TRAFALGAR ENGINEERING

FUNCTIONAL SERVICING REPORT

Water, Wastewater and Stormwater Management

PROPOSED RESIDENTIAL RE-DEVELOPMENT

2087 – 2103 PROSPECT STREET
CITY OF BURLINGTON

OUR FILE: 1629

PREPARED FOR WELWYN INTERESTS INC.

MAY 1, 2019

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REVISION HISTORY

DATE	REVISION	SUBMISSION
December 11, 2017	1	
November 9, 2018	2	
December 14, 2018	3	
May 1, 2019	4	Issued for RZA / OPA

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1.0 INTRODUCTION

1.1 Scope of Functional Servicing Report

This report has been prepared in support of the Official Plan and Zoning Amendments being sought for the subject lands located at 2087–2103 Prospect Street in the City of Burlington.

This report discusses how the re-development of these lands can be serviced by the existing infrastructure for water, wastewater, and storm drainage. Furthermore, the report shows how the proposed type of dwelling is compatible with the existing site topographic and boundary conditions. The designs provided in this report can be used to evolve further detail designs as the various elements of the proposed development progress through the City's development approval process.

Background information regarding existing services is based on information obtained from the City of Burlington and the Region of Halton as well as site reconnaissance to ascertain the location of the existing services on the property. *Revisions to the body of the report are indicated in italics.*

1.2 Site Location and Description

The site is located on the north side of Prospect Street, close to the major intersection of Brant Street and Fairview Street in Ward 2. The site is surrounded by similar uses/density to the west, low density residential to the north and community facilities to the east. There is also a small cluster of street townhomes immediately to the east of the site. The area of the subject lands is 0.96 ha. The site is currently occupied by an eight storey mid-rise apartment building (65 units) on the south half and two fourplex buildings (8 units) on the north half having a total combined unit count of 73 units. Other existing features include landscaped areas, outdoor amenities, surface parking and drive aisles, and quasi-underground parking.

Attached in Appendix 'A' is the topographic survey of the property depicting the above features. The site gently slopes from north to south. It is currently serviced for storm drainage (minimally) and wastewater *(partially via private sewers over the lands to the west)* and water from the municipal services on Prospect Street.

1.3 Proposed Development

The Proponent proposes to re-develop the site by introducing a stacked townhouse product at the rear of the property. The existing low-rise dwellings at the rear will be demolished while the existing mid-rise apartment building is proposed to remain as is. The re-development includes a re-organization of the existing surface parking as well as the construction of new surface

parking and associated drive aisles. Water and sanitary sewer upgrades are also proposed. The existing drop off area in front of the apartment building will be reconfigured to provide parking as well. A total of *40* new dwelling units are proposed *resulting in no overall increase of 32 units*.

A copy of the proposed site plan and typical sections showing the above are provided in Appendix 'A' for reference purposes.

2.0 MUNICIPAL SERVICES (Water and Sanitary Drainage)

Re-development of the subject lands will require adequately sized water and wastewater services that comply with the Ontario Building Code, Region of Halton standards and City of Burlington standards. In order to design the services that would be required for the proposed units, it was necessary to verify the location of the existing services on the property. Terra Discovery was retained to locate the services throughout the site. The located services are in Appendix 'B' as well as on the Site Servicing Plan in Appendix 'C' of the report. Sewer video services were retained to confirm the location, connectivity and condition of the existing site services that were unable to be located by geophysical means. *A copy of the report is provided in Appendix 'B'*.

It is worthwhile noting that the rear portion of the subject site is serviced (sanitary) by the property to the west. This will be discussed in the forthcoming section of the report.

The findings of the above investigations were used to advance the design of the proposed water and sanitary drainage systems.

2.1 Water

Plans obtained from the Region of Halton indicate that there is an existing 350mm diameter asbestos cement watermain on Prospect Street. The watermain is located on the south side of the municipal road allowance. The information regarding the watermain is appended in Appendix 'D' of the report. Jackson Waterworks was retained to undertake flow testing for the adjacent site, the results of which are appended in Appendix 'D' of the report. The flow tests indicate the following:

Static Pressure	54 psig
Residual Pressure	52 psig @ 1140 US gpm
Residual Pressure	48 psig @ 2120 US gpm
Theoretical Flow of 5255 US gpm @ 20 psi	

The above results are within the Region's normal operating conditions and fire flow conditions. The water demands as a result of the net addition of 32 residential dwelling units will have negligible impact on the existing infrastructure.

A fire flow of approximately 4000 L/min is determined using the Fire Underwriters Survey (FUS) methodology (calculations attached in Appendix 'D'), however Part 1 of the FUS indicates that 6000 L/min minimum flow is required for a 2-hour duration fire. Demand calculations were undertaken based on the Region's Water and Wastewater Linear Design Manual Section 2.3.1., 1.62 persons per unit (ppu) for high density and 2.44 ppu for medium density development in Burlington—taken from the Sustainable Halton Water and Wastewater Master Plan—along with the projected unit counts from the site plan statistics, and are summarized below (refer to calculations in Appendix 'D').

Average Demand	=	*39* L/min
Max. Daily Demand	=	*87* L/min
Max. Hourly Peak	=	*155* L/min
Max. Daily Plus Fire	=	6000 L/min + *87* L/min = *6087* L/min

The site is currently serviced by a single 150mm diameter connection to the existing 350mm diameter watermain on Prospect Street as shown on the plans provided in Appendices 'B' and 'D'. The service is located directly in front of the existing apartment building. Terra Discovery was unable to locate the water services for the existing low-rise dwellings at the rear of the property, however, it is assumed they are serviced from the apartment building to the south. There is a municipal fire hydrant on Prospect Street in close proximity to the subject lands.

We are proposing that the re-development of the site include a private water system within the subject lands consisting of a 150mm diameter looped private watermain including a proposed connection to the existing 350mm watermain on Prospect Street. The proposed watermain will provide both domestic water and a hydrant for fire protection to the stacked townhouses. The proposed dwelling units will be serviced directly from the proposed private watermain. Each stacked group of dwelling units will be provided with a water service lateral.

The proposed private water servicing configuration is shown on the Servicing Plan in Appendix 'C' of the report.

2.2 Sanitary Drainage

Plans obtained from the Region of Halton indicate that there are two existing 250mm diameter PVC sanitary sewers on Prospect Street, each flowing in opposite directions and along the middle of the street and with their respective high points in front of the subject lands. The site is currently serviced by a 150mm sanitary lateral draining to the east, however it appears that in

the 2005 reconstruction of the west sewer, a plugged lead was provided to the site; it is unknown why the lead was provided. The sewer is located generally along the center of the road and is approximately 1.5m deep. Information regarding the sewer is appended in Appendix 'E' of the report.

Terra Discovery was unable to locate a private sanitary sewer to service the fourplexes. *They were located as part of the sewer video*. During the recent development of the lands to the west, it was determined that the existing fourplexes were serviced in the private sanitary sewer on said lands. Arrangements were made to continue servicing the fourplexes in this manner until such time that the subject lands are developed. Development of the subject lands will require all buildings to be serviced by a private sewer connection directly to Prospect Street.

We are proposing that the re-development of the site include a private sanitary sewer system within the site connecting to the existing manhole at the street line. The proposed dwellings will be serviced by the proposed private sanitary sewer. Each stacked group of dwelling units will be provided with a single building sewer. The proposed private sewer reconfiguration is shown on the Servicing Plan in Appendix 'C' of the report.

3.0 STORM DRAINAGE AND STORMWATER MANAGEMENT

The re-development of the subject lands will require adequately sized storm sewers that comply with the Ontario Building Code and the City of Burlington standards for site servicing. Section 2.0 of the report outlined the need to locate the existing water and sanitary drainage systems. It is also necessary to ascertain the location of the existing storm drainage system on the property in order to design the required storm drainage system for the site's re-development. Sewer video services *were* retained to determine the location, connectivity and condition of the existing system. It is worthwhile noting that an area at the rear of the site is serviced by the private storm sewer on the site to the west. This will be further discussed in the following section.

3.1 Minor Storm System

Plans obtained from the City of Burlington show that there is an existing 375mm diameter storm sewer on Prospect Street. The sewer drains in an easterly direction and is located generally south of the centreline and is approximately 1.2m deep to the invert. The subject lands are currently serviced by a single 300mm diameter storm sewer lateral located in the easterly driveway entrance. During the redevelopment of the lands to the west, it was determined that some of the parking along the west side of the subject site was serviced by a private storm sewer on the lands to the west. Arrangements were made to continue conveying storm drainage in this manner until such time that the subject lands are redeveloped.

Development of the subject lands will require all storm drainage to be conveyed in a private storm sewer with a direct connection from the site to the municipal storm sewer on Prospect Street.

We are proposing that the re-development of the site include the replacement of the existing storm sewer system, and that it be extended to service the proposed area of re-development. The proposed system is shown on the Site Servicing Plan appended in Appendix 'C'. The proposed system has been designed to incorporate underground detention storage as outlined in Section 3.3.1 of this report.

There is an external drainage area of 1617 m^2, which sheet flows into the site from the north. The external areas are shown on the Storm Drainage Area Plan included in Appendix 'F'. The external drainage has been accounted for in the design of the site's storm sewer system.

The proposed storm sewer system will have minimal cover throughout the site given the shallow depth of the existing storm sewer on Prospect Street. This precludes the ability to drain the foundation weepers of the proposed dwellings by gravity and necessitates pumping of the foundation weepers. In light of this, each lower unit must be provided with a sump pump. The pumped flows will discharge to the site's storm sewer system that collects surface drainage.

3.2 Major Storm System

As outlined in Section 3.3.1, the proposed storm sewer system will incorporate an underground storage facility. An overland flow route to Prospect Street is provided in the event of system failure and/or a storm event greater than the 100-yr storm. The site's grading design is such that overland flows can be conveyed overland over grassed areas as well as the parking/drive aisles. The major system ensures that dwellings are not inundated with stormwater and provides a level of protection over and above that of the minor system.

3.3 Stormwater Management

3.3.1 Quantity Control (100-yr post-development controlled to 5-yr pre-development)

The quantity control criteria is satisfied by providing below grade storage of stormwater within proposed the Cultec 280HD stormwater detention system—providing approximately *78* m^3 of storage—and by providing approximately *49* m^3 of storage within the storm pipes.

The allowable flow has been determined by using a pre-development run-off coefficient of 0.6 and the drainage areas shown on Figure 1. The plan can be found in Appendix 'F' of this report. Based on the above, the calculated 5-yr pre-development flow (allowable flow) is 165 L/s.

An orifice tube on the downstream side of STM MH-3 will be used to control the site storm drainage to the municipal system. Orifice calculations indicate that a short segment of 200mm diameter pipe is adequate to control the flow to the allowable release rate, at a maximum water level of 93.*88*m—the lowest catch basin elevation—which is located at the driveway entrance to the site. There is sufficient storage such that no surface storage is utilized up to and including the 100-year storm; local ponding at catch basin inlets in the order of 0.05–0.10m may occur due to inlet capacity during higher intensity events.

