Final Report

FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT REPORT

530, 550, 588 Kerr Street and 131, 171 Speers Road, Oakville, Ontario

Prepared for Urban Strategies Inc
by IBI Group
IBI GROUP Project #137021
January 31, 2022

Document Control Page

CLIENT:	Urban Strategies Inc.
PROJECT NAME:	530, 550, 588 Kerr Street and 131, 171 Speers Road Town of Oakville, Ontario
REPORT TITLE:	Functional Servicing and Stormwater Management Report
IBI REFERENCE:	Project #137021
VERSION:	Final Report, January 31, 2022, Official Plan Amendment
DIGITAL MASTER:	137021 Urban Strategies Inc._Environmental and Ecology_Upper Kerr Village – Internal Documents\6.0_Technical\6.04_Civil\03_Reports\OPA\Revision 1
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HISTORY:	January 31, 2022 – Official Plan Amendment

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1 Introduction

1.1 Background

IBI GROUP PROFESSIONAL SERVICES (CANADA) INC. (IBI GROUP) has been retained by Urban Strategies Inc. to prepare a Functional Servicing and Stormwater Management Report on behalf of April Investments Limited (owner of 588 Kerr Street), 527079 Ontario Limited (owner of 530 Kerr Street), Trans County Development Corporation Limited (owner of 131 Speers Road), and Oakville Developments (2010) Inc. (owner of 550 Kerr Street) (together known as the "landowners"). This document is in support of an Official Plan Amendment (OPA) process to permit the redevelopment of lands municipally addressed 530, 550, 580 Kerr Street, 131 and 171 Speers Road (together known as the "subject site"), in the Town of Oakville (the "Town"), Halton Region (the "Region"). The purpose of this report is to discuss the feasibility of servicing the site from a municipal servicing strategy. More specifically, the report will present the following:

- Calculate allowable runoff rates for the development;
- Identify suitable methods for attenuation and treatment of stormwater runoff;
- Identify storm servicing opportunities and constraints;
- Identify sanitary servicing opportunities and constraints and evaluate the capacity of the receiving municipal sewer; and,
- Identify water servicing opportunities and constraints, calculate the proposed domestic water and firefighting supply needs; and evaluate the capacity of the municipal infrastructure.

The following documents have been obtained from various sources:

- Town of Oakville plan and profile drawings for Speers Road, dated February 1975;
- Halton Region plan and profile drawings for Speers Road and Kerr Street, dated November 2006 and September 2019;
- Kerr Street at CNR Grade Separation Class Environmental Assessment Study, dated June 2009;
- Conceptual plans and site statistics prepared by Urban Strategies Inc.; and,
- Topographic survey prepared by KRCMR Surveyors Ltd., dated January 26, 2022.

1.2 Existing Site Description

The 4.8 ha site is bounded by Speers Road to the south, Kerr Street to the east, a CN rail corridor to the north, and a single storey heritage building to the west. Please see **Figure 1** following the report for an aerial view of the site.

The subject site currently hosts a commercial plaza and retail buildings with asphalt parking surfaces fronting Kerr Street at 131 Speers Road, 530, 550, 588 Kerr Street, and a cinema and education centre with an asphalt parking surface at 171 Speers Road.

It should be noted that Metrolinx is in the planning stages of the Kerr Street Underpass Project, which will see changes to the horizontal alignment and profile of Kerr Street to accommodate an underpass beneath the CN rail corridor. Detailed information pertaining to grading and servicing has been requested from Metrolinx and will be included in future submissions. For the purposes of this report, it is assumed that the preferred alternative identified in the June 2009 Class Environmental Assessment (EA) shall be constructed prior to development of the subject site. Please refer to **Appendix A** for an excerpt copy of the EA.

Under existing conditions, surface elevations at the subject site range from approximately 100.9 m to 104.3 m and generally slope in a southeasterly direction. As previously mentioned, the existing profile of Kerr Street is expected to change as part of the Metrolinx underpass project, however the EA indicates that retaining walls shall be used to minimize property impact.

1.3 Site Proposal

The Proposal contemplates the construction of mixed-use buildings ranging from eight to 28 storeys with an approximate total residential gross floor area (GFA) of 172,000 m^2 and commercial GFA of 7,900 m^2 and a 1 acre (4,036 m^2) park central to the site.

The site is proposed to be divided into four areas as follows:

- Area A: 588 Kerr Street;
- Area B: 550 Kerr Street;
- Area C: 530 Kerr Street and 131 Speers Road; and,
- Area D: 171 Speers Road.

The four parcels fronting Kerr Street have been revised based on the Metrolinx expropriation related to the aforementioned grade separation project. For the purposes of this report, it is assumed that the resultant grading, parcels, and road configuration are in place.

A new roadway is proposed to extend from Kerr Street at the Shepherd Road intersection to Speers Road at the St. Augustine Drive intersection.

Given the scale of the subject site, the Proposal will be developed in a phased manner and an interim site plan has been prepared accordingly. Under the interim condition, which includes Areas A, B, and C, the 2.9 ha site is proposed to host mixed-use buildings with an approximate total residential GFA of 128,000 m^2 and commercial GFA of 6,900 m^2 and a 2,962 m^2 park space. The new roadway is proposed to extend from Kerr Street at the Shepherd Road intersection to Speers Road east of St. Augustine Drive.

Sample conceptual site plan drawings and statistics can be found in **Appendix A** for reference.

1.4 Service Connections

Individual sanitary and domestic services shall be provided per Halton Region standards. Individual storm services may be provided for each building or may be shared if the buildings share a common underground level. The servicing strategy shall be advanced at the detailed design stage.

Furthermore, the Ontario Building Code (OBC) requires two fire service connections separated by an isolation value for any building above 84 m in height. Should the buildings exceed this threshold, a secondary fire service will be required.

Site servicing requirements will be discussed in greater detail in subsequent sections.

2 Terms of Reference and Methodology

2.1 Terms of Reference

The terms of reference used for the scope of this report have been based on the Town of Oakville's Development Engineering Procedures and Guidelines, the Town of Oakville's Stormwater Management Master Plan, dated November 2019, and the Regional Municipality of Halton's Water and Wastewater Linear Design Manual, dated October 2019.

2.2 Methodology: Stormwater Management

This report provides a brief stormwater management (SWM) review of the pre-development conditions, post-development conditions, and comments on opportunities to reduce peak flows.

Per the Town's Development Engineering Procedures and Guidelines and Stormwater Management Master Plan, the following SWM criteria shall apply:

Quantity Control
Quantity control is required where increased storm runoff, due to development, will cause detrimental impacts via flooding and erosion. The post-development peak runoff rate shall not exceed the pre-development levels for all events up to the 100-year storm. An overland flow route (major system) shall be provided within the developed site to direct runoff in excess of the 100-year storm to an approved overland flow outlet.

Quality Control
Quality treatment of storm water is required with the level of treatment to be determined by Conservation Halton based on the receiving system, which is Sixteen Mile Creek. Conservation Halton has indicated that long-term average removal of 80% of the total suspended solids (TSS) on an annual loading basis is required.

Erosion Control
Conservation Halton recommends retention of the 25 mm design storm over 24 hours or demonstration that erosion potential has been reduced to the extent feasible.

Source Control Capture
The criteria provided in the Town's Stormwater Management Master Plan outline that controls should be in place, such that the runoff resulting from a 25 mm rainfall event must be captured on-site through a combination of initial abstraction, rainwater re-use, infiltration, and storage.

2.3 Methodology: Sanitary Discharge

Pre- and post-development peak sewer flows will be calculated based on the following Region design criteria:

Table 2.1 Sanitary Design Parameters

DESIGN FLOWS		POPULATION DENSITIES	
Existing Domestic Flow	275 L/c/day		
Proposed Residential	275 L/c/day	Residential	2.7 pp/unit
Proposed Commercial	24.75 m^3/ha/day	Commercial or Retail	90 pp/ha
Infiltration Allowance	0.286 L/s/ha		
Peaking Factor	Harmon equation		

It should be noted that the residential population density that shall be used is greater than the population densities provided in Table 2-1 of the Region's Design Manual. As the conceptual site plan indicates higher than typical density, 2.7 pp/unit shall be used as a conservative measure.

Based on the calculated peak flows, the adequacy of the existing infrastructure to support the proposed development will be discussed.

2.4 Methodology: Water Supply

The domestic water usage will be calculated based on the following Region design criteria:

Table 2.2 Water Design Parameters

AVERAGE DAILY DEMAND		PEAKING FACTORS		
		LAND USE	PEAK HOUR	MAX DAY
Residential	275 L/c/day	Residential	4.00	2.25
Commercial	275 L/c/day	Commercial	2.25	2.25

Pressure and flow testing to determine the adequacy of the existing watermain to support the development with fire suppression in accordance with the Fire Underwriters Survey (FUS) Guidelines will be discussed in the subsequent sections.

3 Groundwater Discharge

The number of underground levels, soil conditions, and location of the water table will all factor into groundwater discharge rates. IBI GROUP has prepared a Desktop Hydrogeological Investigation that indicates dewatering will likely be required. Typically, groundwater discharge is directed to the storm sewer, however as noted in the Hydrogeological Investigation groundwater contamination was identified at the site, which may require groundwater to be discharged to the sanitary sewer. A discharge agreement with Halton Region will be required should discharge to the sanitary sewer be deemed necessary.

It is recommended that site specific environmental, geotechnical, and hydrogeological assessments be carried out to further understand existing groundwater conditions.

4 Stormwater Management

4.1 Existing Storm Drainage System

Per the Town's record information, local storm infrastructure consists of:

- A 375 mm storm sewer within Kerr Street that conveys flows in a southerly direction to a 1050 mm storm sewer within Speers Road that conveys flows in an easterly direction;
- A 450 mm storm sewer within Speers Road that increases to 900 mm diameter in the vicinity of the subject site and conveys flows in an easterly direction to the 1050 mm storm sewer; and,
- A 300 mm storm sewer within Speers Road that conveys flows in a westerly direction to a 500 mm storm sewer within St. Augustine Drive that conveys flows in a southerly direction.

Please refer to the Town's plan and profile drawings which can be found in **Appendix A**.

As previously mentioned, it is expected that the Kerr underpass project shall be completed by Metrolinx prior to development of the subject site. As the project involves a significant change in grade along Kerr Street, it is expected that sewers within Kerr Street may be relocated. The EA indicates that a new storm sewer is to be installed within Kerr Street which will convey flows to an outlet to Sixteen Mile Creek. Detailed information from Metrolinx pertaining to the municipal services within Kerr Street shall be provided when made available.

4.2 Grading

The proposed grades will match current drainage patterns wherever feasible. Grades will be maintained along property lines to the extent practical. Emergency overland flow route in excess of a 100-year storm event will continue to be directed to the southeast to the municipal right-of-way matching pre-development conditions. Please refer to the Preliminary Site Grading Exhibit (**SG-01** and **SG-02**) which can be found in **Appendix D**.

4.3 Allowable Release Rate

As previously mentioned, the site currently hosts commercial buildings with surface parking, resulting in a pre-development runoff coefficient of 0.90.

Using the AES Toronto (Bloor Street) IDF data as required by the Town, the pre-development release rate for the site is calculated as follows:

$$Q_{5\text{-Year Pre}} = \frac{(A \times R) * I_5}{360} = \frac{(4.8\ \text{ha} \times 0.90) \times 114.2\ \text{mm/hr}}{360} \times \left(\frac{1000\ \text{L}}{\text{m}^3}\right) = 1371\ \text{L/s}$$

$$Q_{100\text{-Year Pre}} = \frac{(A \times R) * I_{100}}{360} = \frac{(4.8\ \text{ha} \times 0.90) \times 200.8\ \text{mm/hr}}{360} \times \left(\frac{1000\ \text{L}}{\text{m}^3}\right) = 2410\ \text{L/s}$$

As shown above, the release rate from the subject site shall be limited to a maximum of **1,371 L/s** during the 5-year storm and **2,410 L/s** during the 100-year storm.

4.4 Quantity Control

As previously mentioned, the post-development release rate for the subject site shall be limited to the pre-development release rate. While the detailed landscape design has not been completed at this stage, a post-development runoff coefficient was estimated based on the conceptual site plan provided by the planner. As a conservative measure, it was assumed that the site would be comprised of mainly impervious surfaces with landscape area only being assigned to the designated park, resulting in a post-development runoff coefficient of 0.85.

The corresponding post-development release rate for the site is calculated as follows:

$$Q_{5\text{-Year Post}} = \frac{(A \times R) * I_5}{360} = \frac{(4.8\ \text{ha} \times 0.85) \times 114.2\ \text{mm / hr}}{360} \times \left(\frac{1000\ \text{L}}{\text{m}^3}\right) = 1288\ \text{L/s}$$

$$Q_{100\text{-Year Post}} = \frac{(A \times R) * I_{100}}{360} = \frac{(4.8\ \text{ha} \times 0.85) \times 200.8\ \text{mm / hr}}{360} \times \left(\frac{1000\ \text{L}}{\text{m}^3}\right) = 2265\ \text{L/s}$$

As shown above, the post-development release rate for the subject site is less than the pre-development release rate for the subject site. Furthermore, should LID measures such as permeable pavers, landscaping, and green roof be incorporated into the site, the post-development runoff rate shall be further reduced.

4.5 Quality Control

As outlined in **Section 2.2**, 80% of total suspended solids must be removed from site runoff to provide enhanced cleansing. In order to achieve this a water quality unit shall be used. Where possible LID measures will be implemented to provide cleansing and infiltration, however it should be noted that infiltration measures are likely unfeasible as the Desktop Hydrogeological Investigation indicates a relatively thin overburden and the possibility of a perched water table.

4.6 Erosion Control and Source Control Capture

As required by Conservation Halton and the Town, a rainfall depth of 25 mm must be retained over the entire area of development. It is anticipated that a combination of initial abstraction, water re-use, and rooftop and underground storage will be incorporated. As previously mentioned, infiltration measures are likely unfeasible due to the thin overburden and possible perched water table.

4.7 Proposed Storm Sewer

It is proposed that a new storm sewer be installed within the new roadway. The proposed storm sewer may be connected to the existing 900 mm storm sewer within Speers Road or the storm sewer within Kerr Street proposed as part of the Kerr Underpass project. It is expected that further discussion with Metrolinx and the Town will be required should the development connect to the proposed sewer within the Kerr Street underpass.

4.8 Storm Service Connections

It is proposed to connect storm services for each building to the storm sewer within the new roadway. The stormwater management approach will be further refined at the ZBA and SPA stages. The location of the existing and conceptual storm infrastructure is shown on the Preliminary Site Servicing Exhibit (**SS-01** and **SS-02**) which can be found in **Appendix D**.

5 Sanitary Drainage System

5.1 Existing Sanitary Drainage System

The subject site is located within the Oakville Southwest wastewater treatment plant (WWTP) drainage area. Per the Town's and Region's record information, local sanitary infrastructure consists of:

- a 300 mm sanitary sewer within Kerr Street that conveys flows in a southerly direction;
- a 300 mm sanitary sewer within Kerr Street that conveys flows in a southerly direction to a 300 mm sanitary sewer within Shepherd Avenue that conveys flows in an easterly direction; and,
- a 200 mm sanitary sewer within Speers Road that conveys flows in a westerly direction to a 200 mm sanitary sewer within St. Augustine Drive that conveys flows in a southerly direction.

The sanitary sewers indicated above ultimately convey flows to a trunk sewer within Rebecca Street, approximately 1 km south of the subject site.

As previously mentioned, the Kerr underpass project may require relocation of the sewers within Kerr Street. Halton Region has indicated that a connection to temporarily service the existing buildings fronting Kerr Street will connect to the 300 mm sanitary sewer that flows south and that this sewer is to remain. Detailed information from Metrolinx pertaining to the municipal services within Kerr Street shall be provided when made available.

Please refer to the Town's and Region's plan and profile drawings which can be found in **Appendix A** and Region's wastewater system map which can be found in **Appendix C**.

5.2 Pre-Development Sanitary Design Flow

As previously mentioned, the site currently hosts a commercial plaza and buildings with a total commercial area of 1.7 ha resulting in a total population of 153. The corresponding pre-development peak sanitary flow is calculated as follows:

$$Q_{Pre\text{-}Dev.} = (Q_{Residential} + Q_{Commercial}) \times P.F. + I/I$$

$$Q_{Pre} = \left(\frac{24.750\ m^3/ha{\cdot}d \cdot 1.7\ ha \cdot 3.55_{P.F.} \cdot 1000\ L / m^3}{86400\ s / day}\right) + (0.286\ \ L/s{\cdot}ha \cdot 4.8\ ha) = \mathbf{3.1\ L/s}$$

5.3 Post-Development Sanitary Design Flow

Based on the criteria set in **Section 2.3** and the conceptual site plan and statistics provided by the planner, the corresponding post-development sanitary flow is calculated as follows:

$$Q_{Post\text{-}Dev.} = (Q_{Residential} + Q_{Commercial}) \times P.F. + I/I$$

$$Q_{Post} = \left(\frac{(275\ L/c{\cdot}d \cdot 4987\ pers + 24.750\ m^3/ha{\cdot}d \cdot 1000\ L/m^3 \cdot 0.79\ ha) \cdot 3.22_{P.F.}}{86400\ s / day}\right) + (0.286\ \ L/s{\cdot}ha \cdot 4.8\ ha) = \mathbf{53.2\ L/s}$$

As shown above, the subject site represents an increase in dry weather flow. Further analysis using the Region's wastewater hydraulic model should be completed at the zoning by-law application (ZBA) stage to determine if there are any negative impacts on the municipal system.

5.4 Proposed Sanitary Sewer

It is proposed in the interim condition that a new 300 mm sanitary sewer be installed within the new roadway and connect to the existing 300 mm sanitary sewer within Kerr Street to service 588 and 550 Kerr Street (Areas A & B). It is further proposed in the ultimate condition that an additional new 200 mm sanitary sewer be installed within the new roadway and connect to the existing 200 mm sanitary sewer within Speers Road to service 171 Speers Road (Area D).

The calculated design flows, nominal full flow capacities, and corresponding residual capacities for all proposed sewers are summarized as follows:

Table 5.1 Sanitary Sewer Performance

AREA	FROM	TO	SIZE (MM)	SLOPE	PEAK FLOW (L/S)	CAPACITY (L/S)	PERCENT OF FULL FLOW
Area A	MH1A	MH2A	300	0.5%	14.2	71.3	19.9%
Areas A + B	MH2A	EX MH4A	300	0.5%	26.6	71.3	37.3%
Area D	MH7A	EX MH3A	200	0.6%	15.7	26.5	59.2%

As shown above, the proposed sanitary sewers can convey the peak sanitary discharge while operating at 59% (or less) of full flow capacity. Please see the detailed design sheet which can be found in **Appendix B** and the Preliminary Site Servicing Exhibit (**SS-01** and **SS-02**) which can be found in **Appendix D** for the location of proposed sanitary sewers in interim and ultimate conditions.

5.5 Sanitary Service Connections

As previously mentioned, it is proposed that a new sanitary service be installed for each building and a sanitary service be installed for the park. Each service connection will be installed at a 2.0% slope. Under the interim condition, services in Area A and Area B will be connected to the proposed 300 mm sanitary sewer within the new roadway. Services in Area C will be connected to the existing sewers within Kerr Street and Speers Road. Under the ultimate condition, services in Area D will be connected to the proposed 200 mm sanitary sewer within the new roadway. Each service will require a control manhole to be installed at the property line. Please refer to the Preliminary Site Servicing Exhibit (**SS-01** and **SS-02**) which can be found in **Appendix D** for the location of proposed sanitary services in interim and ultimate conditions.

At the time of preparation of this report, a detailed breakdown of unit counts for each building was not available. As a conservative measure, the unit count for each area was used to estimate the required service size, however Areas C and D each have more than one proposed building.

The calculated design flows, nominal full flow capacities, and corresponding residual capacities for all proposed sanitary services are summarized as follows:

Table 5.2 Sanitary Service Performance

AREA	PIPE SIZE (MM)	PIPE SLOPE	PEAK FLOW (L/S)	CAPACITY (L/S)	PERCENT OF FULL FLOW
Area A	150	2.0 %	14.1	22.5	62.8%
Area B	150	2.0 %	14.1	22.5	62.8%
Area C	150	2.0 %	17.0	22.5	75.7%
Area D	150	2.0 %	15.7	22.5	69.9%

As shown above, each sanitary service will convey the post-development peak sanitary flow while operating at 76% or less of full flow capacity. Please see the detailed design sheet which can be found in **Appendix B**.

6 Water Supply System

6.1 Existing Water Infrastructure

The subject site is located within the Region's Pressure District O2 (PD O2), which is primarily supplied by Davis Road Booster Pumping Station (PS). Static pressure within PD O2 is governed by the water level within the Eighth Line Reservoir which has a Top Water Level (TWL) of 167.64 m.

Per the Town's and Region's record information local water infrastructure consists of a 300 mm watermain within Speers Road and a 300 mm watermain within Kerr Street. Furthermore, a 900 mm feedermain is located within Speers Road and Kerr Street along the frontage of the site. As previously mentioned, the Kerr Underpass project may affect the municipal services within Kerr Street. Halton Region has indicated that the 300 mm watermain within Kerr Street is to be relocated to the west side of the realigned Kerr Street and will be accessible to the site. Detailed information from Metrolinx pertaining to the municipal services within Kerr Street shall be provided when made available.

At the time of preparation of this report, hydrant flow testing was not available, however given the TWL of the Eighth Line Reservoir, static pressure within the system is approximated as follows:

$$p = \rho g h = 1000\ kg/m^3 \times 9.81\ m/s^2 \times (167.64\ m - 103.5\ m) \times \frac{0.000145\ psi}{1\ Pa} = \mathbf{91\ psi}$$

As shown above, static pressure within the system is expected to be approximately 91 psi. A hydrant flow test shall be provided at the ZBA stage to confirm that the domestic and fire supply demands can be met by the existing water supply network.

6.2 Domestic Water Supply Demands

Using the criteria set in **Section 2.4** and the site statistics provided by the planner, the Average Day Demand (ADD), Peak Hour Demand (PHD), and Max Day Demand (MDD) have been calculated, and are summarized as follows:

Table 6.1 Domestic Water Demands

AREA	POPULATION	ADD (L/S)	PHD (L/S)	MDD (L/S)
588 Kerr Street (Area A)	1,170	3.7	14.8	8.4
550 Kerr Street (Area B)	1,173	3.7	14.8	8.4
530 Kerr Street & 131 Speers Road (Area	1,429	4.5	18.0	10.2
171 Speers Road (Area D)	1,286	4.1	16.3	9.1
TOTAL	5,058	16.1	63.9	36.2

The domestic supply line for each building will be designed based on PHD while maintaining a minimum available pressure of 40 psi (275 kPa) at the face of the building. Please see **Appendix C** for the detailed calculations.

6.3 Fire Supply Demands

The recommended fire flow demand for the subject site has been calculated using the design criteria outlined in the Water Supply for Public Fire Protection Manual, 1999 by the Fire Underwriters Survey (FUS). The recommended fire flow demand has been calculated for the proposed building in Area C as this results in the worst-case fire demand, based on its size and proximity to the other proposed and existing buildings.

As the building will be constructed using fire resistive materials, the effective floor area is taken as the largest floor area plus 25% of the two adjacent floors. At the time of preparation of this report, detailed floor area statistics for each storey were not available. As a conservative measure, the area for each floor is taken as the measured ground floor area.

