TRAFALGAR ENGINEERING

FUNCTIONAL SERVICING REPORT

Water, Sanitary, and Stormwater Management

PROPOSED SIX-STOREY MIXED-USE CONDOMINIUM

115 TRAFALGAR ROAD
TOWN OF OAKVILLE

OUR FILE: 1797

PREPARED FOR HICKS DESIGN STUDIO

July 11, 2023

REVISION HISTORY

DATE	REVISION	SUBMISSION
July 11, 2023	1	Issued for Zoning By-law Amendment and Official Plan Amendment Application

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1.0   INTRODUCTION

1.1   Scope of Functional Servicing Report

This report has been prepared in support of a Zoning By-law Amendment (ZBA) and Official Plan Amendment (OPA) for a six-storey, mixed use building located at 115 Trafalgar Road between Church Street and Lakeshore Road E. This report discusses how the site can be serviced by the existing infrastructure for water, wastewater, and stormwater. This report may be updated and refined as the project moves through the planning process to support the Site Plan Application and Building Permit stages. A copy of the preliminary site plan is included in Appendix 'A' for reference.

This report should be read in conjunction with architectural plans and landscape plans prepared for the project.

For the purposes of this report, north is defined as running parallel to Trafalgar Road.

1.2   Existing Condition

The site is surrounded by commercial developments to the south and west, a municipal parking lot the east, and residential houses to the north.

The site area is 683.5 m^2 and is occupied by a two-storey commercial building containing several businesses. The property has frontage along Trafalgar Road and Church Street.

1.3   Proposed Condition

The proposed site includes a six-storey mixed-use building consisting of nine residential units and approximately 230 m^2 of at-grade retail. The building will also have an underground parking garage with access from Trafalgar Road.

2.0   MUNICIPAL WATER AND WASTEWATER

The location of the existing services was determined through the review of record drawings provided by the Region of Halton and Town of Oakville, and topographic survey completed by Cunningham McConnell Limited.

All proposed services must be in accordance with the Ontario Building Code, Town of Oakville, and Region of Halton standards and requirements. A copy of the Grading and Servicing Plan is

included in Appendix 'E' and should be read in conjunction with this report. Existing and proposed servicing is discussed in further detail in the following sections.

2.1   Water

Record drawings indicate that there is an existing 300 mm diameter PVC watermain that runs along Trafalgar Road and another 300 mm diameter PVC watermain that runs along Church Street. The site is currently serviced from the 300 mm diameter PVC watermain on Trafalgar Road. It should be noted there is a private fire hydrant on the site along Trafalgar Road, which will be removed. There is an existing fire hydrant available in the Trafalgar Road allowance on the north side of the Trafalgar Road and Church Street intersection, within 90 m of the proposed building (refer to Figure 1 in Appendix 'B').

Using the development area and Region of Halton design criteria for a development consisting of a Light Commercial Area (90 persons per hectare) and a Townhouse, Maisonette of six storeys or less (135 persons per hectare), the estimated water demand is determined with approximately two persons for commercial plus approximately nine persons for residential and 275 L/cap. day (see Appendix 'B' for supporting calculations).

The fire flow was estimated for demand purposes only using the Fire Underwriter's Survey methodology. Fire flows should be confirmed at the building permit stage by the sprinkler consultant. The estimated flows are summarized below, with detailed calculations shown in Appendix 'B'.

Table 1: Estimated Water Demands (L/min)

Average Daily Demand	2
Minimum Hourly Demand	2
Maximum Hourly Demand	5
Maximum Daily Demand	3
Estimated Fire Demand (FUS 1999)	4000
Maximum Daily Plus Fire Demand	4003

A flow test was undertaken (December 07, 2022) using the base hydrant at the north-east corner of Trafalgar Road and Lakeshore Road E. The results of the flow test are included in Appendix 'B' and are summarized as follows:

Table 2: Base Hydrant at Trafalgar Road and Lakeshore Road E

Static Pressure	69 psig
Flow 1125 usgpm (71 L/s)	residual 64 psig
Flow 2124 usgpm (134 L/s)	residual 63 psig
Theoretical Flow 14111 usgpm (890 L/s)	residual 20 psig
Estimated Max. Daily Plus Fire Service Pressure	64 psig

The proposed building will be connected to the existing 300 mm diameter PVC watermain on Church Street, with a 200 mm diameter fire, 100 mm diameter domestic for the residential units, and 100 mm diameter domestic for the at-grade retail. The connections are designed per Region Standard RH 409.010; sizing to be confirmed by the mechanical consultant at the building permit stage.

2.2   Wastewater

Record drawings indicate that there is an existing 300 mm diameter sanitary sewer near the centreline of Trafalgar Road. The sanitary sewer drains south towards Lakeshore Road E. There is a single service connection to the site which will be disconnected and abandoned per Region of Halton Standards. Capacity of the local sewer in Trafalgar Road is discussed in Section 2.2.3.

2.2.1   Estimated Flows

Using the development area and Region of Halton design criteria for Light Commercial Areas (90 persons per hectare), the estimated existing sanitary discharge is determined with six persons and 275 L/cap. day (see Appendix 'C' for supporting calculations).

Table 3: Estimated Existing Wastewater Flow (L/s)

Average Daily Dry Weather Flow	0.02
Modified Harmon Peaking Factor	-
Infiltration Allowance (0.26 L/s-ha)	0.02
Peak Daily Flow	0.04

Using the development area and the Region of Halton design criteria for a development consisting of a Light Commercial Area (90 persons per hectare) and a Townhouse, Maisonette of six storeys or less (135 persons per hectare), the estimated sanitary discharge is determined with approximately two persons for commercial plus approximately nine persons for residential and 275 L/cap. day (see Appendix 'C' for supporting calculations).

Table 4: Estimated Proposed Wastewater Flow (L/s)

Average Daily Dry Weather Flow	0.06
Modified Harmon Peaking Factor	4.42
Infiltration Allowance (0.26 L/s-ha)	0.02
Peak Daily Flow	0.16

Although there is an increase over the existing condition, the estimated proposed flows are small in context of the system capacity, which is discussed in Section 2.2.3 below.

2.2.2   Service Lateral Connection

A new 150 mm diameter PVC sanitary service lateral complete with a property line inspection manhole is proposed to service the site. The lateral will connect to the 300 mm diameter sanitary sewer on Trafalgar Road and drain in a southern direction.

The service lateral connection is sized in accordance with Region of Halton standards. Based on nine residential units and 20 FU per unit (according to Table 3-6 of the Region's Linear Design Manual), approximately 180 FU are generated. From Table 3-5 of the Region's Linear Design Manual, a minimum sewer diameter of 125 mm with a slope of 2% is required, however, from previous discussions with the Service Permit group on a similar project it was indicated that a 150 mm diameter sanitary lateral would be required.

2.2.3   Existing Sewer Capacity

Using drainage areas determined by reviewing record drawings, the Region's Wastewater Operating Maps, the Town's Zoning Bylaw, and aerial photography, estimated sanitary flows are analysed for the proposed condition using a Sanitary Sewer Design sheet and Region of Halton criteria. The sanitary sewer was analyzed to the outfall of the southern wastewater main on Trafalgar Road, as we assume the 300 mm diameter sewer has capacity. Refer to Figure 2 and associated design sheet in Appendix 'C' for detail.

Our analysis indicates that the Trafalgar Road local wastewater main is flowing approximately 4% full at the downstream end. There is adequate capacity in the local wastewater main to service the development.

The subject lands are tributary to the Navy Street pumping station which has identified capacity constraints. However, using the Region's demand criteria, the estimated proposed increase in flow to the station is insignificant.

3.0   STORM DRAINAGE AND STORMWATER MANAGEMENT

3.1   Existing Storm Drainage

There is a 525 mm diameter sewer running along Trafalgar Road that runs south and a 375 mm sewer running along Church Street that runs west. The Church Street sewer drains to the Trafalgar Road sewer which continues to run south and discharges to Lake Ontario.

The site is entirely covered by the existing building, meaning there is no overland flow on the site. The topographic survey indicates that the sidewalk along the Church Street drains to existing catch basins in the sidewalk, that are connected to the storm sewer along Church Street.

The site is located within an established urban area with minimal vegetative cover. It is entirely paved in the existing condition resulting in a 100% impervious with a curve number of CN = 98.

3.2   Proposed Storm Drainage

A 150 mm diameter storm connection from the site will be provided to the existing 525 mm storm sewer along Trafalgar Road. Roof drainage is proposed to intercept the 100-year event and direct flow to the stormwater management tank located at the parking garage level (P1). Building mechanical is to be sized to convey the 100-year event. Stormwater management requirements are discussed in further detail in Section 3.3.

The proposed site is 100% impervious with a curve number of CN = 98.

3.3   Stormwater Management

3.3.1   Stormwater Quantity Control (Peak Flow Control)

The Town of Oakville generally requires developments to manage their drainage to the lesser of pre-development levels for each event up to the 100-year (or as otherwise identified by the appropriate sub-watershed study), or the receiving system capacity. In this case, due to the sewer and major system capacity issues identified in the Town's Stormwater Management Master Plan, we propose to control all events to the 5-year pre-development rate. This is generally consistent with developments of this type regardless of sewer constraints.

Pre-development flow rates are calculated based on a 24-hour Chicago storm distribution and the Town of Oakville IDF data. The pre-development curve number is calculated based on the current condition of the site which consists of a two-storey building (CN = 98) covering the entire site.

The post-development flows are calculated based on a 24-hour Chicago Storm distribution and the Town of Oakville IDF data. The post-development curve number (CN = 98) is equal to the pre-development curve number (CN = 98), therefore; the post-development flows are equal to the pre-development flows.

A comparison of pre- and post-development flow is provided in the table below.

Table 5: Stormwater Peak Flows

Return	Pre-Dev Total (L/s)	Post-Dev Tank Inflow (L/s)	Post-Dev Release (L/s)	Storage Required (m³)
5-yr	30	30	30	3.4
10-yr	35	35	30	4.3
25-yr	43	43	30	5.9
50-yr	48	48	30	8.7
100-yr	53	53	30	9.2

In order to control the post-development flow to the pre-development rate of Q = 0.03 m³/s, approximately 9.2 m³ of storage is required to control post-development flows from the 100-year event to the 5-year pre-development event. The proposed tank will be approximately 3.05 m x 3.66 m x 1.12 m to provide the required storage plus freeboard. Due to the elevation of the storm sewer on Trafalgar Road and the depth of the tank, discharge must be pumped. Pumps shall be designed by the mechanical consultant and the peak discharge must not exceed the allowable rate. An emergency pump complete with back up power is proposed to spill to grade. Due to the lack of the landscaping around the proposed site, it is recommended that the pumps discharge location is placed in the exterior wall to the left of the overhead parking garage door. The emergency discharge would spill into Trafalgar Road and drain south toward the catch basin on the corner of Trafalgar Road and Lakeshore Road E. The routing and location of discharge is to be confirmed by the mechanical consultant. Emergency overflow from the tank must be detailed as designs progress, but generally consists of a mechanism to spill to grade in the driveway and out to Trafalgar Road. Building mechanical systems must be designed to withstand surcharge.

3.3.2   Stormwater Quality Control

The Town of Oakville requires that the development meet MECP Enhanced protection (80% long-term removal of TSS). In this case, the proposed site's drainage area is entirely made up of roof area which is considered to be clean. Therefore, no specific water quality control measures are proposed.

3.3.3   Water Balance

The stormwater management tank has not been sized to accommodate a 25 mm water reuse as there is no increase in impervious area from the existing to proposed condition.

4.0   SITE GRADING

The site is entirely covered by the proposed building, leaving little grading work to be completed on site, however, along the north property line the sidewalk along Church Street has undesirable drainage. The retaining walls and catch basins will be removed, and the grades will be adjusted to ensure that the boulevard grades are between 2 and 4%. The grades along the western property line will be matched to the existing sidewalk to maintain a 2% slope to provide drainage towards Trafalgar Road. Along the east and south property lines the existing grades will be maintained.

A copy of the Preliminary Grading and Servicing Plan is provided in Appendix 'E' and should be read in conjunction with this report.

5.0   CONCLUSION

The information presented in this Functional Servicing Report demonstrates that the proposed development can be serviced by the existing infrastructure for water, wastewater, and stormwater and can meet the Town of Oakville stormwater management criteria. The following is a summary of the report findings:

1. Regional services, water and wastewater have sufficient capacity to support the proposed development.

2. The site's domestic (100 mm diameter for residential and at-grade retail) and fire service (200 mm diameter) water connection will be connected to the existing 300 mm diameter watermain on Trafalgar Road.

3. The site's sanitary lateral (150 mm diameter) will be connected to the existing 300 mm diameter sanitary sewer on Trafalgar Road.

4. Stormwater quantity controls are proposed to control post-development flows from the 100-year event to the 5-year pre-development event. Runoff is to be stored within a stormwater management tank at P1 and pumped to a maximum allowable rate of 30 L/s to the storm lateral (150 mm diameter) which is connected to the existing 525 mm diameter storm sewer. An emergency pump is also proposed to spill from the exterior wall to the left of the overhead door; the routing and location of discharge is to be confirmed by the mechanical consultant.

5. The stormwater management tank is sized to provide 12.3 m^3 of storage. The quantity control storage volume required is 9.2 m^3.

6. The sidewalk along Church Street needs to be regraded due to an undesirable drainage condition. The stone retaining walls and catch basins will be removed, the trees will remain, and the sidewalk will be graded to a minimum 2% slope.

Based on the above, we support the proposed development from a civil engineering perspective for Zoning By-law Amendment and Official Plan Amendment Application.

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

PREPARED BY TRAFALGAR ENGINEERING LTD.

Andy Prejs, MASc   **J.T. Nelson, P.Eng.**
Junior Designer   Principal, Design Services

LICENSED PROFESSIONAL ENGINEER
J.T. NELSON
100199369
PROVINCE OF ONTARIO

APPENDIX 'A'

Architectural Site Plan, Hicks Design Studio

Topographic Survey, Cunningham McConnell Limited

TREE PROTECTION

SEE SECTION 4 FOR DETAILS

SEE SECTION 4 FOR DETAILS

SNOW FENCING
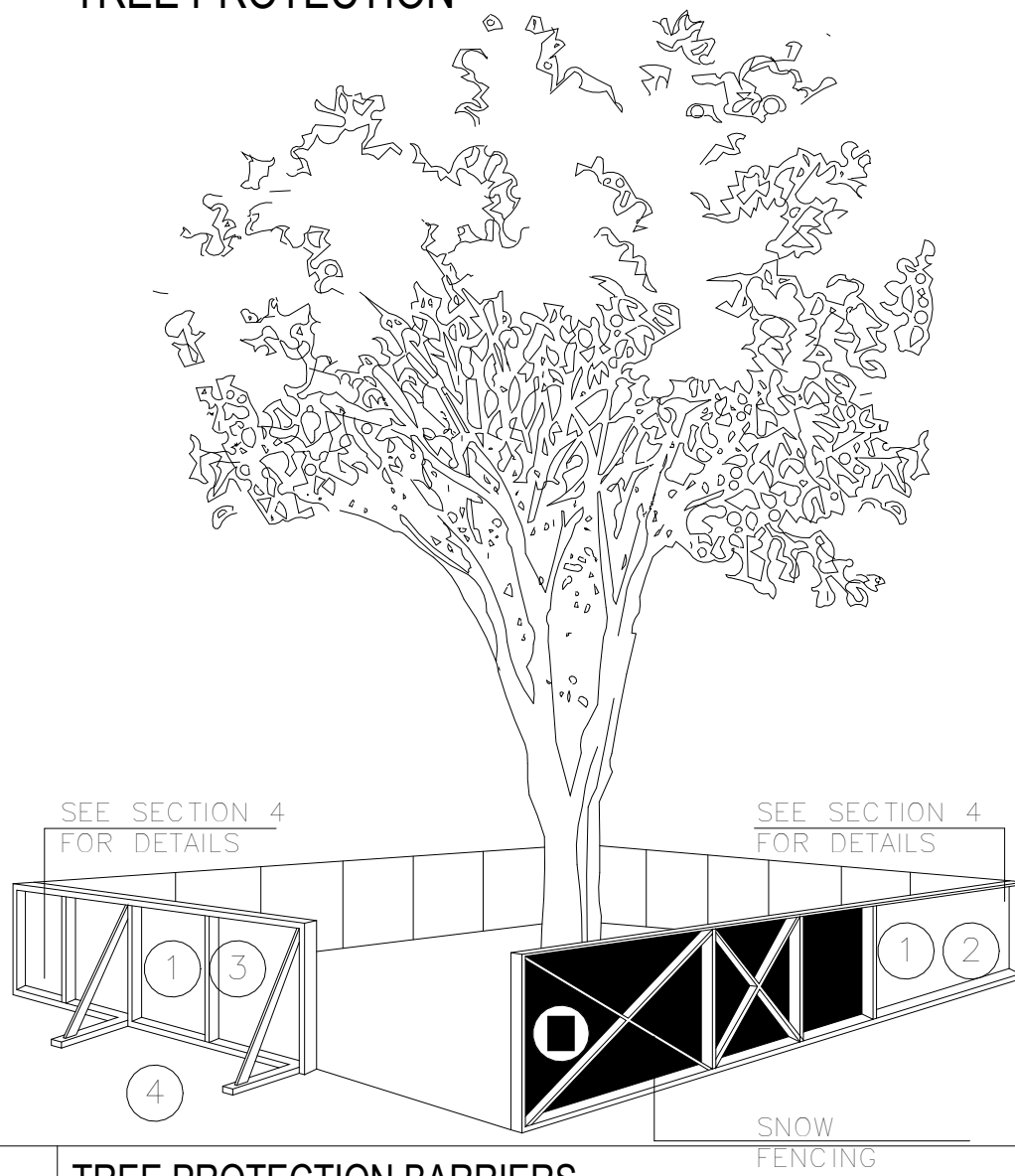
TREE PROTECTION BARRIERS

1. TREE PROTECTION BARRIERS MUST BE 1.2m (4'-0") HIGH, WAFERBOARD HOARDING OR AN EQUIVALENT APPROVED BY URBAN FORESTRY SERVICES.