We have determined the re-development of the site results in a composite runoff coefficient of *C=0.72 as calculated in Figure 2 of Appendix 'F'*. Given the total internal and external areas of 1.12 ha, the 100-year peak inflow is calculated to be *0.319* m/s. The required storage to attenuate the 100-year storm event is calculated to be *127* m^3. The storage volume provided is calculated to be *127* m^3. Supporting stormwater management calculations are provided in Appendix 'F'.

3.3.2 Quality Control

Runoff from the roofs, yards, roadways, and parking areas will be collected and conveyed to oversized storm sewers before discharging into the municipal storm sewer on Prospect Street. Catch basins immediately upstream of the sewers will provide primary treatment to separate and remove grit. A 0.60m deep sump on all catch basins in paved areas will be provided to collect grit.

Water quality control to the MOECC Enhanced level of protection is required, providing an overall long term removal of 80% of total suspended solids. A Stormceptor STC-2000 or approved equivalent is proposed as a means of satisfying the water quality criteria. Stormceptor sizing is provided in Appendix 'F' for reference.

3.3.3 Sustainable Stormwater Management Measures

The above sections, namely 3.3.1 and 3.3.2, describe the sustainable measures being proposed for stormwater quantity and quality control. By implementing these measures, the existing downstream infrastructure will benefit as a result of a reduction of peak flows, reduced run-off volumes and overall stormwater quality improvement. *The introduction of an open-bottomed underground stormwater detention facility (Cultec system) provides infiltration and groundwater recharge from storm drainage that would have otherwise become runoff. Due to the nature and configuration of the development proposal, there is minimal opportunity for the introduction of bio-swales or other similar LID's. Rainwater leaders shall discharge to pervious surfaces (where possible) to promote infiltration; rainwater leaders that cannot discharge to pervious surfaces shall be connected to the storm sewer system.*

3.3.4 Sediment and Erosion Control (Construction Stage)

Prior to any construction activity, all sediment and erosion control measures shall be implemented. These measures include a perimeter sediment control fence, mud mat and catch basin sediment control.

All controls shall be inspected on a regular basis and after rainfall events that generate runoff. Of particular importance are the controls placed at catch basins. If not maintained, the tendency is for these to become obstructed is high and hence there is a potential for significant pooling and/or drainage issues.

4.0 SITE GRADING

The proposed site grading for the re-development of the site has been designed to account for the existing boundary conditions, proposed building type and existing site elevations. Given the inherent shallow storm sewer system, it is necessary to elevate the rear half of the site. This will necessitate a perimeter retaining wall along the north, west and east boundary of the site in order to match the existing elevations on the abutting properties. The proposed elevation at the top and base of the wall are shown on the Grading Plan.

The Grading Plan is included in Appendix 'C'.

5.0 CONCLUSION

Our review of the background information as provided in this report confirms that there are adequate municipal services to support the proposed planning amendments and re-development of the property. This report and the drawings included in the report have evolved throughout the course of the planning approval process. We have consulted with other team consultants and our client to ensure that the designs outlined in this report can be implemented accordingly.

PREPARED BY TRAFALGAR ENGINEERING LTD.

LICENSED PROFESSIONAL ENGINEER
P. CIFONI
PROVINCE OF ONTARIO

Paul Cifoni, P.Eng.
Principal

PC:ht

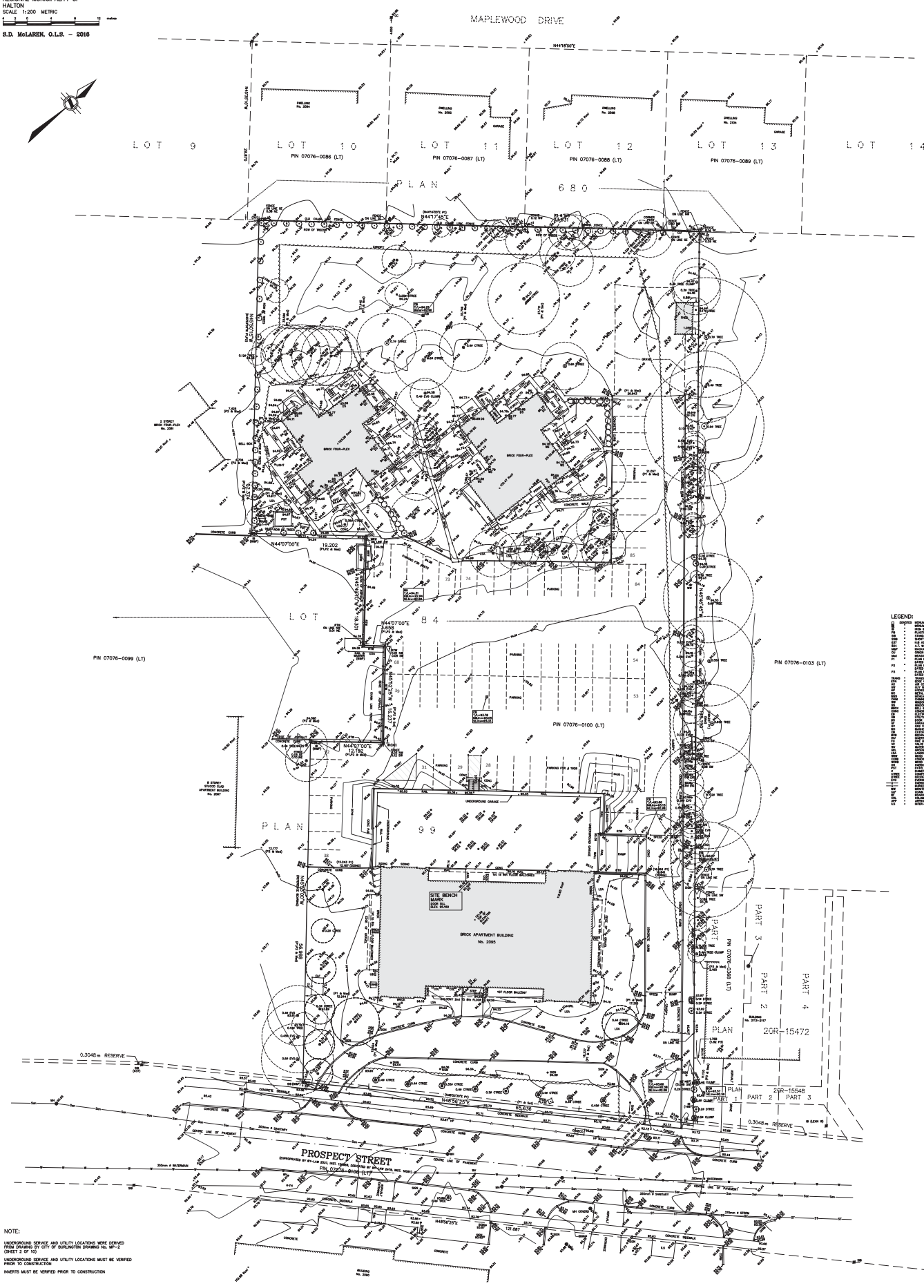
APPENDIX 'A'

Topographic Survey

Site Plan

TOPOGRAPHIC SURVEY
OF PART OF
LOT 84
REGISTERED PLAN 99
IN THE
CITY OF BURLINGTON
REGIONAL MUNICIPALITY OF
HALTON
SCALE 1:200 METRIC

S.D. McLAREN, O.L.S. – 2016



LEGEND:

SIB/STIB	MONUMENT SET
SIP	MONUMENT FOUND
PLP	PLAN OF SUB
SSIB	STANDARD IRON BAR
SSIP	SHORT STANDARD IRON BAR
SCM	S.E. McLAREN, O.L.S.
MMP	MACKAY MACKAY & PETERS
CM	CROSS MEASURED
CP	CROSS PLANTED
P1	PLAN 99 (S.E. McLAREN, O.L.S.
P2	PLAN 680 (S.E. McLAREN, O.L.S.
P3	CLOSE W/ MACKAY, MACKAY & PETERS
P4	CLOSE AUGUST 26, 1998 PLS 2004
P5	CLOSE W/ AGREEMENT & MEASURED
TRANS	TRANSFORMER
HH	HAND HOLE
SP	SIGN POST
HP	HYD. PEDESTAL
MH	MAN HOLE
UP	UTILITY POLE
MC	METAL COLUMN
MS	METAL SHED
WMS	WOODEN METAL SHED
WC	WOOD COLUMN
WB	WINDOW WELL
BW	BELL BOX
BOX	BELL BOX
CONC	CONCRETE
CB	CONCRETE BOX
UB	UTILITY BOX
LP	LIGHT & POLE
LSP	LIGHT STANDARD
GB	GAS VALVE
GM	GAS METER
CB	CATCH BASIN
RCB	REVERSE CATCH BASIN
HC	HEDGE
FH	FIRE HYDRANT
WV	WATER VALVE
WM	WATER METER
UG	UNDERGROUND GUARD
WW	WOOD RETAINING WALL
CRW	CONCRETE WALL
CW	CONCRETE WALL
OHW	OVERHEAD WIRES
DW	DRIVEWAY
CHIM	CHIMNEY
CAN	CANOPY
OH	OVERHANG
OHW	OVERHEAD UTILITIES
SW	SURVEY WIRE
SMH	SIGNAL MAN HOLE
SWB	SIGNAL WIRE BELL
SWC	SIGNAL WIRE CAN
SCAB	SIGNAL CABLE
CB	CABLE BOX
WCS	WATER COOLING STAND

NOTE:

UNDERGROUND SERVICE AND UTILITY LOCATIONS WERE DERIVED FROM DRAWING BY CITY OF BURLINGTON DRAWING No. MP-2 (SHEET 2 OF 10)

UNDERGROUND SERVICE AND UTILITY LOCATIONS MUST BE VERIFIED PRIOR TO CONSTRUCTION

INVERTS MUST BE VERIFIED PRIOR TO CONSTRUCTION

BENCHMARK:

No. 301

Benchmark set on City plate southwest corner, south side of Central Public School facing Baldwin Street. Elevation 90.583m.