- Effective Floor Area = Largest Floor Area + 25% (two adjoining floors)
- Effective Floor Area = 4417 m2 + 25% (4417 m2 + 4417 m2)
- Effective Floor Area = 6,626 m2

The corresponding floor area and FUS factors will be applied as follows:

Table 6.2 Fire Underwriters Survey Factors

CONSTRUCTION COEFFICIENT	BUILDING OCCUPANCY	SPRINKLER ADJUSTMENT	PROXIMITY FACTOR
0.6 (resistive)	- 15 % (limited)	- 30 %	+ 35 %

Using the effective floor area for the building and the appropriate FUS factors, the required fire flow is calculated as follows:

Table 6.3 Fire Demand Calculations

FIRE FLOW (F) CALCULATION	APPLYING FUS FACTORS	ADJUSTED FIRE FLOW	TOTAL DEMAND (TD)
F=220 0.6 √Area	F_1=F·0.85 = 9,350 L/min	Fire Flow=F_1 - F_2 + F_3	TD=FF + MDD
F=220 0.6 √6,626 m^2	F_2=F_1·0.30 = 2,805 L/min	FF=10,000 L/min *(rnd'd)*	TD=166.7 L/s + 36.2 L/s
F=11,000 L/min *(rnd'd)*	F_3=F_1·0.35 = 3,273 L/min	FF=166.7 L/s	TD=202.8 L/s

The fire supply line for each building will be designed based on Total Demand (Fire Flow + MDD) while maintaining a minimum available pressure of 20 psi (140 kPa) at the face of the building. Please see **Appendix C** for the detailed calculations.

6.4 Proposed Watermain

To improve fire flow response and water quality through increased circulation, watermain networks should be looped where possible. To satisfy this requirement, a new municipal 300 mm watermain is proposed to be installed within the new roadway and will be connected to both the existing 300 mm watermain within Speers Road, and the existing 300 mm watermain within Kerr Street in both interim and ultimate conditions.

Please see the Preliminary Site Servicing Exhibit (**SS-01** and **SS-02**) which can be found in **Appendix D** for the location of existing and proposed water infrastructure in interim and ultimate conditions.

6.5 Water Service Connections

To service the development, a new 200 mm fire service is proposed to connect to the new watermain within the new roadway for each building. A separate 150 mm domestic service will tee off from each fire line within the municipal right-of-way. A hydrant flow test shall be included in a future submission to confirm service sizes.

A new valve and box shall be installed at the property line for each incoming service, and all required water meters, backflow preventers, and double check valves shall be located inside a mechanical room.
As previously mentioned, the OBC requires two fire services separated by an isolation valve to be installed for any building above 85 m. As the proposed towers may exceed this threshold, a secondary fire service may be required for these buildings.

The National Fire Protection Association (NFPA) considers any building over 23 m in height to be classified as a high-rise building and thus requires a remotely located secondary siamese connection for each zone. As all buildings are expected to exceed this threshold, a second siamese connection for each building will be required. All siamese connections shall be placed within 45 m of a hydrant.

Please see the Preliminary Site Servicing Exhibit (**SS-01** and **SS-02**) which can be found in **Appendix D** for the location of existing and proposed water infrastructure.

6.6 Hydrant Coverage

Existing fire hydrants in the vicinity of the site include:

- One (1) hydrant on the west side of Kerr Street, approximately 50 m north of Speers Road;
- One (1) hydrant on the west side of Kerr Street, approximately 20 m north of Shepherd Road;
- One (1) hydrant on the north side of Speers Road, approximately 30 m east of Kerr Street;
- One (1) hydrant on the north side of Speers Road, approximately 100 m east of Kerr Street 10 m east of the existing driveway to 520 Kerr Street);
- Two (2) hydrants on the north side of Speers Road, approximately 15 m west of the existing driveway to 171 Speers Road; and,
- One (1) hydrant on the north side of Speers Road, approximately 50 m east of the existing driveway to 171 Speers Road.

As the Kerr Street Underpass construction includes a realignment of Kerr Street, the existing hydrants along Kerr Street may be relocated as a result.

Five hydrants are proposed within the subject site along the new municipal road. These will serve to provide the hydrant spacing required by the Region and shall be strategically placed within 45 m of the proposed siamese connections.

Please see the Preliminary Site Servicing Exhibit (**SS-01** and **SS-02**) which can be found in **Appendix D** for the location of existing and proposed water infrastructure.

7 Conclusions and Recommendations

Storm Sewer and Stormwater Management
The objectives of the Town's and Conservation Authority's stormwater management criteria can be met by implementing on-site measures in both interim and ultimate conditions. Post-development peak runoff rates shall be less than pre-development peak runoff rates. Conservation Halton's target for quality control can be met through a combination of LID practises and the installation of a water quality unit. The Town's target for source control capture can be achieved through a combination of initial abstraction and graywater re-use. Details pertaining to the SWM strategy will be advanced during the detailed design stage.

Sanitary Sewers
The proposed sanitary sewers within the new roadway can support the peak sanitary discharge from the development in both interim and ultimate conditions. Further analysis of the downstream system is required to determine the available capacity in the existing sanitary network and any upgrades that may be required.

Water Supply
The proposed 300 mm watermain within the new roadway, and the adjacent existing watermain network is expected to have sufficient capacity to support the fire and domestic water demands for the Proposal in interim and ultimate conditions without improvements to the system. Hydrant flow testing shall be provided in a future submission to confirm that domestic and fire demands are met.

In summary, while the site is located in a well-established area within the Town of Oakville, further analysis will be required at the zoning bylaw amendment stage to verify the assumptions made in this report.

Should you have any questions, please do not hesitate to contact the undersigned.

Respectfully Submitted,

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Figure 1 – Aerial Plan

CLIENT: URBAN STRATEGIES INC.	PROJECT NAME: 530,550,580 KERR STREET AND 131,171 SPEERS ROAD	IBI GROUP Unit 300 – 8133 Warden Avenue Markham ON L6G 1B3 Canada tel 905 763 2322 fax 905 763 9983 ibigroup.com	
	SCALE: NTS / DATE: 2022-01-31	FIGURE NAME: AERIAL PLAN	FIGURE NO.: FIG.1 / REVISION: 1
	PROJECT ENG: JJ / DRAWN BY: SB		
	CHECKED BY: JJ / APPROVED BY: JJ		
	PROJECT NO: 137021		

File Location: J:\137021_UpperKerr\7.0_Production\7.03_Design\04_Civil\Sheets\Figures\137021- Figure 1 (Aerial Plan).dwg Last Saved: January 26, 2022, by shirley.beaudoin Plotted: Tuesday, February 1, 2022 1:17:24 PM by Shirley Beaudoin

SCALE CHECK 1 in 10mm

Appendix A
Background Information

Conceptual Site Plan and Statistics (Urban Strategies Inc.)

Topographic Survey (KRCMR)

Plan and Profile Drawings (Town of Oakville)

Plan and Profile Drawings (Halton Region)

Excerpt Kerr Street at CNR Grade Separation Class Environmental Assessment Study

OPT 5C_Long Term	Retail GFA (sq m)	Residential GFA (sq m)	Above Grade Parking	Total GFA (sq m)	# of Units	Net Floor Area (sq m)	Site Area	FSI
588 Kerr (AREA A)	923	39,797	N/A	40,720	428	34,612	9,058	3.82
550 Kerr (AREA B)	1,941	39,846	2,876	44,663	428	34,842	8,017	4.35
530 Kerr + 131 Speers (AREA C)	3,968	48,080	N/A	52,048	517	44,241	12,398	3.57
171 Speers (AREA D)	980	43,919	N/A	44,899	472	38,164	18,845	2.03
TOTAL	**7,811**	**171,642**	**2,876**	**182,329**	**1,845**	**154,980**	**48,318**	**3.21**

NOTE: Net Floor Area : 15% floor area for core, stairs, amenities, lobbies and services.

550 Kerr Statistics are based on Architecture Set Oct 28

0.78011307

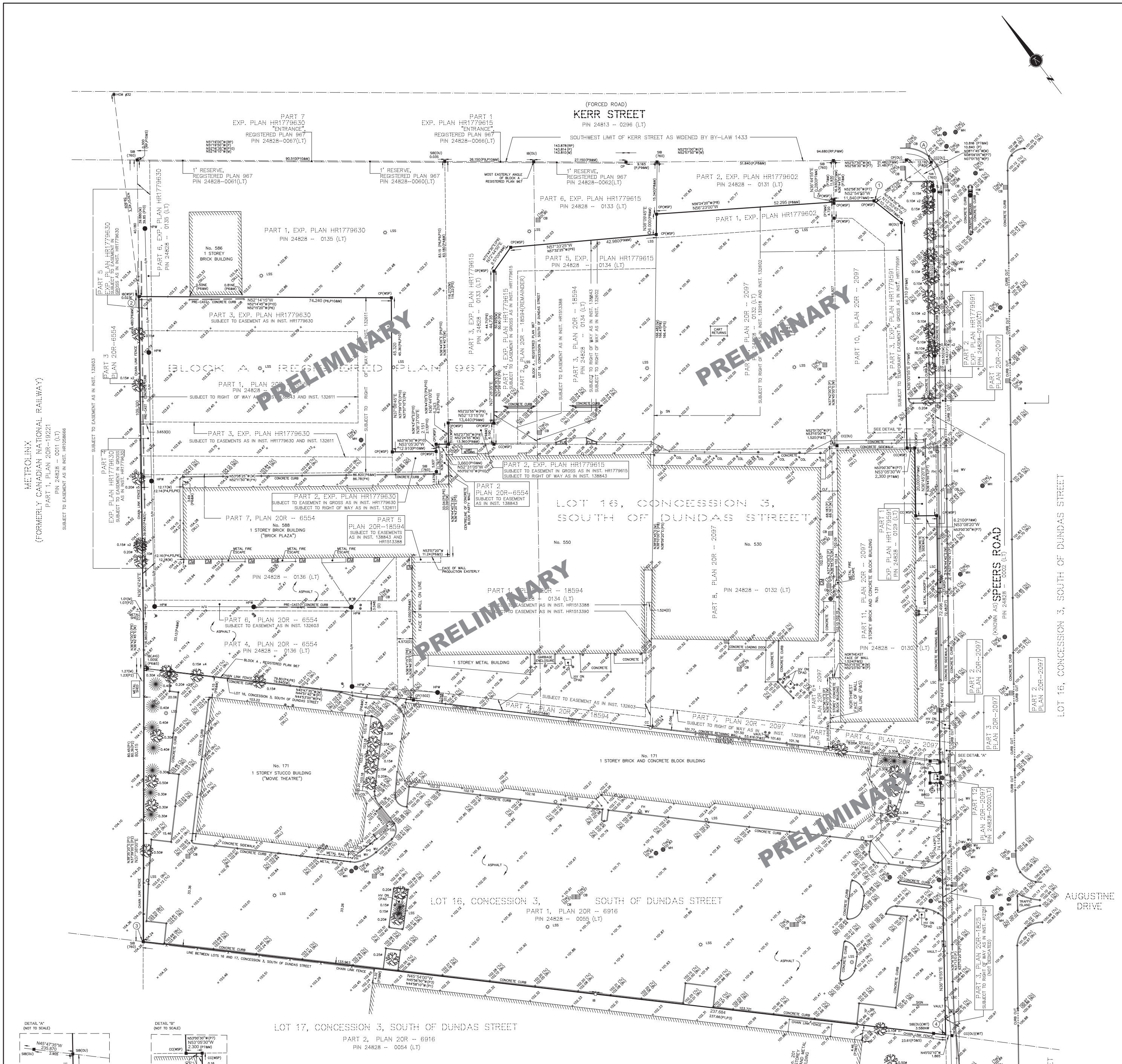
OPT 5C_Long Term	Parking Area (sq m)	Parking Lot
588 Kerr (AREA A)	6,549	187
171 Speers (AREA D)	5,033	144
TOTAL	**11,582**	**331**

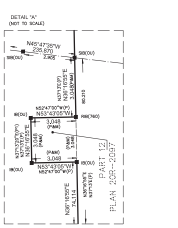
Round up table

Site By Property	Retail GFA (sq m)	Residential GFA (sq m)	Above Grade Parking	Total GFA (sq m)	# of Units	Net Floor Area (sq m)	Site Area (ha)	FSI
588 Kerr (AREA A)	1,000	40,000	6,500	47,500	430	40,375	0.9	4.5
550 Kerr (AREA B)	1,900	40,000	2,800	44,700	428	34,850	0.8	4.4
530 Kerr + 131 Speers (AREA C)	4,000	48,000	0	52,000	516	44,200	1.2	3.6
171 Speers (AREA D)	1,000	44,000	5,000	50,000	473	42,500	1.9	2.3
TOTAL	**7,900**	**172,000**	**14,300**	**194,200**	**1,847**	**161,925**	**4.8**	**3.4**

Statistics for Area B is based on the 550 Kerr Architecture Set dated Oct 28, 2021

assumptions for Area A, C and D: Net Floor Area = 85% of Gross Floor Area, average residential units GFA: 93 sq m





INTEGRATION DATA

6° UTM ZONE 17 COORDINATES		
NAD 83 (CSRS)(2010) (CENTRAL MERIDIAN 81°00' WEST LONGITUDE) THE UTM COORDINATES LISTED BELOW ARE TO URBAN ACCURACY AND COMPLY WITH SUBSECTION 14(2) OF ONTARIO REGULATION 216/10 FILED UNDER THE SURVEYORS ACT.		
OBSERVED REFERENCE POINTS		
MONUMENT ID.	NORTHING	EASTING
(A) CC(OU)	N=4811259.852	E=606233.877
HCM # 32	N=4811421.931	E=606055.219
REFERENCE POINTS		
POINT	NORTHING	EASTING
1	4 811 261.10	606 213.67
2	4 811 370.32	606 024.99
3	4 811 219.09	605 910.59
4	4 811 053.74	606 081.18

COORDINATE VALUES SHOWN ARE FOR GEOGRAPHIC INFORMATION SYSTEM INTEGRATION ONLY. COORDINATES CANNOT, IN THEMSELVES, BE USED TO RE-ESTABLISH CORNERS OR BOUNDARIES SHOWN ON THIS PLAN.

TOTAL SITE AREA = 4.8525 ha

PLAN OF SURVEY
SHOWING TOPOGRAPHICAL INFORMATION OF

PART OF BLOCK A, REGISTERED PLAN 967 AND PART OF LOT 16 CONCESSION 3 SOUTH DUNDAS STREET (GEOGRAPHIC TOWNSHIP OF TRAFALGAR) TOWN OF OAKVILLE

REGIONAL MUNICIPALITY OF HALTON

SCALE 1:400

KRCMAR SURVEYORS LTD. 2022

METRIC: DISTANCES AND COORDINATES SHOWN HEREON ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

BEARING

BEARINGS SHOWN HEREON ARE GRID DERIVED FROM GPS OBSERVATIONS OF OBSERVED REFERENCE POINT 'A' AND HORIZONTAL CONTROL MONUMENT HCM# 32 USING THE LEICA SMARTNET RTK NETWORK AND ARE REFERRED TO THE 6° UTM COORDINATE SYSTEM, ZONE 17, CENTRAL MERIDIAN 81°00' WEST LONGITUDE. (NAD 83 (CSRS)(2010)).

DISTANCES SHOWN HEREON ARE GROUND DISTANCES AND CAN BE CONVERTED TO GRID DISTANCES BY MULTIPLYING BY A COMBINED SCALE FACTOR OF 0.999747.

ELEVATION

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE RELATED TO TOWN OF OAKVILLE BENCH MARK No. 112 HAVING AN ELEVATION OF 102.472 METRES.

LEGEND

■	DENOTES SURVEY MONUMENT FOUND
□	DENOTES SURVEY MONUMENT PLANTED
HCM	DENOTES HORIZONTAL CONTROL MONUMENT
SIB	DENOTES STANDARD IRON BAR
SSIB	DENOTES SHORT STANDARD IRON BAR
RIB	DENOTES ROUND IRON BAR
IB	DENOTES IRON BAR
CP	DENOTES CONCRETE PIN
CC	DENOTES CUT CROSS
(M)	DENOTES MEASURED
(S)	DENOTES SET
(OU)	DENOTES ORIGIN UNKNOWN
(WIT)	DENOTES WITNESS
(RP)	DENOTES REGISTERED PLAN 967
(P)	DENOTES PLAN 20R–2097
(P1)	DENOTES PLAN 20R–6916
(P2)	DENOTES PLAN 20R–19221
(P3)	DENOTES TOPOGRAPHIC SURVEY BY DAVID HORWOOD LTD, O.L.S. DATED JULY 11, 2005
(P4)	DENOTES PLAN 20R–6554
(P5)	DENOTES PLAN 20R–18594
(P6)	DENOTES SURVEYOR'S REAL PROPERTY REPORT BY J. H. GELBLOOM SURVEYING LIMITED, O.L.S. DATED JULY 27, 2021
(P7)	DENOTES EXPROPRIATION PLAN HR1779591
(P8)	DENOTES EXPROPRIATION PLAN HR1779602
(P9)	DENOTES EXPROPRIATION PLAN HR1779615
(P10)	DENOTES EXPROPRIATION PLAN HR1779630
(P11)	DENOTES PLAN 20R–21692
(D)	DENOTES INSTRUMENT 132603
(1370)	DENOTES KRCMAR SURVEYORS LTD. O.L.S.
(760)	DENOTES K. H. MCCONNELL, O.L.S.
(JHG)	DENOTES J. H. GELBLOOM SURVEYING LIMITED, O.L.S.
(WSP)	DENOTES WSP GEOMATICS ONTARIO LIMITED, O.L.S.
(MMM)	DENOTES McCONNELL, MAUGHAN LIMITED, O.L.S.
ILB	DENOTES INTERLOCKING BRICK
CSW	DENOTES CONCRETE SIDEWALK
HV	DENOTES HYDRO VAULT
CPAD	DENOTES CONCRETE PAD
COL	DENOTES COLUMN
PLR	DENOTES PLANTER
SILL	DENOTES DOOR SILL ELEVATION
WIF	DENOTES WROUGHT IRON FENCE
EXP	DENOTES EXPROPRIATION
(Tc)	DENOTES TOP OF CURB
(Bc)	DENOTES BOTTOM OF CURB
×123.45	DENOTES EXISTING GRADE ELEVATION
BPED	DENOTES BELL PEDESTAL
⊕	DENOTES BOLLARD
CB	DENOTES CATCH BASIN
0.1ø	DENOTES CONIFEROUS TREE WITH TRUNK DIAMETER
0.1ø	DENOTES DECIDUOUS TREE WITH TRUNK DIAMETER
	DENOTES DOWN GUY ANCHOR
FH	DENOTES FIRE HYDRANT
GM	DENOTES GAS METER
GAS	DENOTES GAS SERVICE LOCATE MARKER
GV	DENOTES GAS VALVE
HW	DENOTES HYDRO HAND WELL
HP	DENOTES HYDRO POLE
HPW	DENOTES HYDRO POLE – WOODEN
LP	DENOTES LAMP POST (PRIVATE)
LS	DENOTES LAMP STANDARD
LSC	DENOTES LAMP STANDARD – CONCRETE
LSS	DENOTES LAMP STANDARD – STEEL
MH	DENOTES MANHOLE
Pipe	DENOTES PIPE
TL	DENOTES TRAFFIC LIGHT
WV	DENOTES WATER VALVE

SURVEY REPORT

1. THE RE-ESTABLISHMENT OF THE SUBJECT PROPERTY BOUNDARIES IS BASED ON INFORMATION CONTAINED IN THE RELEVANT TITLE DOCUMENTS, REGISTERED PLANS AND ON THE EVIDENCE OF PRIOR SURVEYS FOUND DURING THE COURSE OF PREPARING THE SUBJECT SURVEY.
2. THE TYPE AND LOCATION OF THE EXISTING BUILDINGS AND OTHER IMPROVEMENTS, FENCES ETC., ON OR NEAR THE SUBJECT PROPERTY ARE AS SHOWN ON THE SURVEY PLAN.
3. COMPLIANCE WITH MUNICIPAL ZONING REQUIREMENTS IS NOT CERTIFIED BY THIS REPORT.
4. LANDS COMPRISES ALL OF PINS 24828–0130(LT), 24828–0132(LT), 24828–0134(LT), 24828–0136(LT) AND 24828–0055(LT).
5. THE PARCEL IS DESCRIBED AS BEING:

PIN 24828–0130(LT)
SUBJECT TO AND TOGETHER WITH RIGHT–OF–WAY AS IN INST. 132602 AND INST. 132918.
SUBJECT TO RIGHT–OF–WAY OVER PART 10, PLAN 20R–2097 AS IN INST. 132198 AND INST. 132602 (EXCEPT PART 2, EXPROPRIATION PLAN HR1779591).
TOGETHER WITH RIGHT–OF–WAY AS IN INST. 132611.
SUBJECT TO EASEMENT OVER PART 3, EXPROPRIATION PLAN HR1779591 IN FAVOUR OF PARTS 1 AND 2, EXPROPRIATION PLAN HR1779591 AS IN INST. HR1779591.
SUBJECT TO TEMPORARY EASEMENT IN GROSS AS IN INST. HR1779591 OVER PART 3, EXPROPRIATION PLAN HR1779591.

PIN 24828–0132(LT)
SUBJECT TO AND TOGETHER WITH RIGHT–OF–WAY AS IN INST. 132602 AND INST. 132918.
SUBJECT TO RIGHT–OF–WAY OVER PART 9, PLAN 20R–2097 AS IN INST. 132918 AND INST 132602 (EXCEPT PART 2, EXPROPRIATION PLAN HR1779602).
TOGETHER WITH RIGHT–OF–WAY AS IN INST. 132611
SUBJECT TO EASEMENT IN GROSS OVER PART 1, EXPROPRIATION PLAN HR1779602 AS IN INST. HR1779602.

PIN 24828–0134(LT)
SUBJECT TO RIGHT–OF–WAY OVER PART 3, PLAN 20R–18594 AS IN INST. 132602 (EXCEPT PART 6, EXPROPRIATION PLAN HR1779615)
TOGETHER WITH RIGHT–OF–WAY OVER PARTS 3, 4, 5 AND 7, PLAN 20R–2097 AS IN INST. 138843.
SUBJECT TO RIGHT OF WAY OVER PARTS 2 AND 3, PLAN 20R–18594 AS IN INST 138843 (EXCEPT PART 3, EXPROPRIATION PLAN HR1779615)
SUBJECT TO EASEMENT OVER PART 5, PLAN 20R–18594 AS IN INST. 138843 AND INST. HR1513388.
SUBJECT TO EASEMENT OVER PART 4, PLAN 20R–18594 AS IN INST. 132603.
TOGETHER WITH EASEMENT OVER PART 2, PLAN 20R–6554 AS IN INST. 138843.
TOGETHER WITH RIGHT–OF–WAY AS IN INST. 138843 (FIRSTLY) AND INST. 132611(AFFECT PIN 24828–0136(LT)).
SUBJECT TO EASEMENT OVER PARTS 1, 2 AND 5, PLAN 20R–18594 AS IN INST. HR1513388.
SUBJECT TO EASEMENT OVER PARTS 1 AND 4, PLAN 20R–18594 AS IN INST. HR1513390.
SUBJECT TO EASEMENT IN GROSS OVER PARTS 2, 4 AND 5, EXPROPRIATION PLAN HR1779615 AS IN INST HR1779615.

PIN 24828–0136(LT)
SUBJECT TO RIGHT–OF–WAY AS IN INST. 138843 AND INST. 132611.
SUBJECT TO EASEMENT OVER PARTS 3 AND 6, PLAN 20R–6554 AS IN INST. 132603 (EXCEPT PART 6, EXPROPRIATION PLAN HR1779630).
SUBJECT TO EASEMENT IN GROSS OVER PARTS 2, 3, 4 AND 5, EXPROPRIATION PLAN HR1779630 AS IN INST. HR1779630.
TOGETHER WITH RIGHT–OF–WAY AS IN INST. 13602 AND INST. 138843.
TOGETHER WITH RIGHT–OF–WAY OVER PARTS 3, 4, 5 AND 7, PLAN 20R–2097 AS IN INST. 132602.
TOGETHER WITH EASEMENT OVER PARTS 1, 2, 5 AND 6, PLAN 20R–18594 AS IN INST. HR1513388.
TOGETHER WITH EASEMENT OVER PARTS 1 AND 4, PLAN 20R–18594 AS IN INST HR1513390.

