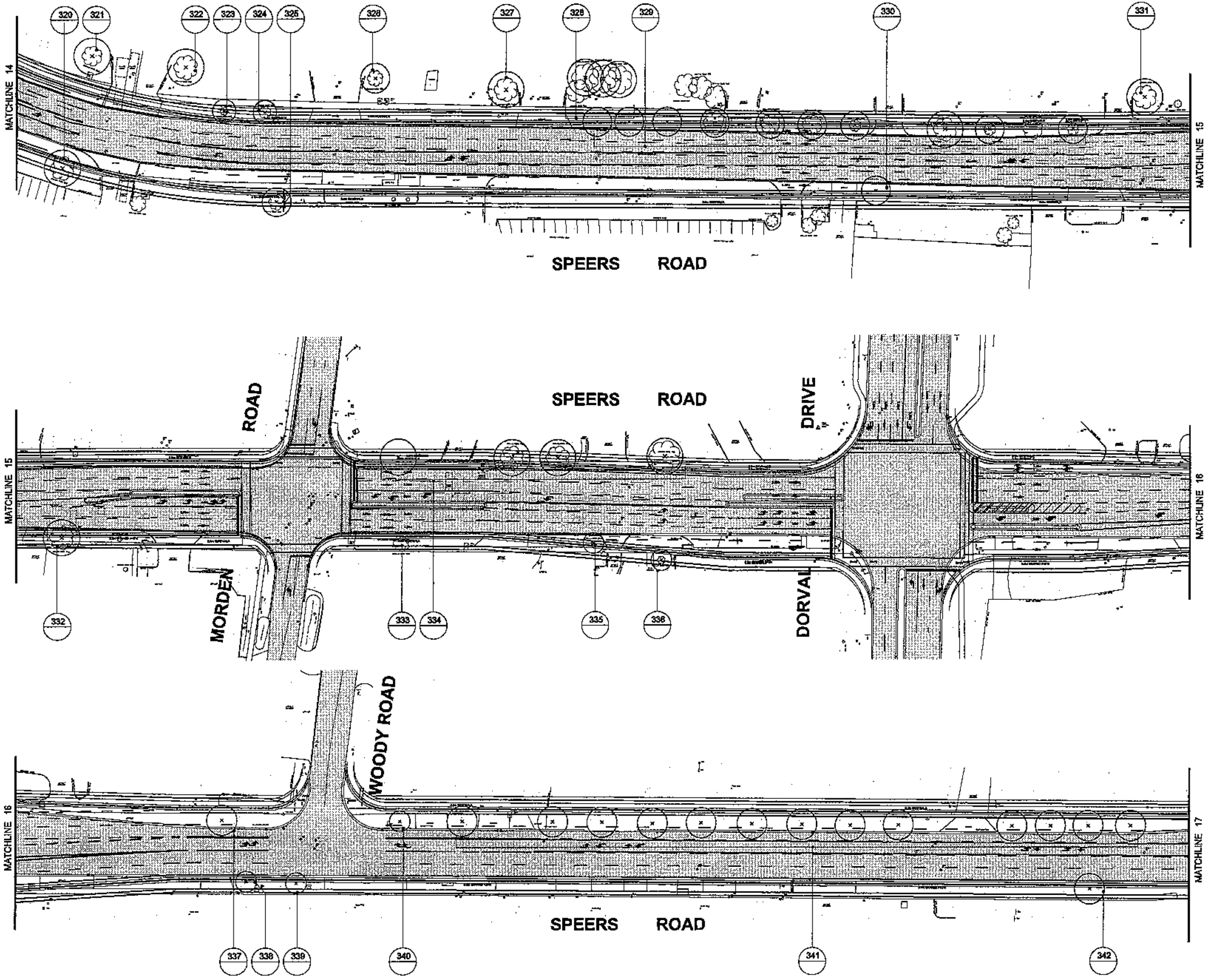

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JAMES McWILLIAM
LANDSCAPE ARCHITECT
27 Bayview Drive, St.Catharines, ON, L2N 4Y3
Phone: 905-937-8666, Fax: 905-938-9959

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DRAWING

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NORTH

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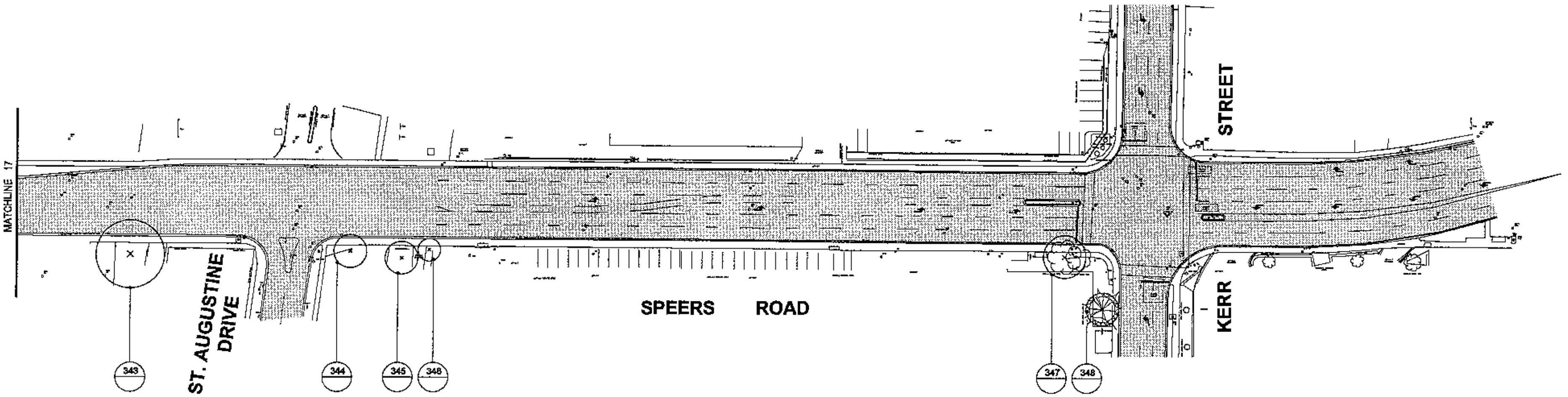

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27 Bayview Drive, St.Catharines, ON, L2N 4Y3
Phone: 905-937-8666, Fax: 905-938-9959

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DRAWN BY:	T.F.G.
SHEET:	L-7

Appendix C

Stage 1 Archaeological Assessment

Speers Road Improvements
Class Environmental Assessment Study,
Town of Oakville, Ontario

Submitted to

Delcan Corporation
4056 Dorchester Road
Niagara Falls, Ontario L2E 6M9
Tel: 905-356-7003
Fax: 905-356-7008

Prepared by

Archaeological Services Inc.
528 Bathurst Street
Toronto, Ontario M5S 2P9
Tel.: 416-966-1069
Fax: 416-966-9723
Email: asitoronto@rogers.com
Website: www.iasi.to

ASI File 08EA-002
Archaeological License P057
MCL PIF P057-474-2008

September 2008

ARCHAEOLOGICAL SERVICES INC.
ENVIRONMENTAL ASSESSMENT DIVISION

PROJECT PERSONNEL

Senior Project Manager:	Robert Pihl, MA, CAHP [MCL licence P057] Partner and Senior Archaeologist, Manager, Environmental Assessment Division
Project Director (licence):	Rob Pihl
Project Manager:	Caitlin Lacy, Hon. BA [MCL licence R303] Staff Archaeologist
Project Administrator:	Sarah Jagelewski, Hon. BA Research Archaeologist
Field Director:	Peter Carruthers, MA CAHP [MCL licence P163] Senior Associate
Report Writer and Graphics:	Caitlin Lacy
Report Reviewer:	Robert Pihl

Stage 1 Archaeological Assessment

Speers Road Improvements Class Environmental Assessment Study, Town of Oakville, Ontario

1.0 INTRODUCTION

Archaeological Services Inc. (ASI) was contracted by Delcan Corporation, Niagara Falls, on behalf the Town of Oakville, to conduct a Stage 1 archaeological assessment as part the Speers Road Improvements Class Environmental Assessment Study, Town of Oakville, Regional Municipality of Halton, Ontario (Figure 1). The study area includes the area immediately surrounding Speers Road between Kerr Street and Bronte Road.

Authorization to carry out the activities necessary for the completion of the Stage 1 assessment was granted to ASI by Delcan on April 3, 2008.

This report presents the results of the Stage 1 background research and field review, and makes several recommendations.

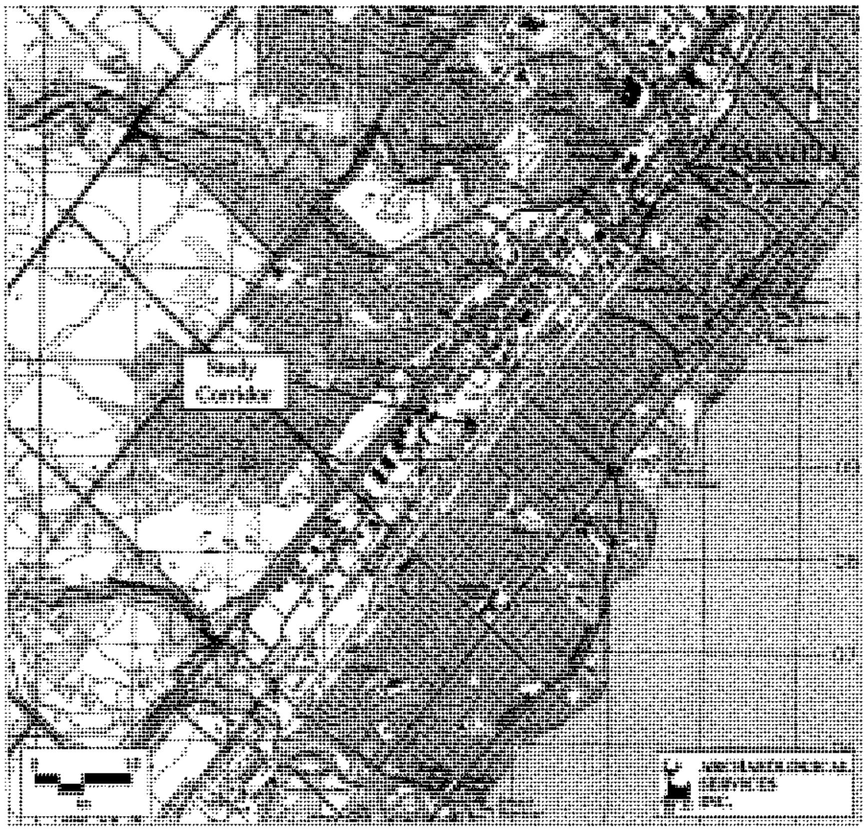

Figure 1: Location of the study corridor [NTS Sheet 30 M/05 (Hamilton-Burlington)].

2.0 BACKGROUND RESEARCH

The Stage 1 archaeological assessment of the study corridor was conducted in accordance with the Ontario Heritage Act (2005) and the Ontario Ministry of Culture's (MCL) draft *Standards and Guidelines for Consultant Archaeologists* (2006). A Stage 1 archaeological assessment involves research to describe the known and potential archaeological resources within the vicinity of a study corridor. Such an assessment incorporates a review of previous archaeological research, physiography, and land use history. Background research was completed to identify any archaeological sites in the study corridor and to assess their archaeological potential.

2.1 Previous Archaeological Research

In order that an inventory of archaeological resources be compiled for the study corridor, three sources of information were consulted: the site record forms for registered sites housed at the MCL; published and unpublished documentary sources; and the files of ASI.

In Ontario, information concerning archaeological sites is stored in the Ontario Archaeological Sites Database (OASD) maintained by the MCL. This database contains archaeological sites registered within the Borden system. Under the Borden system, Canada has been divided into grid blocks based on latitude and longitude. A Borden block is approximately 13 km east to west, and approximately 18.5 km north to south. Each Borden block is referenced by a four-letter designator, and sites within a block are numbered sequentially as they are found. The study corridor under review is located in Borden block *AiGw.*

According to the OASD (email communication, Robert von Bitter, MCL Data Coordinator, March 3, 2008), no archaeological sites have been registered immediately adjacent to the study corridor. Forty additional archaeological sites have been registered within 2 km of the study corridor (Table 1).

Table 1: List of registered sites within a two kilometer radius of the study corridor

Borden #	Site Name	Cultural Affiliation	Site Type	Researcher
AiGw-10	Snedden	Aboriginal	Isolated Find	BCPP, 1972
AiGw-12	Watercourse	Aboriginal	Undetermined	BCPP, n.d.
AiGw-13	Snedden House	Aboriginal – Archaic	Campsite	BCPP, 1972
AiGw-17	North Service Road	Aboriginal – Archaic	Undetermined	S. Thomas, 1973
AiGw-18		Aboriginal	Undetermined	A. Roberts, 1974
AiGw-19	Asparagus Patch	Unknown	Undetermined	A. Roberts, 1974
AiGw-20	Petty Pavlish	Unknown	Undetermined	A. Roberts, 1974
AiGw-21	Burloak Drive 2	Aboriginal – Archaic	Undetermined	A. Roberts, 1974
AiGw-23	North Service	Unknown	Undetermined	J. Chisholm, 1975
AiGw-26	Ontario Sports	Aboriginal – Woodland	Campsite	S. Thomas, 1975
AiGw-28	Bronte Road North	Unknown	Undetermined	S. Thomas, 1975
AiGw-29	Mercedes	Aboriginal – Archaic	Undetermined	A. Roberts, 1974
AiGw-33	Riverside	Aboriginal – Archaic	Campsite	S. Thomas, 1975
AiGw-34	Field 3	Aboriginal – Woodland	Isolated Find	S. Thomas, 1975
AiGw-43	Core Development	Aboriginal – Archaic	Isolated Find	S. Thomas, 1975

Table 1: List of registered sites within a two kilometer radius of the study corridor

Borden #	Site Name	Cultural Affiliation	Site Type	Researcher
AiGw-45	The Playing Field	Unknown	Isolated Find	S. Thomas, 1975
AiGw-50	East of 25	Aboriginal	Undetermined	S. Thomas, 1975
AiGw-54	Perry	Aboriginal – Archaic	Undetermined	S. Thomas, 1975
AiGw-57	Fence Line	Unknown	Undetermined	T. Hutchinson, 1975
AiGw-58	Centre of Field 1	Aboriginal – Archaic	Isolated Find	T. Hutchinson, 1975
AiGw-59	Centre of Field 2	Unknown	Isolated Find	T. Hutchinson, 1975
AiGw-62	West of Fence	Unknown	Undetermined	J. Chisholm, 1975
AiGw-64	Cherry Orchard	Unknown	Undetermined	J. Chisholm, 1975
AiGw-73	Farm Lane	Aboriginal – Archaic	Undetermined	T. Hutchinson, 1975
AiGw-74	North End of Field	Unknown	Isolated Find	K. Ryan, 1975
AiGw-108	Fred Fell	Aboriginal – Late Archaic	Undetermined	A. Roberts, 1975
AiGw-109	Flummerfelt	Aboriginal – Archaic	Undetermined	A. Roberts, 1975
AiGw-111	Walmsley	Aboriginal – Late Archaic	Undetermined	A. Roberts, 1975
AiGw-112	Atkins	Unknown	Undetermined	A. Roberts, 1975
AiGw-113	George Atkin	Aboriginal – Archaic	Undetermined	A. Roberts, 1974
AiGw-114	Old Atkin Farm	Unknown	Undetermined	A. Roberts, 1975
AiGw-115	Cudmore	Aboriginal – Archaic	Undetermined	A. Roberts, 1974
AiGw-117	Lynn Timbers	Aboriginal – Archaic	Undetermined	A. Roberts, 1974
AiGw-118	Skeet Field	Unknown	Undetermined	A. Roberts, 1974
AiGw-193	Shoemaker	Euro-Canadian	Homestead	ASI, 1988
AiGw-194	Donaldson	Aboriginal	Isolated Find	ASI, 1988
AiGw-258	Lisonally Farm	Euro-Canadian	Homestead	ASI, 1994
AiGw-262		Euro-Canadian	Homestead	S. Janusas, 1994
AiGw-338	Rebecca	Aboriginal	Lithic Scatter	ASI, 1999
AiGw-460		Euro-Canadian Aboriginal	Homestead Lithic Scatter	ASI, 2007

2.2 Physiography and Assessment of Aboriginal Archaeological Potential

The study corridor is situated within the Iroquois Plain physiographic region of southern Ontario (Chapman and Putnam 1984: 190-196). The Iroquois Plain comprises lacustrine deposits along the western end of Lake Ontario that were created by glacial Lake Iroquois. In most areas, the old shoreline is clearly visible. The plain extends from the Niagara River to the Trent River, a length of 300 km, varying from a few hundred metres to thirteen kilometres in width. Across the Regional Municipality of Halton, the Iroquois Plain has a very constant pattern with the old shoreline marked by bluffs or gravel bars. The land is generally level and the coarse sandy soil is often poorly drained. The soils of the area generally consist of clay loams derived from the underlying Ordovician red shale of the Queenston Formation.

Potable water is the single most important resource necessary for any extended human occupation or settlement. Since water sources have remained relatively stable in south central Ontario after the Pleistocene era, proximity to water can be regarded as a useful index for the evaluation of archaeological site potential. Indeed, distance from water has been one of the most commonly used variables for predictive modeling of site location.

The MCL's draft *Standards and Guidelines for Consultant Archaeologists* (2006: Unit 1e 5–7, 10) stipulates that undisturbed land within 300 m of a primary water source (lakeshore, river, large creek, etc.), undisturbed land within 200 m of a secondary water source (stream, spring, marsh, swamp, etc.), as well as undisturbed land within 300 m of an ancient water source (as indicated by remnant beaches, shore cliffs, terraces, abandoned river channel features, etc.), are considered to have archaeological potential. Fourteen Mile Creek bisects the study corridor just north of Third Line and a tributary of Sixteen Mile Creek bisects the study corridor just North of Fourth Line. Sixteen Mile Creek and Bronte Creek flank the northern and southern limits of the study corridor respectively.

Therefore, depending on the degree of previous land disturbance, it may be concluded that there is potential for the recovery of Aboriginal remains within the study corridor.

2.3 Historical Land Use History

The land within Trafalgar Township was acquired by the British from the Mississaugas in 1795. The first township survey was undertaken in 1806, and the first legal settlers occupied their land holdings in the same year. The township was first named "Grant Township" in honour of Alexander Grant, the administrator of Upper Canada. In 1806, it was renamed in honour of the victory by Horatio Viscount Nelson at Cabo Trafalgar, in Spain the previous year. Nelson was initially settled by the children of Loyalists, soldiers who served during the War of 1812, and by immigrants from England, Scotland and Ireland. By the 1840s, the township was noted for its well cultivated farms (Smith 1846:197; Armstrong 1985:148; Rayburn 1997:348).

The town of Oakville was a "flourishing" post office town was situated on part Lots 12 to 16, Concession 3, South of Dundas Street, and on part Lots 11-17, Broken Front Concession, in Trafalgar Township. It was developed as a town site in 1827 by merchant-miller William Chisholm. The place was originally named Sixteen Mile Creek, but the name was changed to "Oakville" at the suggestion of Robert Baldwin Sullivan, on account of the large number of white oaks that grew in the area. Two wharves extended into Lake Ontario at the mouth of the Sixteen Mile Creek which formed a protective harbour, and Oakville was therefore a port of entry. Registered plans of subdivision for this village date from 1837-1861. This town was also served by the Hamilton and Toronto Branch of the Great Western Railroad (now part of the CNR). The original depot was located in the vicinity of the present Oakville GO Station. In 1877, the town contained a square reserved for a market and town hall. It contained five churches, stores, hotels, mills and factories, ship building yards, two telegraph offices and a weekly newspaper. The population was about 1,684 (Crossby 1873:232; Mathews 1953; Young 1957; Winearls 1991:757-758; Scott 1997:165; Rayburn 1997:252).

The Town of Bronte was a "thriving" post office town and situated where Lakeshore Road crossed the Twelve Mile Creek, on part Lots 28 to 32, Broken Front Concession, in Trafalgar Township. One of the first settlers here was Philip Sovereign in 1814. The village was named in honour of Admiral Lord Nelson, who was given the title "Duke of Bronte." A wharf extended into Lake Ontario on the east side of the creek, which provided a small protected harbour. The town was also served by the Great Western

Railway. It contained a telegraph office, printing office, several stores and hotels. The population numbered about 550 in 1873 (Crossby 1873:49; Brimacombe 1976; Scott 1997:35; Rayburn 1997:44).

2.4 Assessment of Historic Archaeological Potential

The 1877 *Illustrated Historical Atlas of the County of Halton, Ontario* was reviewed to determine the potential for the presence of historical archaeological remains within the study corridor during the nineteenth century (Figures 2).

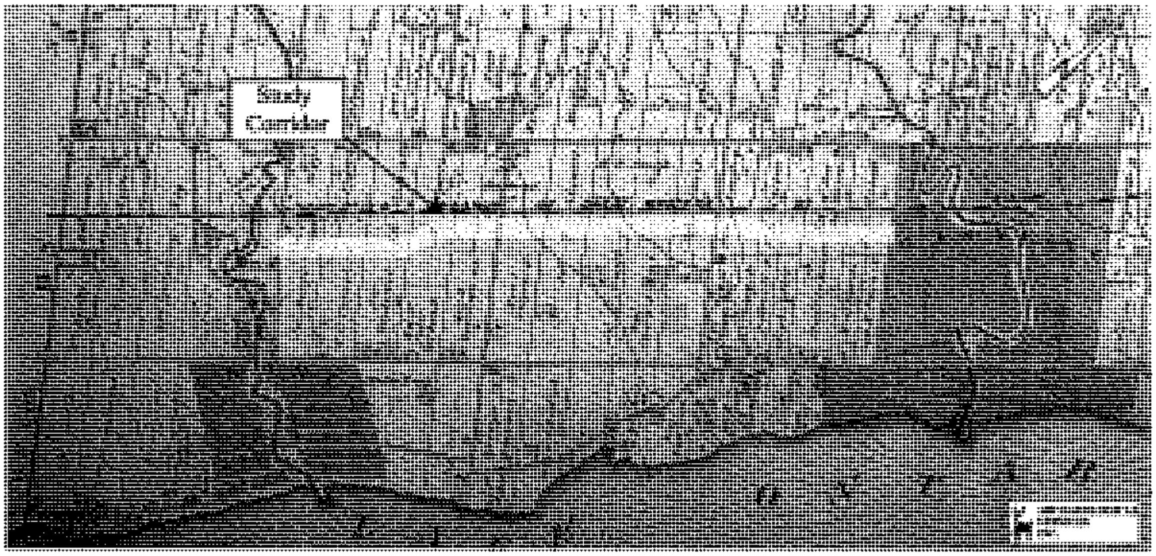

Figure 2: The study corridor superimposed on a map of the Township of Trafalgar, in the *1877 Illustrated Historical Atlas of the County of Halton*

The study corridor is located on Lots 17 to 30, Concession III south of Dundas Street, in the former Township of Trafalgar, County of Halton. The atlas depicts several property owners/residents within the study corridor (Table 2). No historic features are located within or adjacent to the study corridor, but the historic communities of Bronte and Oakville flank the western and eastern edges of it. It should be noted, however, that not all features of interest were mapped systematically in the Ontario series of historical atlases, given that they were financed by subscription, and subscribers were given preference with regard to the level of detail provided on the maps. Moreover, not every feature of interest would have been within the scope of the atlas.

Table 2: Summary of Property Owners within the study corridor

Conc	Lot	Owner
III	17	J.J. Mason
	18	Estate of George Le Barre Andrew Le Barre
	19	John McKay W.J. Carter
	20	George Langrty
	21	Colin Smith
	22	Robert Smith
	23	John Smith
	24	John T. Shewell
	25	John Husband
	26	John Husband A. Speers
	27	A. Speers
	28	J.H. Waite
	29	W.O. Peacock E. Fryan
	30	W.A. Riggs

The railway had tremendous impact on the settlement patterns and economics of the Region of Halton and towns grew or disappeared; businesses flourished or floundered (RMH, 1981:23). The names may be different today, but the lines follow the same routes as their predecessors of the 1800's (RMH, 1981: 29). The Hamilton & Toronto Branch of the Great Western Railway runs parallel to the north side of the study corridor. The railway was incorporated in November 1852 by a group of financiers also involved in the ownership of the Great Western Railway to provide a link between Hamilton and Toronto. Construction of the route began and the line was ready for traffic in December 1856. Initially, direct access into Toronto was not possible, forcing the establishment of a terminal point on the outskirts of the downtown area. The Great Western Railway was able to establish a central terminal by March 1866 in the city in order to compete with the existing Grand Trunk Railway, who controlled Union Station.

For the Euro-Canadian period, the majority of early nineteenth century farmsteads (i.e., those which are arguably the most potentially significant resources and whose locations are rarely recorded on nineteenth century maps) are likely to be captured by the basic proximity to the water model outlined in Section 2.2, since these occupations were subject to similar environmental constraints. An added factor, however, is the development of the network of concession roads and railroads through the course of the nineteenth century. These transportation routes frequently influenced the siting of farmsteads and businesses. Accordingly, undisturbed lands within 100 m of an early settlement road, such as Bronte Road, 3rd Line, and 4th Line, are also considered to have potential for the presence of Euro-Canadian archaeological sites.

Therefore, depending on the degree of previous land disturbance, it may be concluded that there is potential for the recovery of historic cultural material within the study corridor.

3.0 FIELD REVIEW

A field review of the study corridor was conducted by Mr. Peter Carruthers (P163), ASI, August 28, 2008, in order to confirm the assessment of archaeological site potential and to determine the degree to which development and landscape alterations may have affected that potential. Weather conditions during the field assessment were sunny with a few clouds and 19°C. Field observations have been compiled onto maps of the study corridor (Figures 4-1 to 4-6). Associated photography can be found in Section 7.0.

Typically, rights-of-way (ROW) can be divided into two areas: the disturbed ROW, and ROW lands beyond the disturbed ROW. The typically disturbed ROW extends outwards from either side of the centerline of the traveled lanes. The disturbed ROW includes the traveled lanes and shoulders, and extends to the toe of the fill slope, the top of the cut slope, or the outside edge of the drainage ditch, whichever is furthest from the centerline. Subsurface disturbance within these lands may be considered extreme and pervasive, negating any archaeological potential for such lands.

ROW construction disturbance may be found to extend beyond the typical disturbed ROW area. Such ROW disturbances generally include additional grading, cutting and filling, additional drainage ditching, watercourse alteration or channelization, servicing, removals, intensive landscaping, and heavy construction traffic. Areas beyond the typically disturbed ROW generally require archaeological assessment in order to determine archaeological potential relative to the type or scale of disturbances that may have occurred in these zones.

Within the study corridor, Speers Road generally consists of a four lane urban cross-section. The field review of the study corridor proceeded from east to west, starting at Kerr Street.

The Speers Road ROW has been heavily disturbed by residential (Plate 1) and commercial/industrial developments (Plates 2, 4, 6-8, 10-13, 16-18, 25), and by typical road construction, exhibiting ditching, grading, utility installation, and landscaping (Plates 5, 15). Due to the extent of previous disturbance, the Speers Road ROW does not exhibit archaeological site potential (Figures 4-1 to 4-6; areas marked in red). No further archaeological assessment is required.

As mentioned in Section 2.2, Fourteen Mile Creek (Figure 4-4) and a tributary of Sixteen Mile Creek (Figure 4-2) bisect the study corridor. The landscape surrounding both water sources has been previously altered, and these lands do not exhibit archaeological site potential (Plates 9, 15). No further archaeological assessment is required on these lands.

Archaeological potential exists at two locals along the study corridor. Area 1 extends from the free standing light poles along Speers Road across the lawn and into the wooded area. (Plate 3; Figure 4-1: areas marked in green). Area 2 consists of a series of wooded areas and open spaces that appear to be relatively undisturbed (Plates 19-24; Figure 4-6: areas marked in green). These areas have remained relatively undisturbed, and they exhibit archaeological site potential. Should road improvements encroach upon undisturbed land with archaeological potential beyond the disturbed ROW, a Stage 2 assessment should be conducted.

4.0 CONCLUSIONS AND RECOMMENDATIONS

The Stage 1 archaeological assessment is being conducted as part the Speers Road Improvements Class Environmental Assessment Study, Town of Oakville. The assessment determined that 40 archaeological sites have been registered within two kilometers of the study corridor, none of which are located immediately adjacent to the Speers Road ROW. Additionally, a review of the general physiography and local nineteenth century land use of the study corridor suggested that it has potential for the identification of Aboriginal and Euro-Canadian archaeological sites.

In light of these results, the following recommendations are made:

1. The Speers ROW does not retain archaeological site potential due to previous road, commercial, and residential disturbances (Figures 4-1 to 4-6: areas marked in red). Additional archaeological assessment is not required within the existing ROW, and the study corridor can be cleared of further archaeological concern; and

2. If the project limits extend beyond the Speers Road ROW, then a Stage 2 archaeological assessment should be conducted on lands determined to have archaeological potential (Figures 4-1 to 4-6: areas marked in green). This work will be done in accordance with the MCL's draft *Standards and Guidelines for Consultant Archaeologists* (MCL 2006), in order to identify any archaeological remains that may be present.

The above recommendations are subject to Ministry of Culture approval, and it is an offence to alter any archaeological site without Ministry of Culture concurrence. No grading or other activities that may result in the destruction or disturbance of an archaeological site are permitted until notice of Ministry of Culture approval has been received.

The following Ministry of Culture conditions also apply:

- Should deeply buried archaeological remains be found during construction activities, the Heritage Operations Unit of the Ministry of Culture should be immediately notified; and

- In the event that human remains are encountered during construction, the proponent should immediately contact both the Ontario Ministry of Culture and the Registrar or Deputy Registrar of the Cemeteries Regulation Unit of the Ontario Ministry of Government Services, Consumer Protection Branch at (416) 326-8404 or toll-free at 1-800-889-9768.

The documentation and artifacts related to the archaeological assessment of this project will be curated by Archaeological Services Inc. until such a time that arrangements for their ultimate transfer to Her Majesty the Queen in right of Ontario, or other public institution, can be made to the satisfaction of the project owner, the Ontario Ministry of Culture, and any other legitimate interest groups.

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6.0 OVERSIZED GRAPHICS

Figure 3: Speers Road Key Map
Figure 4-1: Speers Road Class EA Study - Results of the Stage 1 Archaeological Assessment
Figure 4-2: Speers Road Class EA Study - Results of the Stage 1 Archaeological Assessment
Figure 4-3: Speers Road Class EA Study - Results of the Stage 1 Archaeological Assessment
Figure 4-4: Speers Road Class EA Study - Results of the Stage 1 Archaeological Assessment
Figure 4-5: Speers Road Class EA Study - Results of the Stage 1 Archaeological Assessment
Figure 4-6: Speers Road Class EA Study - Results of the Stage 1 Archaeological Assessment

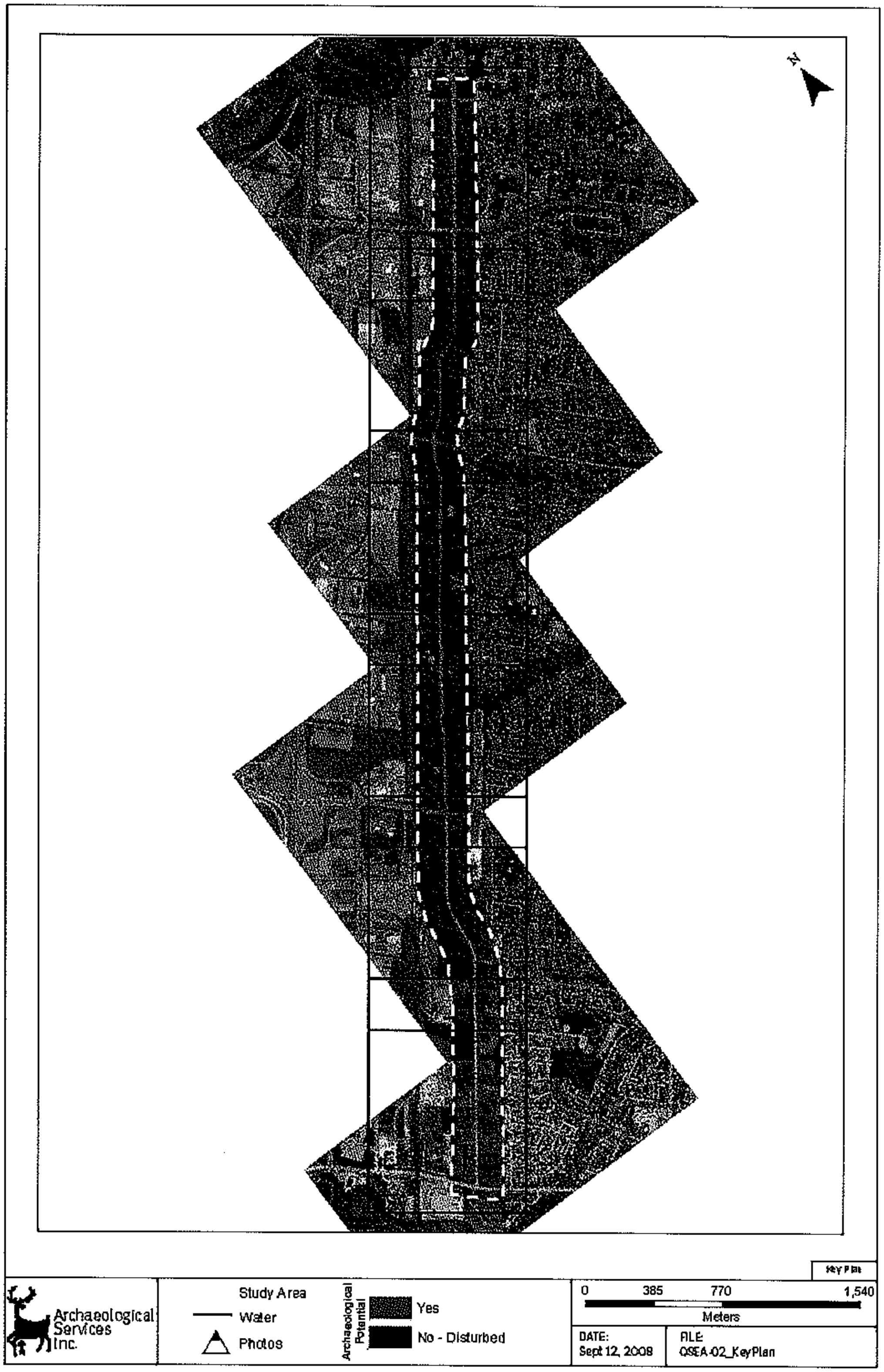


Figure 3: Speers Road Key Map

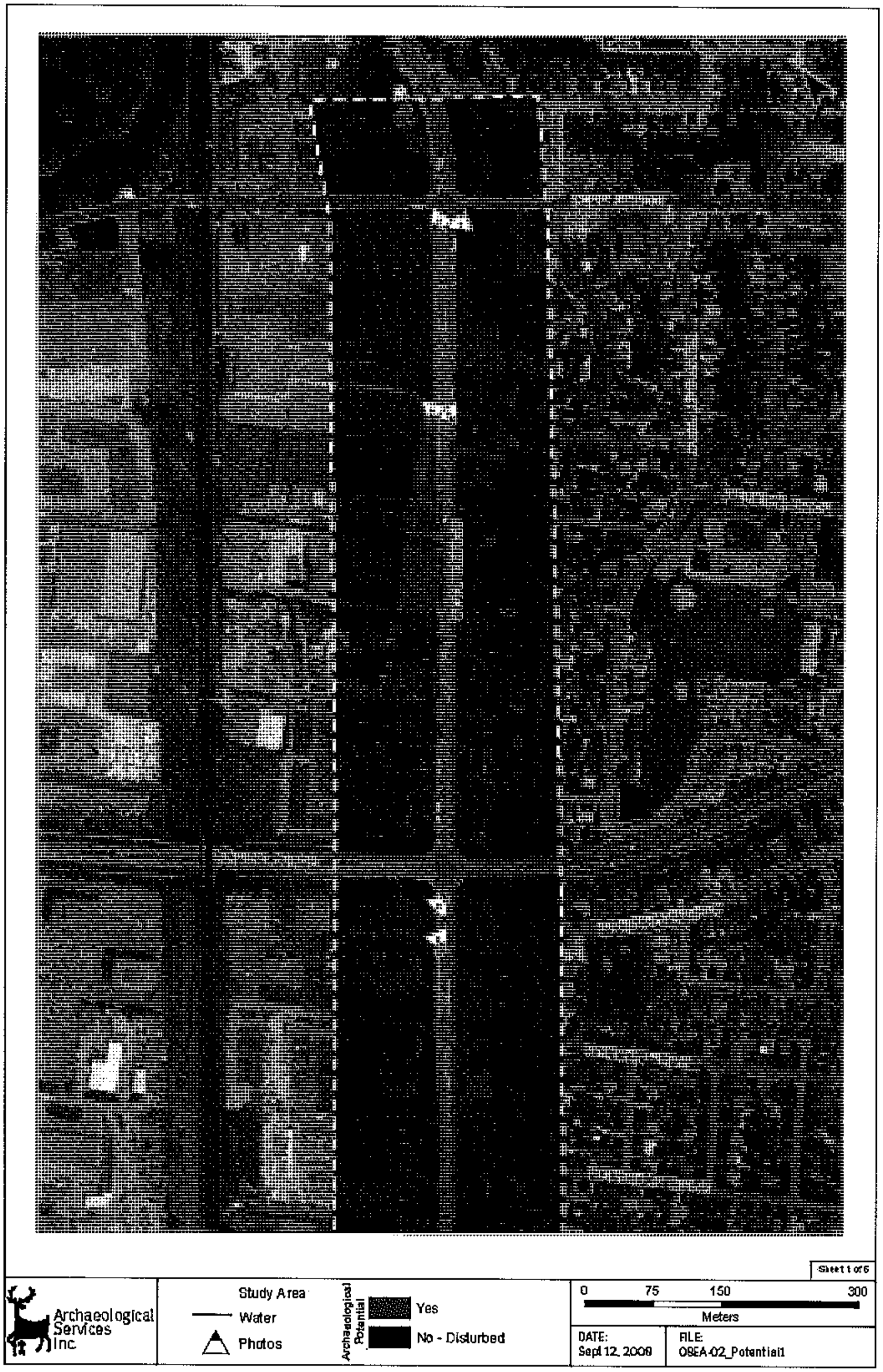


Figure 4-1: Speers Road Class EA Study - Results of the Stage 1 Archaeological Assessment

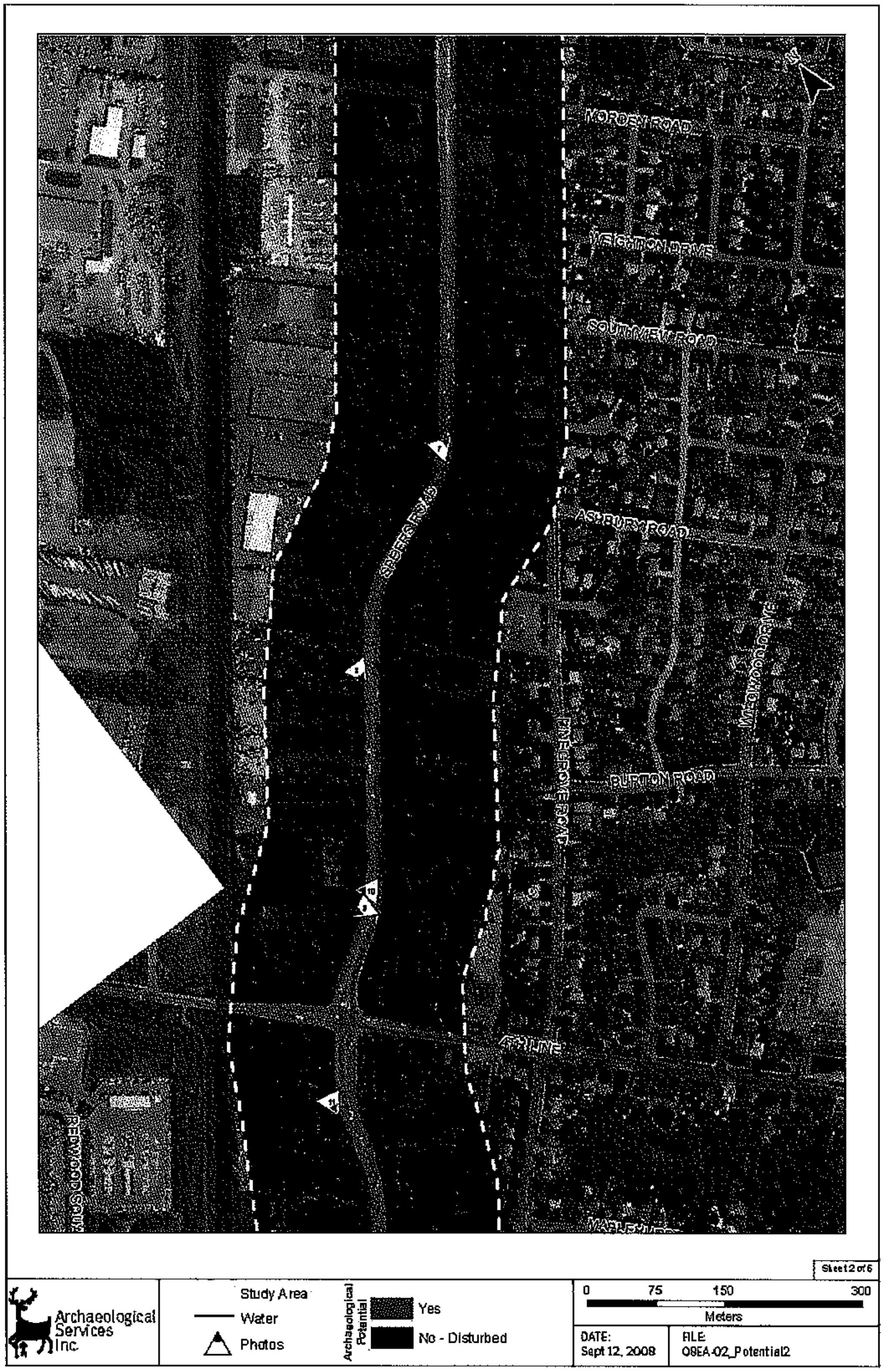


Figure 4-2: Speers Road Class EA Study - Results of the Stage 1 Archaeological Assessment

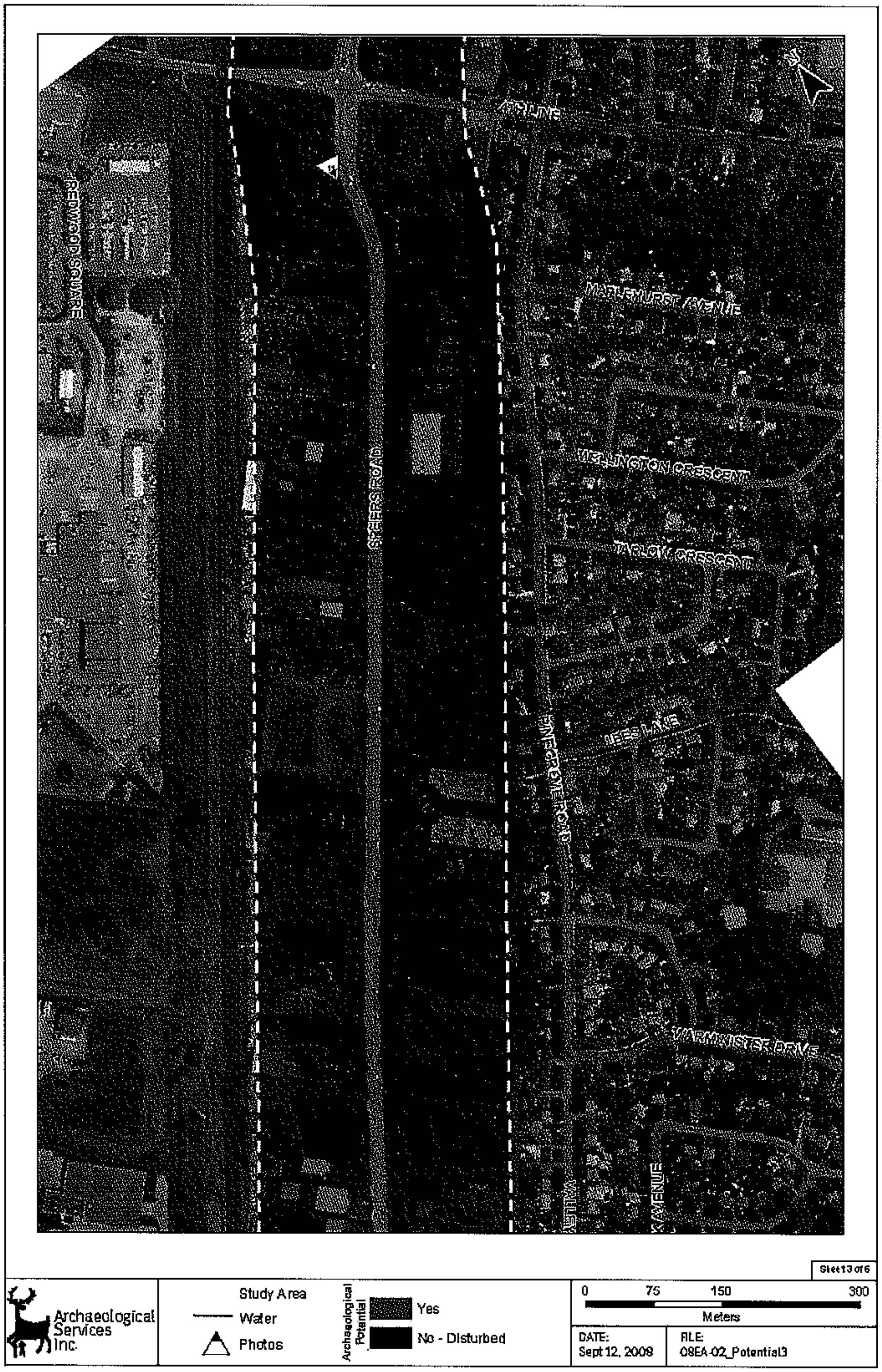


Figure 4-3: Speers Road Class EA Study - Results of the Stage 1 Archaeological Assessment