2. TREE PROTECTION BARRIERS FOR TREES SITUATED ON THE TOWN ROAD ALLOWANCE WHERE VISIBILITY MUST BE MAINTAINED CAN BE 1.2m (4'-0") HEIGHT AND CONSIST OF ORANGE PLASTIC WEB SNOW FENCING ON A WOOD FRAME MADE OF 2"x4"'S.

3. WHERE SOME EXCAVATE OR FILL HAS TO BE TEMPORARILY LOCATED NEAR A TREE PROTECTION BARRIER, PLYWOOD MUST BE USED TO ENSURE NO MATERIAL ENTERS THE TREE PROTECTION ZONE.

4. ALL SUPPORTS AND BRACING SHOULD BE OUTSIDE THE TREE PROTECTION ZONE. ALL SUCH SUPPORTS SHOULD MINIMIZE DAMAGING ROOTS OUTSIDE THE TREE PROTECTION BARRIER.

5. NO CONSTRUCTION ACTIVITY, GRADE CHANGES, SURFACE TREATMENT OR EXCAVATIONS OF ANY KIND IS PERMITTED WITHIN THE TREE PROTECTION ZONE.

6. ALL LOCATES MUST BE OBTAINED PRIOR TO THE INSTALLATION OF THE PROPOSED HOARDING WITHIN THE MUNICIPAL RIGHT OF WAY.

SECTION 4, SIGNAGE

1. A SIGN (AS PER BELOW) MUST BE MOUNTED ON ALL SIDES OF A TREE PROTECTION BARRIER FOR THE DURATION OF THE PROJECT. THE SIGN SHOULD BE A MINIMUM OF 40cmX60cm AND MADE OF WHITE GATOR BOARD OR EQUIVALENT MATERIAL.

"TREE PROTECTION ZONE
NO GRADE CHANGE, STORAGE OF MATERIALS OR EQUIPMENT IS PERMITTED WITHIN THIS AREA. THE TREE PROTECTION BARRIER MUST NOT BE REMOVED WITHOUT THE WRITTEN AUTHORIZATION OF THE TOWN OF OAKVILLE."

TOWN OF OAKVILLE
PARKS AND RECREATION
DEPARTMENT

NAME: TREE PROTECTION BARRIERS

DATE:

FILE NO.:

1 OAKVILLE SITE REQUIREMENTS
1 : 1000

2 SITE PLAN
1 : 150

N

SITE LEGEND

F.F.E   FINISHED FLOOR ELEVATION

MAIN ENTRANCE

EXISTING TREE TO BE REMOVED
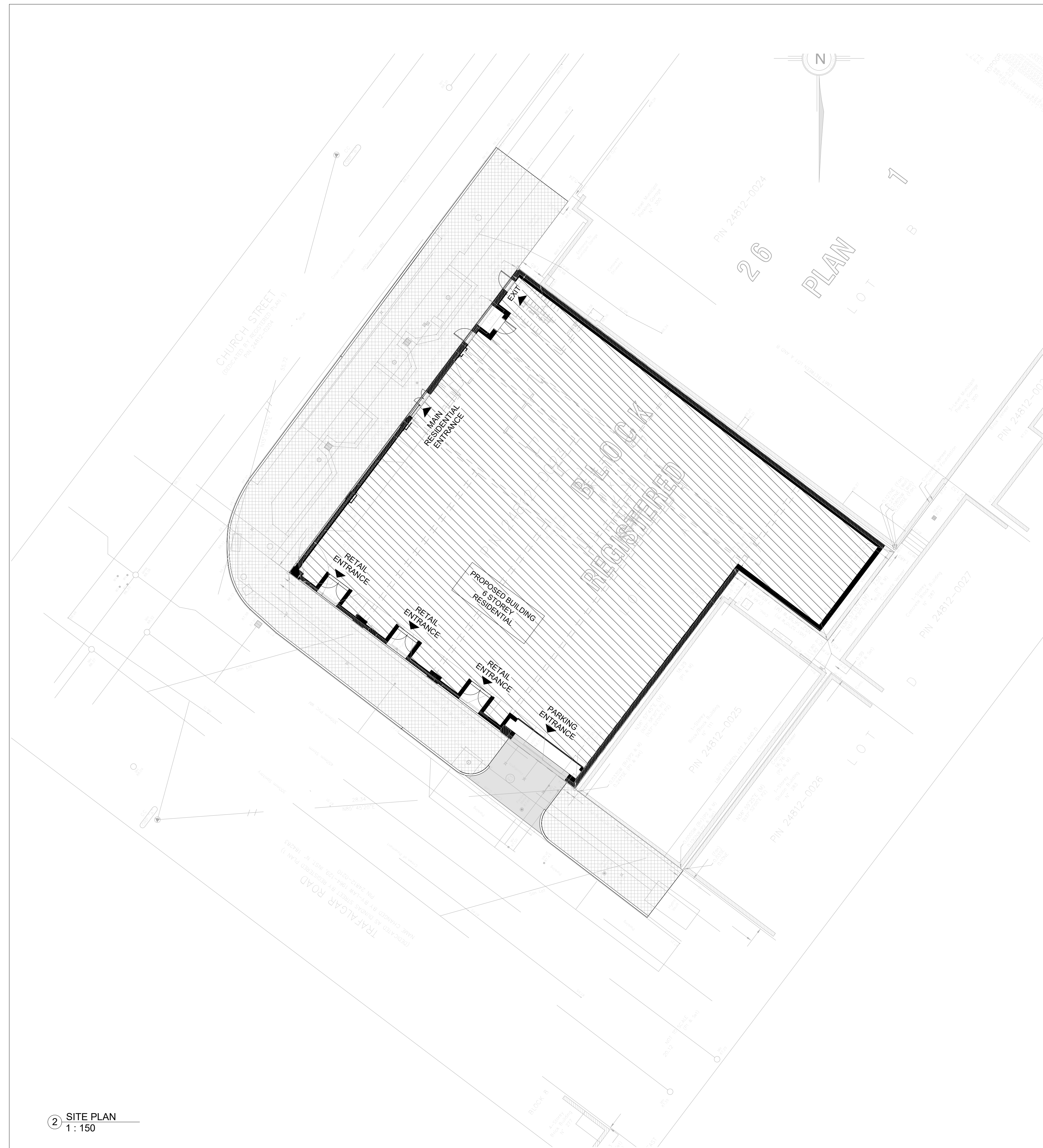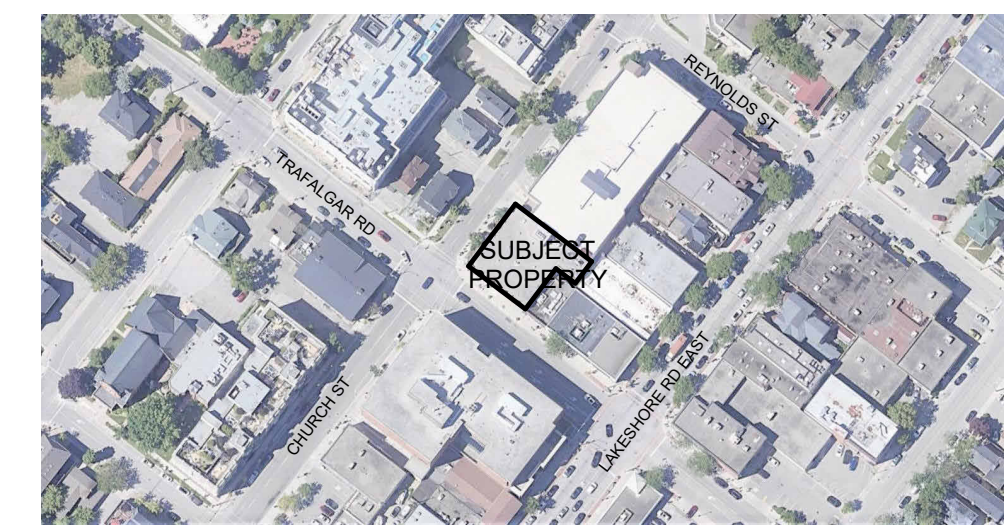
ARCHITECT & APPLICANT:
HICKS DESIGN STUDIO
295 ROBINSON STREET, SUITE 200
OAKVILLE, ONTARIO L6J 1G7
ATTENTION: WILLIAM HICKS
PH: 905 339 1212 EXT:222

SITE STATISTICS:

ADDRESS:	115 TRAFALGAR ROAD OAKVILLE, ON. L6J 3G3
ZONING:	CBD new by-law 2014-14
LEGAL DESCRIPTION:	PART OF LOT A - BLOCK 26 REGISTERED PLAN 1
LOT SIZE:	7,352 SQ FT

REQUIRED:	PROVIDED:
LOT COVERAGE:	
BUILDING (GROUND):	660.036 m2
COVERED GARAGE ENTRY:	7.95 m2
TOTAL:	667.986 m2
COVERAGE (%)	91.19%
LANDSCAPED AREA:	0%
PAVED AREA:	8.81 m2
SETBACKS:	
MIN. FRONT YARD 0m	0.00m
MIN. FLANKAGE YARD 0m	0.10m
MIN. INTERIOR SIDE YARD 0m	0.10m
MAX. NUMBER OF STOREYS- 4	6
MIN. FIRST STOREY HEIGHT 4.5m	4.5m
MAX. HEIGHT- 15m	22.10m

GFA (EXCLUDING PARKING)		
LEVEL	SQ M.	SQ F.
GROUND FLOOR	547 m²	5887
SECOND FLOOR	574 m²	6182
THIRD FLOOR	574 m²	6182
FOURTH FLOOR	574 m²	6182
FIFTH FLOOR	499 m²	5372
SIXTH FLOOR	411 m²	4427
TOTAL	3180 m²	34232

RETAIL AREA		
LEVEL	SQ M.	SQ F.
GROUND FLOOR	77 m²	827
GROUND FLOOR	76 m²	817
GROUND FLOOR	77 m²	831
TOTAL	230 m²	2475

RESIDENTIAL SALABLE AREA		
LEVEL	SQ M.	SQ F.
SECOND FLOOR	238 m²	2566
SECOND FLOOR	245 m²	2637
THIRD FLOOR	238 m²	2566
THIRD FLOOR	244 m²	2625
FOURTH FLOOR	238 m²	2566
FOURTH FLOOR	245 m²	2637
FIFTH FLOOR	185 m²	1992
FIFTH FLOOR	223 m²	2400
SIXTH FLOOR	369 m²	3975
TOTAL	2226 m²	23963

TERRACES & BALCONIES		
LEVEL	SQ M.	SQ F
SECOND FLOOR	92 m²	986
THIRD FLOOR	53 m²	567
FOURTH FLOOR	53 m²	566
FIFTH FLOOR	98 m²	1060
SIXTH FLOOR	117 m²	1256
TOTAL	412 m²	4436

PARKING PROVIDED		
LEVEL	TYPE	COUNT
UG1	2700X5700- Parking Space	14
UG1	2700X5700- Parking Space with Lift Down	11
TOTAL		25

NO	DATE:	DESCRIPTION
1	2022-08-17	ISSUED FOR PRE-CONSULTATION MEETING

REVISIONS/ISSUANCE:

HICKS
DESIGN STUDIO

HICKS DESIGN STUDIO
295 ROBINSON STREET, SUITE 200 OAKVILLE ON, CAN L6J 1G7
WWW.HICKSDESIGNSTUDIO.CA   T.905.339.1212

CLIENT:

TRAFALGAR ROAD

ADDRESS: 115 TRAFALGAR ROAD,
CITY: OAKVILLE

DRAWING TITLE:

SITE PLAN

DRAWN: CP

DATE: 10/14/21   SCALE: As indicated

JOB NUMBER: SHEET NUMBER:

22-345   A2.1

(Site plan labels)

MAIN RESIDENTIAL ENTRANCE

RETAIL ENTRANCE

RETAIL ENTRANCE

RETAIL ENTRANCE

PARKING ENTRANCE

PROPOSED BUILDING
6 STOREY
RESIDENTIAL

BLOCK 26 PLAN 1

BLOCK 26 REGISTERED

CHURCH STREET

TRAFALGAR ROAD

SURVEYOR'S REAL PROPERTY REPORT
PLAN OF SURVEY OF

PART OF LOT A
BLOCK 26
REGISTERED PLAN 1

TOWN OF OAKVILLE
REGIONAL MUNICIPALITY OF HALTON

SCALE 1 : 100

GRAPHIC SCALE - METRES
2 0 2 4 6
NOT TO SCALE
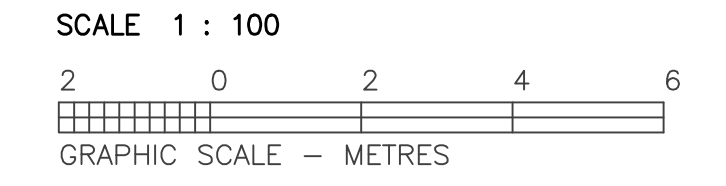
INTEGRATION DATA

BEARINGS ARE UTM GRID, DERIVED FROM THE OBSERVED REFERENCE POINTS "A" AND "B" BY REAL TIME NETWORK (RTN) OBSERVATIONS, UTM ZONE 17, NAD83 (CSRS-2010.0).

OBSERVED REFERENCE POINTS (ORPs): UTM ZONE 17, NAD-83 (CSRS-2010.0). CO-ORDINATES TO URBAN ACCURACY PER SEC. 14(2) OF O.REG. 216/10.

POINT N°	NORTHING	EASTING
"A"	4,811,397.15	607,838.22
"B"	4,811,450.94	607,852.71

CO-ORDINATES CAN NOT, IN THEMSELVES, BE USED TO RE-ESTABLISH CORNERS OR BOUNDARIES SHOWN ON THIS PLAN.

ALL BEARINGS IN COMPARISONS ARE ASTRONOMIC.

DISTANCE NOTE
DISTANCES SHOWN HEREON ARE GROUND DISTANCES AND CAN BE CONVERTED INTO GRID DISTANCES BY MULTIPLYING BY A COMBINE SCALE FACTOE OF 0.99973110.

METRIC NOTE
ALL DISTANCES SHOWN HEREON ARE IN METRES AND CAN BE CONVERTED INTO FEET BY DIVIDING BY 0.3048.

DIMENSION NOTE
ALL BEARINGS AND DISTANCES SHOWN HEREON ARE MEASURED UNLESS OTHERWISE NOTED.

ELEVATION NOTE
ALL ELEVATIONS SHOWN HEREON ARE GEODETIC AND WERE DERIVED FROM THE TOWN OF OAKVILLE BENCHMARK O-251 HAVING AN ELEVATION OF 118.729m (CGVD-1928:1978).

LEGEND
■ DENOTES SURVEY MONUMENT FOUND
□ DENOTES SURVEY MONUMENT SET
SIB DENOTES STANDARD IRON BAR
SSIB DENOTES SHORT STANDARD IRON PIPE
IB DENOTES IRON BAR
CC DENOTES CUT CROSS
CP DENOTES CONCRETE PIN
PB DENOTES PLASTIC BAR
P.I.N. DENOTES PROPERTY IDENTIFICATION NUMBER
(E) DENOTES ENCROACHMENT REFERENCE
(NI) DENOTES NO IDENTIFICATION
(950) DENOTES CUNNINGHAM McCONNELL LIMITED
(C&S) DENOTES CALCULATED AND SET
(Br) DENOTES BRICK
(Fdn) DENOTES FOUNDATION
(M) DENOTES MEASURE
P-1 DENOTES PLAN BY J.D. BARNES JULY 21, 1987
P-2 DENOTES PLAN BY F.G. CUNNINGHAM JUNE 8, 1988
P-3 DENOTES REGISTERED PLAN 1
P-4 DENOTES PLAN BY McCONNELL MAUGHAN NOVEMBER 6, 1980
P-5 DENOTES PLAN BY B. JACOBS FEBRUARY 16, 2006

TOPOGRAPHIC LEGEND
AW DENOTES ANCHOR WIRE(S)
BB DENOTES BELL BOX
—B— DENOTES U/G BELL CABLE
CON-0.20 DENOTES CONIFEROUS TREE 0.20 DIA
DEC-0.20 DENOTES DECIDUOUS TREE 0.20 DIA
FH DENOTES FIRE HYDRANT
GM DENOTES GAS METER
GV DENOTES GAS VALVE
—G— DENOTES U/G GAS MAIN
—H— DENOTES U/G HYDRO CABLE
LS DENOTES LIGHT STANDARD (LAMP)
MH DENOTES MANHOLE
—OW— DENOTES OVER HEAD WIRE(S)
—SAN— DENOTES SANITARY SEWER
—STM— DENOTES STORM SEWER
UP DENOTES UTILITY POLE
UPLS DENOTES UTILITY POLE/LIGHT STANDARD
WV DENOTES WATER VALVE (KEY)
—W— DENOTES U/G WATER MAIN

PART 2 - SURVEY REPORT

1. DESCRIPTION OF LAND:
   PART OF LOT A, BLOCK 26, REGISTERED PLAN 1.

2. REGISTERED EASEMENTS AND/OR RIGHTS-OF-WAY:
   NONE REGISTERED ON TITLE AND AFFECTING THE SUBJECT LANDS.

3. BOUNDARY FEATURES:
   ASIDE FROM FENCING, THE FOLLOWING FEATURES MAY AFFECT THE BOUNDARY:
   (E1) THREE FLOODLIGHTS ARE EXTENDING FROM THE BUILDING ON THE SUBJECT LANDS INTO THE PUBLIC ROAD KNOWN AS TRAFALGAR ROAD.