PIN 24828–0085(LT)
TOGETHER WITH RIGHT–OF–WAY OVER PART 3, PLAN 20R–1825 AS IN INST. 412751.

SURVEYOR'S CERTIFICATE

I CERTIFY THAT:

1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE REGULATIONS MADE UNDER THEM.
2. THE SURVEY WAS COMPLETED ON THE 24th DAY OF JANUARY, 2022

DATE JANUARY 26 , 2022

S.N. RAMSAMOOJ
ONTARIO LAND SURVEYOR

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
V-16288
THIS PLAN IS NOT VALID UNLESS IT IS AN EMBOSSED ORIGINAL COPY ISSUED BY THE SURVEYOR In accordance with Regulation 1026, Section 29(3).

MUNICIPAL ADDRESS: Nos. 530, 550, 588 KERR STREET AND 131 & 171 SPEERS ROAD, OAKVILLE

FIELD:	L.D.	DRAWN:	J.M.	CHECKED:	S.N.R.	JOB NO:	21-204
DWG NAME:	21-204BT01	PLOT INFO:	11:55 26/Jan/2022	WORK ORDER NO:	35795		

1137 Centre Street Thornhill ON L4J 3M6 905.738.0053 F 905.738.9221 www.krcmar.ca

PLAN AVAILABLE AT www.ProtectYourBoundaries.ca

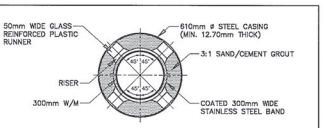
KRCMAR

LEGEND

- BH1 — BOREHOLES – REFER TO GEOTECHNICAL INVESTIGATION REPORTS PROJECT No. 00158 PREPARED BY LANDTEK LIMITED
- PLUGS
- EX. HYDRANT REMOVAL
- EX. G.V. & BOX REMOVAL
- EX. WVC OR EX. MH REMOVAL
- PROPOSED PROPERTY LINE MANHOLE
- SAN. SEWER

WATERMAIN BORE AND JACKING NOTES:
MAIN LINE CROSSING

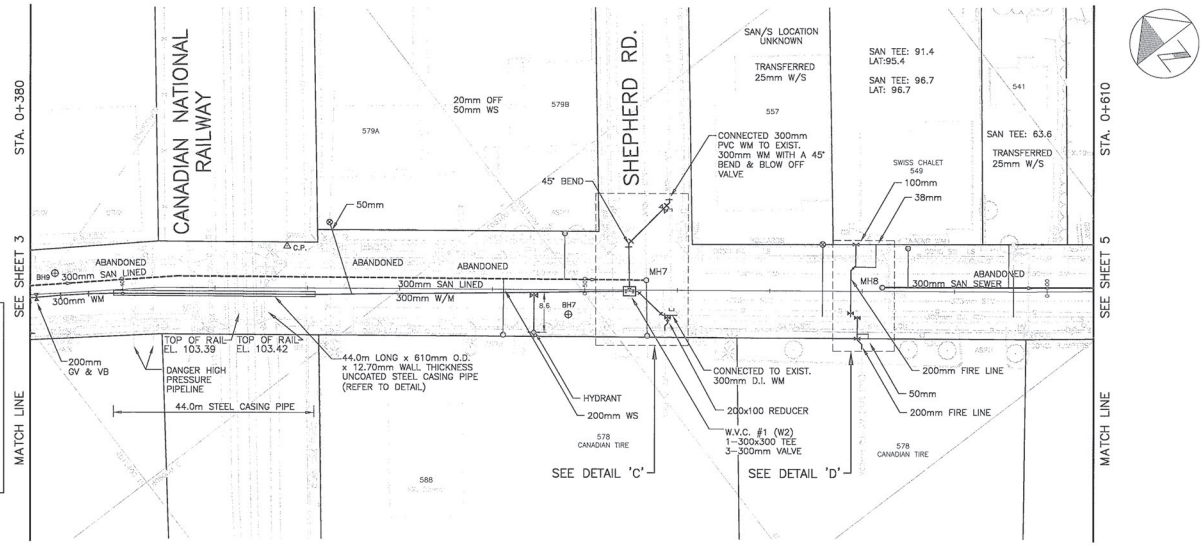
1.) RESTORE GROUND SURFACE TO EXISTING GRADE AND CONDITION.
2.) NOTIFY C.N. (NORTH AMERICA) THREE WEEKS IN ADVANCE OF DOING ANY WORK ON OR AFFECTING THEIR PROPERTIES.
3.) ALL FACILITIES SHALL BE CONSTRUCTED AND MAINTAINED TO MEET THE REQUIREMENTS OF CANADIAN TRANSPORT COMMISSION GENERAL ORDER No. E-10 "REGULATIONS RESPECTING PIPE CROSSINGS UNDER RAILWAYS"
4.) COMPACTION TO BE: (a) NATIVE MATERIAL BACKFILL TO 95% SPD. (b) GRANULAR 'A' TO 100% SPD.
5.) SHORING OF PITS AND TRENCH TO COMPLY WITH "OCCUPATIONAL HEALTH AND SAFETY ACT" PART III – TRENCHING.



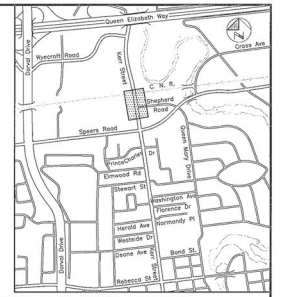
CNR CROSSING
JACK AND BORE CASING PIPE DETAIL
N.T.S.

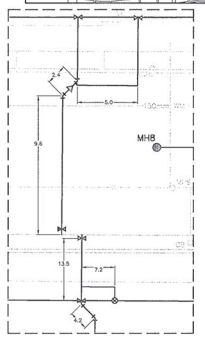
6.) CASING SPACERS SHOULD BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
7.) SPECIAL CARE SHOULD BE TAKEN TO ENSURE THAT ALL COMPONENT PARTS ARE CORRECTLY ASSEMBLED AND EVENLY TIGHTENED, AND THAT NO DAMAGE OCCURS DURING TIGHTENING OF THE SPACERS OR THE WATERMAIN INSERTION.
8.) THE ANNULUS BETWEEN THE WATERMAIN AND THE CASING SHOULD BE SEALED AT EACH END OF THE CASING TO PREVENT WATER FROM ENTERING.
9.) THE WATERMAIN IN THE CASING IS REQUIRED TO BE CENTRED AND RESTRAINED.

C KERR ST. = ml 21.96 OAKVILLE SUBDIVISION

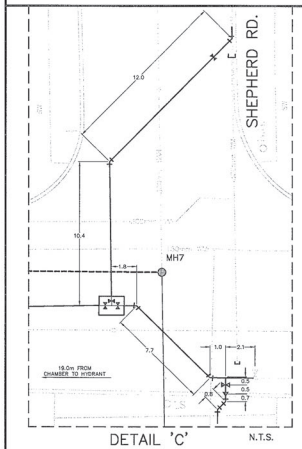


REGIONAL MUNICIPALITY OF HALTON, ITS EMPLOYEES, OFFICERS AND AGENTS ARE NOT RESPONSIBLE FOR ANY ERRORS, OMISSIONS OR INACCURACIES WHETHERS DUE TO THEIR NEGLIGENCE OR OTHERWISE. ALL INFORMATION SHOULD BE VERIFIED

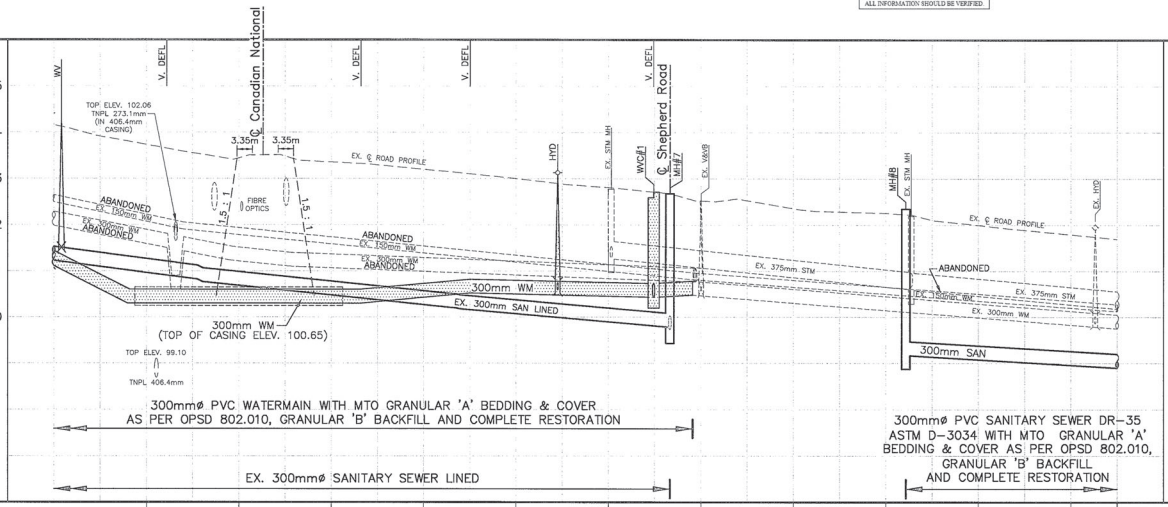




DETAIL 'D'
549 KERR STREET SERVICE DETAIL
N.T.S.



DETAIL 'C'
578 KERR STREET SERVICE DETAIL
N.T.S.



300mmø PVC WATERMAIN WITH MTO GRANULAR 'A' BEDDING & COVER AS PER OPSD 802.010, GRANULAR 'B' BACKFILL AND COMPLETE RESTORATION

EX. 300mmø SANITARY SEWER LINED

300mmø PVC SANITARY SEWER DR-35 ASTM D-3034 WITH MTO GRANULAR 'A' BEDDING & COVER AS PER OPSD 802.010, GRANULAR 'B' BACKFILL AND COMPLETE RESTORATION

EX. ℄ ELEVATIONS	103.730, 103.440, 103.356, 103.198, 102.897, 102.804, 102.517, 102.354, 102.254, 101.994, 101.783	EX. ℄ ELEVATIONS
PROPOSED WATERMAIN INVERTS	100.43 — 8.49m @ 0.59% — 100.48	PROPOSED WATERMAIN INVERTS
PROPOSED SANITARY INVERTS	EX. SAN LINED (MH#5 TO MH#7 168.0m @1.12%) N 99.81 EX. ℄ 99.76 S 99.39 — 135.97m @ 0.60% (ACTUAL LENGTH 99.5m)	PROPOSED SANITARY INVERTS
STATIONS	0+400, 0+404.42, 0+446.42, 0+470.00, 0+500, 0+509.78, 0+513.29, 0+518.27, 0+564.5, 0+600	STATIONS

1	11/15/2006	DMS	"AS CONSTRUCTED"	X
№	Date	By	REVISIONS	MANU CAD

Design	R.W.H.	Ch'kd	J.S.	Date MARCH 12, 2001
Drawn	T.B.G.	Ch'kd	M.H.	
Scale 1:500 Horiz. 10 5 0 10				References
1:50 Vert. 1 0.5 0 1				

APPROVALS — Field Notes

Municipal — Stamp

Regional

Director, Engineering Services

Manager, Design Services

UPPER CANADA CONSULTANTS
ENGINEERS/PLANNERS
672 Spring Gardens Road Burlington, Ontario L7T 1J3
Phone (905)521-9440 Fax: (905)521-9535

Halton

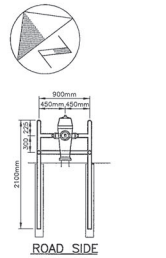
TITLE WATERMAIN AND SANITARY SEWER REPLACEMENT
KERR STREET
IN THE TOWN OF OAKVILLE
FROM 35m NORTH OF CANADIAN NATIONAL RAILWAY TO 65m NORTH OF SPEERS ROAD

Consultant File № 0021PP3 — Regional Drawing № 0-13133

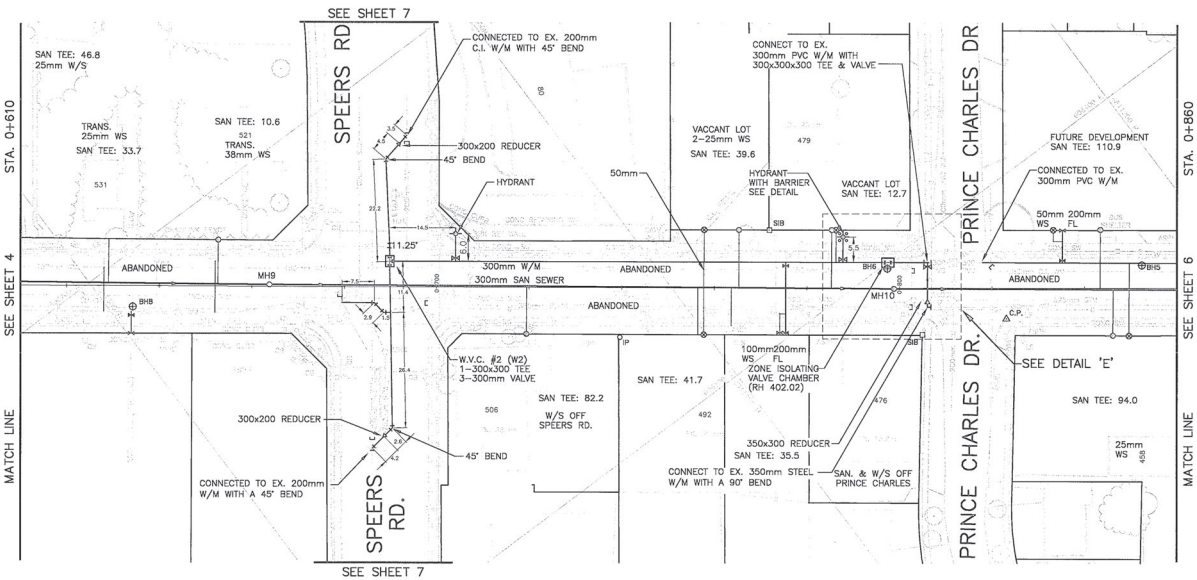
CONTRACT № WS-1989B-03 — Drawing № SHEET 4 OF 8

0-13133

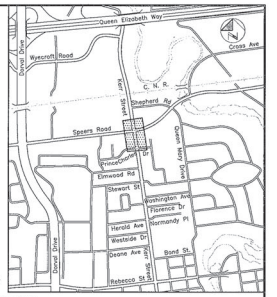
WS-1989B-03 4 of 8



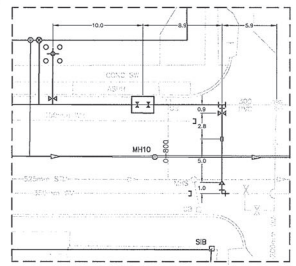
HYDRANT BARRIER
N.T.S.



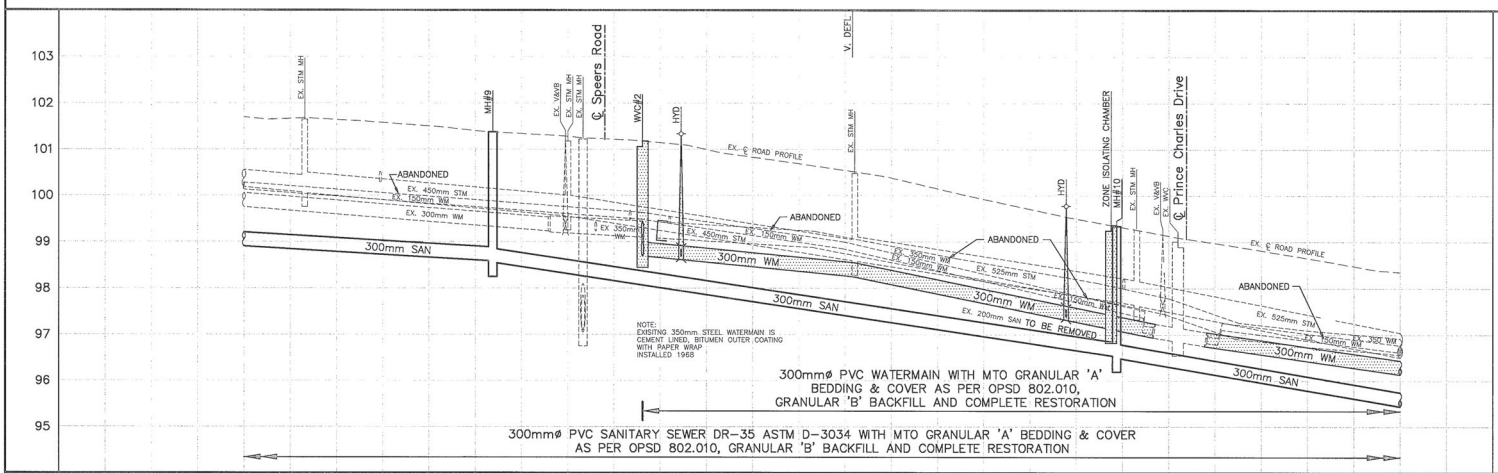
KERR STREET



LEGEND
- PLUGS
- EX. HYDRANT REMOVAL
- EX. G.V. & BOX REMOVAL
- EX. WVC OR EX. MH REMOVAL
- BH1 BOREHOLES – REFER TO GEOTECHNICAL INVESTIGATION REPORTS PROJECT No. 00158 PREPARED BY LANDTEK LIMITED
- PROPOSED PROPERTY LINE MANHOLE
- SAN. SEWER



DETAIL 'E'
549 KERR STREET SERVICE DETAIL
N.T.S.



EX. ℄ ELEVATIONS	101.685 · 101.578 · 101.405 · 101.381 · 101.144 · 100.830 · 100.545 · 100.146 · 99.707 · 99.314 · 98.975 · 98.649 · 98.350	EX. ℄ ELEVATIONS
PROPOSED WATERMAIN INVERTS	98.69 — 45.34m @ 0.97% — 98.25 — 64.78m @ 2.02% — 96.94 — 96.75 — 118.63m @ 1.46%	PROPOSED WATERMAIN INVERTS
PROPOSED SANITARY INVERTS	135.97m @ 0.60% — N 98.58 S 98.55 — 135.0m @ 1.50% — N 96.53 S 96.50 — 150.0m @ 1.54%	PROPOSED SANITARY INVERTS
STATIONS	0+663.82 · 0+696.22 (0+700) · 0+741.56 · 0+798.71 (0+800) · 0+806.60 · 0+817.69	STATIONS

1	11/15/2006	DMS	"AS CONSTRUCTED"	X
NO	Date	By	REVISIONS	MANU CAD

Design	R.W.H.	Ch'kd	J.S.	Date
Drawn	T.B.G.	Ch'kd	M.H.	MARCH 12, 2001

Scale 1:500 Horiz. 5 0 10
1:50 Vert. 1 0.5 0 1

References

APPROVALS

Municipal

Field Notes

Stamp

Regional

Director, Engineering Services

Manager, Design Services

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ENGINEERS/PLANNERS
672 Spring Gardens Road
Burlington, Ontario
L7T 1J3
Phone:(905)521-9440
Fax: (905)521-9535

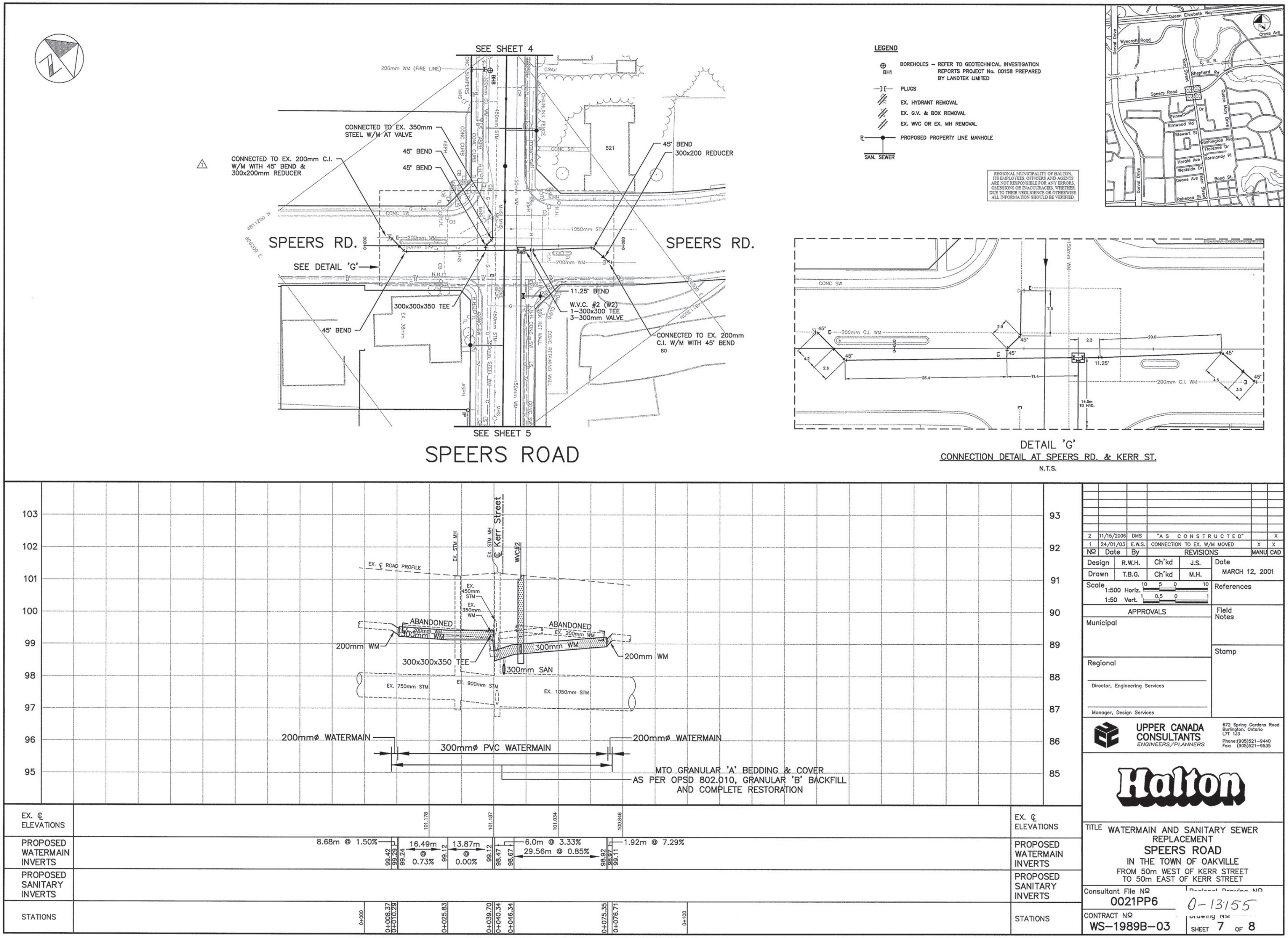
Halton

TITLE WATERMAIN AND SANITARY SEWER REPLACEMENT
KERR STREET
IN THE TOWN OF OAKVILLE
FROM 65m NORTH OF SPEERS ROAD TO 45m SOUTH OF PRINCE CHARLES DRIVE

Consultant File NO 0021PP4	Regional Drawing NO 0-13134
CONTRACT NO WS-1989B-03	Drawing NO SHEET 5 OF 8