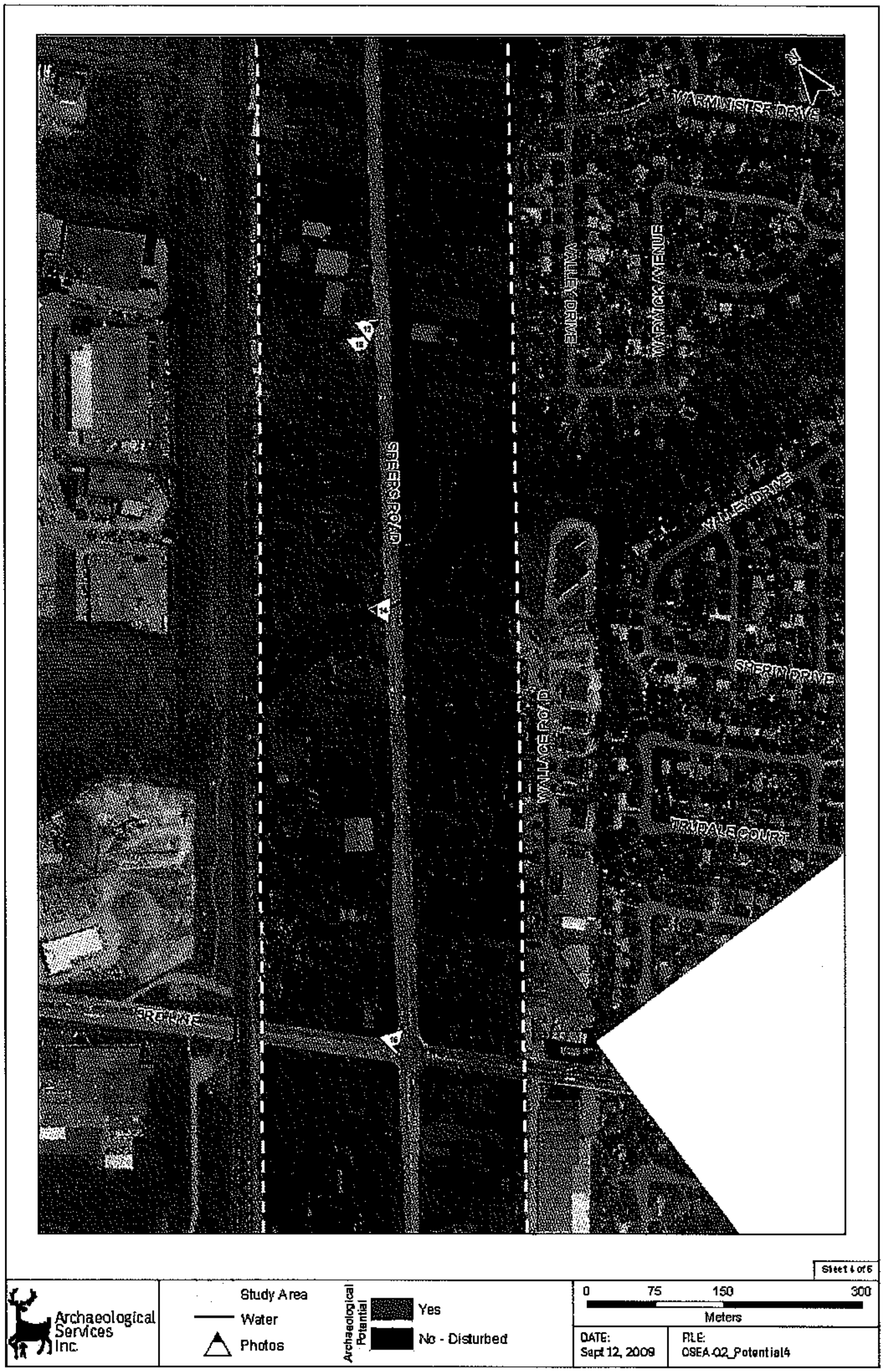


Figure 4-4: Speers Road Class EA Study - Results of the Stage 1 Archaeological Assessment

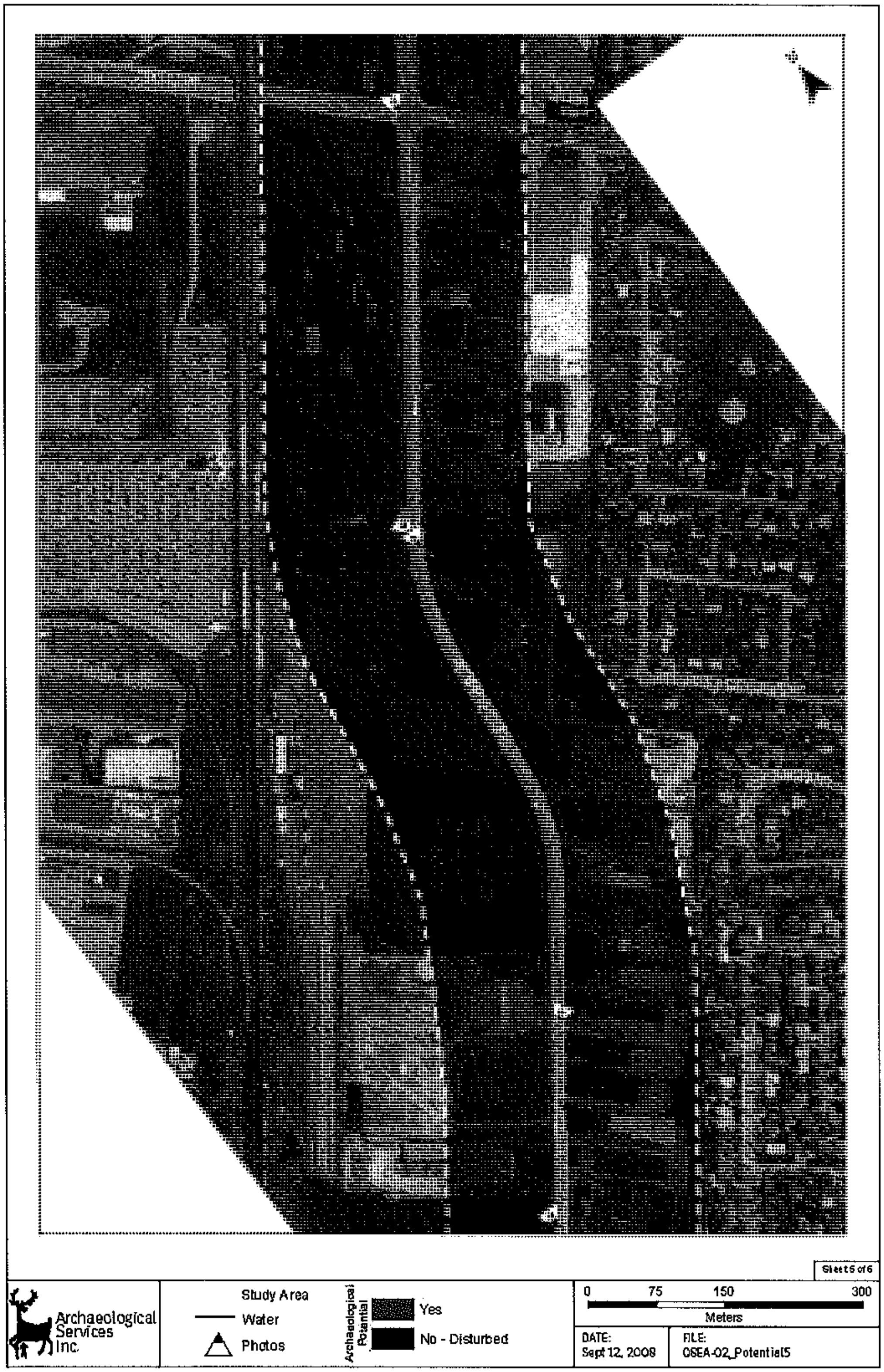


Figure 4-5: Speers Road Class EA Study - Results of the Stage 1 Archaeological Assessment

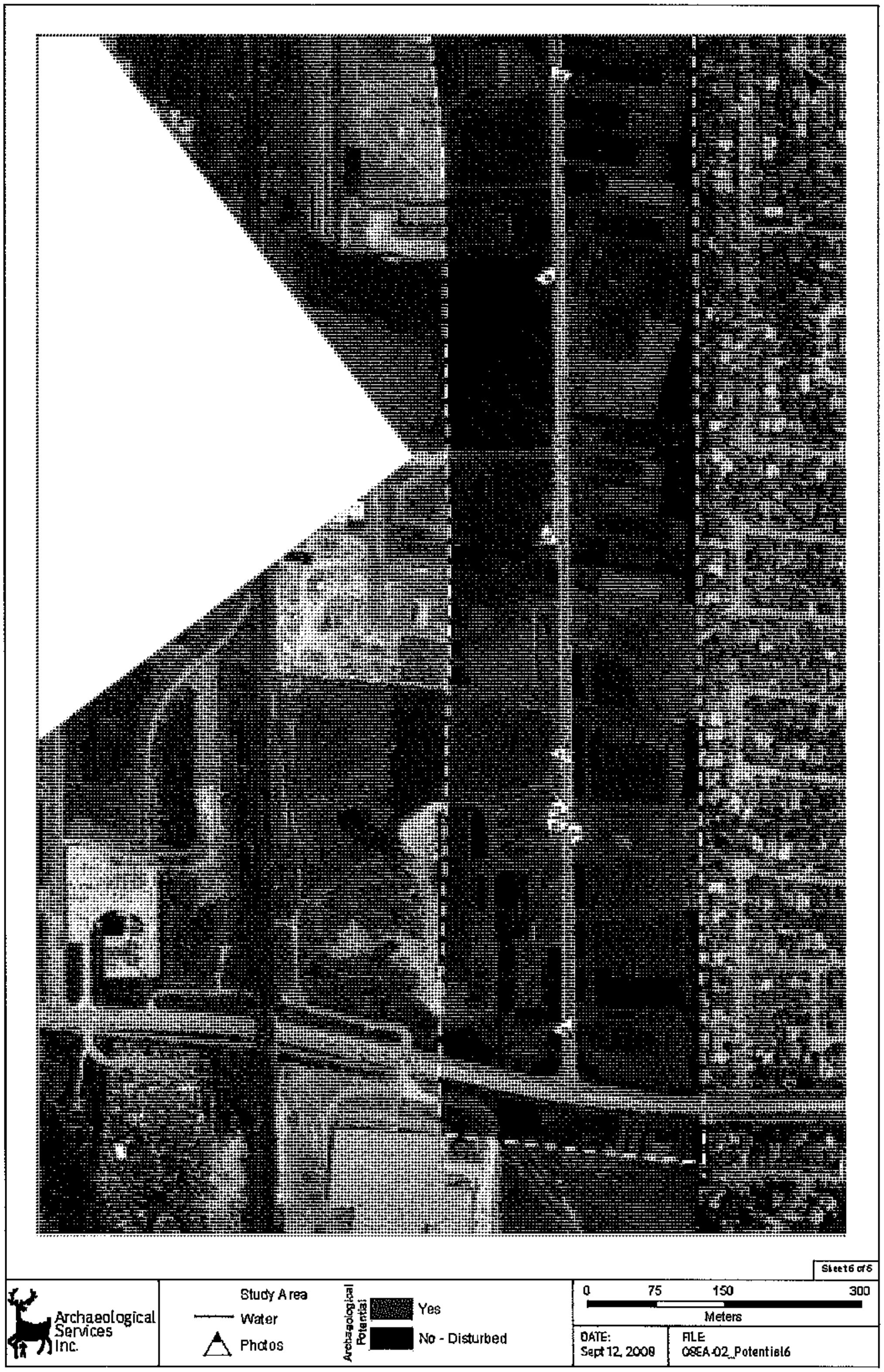


Figure 4-6: Speers Road Class EA Study - Results of the Stage 1 Archaeological Assessment

7.0 PHOTOGRAPHY

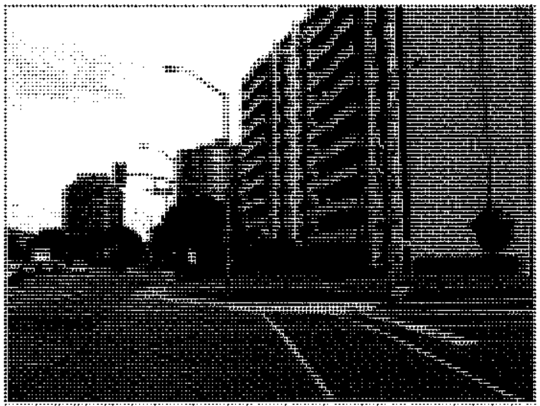


Plate 1: View to east-northeast from SW corner of Speers Rd/Kerr St intersection at residential development along corridor.

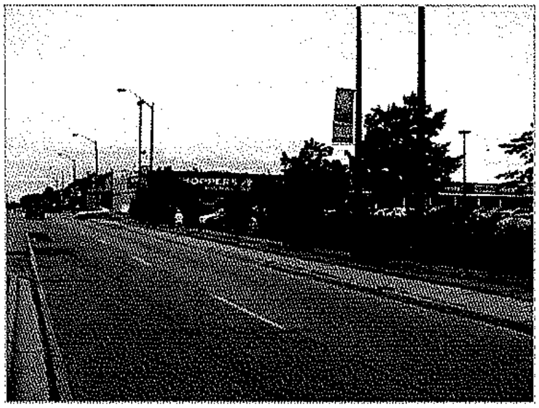


Plate 2: View to west-southwest along Speers Rd at commercial development along corridor.

Plate 3: View to west-southwest along Speers Rd at landscaped area. Potential exists beyond free standing light poles.

Plate 4: View to south across Speers Rd at commercial development along corridor. Area has no potential.

Plate 5: View to northeast across Speers Rd/ Dorval Dr intersection. Area has been previously disturbed by construction activities.

Plate 6: View to south across Speers Rd at commercial development along corridor. Area has no potential.

Plate 7: View to east across Speers Rd at commercial development along corridor. Area has no potential.

Plate 8: View to south across Speers Rd toward creek crossing. Area has been disturbed by industrial development.

Plate 9: View to northwest along a tributary of Sixteen Mile Creek. Area has no potential.

Plate 10: View to west along Speers Rd at commercial development along corridor. Area has no potential.

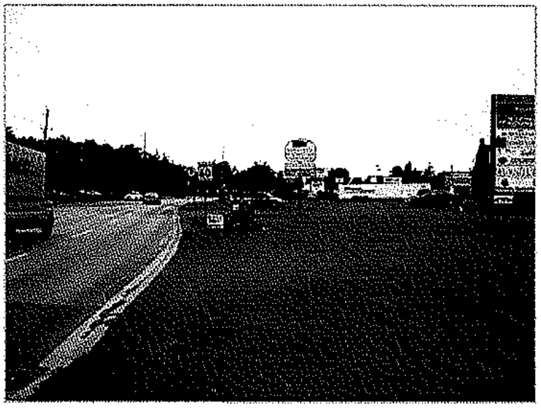


Plate 11: View to south along Speers Rd at commercial development along corridor. Area has no potential.

Plate 12: View to east across Speers Rd at commercial development along corridor. Area has no potential.

Plate 13: View to south along Speers Rd toward Joshua Creek. Area has no potential.

Plate 14: View to northwest along channelized Fourteen Mile Creek.

Plate 15: View to south across Speers Rd/ 3rd Line intersection. Area has been previously disturbed by construction activities.

Plate 16: View to north-northeast along Speers Rd ROW. Area is currently being developed and has no potential.

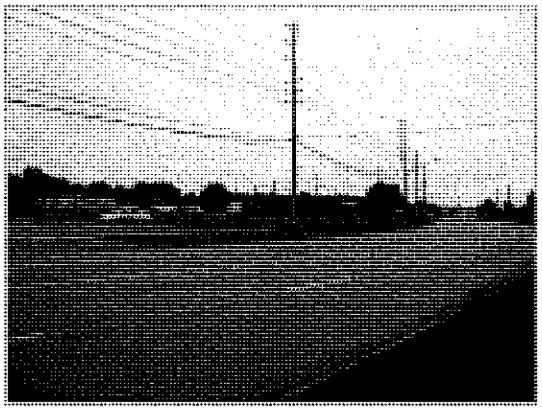


Plate 17: View to south across Speers Rd. Development has occurred on both sides of road.

Plate 18: View to southwest along Speers Rd. Area has been previously developed and has no potential.

Plate 19: View to south across Speers Rd. Note rural cross section. Potential exists beyond pole into wooded area.

Plate 20: View to southwest along Speers Rd disturbed ROW. Woodlot in distance has potential.

Plate 21: View to northeast across Speers Rd toward commercial development. Wooded area in distance has potential.

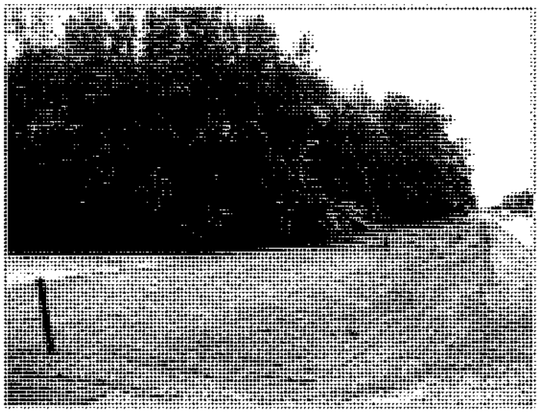


Plate 22: View to north-northeast across southern corner of small woodlot with potential.

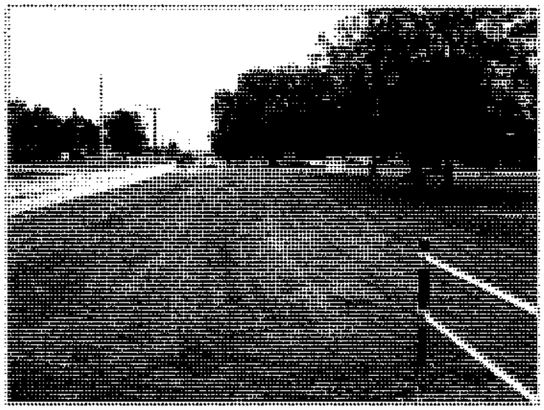


Plate 23: View to south-southwest along Speers Rd ROW with mature trees. Potential exists beyond the ditch.

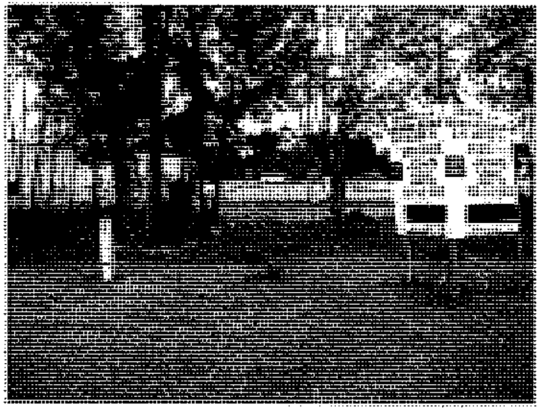
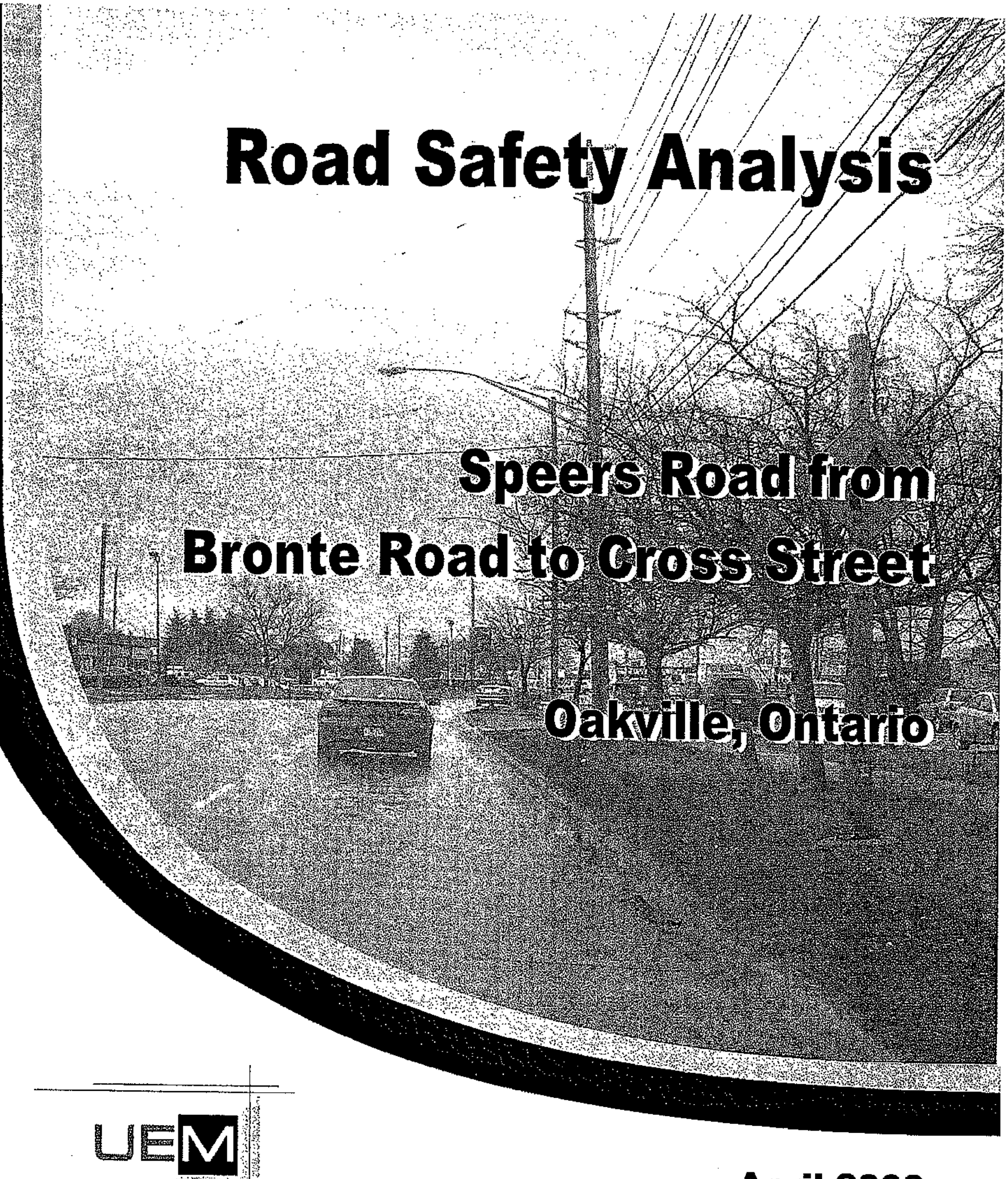


Plate 24: View to southeast into property with potential adjacent to Speers Rd.

Plate 25: View to south across Speers Rd to Bronte Rd. All corners of intersection have been previously disturbed by development.

Appendix D



Road Safety Analysis

Speers Road from Bronte Road to Cross Street

Oakville, Ontario

UEM

April 2008

PR08-504

Road Safety Analysis –
Speers Road from Bronte Road to Cross Street
Town of Oakville, Ontario

Prepared for:
Delcan
4056 Dorchester Road
Niagara Falls, Ontario
L2E 6M9

Road Safety Analysis

Prepared by:
Ana I. Gall, P.Eng., M.Eng., PTOE
Urban & Environmental Management Inc.
4701 St. Clair Avenue, Suite 301
Niagara Falls, Ontario
L2E 3S9
www.uemconsulting.com

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1. INTRODUCTION

1.1 Background

The Town of Oakville is currently undertaking a Class Environmental Assessment (EA) study to identify improvements along Speers Road from Bronte Road to Kerr Street in the Town of Oakville. A road safety analysis of Speers Road from Bronte Road to Cross Street was undertaken as part of the Class EA.

1.2 Scope and Materials

The road safety analysis consisted of a review of collision experience within the study area followed by a field investigation. Collision summary data was provided by Delcan for the safety analysis.

1.3 Objective

The objective of this review is to identify opportunities to make the existing roadway safer, in the short-term, and improve the preliminary design (to be developed by Delcan as part of the Class EA study). In doing so, it is acknowledged that safety is one of many considerations that highway designers need to balance in the design process along with cost, the environment, traffic efficiency, geotechnical conditions and right-of-way availability. This review is therefore focused on safety, with the anticipation that in general, the findings will be used as input to the preliminary design, rather than as a design requirement. The suggestions are provided so that the design team may consider additional safety features within the context of all objectives of the design. The recommendations arising from this review are not directions as to what work must be carried out.

It should be noted that UEM makes no guarantee that every deficiency or safety concern has been identified. We must also note that if all the recommendations contained in this report are followed, there is no guarantee that the subject roadway is "safe". We must stress that as long as there are vehicles on the road, there is no "absolutely safe" roadway. There are simply varying degrees of safety, and the goal of the design should be to provide a roadway which is as safe as possible within the project constraints. Within this context, this safety analysis aims to provide advice to the design team in order to deliver a safer roadway.

2. STUDY AREA

The study limits includes a 6 kilometre section of Speers Road from Bronte Road to just east of Kerr Street in the Town of Oakville. From Bronte Road easterly, Speers Road transitions from a two lane rural section to a three lane rural section to four lanes urban roadway with turning lanes at major (signalized) intersections. Speers Road is designated as a Multi-Use Arterial roadway serving east-west traffic flows and is wholly within Town of Oakville jurisdiction. Speers Road has a posted speed limit is 60 km/hr. Land surrounding the subject portion of Speers Road is primarily commercial and forms part of the "QEW West Employment District". The average annual daily traffic (AADT) volume on Speers Road is in the range of 10,000 - 25,000 vehicles/day. The Speers Road corridor experiences congestion during typical weekday AM and PM peak periods.

3. FINDINGS

3.1 Collision Analysis

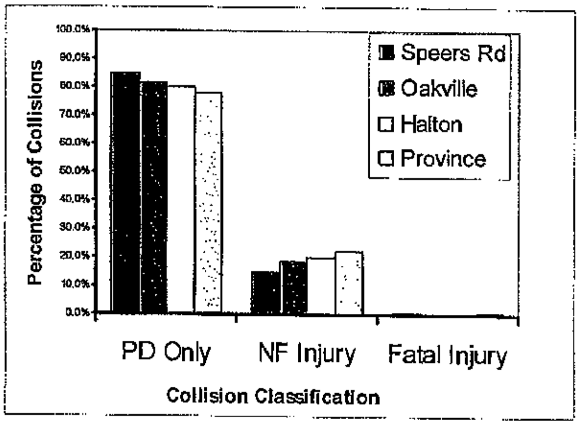
Copies of Motor Vehicle Accident Reports for collisions within the defined study area for the period from January 1, 2002 to December 31, 2006 were provided by Town of Oakville. The only intersection not covered was Speers Road and Dorval Road as it is under Region of Halton jurisdiction. During this time period, a total of 593 collisions were reported on Speers Road within the study area. Of those 593 collisions, 267 collisions (about 45%) occurred at intersections. Approximately 28% of the intersection-related collisions occurred at the intersection of Speers Road and Fourth Line, 25% occurred at the intersection of Speers Road and Third Line and 23% occurred at the intersection of Speers Road and Kerr Street. Of the midblock collisions, approximately 64% of these collisions occurred along Speers Road between York Street and Morden Road. This section of Speers Road is highly commercialized with numerous driveways and a significant number of rear-end and turning movement collisions occurring along this roadway are related to turning movements at these driveways.

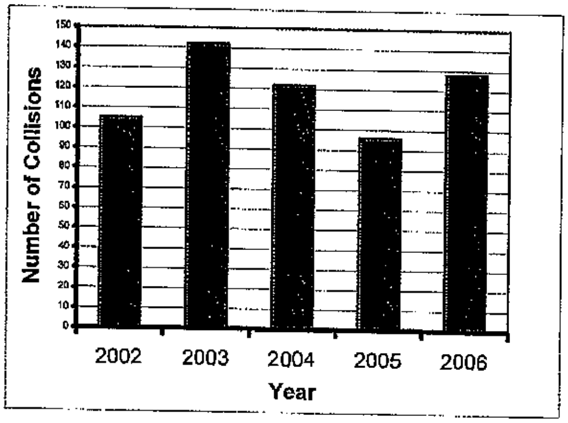
3.1.1 Macro-Analysis of Collision Experience

In order to reduce collision experience, it is important to understand the context in which these collisions occur. Macro-analysis allows us to determine if any apparent trends exist in the historical collision data. The following charts present a summary of the macro-analysis:

Classification

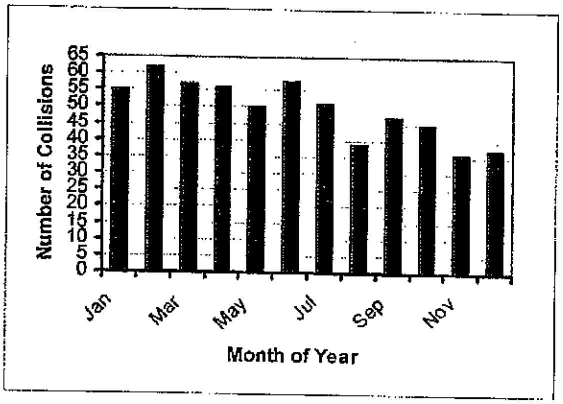
The frequency of Property Damage (PD) Only collisions along Speers Road is higher than Town-wide, Halton-wide and Province-wide experience (based on collision statistics published by the Ministry of Transportation for 2002-2004). However, the frequency of Non-Fatal Injury collisions along Speers Road is lower than Town-wide, Halton-wide and Province-wide experience. The frequency of Fatal collisions along Speers Road (at 0.3%) is comparable to Provincial experience (averaged over 2002-2004).





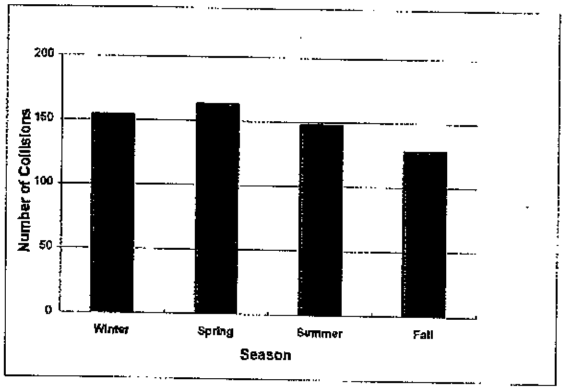
Collision Frequency

The highest number of collisions, on an annual basis, occurred in 2003. The annual frequency decreased in the following two years but increased in 2006.



Collision Experience by Month

More collisions occur in the months of February and June. The provincial experience indicates January and December are the months with highest frequency of collisions.

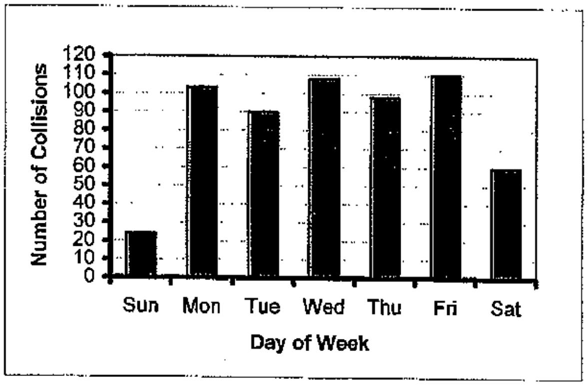


Collision Experience by Season

More collisions along Speers Road occur in Spring. The provincial experience indicates Fall and Winter as being the seasons of highest collision experience.

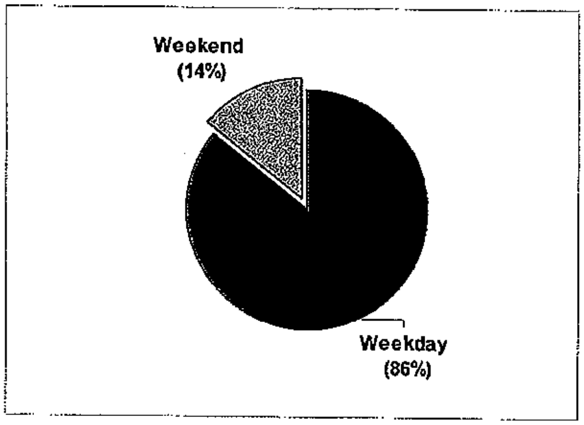
Collision Experience by Day of Week

The majority of collisions occur on Friday, Wednesday and Monday. This is generally consistent with provincial experience (based on statistics for 2002-2004).



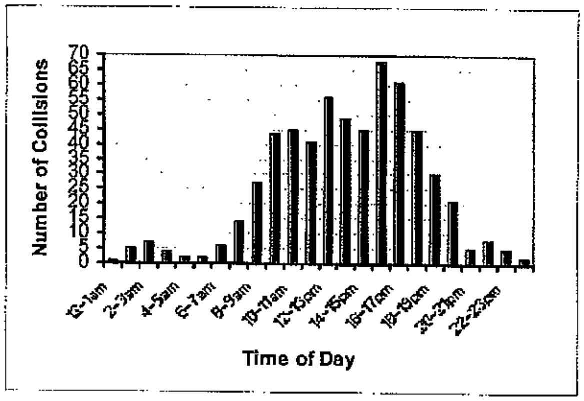
Weekday vs Weekend

The majority of collisions occur on weekdays. This is higher than the provincial experience of 76% collisions occurring on weekdays.

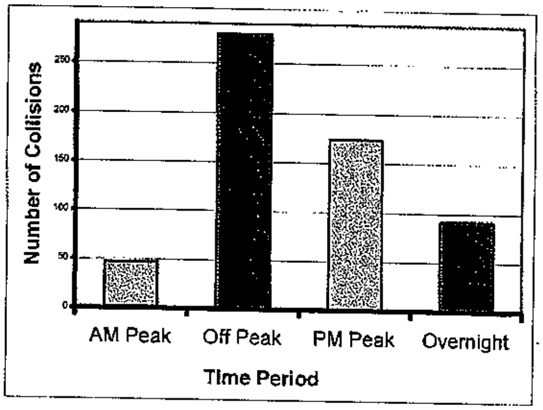


Collision by Time of Day

Nearly 22% of all collisions occur within the two-hour period from 3:00 pm to 5:00 pm.

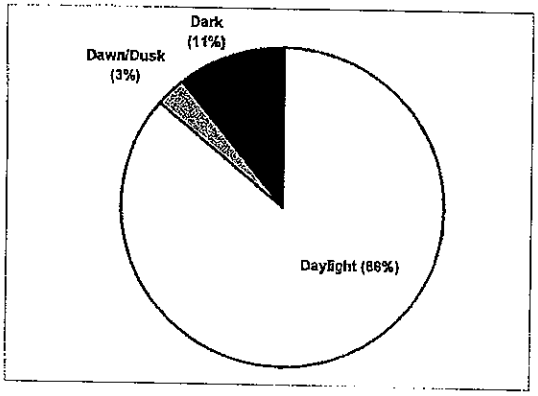


The majority of collisions (about 47%) occur during the Off-Peak period between 9:00 am and 3:00 pm. This is higher than average provincial experience of 33% during the Off-Peak period.

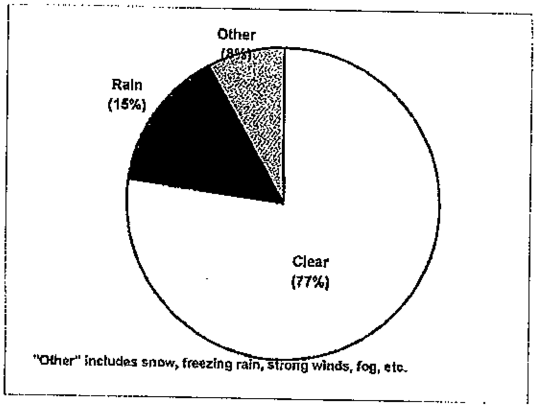


Light and Environmental Conditions

The majority of collisions (approximately 86%) occurred during daylight conditions. This is higher than the average provincial experience of 69% in the period from 2002-2004.



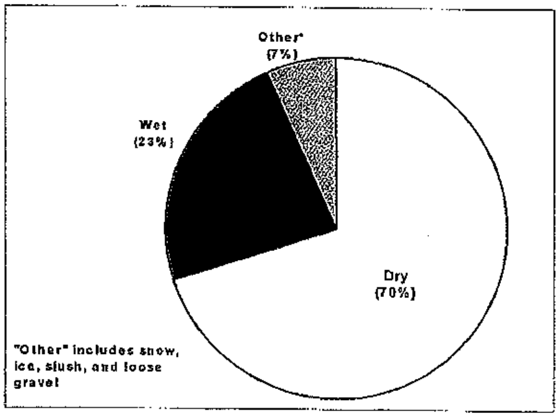
The majority of collisions (approximately 77%) occurred when visibility was clear. The average provincial experience is 69% in the period from 2002-2004.



"Other" includes snow, freezing rain, strong winds, fog, etc.

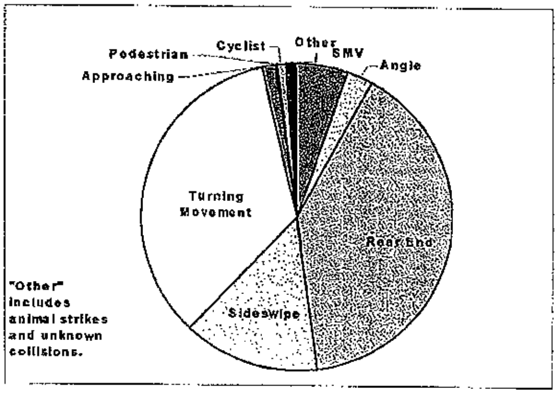
Pavement Surface Condition

The majority of collisions (approximately 70%) occurred on dry roads. This is higher than the average provincial experience of 64% in the period from 2002-2004.



Initial Impact Type

The majority of collisions (about 40%) within the study area were "rear-end" type collisions. Turning movement and sideswipe collisions account for 34% and 14% of the total collisions, respectively.



3.1.2 Micro-Analysis of Collision Experience

The micro-analysis of the collision experience involves an examination of collision diagrams and individual collision events to identify patterns and potential causal factors. **Table 1.1** and **Table 1.2** present summaries of the collision experience by initial impact type at the study intersections along Speers Road within the project limits.

The frequency of collisions at the unsignalized intersections is 1.60 collisions, or less, per year in the period from January 1, 2002 to December 31, 2006. This collision frequency is not remarkable.

At the signalized intersection of Speers Road and Bronte Road, the average collision frequency is 0.40 collisions per year (based on an experience of two (2) reportable collisions during the analysis period). This collision frequency appears low given the volumes entering this intersection. The average collision frequency at the following signalized intersections exceeds 10.0 collisions per year:

- Speers Road and Third Line (13.6 collisions per year)
- Speers Road and Fourth Line (14.0 collisions per year)
- Speers Road and Kerr Street (12.4 collisions per year)

A review of the collision diagrams and individual collision events at these intersections reveals a number of interesting patterns:

Speers Road and Third Line (68 Collisions)

- Nearly 12% of collisions related to left turn movements at driveways in close proximity to intersection (e.g., gas stations on corners)
- Nearly 24% of collisions were rear-end collisions which occurring when pavement conditions were wet, slushy or snow-packed

Speers Road and Fourth Line (70 Collisions)

- Nearly 20% of collisions were related to turning movements at driveways in close proximity to intersection
- About 6% of the collisions involved vehicles which deliberately violated red signal indications – more in East-West approaches
- One (1) collision involved a cyclist that had left the sidewalk and collided with a northbound right turning vehicle

Speers Road and Morden Road (42 Collisions)

- 25% of collisions were related to turning movements at driveways in close proximity to intersection
- Two (2) of the rear-end collisions occurred as a result of queues in the eastbound lanes spilling back from Dorval Drive
- Nearly 12% of the collisions were the result of a red signal indication violation
- One (1) collision involved a cyclist that was riding on the south sidewalk and was struck by a northbound right turning vehicle

Table 1.1 Intersection Collisions by Initial Impact Type

Intersection	Year	SMV	Right Angle	Rear End	Sideswipe	Turning Movement	Approaching	Pedestrian	Cyclist	Other	Total	No. of Collisions per Year
Speers Road and Bronte Road	2002	0	0	0	0	0	0	0	0	0	0	
	2003	0	0	0	0	0	0	0	0	0	0	
	2004	0	0	0	0	0	0	0	0	0	0	
	2005	0	0	1	1	0	0	0	0	0	2	
	2006	0	0	0	0	0	0	0	0	0	0	
Total		0	0	1	1	0	0	0	0	0	2	0.40
Speers Road and Third Line	2002	0	2	9	1	1	0	0	0	0	13	
	2003	0	0	7	2	3	0	0	0	0	12	
	2004	0	0	6	0	4	0	0	0	0	10	
	2005	0	1	8	2	1	0	0	0	0	12	
	2006	0	1	14	2	4	0	0	0	0	21	
Total		0	4	44	7	13	0	0	0	0	68	13.60
Speers Road and Wallace Road	2002	0	0	0	0	0	0	0	0	0	0	
	2003	0	0	0	0	0	0	0	0	0	0	
	2004	0	0	0	0	0	0	0	0	0	0	
	2005	0	0	0	0	0	0	0	0	0	0	
	2006	0	0	0	0	0	0	0	0	0	0	
Total		0	0	0	0	0	0	0	0	0	0	0.00
Speers Road and York Street	2002	1	0	0	0	1	0	0	0	1	3	
	2003	0	0	0	0	0	0	0	0	0	0	
	2004	0	0	0	0	0	0	0	0	0	0	
	2005	0	1	0	0	0	0	0	0	0	1	
	2006	0	0	0	0	0	0	0	0	0	0	
Total		1	1	0	0	1	0	0	0	1	4	0.80
Speers Road and Fourth Line	2002	1	1	4	1	3	0	0	0	0	10	
	2003	1	0	9	2	7	0	0	0	1	20	
	2004	0	1	6	1	7	0	0	0	1	16	
	2005	0	0	3	0	3	0	0	0	0	6	

Table 1.1 Intersection Collisions by Initial Impact Type

Intersection	Year	SMV	Right Angle	Rear End	Sideswipe	Turning Movement	Approaching	Pedestrian	Cyclist	Other	Total	No. of Collisions per Year
	2006	1	1	8	3	5	0	0	0	0	18	
Total		3	3	30	7	25	0	0	0	2	70	14.00
Speers Road and 447 Speers Road	2002	0	1	0	0	1	0	0	0	0	2	
	2003	0	0	2	1	0	0	0	0	0	3	
	2004	0	0	1	0	0	0	0	0	0	1	
	2005	0	0	0	1	0	0	0	0	0	1	
	2006	0	0	0	0	0	0	0	0	0	0	
Total		0	1	3	2	1	0	0	0	0	7	1.40
Speers Road and Morden Road	2002	1	1	5	0	4	0	0	0	0	11	
	2003	0	2	2	1	2	0	0	0	0	7	
	2004	0	1	2	0	6	0	0	0	0	9	
	2005	0	0	1	1	3	0	0	1	0	6	
	2006	1	0	4	1	3	0	0	0	0	9	
Total		2	4	14	3	18	0	0	1	0	42	8.40
Speers Road and Woody Road	2002	0	0	0	0	0	0	0	0	0	0	
	2003	0	0	1	0	0	0	0	0	0	1	
	2004	0	0	1	0	0	0	0	1	0	2	
	2005	0	0	0	0	1	0	0	0	0	1	
	2006	0	0	1	1	2	0	0	0	0	4	
Total		0	0	3	1	3	0	0	1	0	8	1.60
Speers Road and St. Augustine Drive	2002	0	0	0	0	2	0	0	0	0	2	
	2003	0	0	0	0	0	0	0	0	0	0	
	2004	0	0	0	0	0	0	0	0	0	0	
	2005	0	0	0	0	0	0	0	0	1	1	
	2006	0	0	0	0	1	0	0	0	0	1	
Total		0	0	0	0	3	0	0	0	1	4	0.80
Speers Road and Kerr	2002	0	0	1	0	3	0	0	0	0	4	
	2003	0	0	7	4	4	0	1	0	0	16	

Table 1.1 Intersection Collisions by Initial Impact Type

Intersection	Year	SMV	Right Angle	Rear End	Sideswipe	Turning Movement	Approaching	Pedestrian	Cyclist	Other	Total	No. of Collisions per Year
Street	2004	0	0	8	2	5	0	0	0	0	15	
	2005	1	1	4	0	6	0	0	0	0	12	
	2006	0	0	7	4	4	0	0	0	0	15	
Total		1	1	27	10	22	0	1	0	0	62	12.40

Table 1.2 Intersection Collisions by Initial Impact Type – Summary

Year	SMV	Right Angle	Rear End	Sideswipe	Turning Movement	Approaching	Pedestrian	Cyclist	Other	Total	% of Total
2002	3	5	19	2	15	0	0	0	1	45	17%
2003	1	2	28	10	16	0	1	0	1	59	22%
2004	0	2	24	3	22	0	0	1	1	53	20%
2005	1	3	17	5	14	0	0	1	1	42	16%
2006	2	2	34	11	19	0	0	0	0	68	25%
	7	14	122	31	86	0	1	2	4	267	100%

Speers Road and Kerr Street (62 Collisions)

- About 11% of collisions were related to turning movements at driveways in close proximity to intersection
- About 6% of the collisions were sideswipe collisions which may have be attributed to lane widths on Kerr Street (e.g., eastbound left turning vehicle sideswipes westbound right turning vehicle, etc)
- About 11% were rear-end type collisions which occurred when the road pavement surface condition was other than "dry"
- One (1) collision involved a westbound right turning vehicle that struck a pedestrian crossing Kerr Street north of Speers

The collision groups most commonly identified as a cause of concern at signalized intersections are:

- rear-end collisions,
- angle collisions,
- turning movement collisions, and
- collisions involving pedestrians and bicyclists.

The frequency of rear-end collisions is likely attributed to driver inattention and acceptance of short headways (e.g., drivers following too closely as they travel in platoons) during heavy volume conditions or drivers unable to stop in time due to road surface conditions (i.e., wet, icy, slushy or snow-covered pavement).

Angle collisions may be attributed to driver inattention or aggressive behaviour. The visibility of signal heads may also be compromised along corridors where heavy truck traffic habitually prevents adjacent and following drivers from viewing pedestal-mounted traffic signal heads. A number of collisions at Fourth Line and at Morden Road involved drivers that had disobeyed traffic signal control by entering on a red signal indication. It is not known if these violations are the result of driver aggression, driver inattention or other factors.