4. MUNICIPAL ZONING COMPLIANCE:
   TO BE DETERMINED BY THE ZONING DEPARTMENT OF THE TOWN OF OAKVILLE.

5. PARCEL AREA:
   THE TOTAL AREA OF THE SUBJECT LANDS WAS CALCULATED AS 683.5 m2.

UNDERGROUND SERVICES NOTE
ONLY UNDERGROUND SERVICES VISIBLE ON THE GROUND WERE LOCATED FOR THIS PLAN.
THE USER OF THIS PLAN SHALL CONTACT THE LOCAL UTILITY COMPANIES FOR LOCATIONS PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS.

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. MADE UNDER THEM.
2. THE SURVEY WAS COMPLETED ON NOVEMBER 1, 2022.

DATE: NOVEMBER 1, 2022

JARED A. LEGATT, M.Sc.
ONTARIO LAND SURVEYOR

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
V-36503

THIS PLAN IS NOT VALID UNLESS IT IS AN EMBOSSED ORIGINAL COPY ISSUED BY THE SURVEYOR
Regulation 1026, Section 29(3).

CUNNINGHAM McCONNELL LIMITED
ONTARIO LAND SURVEYORS

1200 SPEERS ROAD, UNIT 38
OAKVILLE, ONTARIO L6L 2X4
PHONE (905) 845-3497
FAX (905) 845-3519
infooak@cmlsurveyors.ca

205 MAIN STREET
MILTON, ONTARIO L9T 1N7
PHONE (905) 878-7810
FAX (905) 878-6672
milton.office@cmlsurveyors.ca

PLOT PAPER SIZE = 914mm BY 609mm
PLAN 122-22-1

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NO PERSON MAY COPY, REPRODUCE, DISTRIBUTE OR ALTER THIS PLAN IN WHOLE OR IN PART WITHOUT THE WRITTEN PERMISSION OF CUNNINGHAM McCONNELL LIMITED.

CLIENT'S NOTE
THIS REPORT WAS PREPARED FOR TRAFALGAR LUXURY LIVING, INC. AND ITS SOLICITOR(S), MORTGAGEE(S) AND (OR) AGENT(S) AND THE UNDERSIGNED ACCEPTS NO RESPONSIBILITY FOR USE BY OTHER PARTIES.

BLOCK 25

CHURCH STREET
(DEDICATED BY REGISTERED PLAN 1)
PIN 24812-0204

300mm PVC WM
380mm Storm
200mm Sanitary

PIN 24812-0023

B L O C K

R E G I S T E R E D

L O T   A

2-Storey Brick Building N° 115

PIN 24812-0024

2 6

L O T   B

P L A N   1

3-Level Municipal Parking Garage N° 300
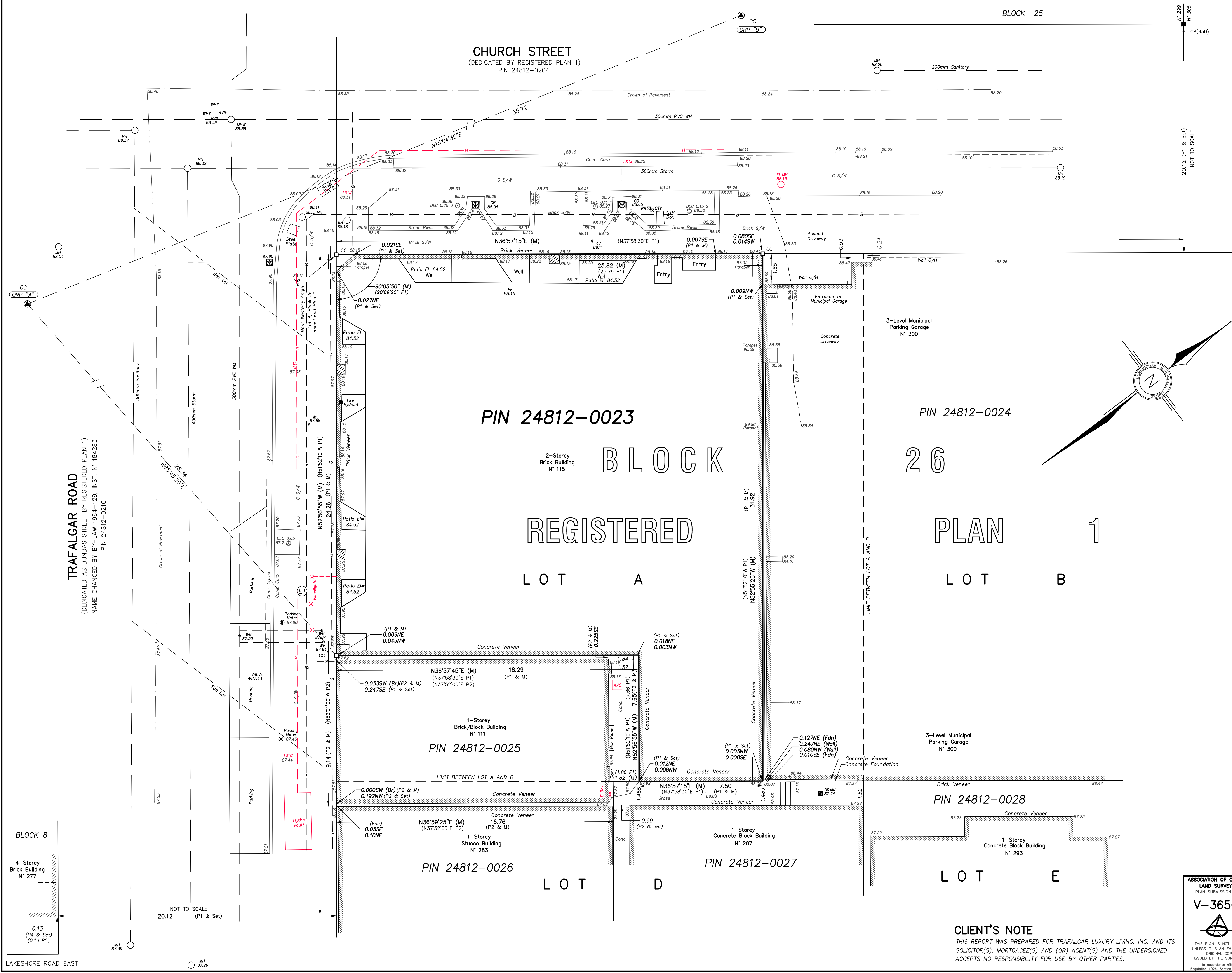
TRAFALGAR ROAD
(DEDICATED AS DUNDAS STREET BY REGISTERED PLAN 1)
NAME CHANGED BY BY-LAW 1964-129, INST. N° 184283
PIN 24812-0210
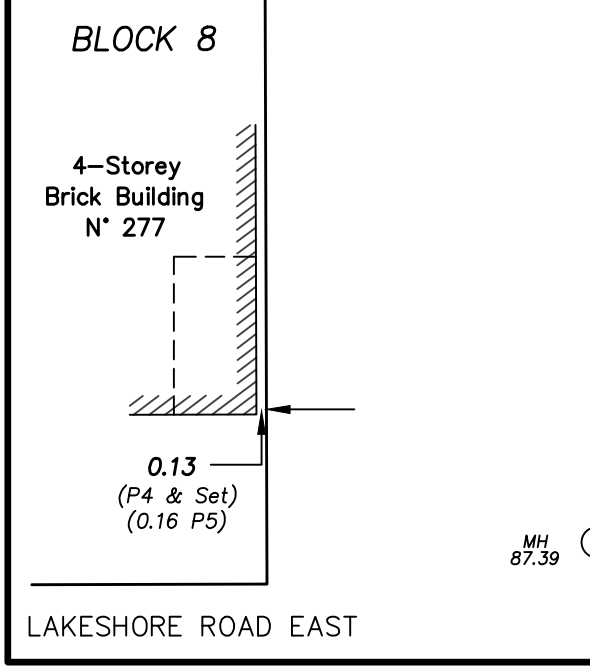
1-Storey Brick/Block Building N° 111
PIN 24812-0025

1-Storey Stucco Building N° 283
PIN 24812-0026

L O T   D

1-Storey Concrete Block Building N° 287
PIN 24812-0027

1-Storey Concrete Block Building N° 293
PIN 24812-0028

L O T   E

3-Level Municipal Parking Garage N° 300

BLOCK 8
4-Storey Brick Building N° 277

LAKESHORE ROAD EAST

ORP "A"
ORP "B"

APPENDIX 'B'

Figure 1, Fire Hydrant Plan

Estimated Water Demand

Estimated Demand Pressure

Fire Flow Test

CONSTRUCTION NORTH

90.0m

EX. FH

EX. 300mmø PVC WM
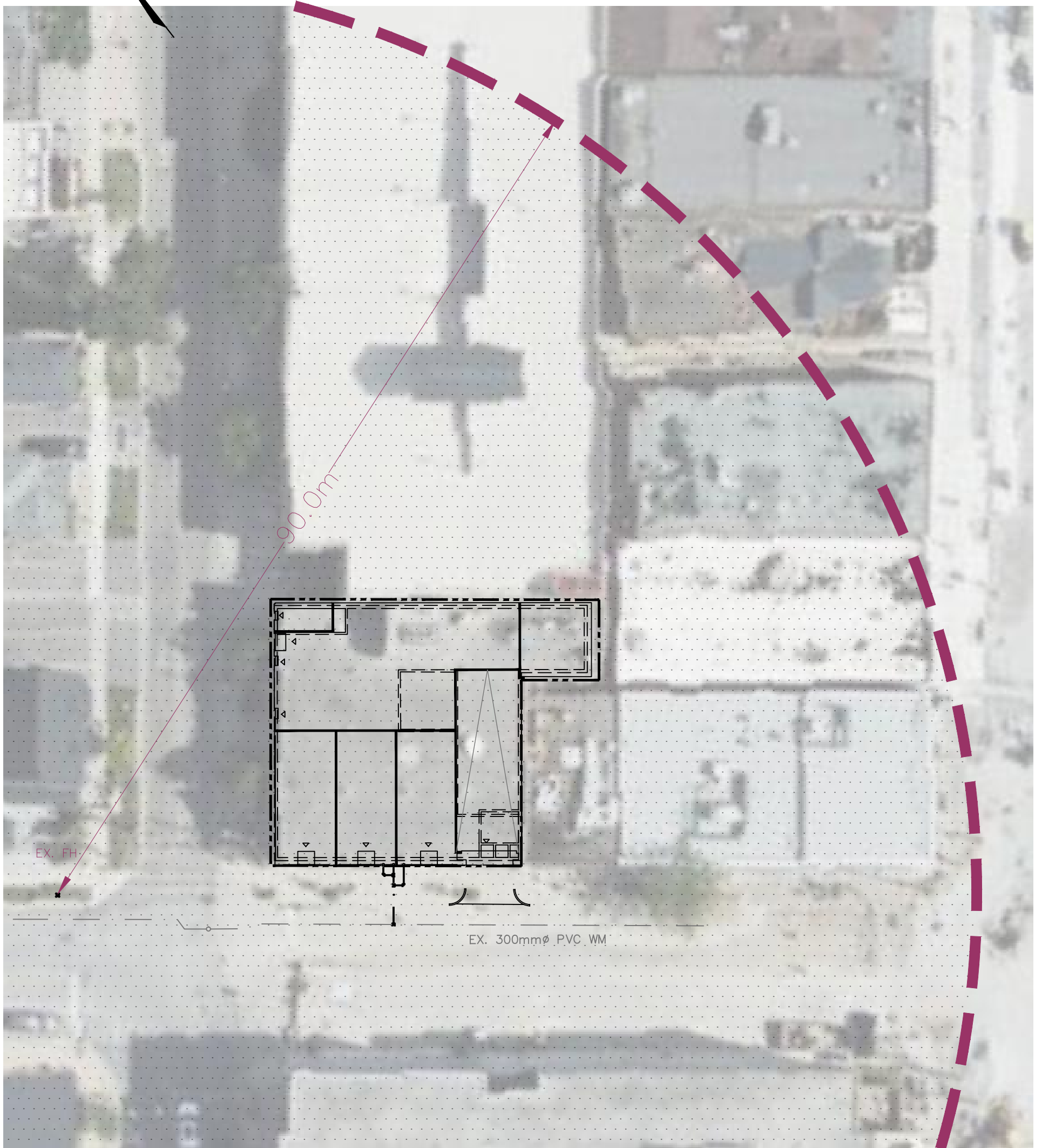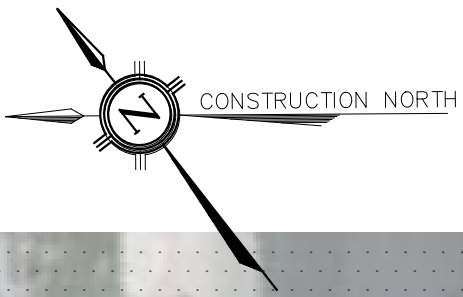
PROJECT TITLE	HICKS TRAFALGAR 115 TRAFALGAR ROAD TOWN OF OAKVILLE	**TRAFALGAR ENGINEERING** #1-481 MORDEN ROAD, OAKVILLE, ON, L6K 3W6 www.trafalgareng.com		
DRAWING TITLE	FIRE HYDRANT PLAN	DESIGN BY AJP	SCALE 1:400	DRAWING No.
		DRAWN BY AJP	DATE 2022/12/12	FIG 1

CAD FILE: 1797FIG.DWG PLOT SCALE: 1:1 PLOT DATE: Dec 13, 2022

TRAFALGAR ENGINEERING LTD.

ESTIMATED WATER DEMAND

Project: 115 Trafalgar Road
Desc: 1st Submission ZBA/OPA

Project No.: 1797
Prepared By: AJP
Checked By: JN

Land Use / Occupancy Type	Area (ha)	Population Density (pers/ha)	Eq. Population (cap.)	Per Cap. Demand (L/cap. Day)	Average Daily Demand (L/min)	Min. Hour	Peak Hour	Max. Daily	Min. Hour Demand (L/min)	Max. Hour Demand (L/min)	Max. Daily Demand (L/min)
						Peaking Factors				**Demand Flow**	
Apartment - six stories or less	0.0684	135.0	9	275	2	0.84	2.50	1.30	1	4	2
Commercial	0.0230	90.0	2	275	0	0.84	2.50	1.30	0	1	1
*Per Cap. Demand based on O.B.C. Table 8.2.1.3.B. -- 5 L/1.0m² Stores											
TOTAL	**0**		**11**		**2**				**2**	**5**	**3**

Fire Flow
Using Fire Underwriters Survey Methodology:

Average Daily Demand: 2 (L/min)
Minimum Hourly Demand: 2 (L/min)
Maximum Hourly Demand: 5 (L/min)
Maximum Daily Demand: 3 (L/min)
Max. Daily Plus Fire: 4003 (L/min)

1. **An estimate of the fire flow is given by the formula**

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

   Where:
   F = The required fire flow in litres per minute
   C = Coefficient related to the type of construction
   A = The total floor area in square metres (including all storeys but excluding basements at least 50% below grade)

   Type of Construction: **Fire-Resistive**   Coefficient: 0.60   Total Floor Area: **1026** (m²)

   F = 4000 (L/min)   Adequately Protected Vertical Openings: **Yes**

   Area Note: For fire resistive buildings, consider the two largest adjoining floors plus 50% of the remaining floors up to eight, when openings are inadequately protected. For adequately protected vertical openings consider only the area of the largest floor plus 25% of each of the two immediately adjoining floors

2. **Adjust the value in No. 1 for occupancy surcharge/reduction**

   Occupancy Contents: **Limited Combustible**   Factor: -15%

   F = 3400 (L/min)

3. **Adjust the value in No. 2 for sprinkler**

NFPA 13 Sprinkler:	**Yes**	Reduction:	**20%**
Standard Water Supply:	**Yes**	Reduction:	**10%**
Fully Supervised:	**Yes**	Reduction:	**10%**

   Total Reduction: 40%
   Sprinkler Reduction: 1360 (L/min)

4. **Adjust the value in No. 2 for exposure**

	Separation (m)	Charge
North	**20**	10%
East	**0**	25%
South	**0**	25%
West	**20**	10%

   Total Charge: 70%
   Exposure Charge: 2380 (L/min)

5. **Estimated Fire Flow is value in No. 2 less *Sprinkler Reduction* plus *Exposure Charge*, rounded to the nearest 1000**

   F = 4000 (L/min)

TRAFALGAR ENGINEERING LTD.

ESTIMATED DEMAND PRESSURE
(AT MAIN)

Project: 115 Trafalgar Road   **Project No.:** 1797
Desc: 1st Submission ZBA/OPA   **Prepared By:** AJP
     Checked By: JN

Hydrant Residual Flow (Refer to Attached Flow Test Results)

Coefficient	$C=$	0.9	
Port Diameter	$D=$	2.5	(inch)
Pitot Pressure	$P_{pit}=$	45	(psig)
Residual Flow	$Q_R=$	1126	(us gpm)
Residual Flow	$Q_R=$	4262	(L/min)

Hydrant Theoretical Flow (Refer to Attached Flow Test Results)

Static Pressure	$P_{stat}=$	65	(psig)
Residual Pressure	$P_{res}=$	64	(psig)
Theoretical Pressure	$P_{theo}=$	20	(psig)
Theoretical Flow	$Q_T=$	8796	(us gpm)
Theoretical Flow	$Q_T=$	33293	(L/min)

Max. Demand Pressure

Maximum Demand	$Q_D=$	4003	(L/min)
Maximum Demand	$Q_D=$	1058	(us gpm)
Calculated Pressure	$P=$	64	(psig)

Where:

$$Q_R = 29.84 \ x \ C \ x \ D^2 \ x \ P_{pit}^{0.5}$$

$$Q_T = Q_R \ x \ [(P_{stat} - P_{theo})/(P_{stat} - P_{res})]^{0.54}$$

$$P = P_{stat} - (Q_D/Q_R)^{1.852} \ x \ (P_{stat} - P_{res})$$

Notes:
Refer to attached hydrant flow test results for 300mm main on Trafalgar Road prepared by Aquacom Contracting dated December 7, 2022.