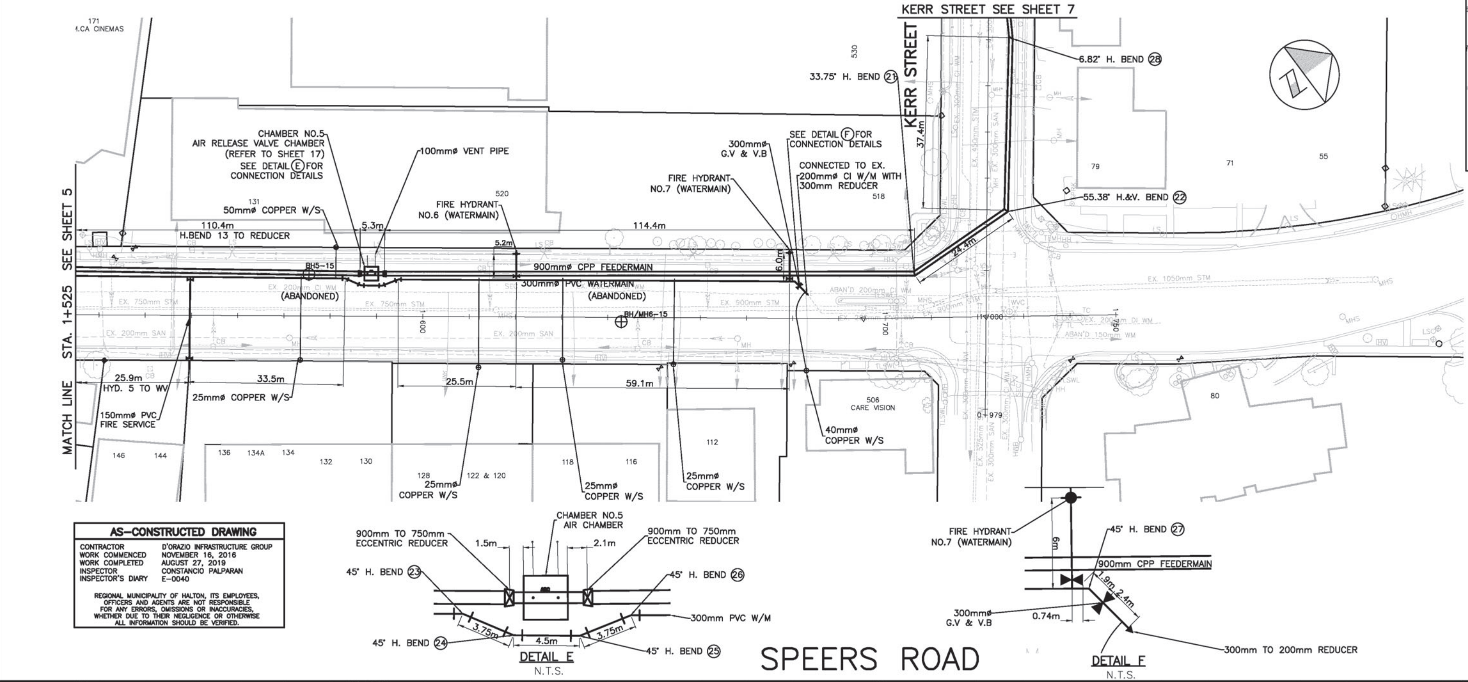
0-13134

WS-1989B-03 5 of 8


SEE SHEET 4
SEE SHEET 5
SPEERS ROAD
SPEERS RD.
SPEERS RD.
SEE DETAIL 'G'
200mm WM (FIRE LINE)
CONNECTED TO EX. 350mm STEEL W/M AT VALVE
45° BEND
45° BEND
CONNECTED TO EX. 200mm C.I. W/M WITH 45° BEND & 300x200mm REDUCER
45° BEND 300x200 REDUCER
11.25° BEND
W.V.C. #2 (W2) 1–300x300 TEE 3–300mm VALVE
CONNECTED TO EX. 200mm C.I. W/M WITH 45° BEND
300x300x350 TEE
45° BEND
LEGEND
BOREHOLES – REFER TO GEOTECHNICAL INVESTIGATION REPORTS PROJECT No. 00158 PREPARED BY LANDTEK LIMITED
PLUGS
EX. HYDRANT REMOVAL
EX. G.V. & BOX REMOVAL
EX. WVC OR EX. MH REMOVAL
PROPOSED PROPERTY LINE MANHOLE
SAN. SEWER
REGIONAL MUNICIPALITY OF HALTON, ITS EMPLOYEES, OFFICERS AND AGENTS ARE NOT RESPONSIBLE FOR ANY ERRORS, OMISSIONS OR INACCURACIES, WHETHER DUE TO THEIR NEGLIGENCE OR OTHERWISE. ALL INFORMATION SHOULD BE VERIFIED.
DETAIL 'G'
CONNECTION DETAIL AT SPEERS RD. & KERR ST.
N.T.S.
EX. ℄ ROAD PROFILE
℄ Kerr Street
WVC#2
ABANDONED
200mm WM
300mm WM
300x300x350 TEE
300mm SAN
EX. 750mm STM
EX. 900mm STM
EX. 1050mm STM
200mmø WATERMAIN
300mmø PVC WATERMAIN
200mmø WATERMAIN
MTO GRANULAR 'A' BEDDING & COVER AS PER OPSD 802.010, GRANULAR 'B' BACKFILL AND COMPLETE RESTORATION
EX. ℄ ELEVATIONS
PROPOSED WATERMAIN INVERTS
PROPOSED SANITARY INVERTS
STATIONS
8.68m @ 1.50%
16.49m @ 0.73%
13.87m @ 0.00%
6.0m @ 3.33%
29.56m @ 0.85%
1.92m @ 7.29%
2 11/15/2006 DMS "AS CONSTRUCTED"
1 24/01/03 E.W.S. CONNECTION TO EX. W/M MOVED
Design R.W.H. Ch'kd J.S.
Drawn T.B.G. Ch'kd M.H.
Date MARCH 12, 2001
Scale 1:500 Horiz. 1:50 Vert.
APPROVALS
Municipal
Regional
Director, Engineering Services
Manager, Design Services
References
Field Notes
Stamp
UPPER CANADA CONSULTANTS
ENGINEERS/PLANNERS
672 Spring Gardens Road Burlington, Ontario L7T 1J3
Phone:(905)521-9440 Fax: (905)521-9535
Halton
TITLE WATERMAIN AND SANITARY SEWER REPLACEMENT
SPEERS ROAD
IN THE TOWN OF OAKVILLE
FROM 50m WEST OF KERR STREET TO 50m EAST OF KERR STREET
Consultant File No 0021PP6
0-13155
CONTRACT No WS-1989B-03
SHEET 7 OF 8

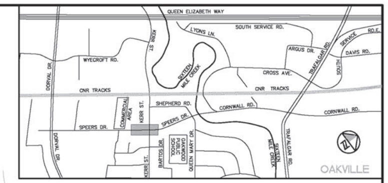
REGIONAL MUNICIPALITY OF HALTON, ITS EMPLOYEES, OFFICERS AND AGENTS ARE NOT RESPONSIBLE FOR ANY ERRORS, OMISSIONS OR INACCURACIES, WHETHER DUE TO THEIR NEGLIGENCE OR OTHERWISE. ALL INFORMATION SHOULD BE VERIFIED

O-23156



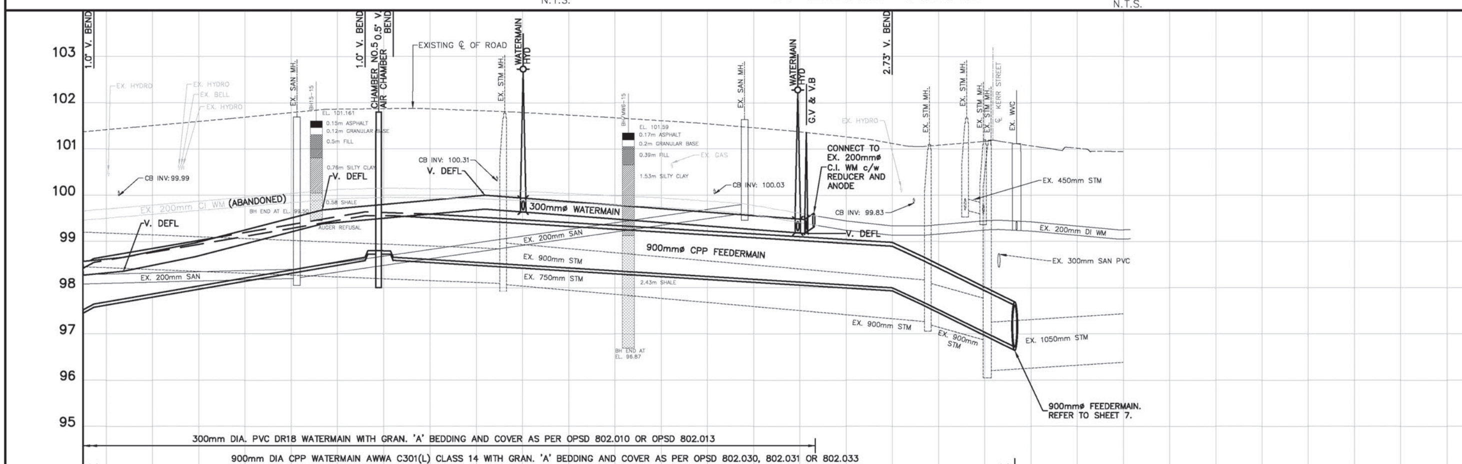
AS-CONSTRUCTED DRAWING	
CONTRACTOR	D'ORAZIO INFRASTRUCTURE GROUP
WORK COMMENCED	NOVEMBER 16, 2016
WORK COMPLETED	AUGUST 27, 2019
INSPECTOR	CONSTANCIO PALPARAN
INSPECTOR'S DIARY	E-0040

REGIONAL MUNICIPALITY OF HALTON, ITS EMPLOYEES, OFFICERS AND AGENTS ARE NOT RESPONSIBLE FOR ANY ERRORS, OMISSIONS OR INACCURACIES, WHETHER DUE TO THEIR NEGLIGENCE OR OTHERWISE ALL INFORMATION SHOULD BE VERIFIED.



AS CONSTRUCTED FEEDERMAIN & WATERMAIN DATA

DISCRIPTION	STATION	OFFSET	NORTHING	EASTING
900mmø CPP FEEDERMAIN				
900mm TO 750mm ECCENTRIC REDUCER	1+586.40	9.22 L	4811156.702	606163.975
CHAMBER NO.5 (AIR RELEASE CHAMBER)	1+588.88	9.59 L	4811158.673	606165.480
900mm TO 750mm ECCENTRIC REDUCER	1+591.749	9.22 L	4811160.979	606167.183
33.75° H. BEND (21)	1+706.48	9.59 L	4811253.091	606235.254
55.38° H. BEND (22)	1+726.52	22.97 L	4811277.170	606236.040
300mmø PVC WATERMAIN				
22.5° H. BEND (23)	1+583.23	8.15 L	48111536.521	606162.937
22.5° H. BEND (24)	1+586.68	6.66 L	4811155.392	606166.187
22.5° H. BEND (25)	1+591.18	6.60 L	4811158.959	606168.931
22.5° H. BEND (26)	1+594.66	8.00 L	4811162.800	606169.906
FIRE HYDRANT NO.6	1+620.15	13.65 L	4811186.389	606180.624
FIRE HYDRANT NO.7	1+679.25	14.13 L	4811234.015	606215.619
45° H. BEND (27)	1+680.43	7.92 L	4811231.279	606221.259
300mm G.V & V.B	1+681.40	7.00 L	4811231.476	606222.615
CONNECTED TO EX 200mmø CI W/M WITH REDUCER AND ANODE	1+683.038	5.37 L	4811231.807	606224.905



℄ ELEVATIONS	101.51	101.69	101.86	101.87	101.79	101.68	101.54	101.37	101.12	101.16	101.02				
WATERMAIN INVERTS															
FEEDERMAIN INVERTS															
CHAINAGE	1+540	1+560	1+580	1+600	1+620	1+640	1+660	1+680	1+700	1+720	1+740	1+760	1+780	1+800	1+820

NO	Date	By	REVISIONS	
8	19-09-01	HI	ISSUED FOR AS-BUILT	WZ
7	16-10-19	JLP	ISSUED FOR CONSTRUCTION	KM
6	16-07-26	JLP	ISSUED FOR TENDER	KM
5	16-04-21	BS	ISSUED FOR 90% REVIEW	BS
4	16-03-03	BS	ISSUED FOR HYDRATEK REVIEW	BS
3	16-02-09	BS	ISSUED FOR 50% REVIEW	BS
2	15-09-21	HI	ISSUED FOR 50% REVIEW	BS
1	15-06-26	HI	ISSUED FOR 10% REVIEW	BS

Design	BS	Ch'kd	HI	Date
Drawn	BS	Ch'kd	JLP	

Scale 1:500 Horiz. 1:50 Vert.

References

Regional

Field Notes

ACCEPTED FOR CONSTRUCTION OF REGIONAL INFRASTRUCTURE

Reviewed For Compliance With Regional Standards Only.

Stamp

Director, Engineering and Construction

Manager, Capital Engineering and Construction

Design BURNSIDE

As Constructed EIS

Halton REGION

TITLE

900mmø FEEDERMAIN ON
SPEERS ROAD
IN THE TOWN OAKVILLE
FROM DORVAL DRIVE TO
TO 512m WEST OF KERR STREET

Consultant File NO
RJ. BURNSIDE NO.300036140
EIS NO. EE16-028

Regional Drawing NO

CONTRACT NO W-2998-16

Drawing NO SHEET 6 OF 43

W-2998-16 6 of 43

Drawing: Z:\CAD_2016 PROJECTS\CEE16-028 DAVIS ROAD 900MM FEEDERMAIN\CAD\14_AS CONSTRUCTED DWG\ACAD AC DRAWING\04-AC-DAVISFEEDERMAIN-PP.DWG
Layout Tab: SHEET 6 AC
Date: 01/23/2020 Time: 10:21:16 AM

O-23157

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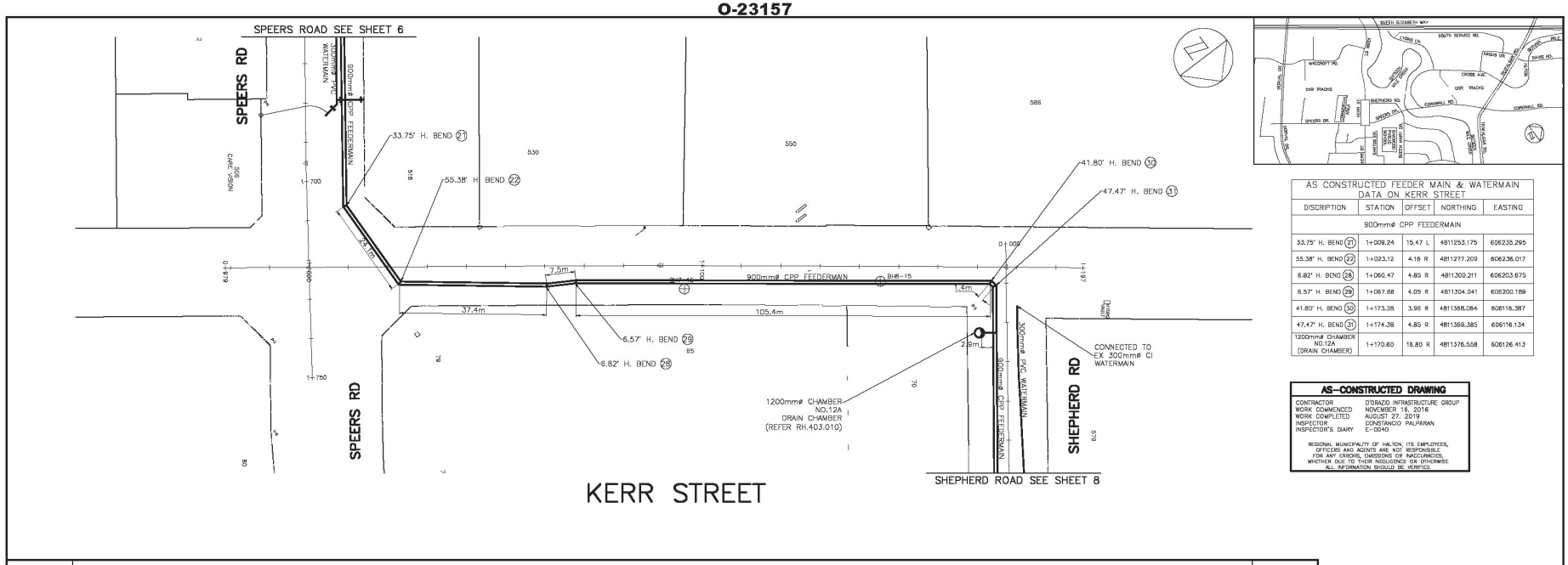
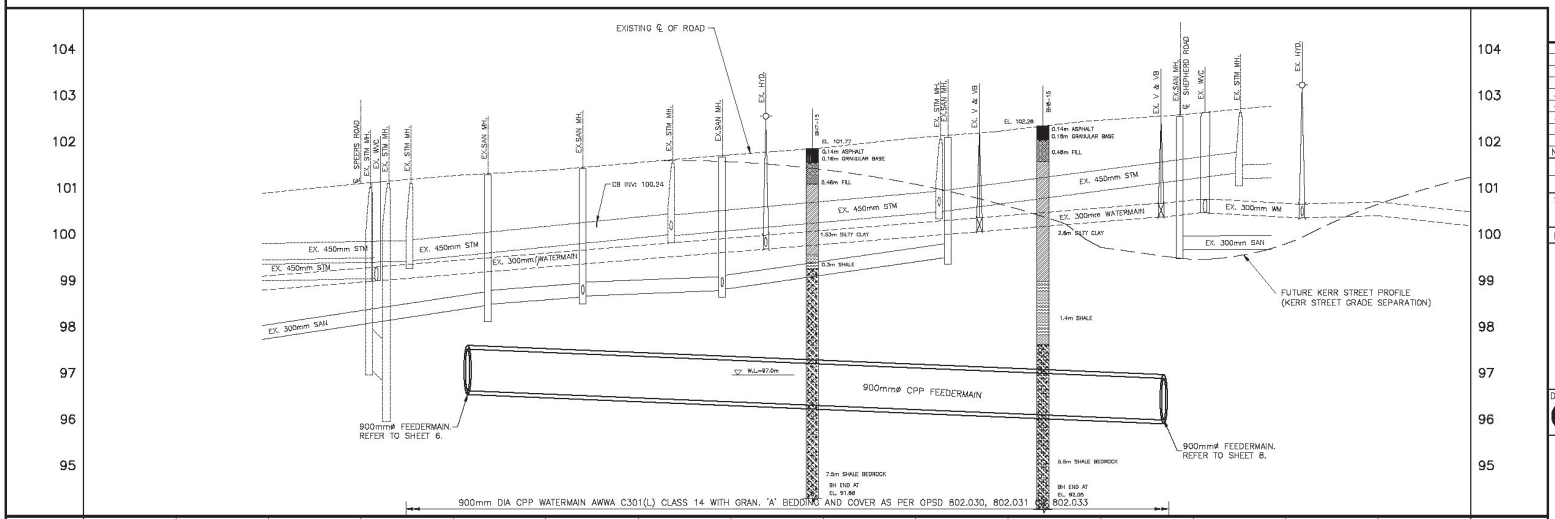


AS CONSTRUCTED FEEDER MAIN & WATERMAIN DATA ON KERR STREET				
DISCRIPTION	STATION	OFFSET	NORTHING	EASTING
900mmø CPP FEEDERMAIN				
33.75° H. BEND (21)	1+009.24	15.47 L	4811253.175	606235.295
55.38° H. BEND (22)	1+023.12	4.18 R	4811277.208	606236.017
6.82° H. BEND (28)	1+060.47	4.85 R	4811300.211	606203.675
6.57° H. BEND (29)	1+067.88	4.05 R	4811304.041	606200.189
41.80° H. BEND (30)	1+173.38	3.96 R	4811388.064	606116.387
47.47° H. BEND (31)	1+174.38	4.85 R	4811389.385	606116.134
1200mmø CHAMBER NO.12A (DRAIN CHAMBER)	1+170.60	16.80 R	4811376.558	606126.413

AS-CONSTRUCTED DRAWING

CONTRACTOR	D'ORAZIO INFRASTRUCTURE GROUP
WORK COMMENCED	NOVEMBER 16, 2016
WORK COMPLETED	AUGUST 27, 2019
INSPECTOR	CONSTANCIO PALPARAN
INSPECTOR'S DIARY	E-0040

REGIONAL MUNICIPALITY OF HALTON, ITS EMPLOYEES, OFFICERS AND AGENTS ARE NOT RESPONSIBLE FOR ANY ERRORS, OMISSIONS OR INACCURACIES, WHETHER DUE TO THEIR NEGLIGENCE OR OTHERWISE. ALL INFORMATION SHOULD BE VERIFIED.



℄ ELEVATIONS	101.00	101.19	101.36	101.48	101.65	101.81	101.98	102.18	102.35	102.56	102.70	℄ ELEVATIONS
FEEDERMAIN INVERTS												FEEDERMAIN INVERTS
CHAINAGE	0+960	0+980	1+000	1+020	1+040	1+060	1+080	1+100	1+120	1+140	1+160	1+180	1+200	1+220	1+240	CHAINAGE

NO	Date	By	REVISIONS	CAD
8	19-09-01	HI	ISSUED FOR AS-BUILT	WZ
7	16-10-19	JLP	ISSUED FOR CONSTRUCTION	KM
6	16-07-26	JLP	ISSUED FOR TENDER	KM
5	16-04-21	BS	ISSUED FOR 90% REVIEW	BS
4	16-03-03	BS	ISSUED FOR HYDRATEK REVIEW	BS
3	16-02-09	BS	ISSUED FOR 50% REVIEW	BS
2	15-09-21	HI	ISSUED FOR 50% REVIEW	BS
1	15-06-26	HI	ISSUED FOR 10% REVIEW	BS

Design	BS	Ch'kd	HI	Date
Drawn	BS	Ch'kd	JLP	

Scale 1:500 Horiz. 1:50 Vert. — References

Regional — Field Notes

ACCEPTED FOR CONSTRUCTION OF REGIONAL INFRASTRUCTURE

Reviewed For Compliance With Regional Standards Only.