It is worthwhile noting that more than 10% of all collisions occurring at the signalized intersections were found to be related to turning movements at driveways located in close proximity to the intersections. The number of potential conflict areas increases when driveways are frequent or closely spaced along a corridor such as Speers Road. Bicyclists are particularly vulnerable to left-turning vehicles who may not detect and perceive approaching bicyclists, especially if the cyclist is riding on the sidewalk. We found a number of cyclists were struck by vehicles while the cyclist was reported to have been riding on the sidewalk. There is currently an off-road designated cycling route/trail on the north side of Speers Road from Morden Road to Third Line. Permissive signs are currently posted along the north side of Speers Road from Morden Road westerly.

Table 1.3 and **Table 1.4** provide summaries of the collision experience by initial impact type at the mid-block locations along Speers Road within the project limits.

With the exception of the sections of Speers Road between Wallace Road and York Road and between Dorval Drive and Woody Road (which are very short), the average number of collisions within the roadway sections exceeds 2.0 collisions per year. The mid-block collision experience is highest within the roadway sections between York Road and Morden Road.

Table 1.3 Mid-block Collisions by Initial Impact Type

Road Section	Year	SMV	Right Angle	Rear End	Sideswipe	Turning Movement	Approaching	Pedestrian	Cyclist	Other	Total	No. of Collisions per Year
Speers Road between Bronte Road and Third Line	2002	1	0	1	1	0	0	0	0	0	3	
	2003	1	0	1	0	0	0	0	0	0	2	
	2004	1	0	1	0	1	0	0	0	0	3	
	2005	2	0	0	0	0	0	0	0	0	2	
	2006	0	0	3	0	2	0	0	0	0	5	
Total		5	0	6	1	3	0	0	0	0	15	3.00
Speers Road between Third Line and Wallace Road	2002	0	0	2	0	1	0	0	0	0	3	
	2003	0	1	1	2	1	0	0	0	0	5	
	2004	0	0	0	2	1	0	0	0	0	3	
	2005	0	0	1	1	2	0	0	0	0	4	
	2006	0	0	0	0	4	0	0	0	0	4	
Total		0	1	4	5	9	0	0	0	0	19	3.80
Speers Road between Wallace Road and York Street	2002	0	0	0	0	1	0	0	1	0	2	
	2003	0	0	0	0	0	0	0	0	0	0	
	2004	0	0	0	0	0	0	0	0	0	0	
	2005	0	0	0	1	1	0	0	0	0	2	
	2006	0	0	0	0	0	1	0	0	0	1	
Total		0	0	0	1	2	1	0	1	0	5	1.00
Speers Road between York Street and Fourth Line	2002	0	0	9	1	8	1	0	0	0	19	
	2003	2	0	15	5	10	0	0	0	0	32	
	2004	2	0	9	1	8	0	0	0	0	20	
	2005	1	1	6	0	8	0	0	0	0	16	
	2006	1	0	9	2	5	0	0	0	1	18	
Total		6	1	48	9	39	1	0	0	1	105	21.00

Table 1.3 Mid-block Collisions by Initial Impact Type

Road Section	Year	SMV	Right Angle	Rear End	Sideswipe	Turning Movement	Approaching	Pedestrian	Cyclist	Other	Total	No. of Collisions per Year
Speers Road between Fourth Line and 447 Speers Road	2002	2	0	8	1	0	0	0	0	1	12	
	2003	3	0	4	6	5	1	0	1	1	21	
	2004	2	0	2	0	3	2	0	0	0	9	
	2005	0	0	3	3	2	1	0	0	0	9	
	2006	0	0	0	0	2	0	1	0	0	3	
Total		7	0	17	10	12	4	1	1	2	54	10.80
Speers Road between 447 Speers Road and Morden Road	2002	1	0	2	2	3	0	0	0	0	8	
	2003	0	0	3	0	5	0	0	0	0	8	
	2004	0	0	6	2	7	0	0	0	0	15	
	2005	1	0	1	0	5	1	0	0	0	8	
	2006	1	0	3	3	4	0	0	0	0	11	
Total		3	0	15	7	24	1	0	0	0	50	10.00
Speers Road between Morden Road and Dorval Drive	2002	0	0	1	0	0	0	0	0	0	1	
	2003	0	0	0	0	2	0	0	0	0	2	
	2004	1	0	1	0	0	0	0	0	0	2	
	2005	0	0	1	1	0	0	0	0	0	2	
	2006	0	0	1	1	2	0	0	0	0	4	
Total		1	0	4	2	4	0	0	0	0	11	2.20
Speers Road between Dorval Drive and Woody Road	2002	0	0	0	1	0	0	0	0	0	1	
	2003	0	0	0	1	1	0	0	0	0	2	
	2004	0	0	0	1	3	0	0	0	0	4	
	2005	0	0	0	1	0	0	0	0	0	1	
	2006	0	0	1	0	0	0	0	0	0	1	
Total		0	0	1	4	4	0	0	0	0	9	1.80

Table 1.3 Mid-block Collisions by Initial Impact Type

Road Section	Year	SMV	Right Angle	Rear End	Sideswipe	Turning Movement	Approaching	Pedestrian	Cyclist	Other	Total	No. of Collisions per Year
Speers Road and Woody Road and St. Augustine Drive	2002	0	0	1	2	1	0	0	0	0	4	
	2003	0	0	2	1	1	0	0	0	0	4	
	2004	0	0	1	0	1	0	0	0	0	2	
	2005	0	0	0	0	0	0	0	0	0	0	
	2006	1	0	0	0	0	0	0	0	0	1	
Total		1	0	4	3	3	0	0	0	0	11	2.20
Speers Road between St. Augustine Drive and Kerr Street	2002	0	0	1	0	2	0	0	0	0	3	
	2003	0	0	2	0	1	0	0	0	0	3	
	2004	0	0	1	2	1	0	0	0	0	4	
	2005	0	0	2	0	2	0	0	0	0	4	
	2006	1	0	0	1	1	0	0	0	0	3	
Total		1	0	6	3	7	0	0	0	0	17	3.40
Speers Road between Kerr Street and Cross Street	2002	0	0	1	1	2	0	0	0	0	4	
	2003	0	0	2	0	2	1	0	0	0	5	
	2004	1	0	2	0	2	0	0	0	0	5	
	2005	0	0	1	2	3	0	0	1	0	7	
	2006	0	0	3	4	2	0	0	0	0	9	
Total		1	0	9	7	11	1	0	1	0	30	6.00

Table 1.4 Summary of Mid-block Collisions by Initial Impact Type

Year	SMV	Right Angle	Rear End	Sideswipe	Turning Movement	Approaching	Pedestrian	Cyclist	Other	Total	% of Total
2002	4	0	26	9	18	1	0	1	1	60	18%
2003	6	1	30	15	28	2	0	1	1	84	26%
2004	7	0	23	8	27	2	0	0	0	67	21%
2005	4	1	15	9	23	2	0	1	0	55	17%
2006	4	0	20	11	22	1	1	0	1	60	18%
	25	**2**	**114**	**52**	**118**	**8**	**1**	**3**	**3**	**326**	100%

A review of the collision diagrams and individual collision events within these roadway sections reveals a number of interesting patterns:

Speers Road between Bronte Road and Third Line (15 Collisions, ± 2.1 km)

- Nearly 12% of collisions related to left turn movements at driveways (three rear-end and two turning movement collisions)
- Nearly 24% of collisions were rear-end collisions which occurring when pavement conditions were wet, slushy or snow-packed

Speers Road between Third Line and Wallace Road (19 Collisions, ± 1.9 km)

- Nearly 58% of collisions related to turning movements at driveways; two rear-end collisions related to inbound left turns, seven turning movement collisions related to outbound left turns, one angle collision related to crossing movement and one sideswipe related to outbound right-turn at a driveway

Speers Road between York Street and Fourth Line (105 Collisions, ± 1.5 km)

- Nearly 68% of collisions related to turning movements at driveways; 30 rear-end collisions primarily related to inbound left turns, 36 turning movement collisions primarily related to outbound left turns, three (3) sideswipe collisions, one angle collision and one SMV-other collision (triggered by turning movement at driveway).

Speers Road between Fourth Line and 447 Speers Road (54 Collisions, ± 0.65 km)

- About 33% of collisions related to turning movements at driveways; five rear-end collisions, 11 turning movement collisions and two sideswipe collisions
- Nearly 13% of collisions involved a loss of control event on the horizontal curve within this roadway section
- Two of the 54 collisions were related to police pursuits.
- One of the two bicycle collisions involved a bicyclist riding on the sidewalk being struck by a vehicle exiting a driveway.

Speers Road between 447 Speers Road and Morden Road (50 Collisions, ± 0.40 km)

- About 68% of collisions related to turning movements at driveways; nine rear-end collisions, 22 turning movement collisions and three sideswipe collisions
- About 6% of collisions involved a loss of control event

Speers Road between Kerr Street and Cross Street (30 Collisions, ± 1.8 km)

- About 50% of collisions related to turning movements at driveways; four rear-end collisions and 11 turning movement collisions.
- One bicycle collision involved southbound vehicle exiting driveway striking westbound cyclist riding on the sidewalk.

3.2 Recommendations

Preliminary recommendations arising from safety assessment thus far:

1. Introduction of centre two-way left turn lane along Speers Road would result in reduced collisions as a marked number of rear-end collisions are related to stopped left turning vehicles and not congestion.
2. Introduction of access management techniques such as median islands at signalized intersections will reduce frequency of turning movement collisions at driveways located in close proximity to the signalized intersections. A large number of turning movement collisions reported at the signalized intersections are actually the result of either inbound or outbound left turn movements at driveways located within close proximity to the signalized intersections

4. STATEMENT

The road safety analysis of Speers Road from Bronte Road to Cross Street has been carried out with the sole purpose of identifying operational and/or safety concerns as manifested in collision data which warrant remediation and/or further examination. As previously stated, UEM makes no guarantee that every deficiency or safety concern has been identified and further, that if the recommendations contained in this report are followed, UEM makes no guarantee that the subject roadway is "safe". As long as there are vehicles on the road, there is no "absolutely safe" roadway, only varying degrees of safety.

Appendix E

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↑	↱	↰	↑	↱	↰↰	↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	*1.00	1.00	1.00	*1.00	1.00	1.00	1.00	1.00	*1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1684	3512	1566	1750	3648	1566	1733	1842	1566	3500	1879	1597
Flt Permitted	0.35	1.00	1.00	0.21	1.00	1.00	0.56	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	620	3512	1566	395	3648	1566	1026	1842	1566	3500	1879	1597
Volume (vph)	58	641	116	334	798	674	134	188	235	400	289	54
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	61	675	122	352	840	709	141	198	247	421	304	57
RTOR Reduction (vph)	0	0	85	0	0	330	0	0	199	0	0	40
Lane Group Flow (vph)	61	675	37	352	840	379	141	198	48	421	304	17
Heavy Vehicles (%)	6%	7%	2%	2%	3%	2%	3%	2%	2%	2%	0%	0%
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2			6
Actuated Green, G (s)	32.1	29.0	29.0	52.5	45.4	45.4	23.5	17.4	17.4	13.9	27.7	27.7
Effective Green, g (s)	34.0	30.9	30.9	54.4	47.3	47.3	26.0	19.9	19.9	16.4	30.2	30.2
Actuated g/C Ratio	0.33	0.30	0.30	0.53	0.46	0.46	0.25	0.19	0.19	0.16	0.29	0.29
Clearance Time (s)	4.0	5.9	5.9	4.0	5.9	5.9	4.0	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)	2.5	5.5	5.5	2.5	5.5	5.5	2.5	4.0	4.0	2.5	4.0	4.0
Lane Grp Cap (vph)	237	1057	471	467	1680	721	302	357	303	559	553	470
v/s Ratio Prot	0.01	0.19		c0.14	0.23		0.03	0.11		c0.12	c0.16	
v/s Ratio Perm	0.08		0.02	c0.26		0.24	0.09		0.03			0.01
v/c Ratio	0.26	0.64	0.08	0.75	0.50	0.53	0.47	0.55	0.16	0.75	0.55	0.04
Uniform Delay, d1	23.8	31.1	25.7	16.7	19.4	19.7	31.2	37.4	34.4	41.2	30.5	25.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	3.0	0.3	6.5	1.1	2.7	0.8	2.3	0.3	5.4	1.4	0.0
Delay (s)	24.3	34.0	26.0	23.2	20.5	22.5	32.1	39.7	34.8	46.6	31.9	25.9
Level of Service	C	C	C	C	C	C	C	D	C	D	C	C
Approach Delay (s)		32.2			21.7			35.8			39.4	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	29.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	102.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Speers Road Class EA
27: Speers Road & Morden Road

Future (2021) PM Peak - With Improvements
6/8/2009

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱		↰	↱		↰	↱	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	*1.00		1.00	*1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.85		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1700	3559		1750	3667		1785	1589		1785	1623	
Flt Permitted	0.31	1.00		0.21	1.00		0.71	1.00		0.47	1.00	
Satd. Flow (perm)	557	3559		394	3667		1337	1589		883	1623	
Volume (vph)	25	982	57	226	885	32	21	4	144	75	12	54
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	1034	60	238	932	34	22	4	152	79	13	57
RTOR Reduction (vph)	0	2	0	0	2	0	0	129	0	0	48	0
Lane Group Flow (vph)	26	1092	0	238	964	0	22	27	0	79	22	0
Heavy Vehicles (%)	5%	5%	0%	2%	2%	0%	0%	0%	1%	0%	0%	2%
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	67.0	67.0		80.5	80.5		14.3	14.3		14.3	14.3	
Effective Green, g (s)	69.1	69.1		82.6	82.6		16.1	16.1		16.1	16.1	
Actuated g/C Ratio	0.65	0.65		0.77	0.77		0.15	0.15		0.15	0.15	
Clearance Time (s)	6.1	6.1		3.0	6.1		5.8	5.8		5.8	5.8	
Vehicle Extension (s)	4.0	4.0		2.5	4.0		3.5	3.5		3.5	3.5	
Lane Grp Cap (vph)	361	2305		426	2839		202	240		133	245	
v/s Ratio Prot		0.31		c0.05	0.26			0.02			0.01	
v/s Ratio Perm	0.05			c0.38			0.02			c0.09		
v/c Ratio	0.07	0.47		0.56	0.34		0.11	0.11		0.59	0.09	
Uniform Delay, d1	6.9	9.6		5.5	3.7		39.1	39.1		42.3	39.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.7		1.3	0.3		0.3	0.2		7.3	0.2	
Delay (s)	7.3	10.3		6.8	4.0		39.4	39.4		49.6	39.2	
Level of Service	A	B		A	A		D	D		D	D	
Approach Delay (s)		10.2			4.6			39.4			44.7	
Approach LOS		B			A			D			D	

Intersection Summary

HCM Average Control Delay	11.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	106.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↑	↱	↰	↑↱		↰	↑↱	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	*1.00	1.00	1.00	*1.00	1.00	1.00	*1.00		1.00	*1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1767	3613	1581	1785	3684	1566	1750	3586		1767	3554	
Flt Permitted	0.29	1.00	1.00	0.33	1.00	1.00	0.27	1.00		0.44	1.00	
Satd. Flow (perm)	533	3613	1581	628	3684	1566	495	3586		820	3554	
Volume (vph)	187	589	123	186	660	124	180	273	109	161	322	166
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	197	620	129	196	695	131	189	287	115	169	339	175
RTOR Reduction (vph)	0	0	80	0	0	81	0	43	0	0	68	0
Lane Group Flow (vph)	197	620	49	196	695	50	189	359	0	169	446	0
Heavy Vehicles (%)	1%	4%	1%	0%	2%	2%	2%	0%	1%	1%	0%	1%
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	44.4	33.4	33.4	44.0	33.2	33.2	32.3	19.8		29.1	18.2	
Effective Green, g (s)	45.8	35.8	35.8	45.4	35.6	35.6	34.1	22.6		30.9	21.0	
Actuated g/C Ratio	0.49	0.38	0.38	0.48	0.38	0.38	0.36	0.24		0.33	0.22	
Clearance Time (s)	3.0	6.4	6.4	3.0	6.4	6.4	3.0	6.8		3.0	6.8	
Vehicle Extension (s)	2.5	4.0	4.0	2.5	4.0	4.0	2.5	4.0		2.5	4.0	
Lane Grp Cap (vph)	391	1375	601	423	1394	592	333	861		369	793	
v/s Ratio Prot	c0.05	0.17		0.05	0.19		c0.07	0.10		0.05	0.13	
v/s Ratio Perm	c0.19		0.03	0.18		0.03	c0.14			0.10		
v/c Ratio	0.50	0.45	0.08	0.46	0.50	0.08	0.57	0.42		0.46	0.56	
Uniform Delay, d1	14.7	21.8	18.6	14.6	22.4	18.8	22.1	30.2		23.5	32.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	1.1	0.3	0.6	1.3	0.3	1.8	0.4		0.7	1.1	
Delay (s)	15.4	22.9	18.9	15.2	23.7	19.1	23.9	30.6		24.2	33.6	
Level of Service	B	C	B	B	C	B	C	C		C	C	
Approach Delay (s)		20.8			21.5			28.5			31.3	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	24.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	94.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰	↱	↑↑	↱	↰	↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	*1.00	1.00	1.00	*1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1785	1566	3721	1566	1733	3758
Flt Permitted	0.95	1.00	1.00	1.00	0.40	1.00
Satd. Flow (perm)	1785	1566	3721	1566	721	3758
Volume (vph)	523	374	434	70	183	1165
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	551	394	457	74	193	1226
RTOR Reduction (vph)	0	242	0	45	0	0
Lane Group Flow (vph)	551	152	457	29	193	1226
Heavy Vehicles (%)	0%	2%	1%	2%	3%	0%
Turn Type		custom		Perm	pm+pt	
Protected Phases			2		1	6
Permitted Phases	8	8		2	6	
Actuated Green, G (s)	39.0	39.0	39.3	39.3	55.5	55.5
Effective Green, g (s)	41.0	41.0	41.3	41.3	57.5	57.5
Actuated g/C Ratio	0.38	0.38	0.39	0.39	0.54	0.54
Clearance Time (s)	6.0	6.0	6.0	6.0	4.0	6.0
Vehicle Extension (s)	3.5	3.5	5.0	5.0	3.5	5.0
Lane Grp Cap (vph)	687	603	1443	607	505	2029
v/s Ratio Prot			0.12		0.04	c0.33
v/s Ratio Perm	c0.31	0.10		0.02	0.16	
v/c Ratio	0.80	0.25	0.32	0.05	0.38	0.60
Uniform Delay, d1	29.1	22.3	22.8	20.3	13.2	16.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.9	0.3	0.6	0.1	0.6	1.3
Delay (s)	36.0	22.6	23.3	20.5	13.8	18.1
Level of Service	D	C	C	C	B	B
Approach Delay (s)	30.4		22.9			17.5
Approach LOS	C		C			B

Intersection Summary			
HCM Average Control Delay	22.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	106.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	**EBL**	**EBT**	**EBR**	**WBL**	**WBT**	**WBR**	**NBL**	**NBT**	**NBR**	**SBL**	**SBT**	**SBR**
Lane Configurations	↰↰	↑↑	↱	↰	↑↑	↱	↰	↑↱		↰	↑↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	*1.00	*1.00	1.00	1.00	*1.00	1.00	1.00	*1.00		1.00	*1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3368	3545	1493	1733	3579	1426	1716	3590		1700	3684	1521
Flt Permitted	0.95	1.00	1.00	0.37	1.00	1.00	0.51	1.00		0.21	1.00	1.00
Satd. Flow (perm)	3368	3545	1493	671	3579	1426	914	3590		371	3684	1521
Volume (vph)	563	748	54	97	557	222	92	453	110	220	421	584
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	593	787	57	102	586	234	97	477	116	232	443	615
RTOR Reduction (vph)	0	0	35	0	0	180	0	19	0	0	0	331
Lane Group Flow (vph)	593	787	22	102	586	54	97	574	0	232	443	284
Heavy Vehicles (%)	6%	6%	7%	3%	5%	12%	4%	2%	0%	5%	2%	5%
Turn Type	Prot		Perm	pm+pt		Perm	pm+pt			pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4	8		8	2			6		6
Actuated Green, G (s)	23.7	43.9	43.9	31.8	25.0	25.0	32.0	27.0		51.0	42.0	42.0
Effective Green, g (s)	25.7	45.9	45.9	33.8	27.0	27.0	34.0	29.0		53.0	44.0	44.0
Actuated g/C Ratio	0.22	0.39	0.39	0.29	0.23	0.23	0.29	0.25		0.45	0.37	0.37
Clearance Time (s)	6.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	2.5	4.0	4.0	2.5	4.0	4.0	2.5	4.0		2.5	4.0	4.0
Lane Grp Cap (vph)	735	1382	582	254	821	327	298	885		393	1377	569
v/s Ratio Prot	c0.18	0.22		0.02	c0.16		0.01	c0.16		c0.10	0.12	
v/s Ratio Perm			0.01	0.09		0.04	0.08			0.17		0.19
v/c Ratio	0.81	0.57	0.04	0.40	0.71	0.16	0.33	0.65		0.59	0.32	0.50
Uniform Delay, d1	43.6	28.2	22.2	31.8	41.8	36.3	31.5	39.8		22.4	26.2	28.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	6.3	0.7	0.0	0.8	3.2	0.3	2.9	3.7		6.4	0.6	3.1
Delay (s)	49.9	28.8	22.3	32.5	45.0	36.6	34.4	43.5		28.8	26.8	31.5
Level of Service	D	C	C	C	D	D	C	D		C	C	C
Approach Delay (s)		37.3			41.5			42.2			29.4	
Approach LOS		D			D			D			C	

Intersection Summary

HCM Average Control Delay	36.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	117.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	78.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑↱		↰	↑↑↱			✥		↰	↑↱	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	*1.00		1.00	*1.00			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99			0.86		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1700	3441		1785	3469			1625		1785	1523	
Flt Permitted	0.33	1.00		0.34	1.00			1.00		0.75	1.00	
Satd. Flow (perm)	596	3441		641	3469			1625		1418	1523	
Volume (vph)	25	807	8	18	803	34	0	0	5	18	1	19
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	849	8	19	845	36	0	0	5	19	1	20
RTOR Reduction (vph)	0	0	0	0	1	0	0	5	0	0	19	0
Lane Group Flow (vph)	26	857	0	19	880	0	0	0	0	19	2	0
Heavy Vehicles (%)	5%	9%	14%	0%	8%	0%	0%	0%	0%	0%	0%	6%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	98.9	98.9		98.9	98.9			6.2		6.2	6.2	
Effective Green, g (s)	100.5	100.5		100.5	100.5			7.9		7.9	7.9	
Actuated g/C Ratio	0.86	0.86		0.86	0.86			0.07		0.07	0.07	
Clearance Time (s)	5.6	5.6		5.6	5.6			5.7		5.7	5.7	
Vehicle Extension (s)	4.0	4.0		4.0	4.0			3.5		3.5	3.5	
Lane Grp Cap (vph)	515	2971		553	2995			110		96	103	
v/s Ratio Prot		0.25			c0.25			0.00			0.00	
v/s Ratio Perm	0.04			0.03						c0.01		
v/c Ratio	0.05	0.29		0.03	0.29			0.00		0.20	0.02	
Uniform Delay, d1	1.1	1.4		1.1	1.5			50.6		51.3	50.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.2		0.1	0.2			0.0		1.2	0.1	
Delay (s)	1.3	1.7		1.2	1.7			50.6		52.5	50.8	
Level of Service	A	A		A	A			D		D	D	
Approach Delay (s)		1.7			1.7			50.6			51.6	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM Average Control Delay	2.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	116.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

4: Speers Road & Third Line

6/8/2009

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↑	↱	↰	↑↱		↰	↑↱	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	*1.00	1.00	1.00	*1.00	1.00	1.00	*1.00		1.00	*1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1623	3613	1551	1623	3385	1377	1785	3479		1684	3496	
Flt Permitted	0.63	1.00	1.00	0.27	1.00	1.00	0.40	1.00		0.07	1.00	
Satd. Flow (perm)	1074	3613	1551	463	3385	1377	750	3479		131	3496	
Volume (vph)	96	412	35	162	196	194	91	854	336	321	590	75
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	101	434	37	171	206	204	96	899	354	338	621	79
RTOR Reduction (vph)	0	0	30	0	0	159	0	37	0	0	9	0
Lane Group Flow (vph)	101	434	7	171	206	45	96	1216	0	338	691	0
Heavy Vehicles (%)	10%	4%	3%	10%	11%	16%	0%	4%	2%	6%	5%	11%
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	27.6	20.6	20.6	33.6	23.6	23.6	55.0	48.0		73.5	63.5	
Effective Green, g (s)	29.1	23.1	23.1	35.1	26.1	26.1	56.0	50.0		75.5	65.5	
Actuated g/C Ratio	0.24	0.19	0.19	0.29	0.22	0.22	0.47	0.42		0.63	0.55	
Clearance Time (s)	3.0	6.5	6.5	3.0	6.5	6.5	3.0	6.0		3.0	6.0	
Vehicle Extension (s)	2.5	4.5	4.5	2.5	4.5	4.5	2.5	4.5		2.5	4.5	
Lane Grp Cap (vph)	289	698	300	223	739	300	403	1454		362	1915	
v/s Ratio Prot	0.02	0.12		c0.06	0.06		0.01	0.35		c0.17	0.20	
v/s Ratio Perm	0.07		0.00	c0.17		0.03	0.10			c0.42		
v/c Ratio	0.35	0.62	0.02	0.77	0.28	0.15	0.24	0.84		0.93	0.36	
Uniform Delay, d1	36.5	44.2	39.1	35.2	38.9	37.8	17.9	31.1		37.3	15.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	2.2	0.1	14.0	0.4	0.4	0.2	5.9		30.7	0.5	
Delay (s)	37.0	46.4	39.2	49.2	39.3	38.2	18.1	37.0		67.9	15.8	
Level of Service	D	D	D	D	D	D	B	D		E	B	
Approach Delay (s)		44.3			41.8			35.6			32.8	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM Average Control Delay	37.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	119.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	91.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↑	↱	↰	↱		↰	↱	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	*1.00		1.00	*1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.92		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1684	3456		1750	3648	1566	1733	1689		1750	1834	
Flt Permitted	0.32	1.00		0.13	1.00	1.00	0.55	1.00		0.12	1.00	
Satd. Flow (perm)	561	3456		231	3648	1566	995	1689		229	1834	
Volume (vph)	58	641	116	334	798	674	134	188	235	400	289	54
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	61	675	122	352	840	709	141	198	247	421	304	57
RTOR Reduction (vph)	0	13	0	0	0	403	0	38	0	0	6	0
Lane Group Flow (vph)	61	784	0	352	840	306	141	407	0	421	355	0
Heavy Vehicles (%)	6%	7%	2%	2%	3%	2%	3%	2%	2%	2%	0%	0%
Turn Type	pm+pt			pm+pt		Perm	pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	29.1	26.0		49.0	41.9	41.9	36.5	30.5		56.5	46.5	
Effective Green, g (s)	31.0	27.9		50.9	43.8	43.8	39.0	33.0		59.0	49.0	
Actuated g/C Ratio	0.26	0.24		0.43	0.37	0.37	0.33	0.28		0.50	0.42	
Clearance Time (s)	4.0	5.9		4.0	5.9	5.9	4.0	6.5		4.0	6.5	
Vehicle Extension (s)	2.5	5.5		2.5	5.5	5.5	2.5	4.0		2.5	4.0	
Lane Grp Cap (vph)	177	818		345	1355	582	367	473		398	762	
v/s Ratio Prot	0.01	0.23		c0.16	0.23		0.02	0.24		c0.20	0.19	
v/s Ratio Perm	0.08			c0.28		0.20	0.11			c0.33		
v/c Ratio	0.34	0.96		1.02	0.62	0.52	0.38	0.86		1.06	0.47	
Uniform Delay, d1	33.4	44.4		35.0	30.3	28.9	28.8	40.3		34.5	25.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.9	22.8		53.7	2.1	3.4	0.5	15.2		61.2	0.6	
Delay (s)	34.2	67.3		88.8	32.4	32.3	29.3	55.4		95.7	25.6	
Level of Service	C	E		F	C	C	C	E		F	C	
Approach Delay (s)		64.9			42.8			49.1			63.3	
Approach LOS		E			D			D			E	

Intersection Summary			
HCM Average Control Delay	52.2	HCM Level of Service	D
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	117.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	99.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

27: Speers Road & Morden Road

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑↱		↰	↑↑↱		↰	↑↱		↰	↑↱	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	*1.00		1.00	*1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.85		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1700	3559		1750	3667		1785	1589		1785	1623	
Flt Permitted	0.31	1.00		0.21	1.00		0.71	1.00		0.47	1.00	
Satd. Flow (perm)	557	3559		394	3667		1337	1589		883	1623	
Volume (vph)	25	982	57	226	885	32	21	4	144	75	12	54
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	1034	60	238	932	34	22	4	152	79	13	57
RTOR Reduction (vph)	0	2	0	0	2	0	0	129	0	0	48	0
Lane Group Flow (vph)	26	1092	0	238	964	0	22	27	0	79	22	0
Heavy Vehicles (%)	5%	5%	0%	2%	2%	0%	0%	0%	1%	0%	0%	2%
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	67.0	67.0		80.5	80.5		14.3	14.3		14.3	14.3	
Effective Green, g (s)	69.1	69.1		82.6	82.6		16.1	16.1		16.1	16.1	
Actuated g/C Ratio	0.65	0.65		0.77	0.77		0.15	0.15		0.15	0.15	
Clearance Time (s)	6.1	6.1		3.0	6.1		5.8	5.8		5.8	5.8	
Vehicle Extension (s)	4.0	4.0		2.5	4.0		3.5	3.5		3.5	3.5	
Lane Grp Cap (vph)	361	2305		426	2839		202	240		133	245	
v/s Ratio Prot		0.31		c0.05	0.26			0.02			0.01	
v/s Ratio Perm	0.05			c0.38			0.02			c0.09		
v/c Ratio	0.07	0.47		0.56	0.34		0.11	0.11		0.59	0.09	
Uniform Delay, d1	6.9	9.6		5.5	3.7		39.1	39.1		42.3	39.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.7		1.3	0.3		0.3	0.2		7.3	0.2	
Delay (s)	7.3	10.3		6.8	4.0		39.4	39.4		49.6	39.2	
Level of Service	A	B		A	A		D	D		D	D	
Approach Delay (s)		10.2			4.6			39.4			44.7	
Approach LOS		B			A			D			D	

Intersection Summary

HCM Average Control Delay	11.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	106.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

22: Speers Road & Fourth Line

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱		↰	↱		↰	↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	*1.00		1.00	*1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.98		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1767	3537		1785	3596		1750	1793		1767	1879	1581
Flt Permitted	0.20	1.00		0.25	1.00		0.30	1.00		0.24	1.00	1.00
Satd. Flow (perm)	376	3537		461	3596		551	1793		438	1879	1581
Volume (vph)	187	589	123	186	660	124	180	273	109	161	322	166
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	197	620	129	196	695	131	189	287	115	169	339	175
RTOR Reduction (vph)	0	14	0	0	13	0	0	13	0	0	0	125
Lane Group Flow (vph)	197	735	0	196	813	0	189	389	0	169	339	50
Heavy Vehicles (%)	1%	4%	1%	0%	2%	2%	2%	0%	1%	1%	0%	1%
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	46.2	34.4		45.8	34.2		38.1	27.1		36.5	26.3	26.3
Effective Green, g (s)	47.6	36.8		47.2	36.6		39.9	29.9		38.3	29.1	29.1
Actuated g/C Ratio	0.46	0.36		0.46	0.36		0.39	0.29		0.37	0.28	0.28
Clearance Time (s)	3.0	6.4		3.0	6.4		3.0	6.8		3.0	6.8	6.8
Vehicle Extension (s)	2.5	4.0		2.5	4.0		2.5	4.0		2.5	4.0	4.0
Lane Grp Cap (vph)	321	1270		349	1284		331	523		283	533	449
v/s Ratio Prot	c0.06	0.21		0.06	c0.23		c0.06	c0.22		0.05	0.18	
v/s Ratio Perm	0.22			0.20			0.17			0.17		0.03
v/c Ratio	0.61	0.58		0.56	0.63		0.57	0.74		0.60	0.64	0.11
Uniform Delay, d1	18.3	26.6		17.9	27.4		22.6	32.8		23.8	32.1	27.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.0	1.9		1.7	2.4		1.9	6.1		2.8	2.8	0.1
Delay (s)	21.2	28.5		19.6	29.8		24.5	38.9		26.6	34.9	27.3
Level of Service	C	C		B	C		C	D		C	C	C
Approach Delay (s)		27.0			27.8			34.3			30.9	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	29.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	102.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰	↱	↑↑	↱	↰	↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	*1.00	1.00	1.00	*1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1785	1566	3721	1566	1733	3758
Flt Permitted	0.95	1.00	1.00	1.00	0.40	1.00
Satd. Flow (perm)	1785	1566	3721	1566	722	3758
Volume (vph)	523	374	434	70	183	1165
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	551	394	457	74	193	1226
RTOR Reduction (vph)	0	243	0	45	0	0
Lane Group Flow (vph)	551	151	457	29	193	1226
Heavy Vehicles (%)	0%	2%	1%	2%	3%	0%
Turn Type		custom		Perm	pm+pt	
Protected Phases			2		1	6
Permitted Phases	8	8		2	6	
Actuated Green, G (s)	38.8	38.8	39.4	39.4	55.5	55.5
Effective Green, g (s)	40.8	40.8	41.4	41.4	57.5	57.5
Actuated g/C Ratio	0.38	0.38	0.39	0.39	0.54	0.54
Clearance Time (s)	6.0	6.0	6.0	6.0	4.0	6.0
Vehicle Extension (s)	3.5	3.5	5.0	5.0	3.5	5.0
Lane Grp Cap (vph)	685	601	1449	610	506	2033
v/s Ratio Prot			0.12		0.04	c0.33
v/s Ratio Perm	c0.31	0.10		0.02	0.16	
v/c Ratio	0.80	0.25	0.32	0.05	0.38	0.60
Uniform Delay, d1	29.2	22.3	22.6	20.2	13.1	16.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.0	0.3	0.6	0.1	0.6	1.3
Delay (s)	36.2	22.6	23.2	20.3	13.7	18.0
Level of Service	D	C	C	C	B	B
Approach Delay (s)	30.5		22.8			17.4
Approach LOS	C		C			B

Intersection Summary			
HCM Average Control Delay	22.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	106.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱		↰	↑↱		↰	↑↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	*1.00		1.00	*1.00		1.00	*1.00		1.00	*1.00	1.00
Frt	1.00	0.99		1.00	0.96		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1684	3507		1733	3362		1716	3590		1700	3684	1521
Flt Permitted	0.13	1.00		0.35	1.00		0.45	1.00		0.20	1.00	1.00
Satd. Flow (perm)	229	3507		636	3362		818	3590		360	3684	1521
Volume (vph)	563	748	54	97	557	222	92	453	110	220	421	584
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	593	787	57	102	586	234	97	477	116	232	443	615
RTOR Reduction (vph)	0	5	0	0	40	0	0	19	0	0	0	441
Lane Group Flow (vph)	593	839	0	102	780	0	97	574	0	232	443	174
Heavy Vehicles (%)	6%	6%	7%	3%	5%	12%	4%	2%	0%	5%	2%	5%
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	67.0	55.6		32.4	25.0		32.0	27.0		41.0	32.0	32.0
Effective Green, g (s)	69.0	57.6		34.4	27.0		34.0	29.0		43.0	34.0	34.0
Actuated g/C Ratio	0.58	0.48		0.29	0.22		0.28	0.24		0.36	0.28	0.28
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	2.5	4.0		2.5	4.0		2.5	4.0		2.5	4.0	4.0
Lane Grp Cap (vph)	592	1683		250	756		269	868		241	1044	431
v/s Ratio Prot	c0.32	0.24		0.03	0.23		0.02	0.16		c0.08	0.12	
v/s Ratio Perm	c0.26			0.09			0.09			c0.27		0.11
v/c Ratio	1.00	0.50		0.41	1.03		0.36	0.66		0.96	0.42	0.40
Uniform Delay, d1	33.8	21.3		32.4	46.5		32.8	41.1		33.6	35.0	34.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	37.4	0.3		0.8	41.3		3.7	3.9		49.1	1.3	2.8
Delay (s)	71.2	21.6		33.2	87.8		36.5	45.0		82.7	36.3	37.6
Level of Service	E	C		C	F		D	D		F	D	D
Approach Delay (s)		42.1			81.8			43.8			45.3	
Approach LOS		D			F			D			D	

Intersection Summary

HCM Average Control Delay	51.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	95.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰↑↑↱			↰↑↑↱			✥		↰	↱	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0		4.0	4.0	
Lane Util. Factor		*1.00			*1.00			1.00		1.00	1.00	
Frt		1.00			0.99			0.86		1.00	0.86	
Flt Protected		1.00			1.00			1.00		0.95	1.00	
Satd. Flow (prot)		3440			3471			1625		1785	1523	
Flt Permitted		0.91			0.93			1.00		0.75	1.00	
Satd. Flow (perm)		3133			3221			1625		1418	1523	
Volume (vph)	25	807	8	18	803	34	0	0	5	18	1	19
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	849	8	19	845	36	0	0	5	19	1	20
RTOR Reduction (vph)	0	0	0	0	1	0	0	5	0	0	19	0
Lane Group Flow (vph)	0	883	0	0	899	0	0	0	0	19	2	0
Heavy Vehicles (%)	5%	9%	14%	0%	8%	0%	0%	0%	0%	0%	0%	6%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		99.9			99.9			6.2		6.2	6.2	
Effective Green, g (s)		101.5			101.5			7.9		7.9	7.9	
Actuated g/C Ratio		0.86			0.86			0.07		0.07	0.07	
Clearance Time (s)		5.6			5.6			5.7		5.7	5.7	
Vehicle Extension (s)		4.0			4.0			3.5		3.5	3.5	
Lane Grp Cap (vph)		2709			2785			109		95	102	
v/s Ratio Prot								0.00			0.00	
v/s Ratio Perm		c0.28			0.28					c0.01		
v/c Ratio		0.33			0.32			0.00		0.20	0.02	
Uniform Delay, d1		1.5			1.5			51.1		51.8	51.1	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.3			0.3			0.0		1.2	0.1	
Delay (s)		1.8			1.8			51.1		53.0	51.3	
Level of Service		A			A			D		D	D	
Approach Delay (s)		1.8			1.8			51.1			52.1	
Approach LOS		A			A			D			D	

Intersection Summary

HCM Average Control Delay	3.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	117.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

4: Speers Road & Third Line

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱		↰	↑↱		↰	↑↱	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	*1.00		1.00	*1.00		1.00	*1.00		1.00	*1.00	
Frt	1.00	0.99		1.00	0.93		1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1623	3573		1623	3064		1785	3479		1684	3496	
Flt Permitted	0.35	1.00		0.26	1.00		0.40	1.00		0.07	1.00	
Satd. Flow (perm)	602	3573		443	3064		750	3479		132	3496	
Volume (vph)	96	412	35	162	196	194	91	854	336	321	590	75
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	101	434	37	171	206	204	96	899	354	338	621	79
RTOR Reduction (vph)	0	6	0	0	149	0	0	35	0	0	9	0
Lane Group Flow (vph)	101	465	0	171	261	0	96	1218	0	338	691	0
Heavy Vehicles (%)	10%	4%	3%	10%	11%	16%	0%	4%	2%	6%	5%	11%
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	29.8	20.6		31.4	21.4		54.6	47.6		73.5	63.5	
Effective Green, g (s)	31.3	23.1		32.9	23.9		55.6	49.6		75.5	65.5	
Actuated g/C Ratio	0.26	0.19		0.28	0.20		0.46	0.41		0.63	0.55	
Clearance Time (s)	3.0	6.5		3.0	6.5		3.0	6.0		3.0	6.0	
Vehicle Extension (s)	2.5	4.5		2.5	4.5		2.5	4.5		2.5	4.5	
Lane Grp Cap (vph)	228	690		211	612		401	1443		368	1915	
v/s Ratio Prot	0.03	0.13		c0.06	0.09		0.01	0.35		c0.17	0.20	
v/s Ratio Perm	0.09			c0.16			0.10			c0.41		
v/c Ratio	0.44	0.67		0.81	0.43		0.24	0.84		0.92	0.36	
Uniform Delay, d1	35.0	44.8		37.1	41.9		18.1	31.5		36.9	15.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	3.1		20.0	0.8		0.2	6.2		27.1	0.5	
Delay (s)	36.0	47.9		57.1	42.7		18.3	37.7		64.0	15.8	
Level of Service	D	D		E	D		B	D		E	B	
Approach Delay (s)		45.8			46.9			36.3			31.5	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM Average Control Delay	38.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	119.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	91.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑↱		↰	↑↑	↱	↰	↑↱		↰	↑↱	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	*1.00		1.00	*1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.92		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1684	3456		1750	3648	1566	1733	1688		1750	1835	
Flt Permitted	0.39	1.00		0.18	1.00	1.00	0.57	1.00		0.20	1.00	
Satd. Flow (perm)	695	3456		332	3648	1566	1048	1688		360	1835	
Volume (vph)	49	542	98	282	675	570	113	159	199	338	244	46
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	52	571	103	297	711	600	119	167	209	356	257	48
RTOR Reduction (vph)	0	12	0	0	0	373	0	39	0	0	7	0
Lane Group Flow (vph)	52	662	0	297	711	227	119	337	0	356	298	0
Heavy Vehicles (%)	6%	7%	2%	2%	3%	2%	3%	2%	2%	2%	0%	0%
Turn Type	pm+pt			pm+pt		Perm	pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	29.5	26.4		45.6	38.5	38.5	30.5	25.9		48.6	40.0	
Effective Green, g (s)	31.4	28.3		47.5	40.4	40.4	33.0	28.4		51.1	42.5	
Actuated g/C Ratio	0.29	0.27		0.45	0.38	0.38	0.31	0.27		0.48	0.40	
Clearance Time (s)	4.0	5.9		4.0	5.9	5.9	4.0	6.5		4.0	6.5	
Vehicle Extension (s)	2.5	5.5		2.5	5.5	5.5	2.5	4.0		2.5	4.0	
Lane Grp Cap (vph)	233	917		350	1383	593	354	450		416	732	
v/s Ratio Prot	0.01	0.19		c0.12	0.19		0.01	0.20		c0.15	0.16	
v/s Ratio Perm	0.06			c0.26		0.15	0.09			c0.26		
v/c Ratio	0.22	0.72		0.85	0.51	0.38	0.34	0.75		0.86	0.41	
Uniform Delay, d1	27.4	35.6		22.3	25.5	24.1	27.3	35.8		21.3	23.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	4.9		16.9	1.4	1.9	0.4	7.1		15.5	0.5	
Delay (s)	27.7	40.5		39.2	26.9	25.9	27.7	43.0		36.8	23.5	
Level of Service	C	D		D	C	C	C	D		D	C	
Approach Delay (s)		39.5			28.8			39.3			30.7	
Approach LOS		D			C			D			C	

Intersection Summary

HCM Average Control Delay	32.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	106.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	89.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱		↰	↱		↰	↱	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	*1.00		1.00	*1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.85		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1700	3559		1750	3668		1785	1588		1785	1623	
Flt Permitted	0.36	1.00		0.27	1.00		0.72	1.00		0.54	1.00	
Satd. Flow (perm)	641	3559		500	3668		1350	1588		1011	1623	
Volume (vph)	21	830	48	191	748	27	18	3	122	63	10	46
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	22	874	51	201	787	28	19	3	128	66	11	48
RTOR Reduction (vph)	0	2	0	0	1	0	0	110	0	0	41	0
Lane Group Flow (vph)	22	923	0	201	814	0	19	21	0	66	18	0
Heavy Vehicles (%)	5%	5%	0%	2%	2%	0%	0%	0%	1%	0%	0%	2%
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	65.9	65.9		77.1	77.1		12.4	12.4		12.4	12.4	
Effective Green, g (s)	68.0	68.0		79.2	79.2		14.2	14.2		14.2	14.2	
Actuated g/C Ratio	0.67	0.67		0.78	0.78		0.14	0.14		0.14	0.14	
Clearance Time (s)	6.1	6.1		3.0	6.1		5.8	5.8		5.8	5.8	
Vehicle Extension (s)	4.0	4.0		2.5	4.0		3.5	3.5		3.5	3.5	
Lane Grp Cap (vph)	430	2387		479	2865		189	222		142	227	
v/s Ratio Prot		0.26		c0.03	0.22			0.01			0.01	
v/s Ratio Perm	0.03			c0.30			0.01			c0.07		
v/c Ratio	0.05	0.39		0.42	0.28		0.10	0.09		0.46	0.08	
Uniform Delay, d1	5.7	7.4		3.7	3.1		38.0	38.0		40.1	37.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.5		0.4	0.2		0.3	0.2		2.8	0.2	
Delay (s)	5.9	7.9		4.2	3.4		38.3	38.2		42.9	38.1	
Level of Service	A	A		A	A		D	D		D	D	
Approach Delay (s)		7.9			3.5			38.2			40.6	
Approach LOS		A			A			D			D	

Intersection Summary

HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	101.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Speers Road Class EA