December 8, 2022

Andy Prejs
Trafalgar Engineering
#1-481 Morden Road
Oakville, Ontario
L6K 3W6

Reference: **115 Trafalgar Road**
Town of Oakville, Region of Halton
Hydrant Flow Testing

The flow testing was completed Wednesday 07 December 2022 as scheduled.

We advised the Region of Halton operations staff of this schedule, and they provided an operator to assist with the operation of the municipal hydrants and to assist with the test.

Please find the attached summary of test results. For your information;

the hydrant was flowed from one than two nozzles, using flow diffusers

residual pressures were recorded from an upstream fire hydrant on the municipal system

theoretical flows were produced from the attached chart, using a .90 nozzle coefficient

all discharge water was dechlorinated as per Ministry requirements

the hydrants were not colour coded at the time of the test

If you should require any further information please do not hesitate to contact the undersigned.

Sincerely yours,

Aquacom Contracting
Mark Kilbourne

SITE NAME	115 TRAFALGAR ROAD
TEST DATE TIME	WENESDAY 7 DECEMBER 2022 @ 11:00
SITE ADDRESS	115 TRAFALGAR ROAD, OAKVILLE
TECHNICIANS	MARC COULTER & PATRICK FORAN
COMMENTS	MUNICIPAL HYDRANTS

LOCATION OF FLOW HYDRANT

123 TRAFALGAR ROAD

LOCATION OF RESIDUAL HYDRANT

284 LAKESHORE ROAD

# OUTLETS	SIZE INCHES	PITO PSI	FLOW USGPM	RESIDUAL PSI	STATIC PSI	PIPE DIA. MM
ONE	2.50	45	1125	64	65	300MM
TWO	2.50	40	2124	63		PVC
		THEORETICAL	14111	20	TEST #	ONE
NOZZLE COEFF.		.90				

FLOW US GPM
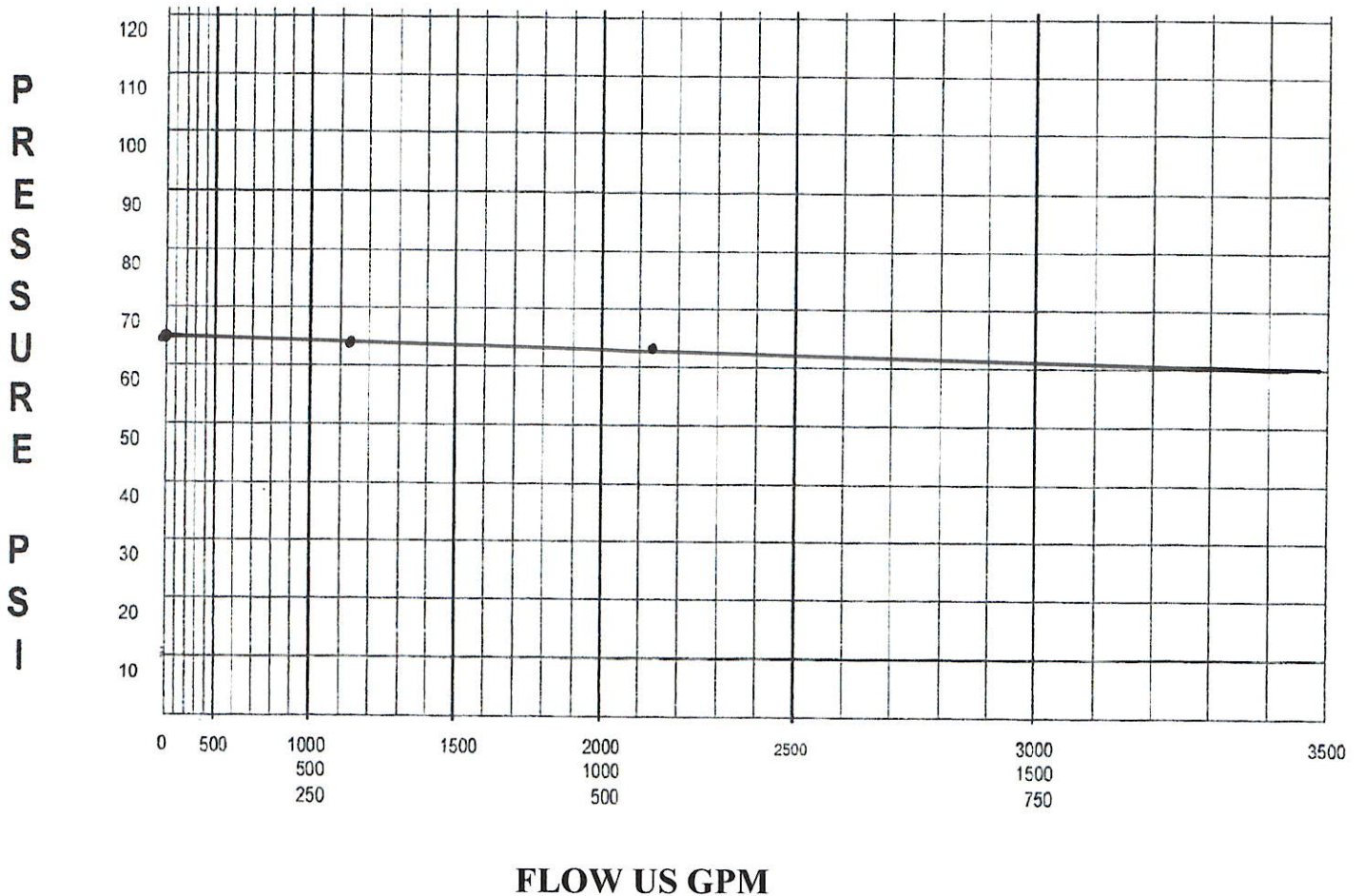
HYDRANT FLOW TEST REPORT

81 Todd Road   Suite 202   Georgetown   Ont.   L7G 4R8

(o) 905-467-5853 (c) 905-971-9956 (e) mark@aquacom.ca

		HYDRANT	SEC. VALVE	TECH.	TIME	STATIC	PITO 1-2.50"	FLOW 1-2.50"	RESIDUAL 1-2.50"	PITO 2-2.50"	FLOW 2-2.50"	RESIDUAL 2-2.50"	THEORETICAL FLOW @ 20PSI	COLOUR
		MAKE	CONDITION			PSI	PSI	US GPM	PSI	PSI	US GPM	PSI	RESIDUAL	CODE
F1	123 TRAFALGAR ROAD	Mueller	OK/OPEN	MC	11:00		45	1125		40	2124		11411	BLUE
R1	284 LAKESHORE	McAvity	OK/OPEN	PF		65			64			63		
F2														
R2														
F3														
R3														
F4														
R4														
F5														
R5														

CUSTOMER

TRAFALGAR ROAD

SERVICE DATE

07-12-2022

LOCATION

115 TRAFALGAR ROAD

TOWN OF OAKVILLE

CONTACTS ON SITE

REGION OF HALTON OPERATOR

APPENDIX 'C'

Estimated Existing Sanitary Flow

Estimated Proposed Sanitary Flow

Figure 2, Sanitary Drainage Plan

Sanitary Sewer Design Sheet

TRAFALGAR ENGINEERING LTD.

ESTIMATED EXISTING SANITARY FLOW

Project: 115 Trafalgar Road
Desc: 1st Submission ZBA/OPA

Project No.: 1797
Prepared By: AJP
Checked By: JN

Residential

Land Use / Occupancy Type	Unit Count	Population Density (pers/unit)	Eq. Population (cap.)	Per Cap. Demand (L/cap. Day)	Average Daily Dry Weather Flow (L/s)
TOTAL	**0**		**0**		**0.00**

Industrial / Commercial / Institutional

Land Use / Occupancy Type	Area (ha)	Population Density (pers/ha)	Eq. Population (cap.)	Per Cap. Demand (L/cap. Day)	Average Daily Dry Weather Flow (L/s)
Light Commercial Area	0.0684	90.0	6	275	0.02
TOTAL	**0.0684**		**6**		**0.02**

Residential Peaking Factor:	4.50
ICI Peaking Factor:	4.43
Include ICI Peaking?	No
Tributary Area:	0.07 (ha)
Infiltration Allowance:	0.26 (L/s ha)
Foundation Drain Allowance:	0.00 (L/s ha)
Infiltration Average Flow:	0.02 (L/s)
ICI Average Flow:	0.02 (L/s)
Groundwater Discharge:	(L/s)
Total Average Flow:	**0.04 (L/s)**
Infiltration Peak Flow:	0.02 (L/s)
ICI Peak Flow:	0.02 (L/s)
Groundwater Discharge:	0.00 (L/s)
Total Peak Flow:	**0.04 (L/s)**

VER 2.1.1

TRAFALGAR ENGINEERING LTD.

ESTIMATED PROPOSED SANITARY FLOW

Project: 115 Trafalgar Road   **Project No.:** 1797
Desc: 1st Submission ZBA/OPA   **Prepared By:** AJP
                                                         Checked By: JN

Residential

Land Use / Occupancy Type	Area (ha)	Population Density (pers/ha)	Eq. Population (cap.)	Per Cap. Demand (L/cap. Day)	Average Daily Dry Weather Flow (L/s)
Apartment - 6 stories or less	0.0684	135.0	9	275	0.03
TOTAL	**0**		**9**		**0.03**

Industrial / Commercial / Institutional

Land Use / Occupancy Type	Area (ha)	Population Density (pers/ha)	Eq. Population (cap.)	Per Cap. Demand (L/cap. Day)	Average Daily Dry Weather Flow (L/s)
Light Commercial Area	0.0230	90.0	2	275	0.01
TOTAL	**0**		**2**		**0.01**

Residential Peaking Factor:	4.42	
ICI Peaking Factor:	4.46	
Include ICI Peaking?	No	
Tributary Area:	0.07	(ha)
Infiltration Allowance:	0.26	(L/s ha)
Foundation Drain Allowance:	0.00	(L/s ha)
Residential Average Flow:	0.05	(L/s)
ICI Average Flow:	0.01	(L/s)
Groundwater Discharge:		(L/s)
Total Average Flow:	**0.06**	**(L/s)**
Residential Peak Flow:	0.15	(L/s)
ICI Peak Flow:	0.01	(L/s)
Groundwater Discharge:	0.00	(L/s)
Total Peak Flow:	**0.16**	**(L/s)**

P:\1797 Hicks Trafalgar\01-Calculations\03-Sanitary\[2022-11-09 Proposed Sanitary Demands.xlsx]SANITARY   VER 2.1.1

CONSTRUCTION NORTH

REYNOLDS STREET

CHURCH STREET

LAKESHORE ROAD E

TRAFALGAR ROAD

0.49
44 | 90

300 mm SAN SEWER

300 mm SAN SEWER

300 mm SAN SEWER

MH 2551

MH 129056

MH 2647

MH 2648

© 2022 Microsoft Corporation © 2022 Maxar ©CNES (2022) Distribution Airbus DS

Legend

0.49
44 | 90
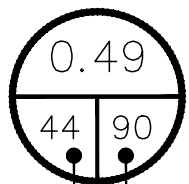
DRAINAGE AREA IN HECTARES

POPULATION PER HECTARE

EQUIVALENT POPULATION

LIGHT COMMERCIAL AREA

DRAINAGE AREA BOUNDARY

PROJECT TITLE				
HICKS TRAFALGAR 115 TRAFALGAR ROAD TOWN OF OAKVILLE		**TRAFALGAR ENGINEERING** #1-481 MORDEN ROAD, OAKVILLE, ON, L6K 3W6 www.trafalgareng.com		
DRAWING TITLE		DESIGN BY AJP	SCALE 1:1000	DRAWING No.
SANITARY DRAINAGE PLAN		DRAWN BY AJP	DATE 2022/11/22	**FIG 2**

TRAFALGAR ENGINEERING

Prepared By: AJP
Checked By: JN
Project No. : 1797

SANITARY SEWER DESIGN SHEET
Regional Municipality of Halton

Project Name : Hicks Trafalgar
Municipal Number:
Date: 2022-11-15
Sheet: 1 of 1

LOCATION	FROM MH	TO MH	Tributary Area — Residential Area (ha)	Density (ppha)	ICI Area (ha)	Density (ppha)	Total (ha)	Population Tributary — Res (pers.)	ICI (pers.)	Total (pers.)	Average Demand — Res (L/cap.Day)	ICI (L/cap.Day)	Incr. Avg. Q (L/s)	Total Avg. Q (L/s)	Peaking Factor K_{avg}	M_{avg}	Peak Q, Q_P (L/s)	Infiltr. (L/s)	Design Flow, Q_D (L/s)	Length, L (m)	Pipe Dia., D (mm)	Slope, s (%)	Manning's Coeff., n	Full Flow Capacity, Q_F (L/s)	Velocity Full (m/s)	Actual (m/s)	Flow Depth, d (mm)	d/D	Type	Class
Commercial Area - Trafalgar Road	MH2551	MH129056			0.49	90	0.49		44	44		275	0.1	0.1	0.8	3.46	0.5	0.1	0.6	48.3	300	2.3	0.014	142.1	1.95	0.64	12	0.04	VC	
TRIBUTARY AREA TOTAL			0.00		0.49		**0.49**	0	44	**44**																				

Notes:
1) Pipe diameter is nominal
2) Capacity and velocity are based on Imperial I.D. (Nom. Dia x 25.4/25)

Peaking Factor $M = K_{avg} \times (1+14 / (4+P^{1/2}))$

Where P is Total population in thousands

$K_{avg} = (A_R + 0.8 \times A_{ICI}) / (A_{Total})$

Infiltration = 0.286 L/ha/s

Full Flow Capacity (Manning's Equation), Q_F

$Q_F = (1/n) \times A \times R^{2/3} \times s^{1/2}$

$= (1/n) \times 311.7 \times D^{8/3} \times s^{1/2}$

APPENDIX 'D'

HydroCAD Results Report

Figure 3, Storm Drainage Plan

Project Notes

Copied 6 events from ON Oakville 24hr storm
Rainfall events imported from "1793.hcp"

Routing Diagram for 1797
Prepared by Trafalgar Engineering, Printed 2022-12-14
HydroCAD® 10.20-2f s/n 12699 © 2022 HydroCAD Software Solutions LLC
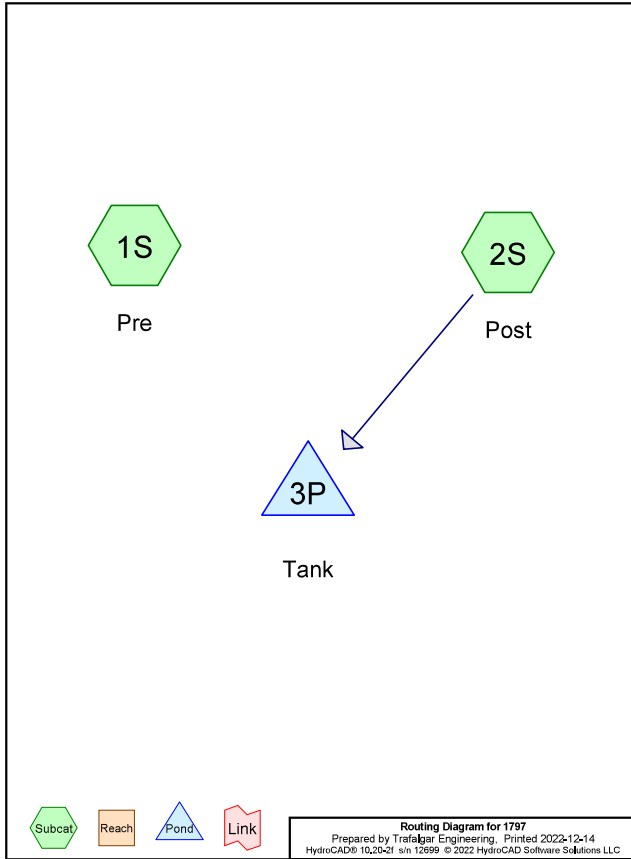
Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (mm)	AMC
1	2-Year	ON Oakville 24hr	2-Year	Default	24.00	1	48	2
2	5-Year	ON Oakville 24hr	5-Year	Default	24.00	1	60	2
3	10-Year	ON Oakville 24hr	10-Year	Default	24.00	1	70	2
4	25-Year	ON Oakville 24hr	25-Year	Default	24.00	1	82	2
5	50-Year	ON Oakville 24hr	50-Year	Default	24.00	1	89	2
6	100-Year	ON Oakville 24hr	100-Year	Default	24.00	1	97	2

Area Listing (all nodes)

Area (hectares)	CN	Description (subcatchment-numbers)
0.137	98	Unconnected roofs, HSG A (1S, 2S)
0.137	**98**	**TOTAL AREA**

Soil Listing (all nodes)

Area (hectares)	Soil Group	Subcatchment Numbers
0.137	HSG A	1S, 2S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
0.137		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (hectares)	HSG-B (hectares)	HSG-C (hectares)	HSG-D (hectares)	Other (hectares)	Total (hectares)	Ground Cover	Subcatchment Numbers
0.137	0.000	0.000	0.000	0.000	0.137	Unconnected roofs	1S, 2S
0.137	**0.000**	**0.000**	**0.000**	**0.000**	**0.137**	**TOTAL AREA**	