Director, Engineering and Construction

Manager, Capital Engineering and Construction

Stamp

Design: BURNSIDE — As Constructed: EIS

Halton REGION

TITLE

900mmø FEEDERMAIN ON

KERR STREET

IN THE TOWN OAKVILLE

FROM SPEERS ROAD 220m TO SHEPHERD DRIVE

Consultant File №: R.J. BURNSIDE NO.300038140; EIS NO. EE16-028

Regional Drawing №

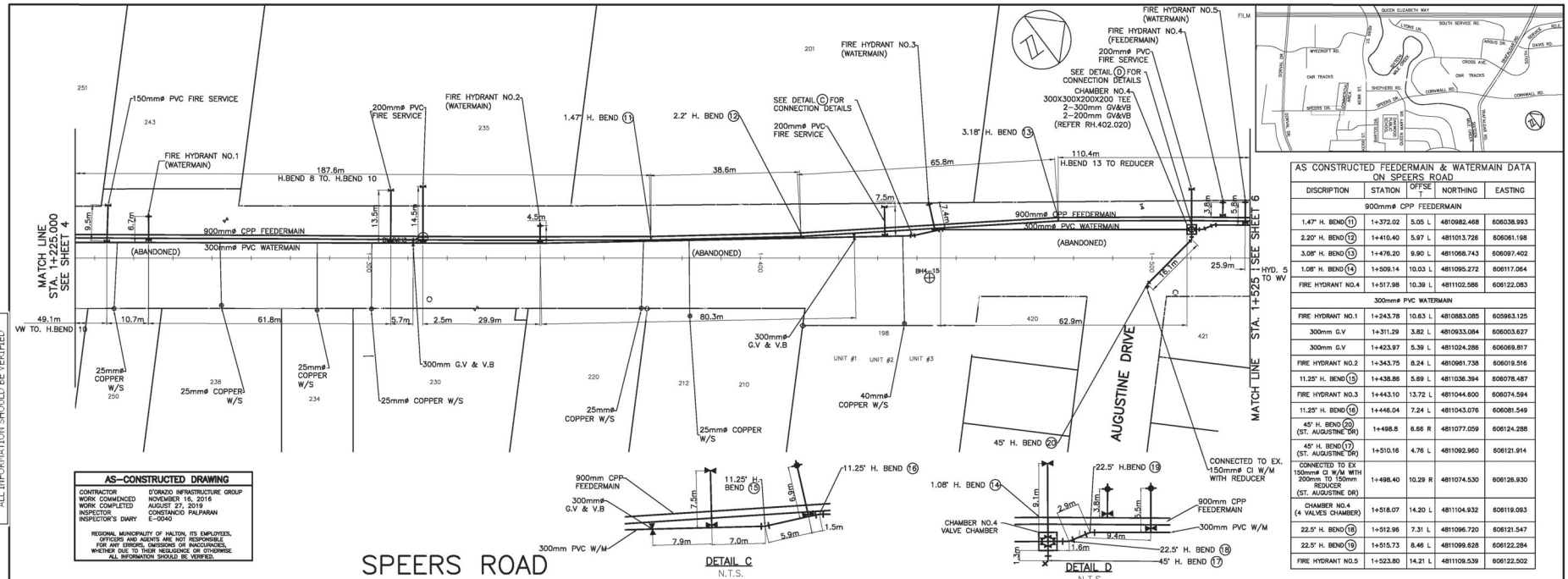
CONTRACT №: W-2998-16

Drawing №

SHEET 7 OF 43

W-2998-16 7 of 43

Drawing: Z:\CAD_2016 PROJECTS\EE16-028 DAVIS ROAD 900MM FEEDERMAIN\CAD\14_AS CONSTRUCTED DWG\ACAD AC DRAWING\pn-AC-DAVISFEEDERMAIN-PP.DWG
Layout Tab: SHEET 7 AC
Date: 01/22/2020 Time: 05:00:13 PM



AS CONSTRUCTED FEEDERMAIN & WATERMAIN DATA ON SPEERS ROAD

DISCRIPTION	STATION	OFFSET	NORTHING	EASTING
900mmø CPP FEEDERMAIN				
1.47° H. BEND (11)	1+372.02	5.05 L	4810982.468	606038.993
2.20° H. BEND (12)	1+410.40	5.97 L	4811013.726	606061.198
3.08° H. BEND (13)	1+476.20	9.90 L	4811068.743	606097.402
1.08° H. BEND (14)	1+509.14	10.03 L	4811095.272	606117.064
FIRE HYDRANT NO.4	1+517.98	10.39 L	4811102.586	606122.083
300mmø PVC WATERMAIN				
FIRE HYDRANT NO.1	1+243.78	10.63 L	4810883.085	605963.125
300mm G.V	1+311.29	3.82 L	4810933.084	606003.627
300mm G.V	1+423.97	5.39 L	4811024.286	606069.817
FIRE HYDRANT NO.2	1+343.75	8.24 L	4810961.738	606019.516
11.25° H. BEND (15)	1+438.86	5.69 L	4811036.394	606078.487
FIRE HYDRANT NO.3	1+443.10	13.72 L	4811044.600	606074.594
11.25° H. BEND (16)	1+446.04	7.24 L	4811043.076	606081.549
45° H. BEND (20) (ST. AUGUSTINE DR)	1+498.8	6.66 R	4811077.059	606124.288
45° H. BEND (17) (ST. AUGUSTINE DR)	1+510.16	4.76 L	4811092.960	606121.914
CONNECTED TO EX 150mmø CI W/M WITH 200mm TO 150mm REDUCER (ST. AUGUSTINE DR)	1+498.40	10.29 R	4811074.530	606126.930
CHAMBER NO.4 (4 VALVES CHAMBER)	1+518.07	14.20 L	4811104.932	606119.093
22.5° H. BEND (18)	1+512.96	7.31 L	4811096.720	606121.547
22.5° H. BEND (19)	1+515.73	8.46 L	4811099.628	606122.284
FIRE HYDRANT NO.5	1+523.80	14.21 L	4811109.539	606122.502

AS-CONSTRUCTED DRAWING

CONTRACTOR	D'ORAZIO INFRASTRUCTURE GROUP
WORK COMMENCED	NOVEMBER 16, 2016
WORK COMPLETED	AUGUST 27, 2019
INSPECTOR	CONSTANCIO PALPARAN
INSPECTOR'S DIARY	E-0040

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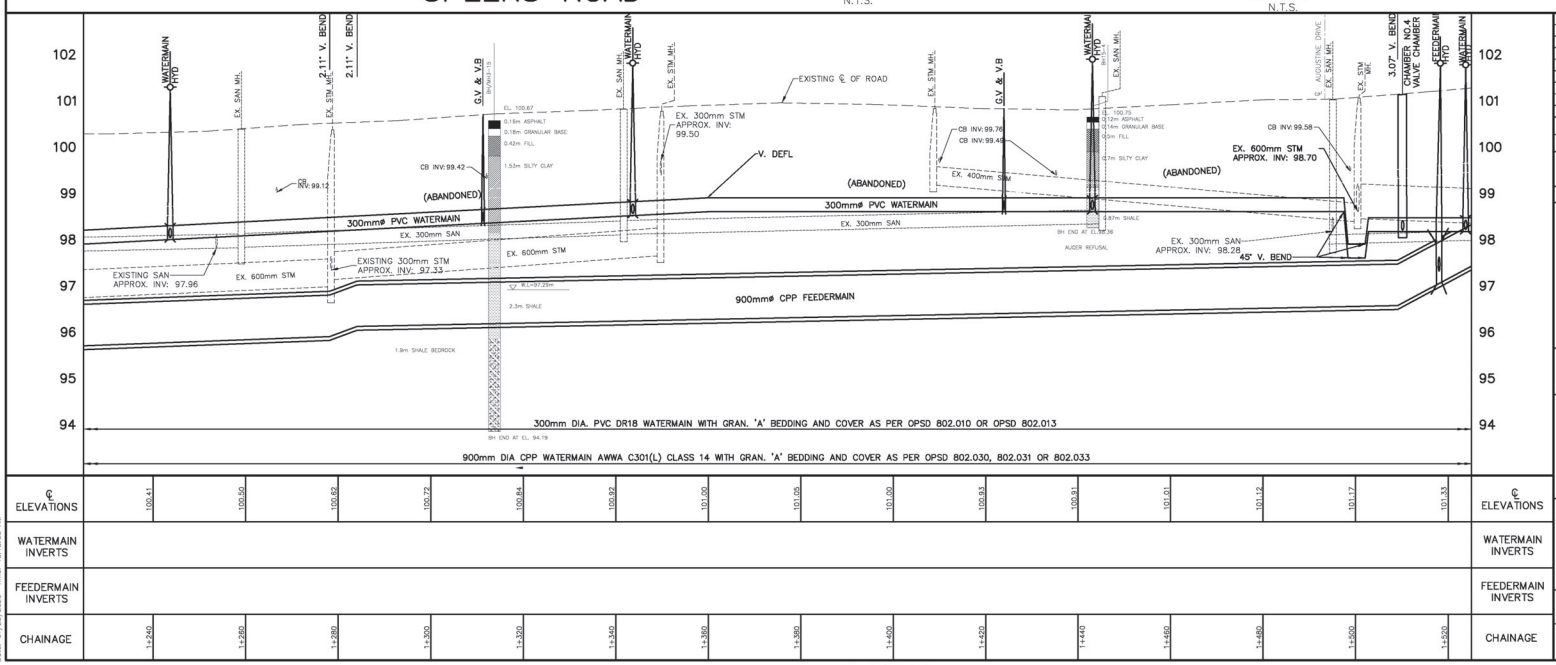

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WATERMAIN INVERTS															
FEEDERMAIN INVERTS															
CHAINAGE	1+240	1+260	1+280	1+300	1+320	1+340	1+360	1+380	1+400	1+420	1+440	1+460	1+480	1+500	1+520

8	19-09-01	HI	ISSUED FOR AS-BUILT	WZ
7	16-10-19	JLP	ISSUED FOR CONSTRUCTION	KM
6	16-07-26	JLP	ISSUED FOR TENDER	KM
5	16-04-21	BS	ISSUED FOR 90% REVIEW	BS
4	16-03-03	BS	ISSUED FOR HYDRATEK REVIEW	BS
3	16-02-09	BS	ISSUED FOR 50% REVIEW	BS
2	15-09-21	HI	ISSUED FOR 50% REVIEW	BS
1	15-06-26	HI	ISSUED FOR 10% REVIEW	BS
№	Date	By	REVISIONS	CAD

Design	BS	Ch'kd	HI	Date
Drawn	BS	Ch'kd	JLP	NOV 2014

Scale 1:500 Horiz. 10 5 0 10
1:50 Vert. 0.5 0 0.5

References

Regional

Field Notes

ACCEPTED FOR CONSTRUCTION OF REGIONAL INFRASTRUCTURE

Reviewed For Compliance With Regional Standards Only.

Director, Engineering and Construction

Manager, Capital Engineering and Construction

Stamp

Design BURNSIDE

As Constructed EIS

Halton REGION

TITLE

900mmø FEEDERMAIN ON

SPEERS ROAD

IN THE TOWN OAKVILLE

FROM 225m EAST OF DORVAL DRIVE TO 215m WEST OF KERR STREET

Consultant File № RJ. BURNSIDE NO.300036140 EIS NO. EE16-028

Regional Drawing №

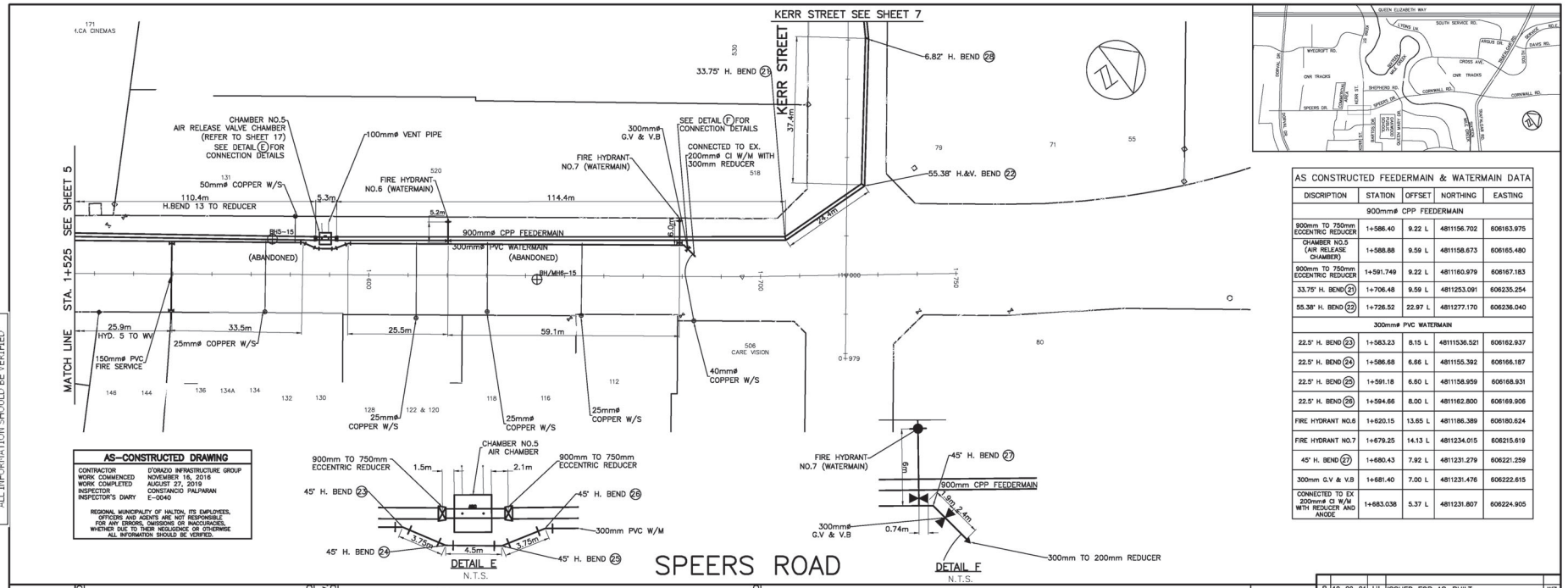
CONTRACT № W-2998-16

Drawing № SHEET 5 OF 43

W-2998-16 5 of 43

Drawing: Z:\AD_2016_PROJECTS\EE16-028 HWS ROAD ROOM FEEDERMAIN\CAD\14-AS CONSTRUCTED DWG\ACAD AC DRAWING\04-AC-DAVISFEEDERMAIN-PP.DWG
Layout Tab: SHEET 5 AC
Date: 07/22/2020 Time: 10:18:08 AM

O-23218



AS-CONSTRUCTED DRAWING

CONTRACTOR	D'ONAZIO INFRASTRUCTURE GROUP
WORK COMMENCED	NOVEMBER 16, 2016
WORK COMPLETED	AUGUST 27, 2019
INSPECTOR	CONSTANCIO PALPARAN
INSPECTOR'S DIARY	E-0040

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AS CONSTRUCTED FEEDERMAIN & WATERMAIN DATA

DISCRIPTION	STATION	OFFSET	NORTHING	EASTING
900mmø CPP FEEDERMAIN				
900mm TO 750mm ECCENTRIC REDUCER	1+586.40	9.22 L	4811156.702	606163.975
CHAMBER NO.5 (AIR RELEASE CHAMBER)	1+588.88	9.59 L	4811158.673	606165.480
900mm TO 750mm ECCENTRIC REDUCER	1+591.749	9.22 L	4811160.979	606167.183
33.75° H. BEND (21)	1+706.48	9.59 L	4811253.091	606235.254
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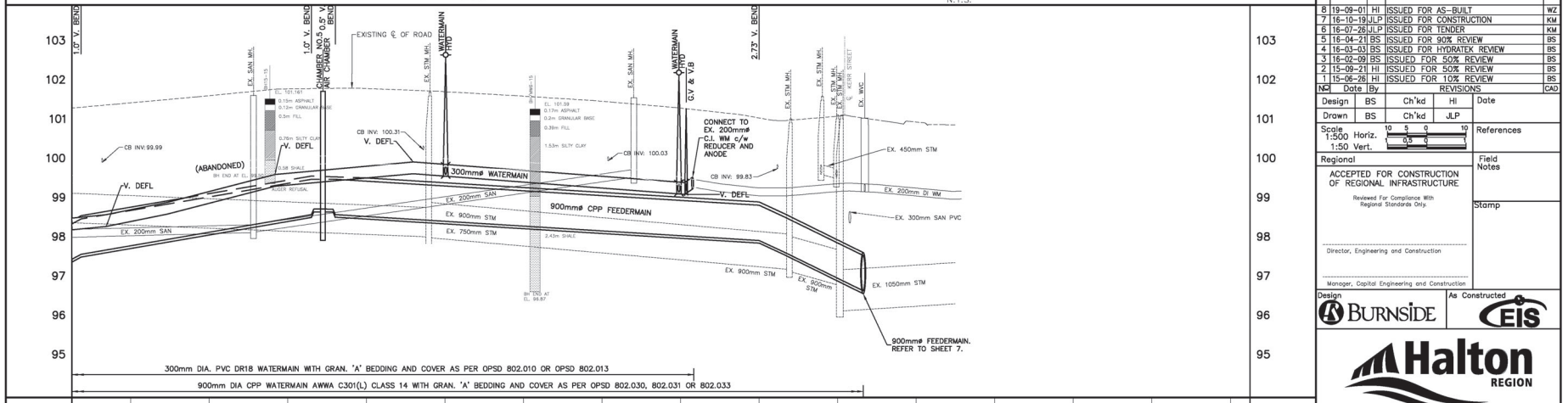
300mmø PVC WATERMAIN				
22.5° H. BEND (23)	1+583.23	8.15 L	48111536.521	606162.937
22.5° H. BEND (24)	1+586.68	6.66 L	4811155.392	606166.187
22.5° H. BEND (25)	1+591.18	6.60 L	4811158.959	606168.931
22.5° H. BEND (26)	1+594.66	8.00 L	4811162.800	606169.906
FIRE HYDRANT NO.6	1+620.15	13.65 L	4811186.389	606180.624
FIRE HYDRANT NO.7	1+679.25	14.13 L	4811234.015	606215.619
45° H. BEND (27)	1+680.43	7.92 L	4811231.279	606221.259
300mm G.V & V.B	1+681.40	7.00 L	4811231.476	606222.615
CONNECTED TO EX 200mmø CI W/M WITH REDUCER AND ANODE	1+683.038	5.37 L	4811231.807	606224.905



℄ ELEVATIONS	101.51	101.69	101.86	101.87	101.79	101.68	101.54	101.37	101.12	101.16	101.02						℄ ELEVATIONS
WATERMAIN INVERTS																	WATERMAIN INVERTS
FEEDERMAIN INVERTS																	FEEDERMAIN INVERTS
CHAINAGE	1+540	1+560	1+580	1+600	1+620	1+640	1+660	1+680	1+700	1+720	1+740	1+760	1+780	1+800	1+820		CHAINAGE

NO	Date	By	REVISIONS	
8	19-09-01	HI	ISSUED FOR AS-BUILT	WZ
7	16-10-19	JLP	ISSUED FOR CONSTRUCTION	KM
6	16-07-26	JLP	ISSUED FOR TENDER	KM
5	16-04-21	BS	ISSUED FOR 90% REVIEW	BS
4	16-03-03	BS	ISSUED FOR HYDRATEK REVIEW	BS
3	16-02-09	BS	ISSUED FOR 50% REVIEW	BS
2	15-09-21	HI	ISSUED FOR 50% REVIEW	BS
1	15-06-26	HI	ISSUED FOR 10% REVIEW	BS
				CAD

Design	BS	Ch'kd	HI	Date
Drawn	BS	Ch'kd	JLP	

Scale 1:500 Horiz. 1:50 Vert. (10 5 0 10; 0.5 0)

References

Regional

Field Notes

ACCEPTED FOR CONSTRUCTION OF REGIONAL INFRASTRUCTURE

Reviewed For Compliance With Regional Standards Only.

Director, Engineering and Construction

Manager, Capital Engineering and Construction

Stamp

Design BURNSIDE

As Constructed EIS

Halton REGION

TITLE

900mmø FEEDERMAIN ON

SPEERS ROAD

IN THE TOWN OAKVILLE

FROM DORVALL DRIVE TO

TO 512m WEST OF KERR STREET

Consultant File NO
RJ. BURNSIDE NO.300036140
EIS NO. EE16-028

Regional Drawing NO

CONTRACT NO
W-2998-16

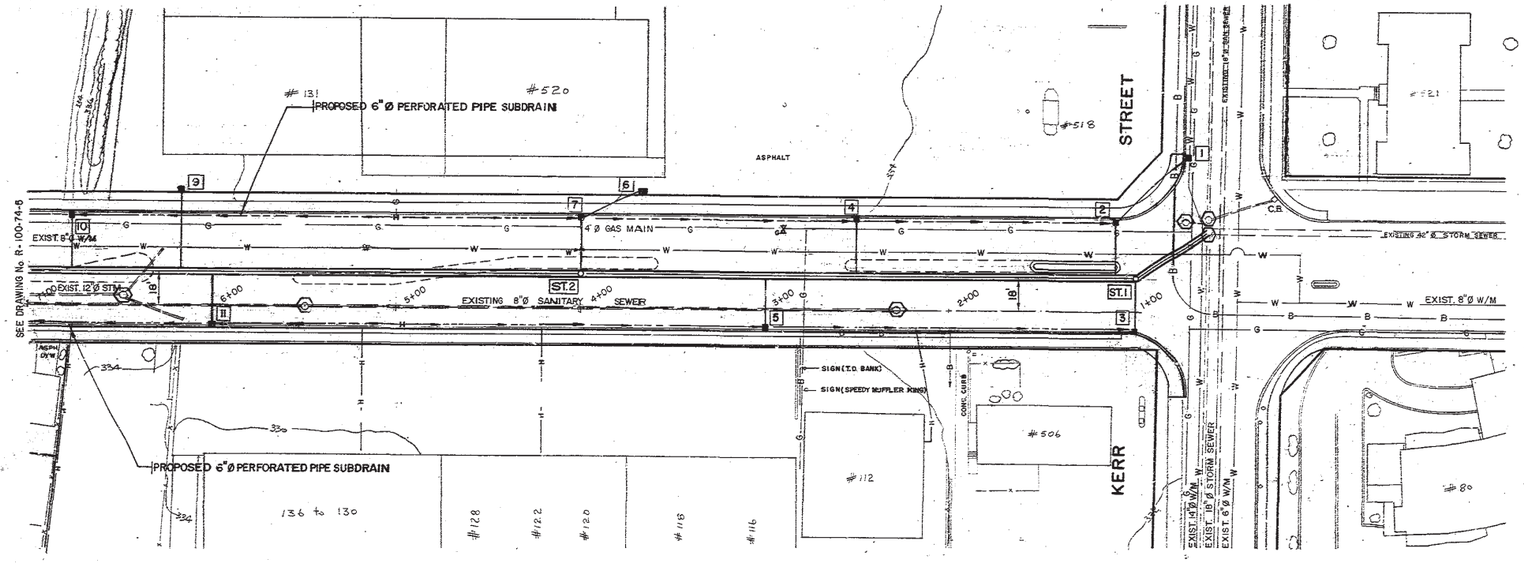
Drawing NO
SHEET 6 OF 43

W-2998-16 6 of 43

Drawing: J:\CAD_2016 PROJECTS\2016-028 DAVIS ROAD 900MM FEEDERMAIN\CAD\14_AS CONSTRUCTED DWG\CAD AC DRAWING\DA-AC-DAVISFEEDERMAIN-PP.DWG
Layout Tab: SHEET 6 AC
Date: 07/22/2020 Time: 10:21:16 AM

O-23219

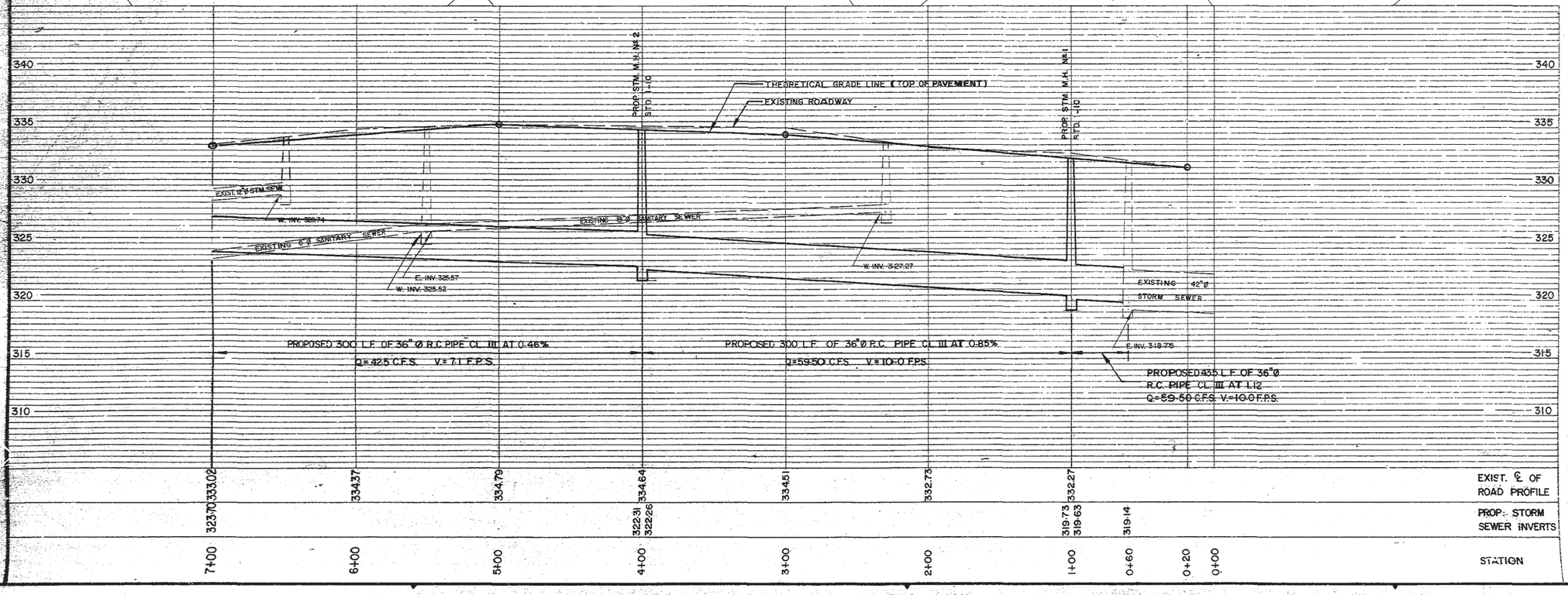
SPEERS RD. R-100-74



STORM SEWER DATA - SYMBOL ST.					
NUMBER	STATION	OFFSET FROM ℄	STRUCTURE	COVER	COMMENTS
1	1+00	18' RT.	1-1C	1-5A	
2	4+00	18' RT.	1-1C	1-5A	

CATCHBASIN DATA - SYMBOL ☐					
NUMBER	STATION	OFFSET FROM ℄	STRUCTURE	COVER	COMMENTS
1	0+70	IN CURB	2-1B	2-5B	END OF RADIUS
2	1+10	IN CURB	2-1B	2-5B	BEG. OF RADIUS
3	1+00	IN CURB	2-1B	2-5B	BEG. OF RADIUS
4	2+50	IN CURB	2-1B	2-5B	
5	3+00	IN CURB	2-1B	2-5B	
6	3+66	IN DRIVEWAY	2-1B	2-5B	AGAINST TOEWALL
7	4+00	IN CURB	2-1B	2-5B	
8					DELETED
9	6+16	IN DRIVEWAY	2-1B	2-5B	AGAINST TOEWALL
10	6+75	IN CURB	2-1B	2-5B	
11	6+00	IN CURB	2-1B	2-5B	

NOTES: 1) ALL C.B. LEADS TO BE 12"Ø E.S. CONCRETE PIPE AT 1% SLOPE UNLESS OTHERWISE SHOWN.
2) O.B.M. 53-S.E. CORNER OF CONCRETE PLATFORM OF PLAZA THEATRE, 9-6"W OF S'LY LIMIT OF CONCRETE CORNER BLOCK THEN 2.0'NORTHERLY. ELEV. 336.34
3) CATCHBASIN OFFSETS ARE TO TOP OF BACK OF GRADE.
4) ADJUST EXISTING M.H. FRAME AND COVERS TO SUIT FINISHED GRADE — SYMBOL ⬡



GENERAL NOTES

- ALL DRIVEWAYS GRAVEL UNLESS OTHERWISE NOTED.
- ALL SERVICE LOCATIONS ARE APPROXIMATE AND MUST BE LOCATED ACCURATELY IN THE FIELD.
- WATER AS SHOWN
- GAS AS SHOWN.
- BELL AS SHOWN.
- HYDRO AS SHOWN.