22: Speers Road & Fourth Line

Existing (2008) PM Peak Hour

6/8/2009

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑↱		↰	↑↑↱		↰	↱		↰	↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	*1.00		1.00	*1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.98		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1767	3537		1785	3596		1750	1793		1767	1879	1581
Flt Permitted	0.28	1.00		0.32	1.00		0.36	1.00		0.30	1.00	1.00
Satd. Flow (perm)	526	3537		605	3596		655	1793		555	1879	1581
Volume (vph)	158	498	104	157	558	105	152	231	92	136	272	140
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	166	524	109	165	587	111	160	243	97	143	286	147
RTOR Reduction (vph)	0	14	0	0	13	0	0	13	0	0	0	109
Lane Group Flow (vph)	166	619	0	165	685	0	160	327	0	143	286	38
Heavy Vehicles (%)	1%	4%	1%	0%	2%	2%	2%	0%	1%	1%	0%	1%
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	44.1	33.8		43.9	33.7		33.8	23.1		32.4	22.4	22.4
Effective Green, g (s)	45.5	36.2		45.3	36.1		35.6	25.9		34.2	25.2	25.2
Actuated g/C Ratio	0.47	0.38		0.47	0.37		0.37	0.27		0.36	0.26	0.26
Clearance Time (s)	3.0	6.4		3.0	6.4		3.0	6.8		3.0	6.8	6.8
Vehicle Extension (s)	2.5	4.0		2.5	4.0		2.5	4.0		2.5	4.0	4.0
Lane Grp Cap (vph)	368	1330		397	1348		352	482		310	492	414
v/s Ratio Prot	c0.04	0.18		0.04	c0.19		c0.05	c0.18		0.04	0.15	
v/s Ratio Perm	0.17			0.16			0.12			0.12		0.02
v/c Ratio	0.45	0.47		0.42	0.51		0.45	0.68		0.46	0.58	0.09
Uniform Delay, d1	15.5	22.7		15.4	23.2		21.7	31.5		22.6	31.0	26.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.6	1.2		0.5	1.4		0.7	4.1		0.8	2.1	0.1
Delay (s)	16.2	23.9		15.9	24.6		22.4	35.6		23.4	33.0	27.0
Level of Service	B	C		B	C		C	D		C	C	C
Approach Delay (s)		22.3			23.0			31.4			29.1	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	25.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	96.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰	↱	↑↑	↱	↰	↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	*1.00	1.00	1.00	*1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1785	1566	3721	1566	1733	3758
Flt Permitted	0.95	1.00	1.00	1.00	0.46	1.00
Satd. Flow (perm)	1785	1566	3721	1566	836	3758
Volume (vph)	442	316	367	59	155	985
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	465	333	386	62	163	1037
RTOR Reduction (vph)	0	220	0	35	0	0
Lane Group Flow (vph)	465	113	386	27	163	1037
Heavy Vehicles (%)	0%	2%	1%	2%	3%	0%
Turn Type		custom		Perm	pm+pt	
Protected Phases			2		1	6
Permitted Phases	8	8		2	6	
Actuated Green, G (s)	32.5	32.5	42.8	42.8	57.5	57.5
Effective Green, g (s)	34.5	34.5	44.8	44.8	59.5	59.5
Actuated g/C Ratio	0.34	0.34	0.44	0.44	0.58	0.58
Clearance Time (s)	6.0	6.0	6.0	6.0	4.0	6.0
Vehicle Extension (s)	3.5	3.5	5.0	5.0	3.5	5.0
Lane Grp Cap (vph)	604	530	1634	688	582	2192
v/s Ratio Prot			0.10		0.03	c0.28
v/s Ratio Perm	c0.26	0.07		0.02	0.13	
v/c Ratio	0.77	0.21	0.24	0.04	0.28	0.47
Uniform Delay, d1	30.2	24.1	17.9	16.3	10.1	12.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.1	0.2	0.3	0.1	0.3	0.7
Delay (s)	36.3	24.3	18.2	16.4	10.4	13.0
Level of Service	D	C	B	B	B	B
Approach Delay (s)	31.3		18.0			12.6
Approach LOS	C		B			B

Intersection Summary			
HCM Average Control Delay	19.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	102.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱		↰	↑↱		↰	↑↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	*1.00		1.00	*1.00		1.00	*1.00		1.00	*1.00	1.00
Frt	1.00	0.99		1.00	0.96		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1684	3507		1733	3362		1716	3590		1700	3684	1521
Flt Permitted	0.15	1.00		0.39	1.00		0.46	1.00		0.28	1.00	1.00
Satd. Flow (perm)	258	3507		719	3362		837	3590		506	3684	1521
Volume (vph)	476	632	46	82	471	188	78	383	93	186	356	494
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	501	665	48	86	496	198	82	403	98	196	375	520
RTOR Reduction (vph)	0	4	0	0	38	0	0	19	0	0	0	387
Lane Group Flow (vph)	501	709	0	86	656	0	82	482	0	196	375	133
Heavy Vehicles (%)	6%	6%	7%	3%	5%	12%	4%	2%	0%	5%	2%	5%
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	65.3	55.2		32.1	26.0		30.1	25.1		34.1	27.1	27.1
Effective Green, g (s)	67.3	57.2		34.1	28.0		32.1	27.1		36.1	29.1	29.1
Actuated g/C Ratio	0.59	0.50		0.30	0.25		0.28	0.24		0.32	0.26	0.26
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	2.5	4.0		2.5	4.0		2.5	4.0		2.5	4.0	4.0
Lane Grp Cap (vph)	597	1769		271	830		276	858		235	945	390
v/s Ratio Prot	c0.26	0.20		0.02	0.20		0.01	0.13		c0.05	0.10	
v/s Ratio Perm	c0.24			0.08			0.07			c0.21		0.09
v/c Ratio	0.84	0.40		0.32	0.79		0.30	0.56		0.83	0.40	0.34
Uniform Delay, d1	26.4	17.5		29.2	39.9		30.7	37.9		34.2	34.9	34.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	9.9	0.2		0.5	5.3		2.7	2.7		28.0	1.2	2.4
Delay (s)	36.3	17.7		29.7	45.3		33.4	40.6		62.2	36.1	36.7
Level of Service	D	B		C	D		C	D		E	D	D
Approach Delay (s)		25.4			43.6			39.6			41.1	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM Average Control Delay	36.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	113.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Speers Road Environmental Assessment
11: Speers Road & #447 Speers Road

Existing (2008) AM Peak Hour
6/8/2009

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰↑↱			↰↑↱			↰↑↱		↰	↑↱	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0		4.0	4.0	
Lane Util. Factor		*1.00			*1.00			1.00		1.00	1.00	
Frt		1.00			0.99			0.86		1.00	0.86	
Flt Protected		1.00			1.00			1.00		0.95	1.00	
Satd. Flow (prot)		3440			3470			1625		1785	1526	
Flt Permitted		0.92			0.93			1.00		0.76	1.00	
Satd. Flow (perm)		3171			3246			1625		1419	1526	
Volume (vph)	21	682	7	15	679	29	0	0	4	15	1	16
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	22	718	7	16	715	31	0	0	4	16	1	17
RTOR Reduction (vph)	0	0	0	0	1	0	0	4	0	0	16	0
Lane Group Flow (vph)	0	747	0	0	761	0	0	0	0	16	2	0
Heavy Vehicles (%)	5%	9%	14%	0%	8%	0%	0%	0%	0%	0%	0%	6%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		100.5			100.5			6.2		6.2	6.2	
Effective Green, g (s)		102.1			102.1			7.9		7.9	7.9	
Actuated g/C Ratio		0.87			0.87			0.07		0.07	0.07	
Clearance Time (s)		5.6			5.6			5.7		5.7	5.7	
Vehicle Extension (s)		4.0			4.0			3.5		3.5	3.5	
Lane Grp Cap (vph)		2744			2809			109		95	102	
v/s Ratio Prot								0.00			0.00	
v/s Ratio Perm		c0.24			0.23					c0.01		
v/c Ratio		0.27			0.27			0.00		0.17	0.02	
Uniform Delay, d1		1.4			1.4			51.4		52.0	51.4	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.2			0.2			0.0		1.0	0.1	
Delay (s)		1.6			1.6			51.4		52.9	51.5	
Level of Service		A			A			D		D	D	
Approach Delay (s)		1.6			1.6			51.4			52.2	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM Average Control Delay	2.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱		↰	↑↱		↰	↑↱	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	*1.00		1.00	*1.00		1.00	*1.00		1.00	*1.00	
Frt	1.00	0.99		1.00	0.93		1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1623	3572		1623	3064		1785	3479		1684	3497	
Flt Permitted	0.55	1.00		0.30	1.00		0.44	1.00		0.14	1.00	
Satd. Flow (perm)	936	3572		520	3064		829	3479		255	3497	
Volume (vph)	81	348	30	137	166	164	77	722	284	271	499	63
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	85	366	32	144	175	173	81	760	299	285	525	66
RTOR Reduction (vph)	0	6	0	0	130	0	0	35	0	0	8	0
Lane Group Flow (vph)	85	392	0	144	218	0	81	1024	0	285	583	0
Heavy Vehicles (%)	10%	4%	3%	10%	11%	16%	0%	4%	2%	6%	5%	11%
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	26.6	21.1		34.9	26.4		55.1	49.6		70.2	61.7	
Effective Green, g (s)	28.1	23.6		37.4	28.9		56.1	51.6		72.2	63.7	
Actuated g/C Ratio	0.24	0.20		0.32	0.25		0.48	0.44		0.61	0.54	
Clearance Time (s)	3.0	6.5		3.0	6.5		3.0	6.0		3.0	6.0	
Vehicle Extension (s)	2.5	4.5		2.5	4.5		2.5	4.5		2.5	4.5	
Lane Grp Cap (vph)	250	717		257	753		432	1527		358	1894	
v/s Ratio Prot	0.01	0.11		c0.05	0.07		0.01	0.29		c0.11	0.17	
v/s Ratio Perm	0.07			c0.13			0.08			c0.38		
v/c Ratio	0.34	0.55		0.56	0.29		0.19	0.67		0.80	0.31	
Uniform Delay, d1	36.0	42.2		30.7	36.0		16.8	26.2		20.5	14.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	1.3		2.3	0.4		0.2	2.4		11.3	0.4	
Delay (s)	36.6	43.5		33.0	36.4		17.0	28.6		31.7	15.2	
Level of Service	D	D		C	D		B	C		C	B	
Approach Delay (s)		42.3			35.4			27.8			20.6	
Approach LOS		D			D			C			C	

Intersection Summary

HCM Average Control Delay	29.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	117.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Appendix F

Speers Road Widening Project
Initial Site Conditions Report

Table of Contents

1.0 INTRODUCTION

This report presents the results of an initial condition survey of the section of Speers Road between 3rd Line and just east of 4th Line in Bronte, Ontario. Currently this section of Speers Road is four lanes wide, two lanes in both east and west directions respectively. It is proposed to widen the road by the addition of one additional lane in both directions for a total of 6 lanes.

An initial site visit was conducted on August 24, 2008. The inspection began at the intersection of Speers Road and 3rd Line and progressed to a few blocks east of 4th Line. A visual inspection of the road's current alignment and of the two bridges that the road crosses was completed.

2.0 EXISTING CONDITIONS

The existing conditions and any existing structures which may be an issue to the widening are listed below. The inspection began at the intersection of Speers Road and 3rd Line and progressed east towards 4th Line. A photo summary of this inspection is attached and notations of existing concerns are referenced to their associated photo.

Intersection of Speers Rd. and 3rd Line
-Intersection has commercial development at all four corners, there is a small retaining wall parallel to Speers Rd on the North East corner by the Shell station (see Photo P01).
-Between the intersection of Speers and 3rd Line and the first bridge is fairly open with commercial development on either side of the road. Existing businesses are set back a sufficient distance to allow for widening.
-The pole lines that run on either side of Speers would have to be relocated.

West Bridge over 14 Mile Creek (East of York Road, see Photos P02-P22)
-Bridge is a four lane concrete frame bridge with sidewalks on north and south sides of the road.
-Barriers on north and south sides are deteriorated. Many sections are spalling and rebar is exposed. (see Photos P02-05, P08)
-Stream flows from North to South. (see Photo P06)
-Gabion basket channel protection on both east and west banks on both north and south sides of the bridge. (see Photos P07/P12)
-Exterior of barrier walls in good condition. (see Photo P10)
-Watermain and manhole/catchbasin at NE corner of bridge. (see Photo P11)
-Bridge widened on north side. (see Photos P13/14)
-Soffit in good condition. (see Photo P15)
-Bridge abutments are in the creek. (see Photo P15)
-Drain pipe outlet integral with SW abutment. (see Photo P16)
-Drain pipe outlet integral with SE abutment. (see Photo P18)
-Pole line in proposed right of way, also large number of trees and hydrants that would require relocation. (see Photo P22).

Section of road between West Bridge and 4th Line (see Photos P23-P27)
-This section of Speers Rd. is developed commercial usage as well. The primary pole line is on the south side and there are a large number of trees in the proposed right of way.

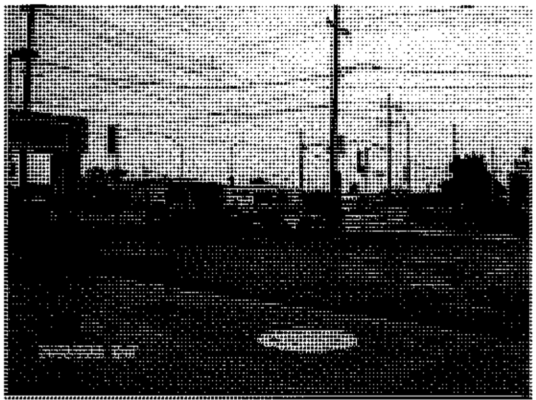
Intersection of Speers Rd and 4th Line (see Photos P28/29)
-Light poles and hydro lines adjacent to road at all corners. Retaining wall on north side of Speers Rd at NW corner of intersection.

East Culvert over McCraney Creek (East of 4th Line, see Photos 30-42)
-Culvert in good condition, no major spalling or deterioration to concrete. (see Photos P30/31/38/39)
-Drain pipe outlet integral with SE abutment. (see Photo P31)
-Walls of culvert are in the water. (See Photo P31)
-Culvert has 16' of free space from the edge of curb to barrier face. (see Photo P32)
-Stream flows North to South. Gabion basket channel protection on both east and west banks on south side of culvert. (see Photos P33/34)
-Drain pipe extending out from East bank on North side of culvert. (see Photo P36)
-No channel protection on either bank on North side of culvert. (see Photo P37)
-Soffit of culvert in good condition, stream drops approximately 2' at south outlet. (see Photo P38)
-Manhole on North West corner of culvert. (see Photo P41)
-Electrical box on South West side of culvert. (see Photo P42)
-Due to water level it was not possible determine if the culvert is an open footed structure.

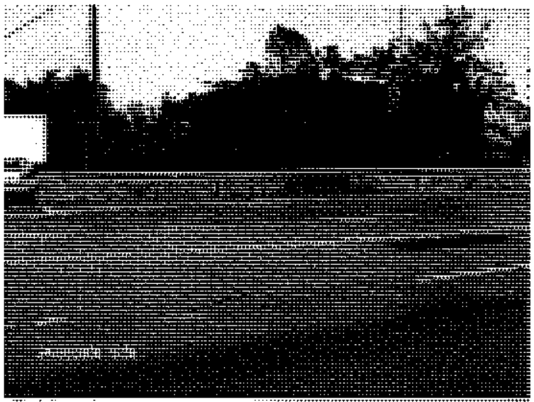
3.0 CONCLUSIONS

At this time, based on visual inspection, there appears to be sufficient space existing along Speers Rd to allow for the additional 2 lanes of traffic being proposed. This would require the relocation of the existing pole lines and services. Also the West Bridge would require widening as it does not have sufficient clearance to allow for the widening and sidewalks. The East Culvert appears to have sufficient free space to allow for the widening while maintaining existing sidewalks. There are also two retaining walls which would be affected and relocation of these would have to be addressed as well.

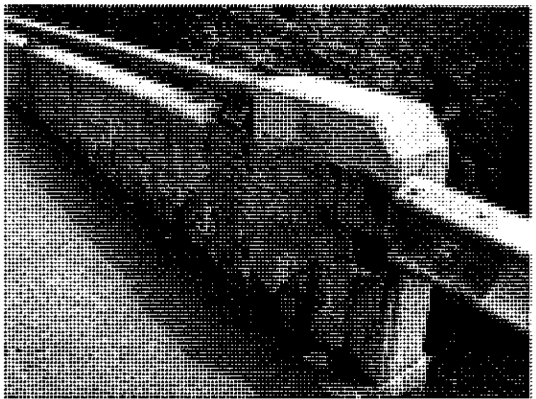
Speers Road Initial Condition Inspection
August 24, 2008



Intersection of Speers and 3rd line looking NE, small retaining wall on NE corner.

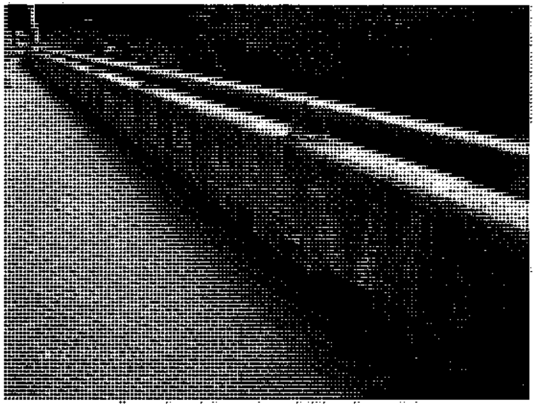


Bridge just east of 3rd line over 14 Mile Creek.

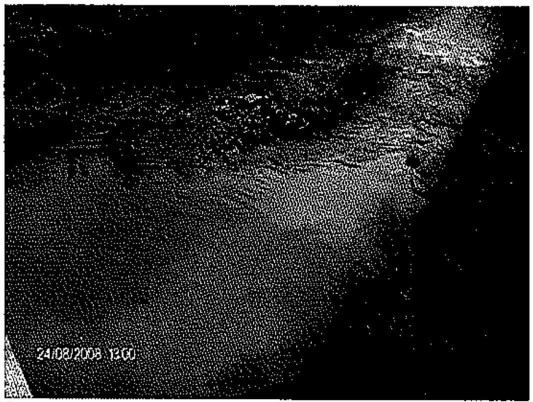


Wall in poor condition on both sides. (14 Mile Creek)

North side. (14 Mile Creek)

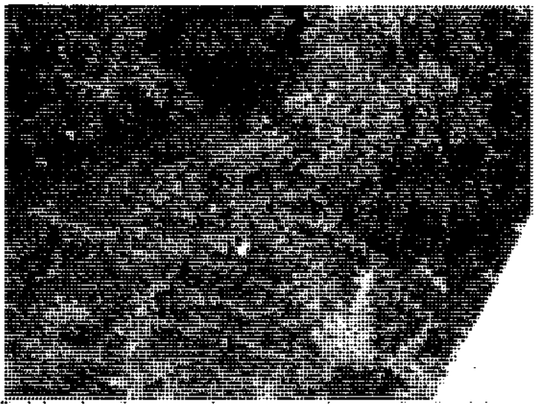


South side. (14 Mile Creek)



Stream on south side, flow is north to south. (14 Mile Creek)

Speers Road Initial Condition Inspection
August 24, 2008



Gabion basket erosion protection on both sides of channel on south side. (14 Mile Creek)

Typical delamination on barrier walls, steel rebar exposed. (14 Mile Creek)

North side, looking west. (14 Mile Creek)

Exterior north barrier wall in good condition. (14 Mile Creek)

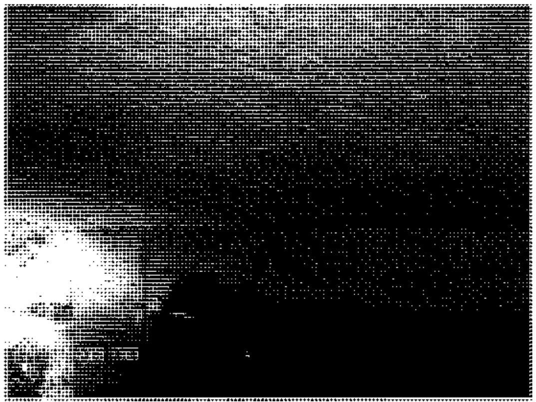
Water main and manhole/catchbasin at NE corner of bridge. (14 Mile Creek)

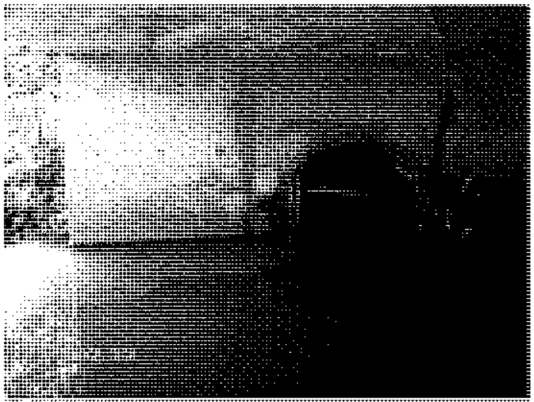
Gabion basket retaining wall on both sides of channel on north side. (14 Mile Creek)

Speers Road Initial Condition Inspection
August 24, 2008


Bridge widened by about 6-7' (sidewalk). (14 Mile Creek)


(14 Mile Creek)


Deck in good condition. (14 Mile Creek)

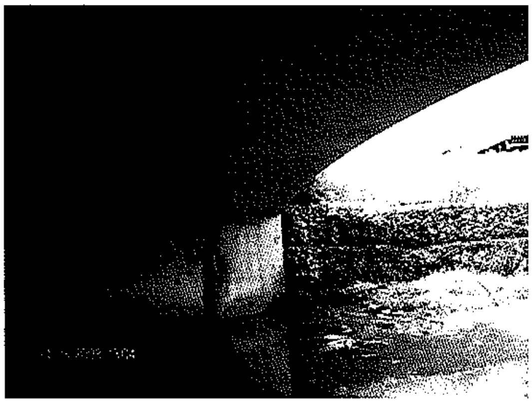

Drain pipe under SW corner. (14 Mile Creek)


Deck drains all functional. (14 Mile Creek)

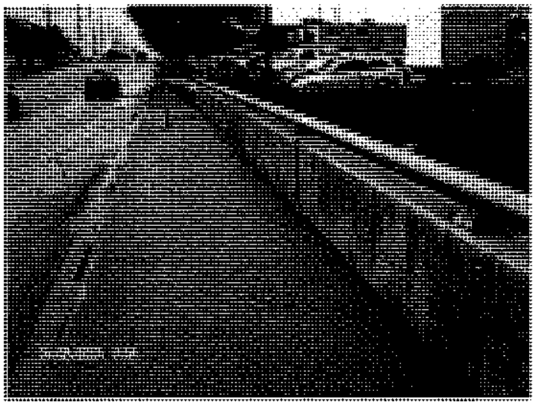

Drain pipe at SE corner. (14 Mile Creek)

Speers Road Initial Condition Inspection
August 24, 2008

Cold joint where structure was widened. (14 Mile Creek)

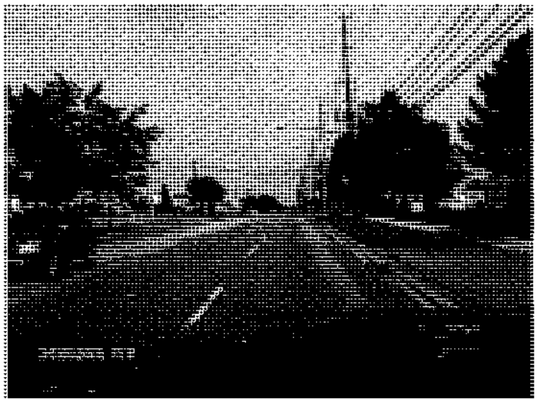


(14 Mile Creek)



North side. (14 Mile Creek)

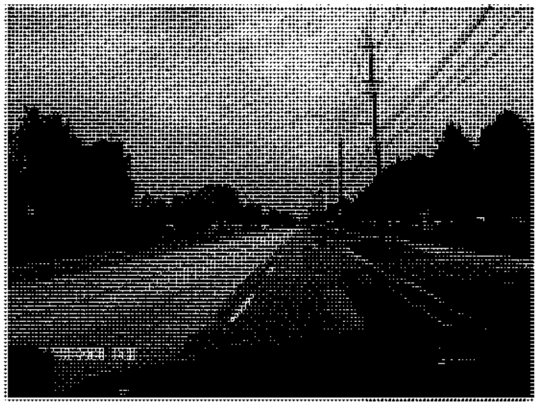
Pole line in proposed right of way, large number of tree relocates, fire hydrants also.



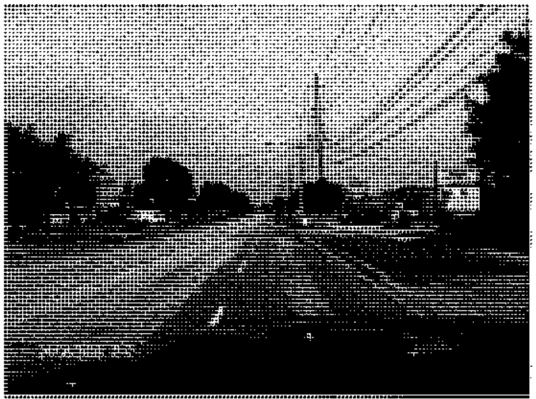
Travelling east to 4th line.

Travelling east to 4th line.

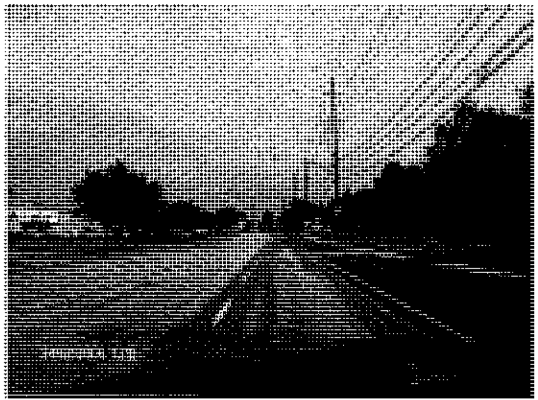
Speers Road Initial Condition Inspection
August 24, 2008



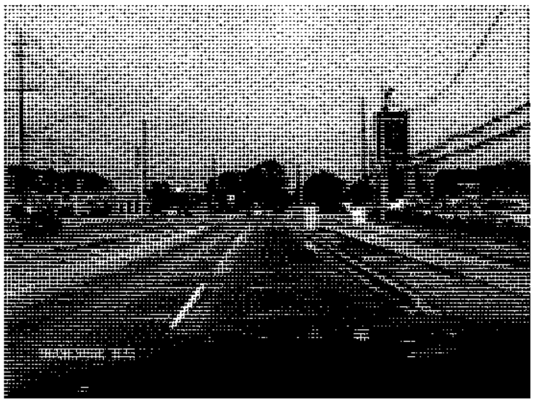
Traveling east to 4th line.



Traveling east to 4th line.



Traveling east to 4th line.



Speers Rd/4th Line.

Retaining wall on NW side of intersection.

South side of culvert east of 4th line over McCraney Creek.

Speers Road Initial Condition Inspection
August 24, 2008

Culvert in good condition, drain at SE corner, flow from north to south. (McCraney Creek)

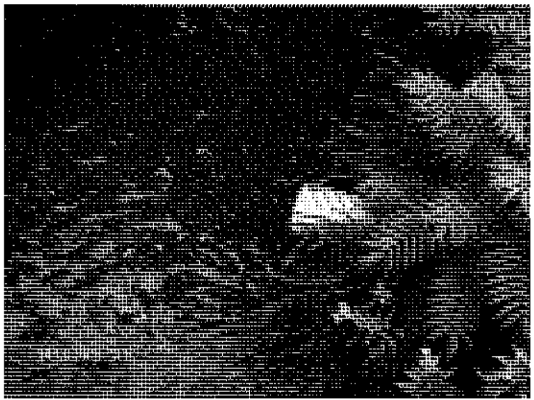
Culvert has 16' of free space from curb face to barrier wall. (McCraney Creek)

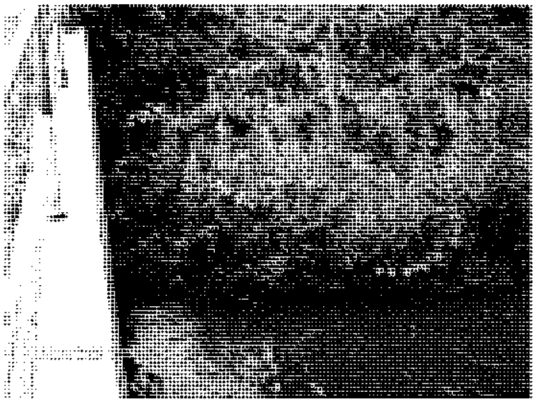
Gabion basket erosion protection on both sides on south side. (McCraney Creek)

Gabion basket erosion protection on both sides on south side. (McCraney Creek)

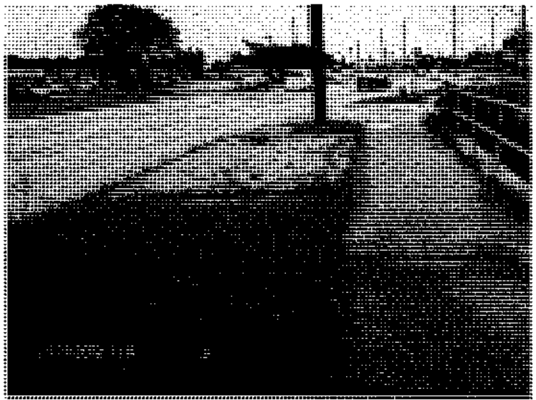
Culvert in good condition, minor siltation on north side, 2' drop in stream level on south side.

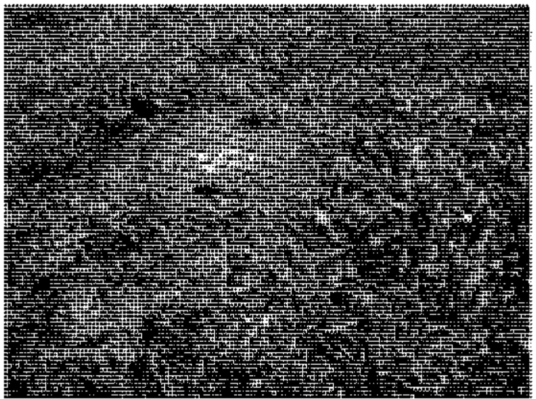
Speers Road Initial Condition Inspection
August 24, 2008


Drain on NE side. (McCraney Creek)


No erosion protection on north side. (McCraney Creek)


North side. (McCraney Creek)


North side. (McCraney Creek)


Manhole on NW side. (McCraney Creek)


Electrical box on SW side. (McCraney Creek)

Appendix G

SPEERS ROAD - PRELIMINARY DESIGN
(from BRONTE ROAD to 1.0km NORTH)
MARCH 11, 2009
SCALE = 1:300

REV.	COMMENT	DATE
1	ISSUED FOR TOWN REVIEW	SEPT. 9-08
2	ISSUED FOR TOWN REVIEW	OCT. 15-08
3	ISSUED FOR TOWN REVIEW	NOV. 7-08
4	ISSUED FOR TOWN REVIEW	NOV. 20-08
5	ISSUED FOR TOWN REVIEW	NOV. 28-08
6	ISSUED FOR T.A.C. MEETING	DEC.15-08
7	ISSUED FOR P.I.C.	DEC.17-08
8	ISSUED FOR TOWN REVIEW	JAN. 05-09
9	ISSUED FOR TOWN REVIEW	JAN. 15-09
10	ISSUED FOR TOWN REVIEW	JAN. 28-09
11	PROPERTY/R.O.W REVISIONS	MAR. 11-09

SPEERS ROAD - PRELIMINARY DESIGN
(from 1.0km NTH. OF BRONTE RD. to THIRD LINE)

MARCH 11, 2009 SCALE = 1:300

Delcan
TRANSPORTATION • INFORMATION TECHNOLOGY • WATER

OAKVILLE

SPEERS ROAD - PRELIMINARY DESIGN
(from THIRD LINE to 1.0km NTH.)
MARCH 11, 2009 SCALE = 1:300

REV.	COMMENT	DATE
1	ISSUED FOR TOWN REVIEW	SEPT. 9-08
2	ISSUED FOR TOWN REVIEW	OCT. 15-08
3	ISSUED FOR TOWN REVIEW	NOV. 7-08
4	ISSUED FOR TOWN REVIEW	NOV. 20-08
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9	ISSUED FOR TOWN REVIEW	JAN. 15-09
10	ISSUED FOR TOWN REVIEW	JAN. 28-09
11	PROPERTY/R.O.W REVISIONS	MAR. 11-09

SPEERS ROAD - PRELIMINARY DESIGN

(from 1.0km NTH. of THIRD LN. to 4th LINE)

MARCH 11, 2009 SCALE = 1:300

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TRANSPORTATION • INFORMATION TECHNOLOGY • WATER

OAKVILLE

SPEERS ROAD - PRELIMINARY DESIGN

(from 4th LINE to MORDEN ROAD)

MARCH 11, 2009 SCALE = 1:300

Delcan
TRANSPORTATION • INFORMATION TECHNOLOGY • WATER

OAKVILLE

SPEERS ROAD - PRELIMINARY DESIGN
(from MORDEN ROAD to KERR STREET)
MARCH 11, 2009
SCALE = 1:300

Appendix H

Environmental Noise Assessment

Speers Road Improvements

Class Environmental Assessment Study
Bronte Road to Kerr Street
Region of Halton

July 30, 2009
Revised: September 23, 2009
Project: 107-298

Prepared for

Delcan Corporation

Prepared by

09/23/09
J. EMELJANOW

John Emeljanow, B.Eng., P.Eng.

VALCOUSTICS
Canada Ltd.

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Speers Road Improvements

Class Environmental Assessment Study

Bronte Road to Kerr Street
Region of Halton

1.0 INTRODUCTION

There is a proposal to improve Speers Road, between Bronte Road and Kerr Street. See Figure 1.

This report summarizes the expected noise impact from the proposed improvements, including the potential impact of construction noise. In addition, the need for noise mitigation based on the requirements of the Ministry of Transportation (MTO)/Ministry of the Environment (MOE) protocol is evaluated.

2.0 ENVIRONMENTAL NOISE GUIDELINES

The MOE does not have noise guidelines specifically relating to the construction or widening of roadways. However, the MOE does have a protocol with the MTO relating to Provincial Highway Expansions. The protocol states that the primary objective is to achieve sound exposures not exceeding 55 dBA or the preconstruction ambient sound exposure, whichever is higher, at outdoor receptor locations.

In addition to the absolute sound exposure, changes are also considered. Changes of 0 to 3 dBA are considered insignificant; 4 to 5 dBA are just noticeable and considered minor; 10 dBA and above are considered significant (perceived to be about twice as loud). The MTO/MOE protocol indicates that no mitigation is required for sound exposure increases of 0 to 5 dBA. Increases of greater than 5 dBA require investigation into the administrative, economic, and technical feasibility of effective noise mitigation. To be implemented, a sound barrier must be shown to provide at least 5 dBA of attenuation.

3.0 NOISE SENSITIVE AREAS

Land uses designated as noise sensitive by the MOE/MTO consist of residential developments, hospitals, nursing/retirement homes, etc. There are two noise sensitive areas (NSA's) immediately adjacent to Speers Road. There are also residential dwellings to the south of the study area that have been considered.

Figure 2 identifies receptor locations which were analysed in detail. These residential dwellings are representative of the noise sensitive areas within the study area, in accordance with Section 9.3.2.1.3-2) of the MTO *Environmental Office Manual*. Other dwellings with similar setback and orientation to the noise source will receive similar sound exposures and noise impacts. Dwellings further removed from the roadway will receive lower sound exposures due to increased distance attenuation.

Receptor locations were identified on drawings provided by Delcan. The receptor locations were confirmed during a site visit to the study area.

4.0 NOISE IMPACT ASSESSMENT

4.1 TRAFFIC DATA

Existing and future (year 2021) traffic information for Speers Road was provided by Delcan. The road traffic data is summarized in Table 1 and in Appendix A.

4.2 PROCEDURE

Sound exposures were calculated using STAMSON V5.04-ORNAMENT, the computerized road traffic noise prediction model of the MOE. This is an accepted approach by the MTO, as outlined in their *Environmental Office Manual Technical Areas – Noise.*

Using the road traffic data, 24-hour (L_{eq} 24-hour) and daytime ($L_{eq\ Day}$) sound exposures were calculated at each receptor location. To assess the noise impact, the existing sound exposures were compared to the future (year 2021) sound exposures with the proposed road improvements. For the dwellings to the south, the acoustical screening provided by the retail, commercial and industrial buildings along the south side of Speers Road has been taken into account.

Since the ambient sound environment in the vicinity of the noise sensitive areas is dominated by Speers Road road traffic, noise sources other than Speers Road were ignored. This is a conservative approach since, in the noise impact assessment, these secondary noise sources would tend to reduce the significance of sound exposure changes (i.e., impact) due to the improvement of Speers Road.

4.3 RESULTS

Table 2 shows, for each receptor, the existing sound exposures, the future sound exposures with the improvements and the resulting noise impact (i.e., change between the existing and future with improvements scenarios).

The proposed improvements are predicted to result in minor (0.7 to 0.9 dBA) sound exposure changes at all receptors. Table 3 shows the significance of the increased sound exposures.

At R19 and R20, under both existing (and future) conditions, sound exposures exceed 60 dBA.

5.0 CONSTRUCTION NOISE

Construction noise is temporary noise and depends on the type of work required. The impact of construction noise depends on the type of equipment used, number of pieces of equipment, time and duration of operation and the proximity to noise sensitive receivers in question.

5.1 APPLICABLE MUNICIPAL NOISE CONTROL BY-LAWS

Speers Road, along the extent of the project, is located in the Town of Oakville. Therefore, the noise control by-law for the Town of Oakville (By-law No. 2008-098) applies.

5.1.1 Town of Oakville Noise By-law

The following summarizes the applicable sections of the Town of Oakville By-law (No. 2008-098) concerning construction noise:

Schedule 2, item 13:	*"The operation of any construction equipment or other than in connection with Residential Renovation"* is prohibited from being clearly audible in a residential and controlled areas all day Sundays and Statutory Holidays and 1900 hours one day to 0700 hours the next day otherwise.
Schedule 3, item 6:	*"Operation of construction equipment where the Town has issued a road use permit and in issuing such permit the Town mandates that the work be done on weekends or overnight to minimize traffic impacts"* is exempt from the By-law.

5.2 RECOMMENDATIONS

- The noise control by-law for the Town of Oakville (By-law No. 2008-098) will be obeyed. Exemptions, where required, will be applied for through the municipality and should be included in the construction contract documents.

- General noise control measures will be referred to, or placed into construction contract documents. The following constraints addressing construction equipment operation and maintenance should be included in the construction contract documents:

Equipment Maintenance:	Equipment shall be maintained in an operating condition that prevents unnecessary noise, including but not limited to non-defective muffling systems, properly secured components and the lubrication of moving parts.
Equipment Operation:	Idling of equipment shall be restricted to the minimum necessary to perform the specified work.

  Additional noise constraints may be included at the discretion of the Environmental Planner. They could include, for example, the siting of the contractor's yard.

- Any initial complaint from the public will require verification that the general noise control measures agreed to are in effect, any noise concerns will be investigated, and the contractor warned of any problems.

- Notwithstanding compliance with the "general noise control measures", a persistent complaint will require a contractor to comply with the MOE sound level criteria for construction equipment contained in the MOE Model Municipal Noise Control By-law. Subject to the results of field investigation, alternative noise control measures will be required, where these are reasonably available.

6.0 CONCLUSION

The widening of Speers Road between Bronte Road and Kerr Street will produce insignificant noise impacts.

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REFERENCES

1. "MTO/MOE Protocol Dealing in Noise Concerns of New Highway Projects", Ontario Ministry of Transportation/Ontario Ministry of Environment, 1986.

2. "Directive QST A-1 (Noise Policy and Acoustic Standards for Provincial Highways)", Ontario Ministry of Transportation, 1992.

3. PC STAMSON 5.04, "Computer Program for Road Traffic Noise Assessment", Ontario Ministry of Environment.

4. "Environmental Office Manual – Technical Areas – Noise", Ontario Ministry of Transportation, 1992.

TABLE 1

SPEERS ROAD EXISTING AND FUTURE TRAFFIC VOLUME DATA

Speers Road Section	Existing AADT[1]	2021 AADT	Posted Speed Limit (kph)
Bronte Road to Third Line	11 000	13 000	60
Third Line to Fourth Line	17 000	20 000	60
Fourth Line to 447 Speer Road	16 000	19 000	60
447 Speers Road to Marden Road	17 000	21 000	60
Marden Road to Dorval Drive	25 000	30 000	60
Dorval Drive to Kerr Street	20 000	24 000	60

Note:

(1) AADT – Annual Average Daily Traffic provided by Delcan.

TABLE 2

NOISE ASSESSMENT RESULTS

Location	Existing $L_{eq\,Day}$ (dBA)	Future $L_{eq\,Day}$ with Improvements (dBA)	Noise Impact (dBA)(1)
R1	52	52	0.7
R2	54	54	0.7
R3	54	54	0.7
R4	51	52	0.7
R5	51	51	0.7
R6	56	57	0.7
R7	55	55	0.7
R8	49	50	0.7
R9	50	51	0.7
R10	49	50	0.7
R11	52	53	0.7
R12	53	54	0.7
R13	56	56	0.7
R14	50	51	0.7
R15	52	52	0.8
R16	55	56	0.8
R17	56	57	0.9
R18	56	56	0.8
R19	68	69	0.8
R20	68	69	0.8
R21	56	56	0.8

Note:

(1) The noise impact is the difference between the future and existing sound exposures.

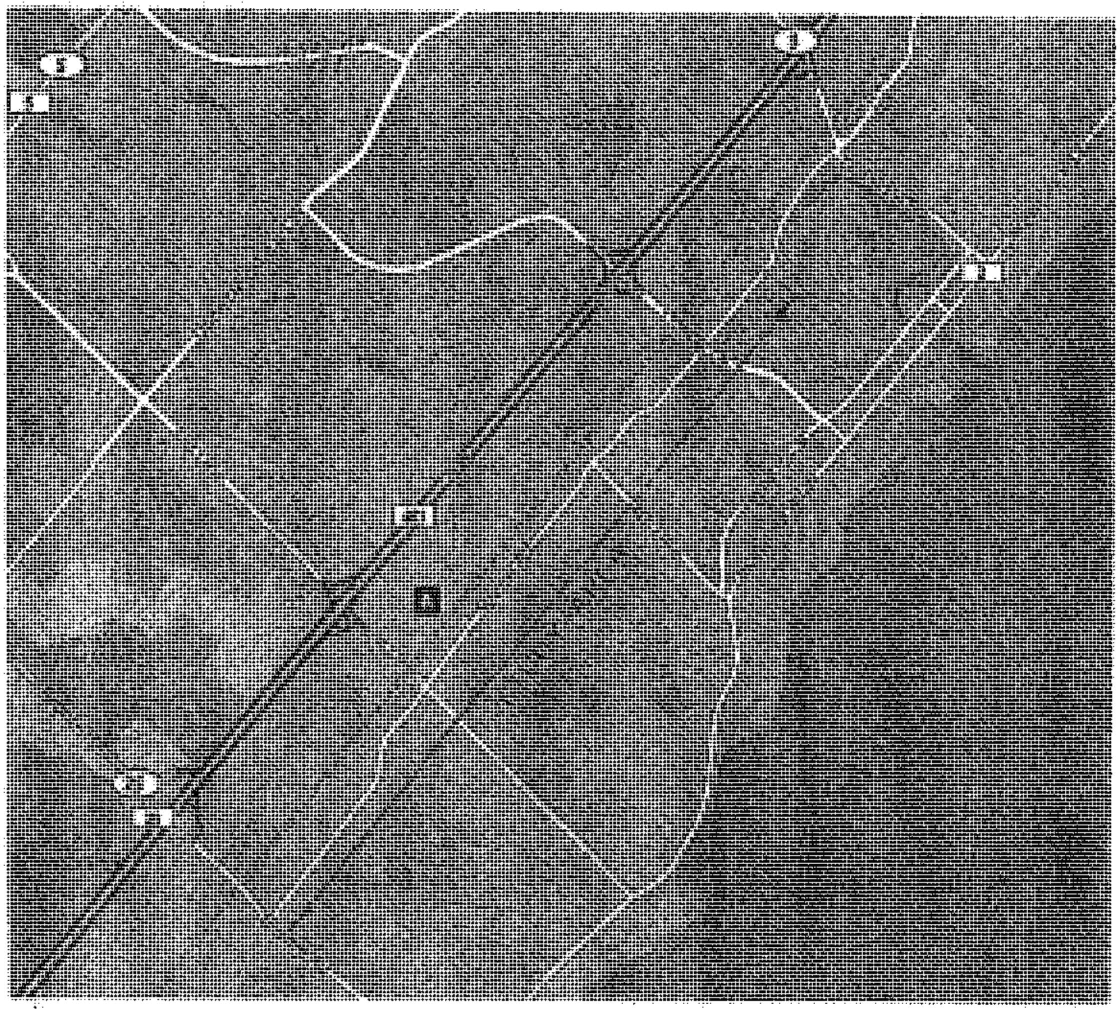
TABLE 3

TYPICAL IMPACT OF INCREASED SOUND EXPOSURES(1)

Incremental Increase Over Background Noise (dBA)	General Perception	Impact
0-3	No Change	Nil
4-5	Perceptible Change	Low
6-9	Almost twice as loud	Medium
10 and above	Doubling of loudness or greater	High

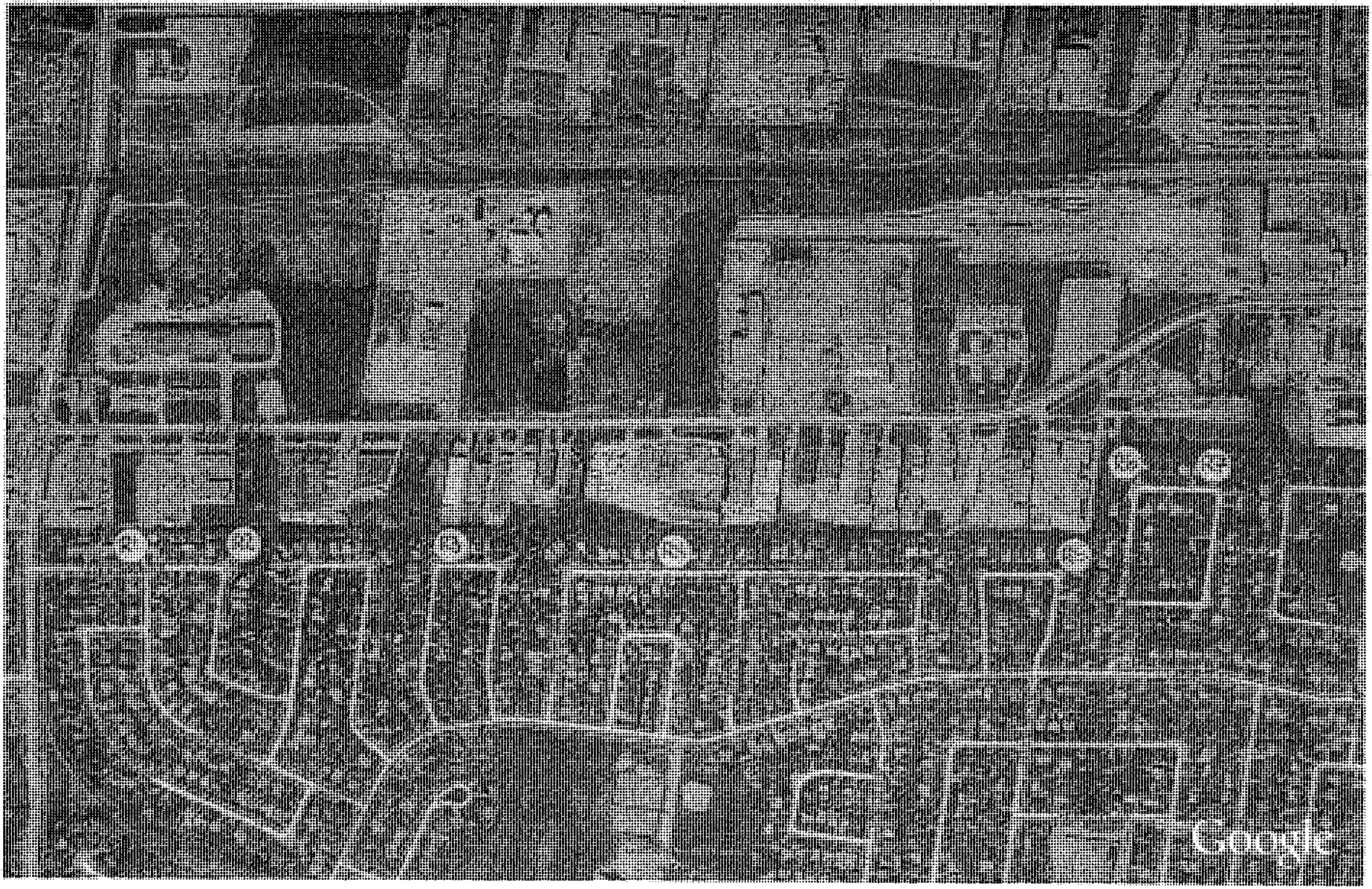
Note:

(1) Note that community sound level assessments are done using an A-weighted logarithmic or decibel (dBA) scale and not a linear scale since humans do not respond linearly to sound. In other words, two cars (or a doubling of background traffic) do not sound twice as loud as one car. Two cars produce a sound level that is 3 dBA higher than a single car, which is the limit of perceptible change to the average person. In fact, it takes a tenfold increase in traffic (a 10 dBA increase) to be perceived as a doubling of loudness.