1797
Prepared by Trafalgar Engineering
HydroCAD® 10.20-2f s/n 12699 © 2022 HydroCAD Software Solutions LLC

ON Oakville 24hr 2-Year Rainfall=48 mm
Printed 2022-12-14
Page 7

Time span=0.00-32.00 hrs, dt=0.05 hrs, 641 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Pre
Runoff Area=684 m² 100.00% Impervious Runoff Depth=43 mm
Flow Length=15.8 m Slope=0.0100 m/m Tc=1.4 min CN=98 Runoff=0.021 m³/s 0.029 Ml

Subcatchment 2S: Post
Runoff Area=684 m² 100.00% Impervious Runoff Depth=43 mm
Flow Length=15.8 m Slope=0.0100 m/m Tc=1.4 min CN=98 Runoff=0.021 m³/s 0.029 Ml

Pond 3P: Tank
Peak Elev=86.227 m Storage=3.4 m³ Inflow=0.021 m³/s 0.029 Ml
Outflow=0.030 m³/s 0.037 Ml

Total Runoff Area = 0.137 ha Runoff Volume = 0.058 Ml Average Runoff Depth = 43 mm
0.00% Pervious = 0.000 ha 100.00% Impervious = 0.137 ha

1797
Prepared by Trafalgar Engineering
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ON Oakville 24hr 2-Year Rainfall=48 mm
Printed 2022-12-14
Page 8

Summary for Subcatchment 1S: Pre

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.021 m³/s @ 8.02 hrs, Volume= 0.029 Ml, Depth= 43 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.05 hrs
ON Oakville 24hr 2-Year Rainfall=48 mm

Area (m²)	CN	Description
684	98	Unconnected roofs, HSG A
684		100.00% Impervious Area
684		100.00% Unconnected

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
1.4	15.8	0.0100	0.19		Lag/CN Method,

Subcatchment 1S: Pre

Hydrograph

ON Oakville 24hr 2-Year
Rainfall=48 mm
Runoff Area=684 m²
Runoff Volume=0.029 Ml
Runoff Depth=43 mm
Flow Length=15.8 m
Slope=0.0100 m/m
Tc=1.4 min
CN=98

1797
Prepared by Trafalgar Engineering
HydroCAD® 10.20-2f s/n 12699 © 2022 HydroCAD Software Solutions LLC

ON Oakville 24hr 2-Year Rainfall=48 mm
Printed 2022-12-14
Page 9

Summary for Subcatchment 2S: Post

[49] Hint: Tc<2dt may require smaller dt

Runoff   =   0.021 m³/s @   8.02 hrs, Volume=   0.029 Ml, Depth=   43 mm
    Routed to Pond 3P : Tank

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.05 hrs
ON Oakville 24hr 2-Year Rainfall=48 mm

Area (m²)	CN	Description
684	98	Unconnected roofs, HSG A
684		100.00% Impervious Area
684		100.00% Unconnected

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
1.4	15.8	0.0100	0.19		Lag/CN Method,

Subcatchment 2S: Post

Hydrograph

ON Oakville 24hr 2-Year
Rainfall=48 mm
Runoff Area=684 m²
Runoff Volume=0.029 Ml
Runoff Depth=43 mm
Flow Length=15.8 m
Slope=0.0100 m/m
Tc=1.4 min
CN=98

1797
Prepared by Trafalgar Engineering
HydroCAD® 10.20-2f s/n 12699 © 2022 HydroCAD Software Solutions LLC

ON Oakville 24hr 2-Year Rainfall=48 mm
Printed 2022-12-14
Page 10

Summary for Pond 3P: Tank

Inflow Area =	0.068 ha, 100.00% Impervious, Inflow Depth = 43 mm for 2-Year event			
Inflow =	0.021 m³/s @ 8.02 hrs, Volume=	0.029 Ml		
Outflow =	0.030 m³/s @ 7.96 hrs, Volume=	0.037 Ml, Atten= 0%, Lag= 0.0 min		
Primary =	0.030 m³/s @ 7.96 hrs, Volume=	0.037 Ml		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 86.227 m @ 8.08 hrs Surf.Area= 9 m² Storage= 3.4 m³

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 50.5 min (610.5 - 560.0)

Volume	Invert	Avail.Storage	Storage Description
#1	85.850 m	16.2 m³	**Custom Stage Data (Prismatic) Listed below (Recalc)**

Elevation (meters)	Surf.Area (sq-meters)	Inc.Store (cubic-meters)	Cum.Store (cubic-meters)
85.850	9	0.0	0.0
87.650	9	16.2	16.2

Device	Routing	Invert	Outlet Devices (Turned on 6 times)
#1	Primary	86.200 m	**Pump (Everbilt 0.5 hp) X 7.00**

Discharges@87.350 m Turns Off<85.900 m
150 mm Diam. x 20.00 m Long Discharge, Hazen-Williams C= 130

Flow (l/min)=	75.7	151.4	201.7	227.1	252.5 264.9
Head (meters)=	7.500	6.000	4.500	3.000	1.500 0.000
-Loss (meters)=	0.001	0.004	0.007	0.009	0.011 0.012
=Lift (meters)=	7.499	5.996	4.493	2.991	1.489 -0.012

Primary OutFlow Max=0.030 m³/s @ 7.96 hrs HW=86.012 m (Free Discharge)
└─1=Pump (Everbilt 0.5 hp) (Pump Controls 0.030 m³/s)

1797
Prepared by Trafalgar Engineering
HydroCAD® 10.20-2f s/n 12699 © 2022 HydroCAD Software Solutions LLC

ON Oakville 24hr 2-Year Rainfall=48 mm
Printed 2022-12-14
Page 11

Pond 3P: Tank

Hydrograph

Inflow Area=0.068 ha
Peak Elev=86.227 m
Storage=3.4 m³

1797
Prepared by Trafalgar Engineering
HydroCAD® 10.20-2f s/n 12699 © 2022 HydroCAD Software Solutions LLC

ON Oakville 24hr 5-Year Rainfall=60 mm
Printed 2022-12-14
Page 12

Time span=0.00-32.00 hrs, dt=0.05 hrs, 641 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Pre
Runoff Area=684 m² 100.00% Impervious Runoff Depth=55 mm
Flow Length=15.8 m Slope=0.0100 m/m Tc=1.4 min CN=98 Runoff=0.030 m³/s 0.037 Ml

Subcatchment 2S: Post
Runoff Area=684 m² 100.00% Impervious Runoff Depth=55 mm
Flow Length=15.8 m Slope=0.0100 m/m Tc=1.4 min CN=98 Runoff=0.030 m³/s 0.037 Ml

Pond 3P: Tank
Peak Elev=86.231 m Storage=3.4 m³ Inflow=0.030 m³/s 0.037 Ml
Outflow=0.031 m³/s 0.047 Ml

Total Runoff Area = 0.137 ha Runoff Volume = 0.075 Ml Average Runoff Depth = 55 mm
0.00% Pervious = 0.000 ha 100.00% Impervious = 0.137 ha

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ON Oakville 24hr 5-Year Rainfall=60 mm
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Summary for Subcatchment 1S: Pre

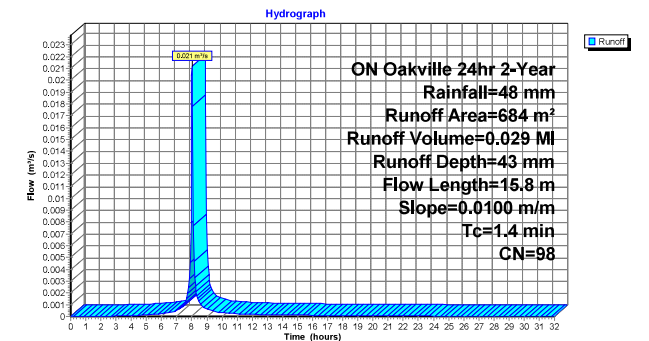[49] Hint: Tc<2dt may require smaller dt

Runoff   =   0.030 m³/s @   8.02 hrs, Volume=   0.037 Ml, Depth=   55 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.05 hrs
ON Oakville 24hr 5-Year Rainfall=60 mm

Area (m²)	CN	Description
684	98	Unconnected roofs, HSG A
684		100.00% Impervious Area
684		100.00% Unconnected

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
1.4	15.8	0.0100	0.19		Lag/CN Method,

Subcatchment 1S: Pre

ON Oakville 24hr 5-Year
Rainfall=60 mm
Runoff Area=684 m²
Runoff Volume=0.037 Ml
Runoff Depth=55 mm
Flow Length=15.8 m
Slope=0.0100 m/m
Tc=1.4 min
CN=98

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ON Oakville 24hr 5-Year Rainfall=60 mm
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Summary for Subcatchment 2S: Post

[49] Hint: Tc<2dt may require smaller dt

Runoff   =   0.030 m³/s @   8.02 hrs, Volume=   0.037 Ml, Depth=   55 mm
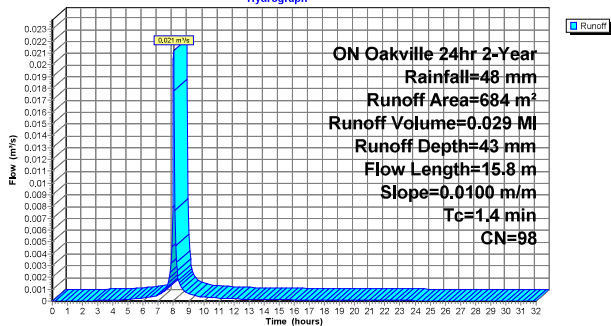   Routed to Pond 3P : Tank

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.05 hrs
ON Oakville 24hr 5-Year Rainfall=60 mm

Area (m²)	CN	Description
684	98	Unconnected roofs, HSG A
684		100.00% Impervious Area
684		100.00% Unconnected

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
1.4	15.8	0.0100	0.19		Lag/CN Method,

Subcatchment 2S: Post

ON Oakville 24hr 5-Year
Rainfall=60 mm
Runoff Area=684 m²
Runoff Volume=0.037 Ml
Runoff Depth=55 mm
Flow Length=15.8 m
Slope=0.0100 m/m
Tc=1.4 min
CN=98

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ON Oakville 24hr 5-Year Rainfall=60 mm
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Summary for Pond 3P: Tank

Inflow Area =	0.068 ha,100.00% Impervious,	Inflow Depth =	55 mm	for 5-Year event
Inflow =	0.030 m³/s @ 8.02 hrs,	Volume=	0.037 Ml	
Outflow =	0.031 m³/s @ 8.07 hrs,	Volume=	0.047 Ml,	Atten= 0%, Lag= 3.4 min
Primary =	0.031 m³/s @ 8.07 hrs,	Volume=	0.047 Ml	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 86.231 m @ 8.03 hrs Surf.Area= 9 m² Storage= 3.4 m³

Plug-Flow detention time= (not calculated: outflow precedes inflow)
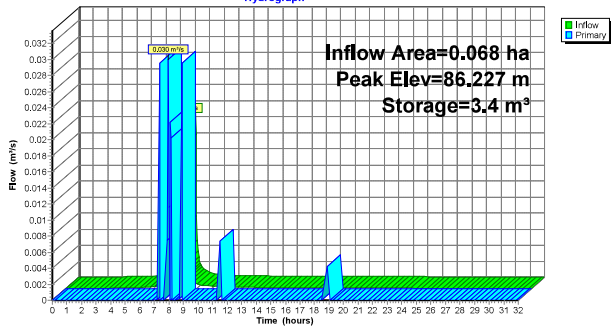Center-of-Mass det. time= 75.4 min (620.3 - 545.0)

Volume	Invert	Avail.Storage	Storage Description
#1	85.850 m	16.2 m³	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (meters)	Surf.Area (sq-meters)	Inc.Store (cubic-meters)	Cum.Store (cubic-meters)
85.850	9	0.0	0.0
87.650	9	16.2	16.2

Device	Routing	Invert	Outlet Devices (Turned on 7 times)
#1	Primary	86.200 m	**Pump (Everbilt 0.5 hp) X 7.00**

                Discharges@87.350 m Turns Off<85.900 m
                150 mm Diam. x 20.00 m Long Discharge, Hazen-Williams C= 130
                Flow (l/min)= 75.7 151.4 201.7 227.1 252.5 264.9
                Head (meters)= 7.500 6.000 4.500 3.000 1.500 0.000
                -Loss (meters)= 0.001 0.004 0.007 0.009 0.011 0.012
                =Lift (meters)= 7.499 5.996 4.493 2.991 1.489 -0.012

Primary OutFlow Max=0.030 m³/s @ 8.07 hrs HW=86.094 m (Free Discharge)
└─1=Pump (Everbilt 0.5 hp) (Pump Controls 0.030 m³/s)

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ON Oakville 24hr 5-Year Rainfall=60 mm
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Pond 3P: Tank

Inflow Area=0.068 ha
Peak Elev=86.231 m
Storage=3.4 m³

Time span=0.00-32.00 hrs, dt=0.05 hrs, 641 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

| Subcatchment 1S: Pre | Runoff Area=684 m² 100.00% Impervious Runoff Depth=64 mm |
| Flow Length=15.8 m Slope=0.0100 m/m Tc=1.4 min CN=98 Runoff=0.035 m³/s 0.044 Ml |

| Subcatchment 2S: Post | Runoff Area=684 m² 100.00% Impervious Runoff Depth=64 mm |
| Flow Length=15.8 m Slope=0.0100 m/m Tc=1.4 min CN=98 Runoff=0.035 m³/s 0.044 Ml |

| Pond 3P: Tank | Peak Elev=86.333 m Storage=4.3 m³ Inflow=0.035 m³/s 0.044 Ml |
| Outflow=0.030 m³/s 0.054 Ml |

Total Runoff Area = 0.137 ha   Runoff Volume = 0.087 Ml   Average Runoff Depth = 64 mm
0.00% Pervious = 0.000 ha   100.00% Impervious = 0.137 ha

Summary for Subcatchment 1S: Pre

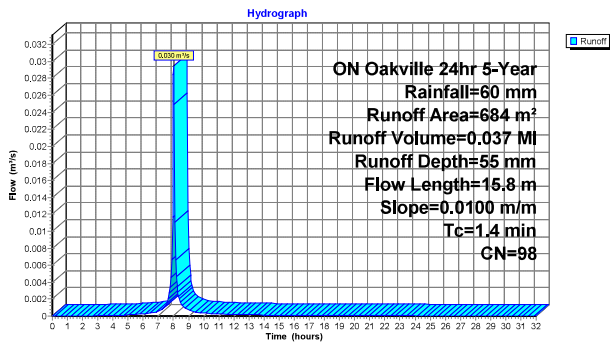[49] Hint: Tc<2dt may require smaller dt

Runoff   =   0.035 m³/s @   8.02 hrs, Volume=   0.044 Ml, Depth=   64 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.05 hrs
ON Oakville 24hr 10-Year Rainfall=70 mm

Area (m²)	CN	Description
684	98	Unconnected roofs, HSG A
684		100.00% Impervious Area
684		100.00% Unconnected

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
1.4	15.8	0.0100	0.19		Lag/CN Method,

Subcatchment 1S: Pre

Hydrograph

ON Oakville 24hr 10-Year
Rainfall=70 mm
Runoff Area=684 m²
Runoff Volume=0.044 Ml
Runoff Depth=64 mm
Flow Length=15.8 m
Slope=0.0100 m/m
Tc=1.4 min
CN=98

Summary for Subcatchment 2S: Post

[49] Hint: Tc<2dt may require smaller dt
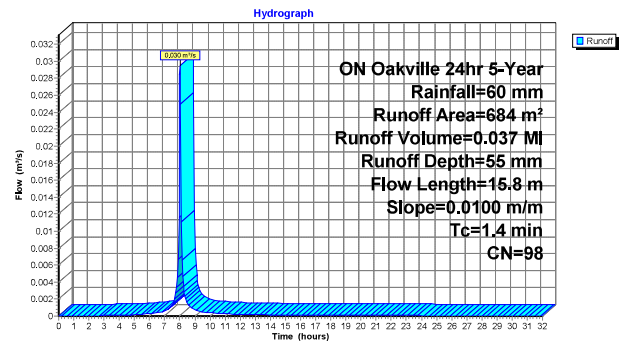
Runoff   =   0.035 m³/s @   8.02 hrs, Volume=   0.044 Ml, Depth=   64 mm
Routed to Pond 3P : Tank

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.05 hrs
ON Oakville 24hr 10-Year Rainfall=70 mm

Area (m²)	CN	Description
684	98	Unconnected roofs, HSG A
684		100.00% Impervious Area
684		100.00% Unconnected

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
1.4	15.8	0.0100	0.19		Lag/CN Method,

Subcatchment 2S: Post

Hydrograph

ON Oakville 24hr 10-Year
Rainfall=70 mm
Runoff Area=684 m²
Runoff Volume=0.044 Ml
Runoff Depth=64 mm
Flow Length=15.8 m
Slope=0.0100 m/m
Tc=1.4 min
CN=98

Summary for Pond 3P: Tank

Inflow Area =	0.068 ha,100.00% Impervious, Inflow Depth = 64 mm for 10-Year event
Inflow =	0.035 m³/s @ 8.02 hrs, Volume= 0.044 Ml
Outflow =	0.030 m³/s @ 8.03 hrs, Volume= 0.054 Ml, Atten= 15%, Lag= 1.1 min
Primary =	0.030 m³/s @ 8.03 hrs, Volume= 0.054 Ml

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 86.333 m @ 8.03 hrs Surf.Area= 9 m² Storage= 4.3 m³