ELEVATION: 90.583 metre

METRIC NOTE
DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

BEARING NOTE:
BEARINGS ARE ASTRONOMIC AND ARE REFERRED TO THE SOUTHWESTERLY LIMIT OF PIN 07076-0110 AS SHOWN ON PLAN BY MACKAY MACKAY & PETERS DATED AUGUST 26, 1998 AS BEING N48°57'00"W

SURVEYOR'S CERTIFICATE:
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 8TH DAY OF OCTOBER, 2016

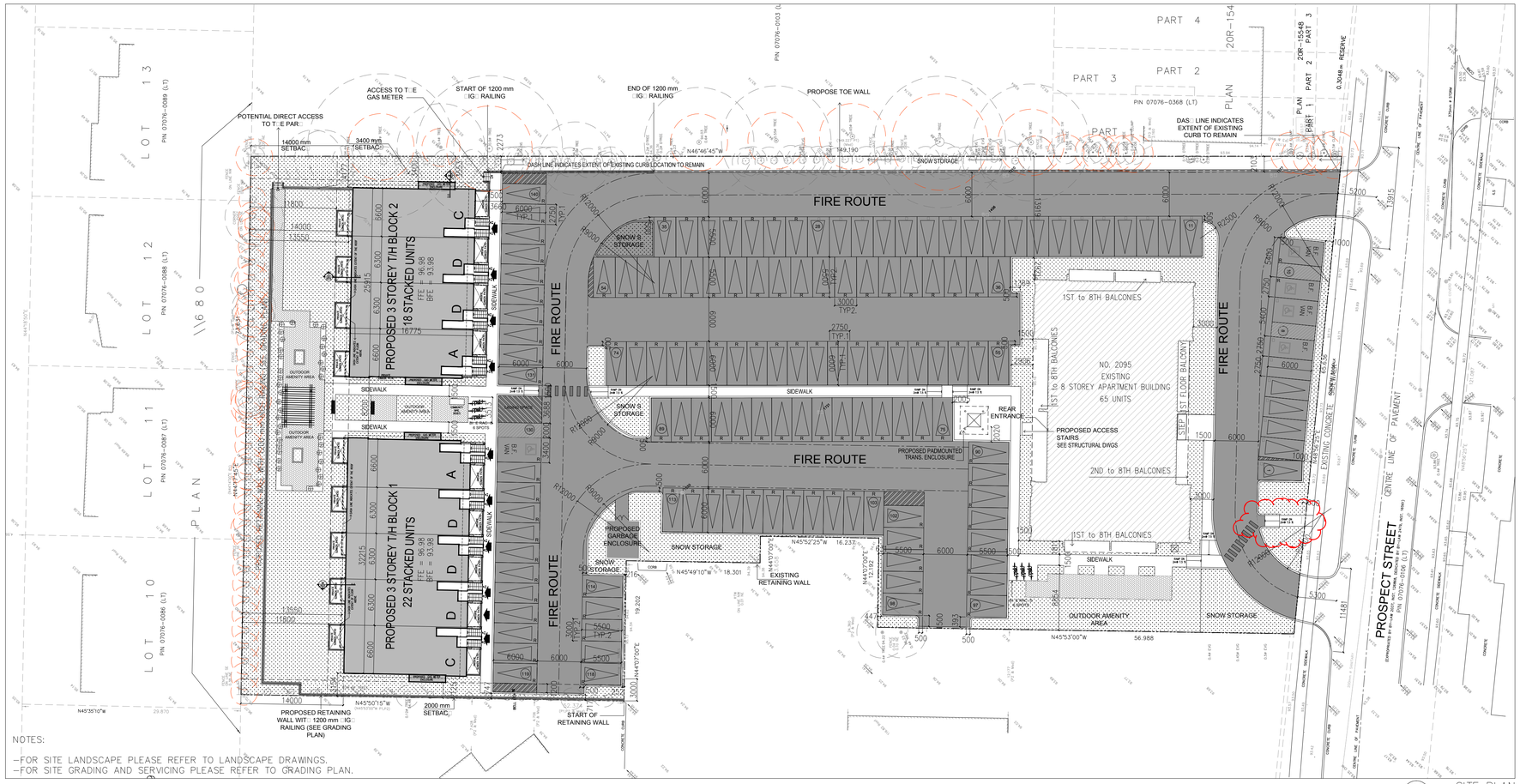
OCTOBER 26, 2016
DATE
S. DAN McLAREN, O.L.S.

No.	DESCRIPTION	DATE	BY
2	ADDITIONAL TOPO ON PROSPECT	SEPT 15, 2016	JB
1	UPDATING TREES ON PARCEL	APRIL 19, 2016	JB
	REVISIONS		

S.D. McLAREN, O.L.S. • P.E.N. JEFFERIES, B.E.S., O.L.S.
SURVEYING, ENGINEERING & PLANNING SERVICES
PART SURVEY FOR AUTHORIZATION OF S.D. McLAREN, O.L.S.

A.T. McLaren Limited
LAND SURVEYING SERVICES
49 JOHN STREET SOUTH, SUITE 103
HAMILTON, ONTARIO L8N 2B9
PHONE (905) 527-8559 FAX (905) 527-1572

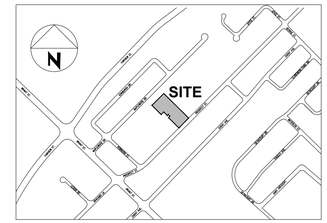
Surveyed	Drawn	Checked	Date	Scale	Dwg.No.
JB	RBS	SDM	10/26	1:200	39143



01 A011 SITE PLAN 1:350

SURVEY INFORMATION TAKEN FROM:
S.D. McLAREN, O.L.S.
TOPOGRAPHIC SURVEY OF PART OF LOT 84
REGISTERED PLAN 99
IN THE
CITY OF BURLINGTON
REGIONAL MUNICIPALITY OF
HALTON

2016



02 A011 KEY PLAN N.T.S.

STATISTICS :

SITE GROSS AREA:	9607.6 m2
TOTAL GFA OF PROPOSED TOWNHOUSES:	3630.0 m2
FSI:	0.40
DENSITY:	109.2 UNITS/ HECTARE
LOT COVERAGE OF PROPOSED TOWNHOUSES:	11.0%
BUILDING HEIGHT:	14m
PROPOSED TOWNHOUSES BUILDING AREA:	1044.0 m2
ESTIMATED EXISTING BUILDING BUILDING AREA:	810.0 m2
TOTAL LANDSCAPED OPEN SPACE AREA:	2893.0 m2
ASPHALT AREA:	4764.0 m2

GROSS FLOOR AREA :

PROPOSED STACKED TOWN HOUSES BLOCKS

BLOCK	NUMBER OF UNITS	AREAS m2 BASEMENT	GROUND	2ND	3RD	TOTAL AREA m2	ft2
1	24	521.0	490.0	514.0	488.0	2013.0	21667.9
2	20	419.0	392.0	413.0	392.0	1616.0	17394.6
TOTAL	44					3629.0	39062.6

RESIDENTIAL UNIT BREAKDOWN :

EXISTING BUILDING

UNIT	NUMBER
BACHELOR UNITS	1
1 BEDROOM UNITS	30
2 BEDROOM UNITS	34
TOTAL	65

PROPOSED STACKED TOWNHOUSES

UNIT	NUMBER
BACHELOR UNITS	4
1 BEDROOM UNITS	4
2 BEDROOM UNITS	32
TOTAL	40

TOTAL NUMBER OF UNITS : 105

AMENITY AREA :

OUTDOR /INDOOR AMENITY AREA :

PROPOSE OUTDOOR AMENITY :	1112.0 m2
PROPSED INDOOR AMENITY AREA IN EXISTING BUILDING :	160.0 m2

PRIVACY AREA :

BALCONIES/ TERRACES (EXISTING BUILDING-ESTIMATED):	852.0 m2
BALCONIES/ TERRACES (PROPOSED TOWN HOUSES):	182.0 m2
PRIVATE SUNKEN PATIOS (PROPOSED TOWN HOUSES):	109.0 m2
PRIVATE FRONT YARDS (PROPOSED TOWN HOUSES):	17.5 m2
TOTAL AMENITY AREA :	**2432.5 m2**

TOTAL PRIVACY AREA PER UNIT (105 UNIT) : 11.05 m2
TOTAL AMENITY AREA PER BEDROOM (171 BEDROOMS) : 14.20 m2

VEHICLE PARKING REQUIRED :

EXISTING APARTMENT BUILDING

PARKING REQUIRED	AREA	UNITS	RATIO	REQ
BACHELOR	N/A	1	1.0	1.0
1BD	N/A	30	1.0	30.0
2BD		34	1.25	42.5
TOTAL		65		73.5

PROPOSED TOWNHOSES

PARKING REQUIRED	AREA	UNITS	PROPOSED RATIO	REQ
BACHELOR	N/A	4	1.0	4
1BD	N/A	4	1.0	4
2BD/2BD+D	N/A	32	1.0	32
TOTAL		40		40

VISITORS

PARKING REQUIRED	UNITS	PROPOSED RATIO	REQ
EXISTING APPARTEMENT	65	0.25	16.25
PROPOSED T/H	40	0.25	10.0
TOTAL	105		26.25

VE□ICLE PAR□ING RE□UIRED :

APARTMENT BUILDING	73.5
STACKED TOWNHOUSE	40
VISITORS	26.25
TOTAL	140

VEHICLE PARKING PROVIDED :

EXISTING APARTMENT BUILDING

PARKING REQUIRED	AREA	UNITS	PROPOSED RATIO	REQ
BACHELOR	N/A	1	1.0	1.0
1BD	N/A	30	1.0	30
2BD		34	1.25	42.5
TOTAL		65		73.5

PROPOSED TOWNHOUSES

PARKING REQUIRED	AREA	UNITS	PROPOSED RATIO	REQ
BACHELOR	N/A	4	1.0	4
1BD	N/A	4	1.0	4
2BD	N/A	32	1.0	32
TOTAL		40		40

VISITORS

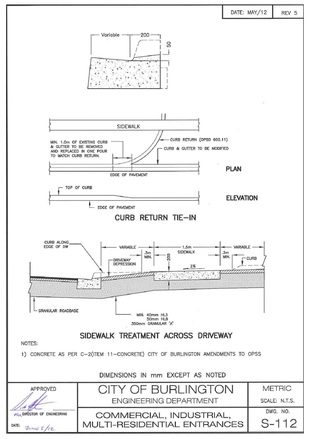
PARKING REQUIRED	UNITS	PROPOSED RATIO	REQ
EXISTING APPARTEMENT	65	0.25	16.25
PROPOSED T/H	40	0.25	10.0
TOTAL	105		26.25

VEHICLE PARKING PROVIDED :

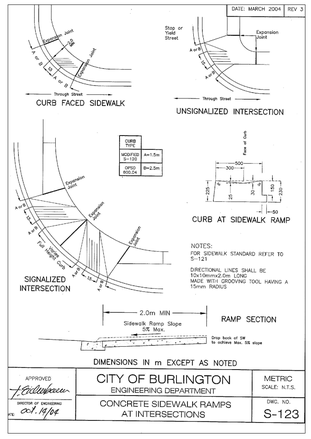
APARTMENT BUILDING	74
STACKED TOWNHOUSE	40
VISITORS	26.0
TOTAL	140

BARRIER FREE PARKING REQUIRED 3% 5 SPOTS

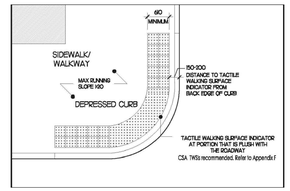
BICYCLE PAR□ING PROPOSED : 6 BICYCLE RACKS 12 SPOTS



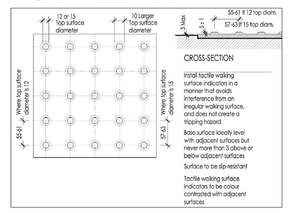
03 A011 MULTI–RESIDENTIAL ENTRANCES N.T.S



04 A011 CONCRETE SIDEWALK RAMPS S–123 N.T.S.



05 A011 ACCESSIBILITY STANDARD (DOPS) DEPRESSED CURB N.T.S.



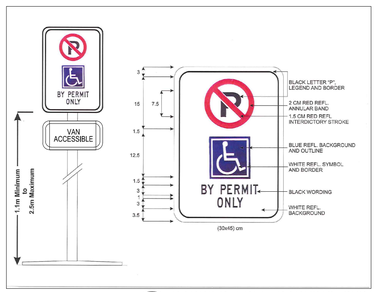
06 A011 CSA STANDARD FOR TWSIs N.T.S.