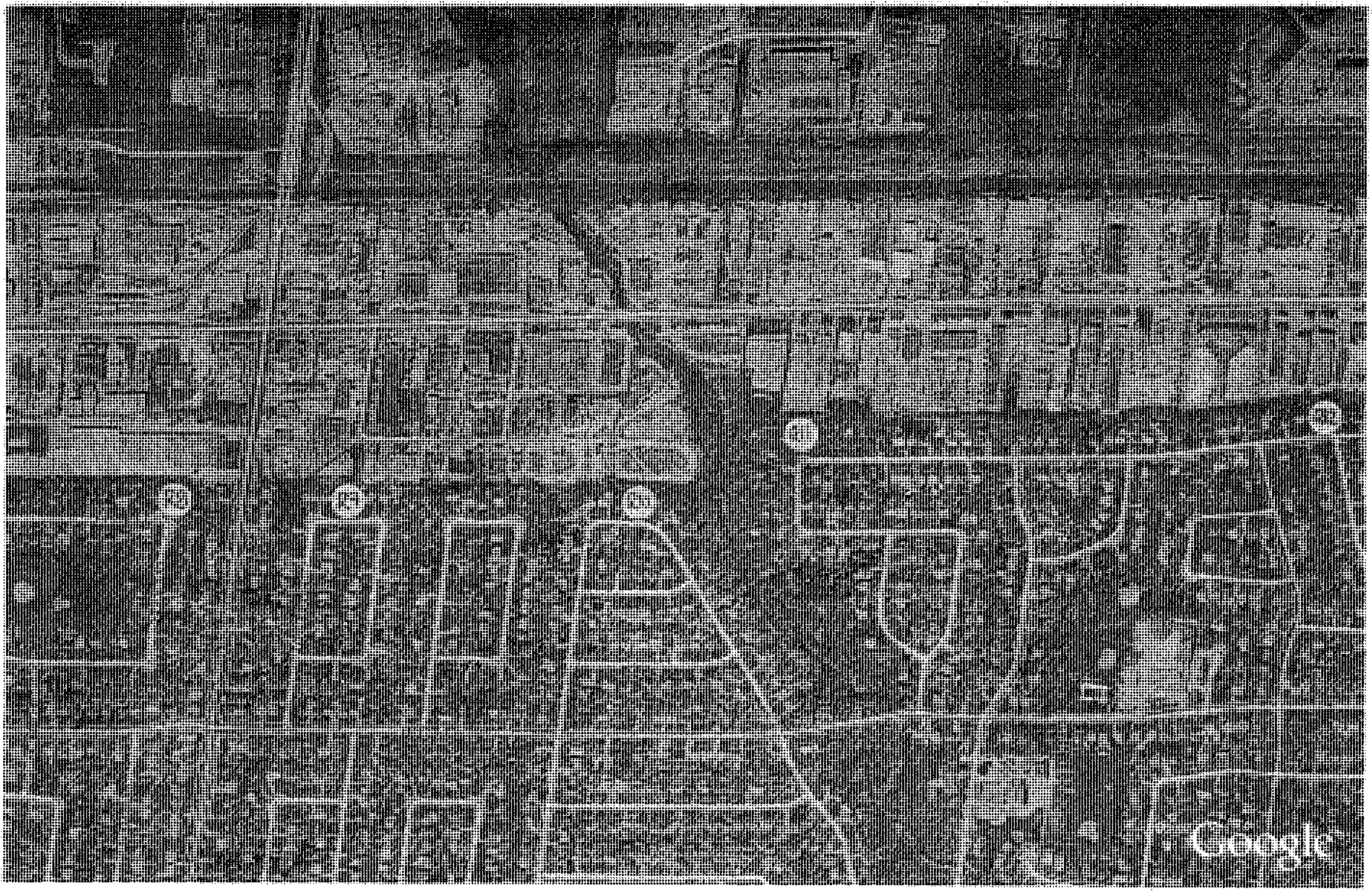
STUDY AREA

FIGURE 1



VALCOUSTICS
Canada Ltd.

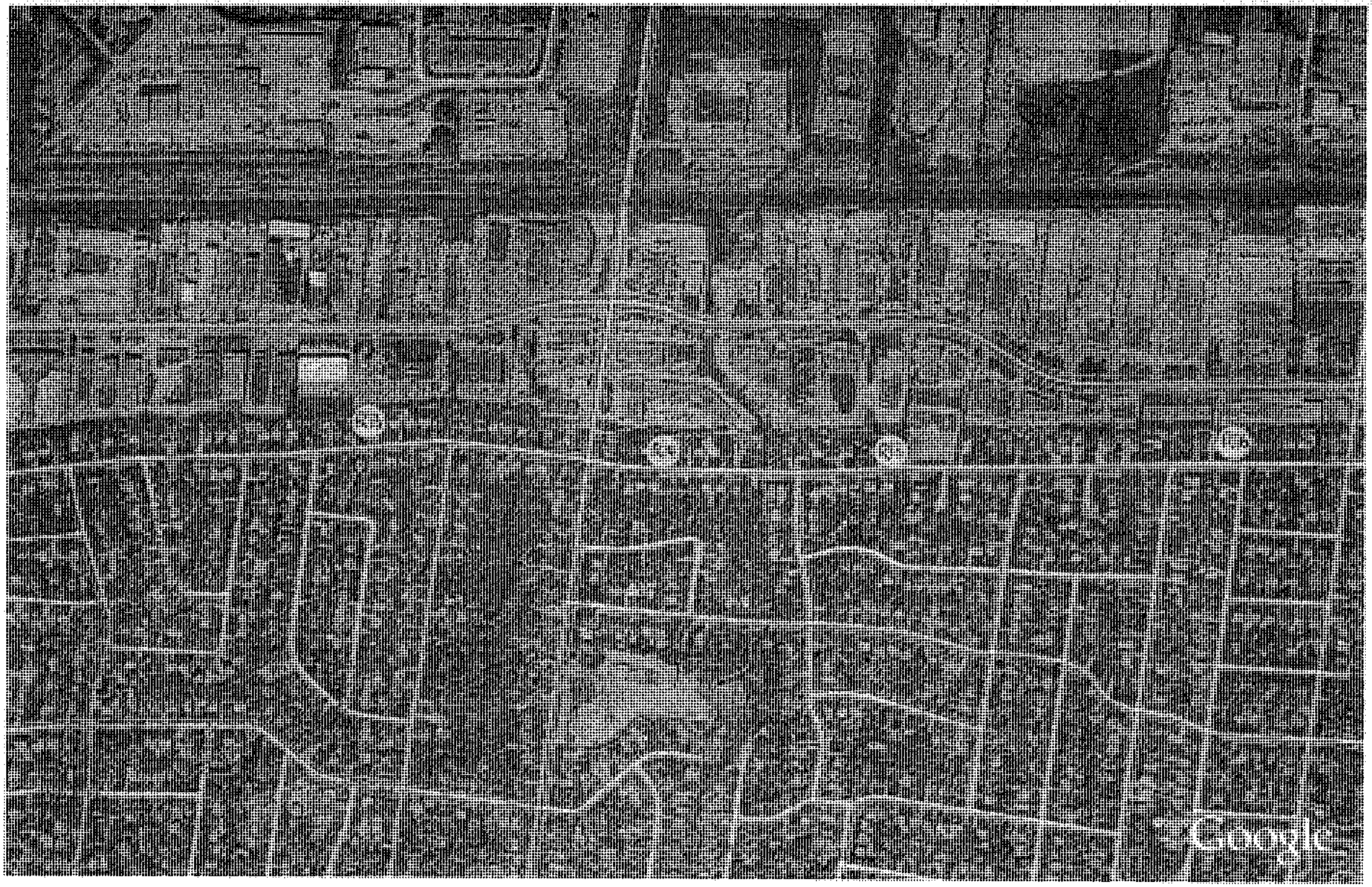
FIGURE 2 **RECEPTORS**



VALCOUSTICS
Canada Ltd.

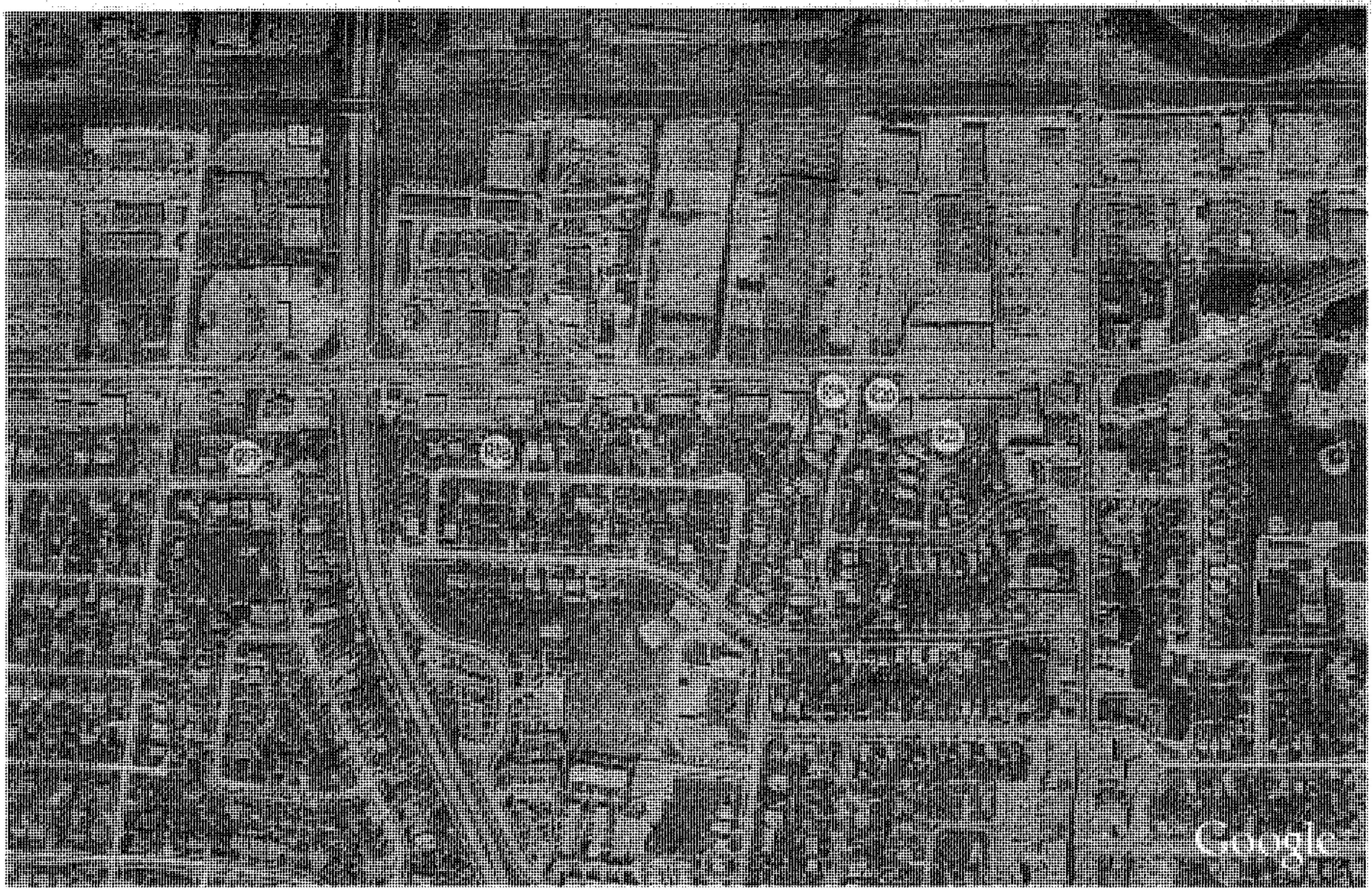
FIGURE 3

RECEPTORS



VALCOUSTICS
Canada Ltd.

FIGURE 4 **RECEPTORS**



VALCOUSTICS
Canada Ltd.

FIGURE 5 **RECEPTORS**

APPENDIX A

ROAD TRAFFIC INFORMATION

TRAFFIC VOLUMES (Existing and 2021) - Speers Road Corridor (from Bronte Road to Kerr Street)

Roadway Section	Existing AADT	2021 AADT Without Improvements	2021 AADT With Improvements	Existing and 2021 Truck Percentages
Bronte Road to Third Line	11000	13000	13000	9%
Third Line to Fourth Line	17000	20000	20000	7%
Fourth Line to #447 Spears Road	16000	19000	19000	6%
#447 Spears Road to Morden Road	17000	21000	21000	5%
Morden Road to Dorval Drive	25000	30000	30000	4%
Dorval Drive to Kerr Street	20000	24000	24000	5%

Appendix I

APPENDIX I-1 - NOTICE OF STUDY COMMENCEMENT

NOTICE OF STUDY COMMENCEMENT

Environmental Assessment for Speers Road Improvements

The Town of Oakville has recently initiated a Class Environmental Assessment for roadway improvements in the Speers Road corridor between Bronte Road and Kerr Street. The purpose of the Study is to address various issues including, but not limited to:

- Existing and future travel demand
- Land servicing needs
- Pedestrian, cycling and transit facilities
- Operational and infrastructure deficiencies
- Approved and proposed changes in land use

In developing a preferred design, consideration will be given to technical requirements of the Town, needs/concerns of the local community, as well as local environmental and economic constraints. The study is expected to be complete by the end of 2008.

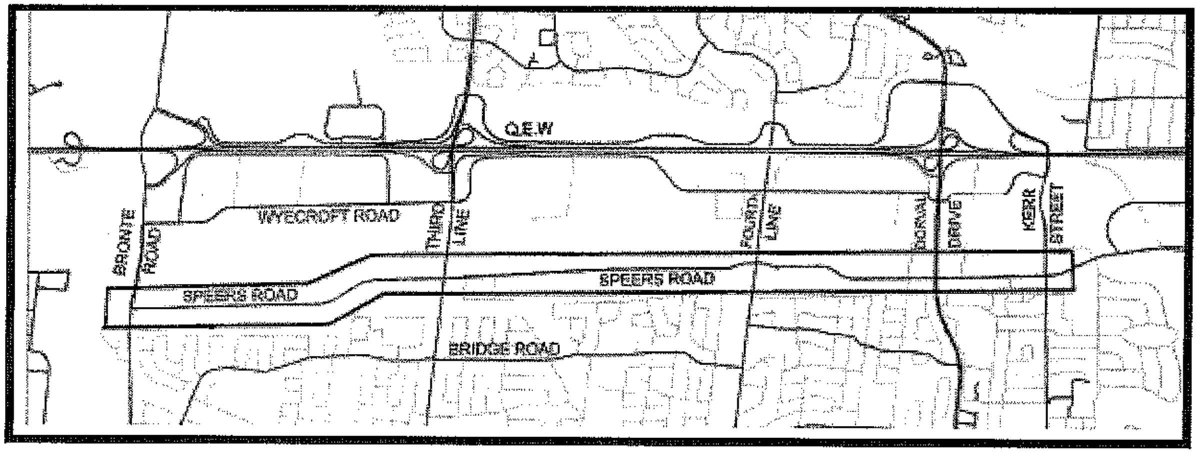
The study will follow the *Municipal Class Environmental Assessment, October 2000, as amended in 2007*. A key component of the study will be consultation with interested stakeholders (public and regulatory agencies). As part of the study, two, Public Information Centres (PIC) will be held to provide interested parties an opportunity to review and discuss issues related to the project and identification of a recommended design. Details regarding the upcoming PICs will be available on our Town website at www.oakville.ca and advertised as the study progresses.

Should you have any questions or comments on this EA study contact:

Irfan Arab, Senior Project Leader, Engineering and Construction Dept., Town of Oakville, PO Box 310, 1225 Trafalgar Road, Oakville, ON L6J 5A6. Tel: 905-845-6601 x3312 Fax: 905-338-4159 iarab@oakville.ca

Manoj Dilwaria, Principal Transportation Division, Delcan Corporation, 4056 Dorchester Road, Niagara Falls, ON L2E 6M9. Tel: 905-356-7003 x231 Fax: 905-356-7008 m.dilwaria@delcan.com

All comments received will become part of the study documentation.



4056 Dorchester Road, Niagara Falls, ON L2E 6M9
Tel: 905.356.7003 • Fax: 905.356.7008
www.delcan.com

March 18, 2008

OUR REF: TN-1340-TN-A00

443175 ONTARIO INC
1272 SPEERS RD UNIT 3-4
OAKVILLE ON L6L 2X4

Dear Sir/Madam:

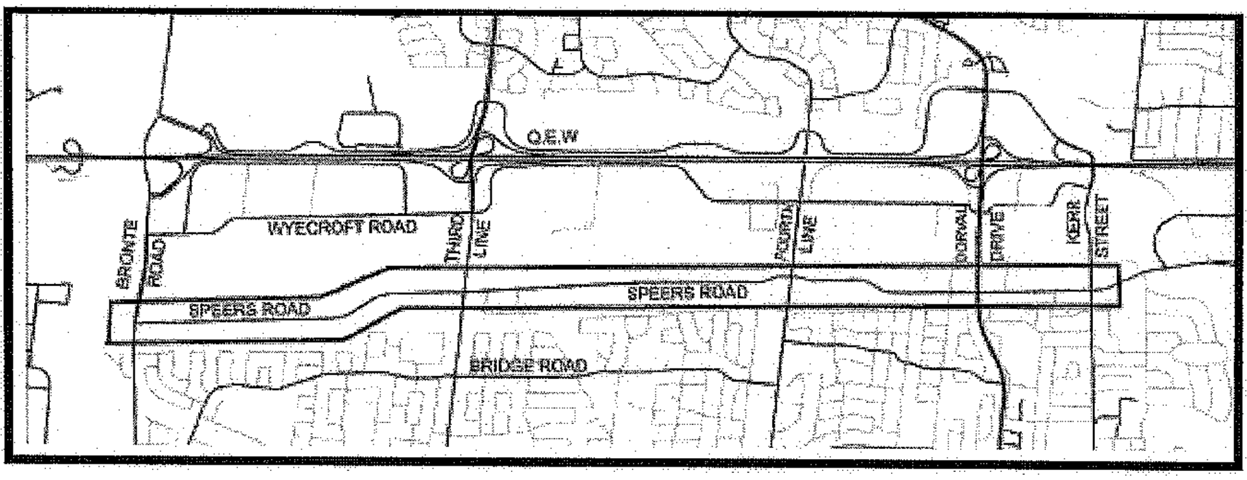
Re.: Notice of Study Commencement
Environmental Assessment for Speers Road Improvements, Bronte Road to Kerr Street

---

The Town of Oakville has recently initiated a Class Environmental Assessment for roadway improvements in the Speers Road corridor between Bronte Road and Kerr Street. The purpose of the Study is to address various issues including, but not limited to:

- Existing and future travel demand
- Land servicing needs
- Pedestrian, cycling and transit facilities
- Operational and infrastructure deficiencies
- Approved and proposed changes in land use

In developing a preferred design, consideration will be given to technical requirements of the Town, needs/concerns of the local community, as well as local environmental and economic constraints. The study is expected to be complete by the end of 2008. The study area is shown on the map below.



The study will follow the *Municipal Class Environmental Assessment, October 2000, as amended in 2007*. A key component of the study will be consultation with interested stakeholders (local public and regulatory agencies). As part of the study, two Public Information Centres (PICs) will be held to provide interested parties an opportunity to review and discuss issues related to the project and identification of a recommended design. Details regarding the upcoming PICs will be advertised as the study progresses.

If you have any questions or concerns regarding this project or the preceding information, please contact either myself directly at (905) 356-7003, x228, (a.mcgregor@delcan.com) or Irfan Arab, Project Manager, Town of Oakville, at (905) 845-6601 x3312 (iarab@oakville.com).

Yours truly,

DELCAN Corporation

Andrew McGregor, B.A.
Environmental Assessment Planner, Transportation Division

cc: Manoj Dilwaria – Delcan Corporation
Irfan Arab – Town of Oakville

4056 Dorchester Road, Niagara Falls, ON L2E 6M9
Tel: 905.356.7003 • Fax: 905.356.7008
www.delcan.com

March 17, 2008

OUR REF: TN-1340-TN-A00

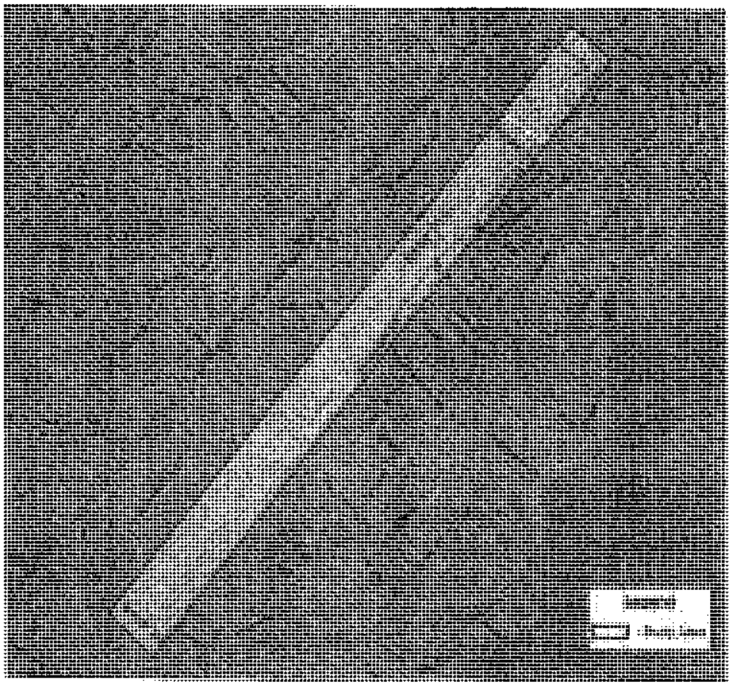
Ms. Jackie Burkart
Resource Management Technician
Ministry of Natural Resources
Aurora District
51 Bloomington Road West, RR#2
Aurora, ON L4G 3G8

Dear Ms. Burkart:

Re.: Notice of Study Commencement - Environmental Assessment for Speers Road Improvements, Bronte Road to Kerr Street
Request for Information

The Town of Oakville has recently initiated a Class Environmental Assessment for roadway improvements in the Speers Road corridor between Bronte Road and Kerr Street. The purpose of the Study is to address various issues including, but not limited to:

- Existing and future travel demand
- Land servicing needs
- Pedestrian, cycling and transit facilities
- Operational and infrastructure deficiencies
- Approved and proposed changes in land use



In developing a preferred design, consideration will be given to technical requirements of the Town, needs/concerns of the local community, as well as local environmental and economic constraints. The study is expected to be complete by the end of 2008. The study area is shown on the map included.

The study will follow the *Municipal Class Environmental Assessment, October 2000, as amended in 2007.* A key component of the study will be consultation with interested stakeholders (public and regulatory agencies). As part of the study, two Public Information Centres (PIC) will be held to provide interested parties an opportunity to review and discuss issues related to the project and identification of a recommended design. Details regarding the upcoming PICs will be advertised as the study progresses.

The purpose of this letter is to introduce the study, to request your agency or group's participation if it is of interest to you, and to obtain any relevant background information from you as it relates to the study area. Information that would be of interest includes the following:

- Contact information and the identification of individuals that represent your agency or group that we should include as a potential participant and primary contact throughout the study process;
- Description of the existing conditions or sensitivities within the study area as they relate to your interests; and
- Specific issues or concerns that your agency or group may have.

In order to ensure that the study process captures your concerns, issues, and expectations for this study, we have provided a "Fax Back Form" for your convenience. Please note that all information provided will become part of the public record once the study is completed.

If you have any questions or concerns regarding this project or the preceding information, please contact either myself directly at (905) 356-7003, x228, (a.mcgregor@delcan.com) or Irfan Arab, Project Manager, Town of Oakville, at (905) 845-6601 x3312 (iarab@oakville.com).

Thank you for your assistance with this project. We respectively request a response by March 31, 2008.

Yours truly,

DELCAN Corporation

Andrew McGregor, B.A.
Environmental Assessment Planner, Transportation Division

cc: Irfan Arab – Town of Oakville
Manoj Dilwaria – Delcan Corporation
Barb Slattery – Ministry of the Environment

Attch.

Delcan
TRANSPORTATION • INFORMATION TECHNOLOGY • WATER

OAKVILLE

FAX BACK FORM

TO: **Andrew McGregor, B.A.**
Environmental Assessment Planner, Transportation Division

FAX: **(905) 356-7008**

RE: **Class Environmental Assessment – Speers Road from Bronte Road to Kerr Street, Town of Oakville**

NAME: ______________________

TITLE: ______________________

GROUP/AGENCY: ______________________

ADDRESS: ______________________

____

TELEPHONE: ______________________

FAX: ______________________

E-MAIL: ______________________

☐ My group/agency is not interested in participating in this study but would like to be kept informed. Please maintain our group/agency on the study contact list for this project.

☐ My group/agency has no concerns about this project and can be removed from your contact list.

AGENCY COMMENTS/AREA OF INTEREST:

____

____

____

____

____

____

____

____

____

Over...

Please use additional paper if required to complete your comments. Thank you for your time and effort!

TECHNICAL AGENCY/STAKEHOLDER CONTACT LIST
SPEERS ROAD CLASS ENVIRONMENTAL ASSESSMENT
NOTICE OF STUDY COMMENCEMENT

Agency	Contact
PROVINCIAL MINISTRIES	
Ministry of Natural Resources Aurora District 51 Bloomington Road West, RR2 Aurora, ON L4G 3G8	Ms. Jackie Burkart Resource Management Technician
Ministry of Natural Resources Aurora District 51 Bloomington Road West, RR2 Aurora, ON L4G 3G8	Mr. Warren May Halton Area Biologist
Ministry of Environment Air, Pesticides and Environmental Planning 5775 Yonge Street, 8th Floor North York, ON M2M 4J1	Mr. Alex Philips Environment Resource Planner
Ministry of Environment 12th Flr 119 King St W Hamilton ON L8P 4Y7	Ms. Barb Slattery Environment Resource Planner/EA Coordinator
Ministry of Culture 400 University Avenue, 4th Floor Toronto, ON M7A 2R9	Ms. Catherine Capella Archaeological Review Officer
Ministry of Transportation Central Region 1201 Wilson Avenue, 7th Floor Building D Downsview, ON M3M 1J8	Mr. Richard Yeung Corridor Management Engineer
Ministry of Transportation Central Region 1201 Wilson Avenue, 7th Floor Building D Downsview, ON M3M 1J8	Mr. Roger Hamner Regional Director
Halton Region Conservation Authority 2596 Brittannia Road West, R.R. #2 Milton, ON L9T 2X6	Ms. Leah Smith Environmental Planner
MUNICIPALITIES	
The Regional Municipality of Halton 1151 Bronte Road Oakville, ON L6M 3L1	Mr. Andrew Head Planning & Public Works Manager of Transportation Services
Corporation of the Town of Oakville P.O. Box 310 1225 Trafalgar Road Oakville, ON L6J 5A6	Mr. Enrico Scalera Manager of Design & Construction
Corporation of the Town of Oakville P.O. Box 310 1225 Trafalgar Road Oakville, ON L6J 5A6	Mr. Dave Wong Traffic Engineering Coordinator

Agency	Contact
Corporation of the Town of Oakville P.O. Box 310 1225 Trafalgar Road Oakville, ON L6J 5A6	Mr. Simon Tam Manager of Traffic Operations Roads & Works Operations Department
Corporation of the Town of Oakville P.O. Box 310 1225 Trafalgar Road Oakville, ON L6J 5A6	Mr. Chris Clapham Sustainable Transportation, Engineering & Construction
Corporation of the Town of Oakville P.O. Box 310 1225 Trafalgar Road Oakville, ON L6J 5A6	Ms. Tricia Collingwood Planner Planning Services Department
Corporation of the Town of Oakville P.O. Box 310 1225 Trafalgar Road Oakville, ON L6J 5A6	Ms. Janis Olbina Manager of Park Planning & Development
Oakville Fire Department 125 Randall Street Oakville, ON L6J 1P3	Mr. Brian Durdin Assistant Deputy Chief
Oakville Transit P.O. Box 310 1225 Trafalgar Road Oakville, ON L6J 5A6	Ms. Joanne Phoenix Manager of Planning & Accessible Services
Halton Regional Police Service P.O. Box 2700 Oakville ON L6J 5C7	Chief Gary Crowell
Halton Region Emergency Medical Services 1179 Bronte Road Oakville, ON L6M 4G3	Mr. John Pereira Manager of Operations
Halton District School Board P.O. Box 5005 2050 Guelph Line Burlington, ON L7R 3Z2	Ms. Marnie Denton Public Relations
Halton Catholic District School Board P.O. Box 5308 802 Drury Lane Burlington, ON L7R 3Y2	Mr. Alex Duffield Administrator of Facilities
ABORIGINAL AGENCIES	
The Ministry of Aboriginal Affairs Policy and Relationships Branch 720 Bay St., 4th Floor Toronto, ON M5G 2K1	Ms. Pam Wheaton Director
The Department of Indian and Northern Affairs Specific Claims Branch 10 Wellington St., Room 1310 Gatineau, QC K1A 0H4	Mr. Fred Hosting Senior Claims Analyst
The Department of Indian and Northern Affairs Litigation Management and Resolution Branch 10 Wellington St., Room 1310 Gatineau, QC K1A 0H4	Mr. Franklin Roy Director

Agency	Contact
The Department of Indian and Northern Affairs Comprehensive Claims Branch 10 Wellington St., Room 1310 Gatineau, QC K1A 0H4	Mr. Kevin Clement Claims East of Manitoba
Ministry of the Attorney General Aboriginal Legal Issues Office 720 Bay Street, 8th Floor Toronto, ON M5G 2K1	Ms. Riz Tzimas Crown Law Office-Civil
UTILITIES	
Oakville Hydro Corporation P.O. Box 1900 861 Redwood Square Oakville, ON L6J 5E3	Mr. Dan Steele
Union Gas 360 Strathearne Avenue P.O. Box 10 Hamilton, Ontario L8N 3A5	Mr. Enzo Greco Construction Projects Team Lead, Hamilton-Halton
Bell Canada 20 Hunter Street West, Flr 6 Hamilton, ON L8N 3H2	Ms. Carol Goossens
Blink Communications P.O. Box 1900 861 Redwood Square Oakville, ON L6J 5E3	Mr. Terry Crawford Director of Facilities and Infrastructure
Cogeco Cable 695 Lawrence Road Hamilton, ON L8K 6P1	Ms. Lynanne Cane Planning Coordinator
INTEREST GROUPS	
Halton E.E.A.C. C/O Region Of Halton 1151 Bronte Road Oakville, ON L6M L31	Mr. Jason Scott Senior Environmental Planner

J:\DATA\TN1340TNA00 (Speers Road, Oakville)\MF#5 - Correspondence\Study Commencement\Technical Agency Contact List.doc

APPENDIX I-2 - TECHNICAL AGENCIES COMMITTEE MEETING #1

Delcan

4056 Dorchester Road, Niagara Falls, ON L2E 6M9
Tel: 905.356.7003 • Fax: 905.356.7008
www.delcan.com

March 18, 2008

OUR REF: TN-1340-TN-A00

Dear Sir/Madam:

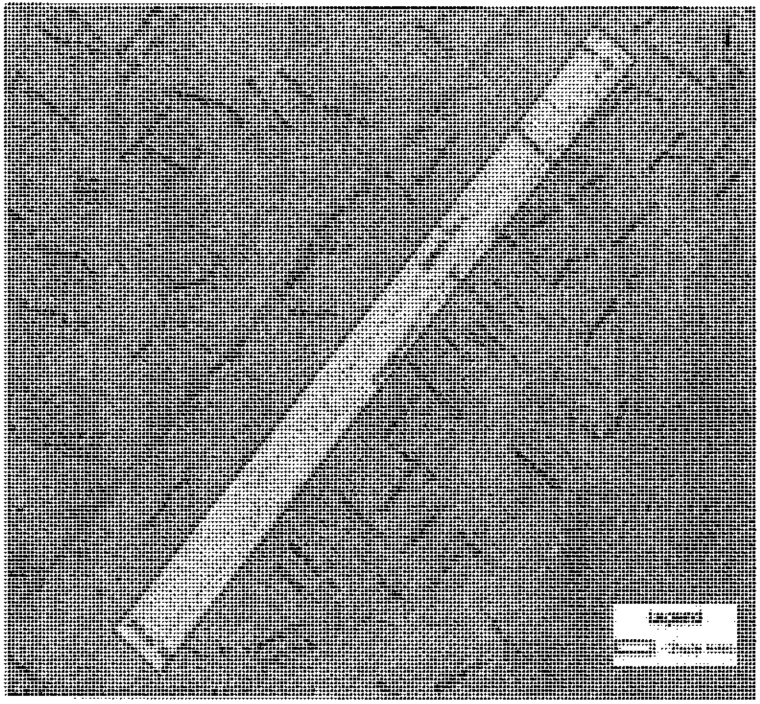
R.e. Environmental Assessment Study for Speers Road Improvements, Bronte Road to Kerr Street – Technical Agencies Committee Invitation

---

The Town of Oakville has recently initiated a Class Environmental Assessment for roadway improvements in the Speers Road corridor between Bronte Road and Kerr Street. The purpose of the Study is to address various issues including, but not limited to:

- Existing and future travel demand
- Land servicing needs
- Pedestrian, cycling and transit facilities
- Operational and infrastructure deficiencies
- Approved and proposed changes in land use

In developing a preferred design, consideration will be given to technical requirements of the Town, needs/concerns of the local community, as well as local environmental and economic constraints. The study is expected to be complete by the end of 2008. The study area is shown on the map below.



The study will follow the *Municipal Class Environmental Assessment, October 2000, as amended in 2007*. A key component of the study will be consultation with interested stakeholders (public, regulatory agencies and interest groups).

As part of the study, a *Technical Agencies Committee* (TAC) is being created to provide input on various issues within the study area.

The main role of the Committee will be to provide technical input to the Project Team and assist in the development and evaluation of alternative solutions/designs.

We have identified your department/agency as having potential interest in the Study and request your involvement as a member of the TAC. It is proposed that the Committee meet at select times during the course of the Study. The project team for this study includes representatives from the Town of Oakville's Engineering and Construction Department and Delcan Corporation (consultant).

To help the Project Team in developing the TAC contact list, please complete the attached form and forward it by fax, phone or email to **Andrew McGregor**.

If you have any questions or concerns regarding this project or the preceding information, please contact either myself directly at (905) 356-7003, x228 (a.mcgregor@delcan.com) or Irfan Arab, Project Manager, Town of Oakville, at (905) 845-6601 x3312 (iarab@oakville.com).

Thank you for your assistance with this project. We respectively request a response by March 21, 2008.

Yours truly,

DELCAN Corporation

Andrew McGregor, B.A.
Environmental Assessment Planner, Transportation Division

cc: Irfan Arab – Town of Oakville
Manoj Dilwaria – Delcan Corporation

Attch.

RESPONSE TO REQUEST FOR PARTICIPANTS
TECHNICAL AGENCIES COMMITTEE

Please circle the appropriate response:

Yes **No** My department/agency is interested in participating in the Technical Agency Committee for the Speers Road Class EA Study.

Yes **No** My department/agency is not interested in participating at this time, but would like to be kept informed of progress in this study. Please leave my department/agency on the mailing list for this project.

Yes **No** My department/agency is not interested in participating in the Technical Agency Committee for the Speers Road Class EA Study. Please take my department/agency off the mailing list for this project.

We have identified an appropriate participant for this study from our department/agency. This person is:

NAME: ____________________________________

DEPARTMENT/AGENCY & TITLE:__________________________

PHONE (DAYTIME):_____________________________

EMAIL:_____________________________________

PLEASE RESPOND TO THE REQUEST FOR PARTICIPATION EITHER BY:

- ⇒ **FAX (905) 356- 7008**
- ⇒ **PHONE (905) 356-7003, Ext. 228**
- ⇒ **EMAIL: a.mcgregor@delcan.com**

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TECHNICAL AGENCIES COMMITTEE MEETING #1

DATE: Thursday, April 17, 2008

LOCATION: Committee Room 1, Oakville Town Hall

TIME: 10:30 a.m. – 12:00 p.m.

AGENDA

1. ***Introductions***
2. ***Study Overview***
   - Purpose of the study
   - Planning process being followed
   - Where we are in the study
3. ***Study Problem Statement***
   - Key issues/constraints to be addressed
   - ***Input from Committee members***
4. ***Broad Level Planning Solutions***
   - Preliminary planning alternatives to be considered
5. ***Next Steps***
   - Confirm study problem statement and identify recommended planning solution
   - Public Information Centre No. 1

TECHNICAL AGENCY COMMITTEE LIST

Speers Road Class EA (From Bronte Road to Kerr Street)

No.	Name	Organization	Contact
1	Ms. Leah Smith	Halton Region Conservation Authority	lsmith@hrca.on.ca
2	Mr. Andrew Head	The Regional Municipality of Halton	andrew.head@halton.ca
3	Mr. William Chan	Oakville Hydro	wchan@oakvillehydro.com
4	Ms. Joanne Phoenix	Transit, Town of Oakville	jphoenix@oakville.ca
5	Mr. Irfan Arab	Eng. & Const., Town of Oakville	iarab@oakville.ca
6	Mr. Enrico Scalera	Eng. & Const., Town of Oakville	escalera@oakville.ca
7	Mr. David Wong	Traffic, Town of Oakville	dwong@oakville.ca
8	Mr. Jim Pendlebury	Roads & Works, Town of Oakville	jpendlebury@oakville.ca
9	Ms. Tricia Collingwood	Planning Services, Town of Oakville	tcollingwood@oakville.ca
10	Ms. Janis Olbina	Parks & Open Space, Town of Oakville	jolbina@oakville.ca
11	Mr. Brian Durdin	Fire, Town of Oakville	bdurdin@oakville.ca
12	Mr. Enzo Greco	Union Gas	egreco@uniongas.com
13	Ms. Carol Goossens	Bell Canada	carol.goossens@bell.ca
14	Mr. Chris Clapham	Town of Oakville Sustainable Transportation, Engineering & Construction	cclapham@oakville.ca
15	Ms. Lynanne Cane	Cogeco Cable	lynanne.cane@cogeco.com
16	Terry Crawford	Blink Communications	tcrawford@blink.ca

APPENDIX I-3 - STAKEHOLDERS GROUP MEETING #1

4056 Dorchester Road, Niagara Falls, ON L2E 6M9
Tel: 905.356.7003 • Fax: 905.356.7008
www.delcan.com

March 18, 2008

OUR REF: TN-1340-TN-A00

Dear Sir/Madam:

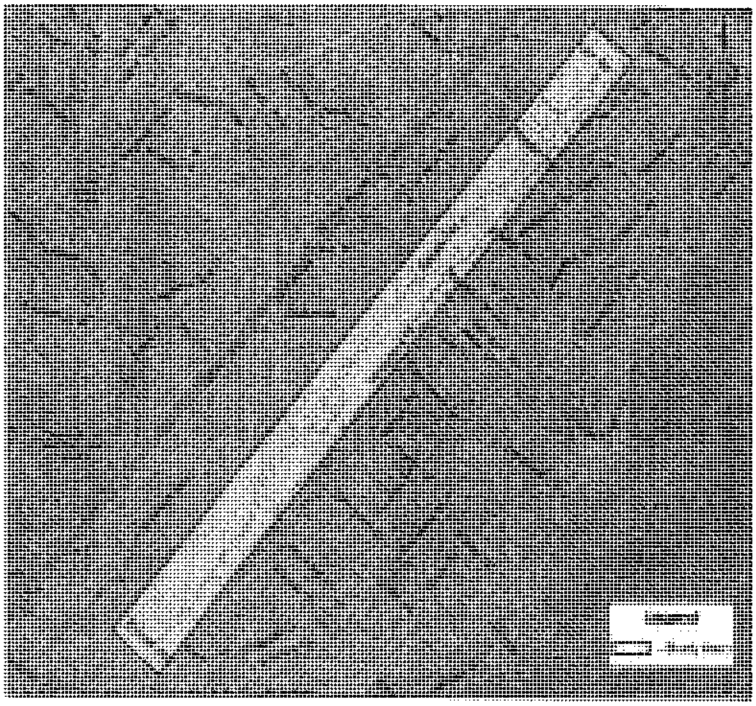
R.e. Environmental Assessment Study for Speers Road Improvements, Bronte Road to Kerr Street – Stakeholder Group Invitation

---

The Town of Oakville has recently initiated a Class Environmental Assessment for roadway improvements in the Speers Road corridor between Bronte Road and Kerr Street. The purpose of the Study is to address various issues including, but not limited to:

- Existing and future travel demand
- Land servicing needs
- Pedestrian, cycling and transit facilities
- Operational and infrastructure deficiencies
- Approved and proposed changes in land use

In developing a preferred design, consideration will be given to technical requirements of the Town, needs/concerns of the local community, as well as local environmental and economic constraints. The study is expected to be complete by the end of 2008. The study area is shown on the map below.



The study will follow the *Municipal Class Environmental Assessment, October 2000, as amended in 2007.* A key component of the study will be consultation with interested stakeholders (public, regulatory agencies and interest groups).

As part of the study, a "Stakeholder Group" is being created to provide input on various issues within the study area. The Group is to consist of individuals from differing areas of interest, including representatives from the environmental community, business associations, safe and efficient transportation supporters, etc.

The main role of the Stakeholder Group will be to:

- Provide input to the Project Team;
- Assist in the development and evaluation of alternatives; and
- Provide feedback to their constituent communities.

We have identified your group/agency as having potential interest in the Study and request your involvement as a member of the Stakeholder Group. It is proposed that the Group meet a maximum of three times during the course of the Study. It is anticipated that each meeting/session will run approximately 1 to 2 hours and be held at the Town Hall (1225 Trafalgar Road, Oakville). The project team for this study includes representatives from the Town of Oakville and Delcan Corporation (consultant).

The first Stakeholder Group meeting is anticipated to be held in early April 2008. To help the Project Team in developing the Stakeholder Group for this Study, please complete the attached form and forward it by fax, phone or email to **Andrew McGregor.**

If you have any questions or concerns regarding this project or the preceding information, please contact either myself directly at (905) 356-7003, x228 (a.mcgregor@delcan.com) or Irfan Arab, Project Manager, Town of Oakville, at (905) 845-6601 x3312 (iarab@oakville.com).

Thank you for your assistance with this project. We respectively request a response by March 21, 2008.

Yours truly,

DELCAN Corporation

Andrew McGregor, B.A.
Environmental Assessment Planner, Transportation Division

cc: Irfan Arab – Town of Oakville
Manoj Dilwaria – Delcan Corporation

Attch.

RESPONSE TO REQUEST FOR PARTICIPANTS STAKEHOLDER GROUP

Please circle the appropriate response:

Yes **No** My group/agency is interested in participating in the Stakeholder Group for the Speers Road Class EA Study.

Yes **No** My group/agency is not interested in participating at this time, but would like to be kept informed of progress in this study. Please leave my group/agency on the mailing list for this project.

Yes **No** My group/agency is not interested in participating in the Stakeholder Group for the Speers Road Class EA Study. Please take my group/agency off the mailing list for this project.

We have identified an appropriate participant for this study from our group/agency. This person is:

NAME: ______________________________

GROUP/AGENCY & TITLE: ______________________________

PHONE (DAYTIME): ______________________________

EMAIL: ______________________________

PLEASE RESPOND TO THE REQUEST FOR PARTICIPATION EITHER BY:

- ⇒ **FAX (905) 356- 7008**
- ⇒ **PHONE (905) 356-7003, Ext. 228**
- ⇒ **EMAIL: a.mcgregor@delcan.com**

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STAKEHOLDER GROUP LIST
Speers Road Class EA (From Bronte Road to Kerr Street)

No.	Organization	Contact Name	Telephone Number	Website
1	Bronte BIA, 100 Bronte Road, Oakville, ON L6L 6L5		905-825-3258	www.brontevillage.net
2	The Kerr Village BIA, 323 Kerr Street, Oakville, ON L6K 3B6	Richard Messer	905-849-8865	rmesser@cogeco.net
3	Green Trans	Lisa Seiler	905-827-5989	lseiler@tap.net
4	Ground Breakers Oakville	Liz Benneian	905-257-0250	www.groundbreakersoakville.com
5	Oakvillegreen Conservation Association Inc.	Liz Benneian	905-257-0250	lizcdn@yahoo.com
6	West River Residents' Association (WRRA)	Barry Dawe	905-845-7796	www.wrra-oakville.ca
7	West River Residents Association (WRRA	Caroline Floroff	905-842-1705	Email: jfloroff@cogeco.ca
8	CAA South Central Ontario	Faye Lyons	ph. 416-708-3919 fx 905-771-3292	Email: fl1@caasco.ca

STAKEHOLDERS GROUP MEETING #1

DATE: Thursday, April 17, 2008

LOCATION: Committee Room 1, Oakville Town Hall

TIME: 1:30 a.m. – 3:00 p.m.