Plug-Flow detention time= (not calculated: outflow precedes inflow)
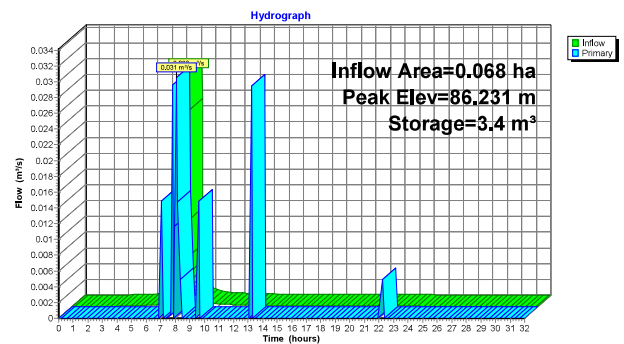Center-of-Mass det. time= 46.6 min (587.9 - 541.3)

Volume	Invert	Avail.Storage	Storage Description
#1	85.850 m	16.2 m³	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (meters)	Surf.Area (sq-meters)	Inc.Store (cubic-meters)	Cum.Store (cubic-meters)
85.850	9	0.0	0.0
87.650	9	16.2	16.2

Device	Routing	Invert	Outlet Devices (Turned on 7 times)
#1	Primary	86.200 m	**Pump (Everbilt 0.5 hp) X 7.00**

Discharges@87.350 m Turns Off<85.900 m
150 mm Diam. x 20.00 m Long Discharge, Hazen-Williams C= 130
Flow (l/min)= 75.7 151.4 201.7 227.1 252.5 264.9
Head (meters)= 7.500 6.000 4.500 3.000 1.500 0.000
-Loss (meters)= 0.001 0.004 0.007 0.009 0.011 0.012
=Lift (meters)= 7.499 5.996 4.493 2.991 1.489 -0.012

Primary OutFlow Max=0.030 m³/s @ 8.03 hrs HW=86.311 m (Free Discharge)
└─1=Pump (Everbilt 0.5 hp) (Pump Controls 0.030 m³/s)
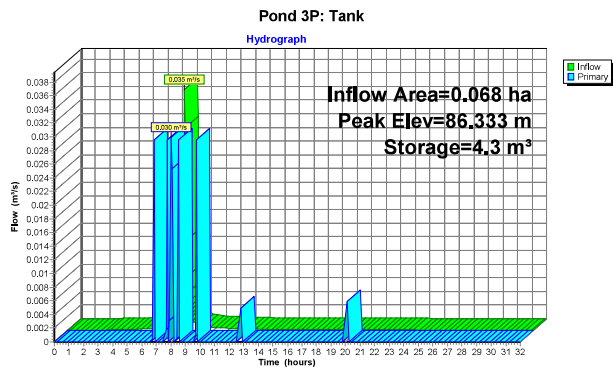
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Pond 3P: Tank

Inflow Area=0.068 ha
Peak Elev=86.333 m
Storage=4.3 m³

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Time span=0.00-32.00 hrs, dt=0.05 hrs, 641 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Pre	Runoff Area=684 m² 100.00% Impervious Runoff Depth=76 mm	
	Flow Length=15.8 m Slope=0.0100 m/m Tc=1.4 min CN=98 Runoff=0.043 m³/s 0.052 Ml	
Subcatchment 2S: Post	Runoff Area=684 m² 100.00% Impervious Runoff Depth=76 mm	
	Flow Length=15.8 m Slope=0.0100 m/m Tc=1.4 min CN=98 Runoff=0.043 m³/s 0.052 Ml	
Pond 3P: Tank	Peak Elev=86.511 m Storage=5.9 m³ Inflow=0.043 m³/s 0.052 Ml	
	Outflow=0.030 m³/s 0.065 Ml	

Total Runoff Area = 0.137 ha   Runoff Volume = 0.104 Ml   Average Runoff Depth = 76 mm
0.00% Pervious = 0.000 ha   100.00% Impervious = 0.137 ha

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Summary for Subcatchment 1S: Pre

[49] Hint: Tc<2dt may require smaller dt
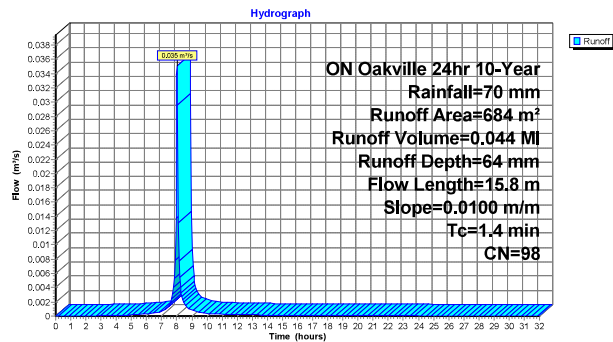
Runoff   =   0.043 m³/s @   8.02 hrs, Volume=   0.052 Ml, Depth=   76 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.05 hrs
ON Oakville 24hr 25-Year Rainfall=82 mm

Area (m²)	CN	Description
684	98	Unconnected roofs, HSG A
684		100.00% Impervious Area
684		100.00% Unconnected

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
1.4	15.8	0.0100	0.19		Lag/CN Method,

Subcatchment 1S: Pre

ON Oakville 24hr 25-Year
Rainfall=82 mm
Runoff Area=684 m²
Runoff Volume=0.052 Ml
Runoff Depth=76 mm
Flow Length=15.8 m
Slope=0.0100 m/m
Tc=1.4 min
CN=98

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Summary for Subcatchment 2S: Post

[49] Hint: Tc<2dt may require smaller dt
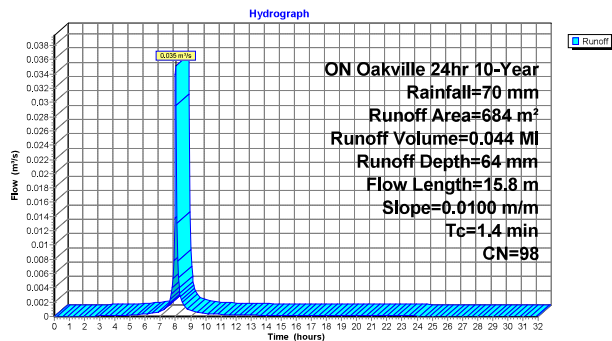
Runoff   =   0.043 m³/s @   8.02 hrs, Volume=   0.052 Ml, Depth=   76 mm
Routed to Pond 3P : Tank

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.05 hrs
ON Oakville 24hr 25-Year Rainfall=82 mm

Area (m²)	CN	Description
684	98	Unconnected roofs, HSG A
684		100.00% Impervious Area
684		100.00% Unconnected

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
1.4	15.8	0.0100	0.19		Lag/CN Method,

Subcatchment 2S: Post

ON Oakville 24hr 25-Year
Rainfall=82 mm
Runoff Area=684 m²
Runoff Volume=0.052 Ml
Runoff Depth=76 mm
Flow Length=15.8 m
Slope=0.0100 m/m
Tc=1.4 min
CN=98

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ON Oakville 24hr 25-Year Rainfall=82 mm
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Summary for Pond 3P: Tank

Inflow Area =		0.068 ha, 100.00% Impervious,	Inflow Depth =	76 mm	for 25-Year event	
Inflow	=	0.043 m³/s @	8.02 hrs,	Volume=	0.052 Ml	
Outflow	=	0.030 m³/s @	8.05 hrs,	Volume=	0.065 Ml,	Atten= 30%, Lag= 2.0 min
Primary	=	0.030 m³/s @	8.05 hrs,	Volume=	0.065 Ml	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 86.511 m @ 8.06 hrs Surf.Area= 9 m² Storage= 5.9 m³

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 71.5 min (609.6 - 538.1)

Volume	Invert	Avail.Storage	Storage Description
#1	85.850 m	16.2 m³	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (meters)	Surf.Area (sq-meters)	Inc.Store (cubic-meters)	Cum.Store (cubic-meters)
85.850	9	0.0	0.0
87.650	9	16.2	16.2

Device	Routing	Invert	Outlet Devices (Turned on 9 times)
#1	Primary	86.200 m	**Pump (Everbilt 0.5 hp) X 7.00**

Discharges@87.350 m Turns Off<85.900 m
150 mm Diam. x 20.00 m Long Discharge, Hazen-Williams C= 130
Flow (l/min)= 75.7 151.4 201.7 227.1 252.5 264.9
Head (meters)= 7.500 6.000 4.500 3.000 1.500 0.000
-Loss (meters)= 0.001 0.004 0.007 0.009 0.011 0.012
=Lift (meters)= 7.499 5.996 4.493 2.991 1.489 -0.012

Primary OutFlow Max=0.030 m³/s @ 8.05 hrs HW=86.497 m   (Free Discharge)
└─1=Pump (Everbilt 0.5 hp) (Pump Controls 0.030 m³/s)

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Pond 3P: Tank

Inflow Area=0.068 ha
Peak Elev=86.511 m
Storage=5.9 m³

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Time span=0.00-32.00 hrs, dt=0.05 hrs, 641 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Pre Runoff Area=684 m² 100.00% Impervious Runoff Depth=83 mm
Flow Length=15.8 m Slope=0.0100 m/m Tc=1.4 min CN=98 Runoff=0.048 m³/s 0.057 Ml

Subcatchment 2S: Post Runoff Area=684 m² 100.00% Impervious Runoff Depth=83 mm
Flow Length=15.8 m Slope=0.0100 m/m Tc=1.4 min CN=98 Runoff=0.048 m³/s 0.057 Ml

Pond 3P: Tank Peak Elev=86.811 m Storage=8.7 m³ Inflow=0.048 m³/s 0.057 Ml
Outflow=0.030 m³/s 0.066 Ml

Total Runoff Area = 0.137 ha Runoff Volume = 0.113 Ml Average Runoff Depth = 83 mm
0.00% Pervious = 0.000 ha 100.00% Impervious = 0.137 ha

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Summary for Subcatchment 1S: Pre

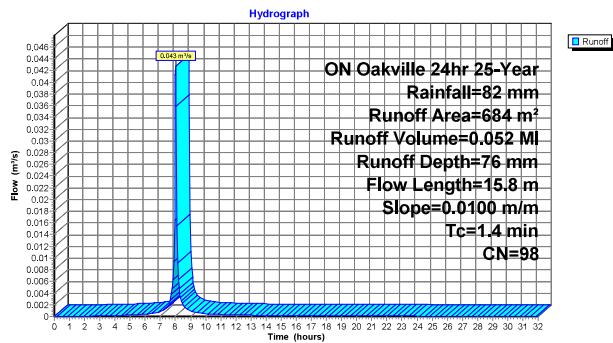[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.048 m³/s @ 8.02 hrs, Volume= 0.057 Ml, Depth= 83 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.05 hrs
ON Oakville 24hr 50-Year Rainfall=89 mm

Area (m²)	CN	Description
684	98	Unconnected roofs, HSG A
684		100.00% Impervious Area
684		100.00% Unconnected

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
1.4	15.8	0.0100	0.19		Lag/CN Method,

Subcatchment 1S: Pre

ON Oakville 24hr 50-Year
Rainfall=89 mm
Runoff Area=684 m²
Runoff Volume=0.057 Ml
Runoff Depth=83 mm
Flow Length=15.8 m
Slope=0.0100 m/m
Tc=1.4 min
CN=98

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Summary for Subcatchment 2S: Post

[49] Hint: Tc<2dt may require smaller dt
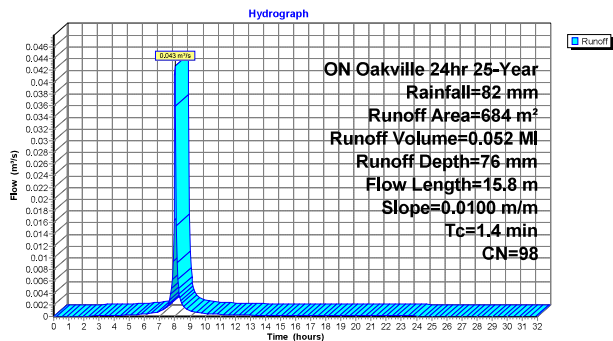
Runoff   =   0.048 m³/s @   8.02 hrs, Volume=   0.057 Ml, Depth=   83 mm
    Routed to Pond 3P : Tank

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.05 hrs
ON Oakville 24hr 50-Year Rainfall=89 mm

Area (m²)	CN	Description
684	98	Unconnected roofs, HSG A
684		100.00% Impervious Area
684		100.00% Unconnected

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
1.4	15.8	0.0100	0.19		Lag/CN Method,

Subcatchment 2S: Post

Hydrograph

ON Oakville 24hr 50-Year
Rainfall=89 mm
Runoff Area=684 m²
Runoff Volume=0.057 Ml
Runoff Depth=83 mm
Flow Length=15.8 m
Slope=0.0100 m/m
Tc=1.4 min
CN=98

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ON Oakville 24hr 50-Year Rainfall=89 mm
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Summary for Pond 3P: Tank

Inflow Area =	0.068 ha,100.00% Impervious, Inflow Depth =	83 mm	for 50-Year event	
Inflow =	0.048 m³/s @ 8.02 hrs, Volume=	0.057 Ml		
Outflow =	0.030 m³/s @ 8.05 hrs, Volume=	0.066 Ml,	Atten= 37%, Lag= 2.0 min	
Primary =	0.030 m³/s @ 8.05 hrs, Volume=	0.066 Ml		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.05 hrs
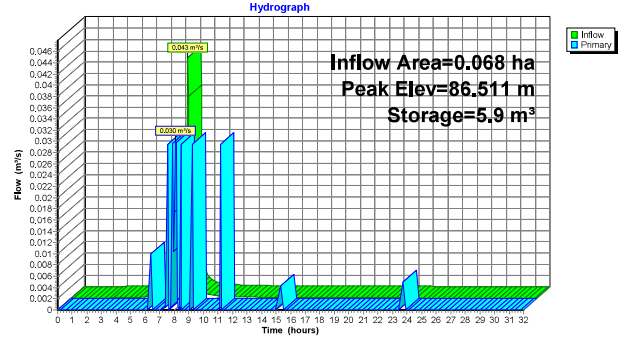Peak Elev= 86.811 m @ 8.07 hrs Surf.Area= 9 m² Storage= 8.7 m³

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 7.1 min (541.2 - 534.1)

Volume	Invert	Avail.Storage	Storage Description
#1	85.850 m	16.2 m³	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (meters)	Surf.Area (sq-meters)	Inc.Store (cubic-meters)	Cum.Store (cubic-meters)
85.850	9	0.0	0.0
87.650	9	16.2	16.2

Device	Routing	Invert	Outlet Devices (Turned on 8 times)
#1	Primary	86.200 m	**Pump (Everbilt 0.5 hp) X 7.00**

Discharges@87.350 m Turns Off<85.900 m
150 mm Diam. x 20.00 m Long Discharge, Hazen-Williams C= 130
Flow (l/min)= 75.7 151.4 201.7 227.1 252.5 264.9
Head (meters)= 7.500 6.000 4.500 3.000 1.500 0.000
-Loss (meters)= 0.001 0.004 0.007 0.009 0.011 0.012
=Lift (meters)=   7.499 5.996 4.493 2.991 1.489 -0.012

Primary OutFlow Max=0.030 m³/s @ 8.05 hrs HW=86.788 m   (Free Discharge)
└─1=Pump (Everbilt 0.5 hp) (Pump Controls 0.030 m³/s)

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ON Oakville 24hr 50-Year Rainfall=89 mm
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Pond 3P: Tank

Hydrograph

Inflow Area=0.068 ha
Peak Elev=86.811 m
Storage=8.7 m³

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ON Oakville 24hr 100-Year Rainfall=97 mm
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Time span=0.00-32.00 hrs, dt=0.05 hrs, 641 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Pre   Runoff Area=684 m² 100.00% Impervious Runoff Depth=91 mm
                    Flow Length=15.8 m   Slope=0.0100 m/m   Tc=1.4 min   CN=98   Runoff=0.053 m³/s 0.063 Ml

Subcatchment 2S: Post   Runoff Area=684 m² 100.00% Impervious Runoff Depth=91 mm
                    Flow Length=15.8 m   Slope=0.0100 m/m   Tc=1.4 min   CN=98   Runoff=0.053 m³/s 0.063 Ml

Pond 3P: Tank   Peak Elev=86.868 m Storage=9.2 m³ Inflow=0.053 m³/s 0.063 Ml
                    Outflow=0.030 m³/s 0.076 Ml

Total Runoff Area = 0.137 ha   Runoff Volume = 0.125 Ml   Average Runoff Depth = 91 mm
                    0.00% Pervious = 0.000 ha   100.00% Impervious = 0.137 ha

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ON Oakville 24hr 100-Year Rainfall=97 mm
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Summary for Subcatchment 1S: Pre

[49] Hint: Tc<2dt may require smaller dt
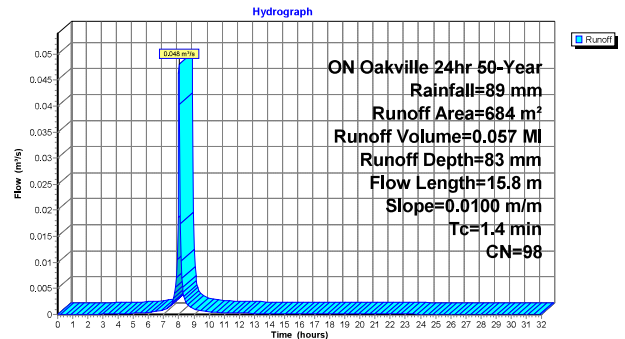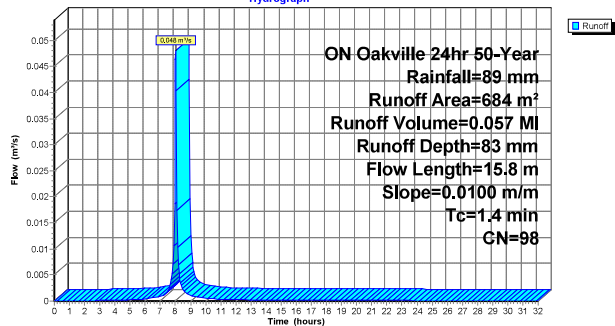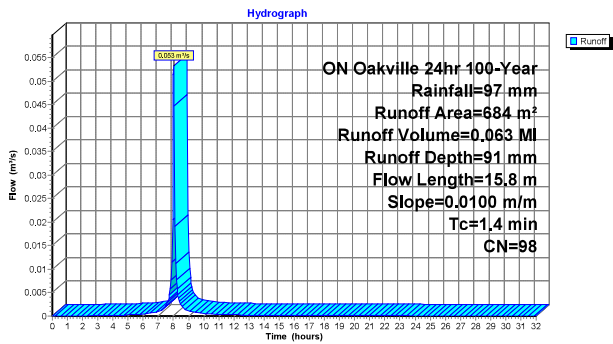
Runoff   =   0.053 m³/s @   8.02 hrs, Volume=   0.063 Ml, Depth=   91 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.05 hrs
ON Oakville 24hr 100-Year Rainfall=97 mm