NOTES:

WASTE MANAGEMENT
1. ALL STACKED TOWNHOUSE UNITS AND APARTMENT UNITS WILL HAVE COMMUNAL WASTE STORAGE OF THEIR OWN. GARBAGE STORAGE AREA, PLEASE REFER TO WASTE MANAGEMENT LETTER FOR MORE INFORMATION.

LOADING SPACES
1. STRUCTURE WILL BE DESIGNED TO SAFELY SUPPORT GARBAGE AND FIRE TRUCK.

FIREFIGHTING
1. ALL INTERNAL ROADWAYS DESIGNED AS A FIRE ACCESS ROUTE IN ACCORDANCE WITH ARTICLES 3.2.5.4, 3.2.5.5. AND 3.2.5.6. OF THE 2006 ONTARIO BUILDING CODE.
2. STRUCTURE WILL BE DESIGNED TO SAFELY SUPPORT A FIRE TRUCK.
3. ON–SITE PRIVATE FIRE HYDRANTS:
(a) THE INSTALLATION OF THE FIRE MAIN AND HYDRANT ARE TO BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE REGION OF HALTON AND THE CITY OF BURLINGTON BUILDING DEPARTMENT
(b) THE HYDRANT IS TO BE POSITIONED WITH 4" STEAMER PORT FACING THE FIRE ACCESS ROUTE AND IS TO BE UNOBSTRUCTED BY ANY PROPOSED LANDSCAPING
(c) SITE SERVICE CONTRACTOR RESPONSIBLE FOR HYDRANT INSTALLATION IS TO PROVIDE A LETTER CERTIFYING THAT THE HYDRANT HAS BEEN TESTED AND IS OPERATIONAL PRIOR TO OCCUPANCY OF BUILDING



07 A011 BARRIER FREE PARKING SIGN N.T.S.

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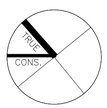
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PROJECT TITLE

PROPOSED 3 STOREY STACKED TOWNHOUSES
2095 PROSPECT STREET- BURLINGTON - ONTARIO

CLIENT NAME AND LOGO

DRAWING TITLE
SITE PLAN, DETAILS, STATISTICS AND ZONING CHART

SCALE
AS NOTED

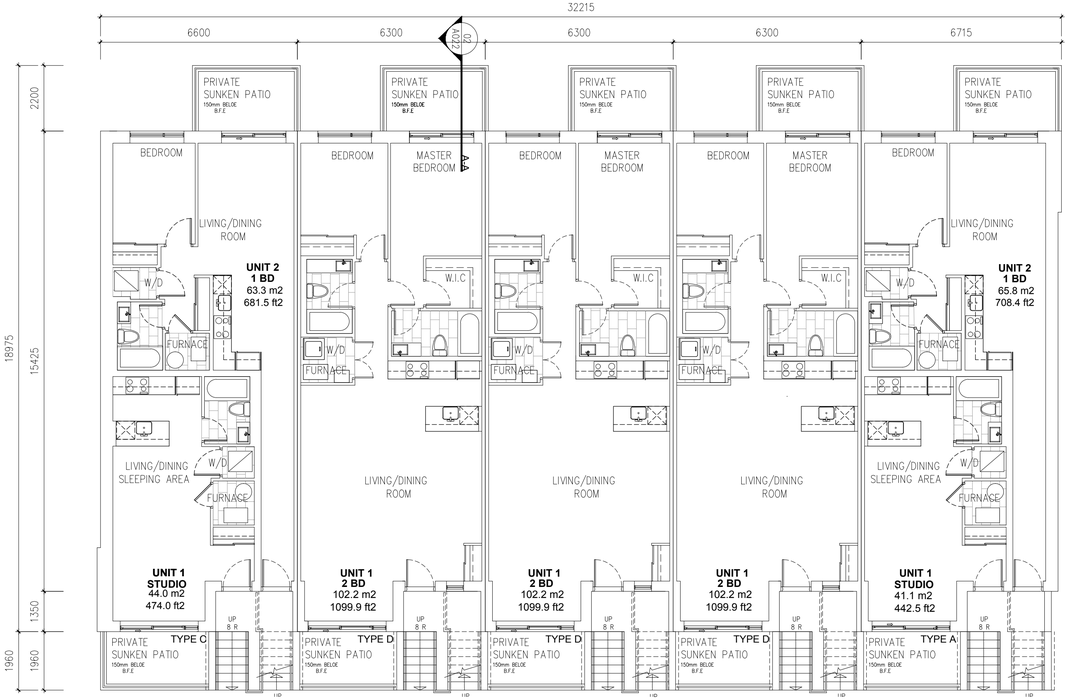
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MAR. 03, 2019

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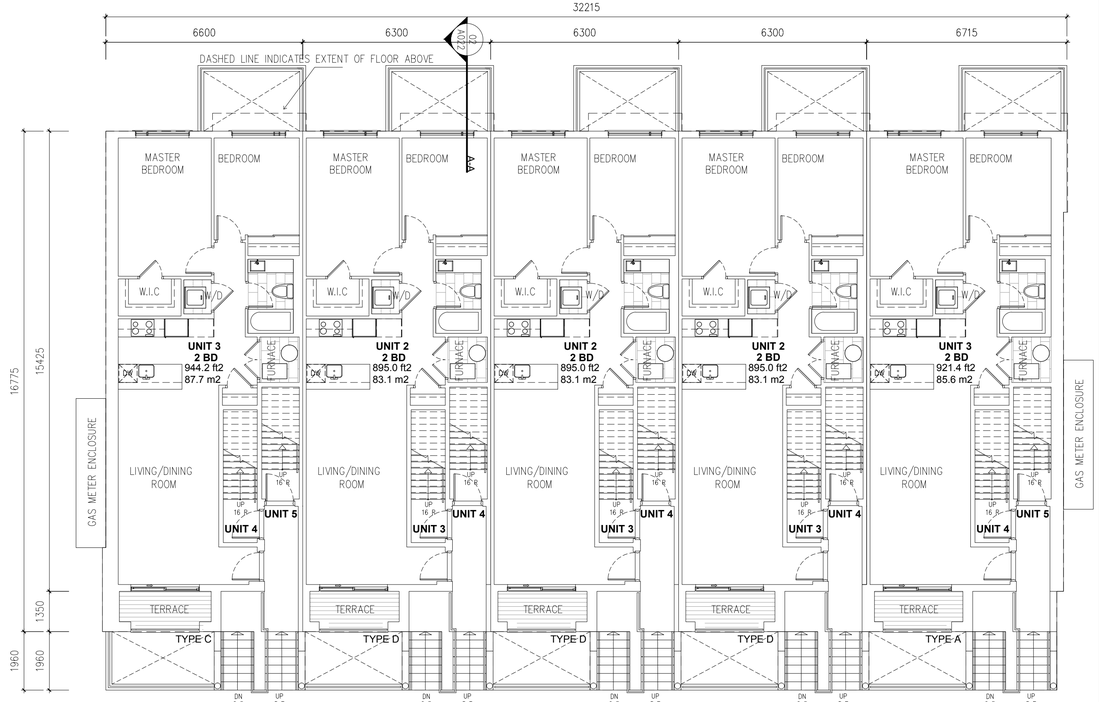
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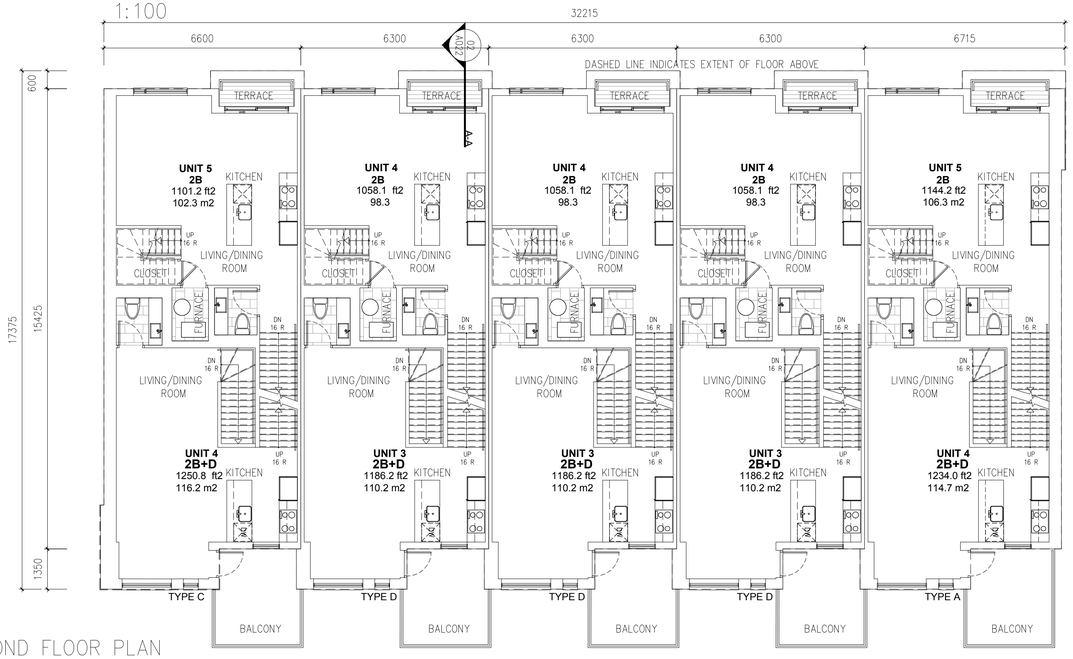
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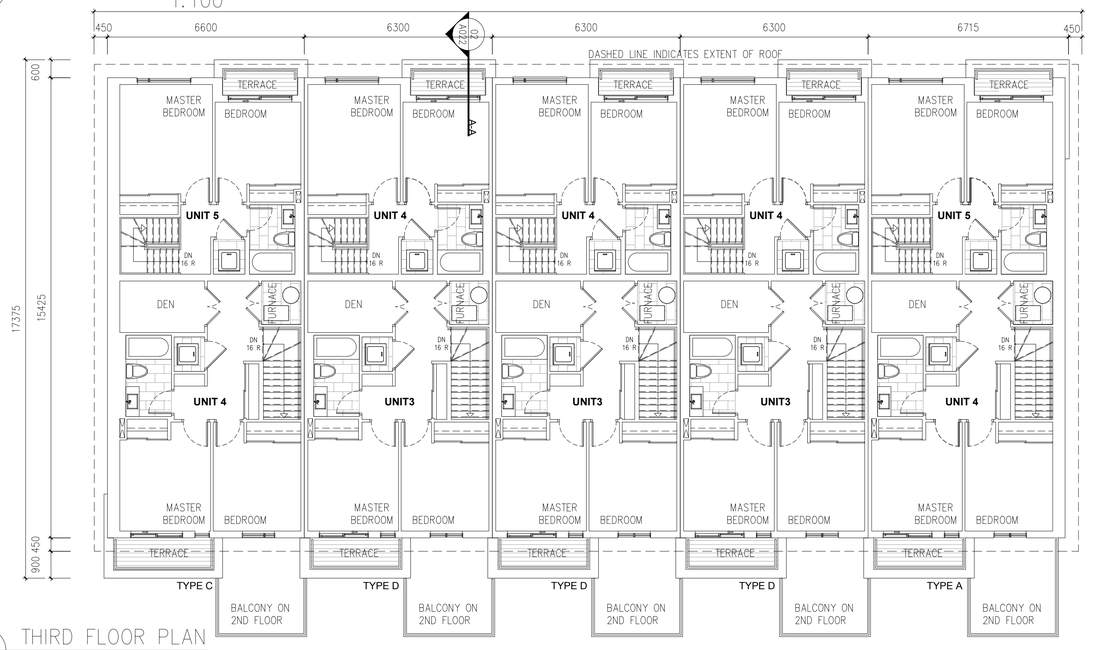
01 A021 BASEMENT FLOOR PLAN
1:100