LEGEND

DENOTES BENCH MARK ELEVATION
STM. M.H. — STORM SEWER & MANHOLE
SAN. M.H. — SANITARY SEWER & MANHOLE
W—W—W—W—W — WATERMAIN & VALVE
G—G—G—G—G — GASMAIN & VALVE
B—B—B—B—B — BELL TELEPHONE BURIED CABLE
HYDRO POLE & GUY ANCHOR
HYD. — HYDRANT

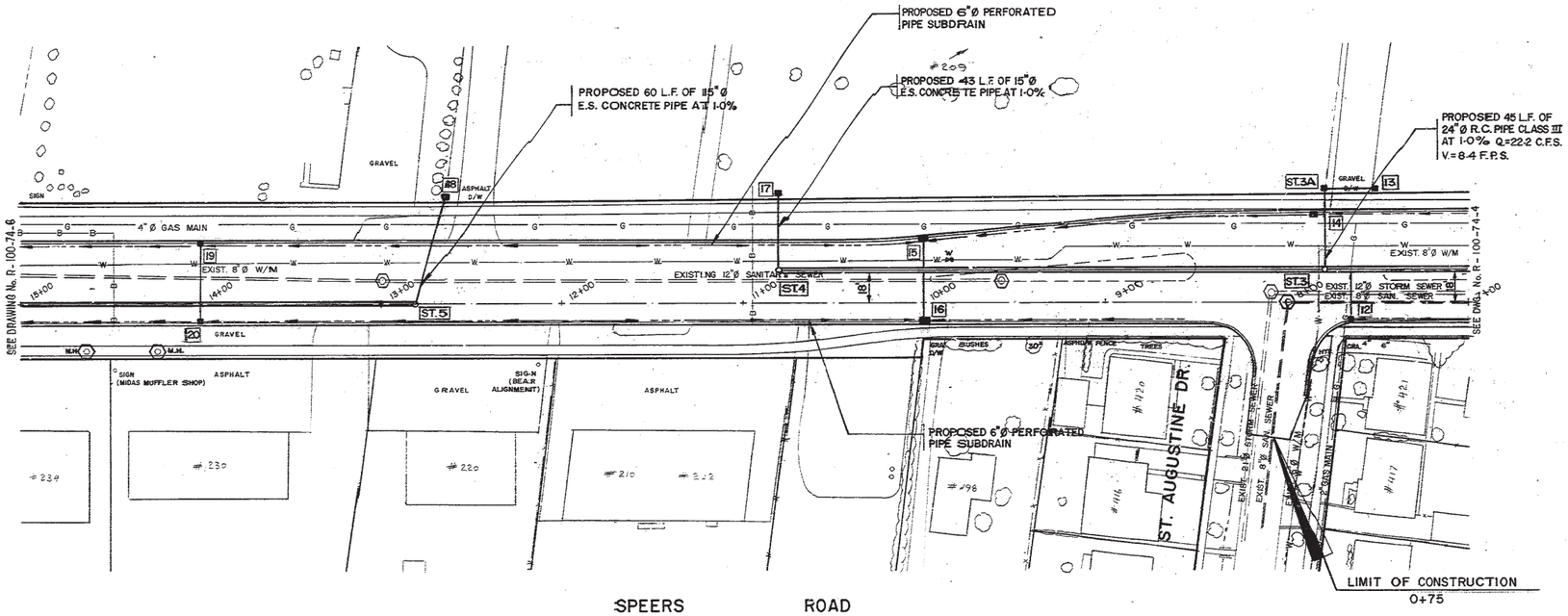
TOWN OF OAKVILLE
DEPARTMENT OF PUBLIC WORKS

PROPOSED 36"Ø STORM SEWER ON SPEERS ROAD FROM KERR STREET TO ST. AUGUSTINE DR.

FLD. BK. No. J.C.-	
SCALES —	HOR: 1"=40' VERT: 1"= 5'
DATE: FEB. 1976	DESIGN BY: R.G.H.
DRAWN BY: J.F.B./D.A.	SURVEY BY: J.C.
CH'KD BY: L.D.McI.	INSPECTOR:
FILE №: R-100-74	CONTRACTOR:

PLAN №
R-100-74-4
SHEET 4 OF 28

DATE	REVISIONS	BY
OCT., 1976	AS CONSTRUCTED	S.J.



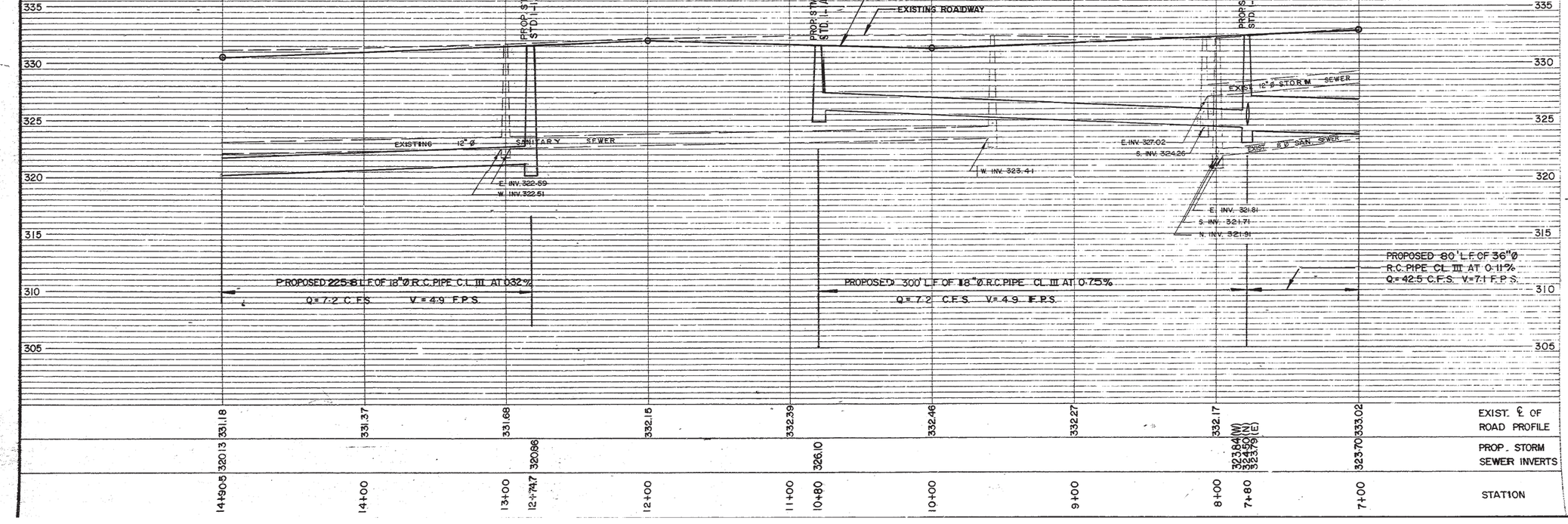
STORM SEWER DATA – SYMBOL ST.

NUMBER	STATION	OFFSET FROM ℄	STRUCTURE	COVER	COMMENTS
3	7+80	18' RT.	1-1C	1-5A	
4	10+80	18' RT.	1-1A	1-5A	
5	12+65	0' FEET	1-1A	1-5A	
3A	7+80	℄ DITCH	2-2	2-2	5'X5' DITCH INLET

CATCHBASIN DATA – SYMBOL □

NUMBER	STATION	OFFSET FROM ℄	STRUCTURE	COVER	COMMENTS
12	7+65	IN CURB	2-1B	2-5B	BEG. OF RADIUS
13	7+50	℄ DITCH	2-1B	2-5	
14	7+85	IN CURB	2-1B	2-5B	
15	10+00	IN CURB	2-1A	2-5B	TWIN C.B.
16	10+00	IN CURB	2-1A	2-5B	TWIN C.B.
17	10+80	43' RT.	2-1B	2-5B	
18	12+65	℄ DITCH	2-1B	2-5	
19	14+00	IN CURB	2-1B	2-5B	
20	14+00	IN CURB	2-1B	2-5B	

NOTES: 1) ALL C.B. LEADS TO BE 12"Ø E.S. CONCRETE PIPE AT 1% SLOPE UNLESS OTHERWISE SHOWN.
2) O.B.M. 53-S.E. CORNER OF CONCRETE PLATFORM OF PLAZA THEATRE, 9·6' W OF S'LY LIMIT OF CONCRETE CORNER BLOCK THEN 2·0' NORTHERLY. ELEV. 336.34
3) CATCHBASIN OFFSETS ARE TO TOP OF BACK OF GRATE.
4) ADJUST EXISTING M.H. FRAME AND COVERS TO SUIT FINISHED GRADE – SYMBOL ⬡



STATION	EXIST. ℄ OF ROAD PROFILE	PROP. STORM SEWER INVERTS
14+90.5	332.13	
14+00	331.18	
13+00	331.37	
12+74.7	331.68	320.86
12+00	332.15	
11+00	332.39	
10+80		326.10
10+00	332.46	
9+00	332.27	
8+00	332.17	
7+80		323.84 (W) 323.50 (N) 323.79 (E)
7+00	333.02	323.70

GENERAL NOTES

- ALL DRIVEWAYS GRAVEL UNLESS OTHERWISE NOTED.
- ALL SERVICE LOCATIONS ARE APPROXIMATE AND MUST BE LOCATED ACCURATELY IN THE FIELD.
- WATER AS SHOWN.
- GAS AS SHOWN.
- BELL AS SHOWN.
- HYDRO AS SHOWN

LEGEND

	DENOTES
BENCH MARK ELEVATION	
STM. M.H.	STORM SEWER & MANHOLE
SAN. M.H.	SANITARY SEWER & MANHOLE
W, V, W, W	WATERMAIN & VALVE
G, V, G, G	GASMAIN & VALVE
B, B, B, B	BELL TELEPHONE BURIED CABLE
H.P.	HYDRO POLE & GUY ANCHOR
HYD.	HYDRANT

TOWN OF OAKVILLE
DEPARTMENT OF PUBLIC WORKS

PROPOSED 18"Ø AND 36"Ø STORM SEWER ON SPEERS ROAD FROM ST. AUGUSTINE DR. TO STA. 15+00 WESTERLY

FLD. BK. No.

SCALES –	HOR: 1"=40' VERT: 1"= 5'
DATE: FEB. 1975	DESIGN BY: R.G.H.
DRAWN BY: J.F.B. / D.A.	SURVEY BY: J.C.
CH'KD BY: L.D.McL.	INSPECTOR:
FILE Nº: R-100-74	CONTRACTOR:

PLAN Nº R-100-74-5
SHEET 5 OF 28

R. W. J. MOORE
REGISTERED PROFESSIONAL ENGINEER PROVINCE OF ONTARIO

DATE	REVISIONS	BY
OCT., 1976	AS CONSTRUCTED	S.J.

OAKVILLE

Town of Oakville

KERR STREET AT CNR GRADE SEPARATION CLASS ENVIRONMENTAL ASSESSMENT STUDY

ENVIRONMENTAL STUDY REPORT

MRC

A member of MMM GROUP

Global Transportation Engineering

June 2009

Town of Oakville

KERR STREET AT CNR GRADE SEPARATION

CLASS ENVIRONMENTAL ASSESSMENT STUDY

ENVIRONMENTAL STUDY REPORT

June 2009

McCormick Rankin Corporation

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APPENDIX

6. PROJECT DESCRIPTION

The preferred alternative for the proposed Kerr Street / CNR grade separation and the widening of Kerr Street from 2 to 4 lanes between Speers Road and north of the QEW is shown on Exhibit 6-1 and is described in more detail in the following sections; the profile is shown on Exhibit 6-2, and the proposed cross section is shown on Exhibit 6-3.

6.1 MAJOR FEATURES

6.1.1 Horizontal Alignment

In general, Kerr Street will be 4-lane (2-lane in each direction) between Speers Road and north of the QEW, tying into North Service Road which is currently being widened to 4 lanes. The roadway will be shifted to the west of existing Kerr Street between Station 10+000 and approximately 10+440 (proposed centreline is approximately 20 m west of the existing centreline at the grade separation) and will follow the existing alignment from approximately 10+440 northerly with most of the widening being on the west side to minimize impact to the Sixteen Mile Creek valley.

The Kerr Street / Shepherd Road intersection will be approximately 3 m below existing grade (see Section 6.1.2). Approximately 140 m of Shepherd Road approaching Kerr Street will be realigned slightly to the south (approximately 10 m to the south of the existing intersection) to achieve a more reasonable grade at the intersection.

Kerr Street / Shepherd Road intersection will be signalized including an entrance to the Oaktown Plaza directly opposite to Shepherd Road. Wyecroft Road will intersect with Kerr Street as a signalized T-intersection. Wyecroft Road is an east-west multi-purpose arterial road between Bronte Road and Kerr Street with future plans to be extended between Bronte Road and Burloak Drive and connect to Harvester Road in the City of Burlington.

A 1.5 m bike lane and a 1.5 - 2.0 m sidewalk will be provided on both sides of the roadway to promote cycling and walking activities. The sidewalk will be elevated through the grade separation.

A raised median will be provided between the northbound and southbound lanes to separate opposing traffic. The width of the median will vary between 2.0 m and 5.75 m. The median is at its widest (i.e. 5.75 m) at the grade separation structure to accommodate the piers and narrows to 2.0 m as it approaches the intersections.

Turning lanes are proposed at the following intersections:

- Right turn lanes:
  - Kerr Street northbound at Shepherd Road
  - Kerr Street southbound at Shepherd Road
  - Kerr Street southbound at Speers Road
- Left turn lanes:
  - Kerr Street northbound at Shepherd Road (Oaktown Plaza)
  - Kerr Street northbound to access 656/700 Kerr Street
  - Kerr Street northbound at Wyecroft Road
  - Kerr Street southbound at Shepherd Road
  - Kerr Street southbound at Speers Road (double left turns)

It should be noted that the Speers Road / Kerr Street intersection (east, west and south legs) is being developed as part of the Speers Road Class EA Study which is currently being carried out by the Town.

As a result of the change in elevation and impact to properties adjacent to Kerr Street from the grade separation, the entrances to #656 and #700 Kerr Street south of Wyecroft Road will be consolidated into one entrance and will be shared by both truck access and employee access to those properties. Concerns were expressed during the EA process about the sharing of the access with trucks and employees at a single entrance from Kerr Street. It was suggested that a second access to the west to Wyecroft Road be considered. Two alternatives to provide access include: realign Wyecroft Road to pass between #656 Kerr Street and #700 Kerr Street and terminate at Kerr Street as a signalized T-intersection and to convert the existing Wyecroft Road / Kerr Street intersection to a right-in/right-out only intersection, and provide an additional from existing Wyecroft Road. The realignment of Wyecroft Road is beyond the scope of the current EA Study and will not be pursued in further detail as part of this study, while the consideration of an additional access from existing Wyecroft Road would be subject to further review during detail design.

6.1.2 Profile

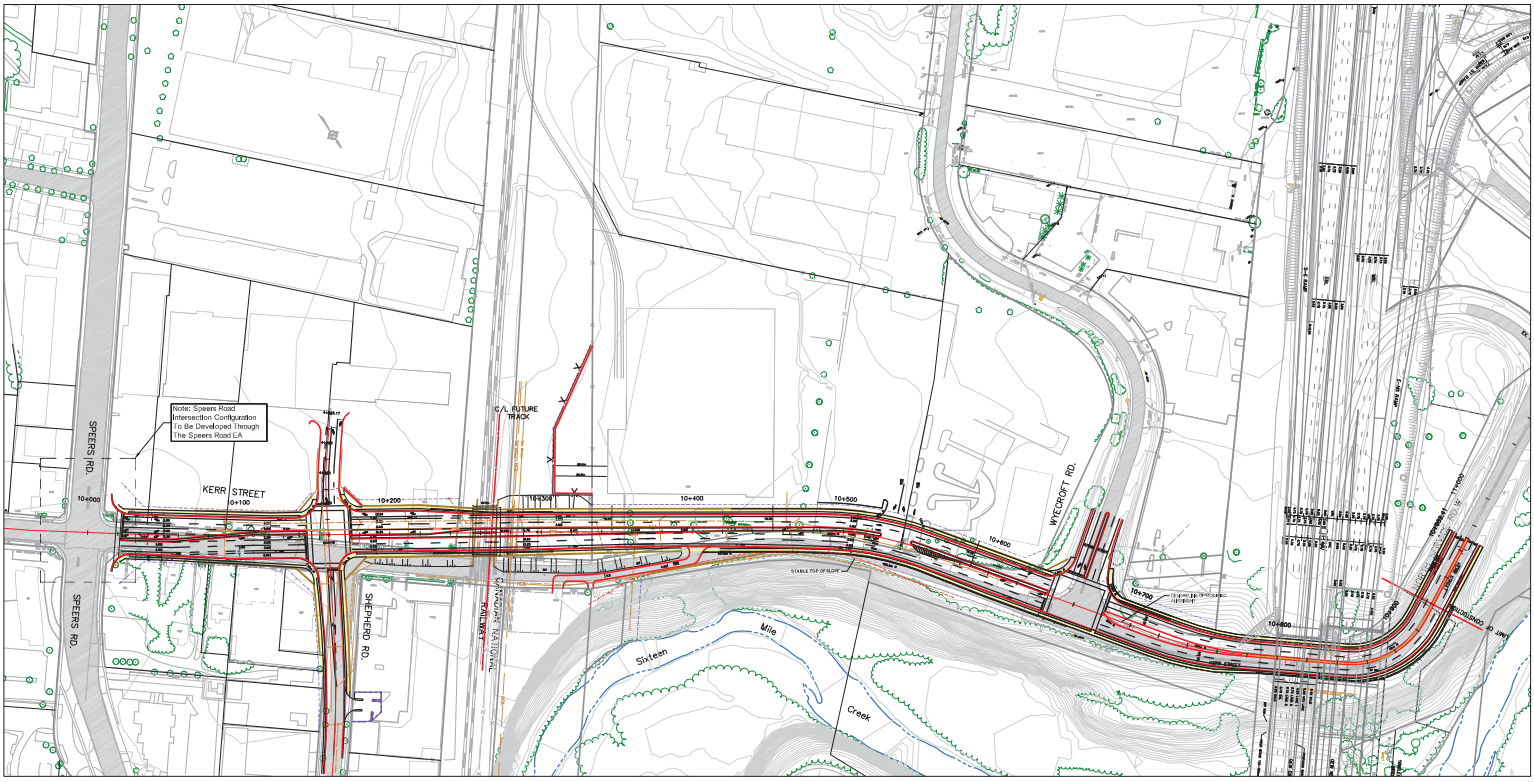
The existing Speers Road / Kerr Street intersection will be maintained at existing grade (subject to findings in the Speers Road Class EA Study). The proposed profile will then follow a 3.5% grade and will be approximately 3 m below existing grade at the Kerr Street / Shepherd Road intersection. The proposed profile will be at the lowest elevation at the CNR crossing, approximately 7 m below the CNR tracks. To the north of the CNR tracks, the proposed profile follows a 6% grade and will meet existing ground in the proximity of the Kerr Street / Wyecroft Road intersection. From Wyecroft Road northerly, the profile will generally follow the existing profile through a 3.2 % grade crossing under the QEW and a 5.0 % grade as it approaches the North Service Road. Retaining walls are proposed between approximately Station 10+080 and 10+500 on either side of the roadway to minimize property impact.

6.1.3 Design Criteria and Typical Section

	Design Standard	Proposed Standards
Number of Lanes	4 lanes	4 lanes
Design Speed	60 km/h	80 km/h
Probable Posted Speed	50 km/h	60 km/h
Minimum Horizontal Radius	130 m	300 m*
Minimum Vertical Curve	15 (crest) 18 (sag)	35 (crest) 8 ** (sag)
Maximum Grade	12 %	6 %
Minimum Grade	0.5 %	0.5 %
Lane Width	3.75 m	3.5 m
Median	-	2.0 m – 5.75 m

* A 55 m curve is used on Kerr Street just north of the QEW. While this is below the minimum horizontal radius for 60 km/h design speed, the proposed alignment generally follows that of the existing roadway and there are limited opportunities to realign the roadway given the constraints on either side of the road.