Area (m²)	CN	Description
684	98	Unconnected roofs, HSG A
684		100.00% Impervious Area
684		100.00% Unconnected

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
1.4	15.8	0.0100	0.19		Lag/CN Method,

Subcatchment 1S: Pre

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ON Oakville 24hr 100-Year Rainfall=97 mm
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Summary for Subcatchment 2S: Post

[49] Hint: Tc<2dt may require smaller dt
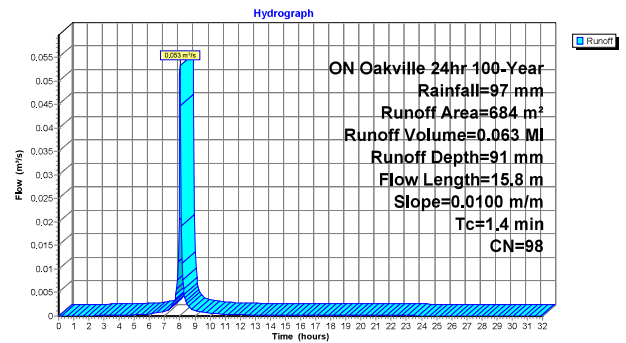
Runoff   =   0.053 m³/s @   8.02 hrs, Volume=   0.063 Ml, Depth=   91 mm
    Routed to Pond 3P : Tank

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.05 hrs
ON Oakville 24hr 100-Year Rainfall=97 mm

Area (m²)	CN	Description
684	98	Unconnected roofs, HSG A
684		100.00% Impervious Area
684		100.00% Unconnected

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
1.4	15.8	0.0100	0.19		Lag/CN Method,

Subcatchment 2S: Post

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ON Oakville 24hr 100-Year Rainfall=97 mm
Printed 2022-12-14
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Summary for Pond 3P: Tank

Inflow Area =	0.068 ha,100.00% Impervious, Inflow Depth =	91 mm	for 100-Year event
Inflow =	0.053 m³/s @ 8.02 hrs, Volume=	0.063 Ml	
Outflow =	0.030 m³/s @ 8.08 hrs, Volume=	0.076 Ml,	Atten= 43%, Lag= 3.8 min
Primary =	0.030 m³/s @ 8.08 hrs, Volume=	0.076 Ml	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 86.868 m @ 8.08 hrs Surf.Area= 9 m² Storage= 9.2 m³

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 42.6 min (575.6 - 533.0)

Volume	Invert	Avail.Storage	Storage Description
#1	85.850 m	16.2 m³	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (meters)	Surf.Area (sq-meters)	Inc.Store (cubic-meters)	Cum.Store (cubic-meters)
85.850	9	0.0	0.0
87.650	9	16.2	16.2

Device	Routing	Invert	Outlet Devices (Turned on 9 times)
#1	Primary	86.200 m	Pump (Everbilt 0.5 hp) X 7.00

Discharges@87.350 m Turns Off<85.900 m
150 mm Diam. x 20.00 m Long Discharge, Hazen-Williams C= 130
Flow (l/min)= 75.7 151.4 201.7 227.1 252.5 264.9
Head (meters)= 7.500 6.000 4.500 3.000 1.500 0.000
-Loss (meters)= 0.001 0.004 0.007 0.009 0.011 0.012
=Lift (meters)= 7.499 5.996 4.493 2.991 1.489 -0.012

Primary OutFlow Max=0.030 m³/s @ 8.08 hrs HW=86.828 m (Free Discharge)
└─1=Pump (Everbilt 0.5 hp) (Pump Controls 0.030 m³/s)

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ON Oakville 24hr 100-Year Rainfall=97 mm
Printed 2022-12-14
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Pond 3P: Tank

CONSTRUCTION NORTH

EX. 375mm ∅ STM

EX. STM MH

CHURCH STREET

EX. 375mm ∅ STM

EX. CB

0.07 / 98

0.07 / 98

PROPOSED SIX-STOREY
MIXED USED CONDO
115 TRAFALGAR ROAD

EX. CB

PROP. STM CONTROL MH

EX. CB

PROP. 150mm ∅ STM

EX. STM MH

EX. 525mm ∅ STM

TRAFALGAR ROAD
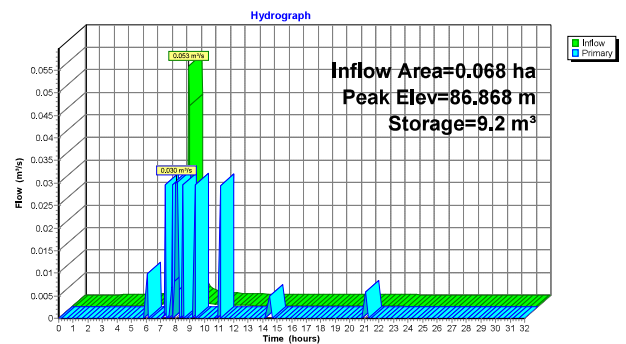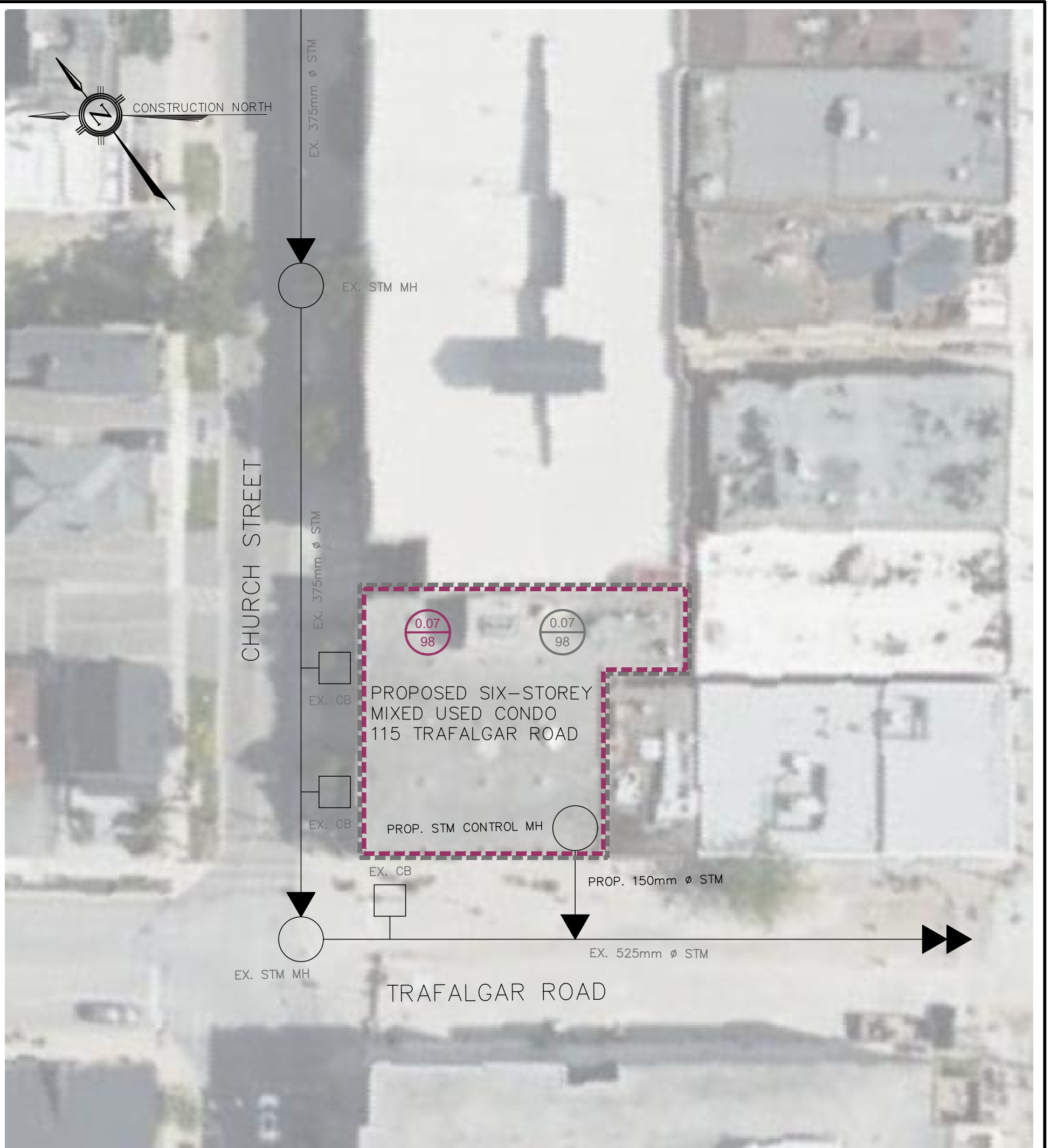
LEGEND

0.07 / 98	PRE DEVELOPMENT DRAINAGE AREA IN HECTARES PRE DEVELOPMENT CURVE NUMBER
0.07 / 98	POST DEVELOPMENT DRAINAGE AREA IN HECTARES POST DEVELOPMENT CURVE NUMBER
▄ ▄ ▄	PRE DEVELOPMENT DRAINAGE AREA BOUNDARY
▄ ▄ ▄	POST DEVELOPMENT DRAINAGE AREA BOUNDARY

PROJECT TITLE		
HICKS TRAFALGAR 115 TRAFALGAR ROAD TOWN OF OAKVILLE	**TRAFALGAR ENGINEERING** #1-481 MORDEN ROAD, OAKVILLE, ON, L6K 3W6 www.trafalgareng.com	

DRAWING TITLE	DESIGN BY AJP	SCALE 1:400	DRAWING No.
STORM DRAINAGE PLAN	DRAWN BY AJP	DATE 2022/11/23	FIG 3

CAD FILE: 1797FIG.DWG PLOT SCALE: 1:1 PLOT DATE: Dec 13, 2022

APPENDIX 'E'

Grading and Servicing Plan
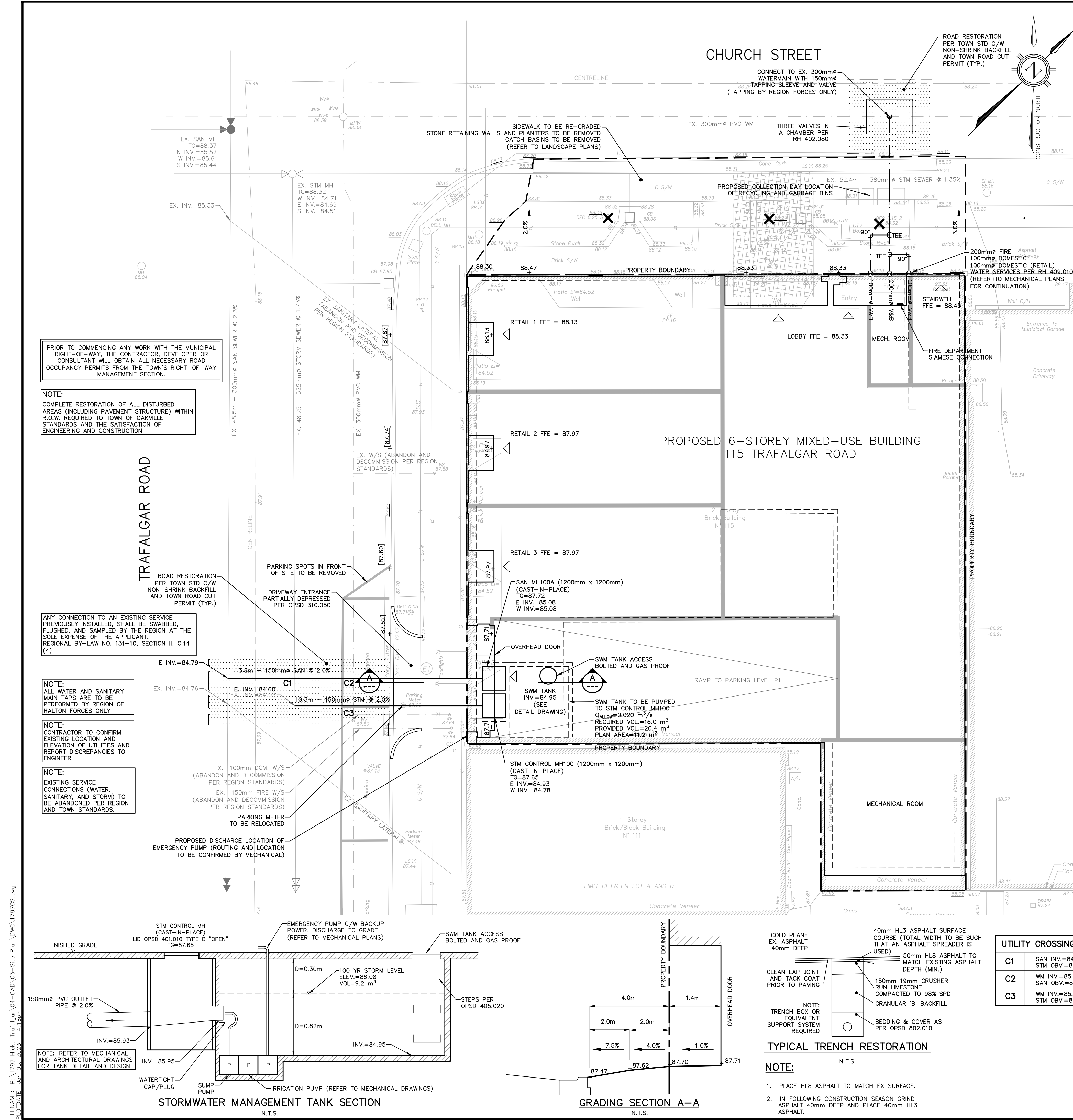
GENERAL NOTES:

1. ALL DIMENSIONS AND ELEVATIONS TO BE VERIFIED PRIOR TO CONSTRUCTION AND ANY DISCREPANCIES FOUND PRIOR TO OR DURING CONSTRUCTION SHALL BE CLARIFIED WITH THE ENGINEER.

2. CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS OF THE REGIONAL MUNICIPALITY OF HALTON (INCLUDING REGION OF HALTON'S CONTRACTOR INFORMATION PACKAGE), THE TOWN OF OAKVILLE AND THE ONTARIO BUILDING CODE (PART 7). ONTARIO PROVINCIAL STANDARD SPECIFICATIONS AND DRAWINGS (OPSS & OPSD) SHALL BE USED IN ABSENCE OF LOCAL STANDARDS.

3. RESTORE ROAD AS PER THE TOWN OF OAKVILLE ROAD CUT PERMIT.

4. ALL INFORMATION SHOWING THE LOCATION AND SIZE FOR EXISTING UTILITIES AND/OR SERVICES HAS NOT BEEN VERIFIED. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE LOCATION OF UTILITIES PRIOR TO CONSTRUCTION, AND PROTECTING AND MAINTAINING THE UTILITIES DURING CONSTRUCTION.

5. ALL REMOVED OR DAMAGED CURBS, SIDEWALK, GRANULARS, ASPHALT AND SOD RESULTING FROM SERVICE INSTALLATION SHALL BE REINSTATED BY SERVICING CONTRACTOR TO THE TOWN OF OAKVILLE STANDARDS.

6. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL, MECHANICAL AND LANDSCAPE DRAWINGS.

7. THE CONTRACTOR SHALL CHECK AND VERIFY ALL GIVEN GRADES AND ELEVATIONS, PRIOR TO CONSTRUCTION AND REPORT ALL DISCREPENCIES TO THE ENGINEER.

8. ALL GRADING CHANGES SHALL BE APPROVED BY THE ENGINEER AND TOWN OF OAKVILLE PRIOR TO IMPLEMENTATION.

9. THE CONTRACTOR SHALL CLEAN ALL MUD TRACKED ON TO ADJACENT ROADWAYS.

SERVICING NOTES:

1. CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS OF THE REGIONAL MUNICIPALITY OF HALTON INLUDING REGION OF HALTON CONTRACTOR INFORMATION PACKAGE), TOWN OF OAKVILLE AND THE ONTARIO BUILDING CODE (PART 7). ONTARIO PROVINCIAL STANDARD SPECIFICATIONS AND DRAWINGS (OPSS & OPSD) SHALL BE USED IN ABSENCE OF LOCAL STANDARDS.

2. ALL SERVICES SHALL BE BACKFILLED WITH APPROVED NATIVE BACKFILL COMPACTED TO 98% S.P.M.D.D. BEDDING AND COVER MATERIAL SHALL BE PER THE APPLICABLE OPSD.