AGENDA

1. ***Introductions***
2. ***Study Overview***
   - Purpose of the study
   - Planning process being followed
   - Where we are in the study
3. ***Study Problem Statement***
   - Key issues/constraints to be addressed
   - ***Input from Group members***
4. ***Broad Level Planning Solutions***
   - Preliminary planning alternatives to be considered
5. ***Next Steps***
   - Confirm study problem statement and identify recommended planning solution
   - Public Information Centre No. 1

APPENDIX I-4 - PUBLIC INFORMATION CENTRE #1 SUMMARY REPORT

Delcan
TRANSPORTATION • INFORMATION TECHNOLOGY • WATER

OAKVILLE

PUBLIC INFORMATION CENTRE NO. 1

Speers Road, from Bronte Road to Kerr Street
Town of Oakville

CLASS ENVIRONMENTAL ASSESSMENT

MAY 2008

TN1340TNA00

TABLE OF CONTENTS

1.0 Background

Public Information Centre (PIC) No. 1 for the Speers Road Class Environmental Assessment (EA) Study was held on May 1, 2008 from 6:00 p.m. to 8:00 p.m. at the Oakville Town Hall. The purpose of the PIC was to provide stakeholders, agencies and interested members of the public an opportunity to meet the Project Team, review the study scope and discuss issues related to the study including alternative solutions, environmental considerations and preliminary evaluation criteria. Local area residents, property and business owners, and agencies were invited to attend via regular mail, flyers, and newspaper advertisements in the Oakville Beaver on April 16th and April 23rd, 2008. All PIC notification materials are provided in **Appendix 1**.

The PIC was set up as a "drop-in" style information centre in which participants were encouraged to view the boards on display and to address their questions and concerns to members of the project team.

2.0 Display Materials

Information displays presented at the PIC included the following:

- WELCOME
- WHAT IS THE PURPOSE OF THIS PUBLIC INFORMATION CENTRE?
- HOW CAN I PARTICIPATE?
- STUDY AREA
- CLASS ENVIRONMENTAL ASSESSMENT PROCESS
- WHY ARE WE UNDERTAKING THIS PROJECT?
- TRAFFIC AND SAFETY ANALYSIS
- PLANNING ALTERNATIVES
- EVALUATION CRITERIA
- EVALUATION OF PLANNING ALTERNATIVES
- RECOMMENDED SOLUTION
- WHAT ARE THE NEXT STEPS IN THE STUDY?

The display materials presented are provided in **Appendix 2.** A large format baseplan (on aerial photography) was also displayed with the text boards mentioned above.

3.0 Attendance and Comments Submitted

Those attending the PIC were requested to sign an attendance booklet and were encouraged to provide their written comments to the material presented. Attendance at the PIC included 30 individuals signing the attendance booklet. A summary of the comments submitted is provided in **Table 1**.

Table 1
Public Information Centre No. 1 Comments

Comment No.	Comment Submitted
1	• In favour of widening Speers Rd. • Does not want to loose parking spaces or pylon sign to move. • Does not want any land use changes or property taxes to increase.
2	• Loss of frontage will make truck deliveries unsafe and restrict parking lot traffic. • Would the land owner or the town (or shared) be responsible for the cost of water, storm sewer and sanitary sewer upgrades?
3	• Concerned over impact to parking at the front of my building. If we loose any property my tenants will not be able to conduct their business. • When will the 'proposed' traffic lights be installed at St. Augustine/Speers. The Kerr/Speers Road intersection is quite often at a 'grid-lock' and the opening up of St. Augustine Road would improve this situation.
4	• Add more trees to help absorb the traffic noise. • Pedestrian improvements: - Create a pleasant place to walk, possibly removed from the traffic. - Create a pedestrian access from streets south of Speers without going south to Bridge and up Bronte or Third Line. Pedestrian access from Speers to GO Station. Perhaps with a pedestrian over/under pass at Third Line. - Coordination and integration with Active Transportation Master Plan. • Make the woodlot or wetland into a public park with a boardwalk over wetland with info regarding native plants and animals. Could this be joined to other greenspace to allow a continuous walking trail?
5	• We welcome any changes that would alleviate the congestion and accidents on Speers but not at the expense of parking. • Boulevard trees and various other private landscaping features pose a direct hazard in terms of visibility. • High traffic volumes entering and exiting properties on Speers.
6	• Any improvements should not impact the ability for full turn access, (both right in and out and left in and out) to our site (399 Speers.)
7	• There should be a turning lane from Kerr to at least the fourth light and at Dorval. There should be two turning lanes for Dorval.
8	• Any future widening of Speers for turning lane purposes should not take away existing parking at front of buildings. Businesses are negatively impacted.
9	• Pedestrian overpass (could also facilitate bicycle usage) to reduce long pedestrian wait to cross the street.
10	• Need centre turning lane and right turn lanes at Dorval, 4th and 3rd Lines.
11	• Planning Alternative 2 – should include increased travel lanes (increased cars/trucks) reduces safety for bike and pedestrians. It would require more infrastructure; i.e. lighting • Planning Alternative 3 – should include transit benefit from Alt.2 to highlight benefits. Safety issues due to driveway access could be improved if properly combined. Improve streetscape by removing old cycle/pedestrian path, put in a proper sidewalk and add bike lanes on street which would provide more room for streetscape improvements. • Please combine access points as much as possible. • Kerr/Speers intersection – because of redevelopment potential, planning would prefer to see a very pedestrian friendly intersection; sidewalks, road crossings, marked/treated pavement, reduced site triangles. We want to encourage those who live north of Speers to walk/cycle down into Kerr Village. Needs to be inviting in order to encourage that pattern of movement.
12	• No curbside garbage pick-up between 4th Line and Kerr Street. Should be private garbage pick-up.

	• Speers between 4th Line and Kerr can be used for intensification of residential and commercial buildings as per Provincial mandates. • Retail front development can increase pedestrian traffic.
13	• Will the watermain be replaced as it dates back to the '50's and has had numerous breaks in the last few years? • Is there going to additional property required for the road widening?
14	• Adding lanes to Speers will only increase the traffic and accident risk along the corridor. The key is to improve adjacent roads, primarily the South Service Road, Wyecroft Road, and the QEW. Once the QEW is fixed and the 4th Line Bridge completed traffic will divert from Speers as a faster alternative will be available. To help the diversion the speed limit on Speers should be reduced to 50km/hr. • A six lane street in Oakville will create a mini suburban highway which will detract from the City's look and feel and create a Mississauga strip mall environment. • Alternatives 1, 3 and 4 are the only viable options.
15	• Add a right turn lane from NB Kerr St. • Extend the storage length for WB Speers left turn lane at Kerr St. • Consider a TWLTL continuous between intersections or consider a continuous raised median to eliminate left-in/left-outs to eliminate the more dangerous maneuvers. • Consider adding continuous 3.0m shoulders for right-turns into businesses (also serves as a bike lane); and/or right-turn lanes into major commercial businesses. • Many transport trucks stop and park in the right lane in this stretch in front of businesses. Emphasize either better enforcement, or the need for a 3.0m shoulder throughout. • Consider improving radii and entrance widths to businesses to facilitate movements. • Consider consolidating multiple entrances on properties that don't need them. • Consider joint-use entrances to reduce the overall number. • Remove entrances near the radii at 4th line (2 in the NE corner, and 2 in the SE corner)
16	• Additional traffic lanes – We are concerned about a property impact if widening of Speers Rd. encroaches on our property. Truck access to our shipping doors is from the front of the building and we currently require all of the property depth to the existing sidewalk line for truck clearance when loading or unloading. Any reduction in our property depth would be unacceptable and would result in blockages of sidewalk and/or traffic lanes. • Construction impact/potential access delays – We are concerned about vehicular traffic delays during construction/reconstruction of roads or sidewalks in this area as delays would impact our business and cause increased costs from trucking companies due to wait charges. Work in this area should be coordinated to minimize delays and provide for adequate flow of traffic at all times. Construction project time should be as short as possible. • Construction impact – potential noise, dust – We are a CFIA food plant with strict air and hygiene standards. We are concerned about the effect of construction on our business. We need to be consulted prior to work planning. • Construction impact – potential interruption of utilities, water – Our machinery requires continuous utility supply to operate safely. We run an ammonia refrigeration system and an alarmed heating and vacuum process 7 days a week, 52 weeks a year. Backup plans need to be in place in case of planned or accidental interruption of utilities to our site. • Alternate 1 - We support this alternative • Alternative 2 –We strongly oppose this alternative for the reasons stated above • Alternative 3 – We do not support a bicycle lane on the roadway for safety reasons however we strongly suggest that sidewalks along Speers Road need to be improved or put in place to improve pedestrian traffic. Bicycle traffic could be accommodated by widening the sidewalk – using the existing boulevard. • Alternative 4 – We support this option if there is no degradation or restriction of access for our trucks.

17	• We are unable to attend PIC #1 and would like to receive any updates of the study and planning which you will be presenting at the PIC#2.
18	• I would like to become a member of the stakeholders committee and would appreciate being notified of upcoming meetings so that I may attend.
19	• Tribute is the owner of the property at 235 Speers Road, and we have an existing application submitted with the Town. We are most interested in this process – please advise how we can become involved on a significant level.
20	• I represent Mancor and we own the 28 acre parcel at the north-west corner of Speers and Bronte excluding the gas station. We are currently in the early planning stages but we expect to be developing the approximately 20 extra acres on the site that we do not use. I have attached a very rough draft layout. We will be working with the Region and the Town over the next several months on our plan. • We would like to be considered a major stakeholder for the Speers EA and kept informed of your plans. • At this point we would like to see additional lanes on Speers at the west end to better accommodate the existing traffic and to also be able to handle the additional traffic from the new construction east of us on Speers and from our future development.
21	• We would like to be kept apprised of the outcomes of tonight's meeting and any potential impact of the proposed improvements on our site. As indicated in the invitation to the community we expect to be advised of any future meetings regarding this subject study section of Speers Road.
22	• No curb side garbage placement on Speers. A uniform Town policy has to be developed and implemented. The larger businesses have private pick up. Smaller business in the 1400 to 1500 Speers Road vicinity and 4th Line and NW corner of Speers are abusing the curbside placement schedule. • The section of Speers between 4th Line and Kerr can be considered for intensification purposes (residential, industrial and commercial) as per the mandate imposed upon the Town by the Province. • Store front (retail) and pedestrian should be encouraged to further develop the aesthetic nature of the street.

4.0 Comment Summary

The key issues/ comments received (as identified in Table 1) are summarized below. These comments shall be incorporated into the identification and evaluation of the alternative design concepts.

1. General support for adding centre turn lane to Speers Road to increase traffic capacity.
2. Concern over property impact, particularly regarding adjacent parking spaces.
3. Intersection improvements via additional lanes.
4. Improvements to pedestrian and bicycling accommodations.
5. Streetscaping improvements.

APPENDIX 1

Public Information Centre Notification Materials

OAKVILLE **Vision – To be the most livable town in Canada**

PUBLIC INFORMATION CENTRE #1

May 1, 2008 – 6 – 8 p.m.
Town Hall, 1225 Trafalgar Road, Committee Room 1
Environmental Assessment for Speers Road Improvements (Bronte Road to Kerr Street)

The Town of Oakville is currently undertaking a Class Environmental Assessment for roadway improvements in the Speers Road corridor between Bronte Road and Kerr Street. The purpose of the Study is to address various issues including, but not limited to: Existing and future travel demand, land servicing needs, pedestrian, cycling and transit facilities, operational and infrastructure deficiencies, approved and proposed changes in land use

In developing a preferred design, consideration will be given to technical requirements of the Town, needs/concerns of the local community, as well as local environmental, social and economic constraints. The study is expected to be complete by the end of 2008.

In accordance with the planning process for Schedule "C" projects under the Municipal Class Environmental Assessment, October 2000, as Amended in 2007, this Public Information Centre (PIC) is being held to present and obtain comments on the problem statement and broad level planning solutions. Interested members of the public, local business community and agencies are encouraged to attend. Information pertaining to the Study will be on display and members of the project team on hand to discuss any issues/concerns you may have.

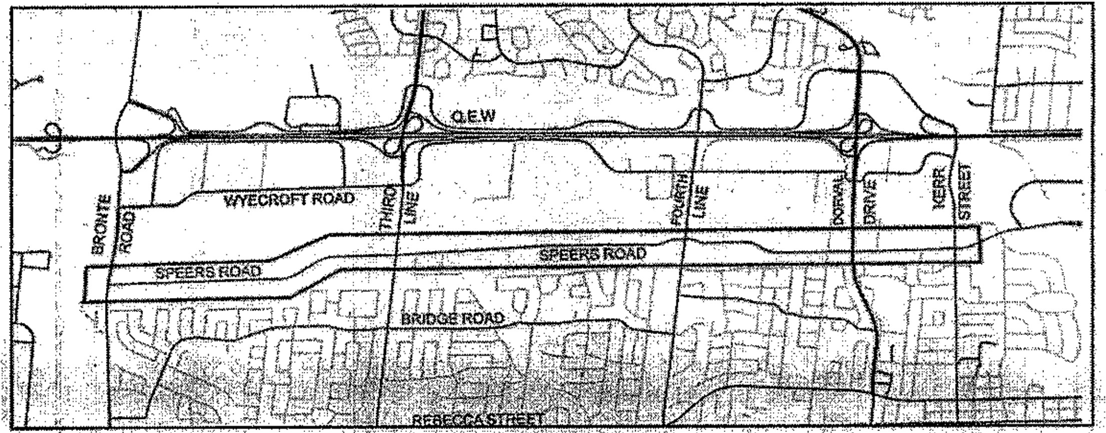
Following the PIC, the Preferred Planning Solution will be confirmed based on comments received from the public, local business community, government agencies, municipal staff and the consultant design team. A second PIC will be held in the near future to present and obtain comments on a recommended design concept for the subject portion of Speers Road. Notification will be provided at the appropriate time.

If you are unable to attend the PIC and would like to submit comments/obtain further information on the Study, please contact one of the following project team members:

Mr. Irfan Arab, Senior Project Leader, Engineering and Construction Dept., Town of Oakville, PO Box 310, 1225 Trafalgar Road, Oakville, ON L6J 5A6. Tel: 905-845-6601 x3312 Fax: 905-338-4159. Email: iarab@oakville.ca.

Mr. Manoj Dilwaria, Principal Transportation Division, Delcan Corporation, 4056 Dorchester Road, Niagara Falls, ON L2E 6M9. Tel: 905-356-7003 x231 Fax: 905-356-7008. Email: m.dilwaria@delcan.com

Information will be collected in accordance with the Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record.



PUBLIC MEETING #2

Wednesday, April 30, 2008 – 6 – 8 p.m.
rwood Public School,

outlined in the Municipal Engineers Association Municipal Class Environmental Assessment document (October 2000, as amended in 20 The Class EA process includes

4056 Dorchester Road, Niagara Falls, ON L2E 6M9
Tel: 905.356.7003 • Fax: 905.356.7008
www.delcan.com

April 14, 2008

OUR REF: TN-1340-TN-A00

Mr. Simon Tam
Manager of Traffic Operations
Corporation of the Town of Oakville
Roads & Works Operations Department
P.O. Box 310
1225 Trafalgar Road
Oakville, ON L6J 5A6

Dear Mr. Tam:

Re.: Notice of Public Information Centre - Environmental Assessment for Speers Road Improvements, Bronte Road to Kerr Street

---

The Town of Oakville is currently undertaking a Class Environmental Assessment for roadway improvements in the Speers Road corridor between Bronte Road and Kerr Street. The purpose of the Study is to address various issues including, but not limited to:

- Existing and future travel demand
- Land servicing needs
- Pedestrian, cycling and transit facilities
- Operational and infrastructure deficiencies
- Approved and proposed changes in land use

In developing a preferred design, consideration will be given to technical requirements of the Town, needs/concerns of the local community, as well as local environmental, social and economic constraints. The study is expected to be complete by the end of 2008.

In accordance with the planning process for Schedule "C" projects under the *Municipal Class Environmental Assessment, October 2000, as Amended in 2007*, a Public Information Centre (PIC) is being held to present and obtain comments on the problem statement and broad level planning solutions. Interested members of the public, local business community and agencies are encouraged to attend. Information pertaining to the Study will be on display and members of the project team on hand to discuss any issues/concerns you may have.

The PIC is scheduled for:

Date: **May 1, 2008**
Time: **6:00 p.m. to 8:00 p.m.**
Location: **Committee Room #1, Oakville Town Hall**
1225 Trafalgar Road
Oakville, ON

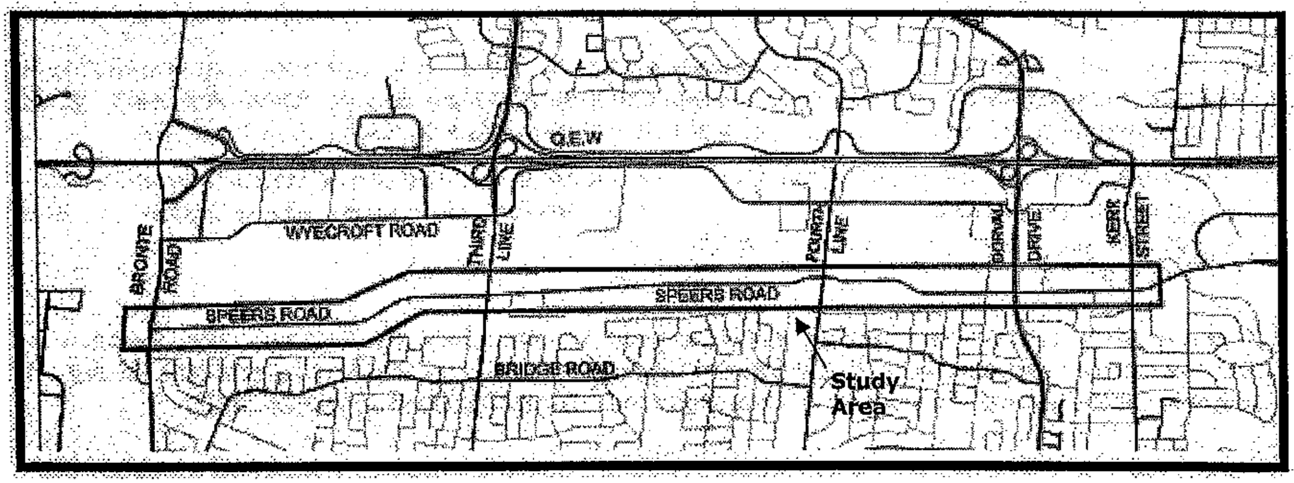
Following the PIC, the Preferred Planning Solution will be confirmed based on comments received from the public, local business community, government agencies, municipal staff and the consultant design team. A second PIC will be held in the near future to present and obtain comments on a recommended design concept for the subject portion of Speers Road. Notification will be provided at the appropriate time.

If you have any questions or concerns regarding this project or the preceding information, please contact either myself directly at (905) 356-7003, x228, (a.mcgregor@delcan.com) or Irfan Arab, Project Manager, Town of Oakville, at (905) 845-6601 x3312 (iarab@oakville.com).

Yours truly,

DELCAN Corporation

Andrew McGregor, B.A.
Environmental Assessment Planner, Transportation Division



cc: Irfan Arab – Town of Oakville
Manoj Dilwaria – Delcan Corporation
Barb Slattery – Ministry of the Environment

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TECHNICAL AGENCY/STAKEHOLDER CONTACT LIST
SPEERS ROAD CLASS ENVIRONMENTAL ASSESSMENT
Public Information Centre No. 1

Agency	Contact
PROVINCIAL MINISTRIES	
Ministry of Natural Resources Aurora District 51 Bloomington Road West, RR2 Aurora, ON L4G 3G8	Ms. Jackie Burkart Resource Management Technician
Ministry of Natural Resources Aurora District 51 Bloomington Road West, RR2 Aurora, ON L4G 3G8	Mr. Warren May Halton Area Biologist
Ministry of Environment Air, Pesticides and Environmental Planning 5775 Yonge Street, 8th Floor North York, ON M2M 4J1	Mr. Alex Philips Environment Resource Planner
Ministry of Environment 12th Flr 119 King St W Hamilton ON L8P 4Y7	Ms. Barb Slattery Environment Resource Planner/EA Coordinator
Ministry of Culture 400 University Avenue, 4th Floor Toronto, ON M7A 2R9	Ms. Catherine Capella Archaeological Review Officer
Ministry of Transportation Central Region 1201 Wilson Avenue, 7th Floor Building D Downsview, ON M3M 1J8	Mr. Richard Yeung Corridor Management Engineer
Ministry of Transportation Central Region 1201 Wilson Avenue, 7th Floor Building D Downsview, ON M3M 1J8	Mr. Roger Hamner Regional Director
Halton Region Conservation Authority 2596 Brittannia Road West, R.R. #2 Milton, ON L9T 2X6	Ms. Leah Smith Environmental Planner
MUNICIPALITIES	
The Regional Municipality of Halton 1151 Bronte Road Oakville, ON L6M 3L1	Mr. Andrew Head Planning & Public Works Manager of Transportation Services
Corporation of the Town of Oakville P.O. Box 310 1225 Trafalgar Road Oakville, ON L6J 5A6	Mr. Enrico Scalera Manager of Design & Construction
Corporation of the Town of Oakville P.O. Box 310 1225 Trafalgar Road Oakville, ON L6J 5A6	Mr. Dave Wong Traffic Engineering Coordinator

Agency	Contact
Corporation of the Town of Oakville P.O. Box 310 1225 Trafalgar Road Oakville, ON L6J 5A6	Mr. Simon Tam Manager of Traffic Operations Roads & Works Operations Department
Corporation of the Town of Oakville P.O. Box 310 1225 Trafalgar Road Oakville, ON L6J 5A6	Mr. Chris Clapham Sustainable Transportation, Engineering & Construction
Corporation of the Town of Oakville P.O. Box 310 1225 Trafalgar Road Oakville, ON L6J 5A6	Ms. Tricia Collingwood Planner Planning Services Department
Corporation of the Town of Oakville P.O. Box 310 1225 Trafalgar Road Oakville, ON L6J 5A6	Ms. Janis Olbina Manager of Park Planning & Development
Oakville Fire Department 125 Randall Street Oakville, ON L6J 1P3	Mr. Brian Durdin Assistant Deputy Chief
Oakville Transit P.O. Box 310 1225 Trafalgar Road Oakville, ON L6J 5A6	Ms. Joanne Phoenix Manager of Planning & Accessible Services
Halton Regional Police Service P.O. Box 2700 Oakville ON L6J 5C7	Chief Gary Crowell
Halton Region Emergency Medical Services 1179 Bronte Road Oakville, ON L6M 4G3	Mr. John Pereira Manager of Operations
Halton District School Board P.O. Box 5005 2050 Guelph Line Burlington, ON L7R 3Z2	Ms. Elaine Westerhof Manager of Planning
Halton Catholic District School Board P.O. Box 5308 802 Drury Lane Burlington, ON L7R 3Y2	Mr. Alex Duffield Administrator of Facilities
UTILITIES	
Oakville Hydro Corporation P.O. Box 1900 861 Redwood Square Oakville, ON L6J 5E3	Mr. William Chan
Union Gas 360 Strathearne Avenue P.O. Box 10 Hamilton, Ontario L8N 3A5	Mr. Enzo Greco Construction Projects Team Lead, Hamilton-Halton
Bell Canada 20 Hunter Street West, Flr 6 Hamilton, ON L8N 3H2	Ms. Carol Goossens
Blink Communications P.O. Box 1900 861 Redwood Square Oakville, ON L6J 5E3	Mr. Terry Crawford Director of Facilities and Infrastructure

Agency	**Contact**
Cogeco Cable 695 Lawrence Road Hamilton, ON L8K 6P1	Ms. Lynanne Cane Planning Coordinator
INTEREST GROUPS	
Halton E.E.A.C. C/O Region Of Halton 1151 Bronte Road Oakville, ON L6M 3L1	Mr. Jason Scott Senior Environmental Planner

APPENDIX 2

Public Information Centre Display Materials

WELCOME

Class Environmental Assessment Study

Speers Road Improvements
From Bronte Road to Kerr Street

Public Information Centre No. 1
May 1, 2008
6:00 p.m. to 8:00 p.m.

Delcan OAKVILLE

WHAT IS THE PURPOSE OF THIS PUBLIC INFORMATION CENTRE?

The Town of Oakville is currently undertaking a Class Environmental Assessment (EA) Study to identify improvements required for Speers Road from Bronte Road to Kerr Street in the Town of Oakville.

The Town is holding this Public Information Centre to:

⇨ Introduce the study and provide an opportunity for the public to review the study issues.

⇨ Obtain public input on the following:
  - Study approach and planning process being followed;
  - Study problem statement and issues being addressed;
  - Recommended planning solution;
  - Evaluation criteria that will be used to select a recommended design.

All comments received will be considered in establishing a preferred design for the subject portion of Speers Road.

HOW CAN I PARTICIPATE?

- ⇨ Please take a moment to register your name on the sign-in sheet provided.
- ⇨ Review all of the materials on display.
- ⇨ Ask any questions you may have to members of the Study Team.
- ⇨ Please fill out a comment sheet and leave it in the box provided at the registration table. Alternatively you can mail, fax or e-mail your comments to one of the Project Team members identified on the comment sheet.

We appreciate your time and interest in this study and thank you for attending the public information centre.

Mr. Irfan Arab, M.A.Sc., P.Eng.
Senior Project Leader
Engineering and Construction Dept.

Town of Oakville
PO Box 310, 1225 Trafalgar Road
Oakville, Ontario
L6J 5A6
Phone: (905) 845-6601 x3312
Fax: (905) 338-4159
Email: iarab@oakville.ca

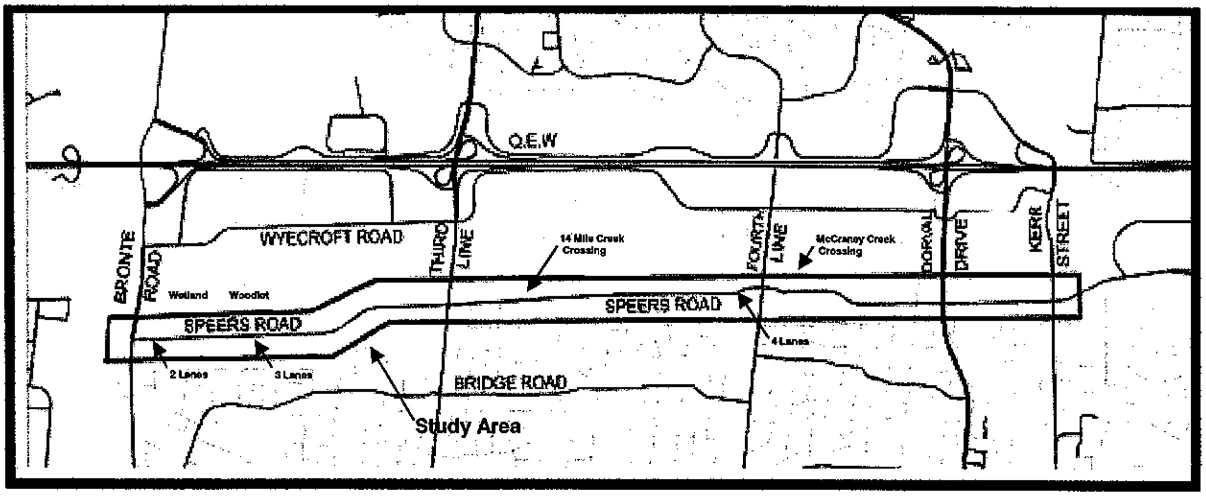
Mr. Manoj Dilwaria
B. Eng., M. Pl. (Transp.), MCIP, RPP, AVS
Principal

Delcan Corporation
4056 Dorchester Road
Niagara Falls, Ontario
L2E 6M9
Phone: (905) 356-7003, Ext. 231
Fax: (905) 356-7008
Email: m.dilwaria@delcan.com

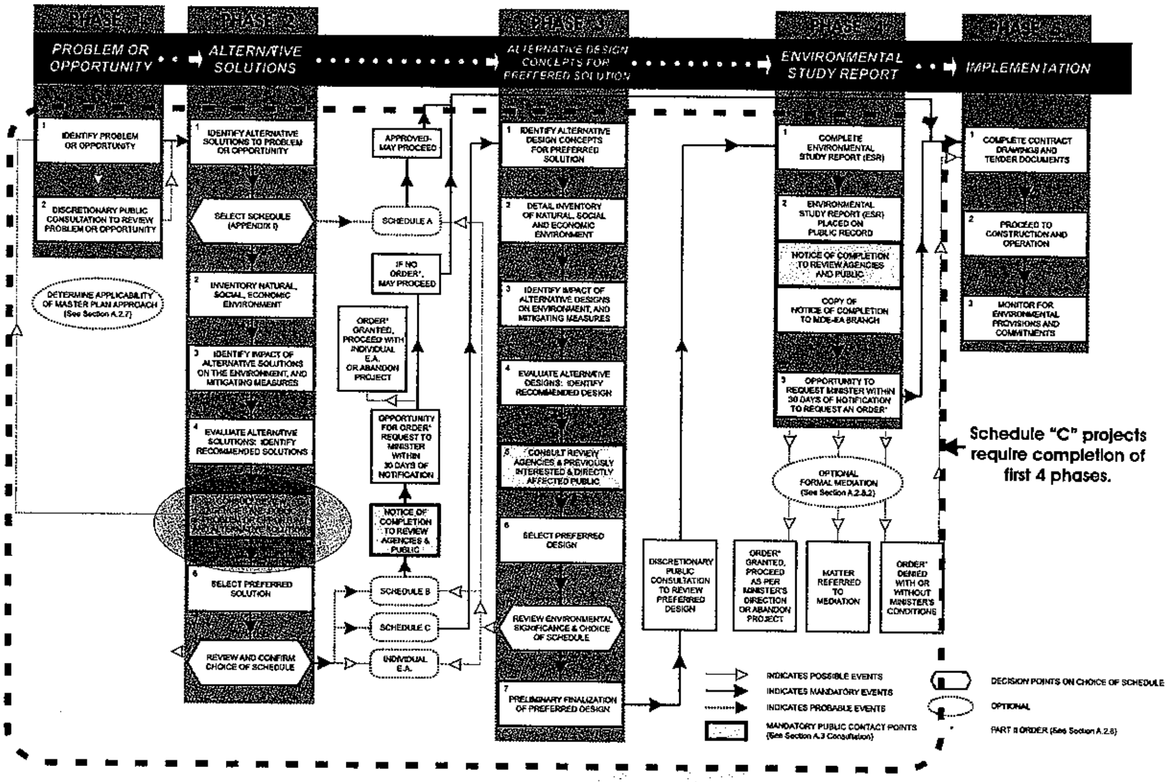
We encourage you to provide comments on the study.

STUDY AREA

- ⇨ The study area includes a 6 km section of Speers Road from Bronte Road to Kerr Street in the Town of Oakville.
- ⇨ Starting at Bronte Road heading east, Speers Road transitions from 2 lanes to 3 lanes to 4 lanes with turning lanes at the major intersections.
- ⇨ Functionally designated as a Multi Use Arterial, serving east/west traffic flows, under the jurisdiction of the Town of Oakville.
- ⇨ The posted speed limit is 60 km/hr.
- ⇨ Land surrounding the subject portion of Speers Road is primarily commercial and forms part of the "QEW West Employment District".
- ⇨ The subject portion of Speers Road contains two watercourse crossings - Fourteen Mile Creek and McCraney Creek, as well as a wetland and woodlot northeast of the Bronte Road intersection.



CLASS ENVIRONMENTAL ASSESSMENT PROCESS



- ⇨ The "Class Environmental Assessment (EA)" process is a formal planning process approved under the *Ontario Environmental Assessment Act* that must be undertaken in advance of road, water and wastewater construction projects.
- ⇨ The process ensures that all reasonable alternatives are considered and that a selected alternative would have minimal impact on the surrounding environment.
- ⇨ This project is being planned as a "Schedule C" Class EA project.

WHY ARE WE UNDERTAKING THIS PROJECT?

The Town of Oakville has initiated this Class EA Study to address a number of issues along the Speers Road corridor:

- ⇨ *Existing/future traffic capacity deficiencies*
- ⇨ *Need for improved public transit facilities*
- ⇨ *Need for safety improvements via access management*
- ⇨ *Inadequate cyclist and pedestrian facilities*
- ⇨ *Structural deficiencies and deteriorating pavement conditions*
- ⇨ *Streetscape aesthetics/landscaping requirements*
- ⇨ *Roadway drainage*

In addressing the above issues comprising the Study "Problem Statement", consideration will be given to factors such as operational effectiveness, local environmental, socio-economic and cost constraints.

TRAFFIC AND SAFETY ANALYSES

- ⇨ **Average Annual Daily Traffic (AADT) volumes on Speers Road varies from 10,000 to 25,000 vehicles/day.**
- ⇨ **Speers Road corridor experiences congestion during typical Weekday AM and PM peak periods.**
- ⇨ **593 collisions were reported within the study area between Jan 1, 2002 and Dec 31, 2006:**
  - 55% of all collisions occurred between intersections;
  - Collision frequency is increased when driveways are frequent and closely spaced;
  - Highest collision frequency occurs between York Street and Morden Road – this is a highly commercialized area with numerous driveways;
  - Majority of collisions (40%) were rear-end collisions followed by turning movement (at 34%) and sideswipe collisions;
  - Majority of rear-end and turning movement collisions were related to turning movements at driveways; and
  - Queuing in the eastbound left turn lane at Dorval Drive has resulted in vehicle queues extending beyond Morden Road and has led to collisions.

PLANNING ALTERNATIVES

In accordance with the *Ontario Environmental Assessment Act,* all reasonable planning alternatives (except "Do Nothing") were developed to address the Problem Statement.

1. *Alleviate traffic congestion along Speers Road by improving adjacent road networks (e.g. Rebecca Street)*

2. *Increase traffic capacity along Speers Road by adding through and turn lanes*

3. *Alleviate traffic congestion along Speers Road by accommodating other modes of travel (e.g. transit, cycling, walking)*

4. *Implement various non-structural improvements (e.g. signing, traffic optimization or traffic control) along Speers Road*

5. *Do nothing*

EVALUATION CRITERIA

Following the identification of alternative planning solutions, the Project Team considered a number of criteria (representing the broad definition of the environment as described in the EA Act) to comparatively evaluate the alternative solutions.

Transportation

How does the alternative serve the expected vehicular, transit, pedestrian and cycling traffic?

Socio-economic Environment

How does the alternative affect the commercial properties abutting the road (driveways/access, on-site parking, property impacts, streetscaping/beautification potential)?

Natural & Cultural Heritage Environment

How does the alternative affect fish habitat, vegetation, noise, air quality and archaeological/heritage resources?

EVALUATION OF PLANNING ALTERNATIVES

Planning Alt. 1 ***(Improve Adjacent Roads)***	**Planning Alt. 2** ***(Provide Additional Traffic Lanes)***	**Planning Alt. 3** ***(Accommodate Other Travel Modes)***	**Planning Alt. 4** ***(Non-Structural Improvements)***	**Planning Alt. 5** ***(Do Nothing)***
⇨ *Would alleviate traffic congestion on Speers Road but does not address transit operations, safety, or pedestrian and cyclist requirements.* ⇨ *Negative impacts along parallel corridors (e.g. residential infilling, negative air quality impacts).* ⇨ *Streetscaping/aesthetic requirements along Speers Road not addressed.*	⇨ **Positive impact on overall vehicular traffic operations.** ⇨ **Potential to accommodate future HOV operations.** ⇨ **Transit operations would benefit from increased traffic capacity.** ⇨ *Potential for significant property impacts.* ⇨ **Reduction in traffic congestion could improve air quality.**	⇨ *Does not adequately address existing/future traffic capacity deficiencies.* ⇨ **Encourages increased transit use, cycling and walking.** ⇨ *User safety issues due to driveway access would not be improved.* ⇨ **Positive impact on air quality.**	⇨ **Provides minor improvements to local traffic operations.** ⇨ *Does not address pedestrian/cyclist requirements.* ⇨ **Minimal socio-economic impacts.** ⇨ **Streetscaping / aesthetic improvements would be addressed.**	⇨ *Traffic capacity deficiencies will continue to degrade. Congestion will increase.* ⇨ *Does not address transit operations or pedestrian and cyclist requirements.* ⇨ *Does not address streetscaping/ aesthetic requirements.* ⇨ *Poor air quality from congestion.*
Not Recommended to be Carried Forward	**Recommended to be Carried Forward**	**Recommended to be Carried Forward**	**Recommended to be Carried Forward**	**Not Recommended to be Carried Forward**

Legend

Advantage / *Disadvantage*

Speers Road Improvements
Class Environmental Assessment Study
Bronte Road to Kerr Street

Delcan OAKVILLE

RECOMMENDED SOLUTION

Based on the advantages vs. disadvantages of each of the Planning Alternatives, the following alternatives were recommended to be carried forward in the study:

2. *Increase traffic capacity along Speers Road by adding through and turn lanes*

3. *Alleviate traffic congestion along Speers Road by accommodating other modes of travel (e.g. transit, cycling, walking)*

4. *Implement various non-structural improvements (e.g. signing, traffic optimization or traffic control) along Speers Road*

Speers Road Recommended Solution

"Increase traffic capacity along Speers Road through the addition of through / turn lanes and help alleviate congestion through the accommodation of transit users, cyclists, and pedestrians and the implementation of non-structural improvements including better signage and traffic control."

WHAT ARE THE NEXT STEPS IN THE STUDY?

Following this first Public Information Centre, the Town of Oakville and its consultant, Delcan, will:

- Review all comments received and confirm/adjust the *Recommended Solution*.
- Develop alternative design concepts to implement the recommended solution.
- Complete environmental inventory of the area and identify the net impacts of the alternative design concepts on the environment, undertake a comparative evaluation and select a recommended design.
- Present the alternative and recommended design concepts at the next PIC (Fall 2008).
- Confirm the recommended design concept based on comments received.
- File Environmental Study Report.

Thank you for attending tonight's public information centre. Please complete a comment sheet following your review of the displays.

APPENDIX I-5 - TECHNICAL AGENCIES COMMITTEE MEETING #2

4056 Dorchester Road, Niagara Falls, ON L2E 6M9
Tel: 905.356.7003 • Fax: 905.356.7008
www.delcan.com

November 28, 2008

OUR REF: TN-1340-TN-A00

Dear Sir/Madam:

R.e. Environmental Assessment Study for Speers Road Improvements, Bronte Road to Kerr Street – Technical Agencies Committee Meeting No. 2 Invitation

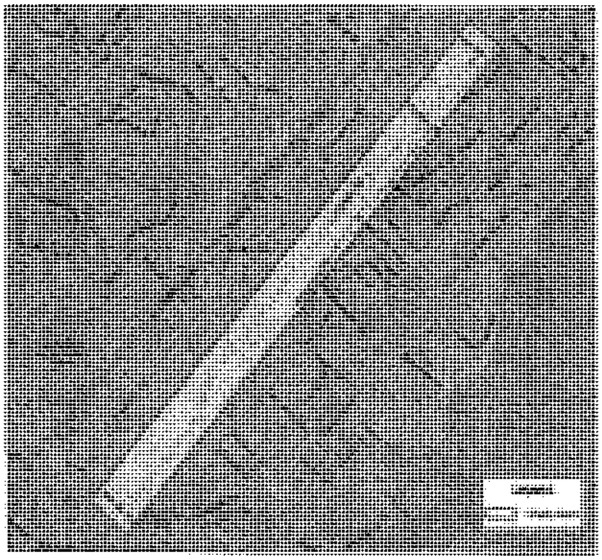
---

The Town of Oakville is currently undertaking a Class Environmental Assessment for roadway improvements in the Speers Road corridor between Bronte Road and Kerr Street. The purpose of the study is to address various issues including, but not limited to:

- Existing and future travel demands
- Pedestrian, cycling and transit requirements
- Operational and infrastructure deficiencies
- Approved and proposed changes in land use

The study is following the *Municipal Class Environmental Assessment, October 2000, as amended in 2007*. A key component of the study involves consultation with interested stakeholders (public, regulatory agencies and interest groups).

At the beginning of the study, a meeting was held on April 17, 2008 with a Technical Agencies Committee (TAC) comprised of individuals from differing areas of interest to develop a better understanding of the study area. Subsequent to this meeting, the project team has identified a preliminary recommended design for the subject portion of Speers Road. In developing this design, the project team considered technical requirements of the Town, input from key stakeholders and technical agencies, as well as local environmental and economic constraints.



As part of the study, a **second TAC Meeting has been scheduled for December 11, 2008 from 10:30 pm to 12:00 pm**, in the Engineering Boardroom, Oakville Town Hall (1225 Trafalgar Road, Oakville). The meeting will be set up as an informal workshop in which participants will be encouraged to comment on the following:

- Study Problem Statement;
- Alternatives developed to address the Study Problem Statement;
- Project Team's preliminary recommended design;
- Evaluation process undertaken; and
- Next steps in the study.

To help us prepare for this meeting, please complete the attached form and forward it by fax, phone or email to **Andrew McGregor**.

If you have any questions or concerns regarding this project or the preceding information, please contact either myself directly at (905) 356-7003, x228 (a.mcgregor@delcan.com) or Irfan Arab, Project Manager, Town of Oakville, at (905) 845-6601 x3312 (iarab@oakville.com).

Thank you for your assistance with this project. We respectively request a response by December 5, 2008.

Yours truly,

DELCAN Corporation

Andrew McGregor, B.A.
Environmental Assessment Planner, Transportation Division

cc: Irfan Arab – Town of Oakville
Manoj Dilwaria – Delcan Corporation

Attch.

RESPONSE TO REQUEST FOR PARTICIPANTS
TECHNICAL AGENCIES MEETING NO. 2

Please circle the appropriate response:

Yes	**No**	My group/agency is interested in participating in the second Technical Agencies Committee Meeting for the Speers Road Class EA Study.
Yes	**No**	My group/agency is not interested in participating at this time, but would like to be kept informed of progress in this study. Please leave my group/agency on the mailing list for this project.
Yes	**No**	My group/agency is not interested in participating in the second Technical Agencies Committee Meeting for the Speers Road Class EA Study. Please take my group/agency off the mailing list for this project.

We have identified an appropriate participant for this study from our group/agency. This person is:

NAME: ____________________

GROUP/AGENCY & TITLE: ____________________

PHONE (DAYTIME): ____________________

EMAIL: ____________________

PLEASE RESPOND TO THE REQUEST FOR PARTICIPATION EITHER BY:

- ⇒ **FAX (905) 356- 7008**
- ⇒ **PHONE (905) 356-7003, Ext. 228**
- ⇒ **EMAIL: a.mcgregor@delcan.com**

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TECHNICAL AGENCIES COMMITTEE MEETING #2

DATE: Thursday, December 11, 2008

LOCATION: Engineering Boardroom, Oakville Town Hall

TIME: 10:30 a.m. – 12:00 p.m.

AGENDA

1. ***Introductions***
2. ***Study Overview***
   - Purpose of the study
   - Planning process being followed
3. ***What Has Been Completed to Date?***
   - Study problem statement/identification of key issues
   - First Public Information Centre/Stakeholder Group Meeting/TAC meeting
   - Identification of a preferred planning solution
   - Identification of a preliminary recommended design
4. ***Recommended Design***
   - ***Input from committee members***
5. ***Next Steps***

APPENDIX I-6 - STAKEHOLDERS GROUP MEETING #2

4056 Dorchester Road, Niagara Falls, ON L2E 6M9
Tel: 905.356.7003 • Fax: 905.356.7008
www.delcan.com

November 28, 2008

OUR REF: TN-1340-TN-A00

Dear Sir/Madam:

R.e. Environmental Assessment Study for Speers Road Improvements, Bronte Road to Kerr Street – Stakeholder Group Meeting No. 2 Invitation

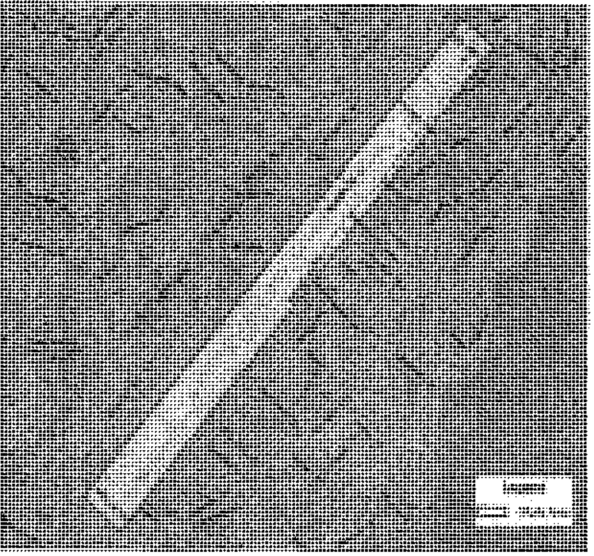
---

The Town of Oakville is currently undertaking a Class Environmental Assessment for roadway improvements in the Speers Road corridor between Bronte Road and Kerr Street. The purpose of the study is to address various issues including, but not limited to:

- Existing and future travel demands
- Pedestrian, cycling and transit requirements
- Operational and infrastructure deficiencies
- Approved and proposed changes in land use

The study is following the *Municipal Class Environmental Assessment, October 2000, as amended in 2007.* A key component of the study involves consultation with interested stakeholders (public, regulatory agencies and interest groups).

At the beginning of the study, a meeting was held on April 17, 2008 with a "Stakeholder Group" comprised of individuals from differing areas of interest to develop a better understanding of the study area. Subsequent to this meeting, the project team has identified a preliminary recommended design for the subject portion of Speers Road. In developing this design, the project team considered technical requirements of the Town, input from key stakeholders and technical agencies, as well as local environmental and economic constraints.