02 A021 GROUND FLOOR PLAN
1:100



03 A021 SECOND FLOOR PLAN
1:100



04 A021 THIRD FLOOR PLAN
1:100

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PROJECT TITLE

PROPOSED 3 STOREY STACKED TOWNHOUSES
2095 PROSPECT STREET- BURLINGTON - ONTARIO

CLIENT NAME AND LOGO

DRAWING TITLE
FLOOR PLANS – BLOCK 1

SCALE
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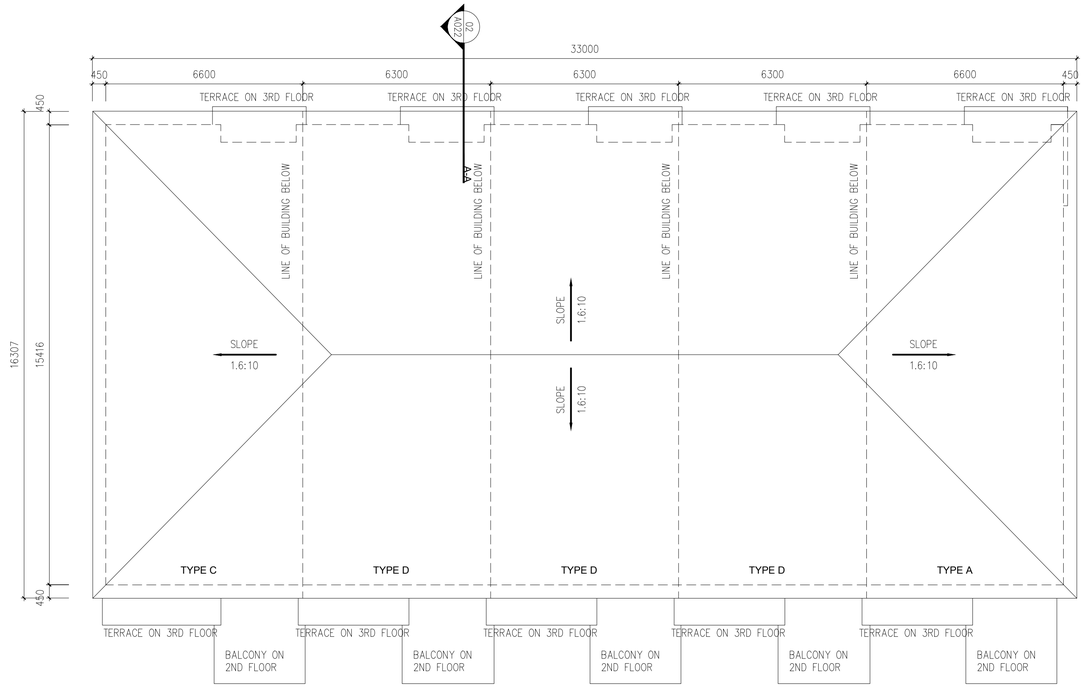
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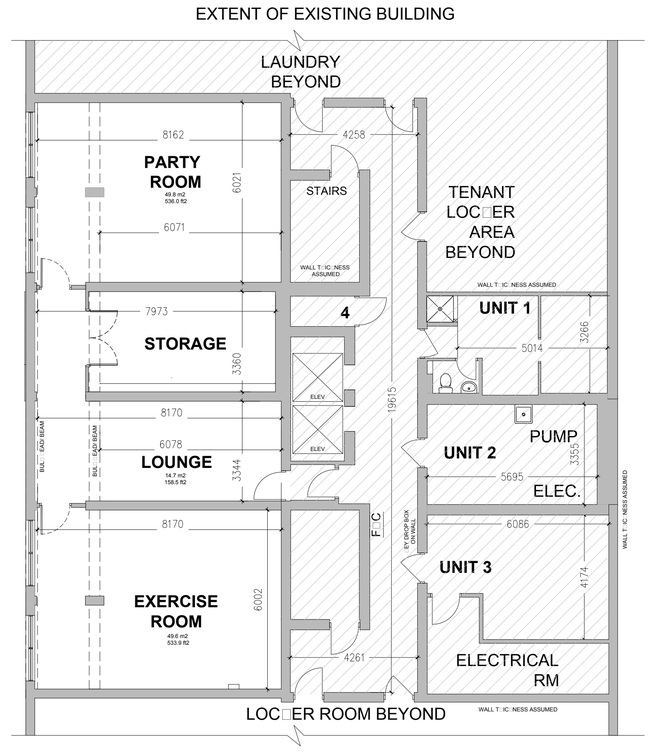
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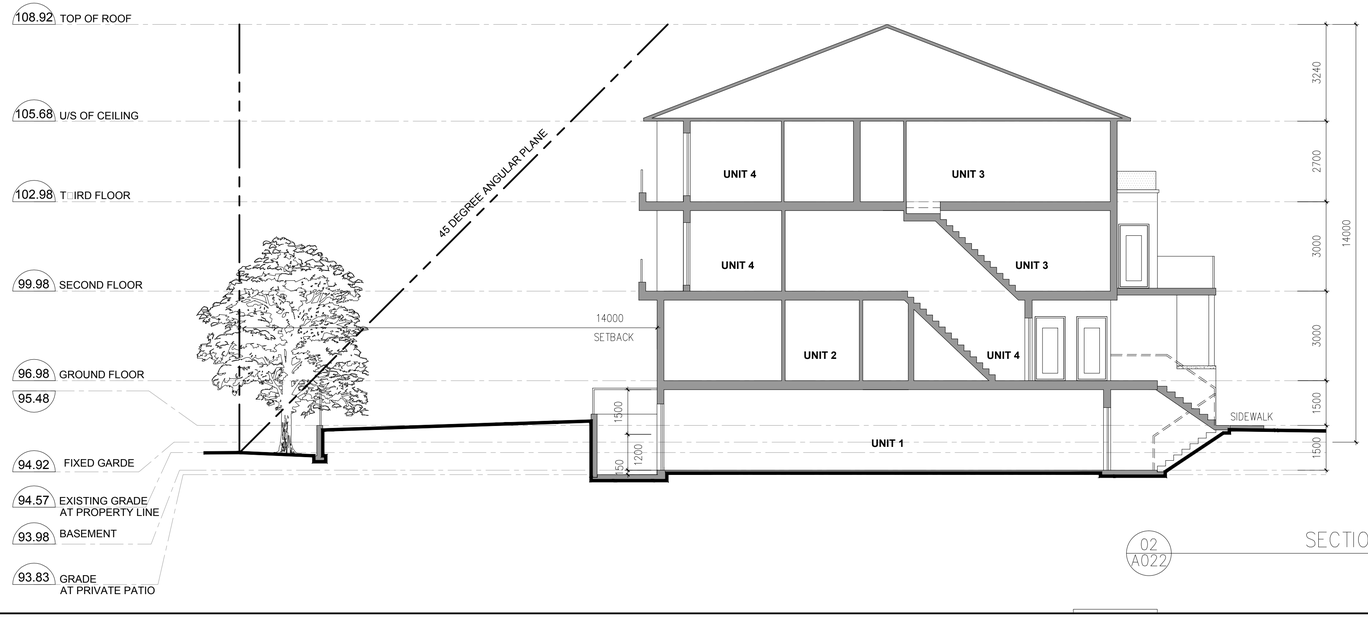
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01 A022 ROOF PLAN
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03 A022 PROPOSED INDOOR AMENITY AREA IN EXISTING BUILDING
1:100



02 A022 SECTION A–A
1:100

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2095 PROSPECT STREET- BURLINGTON - ONTARIO