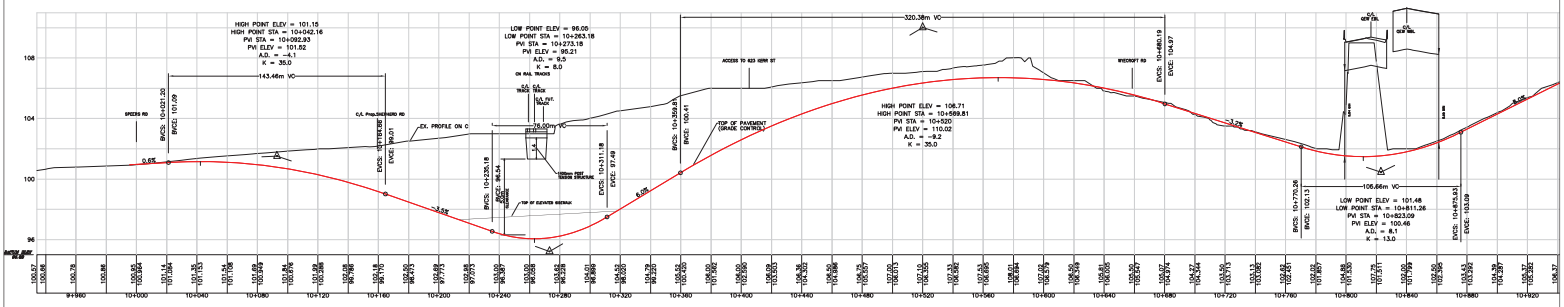
** illuminated



PRELIMINARY ONLY

PRELIMINARY PREFERRED ALTERNATIVE

MRC McCORMICK RANKIN CORPORATION	TITLE	KERR STREET AT CNR GRADE SEPARATION CLASS EA STUDY
		ALTERNATIVE 2–SHIFT KERR STREET TO WEST
OAKVILLE	DATE: JUNE 2009	EXHIBIT 6-1
	SCALE: 1:2500	



PRELIMINARY ONLY

PRELIMINARY PREFERRED ALTERNATIVE PROFILE

McCORMICK RANKIN CORPORATION

TITLE: KERR STREET AT CNR GRADE SEPARATION CLASS EA STUDY

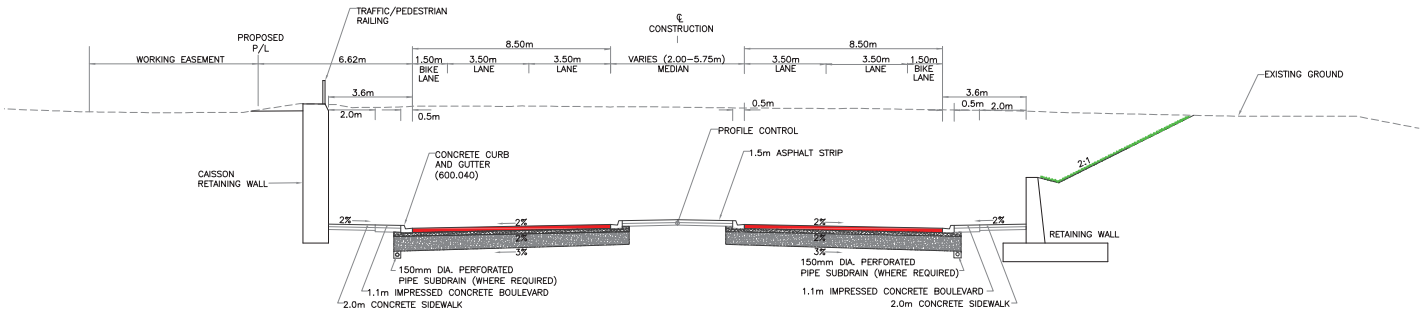
ALTERNATIVE 2–SHIFT KERR STREET TO WEST

OAKVILLE

DATE: JUNE 2009

SCALE: 1:2500

EXHIBIT 6-2



PRELIMINARY ONLY

McCORMICK RANKIN CORPORATION

OAKVILLE

TITLE: KERR STREET AT CNR GRADE SEPARATION CLASS EA STUDY

TYPICAL CROSS-SECTION

DATE: JUNE 2009

SCALE: N.T.S.

EXHIBIT 6-3

Conservation Halton in a letter dated April 2, 2009 suggested a "softer" approach (e.g. cribwalls with bioengineering) rather than the harder approach (e.g. armourstone) for erosion protection of the valley toe of slope, adjacent to Sixteen Mile Creek. Based on visual assessment, erosion protection along the west bank of Sixteen Mile Creek should be provided from about Station 10+350 to 10+500 in order to maintain the setback line (i.e. stable top-of-slope) shown on Exhibit 6-4. It is noted that the sewer outfall structure and proposed erosion protection (i.e. cribwalls, gabion walls or alternative) may alter the hydraulic characteristics upstream and downstream (i.e. adjacent to the CN railway) of the site and this should be addressed during detailed design to determine the full extent of erosion protection required. Temporary cofferdam construction and diversion of Sixteen Mile Creek will be required to construct the erosion protection system and permission from Conservation Halton and DFO required.

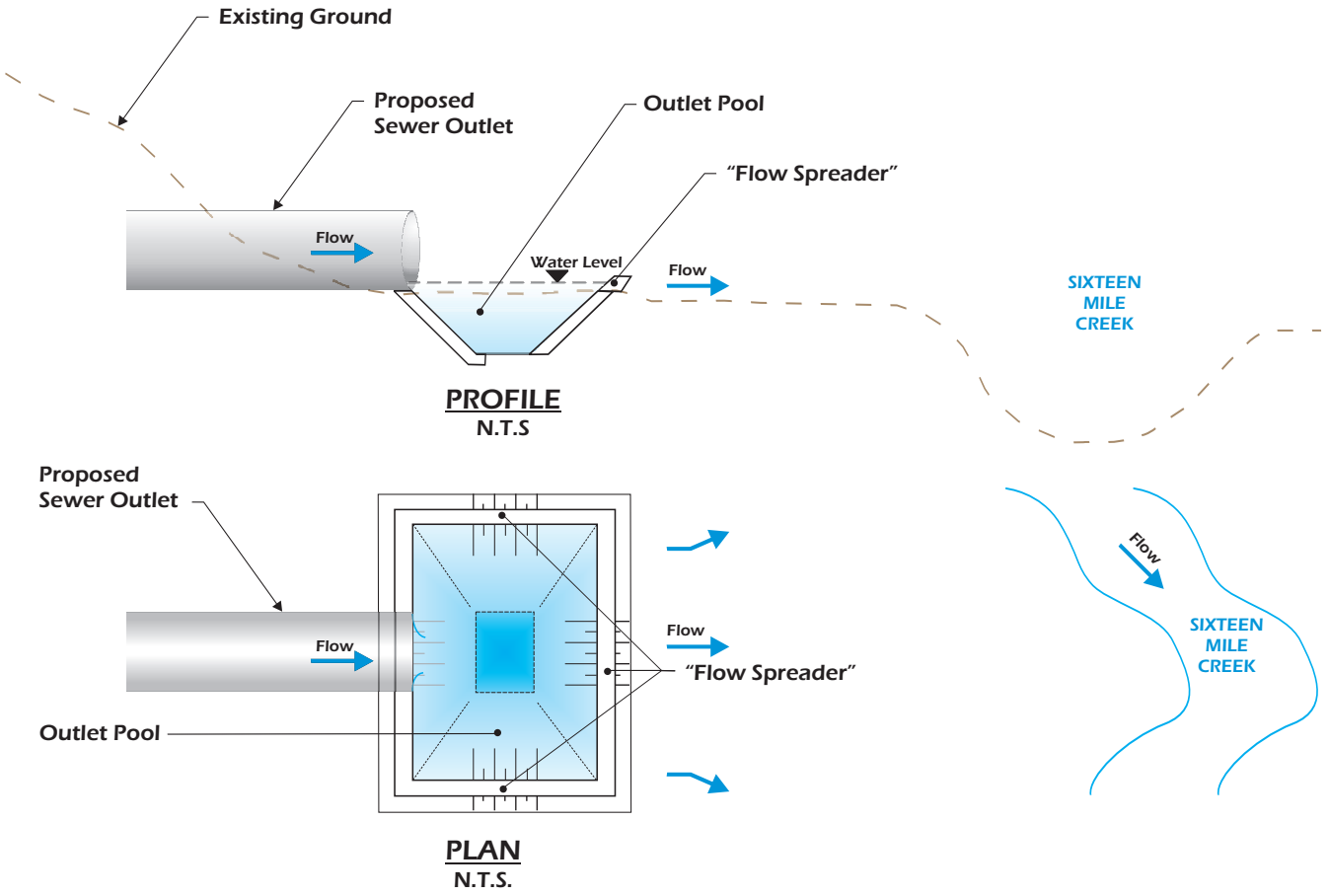
6.1.6 Drainage

The preferred alternative of Kerr Street includes a grade separation at the CNR crossing, where a low point in the road profile will occur. The high points within the proposed alignment occur at approximately Station 10+040, between Speers Road and Shepherd Road, and approximately Station 10+570, located approximately 90 metres south of the intersection of Kerr Street and Wyecroft Road. Runoff from the roadway and immediate areas will be collected and conveyed by storm sewers to discharge to Sixteen Mile Creek. The storm system will be designed to ensure that minimal or no ponding will occur at the low point during major storm events such as the 100-year storm. The existing culverts that discharge into the valley will be directed into the new storm sewer system. Replacement of the corrugated steel pipe (CSP) which discharges stormwater directly into Sixteen Mile Creek at the outside bank of the 180° bend in the river, is required as part of the proposed improvements to Kerr Street. The existing CSP will be left in place to avoid additional disturbance to the valley slope. This is the only component of the proposed works that may have direct impacts to fisheries and aquatic habitat, and thus a description of the aquatic habitat features of the Sixteen Mile Creek is limited to the reaches immediately upstream and downstream of the proposed stormwater outlet and a general description of this portion of the Sixteen Mile Creek.

Peak flow controls will not be provided. It is anticipated that the increase in runoff due to the increase in pavement area will be negligible when compared to the flow in Sixteen Mile Creek. Oil and grit separators will be proposed to provide water quality treatment to meet the Ministry of the Environment's (MOE) Enhanced Protection Level.

The storm sewer outlet will be located at the base of a previously disturbed valley wall in Sixteen Mile Creek. The outlet will be oriented to avoid creek bank scouring and protect fish habitat. An outlet pool complete with a flow spreader is proposed at the storm sewer outlet. The outlet pool and flow spreader will be designed with the assistance of a fluvial geomorphologist (see Exhibit 6-5).

From the intersection of Kerr Street and Wyecroft Road northerly, the proposed profile will remain the same as the existing road profile; however, the road will be



OAKVILLE

PROPOSED SWM OUTLET POOL WITH FLOW SPREADER

KERR STREET AT CNR GRADE SEPARATION
CLASS ENVIRONMENTAL STUDY REPORT

Exhibit 6-5

widened from two lanes to four lanes. At the QEW crossing, the existing storm sewer at the low point in the profile conveys the runoff directly to Sixteen Mile Creek. The existing storm sewer will be assessed to ensure that the storm sewer will not be surcharged under proposed conditions, and that minimal or no ponding will occur during a major storm event. Super pipes can be used for temporary storage, and oil and grit separators will provide the water quality treatment.

6.1.7 Preliminary Cost Estimates

The preliminary cost estimate for the preferred alternative alignment would be in the range of $ 27 M. An allowance for minor items (15%), engineering (15%) and construction contingency (15%) has been included in the road cost. The detailed cost estimate is provided in Table 6-1. Property costs have not been included.

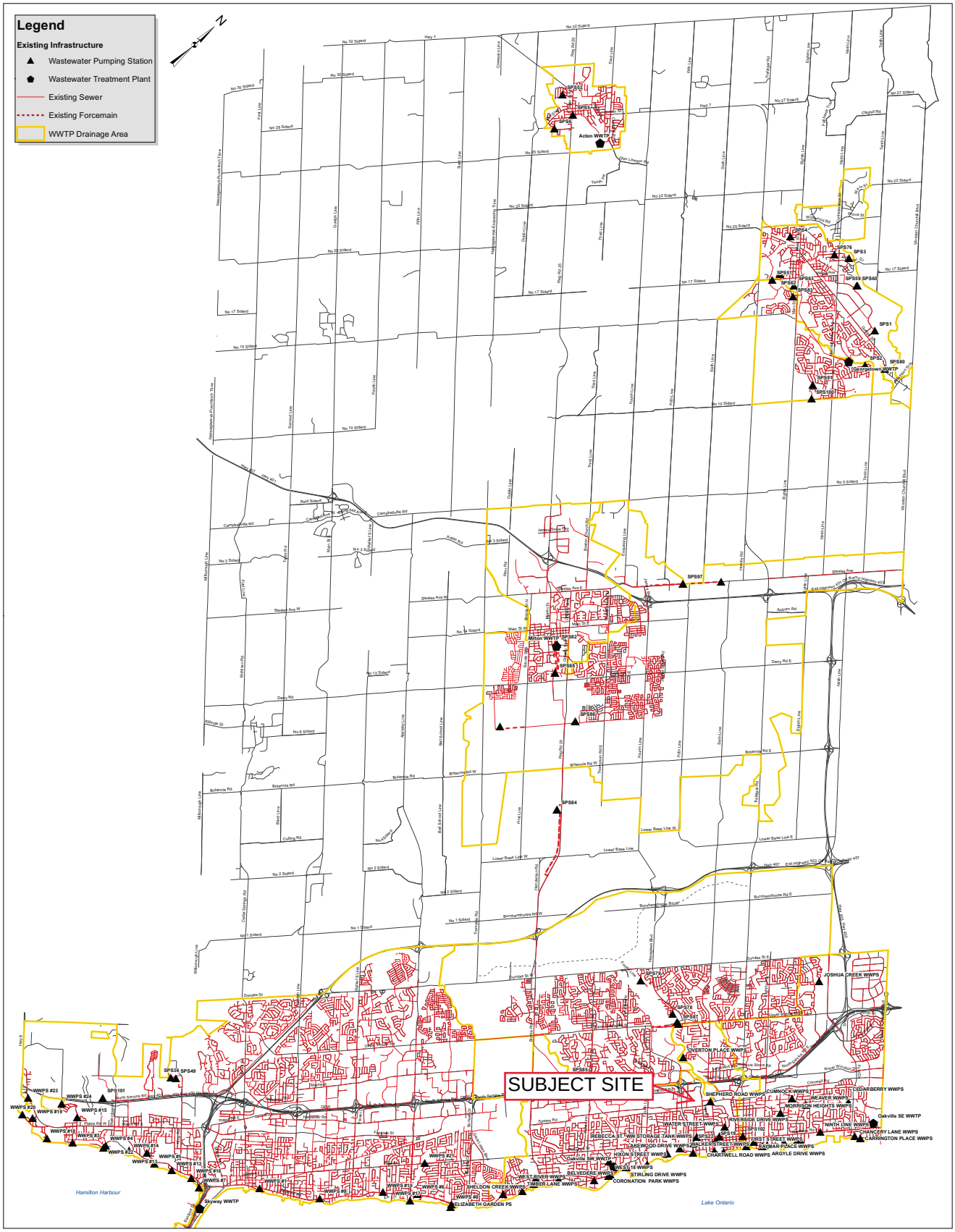
Table 6-1 - Preliminary Cost Estimate

			Preferred Alternative	
Item Description	**Units**	**Unit Cost**	**Quantity**	**Cost**
Removal				
Removal of Existing Pavement	m^2	$10	10,000	$100,000
Remove Chain Link Fence	m	$12	200	$2,400
Remove CSP Culverts	m	$50	100	$5,000
Remove and Dispose of Concrete Curb and Gutter	m	$10	1,800	$18,000
Demolition	LS			$50,000
Clear & Grub	m^2	$2.50		NA
Roadwork				
Earth Excavation	m^3	$18	80,000	$1,440,000
Asphalt HL-1 (50mm)	tonnes	$95	2,440	$231,800
Asphalt HDBC (100mm)	tonnes	$85	4,780	$406,300
Granular 'A' (150mm Depth)	tonnes	$21	7,040	$147,840
Granular 'B' Type II (550mm Depth)	tonnes	$20	21,840	$436,800
Concrete Curb and Gutter - All Type	m	$50	4,060	$203,000
2m Concrete Sidewalk, Median and 1.1m Impress Concrete Sidewalk	m^2	$55	7,200	$396,000
Commercial Driveway	m^2	$70	520	$36,400
Storms Sewers				$1,087,000
Oil/Grit Separator	each	$50,000	1	$50,000
Install 900mm Pipe By Tunnelling	m	$8,000	70	$560,000
Shaft	LS	$500,000	1	$500,000
Retaining Walls				$2,000,000
Watermain				$459,000
Sub-TOTAL				$8,129,540
Minor Items (15%)				$1,219,431
CNR Structure				
Construction of 3 Track Structure	LS	$2,800,000	1	$2,800,000
Track Protection	LS	$500,000	1	$500,000
Track Diversion Contract	LS	$850,000	1	$850,000
CNR Work				
Flagging (Rail Diversion)	LS	$50,000	1	$50,000
Flagging (Structure)	LS	$200,000	1	$200,000
Railway Signal Work	LS	$800,000	1	$800,000
Trackwork	LS	$3,000,000	1	$3,000,000
Design Services/Review	LS	$100,000	1	$100,000
Traffic Signal				
Permanent Traffic Signals	each	$150,000	3	$450,000
Temporary Traffic Signal	each	$150,000	2	$300,000
Illumination	each	$6,000	30	$180,000
Hydro Relocation	LS	$250,000	1	$250,000
Pipeline Relocation	LS	$2,000,000	1	$2,000,000
Construction Sub-total				**$20,828,971**
Misc. and Contingency		15.0%		$3,124,346
Engineering (Detail Design and Construction Administration)		15.0%		$3,124,346
			TOTAL =	**$27,080,000**

Appendix B
Sanitary Analysis

Halton Region Wastewater Map

Sanitary Design Calculations



Halton Region
Existing Wastewater System
Figure 21

Sustainable Halton
Water and Wastewater Master Plan

AECOM
07 Oct 2011
1:40,000
60114062-268-W

Upper Kerr Village

Mixed Use Development

IBI

Sanitary Sewer Design Sheet

NOTES: Post-development domestic sewage flow based upon a unit flow of 275 Lpcd.

Post-development commercial sewage flow based upon a unit flow of 24.750 m^3/ha/day

Infiltration= 0.286 L/s/ha

Mannings= 0.013

Maximum flow velocity for pipe flowing full = 3.0 m/s.

Minimum flow velocity for pipe flowing partially full (actual flow) = 0.6 m/s.

Project Name: Upper Kerr Village

Project Number: 137021

Date: January 4, 2021

Designed By: Jason Jenkins, P.Eng.

	From	To	DESIGN FLOW CALCULATIONS											SEWER DESIGN & ANALYSIS							Notes
			Area (ha)	Commercial Area (ha)	Residential Population	Cumulative Area (ha)	Cumulative Commercial Area (ha)	Cumulative Residential Population	Cumulative Total Population	Peaking Factor	Sewage Flow (L/s) *(1)*	Infiltration Flow (L/s) *(2)*	Total Flow, Qd (L/s) *(1)+(2)*	Nominal Diameter (mm)	Pipe Slope (%)	Pipe Length (m)	Full Flow Capacity, Qf (L/s)	Full Flow Velocity (m/s)	Actual Velocity V (m/s)	Percent of Full Flow (%)	
Pre-Development																					
			4.8	1.7	0	4.8	1.7	0	153	3.55	1.729	1.373	**3.1**								
Post-Development Sewer																					
Area A	MH1A	MH2A	0.9	0.10	1,161	0.9	0.10	1161	1170	3.74	13.933	0.257	**14.2**	300	0.45%	151.4	67.7	0.93	0.73	21.0%	
Area B	MH1A	MH2A	0.8	0.19	1,156	1.7	0.29	2317	2343	3.51	26.160	0.486	**26.6**	300	0.45%	151.4	67.7	0.93	0.87	39.3%	
Area C	MH2A	MH3A	1.2	0.40	1,393	2.9	0.69	3710	3772	3.32	39.856	0.829	**40.7**	300	0.45%	151.4	67.7	0.93	0.97	60.1%	
Area D	MH7A	MH8A	1.9	0.10	1,277	1.9	0.10	1277	1286	3.71	15.206	0.543	**15.7**	200	0.60%	146.0	26.5	0.82	0.85	59.2%	
Total			4.8	0.79	4,987	4.8	0.79	4987	5058	3.22	51.850	1.373	**53.2**								
Post-Development Services																					
Area A	Cntrl MH	SAN	0.9	0.10	1,161	0.9	0.10	1161	1170	3.73	13.890	0.257	**14.1**	150	2.00%	10.0	22.5	1.23	1.30	62.8%	
Area B	Cntrl MH	SAN	0.8	0.19	1,156	0.8	0.19	1156	1173	3.73	13.920	0.229	**14.1**	150	2.00%	10.0	22.5	1.23	1.30	62.8%	
Area C	Cntrl MH	SAN	1.2	0.40	1,393	1.2	0.40	1393	1429	3.65	16.618	0.343	**17.0**	150	2.00%	10.0	22.5	1.23	1.35	75.7%	
Area D	Cntrl MH	SAN	1.9	0.10	1,277	1.9	0.10	1277	1286	3.71	15.206	0.543	**15.7**	150	2.00%	10.0	22.5	1.23	1.33	69.9%	

Pre-Development

	Units	Area	Density	Population
Residential	0.00	0.00	2.7 pp/unit	0
Commercial		1.7 ha	90.0 pp/ha	153
			Pop. =	**153**
			Kav =	**0.80**

Post-Development-Total Site

	Units / Area	Area	Density	Population
Residential	1847	17.2 ha	2.7 pp/unit	4987
Commercial		0.8 ha	90.0 pp/ha	71
			Pop. =	**5058**
			Kav =	**0.99**

Post-Development- Area A

	Units	Area	Density	Population
Residential	430	4.0 ha	2.7 pp/unit	1161
Commerical		0.10 ha	90.0 pp/ha	9
			Pop. =	**1170**
			Kav =	**1.00**

Post-Development-Area B

	Units	Area	Density	Population
Residential	428	4.0 ha	2.7 pp/unit	1156
Commerical		0.19 ha	90.0 pp/ha	17
			Pop. =	**1173**
			Kav =	**0.99**

Post-Development-Area C

	Units / Area	Area	Density	Population
Residential	516	4.8 ha	2.7 pp/unit	1393
Commerical		0.40 ha	90.0 pp/ha	36
			Pop. =	**1429**
			Kav =	**0.98**

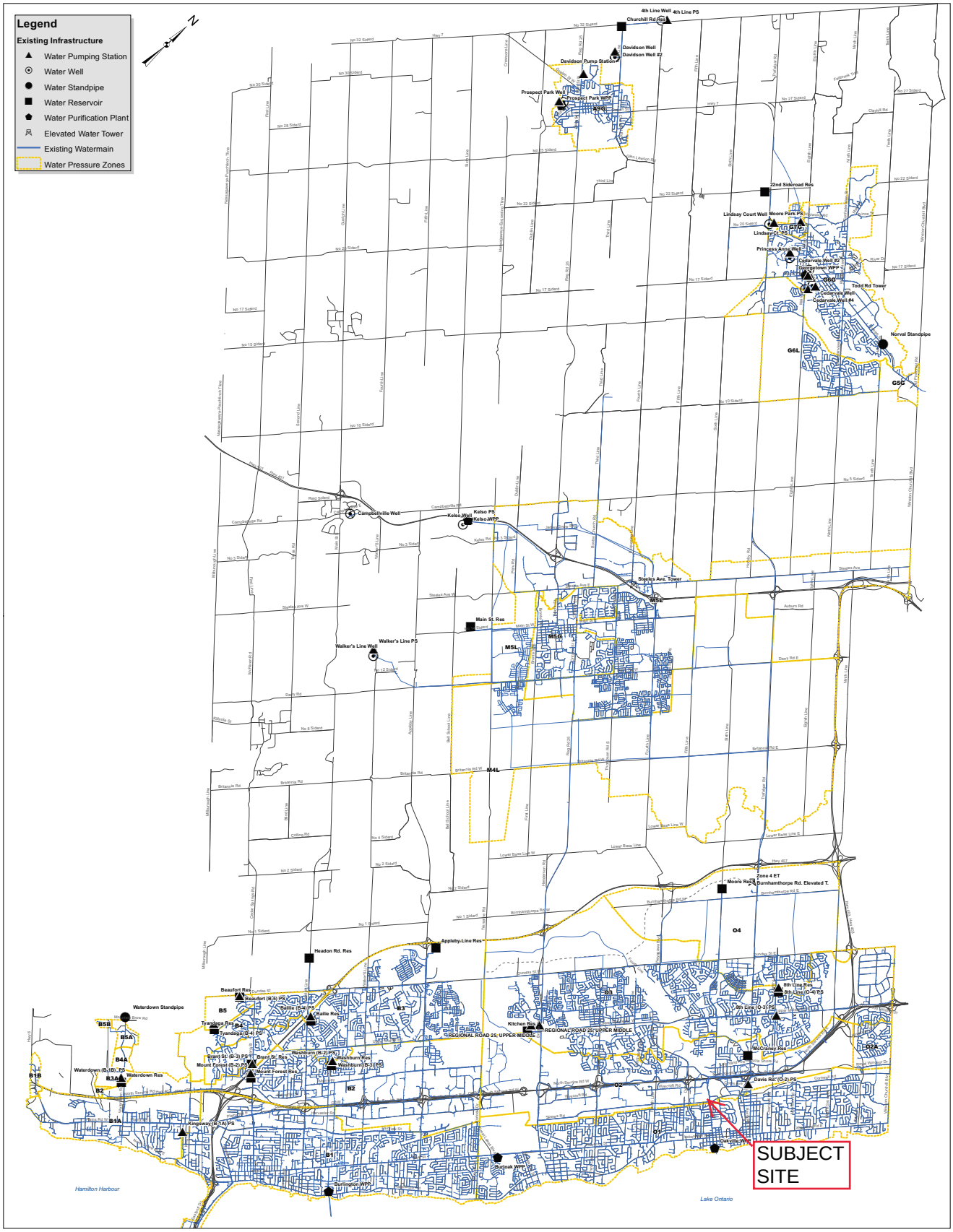
Post-Development-Area D

	Units / Area	Area	Density	Population
Residential	473	4.4 ha	2.7 pp/unit	1277
Commerical		0.10 ha	90.0 pp/ha	9
			Pop. =	**1286**
			Kav =	**1.00**

Appendix C
Water Analysis

Pressure District Map (Halton Region)

Water Demand Calculations



Halton Region
Sustainable Halton
Water and Wastewater Master Plan

Halton Region
Existing Water Distribution System
Figure 12

AECOM
11 Oct 2011
1:40,000
60114162-287-W

Upper Kerr Village

Mixed Use Development

IBI

DOMESTIC WATER DEMAND CALCULATIONS

Project Name: Upper Kerr Village
Project Number: 137021
Date: January 13, 2022
Designed By: Jason Jenkins, P.Eng.