As part of the study, a **second Stakeholder Group Meeting has been scheduled for December 11, 2008 from 1:30 pm to 3:00 pm**, in the Engineering Boardroom, Oakville Town Hall (1225 Trafalgar Road, Oakville). The meeting will be set up as an informal workshop in which participants will be encouraged to comment on the following:

- Study Problem Statement;
- Alternatives developed to address the Study Problem Statement;
- Project Team's preliminary recommended design;
- Evaluation process undertaken; and
- Next steps in the study.

To help us prepare for this meeting, please complete the attached form and forward it by fax, phone or email to **Andrew McGregor**.

If you have any questions or concerns regarding this project or the preceding information, please contact either myself directly at (905) 356-7003, x228 (a.mcgregor@delcan.com) or Irfan Arab, Project Manager, Town of Oakville, at (905) 845-6601 x3312 (iarab@oakville.com).

Thank you for your assistance with this project. We respectively request a response by December 5, 2008.

Yours truly,

DELCAN Corporation

Andrew McGregor, B.A.
Environmental Assessment Planner, Transportation Division

cc: Irfan Arab – Town of Oakville
Manoj Dilwaria – Delcan Corporation

Attch.

RESPONSE TO REQUEST FOR PARTICIPANTS
STAKEHOLDER GROUP MEETING NO. 2

Please circle the appropriate response:

Yes **No** My group/agency is interested in participating in the second Stakeholder Group Meeting for the Speers Road Class EA Study.

Yes **No** My group/agency is not interested in participating at this time, but would like to be kept informed of progress in this study. Please leave my group/agency on the mailing list for this project.

Yes **No** My group/agency is not interested in participating in the second Stakeholder Group Meeting for the Speers Road Class EA Study. Please take my group/agency off the mailing list for this project.

We have identified an appropriate participant for this study from our group/agency. This person is:

NAME: ____________________

GROUP/AGENCY & TITLE: ____________________

PHONE (DAYTIME): ____________________

EMAIL: ____________________

PLEASE RESPOND TO THE REQUEST FOR PARTICIPATION EITHER BY:

⇒ **FAX (905) 356- 7008**
⇒ **PHONE (905) 356-7003, Ext. 228**
⇒ **EMAIL: a.mcgregor@delcan.com**

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STAKEHOLDER GROUP MEETING #2

DATE: Thursday, December 11, 2008

LOCATION: Engineering Boardroom, Oakville Town Hall

TIME: 1:30 a.m. – 3:00 p.m.

AGENDA

1. ***Introductions***
2. ***Study Overview***
   - Purpose of the study
   - Planning process being followed
3. ***What Has Been Completed to Date?***
   - Study problem statement/identification of key issues
   - First Public Information Centre/Stakeholder Group Meeting/TAC meeting
   - Identification of a preferred planning solution
   - Identification of a preliminary recommended design
4. ***Recommended Design***
   - ***Input from group members***
5. ***Next Steps***

APPENDIX I-7 - PUBLIC INFORMATION CENTRE #2 SUMMARY REPORT

Delcan

OAKVILLE

PUBLIC INFORMATION CENTRE NO. 2

SUMMARY REPORT

Speers Road, from Bronte Road to Kerr Street
Town of Oakville

CLASS ENVIRONMENTAL ASSESSMENT

JANUARY 2009

TN1340TNA00

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List of Tables

Appendices

1.0 Background

Public Information Centre (PIC) No. 1 for the Speers Road Class Environmental Assessment (EA) Study was held on December 17, 2008 from 6:00 p.m. to 8:00 p.m. at the Oakville Town Hall. The purpose of the PIC was to provide stakeholders, agencies and interested members of the public an opportunity to review and discuss the alternatives considered to address the identified deficiencies, and the Project Team's recommended design concept and evaluation process undertaken. Local area residents, property and business owners, and agencies were invited to attend via regular mail, flyers, and newspaper advertisements in the Oakville Beaver on Dec. 3 and Dec.10, 2008. All PIC notification materials are provided in **Appendix 1**.

The PIC was set up as a "drop-in" style information centre in which participants were encouraged to view the boards on display and to address their questions and concerns to members of the project team.

2.0 Display Materials

Information displays presented at the PIC included the following:

- WELCOME
- WHAT IS THE PURPOSE OF THIS PUBLIC INFORMATION CENTRE?
- HOW CAN I PARTICIPATE?
- STUDY AREA
- CLASS ENVIRONMENTAL ASSESSMENT PROCESS
- WHY ARE WE UNDERTAKING THIS PROJECT?
- ALTERNATIVE DESIGN CONCEPTS
- EVALUATION CRITERIA
- EVALUATION OF DESIGN ALTERNATIVES
- KEY FEATURES OF THE RECOMMENDED DESIGN
- WERE HOV AND QUEUE JUMP LANES CONSIDERED
- STORMWATER MANAGEMENT
- NATURAL ENVIRONMENT
- ARCHAEOLOGICAL CONSTRAINTS
- NOISE IMPACTS
- WHAT ARE THE NEXT STEPS IN THE STUDY?

The display materials presented are provided in **Appendix 2.** A large format baseplan (on aerial photography) was also displayed with the text boards mentioned above.

3.0 Attendance and Comment Summary

Those attending the PIC were requested to sign an attendance booklet and were encouraged to provide their written comments to the material presented. Attendance at the PIC included 23 individuals signing the attendance booklet. A summary of the comments submitted is provided in **Table 1**.

Table 1
Public Information Centre No. 2 Comments

Comment No.	Comment Submitted
1	• Yes, I agree with the preliminary recommendations. • A roadway upgrade is long overdue at the Speers/Bronte end. • Not safe to have cycling lanes in an industrial area.
2	• Yes, I agree with the preliminary recommendations • Curves on Speers on either side of Fourth Line should be reviewed for safety. Lost brother on these curves this past summer. • I support the overall scheme but these curves have always been ridiculous.
3	• No, I do not agree with the preliminary recommendations. • Speers Road should be aligned to the same height as the Kerr/Speers intersection to minimize the impact on existing residences and businesses on the south side of Speers. • Reducing the width of Speers by combining Bike/Car Lanes is dangerous. • There is a lot of property currently undergoing redevelopment on the north side.
4	• No, I do not agree with the preliminary recommendations. • Trees on north side of Speers between Woody and St. Augustine are not shown. • Protect existing trees wherever possible. • Will separate bike lanes be safe enough given the high volume and speed of traffic? • Consider moving Speers slightly north between St. Augustine and Kerr. • Our resident association is concerned that the dedicated westbound turning lane at Speers onto St. Augustine plus removal of the median and signalization will seem as a back door way to flow traffic off of Kerr on to Speers. • Specify permeable sidewalk paving to reduce excess runoff.
5	• Yes, I agree with the preliminary recommendations. • GreenTrans fully supports continuous marked bike lanes for the whole length of Speers Road. • A future preference would be for physically separated on-road bike lanes. • Good idea to have sidewalks well separated from the roadway. • Disappointed at the size of the roadway and the impact on existing trees. • Will ample boulevards allow for successful greenery plantives and transplanting of existing trees? • I would like an arborist's complete review of existing trees.
6	• Don't reduce parking areas. • Need parking for owners vehicles when snow removal is being carried out.
7	• Check measurements of sidewalk at 420 St. Augustine/Speers Road. • There is not any asphalt at property line but rather grass and a four storey Oak Tree.
8	• Yes, I agree with the preliminary recommendations. • Like the idea of separate turning lane. • Will be interested in selling 2 metres of land to Town
9	• No, I do not agree with the preliminary recommendations. • Frontage on 2060 Property must be able to accommodate large tractor trailer traffic (48 feet). • Access to laneway must be as wide as possible. • Consider elevation of road as drainage is already a problem. • With new factories and a new Go Station parking lot congestion at Bronte Road corner will get worse and should be looked at.
10	• No, I do not agree with the preliminary recommendations. • The proposed property impact of the road widening will result in our tractor/trailers overhanging the sidewalk and the road when loading, unloading and sealing the loads at 579 Speers Road. We receive 3 to 4 trucks per day.

	• Our loading doors are located on the front of the building and we require a minimum of 80 feet from our loading doors to the sidewalk. The tractor trailers we receive are 72 feet long and require a n 8 foot clearance to open/close trailer doors. • We currently have 84 feet from loading doors to sidewalk. The proposed changes would remove approximately 15 feet from the front of the property. • We would like to discuss this situation with you further and invite you to come to our location to review pictures and discuss concerns.

4.0 Consideration of Comments

The key issues/comments received (as presented in Table 1 above and further summarized below) will be addressed by the Project Team and evaluated for incorporation into the recommended design.

- Of the comments received, 4 were in support of the recommended design and 4 were against. Those who were not in support of the recommended design were generally concerned over negative impacts to adjacent businesses (parking, property requirements, operational restrictions etc.).
- Take advantage of development on the north side to reduce property impacts on south side.
- Minimize impacts to existing trees (e.g. large Oak at 420 Augustine).
- Concern over property impacts to homes near Augustine.
- Against dedicated westbound left turn lane at Augustine (residents fought to reduce traffic flow on Augustine).
- Support for measures to reduce excess runoff (e.g. permeable sidewalks).
- Existing road elevation causing drainage problems.
- Recommended design must accommodate large tractor trailors at 2060 and 579 Speers Road.
- Current plans show incorrect existing asphalt at property line at 420 Augustine.

APPENDIX 1

Public Information Centre Notification Materials

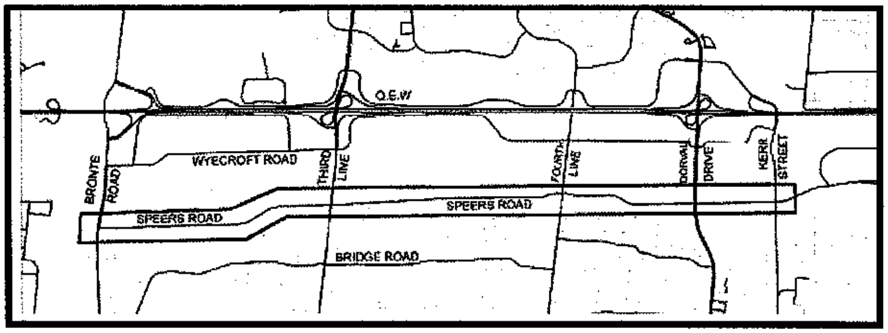
OAKVILLE

TOWN OF OAKVILLE
INVITATION TO PUBLIC INFORMATION CENTRE # 2

Class Environmental Assessment for Speers Road Improvements (Bronte Road to Kerr Street)

The Town of Oakville is currently undertaking a Class Environmental Assessment for roadway improvements in the Speers Road corridor between Bronte Road and Kerr Street. The study will consider various issues including, but not limited to:

- Existing and future travel demand
- Pedestrian, cycling and transit requirements
- Operational and infrastructure deficiencies
- Approved and proposed changes in land use



In accordance with the planning process for Schedule "C" projects under the *Municipal Class Environmental Assessment, October 2000, as Amended in 2007,* a Public Information Centre (PIC) was held on May 1, 2008 to present and obtain comments on the problem statement and broad level planning solutions.

Subsequent to the first PIC, the project team has identified a preliminary recommended design for the subject portion of Speers Road. In developing this design, the project team considered technical requirements of the Town, input from key stakeholders and technical agencies, as well as local environmental and economic constraints.

A second PIC is being held to present and obtain comments on the preliminary recommended design and related issues. Interested members of the public, local business community and agencies are encouraged to attend. Information pertaining to the Study will be on display and members of the project team will be present to discuss any issues or concerns you may have.

The PIC is scheduled for:

Date: **December 17, 2008**
Time: **6:00 p.m. to 8:00 p.m.**
Location: **Trafalgar/Oakville Room, Oakville Town Hall, 1225 Trafalgar Road, Oakville, ON**

Following the PIC, the Preferred Design will be confirmed based on comments received. If you are unable to attend the PIC and would like to submit comments/obtain further information on the Study, please contact one of the following project team members:

Mr. Irfan Arab, Senior Project Leader
Engineering and Construction Dept.
Town of Oakville
PO Box 310, 1225 Trafalgar Road
Oakville, ON L6J 5A6
Tel: (905) 845-6601 x3312
Fax: (905) 338-4159
Email: iarab@oakville.ca

Mr. Manoj Dilwaria, Principal
Transportation Division
Delcan Corporation
4056 Dorchester Road
Niagara Falls, ON L2E 6M9
Tel: (905) 356-7003 x231
Fax: (905) 356-7008
Email: m.dilwaria@delcan.com

Information will be collected in accordance with the Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record.

Delcan
TRANSPORTATION • INFORMATION TECHNOLOGY • WATER

4056 Dorchester Road, Niagara Falls, ON L2E 6M9
Tel: 905.356.7003 • Fax: 905.356.7008
www.delcan.com

OUR REF: TN-1340-TN-A00

Dear Sir/Madam:

Re.: Notice of Public Information Centre No. 2 - Environmental Assessment for Speers Road Improvements, Bronte Road to Kerr Street

---

The Town of Oakville is currently undertaking a Class Environmental Assessment for roadway improvements in the Speers Road corridor between Bronte Road and Kerr Street. The purpose of the Study is to address various issues including, but not limited to:

- Existing and future travel demand
- Pedestrian, cycling and transit requirements
- Operational and infrastructure deficiencies
- Approved and proposed changes in land use

In accordance with the planning process for Schedule "C" projects under the *Municipal Class Environmental Assessment, October 2000, as Amended in 2007*, a Public Information Centre (PIC) was held on May 1, 2008 to present and obtain comments on the problem statement and broad level planning solutions.

Subsequent to the first PIC, the project team has identified a preliminary recommended design for the subject portion of Speers Road. In developing this design, consideration was given to technical requirements of the Town, input from key stakeholders and technical agencies, as well as local environmental and economic constraints.

A second PIC is being held to present and obtain comments on the preliminary recommended design concept and related issues. Interested members of the public, local business community and agencies are encouraged to attend. Unlike a formal public meeting, the PIC will follow an "Open House" format with information on display and members of the project team on hand to answer questions.

The PIC is scheduled for:

Date: **December 17, 2008**
Time: **6:00 p.m. to 8:00 p.m.**
Location: **Committee Room #1, Oakville Town Hall**
1225 Trafalgar Road, Oakville, ON

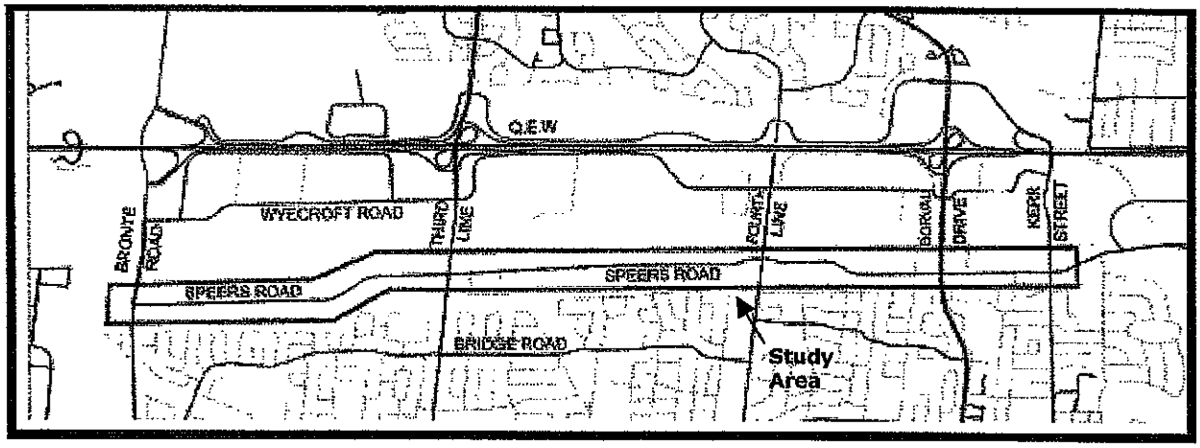
Following the PIC, the Preferred Design will be confirmed based on comments received from the public, local business community, government agencies, municipal staff and the consultant design team.

If you have any questions or concerns regarding this project or the preceding information, please contact either myself directly at (905) 356-7003, x228, (a.mcgregor@delcan.com) or Irfan Arab, Project Manager, Town of Oakville, at (905) 845-6601 x3312 (iarab@oakville.com).

Yours truly,

DELCAN Corporation

Andrew McGregor, B.A.
Environmental Assessment Planner, Transportation Division



cc: Irfan Arab – Town of Oakville
Manoj Dilwaria – Delcan Corporation
Barb Slattery – Ministry of the Environment

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Delcan
TRANSPORTATION • INFORMATION TECHNOLOGY • WATER

4056 Dorchester Road, Niagara Falls, ON L2E 6M9
Tel: 905.356.7003 • Fax: 905.356.7008
www.delcan.com

December 3, 2008

OUR REF: TN-1340-TN-A00

Mr. Dan Steele
Oakville Hydro Corporation
P.O. Box 1900
861 Redwood Square
Oakville, ON L6J 5E3

Dear Mr. Steele:

Re.: Notice of Public Information Centre No. 2 - Environmental Assessment for Speers Road Improvements, Bronte Road to Kerr Street

---

The Town of Oakville is currently undertaking a Class Environmental Assessment for roadway improvements in the Speers Road corridor between Bronte Road and Kerr Street. The purpose of the Study is to address various issues including, but not limited to:

- Existing and future travel demand
- Pedestrian, cycling and transit requirements
- Operational and infrastructure deficiencies
- Approved and proposed changes in land use

In accordance with the planning process for Schedule "C" projects under the *Municipal Class Environmental Assessment, October 2000, as Amended in 2007,* a Public Information Centre (PIC) was held on May 1, 2008 to present and obtain comments on the problem statement and broad level planning solutions.

Subsequent to the first PIC, the project team has identified a preliminary recommended design for the subject portion of Speers Road. In developing this design, consideration was given to technical requirements of the Town, input from key stakeholders and technical agencies, as well as local environmental and economic constraints.

A second PIC is being held to present and obtain comments on the preliminary recommended design concept and related issues. Interested members of the public, local business community and agencies are encouraged to attend. Unlike a formal public meeting, the PIC will follow an "Open House" format with information on display and members of the project team on hand to answer questions.

The PIC is scheduled for:

Date: **December 17, 2008**
Time: **6:00 p.m. to 8:00 p.m.**
Location: **Committee Room #1, Oakville Town Hall**
1225 Trafalgar Road, Oakville, ON

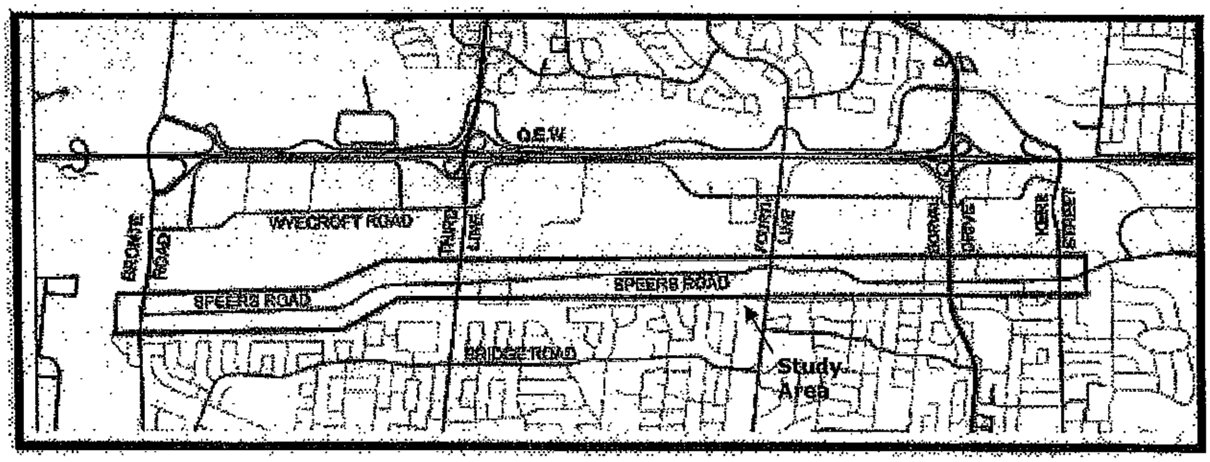
Following the PIC, the Preferred Design will be confirmed based on comments received from the public, local business community, government agencies, municipal staff and the consultant design team.

If you have any questions or concerns regarding this project or the preceding information, please contact either myself directly at (905) 356-7003, x228, (a.mcgregor@delcan.com) or Irfan Arab, Project Manager, Town of Oakville, at (905) 845-6601 x3312 (iarab@oakville.com).

Yours truly,

DELCAN Corporation

Andrew McGregor, B.A.
Environmental Assessment Planner, Transportation Division



cc: Irfan Arab – Town of Oakville
Manoj Dilwaria – Delcan Corporation
Barb Slattery – Ministry of the Environment

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TECHNICAL AGENCY/STAKEHOLDER CONTACT LIST
SPEERS ROAD CLASS ENVIRONMENTAL ASSESSMENT
Public Information Centre No. 1

Agency	Contact
PROVINCIAL MINISTRIES	
Ministry of Natural Resources Aurora District 51 Bloomington Road West, RR2 Aurora, ON L4G 3G8	Ms. Jackie Burkart Resource Management Technician
Ministry of Natural Resources Aurora District 51 Bloomington Road West, RR2 Aurora, ON L4G 3G8	Mr. Warren May Halton Area Biologist
Ministry of Environment Air, Pesticides and Environmental Planning 5775 Yonge Street, 8th Floor North York, ON M2M 4J1	Mr. Alex Philips Environment Resource Planner
Ministry of Environment 12th Flr 119 King St W Hamilton ON L8P 4Y7	Ms. Barb Slattery Environment Resource Planner/EA Coordinator
Ministry of Culture 400 University Avenue, 4th Floor Toronto, ON M7A 2R9	Ms. Catherine Capella Archaeological Review Officer
Ministry of Transportation Central Region 1201 Wilson Avenue, 7th Floor Building D Downsview, ON M3M 1J8	Mr. Richard Yeung Corridor Management Engineer
Ministry of Transportation Central Region 1201 Wilson Avenue, 7th Floor Building D Downsview, ON M3M 1J8	Mr. Roger Hamner Regional Director
Halton Region Conservation Authority 2596 Brittannia Road West, R.R. #2 Milton, ON L9T 2X6	Ms. Leah Smith Environmental Planner
MUNICIPALITIES	
The Regional Municipality of Halton 1151 Bronte Road Oakville, ON L6M 3L1	Mr. Andrew Head Planning & Public Works Manager of Transportation Services
The Regional Municipality of Halton 1151 Bronte Road Oakville, ON L6M 3L1	Mr. Matt Krusto Planning & Public Works
Corporation of the Town of Oakville P.O. Box 310 1225 Trafalgar Road Oakville, ON L6J 5A6	Mr. Enrico Scalera Manager of Design & Construction

Agency	Contact
Corporation of the Town of Oakville P.O. Box 310 1225 Trafalgar Road Oakville, ON L6J 5A6	Mr. Dave Wong Traffic Engineering Coordinator
Corporation of the Town of Oakville P.O. Box 310 1225 Trafalgar Road Oakville, ON L6J 5A6	Mr. Simon Tam Manager of Traffic Operations Roads & Works Operations Department
Corporation of the Town of Oakville P.O. Box 310 1225 Trafalgar Road Oakville, ON L6J 5A6	Mr. Chris Clapham Sustainable Transportation, Engineering & Construction
Corporation of the Town of Oakville P.O. Box 310 1225 Trafalgar Road Oakville, ON L6J 5A6	Ms. Tricia Collingwood Planner Planning Services Department
Corporation of the Town of Oakville P.O. Box 310 1225 Trafalgar Road Oakville, ON L6J 5A6	Ms. Janis Olbina Manager of Park Planning & Development
Oakville Fire Department 125 Randall Street Oakville, ON L6J 1P3	Mr. Brian Durdin Assistant Deputy Chief
Oakville Transit P.O. Box 310 1225 Trafalgar Road Oakville, ON L6J 5A6	Ms. Joanne Phoenix Manager of Planning & Accessible Services
Halton Regional Police Service P.O. Box 2700 Oakville ON L6J 5C7	Chief Gary Crowell
Halton Region Emergency Medical Services 1179 Bronte Road Oakville, ON L6M 4G3	Mr. John Pereira Manager of Operations
Halton District School Board P.O. Box 5005 2050 Guelph Line Burlington, ON L7R 3Z2	Ms. Elaine Westerhof Manager of Planning
Halton Catholic District School Board P.O. Box 5308 802 Drury Lane Burlington, ON L7R 3Y2	Mr. Alex Duffield Administrator of Facilities
UTILITIES	
Oakville Hydro Corporation P.O. Box 1900 861 Redwood Square Oakville, ON L6J 5E3	Mr. Dan Steele
Union Gas 360 Strathearne Avenue P.O. Box 10 Hamilton, Ontario L8N 3A5	Mr. Enzo Greco Construction Projects Team Lead, Hamilton-Halton
Bell Canada 20 Hunter Street West, Flr 6 Hamilton, ON L8N 3H2	Ms. Carol Goossens

Agency	Contact
Blink Communications P.O. Box 1900 861 Redwood Square Oakville, ON L6J 5E3	Mr. Terry Crawford Director of Facilities and Infrastructure
Cogeco Cable 695 Lawrence Road Hamilton, ON L8K 6P1	Ms. Lynanne Cane Planning Coordinator
INTEREST GROUPS	
Halton E.E.A.C. C/O Region Of Halton 1151 Bronte Road Oakville, ON L6M 3L1	Mr. Jason Scott Senior Environmental Planner
GO Transit Transportation Planning & Development Office 20 Bay Street, Suite 600 Toronto, ON M5J 2W3	Dan Francey Manager

APPENDIX 2

Public Information Centre Display Materials

WELCOME

Class Environmental Assessment Study

Speers Road Improvements
From Bronte Road to Kerr Street

Public Information Centre No. 2
December 17, 2008
6:00 p.m. to 8:00 p.m.

Delcan
OAKVILLE

WHAT IS THE PURPOSE OF THIS PUBLIC INFORMATION CENTRE?

The Town of Oakville is currently undertaking a Class Environmental Assessment (EA) Study to identify improvements required for Speers Road from Bronte Road to Kerr Street in the Town of Oakville.

This Public Information Centre is the second to be held for this study and is a forum for you to become informed of, and provide feedback on:

- ⇨ Current and future traffic operational issues along Speers Road;
- ⇨ The alternatives considered to address the identified deficiencies; and
- ⇨ The Project Team's recommended design concept and the evaluation process undertaken.

Please direct any questions and/or comments you may have to members of the Project Team. We encourage you to complete a comment form following your review of the displays. All comments received will be considered in establishing a preferred design for the subject portion of Speers Road.

HOW CAN I PARTICIPATE?

- ⇨ Please take a moment to register your name on the sign-in sheet provided.
- ⇨ Review all of the materials on display.
- ⇨ Ask any questions you may have to members of the Study Team.
- ⇨ Please fill out a comment sheet and leave it in the box provided at the registration table. Alternatively you can mail, fax or e-mail your comments to one of the Project Team members identified on the comment sheet.

We appreciate your time and interest in this study and thank you for attending the public information centre.

Mr. Irfan Arab, P.Eng.
Senior Project Leader
Engineering and Construction Dept.

Town of Oakville
PO Box 310, 1225 Trafalgar Road
Oakville, Ontario
L6J 5A6
Phone: (905) 845-6601 x3312
Fax: (905) 338-4159
Email: iarab@oakville.

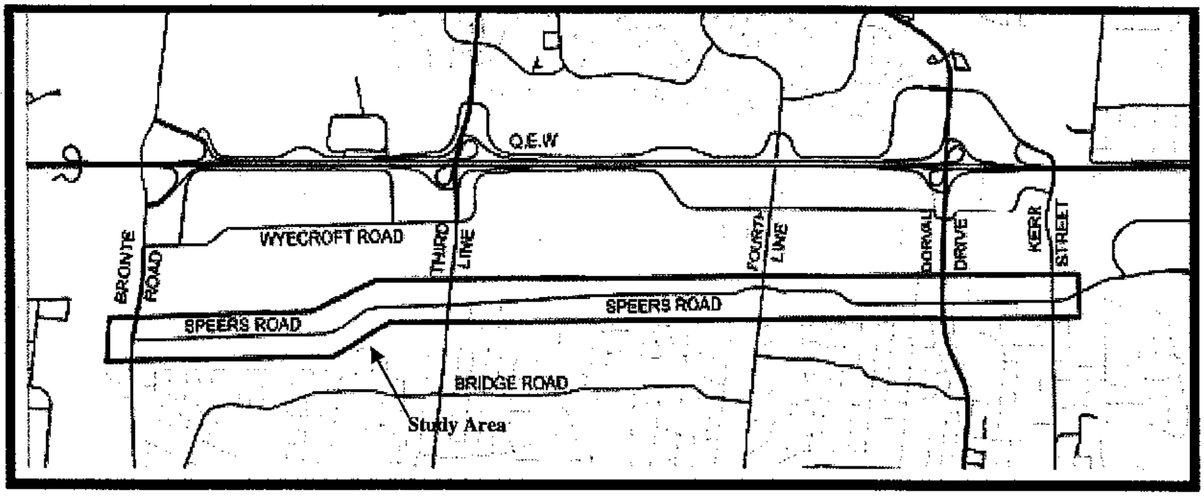
Mr. Manoj Dilwaria
B. Eng., M. Pl. (Transp.), MCIP, RPP, AVS
Principal

Delcan Corporation
4056 Dorchester Road
Niagara Falls, Ontario
L2E 6M9
Phone: (905) 356-7003, Ext. 231
Fax: (905) 356-7008
Email: m.dilwaria@delcan.com

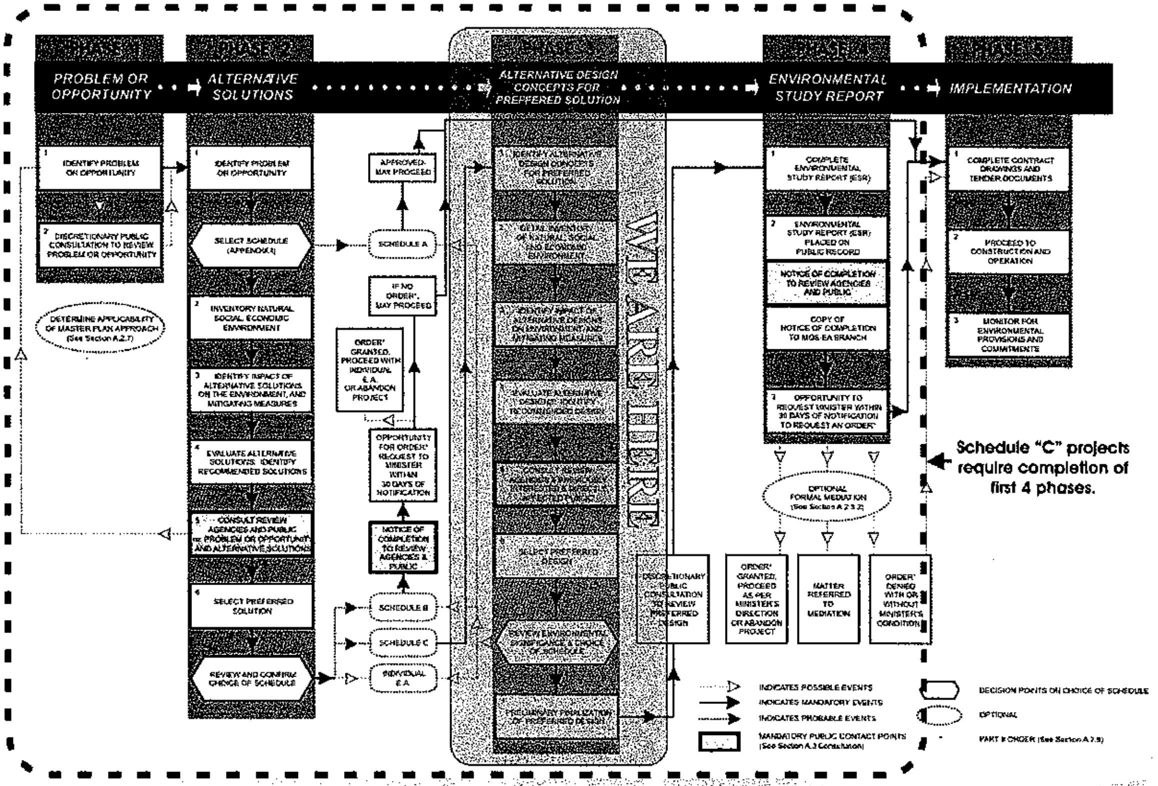
We encourage you to provide comments on the study.

STUDY AREA

- The study area includes a 6 km section of Speers Road from Bronte Road to Kerr Street in the Town of Oakville.
- Staring at Bronte Road heading east, Speers Road transitions from 2 lanes to 3 lanes to 4 lanes with turning lanes at the major intersections.
- Functionally designated as a Multi Use Arterial, serving east/west traffic flows, under the jurisdiction of the Town of Oakville.
- Identified in the Town's Official Plan as requiring a 35 metre Right of Way width.
- The posted speed limit is 60 km/hr.



CLASS ENVIRONMENTAL ASSESSMENT PLANNING PROCESS



Schedule "C" projects require completion of first 4 phases.

⇨ Formal planning process approved under the *Ontario Environmental Assessment Act* that must be undertaken in advance of road, water and wastewater construction projects.

⇨ Ensures that all reasonable alternatives are considered and that a selected alternative would have minimal impact on the surrounding environment.

⇨ This project is being planned as a "Schedule C" Class EA project.

WHY ARE WE UNDERTAKING THIS PROJECT?

The Town of Oakville initiated this Class EA Study to address a number of issues along the Speers Road corridor*:

- ⇨ *Existing/future traffic capacity deficiencies*
- ⇨ *Need for improved public transit facilities*
- ⇨ *Need for safety improvements*
- ⇨ *Inadequate cyclist and pedestrian facilities*
- ⇨ *Structural deficiencies and deteriorating pavement conditions*
- ⇨ *Streetscape aesthetics/landscaping requirements*
- ⇨ *Roadway drainage*

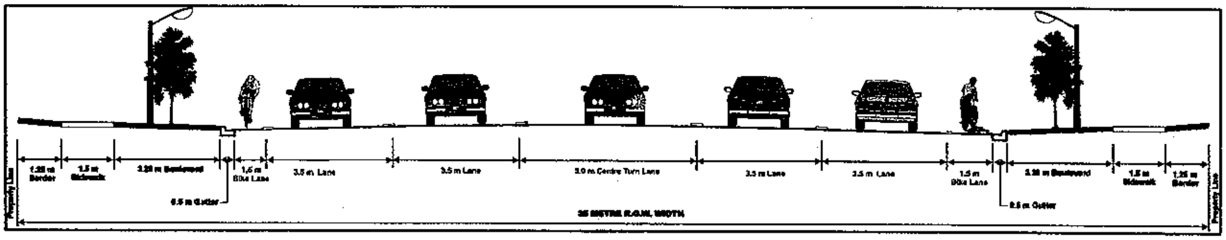
ALTERNATIVE DESIGN CONCEPTS

DESIGN ALTERNATIVE 1

Automobile & transit accommodations: *Five lanes throughout (4 thru and 1 centre turn lane) plus auxiliary turn lanes at major intersections as required*

Bicycle accommodations: *Dedicated bike lanes on both sides*

Pedestrian accommodations: *Boulevard and sidewalk on both sides*

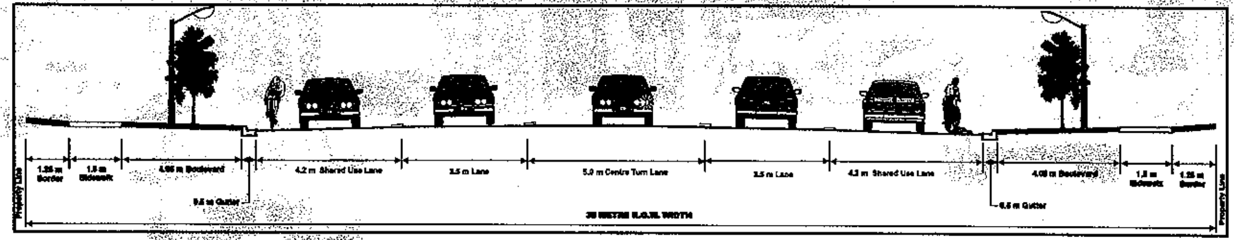


DESIGN ALTERNATIVE 2

Automobile & transit accommodations: *Five lanes throughout (4 thru and 1 centre turn lane) plus auxiliary turn lanes at major intersections as required**

Bicycle accommodations: *Wide shared-use curb lanes*

Pedestrian accommodations: *Boulevard and sidewalk on both sides*



DESIGN ALTERNATIVE 3

Do nothing: *No changes to existing roadway corridor. Automobile, transit, bicycle & pedestrian accommodations would remain as is.*

EVALUATION CRITERIA

Following the identification of alternative design concepts, the Project Team considered a number of criteria to comparatively evaluate the alternative solutions.

Transportation & Safety

How does the alternative serve the expected vehicular, transit, pedestrian and cycling traffic?

Socio-economic Environment

How does the alternative affect the commercial properties abutting the road (driveways/access, on-site parking, property impacts, streetscaping/beautification potential)?

Natural & Cultural Heritage Environment

How does the alternative affect fish habitat, vegetation, noise, air quality and archaeological/heritage resources?

Cost

What is the potential cost of the alternative including the cost for road construction, utility and street-lighting relocations, property acquisitions, traffic signal improvements and landscaping?

EVALUATION OF DESIGN ALTERNATIVES

EVALUATION CRITERIA	DESIGN ALT. 1	DESIGN ALT. 2	DESIGN ALT. 3
TRANSPORTATION & SAFETY	Safely accomodates various modes of transportation. Bike lanes provide increased level of cyclist safety.	Safely accomodates various modes of transportation.	Does not satisfy future traffic capacity & transit requirements. Does not safely accommodate cyclists or pedestrians.
ROW SCORE SUBTOTALS	**Good (4)**	**Fair to Good (3)**	**Poor (0)**
SOCIO-ECONOMIC ENVIRONMENT	Centre turn lane provides increased access to adjacent businesses. Significant property & parking impacts.	Centre turn lane provides increased access to adjacent businesses. Significant property & parking impacts.	Over time, increased traffic congestion would inhibit vehicle access to adjacent businesses. No improvements to roadway aesthetics.
ROW SCORE SUBTOTALS	**Poor to Fair (1)**	**Poor to Fair (1)**	**Fair (2)**
NATURAL ENVIRONMENT & CULTURAL HERITAGE	Construction-related impacts to the natural and cultural heritage environment are mitigable.	Construction-related impacts to the natural and cultural heritage environment are mitigable.	Air quality impacts would worsen over time as traffic congestion increases.
ROW SCORE SUBTOTALS	**Fair to Good (3)**	**Fair to Good (3)**	**Poor to Fair (1)**
COST	Significant utility relocation and property acquisiton costs.	Significant utility relocation and property acquisiton costs.	Increased maintenance costs as roadway continues to degrade.
ROW SCORE SUBTOTALS	**Fair (2)**	**Fair (2)**	**Poor to Fair (1)**
OVERALL SCORE	**2.5**	**2.3**	**1.0**
	Carry Forward	Not Recommended for Further Consideration	Not Recommended for Further Consideration

Ranking System

Good (4)
Fair to Good (3)
Fair (2)
Poor to Fair (1)
Poor (0)

Speers Road Improvements
Class Environmental Assessment Study
Bronte Road to Kerr Street

OAKVILLE

KEY FEATURES OF THE RECOMMENDED DESIGN

- Corridor width of 35 metre right of way as outlined in the Town's Official Plan.
- Accommodates existing and future traffic capacity and transit service improvements via five lanes (4 thru and 1 centre turn lane) plus designated right turn lanes at major intersections.
- Safety improvements via the provision of a centre turn lane.
- Cyclists accommodated via dedicated bike lanes on both sides of the road.
- Pedestrians accommodated via 1.5 metre sidewalks and 3.25 metre vegetated boulevards on both sides of the road.
- Vegetation and utilities (e.g. hydro poles, underground services) to be accommodated via the 3.25 metre boulevard.
- Implementation of the recommended design will necessitate property acquisition and impact existing parking areas.
- Structural deficiencies and deteriorating pavement conditions will be addressed by the pavement reconstruction works.
- Streetscape aesthetics/landscaping requirements will be addressed via a tree planting plan that will be prepared for the corridor as part of the redesign of the roadway.
- Drainage accommodated via concrete curb and gutter system.

WERE HOV AND QUEUE JUMP LANES CONSIDERED?

Following the identification of the preferred planning solution at the first PIC, consideration was given to the following design concepts to increase the general efficiency of the roadway corridor:

- ***High occupancy vehicle (HOV) lanes (1 lane per direction).***
  - *Road lanes restricted to use by vehicles carrying 2 or more persons.*
- ***Queue jump lanes at major intersections.***
  - *Dedicated lanes for HOV vehicles (e.g. transit) at signalized intersections only.*

Following review of both options, it was determined that neither of these alternatives were viable for the Speers Road corridor at this time for the following reasons:

- Limited travel time savings for HOVs on Speers Road corridor.
- Potential to create congestion and delay for non-HOV users.
- Volume of HOVs in corridor too low for operational viability.

STORMWATER MANAGEMENT

Impacts

⇨ Impacts associated with stormwater management (runoff, flooding, etc.) will be negligible to minor.

⇨ No net change in impervious surface from Third Line to Kerr Street.

⇨ Existing ditches from Bronte Road to Third Line will be replaced with concrete curb and gutter.

Opportunities

⇨ Storm sewer system will be reviewed and upgraded where necessary to address any capacity deficiencies.

⇨ Water quality and erosion controls (e.g. oversized piping, hydrodynamic separation, pervious pavement, etc.) will be reviewed to address existing stormwater management deficiencies.

⇨ McCraney Creek and 14 Mile Creek Bridge/Culvert structures will be reviewed to ensure that they are appropriately sized.

⇨ Flooding potential within the road way will be reviewed to determine whether there is a need to raise the road profile at the Creek crossings.

NATURAL ENVIRONMENT

⇨ There are 448 trees located within the roadway corridor. None of the identified tree species are rare or endangered.

⇨ A tree planting plan is to be prepared for the corridor as part of the detailed design of the roadway. The plan is to address:

  - Vegetation requiring removal
  - Planting of new street trees to improve the streetscape aesthetics
  - Restoration of disturbed boulevard landscaped areas

⇨ Healthy trees requiring removal will be transplanted if possible.

⇨ The study limits fall within four watersheds: Bronte Creek, Fourteen Mile Creek, McCraney Creek and Sixteen Mile Creek.

⇨ There are two regulated watercourse crossings (14 Mile Creek and McCraney Creek Tributary), an unregulated crossing of a Bronte Creek Tributary and a crossing of a piped section of McCraney Creek.

⇨ Fourteen Mile Creek is habitat for Redside Dace, a Provincially Threatened fish species.

⇨ Any in-water work associated with bridge/culvert widenings will require approval from Conservation Halton & Department of Fisheries & Oceans.

ARCHAEOLOGICAL CONSTRAINTS

- Based on the completed Stage 1 Archaeological Assessment, the study area has potential for the identification of Aboriginal and Euro-Canadian archaeological sites.
- Prior to construction, a Stage 2 archaeological assessment will be conducted on lands determined to have archaeological potential to identify any archaeological remains that may be present.

NOISE IMPACTS

- Widening Speers Road between Bronte Road and Kerr Street will produce insignificant (0.7 to 0.9 dBA) noise impacts and mitigative measures will not be required.

WHAT ARE THE NEXT STEPS IN THE STUDY?

Following this Public Information Centre, the Town of Oakville and its consultant, Delcan, will:

- Review comments submitted at the PIC;
- Confirm/adjust the recommended design considering the comments submitted (i.e. Develop "Preferred Design");
- Present the Preferred Design to the Town's Community Services Committee for endorsement in early 2009;
- Prepare and submit Environmental Study Report (identifying the recommendations and planning process undertaken) for 30-day public review period;
- Proceed to detail design and preparation of construction drawings and specifications*;
- Construction for the section between Kerr Street and Dorval Drive tentatively scheduled to start in summer 2009 pending regulatory approvals.

Thank you for attending tonight's public information centre. Please complete a comment sheet following your review of the displays.

**The project will be developed based on the recommended design if there are no outstanding "Part II Order" requests (written request for an individual environmental assessment, possibly including a formal hearing) at the end of the 30 calendar day review period.*

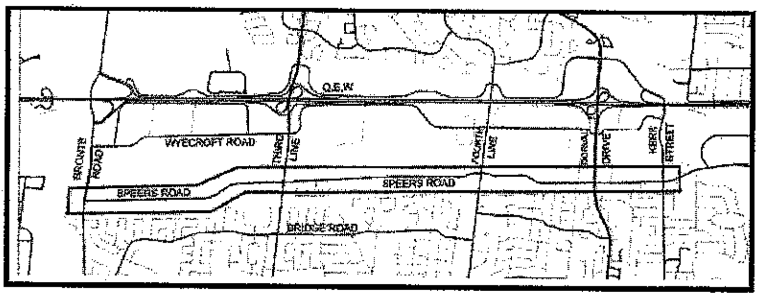
APPENDIX I-8 - NOTICE OF STUDY COMPLETION

TOWN OF OAKVILLE
NOTICE OF STUDY COMPLETION

Class Environmental Assessment for Speers Road Improvements (Bronte Road to Kerr Street)

The Town of Oakville has completed a Class Environmental Assessment (EA) Study for roadway improvements in the Speers Road corridor between Bronte Road and Kerr Street in the Town of Oakville. The study was undertaken to address various issues including, but not limited to:

- Existing and future travel demand
- Pedestrian, cycling and transit requirements
- Operational and infrastructure deficiencies
- Approved and proposed changes in land use.



The Study was undertaken in accordance with the planning process for Schedule "C" projects under the *Municipal Class Environmental Assessment, October 2000, as Amended in 2007.*

Based on recommendations from the consultant and input received from Town staff, technical agencies and the public, a preferred design has been developed for the subject portion of Speers Road. Key features of the design include, but are not limited to, the following:

- Reconstruction of Speers Road to 5 lanes throughout (4 through and 1 centre turn lane) plus auxiliary turn lanes at major intersections as required.
- Dedicated bike lanes, boulevards and sidewalks on both sides.
- Drainage improvements via concrete curb and gutters (replacing existing ditches).