CLIENT NAME AND LOGO

DRAWING TITLE
ROOF PLAN AND SECTION – BLOCK 1
PROPOSED AMENITY AREA IN EXISTING BUILDING

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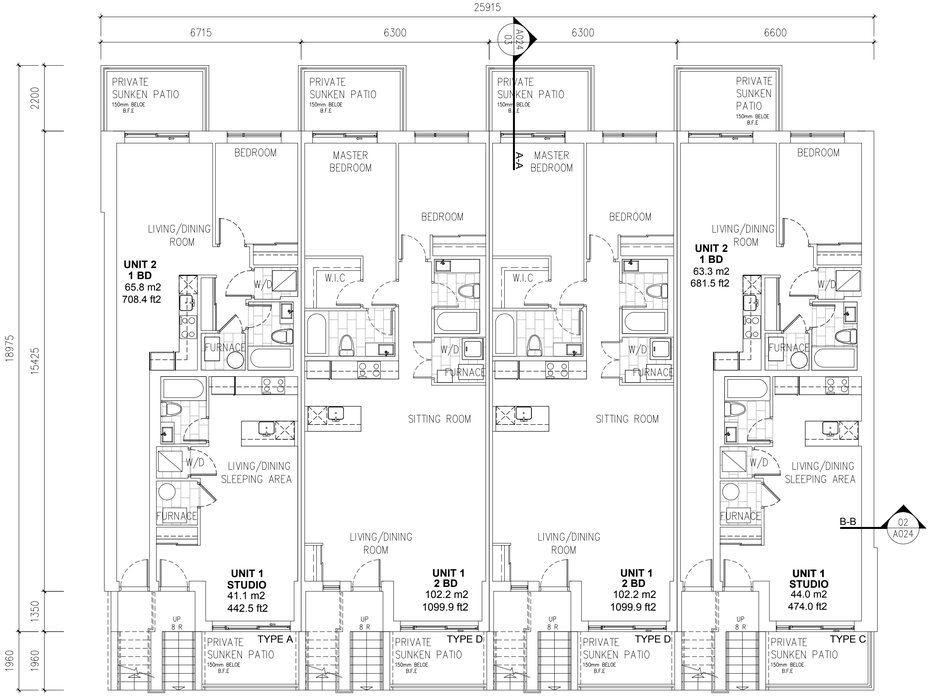
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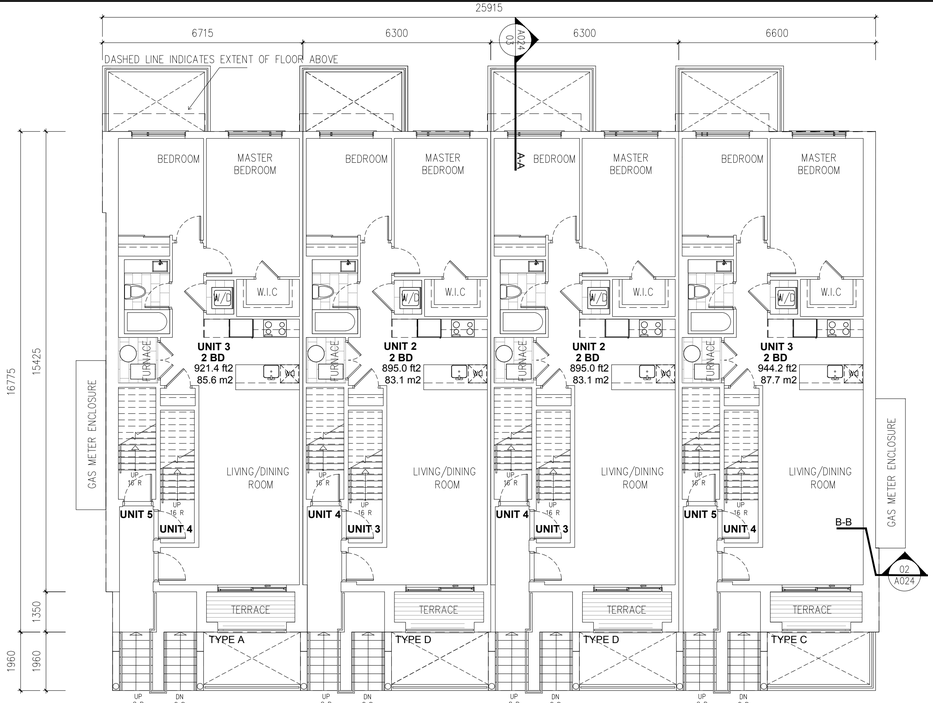
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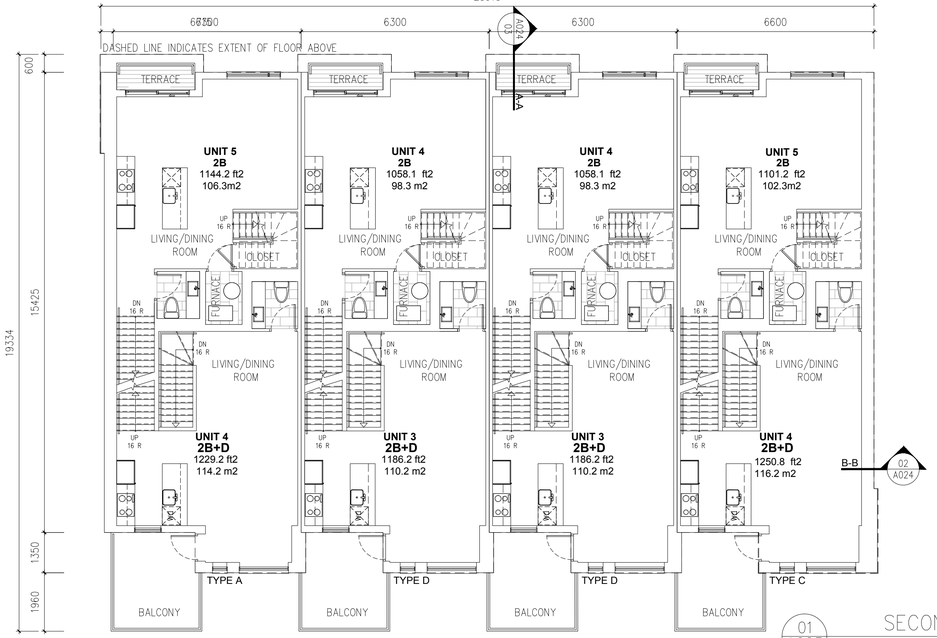
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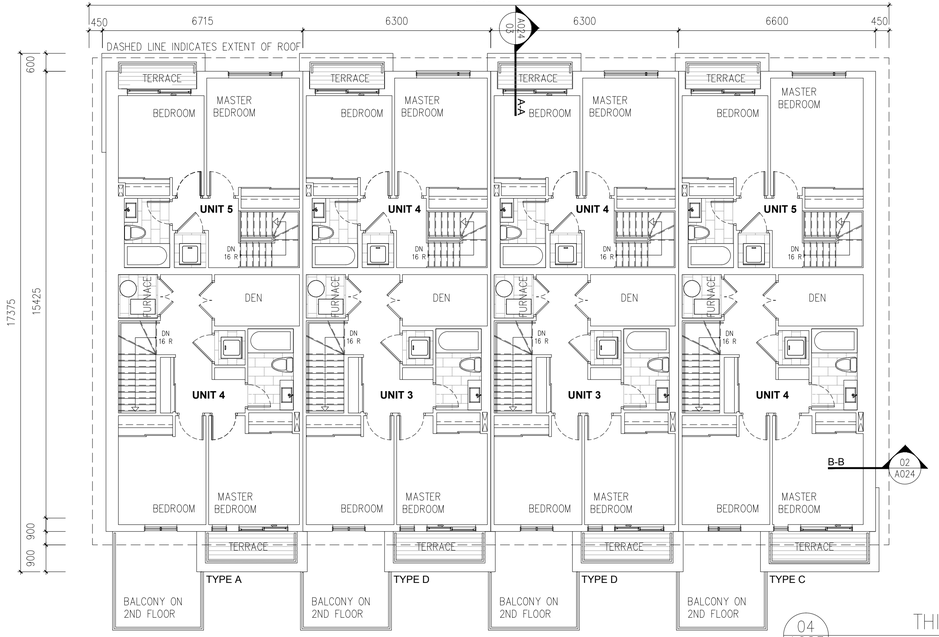
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02 A023 GROUND FLOOR PLAN
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01 A023 SECOND FLOOR PLAN
1:100



04 A023 THIRD FLOOR PLAN
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PROJECT TITLE

PROPOSED 3 STOREY STACKED TOWNHOUSES
2095 PROSPECT STREET- BURLINGTON - ONTARIO

CLIENT NAME AND LOGO

DRAWING TITLE
FLOOR PLANS – BLOCK 2

SCALE
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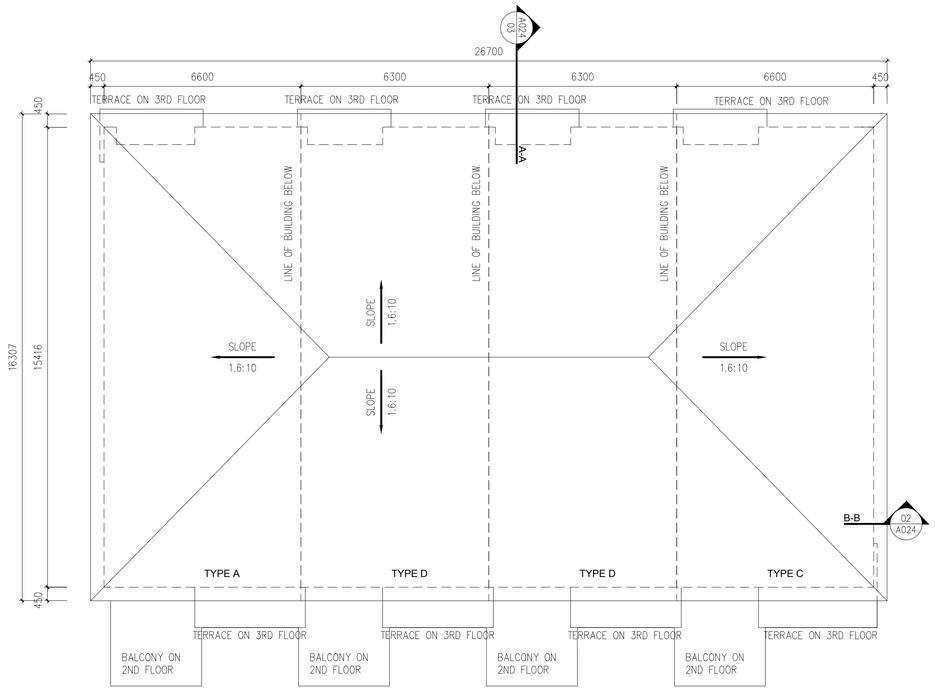
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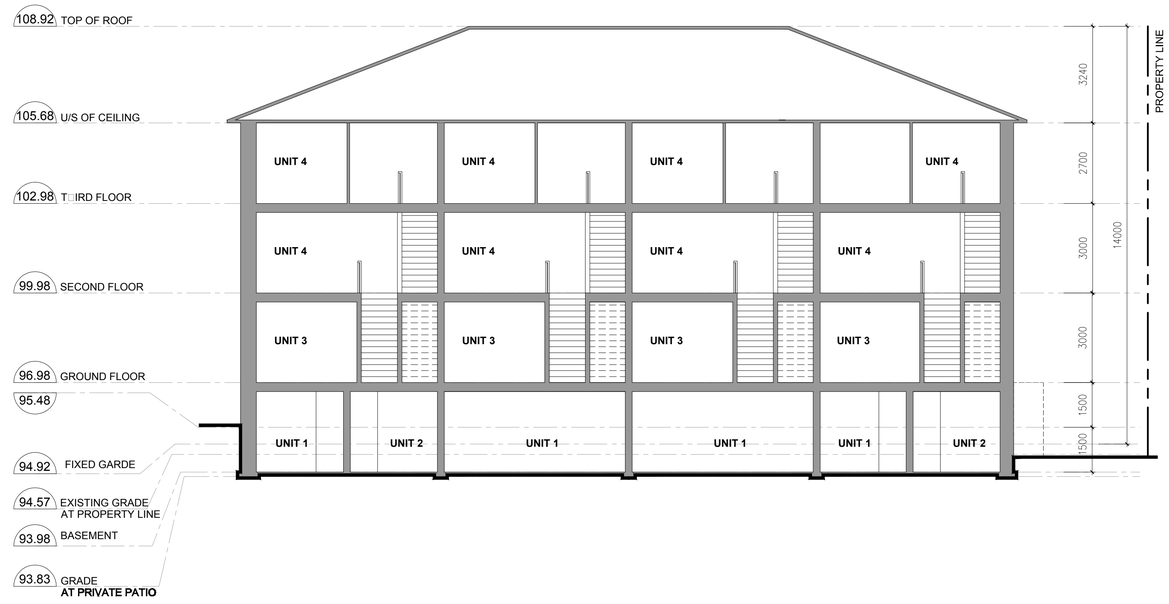
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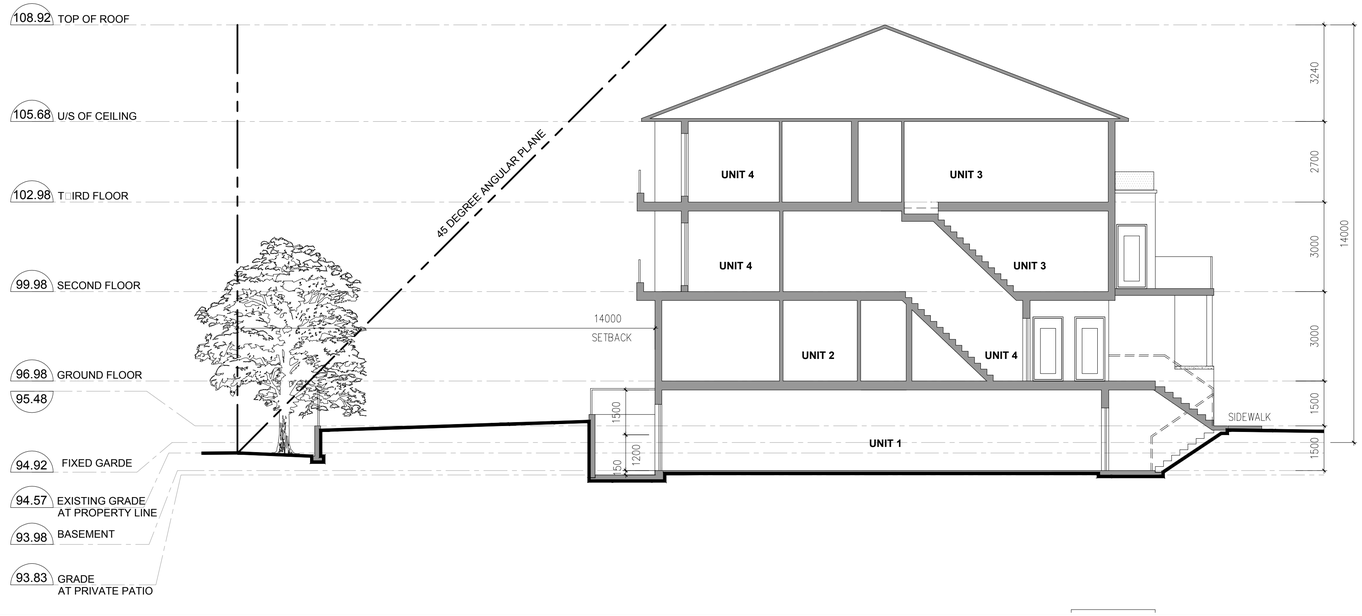
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01 A024 — ROOF PLAN — 1:100