3. SERVICE TRENCH RESTORATION WITHIN MUNICIPAL ROAD ALLOWANCE SHALL BE PER TOWN STD.

4. WATER SERVICE TO BE COPPER TYPE 'K' SOFT COPPER TUBING.

5. SANITARY LATERAL INVERT TO BE CONFIRMED PRIOR TO FOUNDATION CONSTRUCTION.

6. ALL SINGLE CATCHBASIN LEADS TO BE 250mmø PVC DR-35 @ 1.0%.

7. WATER SERVICE LATERALS ARE TO HAVE A MINIMUM COVER OF 1.7m AND MAINTAIN A HORIZONTAL DISTANCE OF 1.2m FROM THEMSELVES & OTHER UTILITIES.

8. WATER SERVICE LATERALS MUST HAVE A MINIMUM VERTICAL CLEARANCE OF 0.30m OVER/0.50M UNDER SEWERS AND ALL OTHER UTILITIES WHEN CROSSING OR IN PARALLEL INSTALLATIONS.

SANITARY NOTES:

1. ALL SANITARY SEWERS SHALL BE PVC SDR35 AND BEDDING PER OPSD 802.010*.

2. ALL SANITARY MANHOLES SHALL BE 1200mmø PER OPSD 701.010 c/w COVER PER OPSD 401.010, UNLESS OTHERWISE NOTED.

3. SERVICE LATERALS ARE TO BE 125mmø PVC PIPE AT 2.0% MINIMUM (UNLESSS OTHERWISE NOTED) SLOPED TO BUILDING, SDR-28 AND SHALL BE GREEN AS PER REGION OF HALTON STANDARDS.

4. BENCHING IN MANHOLES IS THROUGHOUT TO THE CROWN OF ALL PIPES ON A VERTICAL PROJECTION FROM SPRING LINE.

5. ASTERISK (*) INDICATES OPSD CAN BE USED MODIFIED BY REGION OF HALTON.

WATERMAIN NOTES:

1. WATER SERVICE CONNECTION SHALL BE 38mmø COPPER, TYPE 'K' SOFT COPPER TUBING.

2. BEDDING ON WATER SERVICE SHALL BE PER OPSD 802.010*.

3. COVER SHALL BE 1.7m MIN. UNLESS OTHERWISE NOTED.

4. MINIMUM LATERAL SEPARATION FROM OTHER UTILITIES IS 2.5m.

5. ANODE INSTALLATION PER RH 420.04.

6. WATERMAIN SHALL BE PRESSURE TESTED TO 150psi FOR 3 HOURS AND WITNESSED BY REGION OF HALTON.

7. WATERMAIN SHALL BE TESTED AND DISINFECTED AS PER REGION OF HALTON REQUIREMENTS.

GRADING NOTES:

1. ALL TOPSOIL SHALL BE STRIPPED PRIOR TO GRADING.

2. ALL FILL PLACEMENT SHALL BE DONE IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEERS RECOMMENDATIONS.

3. ALL DISTURBED AREAS SHALL BE REINSTATED WITH SEED OVER 200-300mm OF TOPSOIL.

4. ALL DISTURBED AREAS WITH PUBLIC R.O.W. TO BE REINSTATED WITH 200mm TOPSOIL AND SOD.

5. ALL CURBING SHALL BE BARRIER CURB PER OSPD 600.110 (150mm HIGH), UNLESS OTHERWISE NOTED.

6. ASPHALT DRIVEWAY PAVEMENT STRUCTURE SHALL BE THE GREATER OF THE EXISTING, OR 75mm HL3A OVER 150mm 19mm CRL, OR AS OTHERWISE DIRECTED BY THE GEOTECHNICAL CONSULTANT.

EROSION AND SEDIMENT CONTROL NOTES:

1. ALL EROSION AND SEDIMENT CONTROLS ARE TO BE INSTALLED ACCORDING TO THE APPROVED PLANS PRIOR TO COMMENCEMENT OF ANY EARTH MOVING WORK ON THE SITE AND SHALL REMAIN IN PLACE UNTIL ALL DISTURBED AREAS ARE STABILIZED WITH THE INTENDED GROUND COVER.

2. EROSION AND SEDIMENT CONTROLS SHALL BE INSPECTED BY THE CONTRACTOR:
   i. WEEKLY
   ii. BEFORE AND AFTER ANY PREDICTED RAINFALL EVENT
   iii. FOLLOWING AN UNPREDICTED RAINFALL EVENT
   iv. DAILY, DURING EXTENDED DURATION RAINFALL EVENTS
   v. AFTER SIGNIFICANT SNOW MELT EVENTS

3. EROSION AND SEDIMENT CONTROLS SHALL BE MAINTAINED IN PROPER WORKING ORDER AT ALL TIMES. DAMAGED OR CLOGGED DEVICES SHALL BE REPAIRED WITHIN 48 HOURS.

4. WHERE A SITE REQUIRES DEWATERING AND WHERE THE EXPELLED WATER CAN BE FREELY RELEASED TO A SUITABLE RECEIVER, THE EXPELLED WATER SHALL BE TREATED TO CAPTURE SUSPENDED PARTICLES GREATER THAN 40 MICRON IN SIZE. THE CAPTURED SEDIMENT SHALL BE DISPOSED OF PROPERLY PER MOECC GUIDELINES. THE CLEAN EXPELLED WATER SHALL FREELY RELEASE TO A SUITABLE RECEIVER THAT DOES NOT CREATE DOWNSTREAM ISSUES INCLUDING BUT NOT LIMITED TO EROSION, FLOODING - NOT CREATE DOWNSTREAM ISSUES INCLUDING BUT NOT LIMITED TO EROSION, FLOODING - NUISANCE OR OTHERWISE, INTERFERENCE ISSUES, ETC.

5. EXISTING STORM SEWER AND DRAINAGE DITCHES ADJACENT TO THE WORKS SHALL BE PROTECTED AT ALL TIMES FROM THE ENTRY OF SEDIMENT/SILT THAT MAY MIGRATE FROM THE SITE. FOR STORM SEWERS: ALL INLETS (REAR LOT CATCHBASINS, ROAD CATCHBASINS, PIPE INLETS, ETC.) SHALL BE SECURED/FITTED WITH SILTATION CONTROL MEASURES. FOR DRAINAGE DITCHES: THE INSTALLATION OF ROCK CHECK DAMS, SILTATION FENCE, SEDIMENT CONTAINMENT DEVICES MUST BE INSTALLED TO TRAP AND CONTAIN SEDIMENT. THE SILTATION CONTROL DEVICES SHALL BE INSPECTED AND MAINTAINED PER ITEMS B AND C ABOVE.

6. IN THE EVENT OF A SPILL (RELEASE OF DELETERIOUS MATERIAL) ON OR EMANATING FROM THE SITE, THE OWNER OR OWNERS AGENT SHALL IMMEDIATELY NOTIFY THE MOECC AND FOLLOW ANY PRESCRIBED CLEAN UP PROCEDURE. THE OWNER OF OWNERS AGENT WILL ADDITIONALLY IMMEDIATELY NOTIFY THE TOWN.

KEY PLAN
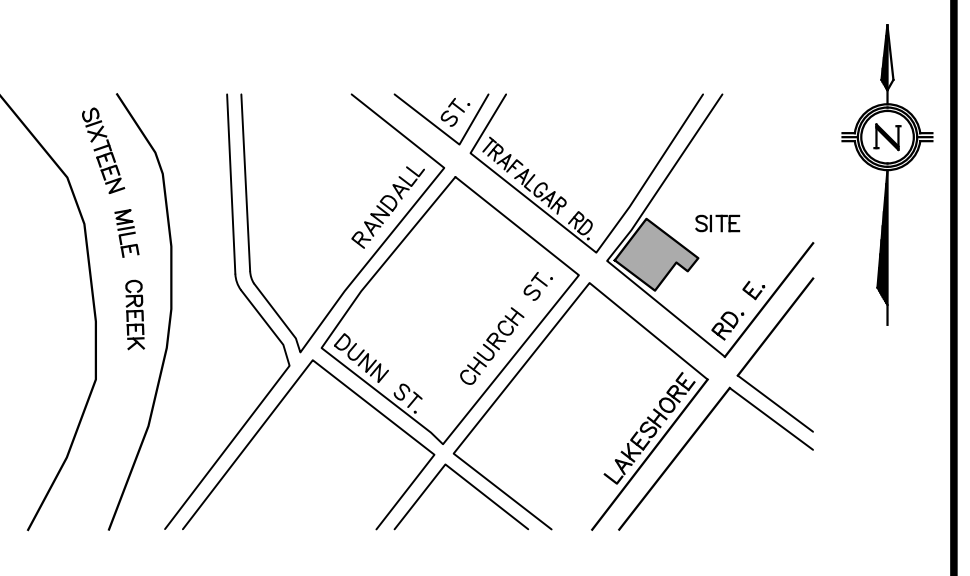
LEGEND

81.71	EXISTING ELEVATION
83.41	EXISTING ELEVATION TO REMAIN
82.77	PROPOSED FINISHED ELEVATION
[83.23]	INTERPOLATED EXISTING GRADE TO REMAIN
○	PROPOSED STORM MANHOLE
●	PROPOSED SANITARY MANHOLE
⋈	PROPOSED FIRE HYDRANT
⋈	PROPOSED VALVE & BOX
▬▶	PROPOSED STORM SEWER
▬▶	PROPOSED SANITARY SEWER
─ ∙ ─	PROPOSED WATERMAIN
Ⓜ	PROPOSED WATER METER
⊡	PROPOSED BACKFLOW PREVENTER

REVISIONS

NO.	DATE	BY/DRAWN		
1	22/12/22	AJP	ISSUED FOR ZBA/OPA	

CAD FILE: 1797GS.dwg PLOT SCALE: 1:1 PLOT DATE: Jan 05, 2023

BENCHMARK

ALL ELEVATIONS SHOWN HEREON ARE GEODETIC AND WERE DERIVED FROM THE TOWN OF OAKVILLE BENCHMARK 0-251 HAVING AN ELEVATION OF 118.729m (CGVD-1928;1978).

SURVEY CREDIT

THE TOPOGRAPHIC DETAIL SHOWN HEREON IS OBTAINED FROM CUNNINGHAM MCCONNELL LIMITED, ONTARIO LAND SURVEYORS PLAN 122-22-1, COMPLETED ON THE 1ST OF NOVEMBER 2022

DESIGNED BY   APPROVED BY

TRAFALGAR ENGINEERING
#1-481 MORDEN ROAD, OAKVILLE, ON, L6K 3W6
www.trafalgareng.com

PROJECT TITLE
HICKS TRAFALGAR

LOCATION
115 TRAFALGAR ROAD
TOWN OF OAKVILLE

DRAWING TITLE
GRADING AND SERVICING PLAN

SCALE	1:100	DESIGN BY	AJP	PROJECT NO.	1797
DRAWN BY	AJP	CHECKED BY	JN	PLAN No.	
DATE	2022/11/14	SHEET	1 OF 1		GS1

Drawing body (site plan)

CHURCH STREET

ROAD RESTORATION PER TOWN STD C/W NON-SHRINK BACKFILL AND TOWN ROAD CUT PERMIT (TYP.)

CONNECT TO EX. 300mmø WATERMAIN WITH 150mmø TAPPING SLEEVE AND VALVE (TAPPING BY REGION FORCES ONLY)

EX. 300mmø PVC WM

THREE VALVES IN A CHAMBER PER RH 402.080

SIDEWALK TO BE RE-GRADED STONE RETAINING WALLS AND PLANTERS TO BE REMOVED CATCH BASINS TO BE REMOVED (REFER TO LANDSCAPE PLANS)

PROPOSED COLLECTION-DAY LOCATION OF RECYCLING AND GARBAGE BINS

EX. 52.4m - 380mmø STM SEWER @ 1.35%

EX. SAN MH
TG=88.37
N INV.=85.52
E INV.=85.61
S INV.=85.44

EX. STM MH
TG=88.32
W INV.=84.71
E INV.=84.69
S INV.=84.51

EX. INV.=85.33

200mmø FIRE
100mmø DOMESTIC (RETAIL)
WATER SERVICES PER RH 409.010
(REFER TO MECHANICAL PLANS FOR CONTINUATION)

PROPERTY BOUNDARY

RETAIL 1 FFE = 88.13

LOBBY FFE = 88.33

STAIRWELL FFE = 88.45

MECH. ROOM

FIRE DEPARTMENT SIAMESE CONNECTION

PROPOSED 6-STOREY MIXED-USE BUILDING
115 TRAFALGAR ROAD

RETAIL 2 FFE = 87.97

RETAIL 3 FFE = 87.97

SAN MH100A (1200mm x 1200mm) (CAST-IN-PLACE)
TG=87.72
E INV.=85.08
W INV.=85.08

ROAD RESTORATION PER TOWN STD C/W NON-SHRINK BACKFILL AND TOWN ROAD CUT PERMIT (TYP.)

PARKING SPOTS IN FRONT OF SITE TO BE REMOVED

DRIVEWAY ENTRANCE PARTIALLY DEPRESSED PER OPSD 310.050

OVERHEAD DOOR

SWM TANK ACCESS BOLTED AND GAS PROOF

RAMP TO PARKING LEVEL P1

SWM TANK
INV.=84.95
(SEE DETAIL DRAWING)

SWM TANK TO BE PUMPED TO STM CONTROL MH100
Q_ALLOW=0.020 m³/s
REQUIRED VOL.=16.0 m³
PROVIDED VOL.=20.4 m³
PLAN AREA=11.2 m²

13.8m - 150mmø SAN @ 2.0%

10.3m - 150mmø STM @ 2.0%

STM CONTROL MH100 (1200mm x 1200mm) (CAST-IN-PLACE)
TG=87.65
E INV.=84.93
W INV.=84.78

PROPOSED DISCHARGE LOCATION OF EMERGENCY PUMP (ROUTING AND LOCATION TO BE CONFIRMED BY MECHANICAL)

PARKING METER TO BE RELOCATED

MECHANICAL ROOM

1-STOREY BRICK/BLOCK BUILDING N° 111

LIMIT BETWEEN LOT A AND D

Left margin notes

PRIOR TO COMMENCING ANY WORK WITH THE MUNICIPAL RIGHT-OF-WAY, THE CONTRACTOR, DEVELOPER OR CONSULTANT WILL OBTAIN ALL NECESSARY ROAD OCCUPANCY PERMITS FROM THE TOWN'S RIGHT-OF-WAY MANAGEMENT SECTION.

NOTE:
COMPLETE RESTORATION OF ALL DISTURBED AREAS (INCLUDING PAVEMENT STRUCTURE) WITHIN R.O.W. REQUIRED TO TOWN OF OAKVILLE STANDARDS AND THE SATISFACTION OF ENGINEERING AND CONSTRUCTION

ANY CONNECTION TO AN EXISTING SERVICE PREVIOUSLY INSTALLED, SHALL BE SWABBED, FLUSHED, AND SAMPLED BY THE REGION AT THE SOLE EXPENSE OF THE APPLICANT. REGIONAL BY-LAW NO. 131-10, SECTION II, C.14 (4)

NOTE:
ALL WATER AND SANITARY MAIN TAPS ARE TO BE PERFORMED BY REGION OF HALTON FORCES ONLY

NOTE:
CONTRACTOR TO CONFIRM EXISTING LOCATION AND ELEVATION OF UTILITIES AND REPORT DISCREPANCIES TO ENGINEER

NOTE:
EXISTING SERVICE CONNECTIONS (WATER, SANITARY, AND STORM) TO BE ABANDONED PER REGION AND TOWN STANDARDS.

TRAFALGAR ROAD

STORMWATER MANAGEMENT TANK SECTION
N.T.S.

STM CONTROL MH (CAST-IN-PLACE) LID OPSD 401.010 TYPE B "OPEN" TG=87.65

FINISHED GRADE

EMERGENCY PUMP C/W BACKUP POWER. DISCHARGE TO GRADE (REFER TO MECHANICAL PLANS)

SWM TANK ACCESS BOLTED AND GAS PROOF

100 YR STORM LEVEL ELEV.=86.08 VOL=9.2 m³

D=0.30m

D=0.82m

150mmø PVC OUTLET PIPE @ 2.0%
INV.=85.93

INV.=85.95

INV.=84.95

WATERTIGHT CAP/PLUG

SUMP PUMP

IRRIGATION PUMP (REFER TO MECHANICAL DRAWINGS)

STEPS PER OPSD 405.020

4.0m   1.4m
2.0m 2.0m
7.5% 4.0% 1.0%
87.47 87.62 87.70 87.71

NOTE: REFER TO MECHANICAL AND ARCHITECTURAL DRAWINGS FOR TANK DETAIL AND DESIGN

GRADING SECTION A-A
N.T.S.

COLD PLANE EX. ASPHALT 40mm DEEP

CLEAN LAP JOINT AND TACK COAT PRIOR TO PAVING

40mm HL3 ASPHALT SURFACE COURSE (TOTAL WIDTH TO BE SUCH THAT AN ASPHALT SPREADER IS USED)

50mm HL8 ASPHALT TO MATCH EXISTING ASPHALT DEPTH (MIN.)

150mm 19mm CRUSHER RUN LIMESTONE COMPACTED TO 98% SPD

GRANULAR 'B' BACKFILL

BEDDING & COVER AS PER OPSD 802.010

NOTE: TRENCH BOX OR EQUIVALENT SUPPORT SYSTEM REQUIRED

TYPICAL TRENCH RESTORATION
N.T.S.

NOTE:
1. PLACE HL8 ASPHALT TO MATCH EX SURFACE.
2. IN FOLLOWING CONSTRUCTION SEASON GRIND ASPHALT 40mm DEEP AND PLACE 40mm HL3 ASPHALT.

UTILITY CROSSINGS

C1	SAN INV.=84.89 STM OBV.=84.58
C2	WM INV.=85.50 SAN INV.=85.08
C3	WM INV.=85.69 STM OBV.=84.80