An Environmental Study Report documenting the planning process undertaken, key elements of the preferred design and its associated impacts to the surrounding environment is on display for review at the following locations for thirty calendar days beginning on <TBD>, 2009 and ending on <TBD>, 2009:

Clerk's Department
Town of Oakville
1225 Trafalgar Road,
Oakville, Ontario
Hours: Monday to Friday –
8:30 a.m. to 4:30 p.m.

Oakville Public Library
Glen Abby & Central Branches
120 Navy Street & 1415 Third Line
Oakville, Ontario
Hours: Monday to Thursday –
10:00 a.m. to 8:00 p.m.
Friday – 10:00 a.m. to 5:00 p.m.
Saturday - 10:00 a.m. to 5:00 p.m.
Sunday - 1:00 p.m. to 5:00 p.m.

During this review period, you are encouraged to contact the Town of Oakville and/or Delcan if you have any questions or concerns about this project. If you feel, after consulting with the Town and/or Delcan, that your concerns remain unresolved, you may request a "Part II Order" (bumping the project to an individual EA) by submitting a written request to the Minister of Environment at the following address *and copying the Town* before the end of the thirty calendar day review period:

The Honourable John Gerretsen
Minister of the Environment
12th Floor, 135 St. Clair Avenue West
Toronto, Ontario M4V 1P5

The project will be able to proceed based on the preferred design if there are no outstanding "Part II Order" requests at the end of the thirty calendar day review period. It is anticipated that construction for this project will begin in Spring 2010. If you have any questions on the above information or would like additional information on the project, please contact either one of the following project team members:

Mr. Irfan Arab, Senior Project Leader
Engineering and Construction Dept.
Town of Oakville
PO Box 310, 1225 Trafalgar Road
Oakville, ON L6J 5A6
Tel: (905) 845-6601 x3312
Fax: (905) 338-4159
Email: iarab@oakville.ca

Mr. Manoj Dilwaria, Principal
Transportation Division
Delcan Corporation
4056 Dorchester Road
Niagara Falls, ON L2E 6M9
Tel: (905) 356-7003 x231
Fax: (905) 356-7008
Email: m.dilwaria@delcan.com

Information will be collected in accordance with the Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record.

Delcan
TRANSPORTATION • INFORMATION TECHNOLOGY • WATER

4056 Dorchester Road, Niagara Falls, ON L2E 6M9
Tel: 905.356.7003 • Fax: 905.356.7008
www.delcan.com

OUR REF: TN-1340-TN-A00

Dear Sir/Madam:

Re.: Notice of Study Completion - Environmental Assessment for Speers Road Improvements, Bronte Road to Kerr Street

---

The Town of Oakville has completed a Class Environmental Assessment (EA) Study for roadway improvements in the Speers Road corridor between Bronte Road and Kerr Street in the Town of Oakville. The study was undertaken to address various issues including, but not limited to:

- Existing and future travel demand.
- Pedestrian, cycling and transit requirements.
- Operational and infrastructure deficiencies.
- Approved and proposed changes in land use.

The Study was undertaken in accordance with the planning process for Schedule "C" projects under the *Municipal Class Environmental Assessment, October 2000, as Amended in 2007*.

Based on recommendations from the consultant and input received from Town staff, technical agencies and the public, a preferred design has been developed for the subject portion of Speers Road. Key features of the design include, but are not limited to, the following:

- Reconstruction of Speers Road to 5 lanes throughout (4 through and 1 centre turn lane) plus auxiliary turn lanes at major intersections as required.
- Dedicated bike lanes, boulevards and sidewalks on both sides.
- Drainage improvements via concrete curb and gutters (replacing existing ditches).

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Saturday - 10:00 a.m. to 5:00 p.m.
Sunday - 1:00 p.m. to 5:00 p.m.

During this review period, you are encouraged to contact the Town of Oakville and/or Delcan if you have any questions or concerns about this project. If you feel, after consulting with the Town and/or Delcan, that your concerns remain unresolved, you may request a "Part II Order" (bumping the project to an individual EA) by submitting a written request to the Minister of Environment at the following address *and copying the Town* before the end of the thirty calendar day review period:

The Honourable John Gerretsen
Minister of the Environment
12th Floor, 135 St. Clair Avenue West
Toronto, Ontario M4V 1P5

The project will be able to proceed based on the preferred design if there are no outstanding "Part II Order" requests at the end of the thirty calendar day review period. It is anticipated that construction for this project will begin in Spring 2010.

If you have any questions or concerns regarding this project or the preceding information, please contact either myself directly at (905) 356-7003, x228, (a.mcgregor@delcan.com) or Irfan Arab, Project Manager, Town of Oakville, at (905) 845-6601 x3312 (iarab@oakville.com).

Yours truly,

DELCAN Corporation

Andrew McGregor, MCIP, RPP
Environmental Planner, Transportation Division

Attch.

cc: Irfan Arab – Town of Oakville
Manoj Dilwaria – Delcan Corporation
Barb Slattery – Ministry of the Environment

J:\DATA\TN1340TNA00 (Speers Road, Oakville)\MF#5 - Correspondence\Study Completion\Notice of Completion.doc

TECHNICAL AGENCY/STAKEHOLDER CONTACT LIST SPEERS ROAD CLASS ENVIRONMENTAL ASSESSMENT STUDY COMPLETION

Agency	Contact
PROVINCIAL MINISTRIES	
Ministry of Natural Resources Aurora District 51 Bloomington Road West, RR2 Aurora, ON L4G 3G8	Ms. Jackie Burkart Resource Management Technician
Ministry of Natural Resources Aurora District 51 Bloomington Road West, RR2 Aurora, ON L4G 3G8	Mr. Warren May Halton Area Biologist
Ministry of Environment Air, Pesticides and Environmental Planning 5775 Yonge Street, 8th Floor North York, ON M2M 4J1	Mr. Alex Philips Environment Resource Planner
Ministry of Environment 12th Flr 119 King St W Hamilton ON L8P 4Y7	Ms. Barb Slattery Environment Resource Planner/EA Coordinator
Ministry of Culture 400 University Avenue, 4th Floor Toronto, ON M7A 2R9	Ms. Catherine Capella Archaeological Review Officer
Ministry of Transportation Central Region 1201 Wilson Avenue, 7th Floor Building D Downsview, ON M3M 1J8	Mr. Richard Yeung Corridor Management Engineer
Ministry of Transportation Central Region 1201 Wilson Avenue, 7th Floor Building D Downsview, ON M3M 1J8	Mr. Roger Hamner Regional Director
Halton Region Conservation Authority 2596 Brittannia Road West, R.R. #2 Milton, ON L9T 2X6	Ms. Leah Smith Environmental Planner
MUNICIPALITIES	
The Regional Municipality of Halton 1151 Bronte Road Oakville, ON L6M 3L1	Mr. Andrew Head Planning & Public Works Manager of Transportation Services
The Regional Municipality of Halton 1151 Bronte Road Oakville, ON L6M 3L1	Mr. Matt Krusto Planning & Public Works
Corporation of the Town of Oakville P.O. Box 310 1225 Trafalgar Road Oakville, ON L6J 5A6	Mr. Enrico Scalera Manager of Design & Construction

Agency	Contact
Corporation of the Town of Oakville P.O. Box 310 1225 Trafalgar Road Oakville, ON L6J 5A6	Mr. Dave Wong Traffic Engineering Coordinator
Corporation of the Town of Oakville P.O. Box 310 1225 Trafalgar Road Oakville, ON L6J 5A6	Mr. Simon Tam Manager of Traffic Operations Roads & Works Operations Department
Corporation of the Town of Oakville P.O. Box 310 1225 Trafalgar Road Oakville, ON L6J 5A6	Mr. Chris Clapham Sustainable Transportation, Engineering & Construction
Corporation of the Town of Oakville P.O. Box 310 1225 Trafalgar Road Oakville, ON L6J 5A6	Ms. Tricia Collingwood Planner Planning Services Department
Corporation of the Town of Oakville P.O. Box 310 1225 Trafalgar Road Oakville, ON L6J 5A6	Ms. Janis Olbina Manager of Park Planning & Development
Oakville Fire Department 125 Randall Street Oakville, ON L6J 1P3	Mr. Brian Durdin Assistant Deputy Chief
Oakville Transit P.O. Box 310 1225 Trafalgar Road Oakville, ON L6J 5A6	Ms. Joanne Phoenix Manager of Planning & Accessible Services
Halton Regional Police Service P.O. Box 2700 Oakville ON L6J 5C7	Chief Gary Crowell
Halton Region Emergency Medical Services 1179 Bronte Road Oakville, ON L6M 4G3	Mr. John Pereira Manager of Operations
Halton District School Board P.O. Box 5005 2050 Guelph Line Burlington, ON L7R 3Z2	Ms. Elaine Westerhof Manager of Planning
Halton Catholic District School Board P.O. Box 5308 802 Drury Lane Burlington, ON L7R 3Y2	Mr. Alex Duffield Administrator of Facilities
UTILITIES	
Oakville Hydro Corporation P.O. Box 1900 861 Redwood Square Oakville, ON L6J 5E3	Mr. Dan Steele
Union Gas 360 Strathearne Avenue P.O. Box 10 Hamilton, Ontario L8N 3A5	Mr. Enzo Greco Construction Projects Team Lead, Hamilton-Halton
Bell Canada 20 Hunter Street West, Flr 6 Hamilton, ON L8N 3H2	Ms. Carol Goossens

Agency	Contact
Blink Communications P.O. Box 1900 861 Redwood Square Oakville, ON L6J 5E3	Mr. Terry Crawford Director of Facilities and Infrastructure
Cogeco Cable 695 Lawrence Road Hamilton, ON L8K 6P1	Ms. Lynanne Cane Planning Coordinator
INTEREST GROUPS	
Halton E.E.A.C. C/O Region Of Halton 1151 Bronte Road Oakville, ON L6M 3L1	Mr. Jason Scott Senior Environmental Planner
GO Transit Transportation Planning & Development Office 20 Bay Street, Suite 600 Toronto, ON M5J 2W3	Dan Francey Manager
ADDITONAL STAKEHOLDERS	
Wayne Burns Consulting Inc. 7 Trothen Circle Markham, ON L3P 4H2	Wayne Burns President

APPENDIX I-9 - CORRESPONDANCE FROM TECHNICAL AGENCIES

Indian and Northern Affairs Canada
Affaires indiennes et du Nord Canada

RECEIVED
JUN 23 2008

JUIN JUN 16 2008

Your file Votre référence

Our file Notre référence

Andrew McGregor
Environmental Assessment Planner, Transportation Division
Declan Corporation
4056 Dorchester Road
NIAGARA FALLS, ONTARIO L2E 6M9

Dear Mr. McGregor:

Re: Notice of Study Commencement – Environmental Assessment for Speers Road Improvements, Bronte Road to Kerr Street Request for Information

I am writing in response to your letter of March 17, 2008, addressed to Franklin Roy inquiring about any claims that may affect the subject property. I regret that we were unable to respond earlier.

We can advise that our inventory does not include active litigation in the vicinity of this property. Please note that we are unable to make any representations regarding potential or future claims.

We cannot make any comments regarding claims filed under other departmental policies. For information on any claims you should also contact Fred Hosking of the Specific Claims Branch at (819) 953-1940 to inquire about any Specific Claims, and Guy Morin of the Comprehensive Claims Branch at (819) 956-0325 to inquire about any current Comprehensive Claims.

.../2

04/18/2008 01:21 PM

CC "Liz B." <lizcdn@yahoo.com>
Subject Speers Road

Yesterday afternoon, I attended the first Speers Road EA stakeholder group meeting, for the stretch from Kerr Street to Bronte Road. There were five members of the public there, three project team members and one staff person from Engineering & Roads.

Of the five members of the public, four of us were speaking with one voice, including Liz Benneian, chair of Oakvillegreen, Richard Messer(?), chair of the Kerr Street BIA, and a member of the West River Residents' Association. (The fifth member was a CAA rep.) We all have a vision that Speers Road could be a prime area for redevelopment and infill. Being close to (both) GO stations and being a very convenient transportation corridor between the two, it is well located for higher density residential and employment lands.

Having attended the Livable Oakville session on Wednesday night, we all realize that the Town is going through a major planning exercise. Speers Road was not specifically mentioned as a separate area, but the timing of this EA process just begs for planning consideration to be given to the area before irreversible decisions are made regarding the roadway. The infill and redevelopment are happening now. We were told the planning horizon for the EA process is to 2021, and decisions are to be made this year. If we're going to do something great with Speers Road, it needs to start happening before 2021, but it should be worth some consideration now to put the right pieces in place. It would be a shame to plan Speers Road this year and have that roadway, decided in isolation, dictate the Official Plan. Surely this falls under the Infill and Intensification (Residential & Employment Opportunities) portion of the Livable Oakville process (if not also the Kerr Street and Bronte portions)!

Further, we know that in 2005 or 2006, a study was done with representatives from each ward regarding infill and intensification. It is our understanding that that study recommended the Speers Road/Wyecroft Road area for intensification. It seems that nothing concrete has yet come of that study. We were told yesterday that what we were discussing is beyond the scope of the EA exercise, because there are no planning documents in place.

We request that you folks discuss this issue and get back to us with an approach that will not overlook the potential for Speers Road to become a street we're all proud of, before this opportunity is lost.

Lisa Seiler
Chair, GreenTrans

Andrew McGregor

From: Firmani, Adrian (MTO) [Adrian.Firmani@ontario.ca]
Sent: Tuesday, April 22, 2008 1:33 PM
To: a.mcgregor@delcan.com
Subject: Notice of Public Information Centre - Environmental Assessment for Speers Road Improvements, Bronte Road to Kerr Street

Andrew,

This is to inform you that the proposed works are outside the Ministry's permit control area and therefore we have no concerns regarding this project.

Should you have any other questions or concerns please feel free to contact me at anytime.

Thanks,

Adrian Firmani
Ministry of Transportation Ontario
Permit Officer/Technician
Corridor Management Section
416 235 5383
Adrian.Firmani@Ontario.ca

Correspondenc
TN 1340

April 24, 2008

Mr. Andrew McGregor
Delcan
4056 Dorchester Road
Niagara Falls, ON
L2E 6M9

Dear Mr. McGregor:

Re: Speers Road Improvements, Bronte Road to Kerr Street
Class Environmental Assessment
Town of Oakville
CH File: MPR 472

Further to Conservation Halton's fax of March 30, 2008, and the Technical Agencies Committee Meeting #1 on April 17, 2008, staff wish to offer the following preliminary comments with respect to the notice of study commencement for the above noted EA.

The proposed Speers Road improvements occur within four watersheds: Bronte Creek, Fourteen Mile Creek, McCraney Creek and Sixteen Mile Creek. The project will involve two regulated watercourse crossings, (Speers Road and 14 Mile Creek, and Speers Road and the McCraney Creek Tributary) as well as an uregulated crossing of a Bronte Creek Tributary and a crossing of a piped section of McCraney Creek. Specifically, the following should be taken into account when considering the options for transportation corridor improvements in this area:

Natural Heritage

1. Endangered and threatened species: Fourteen Mile Creek is habitat for Redside Dace, a Provincially Threatened fish species. Conservation Halton staff will review proposed works near Redside Dace habitat in light of the recommendations provided in the Draft Redside Dace Recovery Strategy;
2. Wetlands: A wetland greater than two hectares in size is present north of Speers Road, near Bronte Road. This wetland is regulated by Conservation Halton pursuant to Ontario Regulation 162/06. This wetland has not been designated as a Provincially Significant Wetland;
3. Woodlands: A Significant Woodland has been identified by the Region of Halton, north of Speers Road, near Bronte Road;

Fish Habitat

4. Staff will review the EA under our Level II Agreement with DFO;
5. Photo documentation of sites with a key map indicating photo locations should be included in the EA;
6. Fish habitat mapping as per MTO Protocol "Environmental Guide for Fish and Fish Habitat, 2006", may be required depending on the nature of the proposed works;

Natural Hazards

7. Flooding is the primary hazard of concern related to the Speers Road improvements project. The Regional Storm overtops Speers Road at the Fourteen Mile Creek crossing, and spills easterly along Speers Road. Spill from McCraney Creek was also identified to flow over the railway berm just north of Speers Road, which flows southerly across properties 1281 to 1195 Speers Road. The proposed project must demonstrate no negative impacts to the flooding hazard, and should consider opportunities to improve the flooding situation if possible;
8. Conservation Halton also regulates the erosion hazards (stable top of bank or meander belt) associated with McCraney and Fourteen Mile Creeks. Stream erosion hazards must be adequately addressed;
9. All areas regulated by Conservation Halton need to be plotted on drawings. Approximate Regulation Limit mapping has been included for your reference. A Data Request Agreement must be completed to obtain flood plain mapping;
10. A fluvial geomorphological assessment may be required depending on the nature of the proposed works;
11. A geotechnical assessment of slope stability is required for works near McCraney Creek and Fourteen Mile Creek;

Stormwater Management/Drainage

12. Drainage Patterns: Existing drainage patterns are to be maintained wherever feasible. Please identify existing vs. proposed – are catchment areas being maintained?
13. Stormwater Quantity: Per the respective subwatershed studies, post to pre quantity control will be required for all design storms;
14. Stormwater Quality Control: Due to the proximity to Lake Ontario, we anticipate that Enhanced Level quality control for all watersheds will be required;
15. Erosion Control: Erosion control measures listed below should be met if feasible; otherwise the consultant must demonstrate no net impacts on the watershed. The recommended erosion strategy for each watershed differs slightly. For the Bronte Creek, Fourteen Mile Creek and McCraney Creek the erosion control requirements should be determined on a site-specific basis, using both a tractive force analysis, and a flow frequency approach. In the Sixteen Mile Creek system, erosion control should be provided by matching the exceedance targets given in the watershed study;

16. Water Balance: To maintain the water balance the "Sixteen Mile Creek Watershed Plan" and the "Fourteen Mile Creek and McCraney Creek Watershed Planning Study" recommend infiltrating 5 mm of runoff per impervious hectare. The Fourteen Mile Creek and McCraney Creek Planning Study also gave an alternative measure of providing two to three days of extended detention for the runoff from the 25 mm 2 hr design storm, to be used where infiltration was not viable. Given water quality concerns related to roadside runoff, this measure may be more appropriate for the Speers Road improvements. It is also consistent with the recommendations given in the Bronte Creek Watershed Study. In the Sixteen Mile Creek Study, Flow Duration Exceedances (which are also used for Erosion Control) were recommended. These should be met if possible;

Other

17. Recommendations from watershed/subwatershed studies should be followed. The following studies impact the study area:
    - "The Bronte Creek Watershed Study" prepared by Conservation Halton in March 2002, and "Bronte Creek Hydrology and Stream Morphology Study" prepared by PEIL, dated April 2003 (unapproved).
    - "Fourteen Mile Creek, McCraney Creek Watershed Planning Study," prepared by Triton Engineering Services in February 1992
    - "Sixteen Mile Creek Watershed Plan" prepared by Gore & Storrie Ltd. and Ecoplans Ltd., in February 1996
18. Data sheets for all surveys will be required with submission (fisheries, vegetation, etc.). Please submit digital species spreadsheets;
19. Conservation Halton landscape guidelines should be used where applicable.

We trust the above is of assistance. If you require additional information please contact the undersigned at extension 283.

Yours truly,

Leah Smith
Environmental Planner
LS/

Encl. 10

cc: Mr. Doug Corbett, Region of Halton, Planning
Mr. Irfan Arab, Town of Oakville, Engineering

Ministry of the Environment

Central Region
Technical Support Section

5775 Yonge Street, 8th Floor
North York, OntarioM2M 4J1

Tel.: (416) 326-6700
Fax: (416) 325-6345

Ministère de l'Environnment

Région du Centre
Section d'appui technique

5775, rue Yonge, 8ième étage
North York, Ontario M2M 4J1

Tél. : (416) 326-6700
Téléc. : (416) 325-6347

Ontario

RECEIVED
MAY 14 2008

May 12, 2008

File: 05-02-05

Andrew McGregor, B.A.
DELCAN Corporation
4056 Dorchester Road
Niagara Falls, Ontario L2E 6M9

RE: Speers Road Improvements – Bronte Road to Kerr Street
Town of Oakville
Municipal Class EA – Schedule C
Response to Notice of Commencement and Notice of Public Information Centre

Dear Mr. McGregor:

This letter is our response to your Notice of Commencement and Notice of Public Information Centre for the above noted Environmental Assessment (EA).

It is our understanding that this study involves improvements in the Speers Road corridor between Bronte Road and Kerr Street to address travel demand, servicing needs, land use, operational and infrastructure needs, and pedestrian, cycling and transit facilities. This response acknowledges that the study is following the approved environmental planning process for a Schedule C project under the *Municipal Engineers Association Municipal Class Environmental Assessment* (Class EA).

Based on the information submitted, we have identified the following concerns with the undertaking:

- Ecosystem Protection and Restoration
- Surface Water
- Groundwater
- Dust and Noise
- Contaminated Soils
- Transmission Lines
- Mitigation and Monitoring
- Planning and Policy
- Class EA Process
- First Nation Consultation

We are providing the following general comments to assist you and your project team members in the proposed undertaking:

Ecosystem Protection and Restoration

- Any impacts to ecosystem form and function must be avoided where possible. The EA Document should describe any proposed mitigation measures and how project planning will protect and enhance the local ecosystem.

- All natural heritage features should be identified and described in detail to assess potential impacts and to develop appropriate mitigation measures. Our records confirm that the following sensitive environmental features are located within or adjacent to the Study Area:

    - Rare Species of flora or fauna
    - Watercourses
    - Woodlots

  We recommend consulting with the Ministry of Natural Resources (MNR), Fisheries and Oceans Canada (DFO) and your local conservation authority to determine if special measures or additional study will be necessary to preserve and protect these sensitive features.

- The Region of Halton and Town of Oakville Official Plan policies related to ecosystem protection within the Study Area should be referenced to ensure that all environmental protection policies are satisfied. The EA Document should also discuss the levels of growth proposed for the area, how this proposal addresses those levels of growth, and how any proposed transportation improvements will affect local traffic flows.

Surface Water

- The EA Document must include a sufficient level of information to demonstrate that there will be no negative impacts on the natural features or ecological functions of any watercourses within the study area. Measures should be included in the planning and design process to ensure that any impacts to watercourses from construction or operational activities are mitigated as part of the proposed undertaking. These should include protecting, restoring and enhancing aquatic ecosystem linkages, natural stream banks and riparian cover.

- A Contingency Plan for dealing with potential adverse effects on surface water (e.g. spills, erosion) should be developed. Exposed areas should be kept to a minimum at all times in order to minimize the potential for erosion. The Ministry of the Environment (MOE) Guideline B-6, *Evaluating Construction Activities Impacting on Water Resources* should be utilized during the planning and construction phases of this project.

- Additional stormwater runoff from new pavement can impact receiving watercourses and flood conditions. Quality and quantity control measures to treat stormwater runoff should be considered for all new impervious areas and, where possible, existing road surfaces. MOE's *Stormwater Management Planning and Design Manual* (2003) should be referenced in the EA Document and utilized when designing stormwater control methods. We recommend that a Stormwater Management Plan should be prepared as part of the Class EA process and included in the EA Document. This plan should include:

    - Strategies to address potential water quantity and erosion impacts related to stormwater draining into streams or other sensitive environmental features, and to ensure that adequate (Enhanced) water quality is maintained
    - Watershed information, drainage conditions, and other relevant background information
    - Future drainage conditions, stormwater management options, information on erosion and sediment control during construction, and other details of the proposed works
    - Information on maintenance and monitoring commitments

Groundwater

- Our records indicate that there are a number of groundwater wells in the Study Area. Care should be taken to ensure that these water supplies will not be adversely affected by construction activities. Our primary concerns include the contamination and potential disruption of groundwater movement, particularly in the case of shallow wells. Background data to define existing groundwater quality and quantity, and their relationships, should be included in the EA Document.

- De-watering associated with construction activities may temporarily impact local groundwater wells and interfere with baseflow to streams. In addition, the dispersal of pumped water can affect a receiving watercourse. A Permit to Take Water (PTTW) will be required should any dewatering exceed 50,000 litres per day. Studies prepared as part of the Class EA process should be carried out to a sufficient level of detail to determine if a PTTW, or any other approvals, will be required. The EA Document should clearly identify what approvals are expected to be necessary. If construction activities are likely to encounter groundwater, you should include the following in the EA Document:

    - Reference to the *Permit to Take Water Manual* (April 2005).
    - An assessment of potential impacts and a description of your plans and commitments to prevent and mitigate negative impacts until the aquifer has recovered
    - A contingency plan to address potential impacts to groundwater (e.g. well impacts), and a description of this plan in the EA Document.

- We recommend consulting with MNR, DFO, and your local conservation authority to solicit their input on any groundwater or surface water concerns and to determine if any subsequent approvals or permits are required.

Dust and Noise

- The EA Document should consider the potential impacts of increased noise levels due to potentially higher traffic volumes resulting from this project. The proponent should explore all potential measures to mitigate significant noise impacts during the assessment of alternatives. Please refer to the *MTO/MOE Noise Protocol (1996).*

- Dust and noise control measures should be addressed and included in the construction plans to ensure that nearby residential and other sensitive land uses within the Study Area are not adversely affected during construction activities. If dust suppressants are proposed to be used, we recommend the use of non-chloride based compounds to protect water quality.

Contaminated Soils

- If the removal or movement of soils may be required, appropriate tests to determine contaminant levels from previous land uses or dumping should be undertaken. If the soils are contaminated, you must determine how and where they are to be disposed of, consistent with *Part XV.1 of the Environmental Protection Act (EPA)* and the Records of Site Condition Regulation (O.Reg. 153/04), which details the new requirements related to site assessment and clean up. We recommend contacting the MOE Halton-Peel District Office in Burlington if contaminated sites are present.

Transmission Lines

- Our records indicate that above ground and underground transmission lines cross the study area. You should consult with the appropriate owners to avoid any impacts to this infrastructure.

Mitigation and Monitoring

- Design and construction reports and plans should be based on a best management approach that centres on the prevention of impacts, protection of the existing environment, and opportunities for rehabilitation and enhancement of any impacted areas.

- All waste generated during construction activities must receive proper disposal in accordance with MOE requirements.

- Contractors must be made aware of all environmental considerations so that all environmental standards and commitments for both construction and operation work are met. Mitigation measures should be clearly referenced in the EA Document and regularly monitored during the construction stage of the project. In addition, we encourage proponents to conduct post-construction monitoring to ensure all mitigation measures have been effective and are functioning properly. The proponent's construction and post-construction monitoring plans should be documented in the EA Document.

Planning and Policy

- The 2005 Provincial Policy Statement contains policies that protect Ontario's Natural Heritage, including significant woodlands, valleylands and wildlife habitat, and groundwater and surface water features. Applicable policies should be referenced in the EA Document, and the proponent should demonstrate how this proposed project is consistent with these policies.

- The *Places to Grow Plan* contains policies which guide decisions on a range of issues such as infrastructure planning and land-use planning to ensure that stronger and more prosperous communities are built in the Greater Golden Horseshoe. The EA Document should demonstrate how this project adheres to the relevant policies of the *Places to Grow Plan*, including Section 3, which contain policies for Infrastructure to Support Growth.

Class EA Process

- The EA Document should provide clear and complete documentation of the planning process in order to allow traceability of decision-making. It must also demonstrate how the consultation provisions of the Class EA have been fulfilled, including documentation of all public consultation efforts undertaken during the planning process. Additionally, it should identify all concerns that were raised and how they have been addressed throughout the planning process. The Class EA also directs proponents to include copies of comments submitted on the project, and the proponent's responses.

- The Class EA requires the consideration of the effects of each alternative on all aspects of the environment. The EA Document should include a level of detail (e.g. hydrogeologic investigations, terrestrial and aquatic assessments) such that all potential impacts can be identified and appropriate mitigation measures can be developed. Any supporting studies conducted during the Class EA process should be referenced and included as part of the EA Document.

- Please include in the EA Document a list of all subsequent permits or other approvals that may be required for the implementation of the preferred alternative, including Permits to Take Water or other ministerial approvals, approval under the *Canadian Environmental Assessment Act* (CEAA), and conservation authority permits.

- We have listed above several ministry guides available to assist you in planning this project. These are available at http://www.ene.gov.on.ca under the publications link. We encourage the proponent to review all the available guides and to reference any relevant information in the EA Document.

First Nation Consultation

- Please note that as part of the required stakeholder and agency consultation, proponents are advised to contact the Ministry of Aboriginal Affairs and the Department of Indian and Northern Affairs to determine potentially affected Aboriginal communities in the project area. Please refer to the website http://www.ene.gov.on.ca/envision/env_reg/ea/english/General_info/GRTList.htm for a list of appropriate government contacts.

- Once identified, you are advised to provide notification directly to the Aboriginal communities who may be affected by the project and provide them with an opportunity to participate in any planned public consultation sessions and comment on the project.

Submissions

- To facilitate the review of this project, please submit the following:

    - Copies of any PIC materials and handouts
    - A draft copy of the EA Document 30 days prior to filing for initial comments
    - A copy of the Notice of Completion and final EA Document once completed

Thank you for the opportunity to comment on this project. Should you or any members of your project team have any questions, please feel free to contact me at 416-326-4839.

Yours truly,

Alex Blasko
Environmental Resource Planner and EA Coordinator
Air, Pesticides and Environmental Planning

c. Irfan Arab, Town of Oakville
Vincent Sferrazza, Halton-Peel District Manager, MOE
Central Region EA File
A & P File

Andrew, as a follow up to our phone conversation of today, could you please include the following comments in your EA report.

GO Transit is planning a station expansion at the Bronte GO Station immediately south of the existing station within the next 1-2 years and we would like to optimize station access opportunities by all modes.

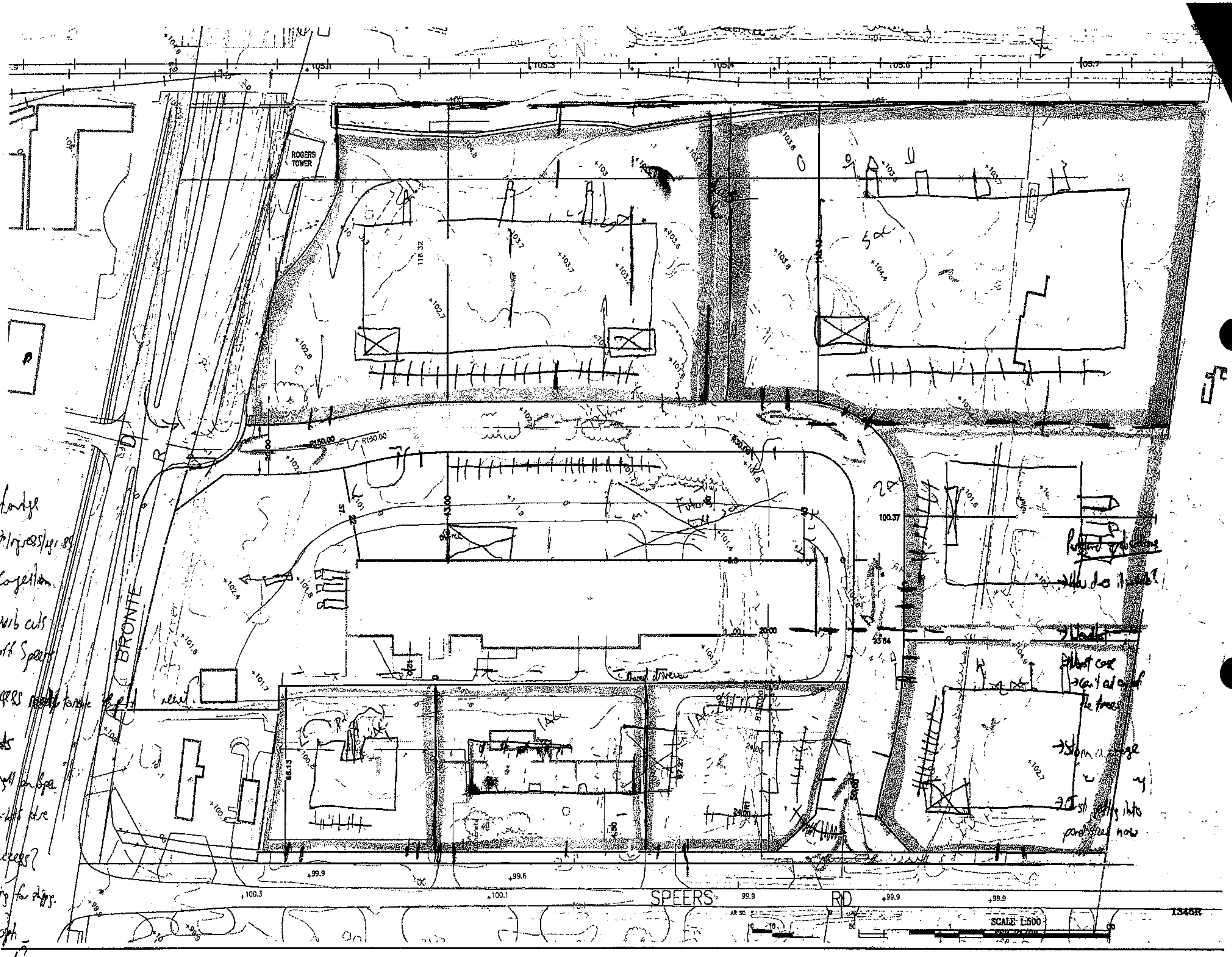
Therefore, we would appreciate the opportunity to coordinate our station design with the detail design work for pedestrian and cycle facilities along Speers Rd.

In addition, to take advantage of better transit access along Speers Rd from southern neighbourhoods, we will be contacting Oakville Transit to review transit route opportunities from south Oakville and requirements for bus operations in our design.

We have not commenced design work on this station expansion, but any provisions for flexibility for protecting for a future signalized intersection for the station should be considered.

We look forward to working with the Town as our respective design work progresses. In the interim, please contact me if you have any questions.

Thanks
Dan Francey
Manager, Transportation Planning and Development



→ Lodge

→ Ingress/egress

→ Congestion

→ curb cuts off Speers

→ access [illegible] towards [illegible]

+ 7 lots

→ 3 small on Speers

→ larger lots else

→ What access?

→ Screening for shops.

→ bike opt.

→ [illegible]

Required [illegible]

→ How do it work?

→ [illegible]

Blast core

→ can't cut any of the trees

→ Storm [illegible] storage

→ [illegible] getting into ponds now

Shared driveway

I represent Mancor and we own the 28 acre parcel at the north west corner of Speers and Bronte excluding the gas station.
We are currently in the early planning stages but we expect to be developing the approximately 20 extra acres on the site that we do not use. I have attached a very rough draft layout. We will be working with the region and town over the next several months on our plan.
We would like to be considered a major stakeholder for the Speers EA and kept informed of your plans.
At this point we would like to see additional lanes on Speers at the west end to better accommodate the existing traffic and to also be able to handle the additional traffic from the new construction east of us on Speers and from our future development.

Delcan

OAKVILLE

FAX BACK FORM

TO: **Andrew McGregor, B.A.**
Environmental Assessment Planner, Transportation Division

FAX: **(905) 356-7008**

RE: **Class Environmental Assessment – Speers Road from Bronte Road to Kerr Street, Town of Oakville**

NAME: JOHN B PEREIRA

TITLE: MANAGER OF OPERATIONS

GROUP/AGENCY: HALTON REGION EMERGENCY MEDICAL SERVICES

ADDRESS: 1179 BRONTE ROAD, OAKVILLE ON
L6M 4G3

TELEPHONE: 905-825-6000 Ext 7001

FAX: 905-825-~~8~~9061

E-MAIL: john.pereira@halton.ca

☐ My group/agency is not interested in participating in this study but would like to be kept informed. Please maintain our group/agency on the study contact list for this project.

☐ My group/agency has no concerns about this project and can be removed from your contact list.

AGENCY COMMENTS/AREA OF INTEREST:

We would like to be kept informed of any work that will limit our ability to respond to ~~the~~ the addresses and/or streets located on or off the road corridor identified on the map provided. ie lane restrictions, lane closures, detours etc. We have no concerns with the study process.

Over...

Delcan

OAKVILLE

FAX BACK FORM

TO: **Andrew McGregor, B.A.**
Environmental Assessment Planner, Transportation Division

FAX: **(905) 356-7008**

RE: **Class Environmental Assessment – Speers Road from Bronte Road to Kerr Street, Town of Oakville**

NAME: BRIAN DURDIN
TITLE: DEPUTY FIRE CHIEF
GROUP/AGENCY: OAKVILLE FIRE DEPARTMENT
ADDRESS: 125 RANDALL ST
OAKVILLE ON L6J 1P3
TELEPHONE: 905 815-6057
FAX: 905 338-4403
E-MAIL: bdurdin@oakville.ca

☑ My group/agency is not interested in participating in this study but would like to be kept informed. Please maintain our group/agency on the study contact list for this project.

☐ My group/agency has no concerns about this project and can be removed from your contact list.

AGENCY COMMENTS/AREA OF INTEREST:

Over...

Delcan

OAKVILLE

FAX BACK FORM

TO: **Andrew McGregor, B.A.**
Environmental Assessment Planner, Transportation Division

FAX: **(905) 356-7008**

RE: **Class Environmental Assessment – Speers Road from Bronte Road to Kerr Street, Town of Oakville**

NAME: CHRIS CLAPHAM
TITLE: SUSTAINABLE TRANSPORTATION PROGRAM COORDINATOR
GROUP/AGENCY: TOWN OF OAKVILLE
ADDRESS: 1225 TRAFALGAR ROAD
OAKVILLE, ON L6J 5A6
TELEPHONE: (905) 845-6601 x 3306
FAX: (905) 338-4159
E-MAIL: cclapham@oakville.ca

☐ My group/agency is not interested in participating in this study but would like to be kept informed. Please maintain our group/agency on the study contact list for this project.

☐ My group/agency has no concerns about this project and can be removed from your contact list.

AGENCY COMMENTS/AREA OF INTEREST:

MY AREA OF INTEREST WILL INVOLVE HOW THE STUDY INCORPORATES CYCLING & PEDESTRIAN FACILITIES (EXISTING & PROPOSED), AND HOW THESE FACILITIES / INFRASTRUCTURE RELATES TO THE OVERALL ACTIVE TRANSPORTATION MASTER PLAN, OR HOW THEY CAN BE INCORPORATED TO DO SO.

Over...

Delcan

OAKVILLE

FAX BACK FORM

TO: Andrew McGregor, B.A.
Environmental Assessment Planner, Transportation Division

FAX: (905) 356-7008

RE: Class Environmental Assessment – Speers Road from Bronte Road to Kerr Street, Town of Oakville

---

NAME: Lynanne Cane

TITLE: Planning Co-ordinator

GROUP/AGENCY: Cogeco

ADDRESS: 695 Lawrence Rd
Hamilton, ON

TELEPHONE: 905.548.8002

FAX: 905.547-5237

E-MAIL: Lynanne.Cane@Cogeco.com

☐ My group/agency is not interested in participating in this study but would like to be kept informed. Please maintain our group/agency on the study contact list for this project.

☐ My group/agency has no concerns about this project and can be removed from your contact list.

AGENCY COMMENTS/AREA OF INTEREST:

Please send all info regarding this project to me via email.
Thanks Lynanne
we do have cable in the area.

Over...

Delcan

OAKVILLE

FAX BACK FORM

TO: Andrew McGregor, B.A.
Environmental Assessment Planner, Transportation Division

FAX: (905) 356-7008

RE: Class Environmental Assessment – Speers Road from Bronte Road to Kerr Street, Town of Oakville

NAME: Enzo Greco
TITLE: Construction Projects Team Lead.
GROUP/AGENCY: Union Gas Ltd.
ADDRESS: 360 Strathearne Ave N.
HAMILTON, ONT. L8N 3A5
TELEPHONE: (905) 548-3531
FAX: (905) 548-3525
E-MAIL: egreco@uniongas.com

☐ My group/agency is not interested in participating in this study but would like to be kept informed. Please maintain our group/agency on the study contact list for this project.

☐ My group/agency has no concerns about this project and can be removed from your contact list.

AGENCY COMMENTS/AREA OF INTEREST:

We would like to be communicated during all stages of this project. There is a significant amount of large diameter gas main within the scope of this project that I expect to be in conflict with the eventual road design.

Over…

Delcan

OAKVILLE

FAX BACK FORM

TO: **Andrew McGregor, B.A.**
Environmental Assessment Planner, Transportation Division

FAX: **(905) 356-7008**

RE: **Class Environmental Assessment – Speers Road from Bronte Road to Kerr Street, Town of Oakville**

NAME: Elaine Westerhof
TITLE: Manager of Planning
GROUP/AGENCY: Halton District School Board
ADDRESS: ~~2~~ 2050 Guelph Line
Burlington, ON L7R 3Z2
TELEPHONE: 905 335-3665
FAX: 905 335-4447
E-MAIL:

☑ My group/agency is not interested in participating in this study but would like to be kept informed. Please maintain our group/agency on the study contact list for this project.

☐ My group/agency has no concerns about this project and can be removed from your contact list.

AGENCY COMMENTS/AREA OF INTEREST:

As a school board we may need to know about any changes/construction for the school bus transportation as we a ~~3~~ schools located just south of Speers Road between Bronte Rd + Kerr St. They are Gladys Speers, Brookdale, PineGrove and Oakwood.

Over...

Affaires indiennes et du Nord Canada
Indian and Northern Affairs Canada

March 31, 2008

Mr. Andrew McGregor
Environmental Planner, Transportation Division
Delcan
4056 Dorchester Road
NIAGARA FALLS, ON L2E 6M9

RE: Notice of Study Commencement – Environmental Assessment for Speers Road Improvements, Bronte Road to Kerr Street
Request for Information

Dear Mr. McGregor,

I am responding to your request for Information sent to the Comprehensive Claims Branch, by mail, on March 17 2008.

We can confirm that there are no comprehensive claims in the Town of Oakville, Ontario. We cannot make any comments regarding potential or future claims, or claims filed under other departmental policies. This includes claims under Canada's Specific Claims Policy or legal action by the First Nation against the Crown. For more information, I suggest you contact the Director General of Specific Claims Branch at (819) 994-2323 and the Director General of Litigation Management and Resolution Branch at (819) 997-3582.

INAC- Comprehensive Claims Branch does not have any specific interest in the project and would request to be taken out of the mailing list

Yours truly,

Kevin Clement, A/ Director
for
Lynn Bernard, Director General
Comprehensive Claims Branch

Cc. Irfan Arab, Town of Oakville

Agency comments/area of interest:

We have conducted a brief search of our records and determined that no claims has been submitted by a First Nation in the area of interest.

However, there are First Nations in the general vicinity of your area of interest. You may wish to apprise them of your intentions.

Mississaugas of the New Credit First Nation
2789 MISSISSAUGA ROAD R.R. #6 HAGERSVILLE ON N0A 1H0
(905) 768-1133

Six Nations of the Grand River
P.O. Box 5000 OHSWEKEN ON
N0A 1M0
(519) 445-2201

For more information, you may wish to consult a "Public Information Status Report" on all claims which have been submitted to date. This information is available to the public on the Indian and Northern Affairs Canada (INAC) website and can be found at http://www.ainc-inac.gc.ca/ps/clm/pis_e.html.

It should be noted that the reports available on the INAC website are updated quarterly and therefore, you may want to check this site at regular intervals for updates. In accordance with legislative requirements, confidential information has not been disclosed.

Please rest assured that it is the policy of the Government of Canada as expressed in *Outstanding Business: A Native Claims Policy* that "in any settlement of specific native claims the government will take third party interests into account. As a general rule, the government will not accept any settlement which will lead to third parties being dispossessed."

We can only speak directly to claims filed under the Specific Claims Policy in the Province of Ontario. We cannot make any comments regarding potential or future claims, or claims filed under other departmental policies. This includes claims under Canada's Comprehensive Claims Policy or legal action by a First Nation against the Crown. You may wish to contact INAC's Comprehensive Claims Branch at (819) 994-7521 or its Litigation Management and Resolution Branch at (819) 934-2185 directly for more information. In addition, you may wish to consult the unit responsible for Special Claims at (819) 994-6453.

To the best of our knowledge, the information we have provided you is current and up-to-date. However, this information may not be exhaustive with regard to your needs and you may wish to consider seeking information from other government and private sources (including Aboriginal groups). In addition, please note that Canada does not act as a representative for any Aboriginal group for the purpose of any claim or the purpose of consultation.

Andrew McGregor

From: JPHOENIX@oakville.ca
Sent: Friday, April 18, 2008 2:41 PM
To: a.mcgregor@delcan.com; m.dilwaria@delcan.com
Subject: Speers Road EA - Oakville Transit

Just to follow up on the discussion at yesterdays TAC meeting:

Oakville Transit operates 8 routes through the study area (I might have said 7 routes yesterday - my error):

- from the east, to Kerr Street - Routes 10, 15, 16, 17, 18, 28, 110 and 180
- from Kerr Street to Dorval - Routes 16, 18, 28
- from Dorval to Third Line - Route 16
- from Third Line to Bronte Road - Route 10

The schedules for each of these routes are available on our website, but generally:

- Route 10 = rush hour only, Monday to Friday
- Route 15 = all day service, Monday to Saturday
- Route 16 = all day service, Monday to Saturday
- Route 17 = all day service, Monday to Saturday
- Route 18 = rush hour only, Monday to Friday
- Route 28 = all day service, Monday to Sunday
- Route 110 = rush hour only, Monday to Friday
- Route 180 = rush hour only, Monday to Friday

During the late evenings, and on Sundays, Oakville Transit operates Zone Express service. This is a call on demand service, and does not follow a fixed route. We operate in 4 zones in the Town - the South West (the study area) would be covered by Zone 3. Additional information on the Zone Service is also available on our website.

We have, as mentioned, experienced severe delays in the pm rush hour, traveling west along Speers, and of course would appreciate any improvements that could be made in the corridor.

I will also re-iterate the importance of the changes stemming from the Accessibility For Ontarians with Disabilities Act (AODA) - which requires all our services to be accessible, and all access to our services to be accessible.

Should you require specific detail on any of these items, please don't hesitate to get in touch with me.

I will forward a copy of the 5 Year Plan, as mentioned, at my first opportunity.

Joanne Phoenix
Manager of Planning & Accessible Services
Oakville Transit