02 A024 — SECTION B-B — 1:100



03 A024 — SECTION A-A — 1:100

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PROJECT TITLE

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2095 PROSPECT STREET- BURLINGTON - ONTARIO

CLIENT NAME AND LOGO

DRAWING TITLE
ROOF PLAN AND SECTONS – BLOCK 2

SCALE
1:100

Date:
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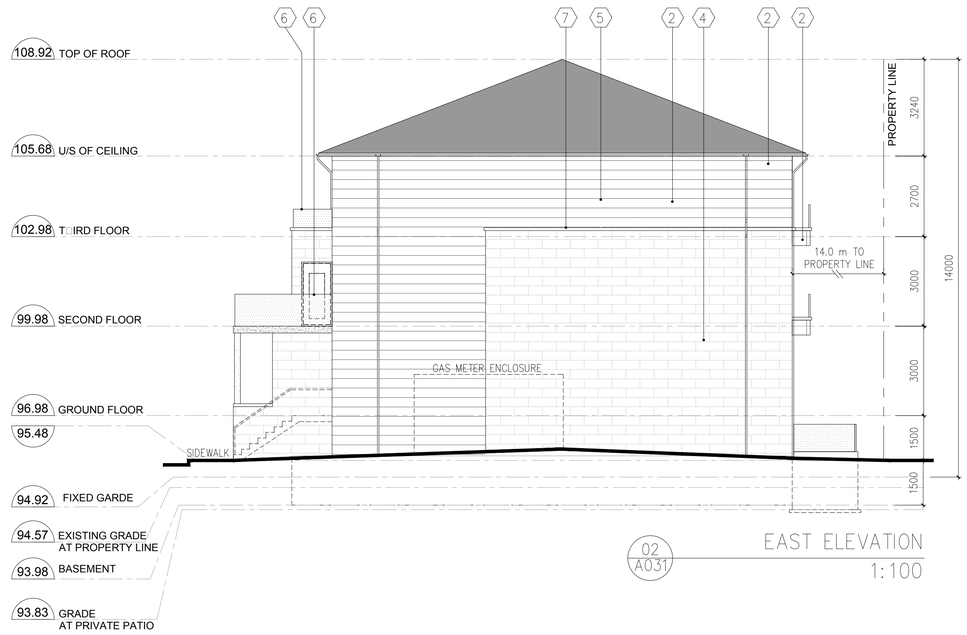
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01 A031 SOUTH ELEVATION
1:100



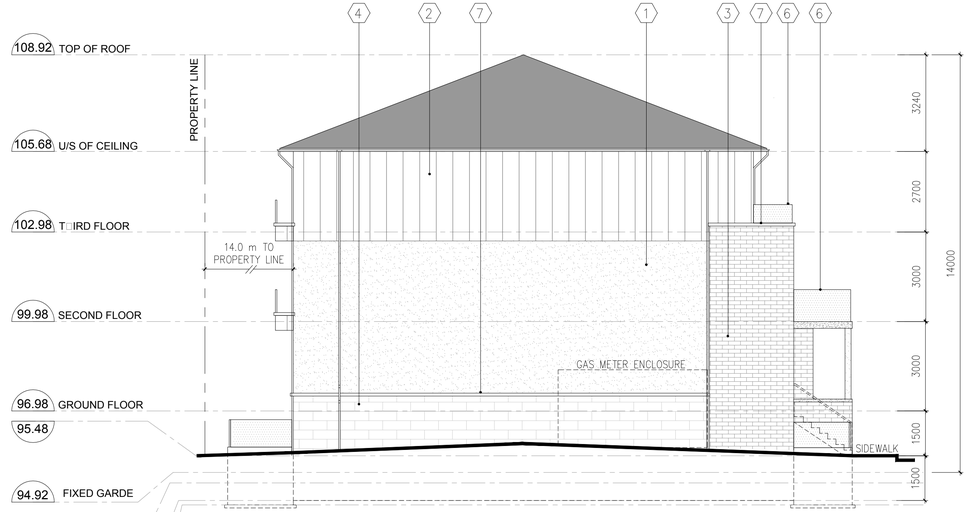
02 A031 EAST ELEVATION
1:100



EXTERIOR MATERIAL LEGEND

1. STUCCO – LIGHT COLOR
2. METAL SIDING (VICWEST) COLOUR RANGE RIVER ROCK GARY 18–2770
3. MELVILLE SILK BRICK – (PERMACON) – COLOUR RANGE BERKELY BROWN
4. LEXA STONE (PERMACON) – COLOUR RANGE CAMEO BEIGE
5. ALUMINUM SIDING (LONG BOARD) COLOUR RANGE WESTERN CEDAR
6. GLASS RAILING
7. PRECAST CONCRETE SILL/CAP
8. DOUBLE GLAZED WINDOW – CLEAR GLASS

03 A031 NORTH ELEVATION
1:100



LEXA STONE (PERMACON) - COLOUR RANGE CAMEO BEIGE

STUCCO - LIGHT

METAL SIDING (VICWEST) COLOUR RANGE RIVER ROCK GARY 18-2770

MELVILLE SILK BRICK - (PERMACON) - COLOUR RANGE BERKELY BROWN

ALUMINUM SIDING (LONGBOARD)

04 A031 WEST ELEVATION
1:100

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PROJECT TITLE

PROPOSED 3 STOREY STACKED TOWNHOUSES
2095 PROSPECT STREET- BURLINGTON - ONTARIO

CLIENT NAME AND LOGO

DRAWING TITLE
ELEVATIONS – BLOCK 1

SCALE
1:100

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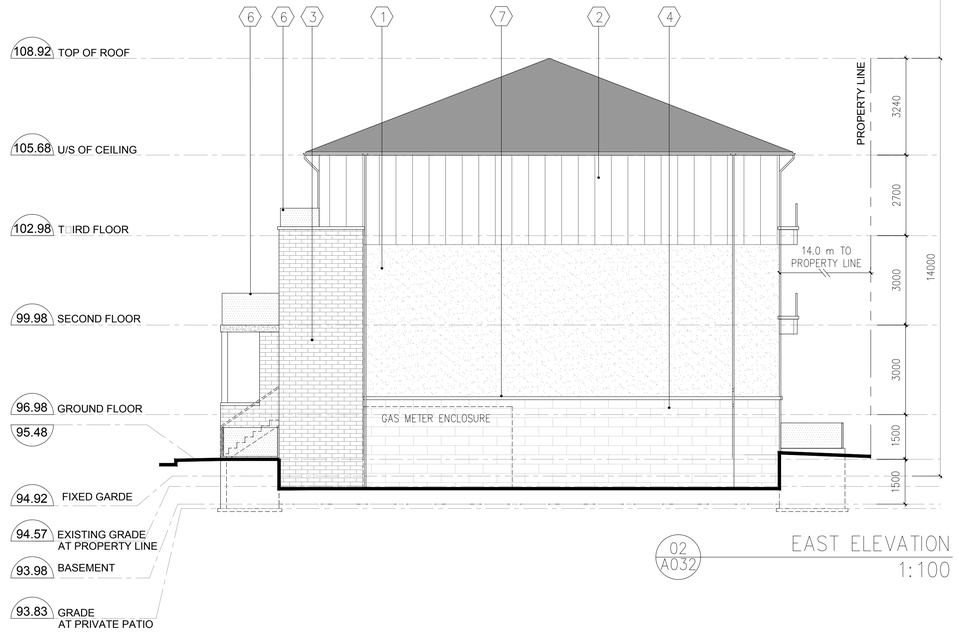
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01 A032 SOUTH ELEVATION 1:100



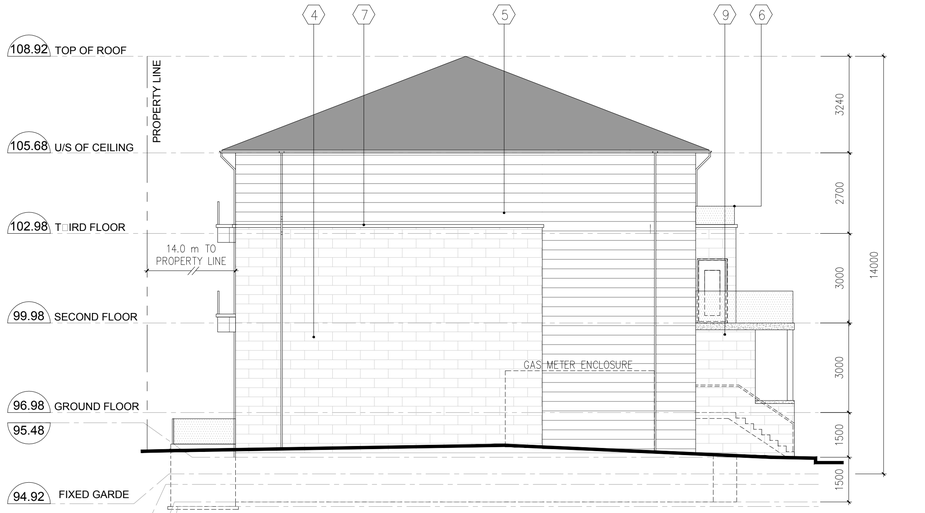
02 A032 EAST ELEVATION 1:100



03 A032 NORTH ELEVATION 1:100

EXTERIOR MATERIAL LEGEND

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6. GLASS RAILING
7. PRECAST CONCRETE SILL/CAP
8. DOUBLE GLAZED WINDOW – CLEAR GLASS