1. Based on the October 2019 Halton Region Water and Wastewater LDM and
2. OBC, Part 8 "Sewage Systems", OBC Table 8.2.1.3.A and 8.2.1.3.B
3. ADD = 275 L/cap/day for residential uses

Peaking Factors		
Land Use	Peak Hour	Maximum Day
Residential	4.00	2.25
Commercial	2.25	2.25

588 Kerr (Area A)					*(ADDxP.F.)*	*(ADDxP.F.)*
	Units / Area	Density	Population	ADD (L/s)	PHD (L/s)	MDD (L/s)
Apartments	430	2.7 pp/unit	1161	3.7	14.8	8.3
Commercial	0.10 ha	90 pp/ha	9	0.0	0.1	0.1
		Totals	**1,170**	**3.7**	**14.8**	**8.4**

550 Kerr (Area B)					*(ADDxP.F.)*	*(ADDxP.F.)*
	Units / Area	Density	Population	ADD (L/s)	PHD (L/s)	MDD (L/s)
Apartments	428	2.7 pp/unit	1156	3.7	14.7	8.3
Commercial	0.19 ha	90 pp/ha	17	0.1	0.1	0.1
		Totals	**1,173**	**3.7**	**14.8**	**8.4**

530 Kerr + 131 Speers (Area C)					*(ADDxP.F.)*	*(ADDxP.F.)*
	Units / Area	Density	Population	ADD (L/s)	PHD (L/s)	MDD (L/s)
Apartments	516	2.7 pp/unit	1393	4.4	17.7	10.0
Commercial	0.40 ha	90 pp/ha	36	0.1	0.3	0.3
		Totals	**1,429**	**4.5**	**18.0**	**10.2**

171 Speers (Area D)					*(ADDxP.F.)*	*(ADDxP.F.)*
	Units / Area	Density	Population	ADD (L/s)	PHD (L/s)	MDD (L/s)
Apartments	473	2.7 pp/unit	1277	4.1	16.3	9.1
Commercial	0.10 ha	90 pp/ha	9	0.0	0.1	0.1
		Totals	**1,286**	**4.1**	**16.3**	**9.1**

Total Site					*(ADDxP.F.)*	*(ADDxP.F.)*
	Units / Area	Density	Population	ADD (L/s)	PHD (L/s)	MDD (L/s)
Interim (A+B+C)	-	-	**3,772**	**12.0**	**47.7**	**27.0**
Ultimate (A+B+C+D)	-	-	**5,058**	**16.1**	**63.9**	**36.2**

Upper Kerr Village

530 Kerr & 131 Speers (Area C)

IBI

FIRE FLOW DEMAND CALCULATIONS

Project Name: Upper Kerr Village
Project Number: 137021
Date: January 13, 2022
Designed By: Jason Jenkins, P.Eng.

Based on the Water Supply for Public Fire Protecetion Manual, 1999 by the Fire Underwriters Survey

Step 1: Calculate Fire Flow (based on area)

Construction Coefficient =	0.6	
Largest Floor Area =	4,417	m2
Floor Above =	4,417	m2
Floor Below =	4,417	m2
Area =	6,626	m2
Fire Flow (F) =	**11,000**	L/min

$$F = 220C\sqrt{A}$$

F = required fire flow (L/min)
C = coefficient related to type of construction
- 0.6 for fire resistive (fully protected, 3-hr ratings)
- 0.8 for non combustable (i.e. unprotected metal buildings)
- 1.0 for ordinary construction
- 1.5 for wood frame construction

A = total floor area excluding basements 50% below grade

** If vertical openings are inadequately protected, consider two largest two largest adjoining floors plus 50% of each of any floors above up to eight floors.*
** If vertical openings are adequately protected (one hour rating), consider largest floor area + 25% of two immediately floors.*

Step 2: Adjustment for Building Occupancy (shall not be less than 2000 L/s)

Occupancy Adjustment =	-0.15	
F_1 = Fire Flow x Adjustment =	**9,350**	L/min

Non-Combust.	-25%	Free Burning	15%
Limited Comb.	-15%	Rapid Burning	25%
Combustable	No change		

Step 3: Adjust F1 for Fire Supression System

Sprinkler Adjustment =	30%	
$F_2 = F_1$ x Adjustment =	**2,805**	L/min

Automatic Sprinklers (monitored)	-50%
Adequatly Designed System	-30%

Step 4: Adjust F1 for Exposure / Proximity (shall not exceed 75%)

Proximity Adjustment =	35%	(max 75%)
$F_3 = F_1$ x Factor =	**3,273**	L/min

Separation	Adjustment	Separation	Adjustment
0m to 3m	25%	20.1m to 30m	10%
3.1m to 10m	20%	30.1m to 45m	5%
10.1m to 20m	15%		

Step 5: Calculate Adjusted Fire Flow (shall not be less than 2000 L/min or greater than 45,000 L/min)

F_1 =	9,350	L/min
- F_2 =	2,805	L/min
+ F3 =	3,273	L/min
Fire Flow =	10,000	L/min
Fire Flow =	**166.7**	L/s
Total Demand (Fire Flow + MDD) =	**202.8**	L/s

$$\text{Fire Flow} = F_1 - F_2 + F_3$$

Checks:
Fire Flow greater than 2000 L/min
Fire Flow less than 45,000 L/min

Appendix D
Engineering Exhibits

Preliminary Site Grading Exhibit – Interim
Preliminary Site Grading Exhibit – Ultimate
Preliminary Site Servicing Exhibit – Interim
Preliminary Site Servicing Exhibit – Ultimate

CNR TRACKS

AREA A
BUILDING 1

AREA B
BUILDING 1

AREA C
BUILDING 2

AREA C
BUILDING 1

PROPOSED PARK

PROPOSED
URBAN SQUARE

OUTLINE OF GROUND FLOOR

LIMIT OF PROPOSED R.O.W.

KERR STREET GRADES AND ALIGNMENT SHOWN PER KERR STREET AT CNR GRADE SEPARATION CLASS ENVIRONMENTAL ASSESSMENT (EA) STUDY, 2009

RETAINING WALL TO BE CONSTRUCTED BETWEEN SUBJECT SITE AND ADJACENT KERR STREET EA, 2009 (BY OTHERS)

SHEPHERD ROAD

KERR STREET

SPEERS ROAD

LOT 17, CONCESSION 3, SOUTH OF DUNDAS STREET

LOT 16, CONCESSION 3, SOUTH OF DUNDAS STREET

PIN 24628 – 0055 (LT)

DEDICATED BY LAW 963–42, INST. 646041

KEY PLAN

CLIENT
URBAN STRATEGIES INC.

ISSUES

No.	DESCRIPTION	DATE
1	ISSED FOR OPA	2022-01-31

LEGEND

- SUBJECT SITE BOUNDARY
- EX. PROPERTY LINE
- EX. ELEVATION ×165.50EX
- PROP. ELEVATION ×149.50
- FINISHED FLOOR ELEVATION FFE=104.50
- PROP. OVERLAND FLOW ROUTE
- EX. OVERLAND FLOW ROUTE
- PROP. STORM MAINTENANCE HOLE
- PROP. AREA DRAIN / DOUBLE AREA DRAIN AD / DAD
- PROP. SANITARY MAINTENANCE HOLE
- EX. STORM MANHOLE
- EX. SANITARY MANHOLE
- PROP. VALVE AND BOX VB
- PROP. FIRE HYDRANT AND VALVE FH
- PROP. SIAMESE CONNECTION

SEAL

TOWN OF OAKVILLE
REGIONAL MUNICIPAL OF HALTON

IBI GROUP
Unit 300 – 8133 Warden Avenue
Markham ON L6G 1B3 Canada
tel 905 763 2322 fax 905 763 9983
ibigroup.com

PROJECT
530,550,580 KERR STREET AND 131,171 SPEERS ROAD

OAKVILLE, ONTARIO

LIST OF DRAWINGS
SG-01 - PRELIMINARY SITE GRADING EXHIBIT - INTERIM
SG-02 - PRELIMINARY SITE GRADING EXHIBIT - ULTIMATE
SS-01 - PRELIMINARY SITE SERVICING EXHIBIT - INTERIM
SS-02 - PRELIMINARY SITE SERVICING EXHIBIT - ULTIMATE

PROJECT NO: 137021	
DRAWN BY: SB	CHECKED BY: JJ
PROJECT MGR: JJ	APPROVED BY: JJ

SITE PLAN INFORMATION

SURVEYOR INFORMATION
KRCMR SURVEYORS LIMITED
1137 CENTRE STREET
THORNHILL, ON L4J 3M6
PHONE: (905) 738-0053

BENCHMARK INFORMATION:
ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE RELATED TO THE TOWN OF OAKVILLE BENCHMARK No. 112, HAVING AN ELEVATION = 102.472 METRES.

SCALE: N.T.S.

SHEET TITLE
PRELIMINARY SITE GRADING EXHIBIT - INTERIM

SHEET NUMBER	ISSUE
SG-01	01

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CNR TRACKS

AREA D BUILDING 1

AREA A BUILDING 1

AREA D BUILDING 2

AREA B BUILDING 1

AREA D BUILDING 3

AREA D BUILDING 4

AREA C BUILDING 2

AREA C BUILDING 1

OUTLINE OF GROUND FLOOR

LIMIT OF PROPOSED R.O.W.

PROPOSED PARK

PROPOSED URBAN SQUARE

RETAINING WALL TO BE CONSTRUCTED BETWEEN SUBJECT SITE AND KERR STREET EA, 2009 (BY OTHERS)

KERR STREET GRADES AND ALIGNMENT SHOWN PER KERR STREET AT CNR GRADE SEPARATION CLASS ENVIRONMENTAL ASSESSMENT (EA) STUDY, 2009

SHEPHERD ROAD

KERR STREET

SPEERS ROAD

LOT 17, CONCESSION 3, SOUTH OF DUNDAS STREET

1' RESERVE, REGISTERED PLAN 967

"ENTRANCE", REGISTERED PLAN 967

SOUTHWEST LIMIT OF KERR STREET AS WIDENED

DEDICATED BY LAW, 963-42, INST. 646041

CONCRETE CURB

CURB CUT

KEY PLAN

CLIENT
URBAN STRATEGIES INC.

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OAKVILLE, ONTARIO

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SS-02 - PRELIMINARY SITE SERVICING EXHIBIT - ULTIMATE

PROJECT NO: 137021	
DRAWN BY: SB	CHECKED BY: JJ
PROJECT MGR: JJ	APPROVED BY: JJ

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SURVEYOR INFORMATION
KRCMR SURVEYORS LIMITED
1137 CENTRE STREET
THORNHILL, ON L4J 3M6
PHONE: (905) 738-0053

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SCALE: N.T.S.

SHEET TITLE
PRELIMINARY SITE GRADING EXHIBIT - ULTIMATE

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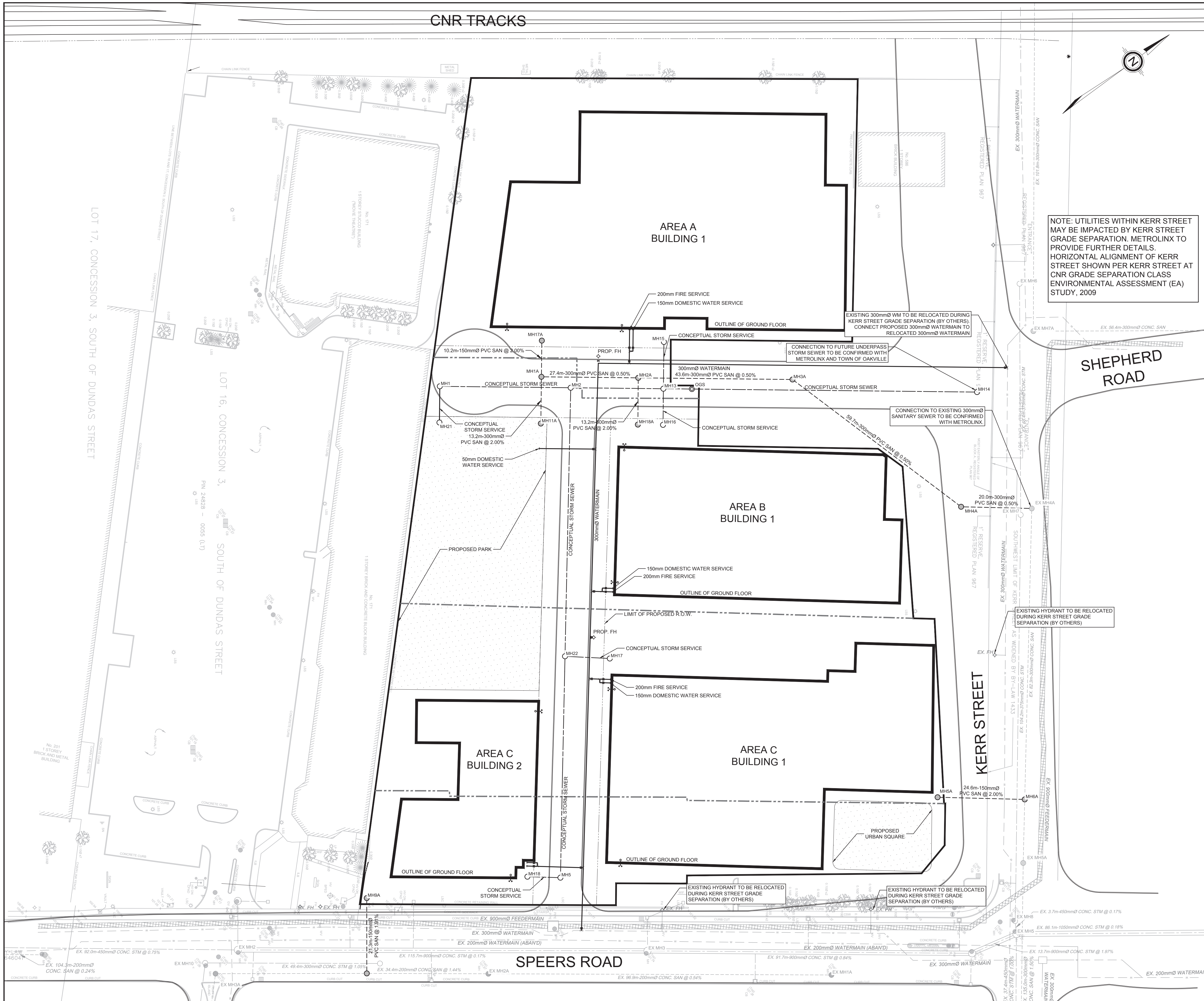

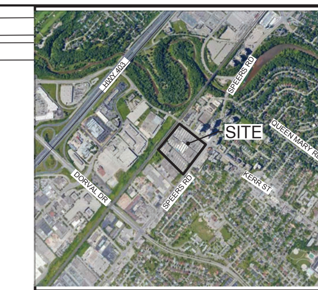

KEY PLAN

CLIENT
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ISSUES

No.	DESCRIPTION	DATE
1	ISSED FOR OPA	2022-01-31

LEGEND

- SUBJECT SITE BOUNDARY
- EXISTING PROPERTY LINE
- PROPOSED STORM MANHOLE
- PROPOSED SANITARY MANHOLE
- PROPOSED SINGLE CATCH BASIN
- PROPOSED DOUBLE CATCH BASIN
- EXISTING STORM MANHOLE
- EXISTING SANITARY MANHOLE
- EXISTING CATCH BASIN
- PROPOSED VALVE AND BOX — V&B
- PROPOSED STORM
- PROPOSED SANITARY
- PROPOSED WATER
- EXISTING STORM
- EXISTING SANITARY
- EXISTING WATER
- EXISTING BELL
- EXISTING GAS
- PROPOSED AREA DRAIN
- PROPOSED BACKFLOW PREVENTER — B
- PROPOSED WATER METER — M
- PROPOSED DOUBLE CHECK DETECTOR — D

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PROJECT
530,550,580 KERR STREET AND 131,171 SPEERS ROAD

OAKVILLE, ONTARIO

LIST OF DRAWINGS

PROJECT NO:
137021

DRAWN BY:	CHECKED BY:
SB	**JJ**
PROJECT MGR:	APPROVED BY:
JJ	**JJ**

SITE PLAN INFORMATION

SURVEYOR INFORMATION
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1137 CENTRE STREET
THORNHILL, ON L4J 3M6
PHONE: (905) 738-0053

SHEET TITLE
PRELIMINARY SITE SERVICING EXHIBIT - INTERIM

BENCHMARK INFORMATION:
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SCALE: N.T.S.

SHEET NUMBER
SS-01

ISSUE
01

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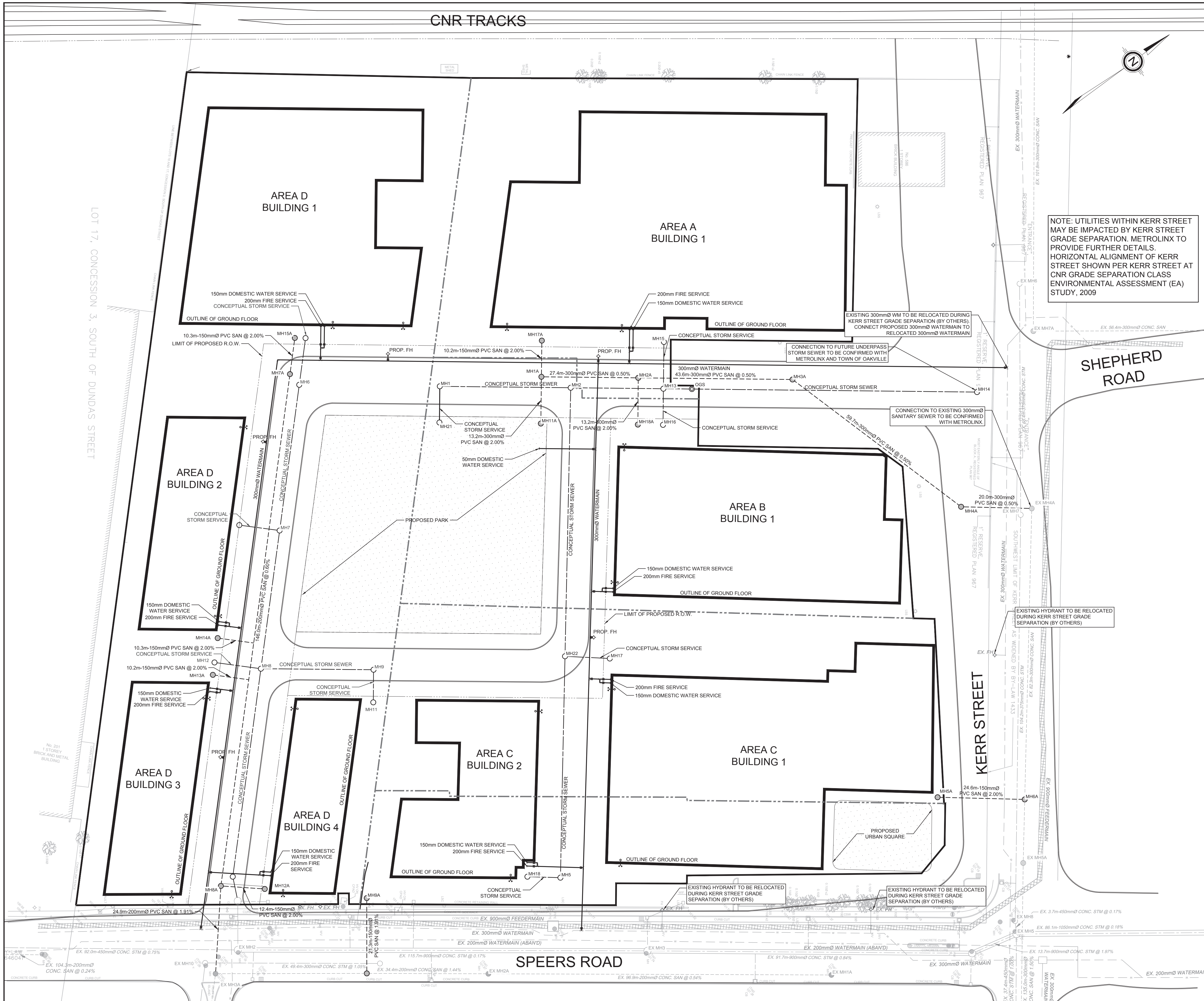

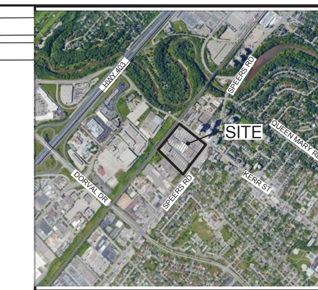

KEY PLAN

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SCALE: N.T.S.

PROJECT NO: 137021	
DRAWN BY: SB	CHECKED BY: JJ
PROJECT MGR: JJ	APPROVED BY: JJ

SHEET TITLE
PRELIMINARY SITE SERVICING EXHIBIT - ULTIMATE

SHEET NUMBER: SS-02
ISSUE: 01

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