04 A032 WEST ELEVATION 1:100

LEXA STONE (PERMACON) - COLOUR RANGE CAMEO BEIGE

STUCCO - LIGHT

METAL SIDING (VICWEST) COLOUR RANGE RIVER ROCK GARY 18-2770

MELVILLE SILK BRICK - (PERMACON) - COLOUR RANGE BERKELY BROWN

ALUMINUM SIDING (LONGBOARD)

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NOT FOR CONSTRUCTION

NO.	REVISION/ISSUE	DATE
11	ISSUED FOR CLIENT REVIEW	FEB. 21, 2019
10	ISSUED FOR CLIENT REVIEW	JAN. 15, 2019
09	ISSUED FOR ZBA RESUBMISSION	DEC. 17, 2018
08	ISSUED FOR ZBA	DEC 08, 2017

NO.	REVISION/ISSUE	DATE
07	ISSUED FOR COORDINATION	NOV 24, 2017
06	ISSUED FOR COORDINATION	NOV 21, 2017
05	ISSUED FOR COORDINATION	SEP. 13, 2017
04	ISSUED FOR CLIENT REVIEW	JULY 04, 2017
03	ISSUED FOR CLIENT REVIEW	JUNE 30, 2017
02	ISSUED FOR CLIENT REVIEW	JUNE 08, 2017
01	ISSUED FOR CLIENT REVIEW	MAY 29, 2017

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NORTH

SEAL

PROJECT TITLE

PROPOSED 3 STOREY STACKED TOWNHOUSES
2095 PROSPECT STREET- BURLINGTON - ONTARIO

CLIENT NAME AND LOGO

DRAWING TITLE
ELEVATIONS – BLOCK 2

SCALE
1:100

Date:
MAY. 03, 2019

Project No.
17108

Drawn by:
MF

Checked by:
RE

Drawing No.
A032

813 - 4789 YONGE ST. TORONTO
M2N 0G3 ICONARCHITECTS.CA
T:416-224-0555 F:416-224-0554

ICON ARCHITECTS

APPENDIX 'B'

Utility Locates (Terra Discovery)

Sewer Video Report (Aquaflow)

TOPOGRAPHIC SURVEY
OF PART OF
LOT 84
REGISTERED PLAN 99
IN THE
CITY OF BURLINGTON
REGIONAL MUNICIPALITY OF
HALTON
SCALE 1:200 METRIC

S.D. McLAREN, O.L.S. - 2016



LEGEND:

NOTE:

UNDERGROUND SERVICE AND UTILITY LOCATIONS WERE DERIVED FROM DRAWING BY CITY OF BURLINGTON DRAWING No. SP-2 (SHEET 2 OF 10)

UNDERGROUND SERVICE AND UTILITY LOCATIONS MUST BE VERIFIED PRIOR TO CONSTRUCTION

INVERTS MUST BE VERIFIED PRIOR TO CONSTRUCTION

BENCHMARK:

No. 301

Benchmark set on City plate southwest corner, south side of Central Public School facing Baldwin Street. Elevation 90.583m.

ELEVATION: 90.583m metre

METRIC NOTE
DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

BEARING NOTE:
BEARINGS ARE ASTRONOMIC AND ARE REFERRED TO THE SOUTHWESTERLY LIMIT OF PIN 07076-0110 AS SHOWN ON PLAN BY MACKAY MACKAY & PETERS DATED AUGUST 20, 1998 AS BEING N44°57'50"W

SURVEYOR'S CERTIFICATE:
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 12th DAY OF OCTOBER, 2016

OCTOBER 28, 2016
DATE
S. DAN McLAREN, O.L.S.

O.L.S. DAN McLAREN, O.L.S., HAS NO KNOWN WAY LIGHT, SURVEYOR'S EASEMENT OR RIGHT OF WAY OR ANY PART WITHIN THE LIMITS OF THE PLAN EXCEPT AS SHOWN ON PLAN

A.T. McLaren Limited
LAND SURVEYING SERVICES
40 JOHN STREET SOUTH, SUITE 103
HAMILTON, ONTARIO L8N 2B7
PHONE (905) 523-8900 FAX (905) 521-0292

Surveyed	Drawn	Checked	Approved	Scale	Dwg.No. 39143
JB	RSS	DMM	SDM	1:200	

AQUAFLOW TECHNOLOGY INC

36 PEPPERWOOD PLACE, BRAMPTON, ONTARIO L6S 3R9
(905) 792-8169

EXISTING SANITARY AND STORM SEWER VIDEO INSPECTION REPORT

100 MM – 250 MM DIAMETER SANITARY SEWERS
&
150 MM – 375 MM DIAMETER STORM SEWERS

FOR

2095 PROSPECT STREET

CITY OF BURLINGTON
REGION OF HALTON

DVD # 19075

CONSULTING ENGINEER: TRAFALGAR ENGINEERING LTD.
CONSULTANT'S SITE REPRESENTATIVE: LORNE WILSON
CONSULTANT'S OFFICE REPRESENTATIVE: ASIF PATEL

WEDNESDAY, MARCH 27TH, 2019

INDEX:

1. TITLE PAGE AND INDEX

2. SUMMARY REPORT AND CONCLUSIONS

3. SKETCH OF SEWERS INSPECTED

4. SEWER INSPECTION REPORTS

SEWER CLEANING AND VIDEO INSPECTION SERVICES
MUNICIPAL ENGINEERING SERVICES

2. SUMMARY REPORT AND CONCLUSIONS:

The video inspection of the existing sanitary and storm sewers for 2095 Prospect Street were carried out by Steven Lostracco, P. Eng. of Aquaflow Technology, and was authorized by Lorne Wilson of Trafalgar Engineering. All sanitary & storm sewers were power flushed immediately prior to the video inspection. The video inspections were carried out on Wednesday, March 27th, 2019.

SANITARY & STORM SEWERS INSPECTED:

DVD # 19075:	100 mm - 250 mm diameter sanitary sewers inspected	130.7 m
	150 mm - 375 mm diameter storm sewers inspected	169.2 m

TOTAL LENGTH OF SEWERS VIDEO INSPECTED: **299.9 M.**

The video inspection confirmed that all of the existing sewer lines inspected are old and showing signs of age, but overall are in satisfactory condition, with the following summary comments. For detailed comments on each sewer run, please refer to the attached sewer video Inspection reports.

1. All sanitary flow from the high rise building drains south to the Prospect Street sanitary sewer (MH 5A to 6A). There was no access to CCTV or trace sanitary sewers from either of the two brick 4-plex buildings. A dye test carried out during a previous investigation which confirmed these sewers drain westerly to the adjacent site.

2. Storm water from the north half of the site drains westerly to the adjacent site. Storm water from the south half of the site drains to the 375mm sewer on Prospect Street. Note that a dye test confirmed the catchbasin storm connection (CB-10 & CB-12).

3. CB-8 + CB-9 covers are seized shut therefore no access to CCTV the lines. Dye test confirmed continuity + flow direction.

4. Mini push camera used for some of the inspections due to small diameter pipes + small 'make shift' catchbasin structures.

5. A new 150mm PVC pipe lateral from manhole 4A to property line where it is capped.

Report Prepared by:



Steven Lostracco, P. Eng.

CB-10

250ø CLAY

CB-12

250ø

CB-11

CB-9

100ø CLAY

100ø PVC

CB-8

150ø CONC STM

200ø CONC STM

CB-7

150ø CONC

150ø SAN

6A

6

1500 CONC SAN

375ø CONC STM

5

PVC 100ø

150ø CLAY

7A

150ø CLAY

150ø PVC

5A

4

4A

3

3A

PROSPECT STREET

PROSPECT STR

PART 1

PLAN

PIN 07076-0368 (LT)

PIN 07076-0100 (LT)

N46°46'45"W

149.190

N44°17'45"E

73.631

N45°30'15"W

52.374

N44°07'00"E

19.202

N45°52'25"W

16.237

N45°49'10"W

18.301

N45°53'00"W

56.988

N44°36'25"E

121.087

BRICK APARTMENT BUILDING No. 2095

UNDERGROUND GARAGE

CONC PAD

CONCRETE CURB

CHAIN LINK FENCE

ROW OF TREES

CANOPY

PARKING

CONCRETE WALK

EDGE OF ASPHALT

EDGE OF GRAVEL

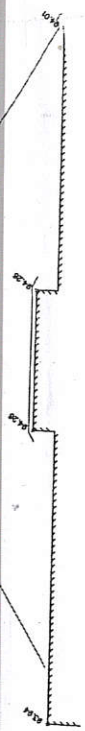
SIGN

Storm MH #5and to File by Terra Discovery

This is the start to the west property sewer, no road

This is the start to the west property sewer, no road

STM-4 (SMALL MAKESHIFT CB) N. INV. - 1.36M. 150MM DIA. CONC. W. INV. - 1.40M. 200MM DIA. CONC. S. INV. - 1.37M. 200MM DIA. CONC.
SAN-4A W. INV. - 2.98M. 250MM DIA. PVC. N.E. INV. - 2.78M. 150MM DIA. PVC.
STM-5 E. INV. - 1.23M. 375MM DIA. CONC. S. INV. - 1.03M. 200MM DIA. CONC.
SAN-5A INV. - 1.90M. 250MM DIA. CONC.
STM-6 W. INV. - 1.10M. 375MM DIA. CONC. E. INV. - 1.20M. +/- 450MM DIA. CONC.
SAN-7A (STEEL PLATE) N.W. INV. - 2.20M. 150MM DIA. CLAY N.E. INV. - 2.20M. 100MM DIA. PVC S.E. INV. - 2.23M. 150MM DIA. CLAY
CB-7 S. INV. - 0.90M. 150MM DIA. CONC.
CB-8 (COVER SIEZED SHUT) N. INV. - 0.70M. CONC. S.E. INV. - 0.73M. 100MM DIA. PVC
CB-9 (COVER SIEZED SHUT) N. INV. - 0.52M. 100MM DIA. CLAY
CB-10 (SMALL MAKESHIFT CB) S. INV. - 0.56M. 250MM DIA. CLAY
CB-11 (SMALL MAKESHIFT CB) N. INV. - 1.08M. 250MM DIA. CLAY S. INV. - 1.05M. 250MM DIA. CONC.
CB-12 E.INV. - 1.00M. 250MM DIA. PVC.



3. SKETCH OF SANITARY & STORM SEWERS VIDEO INSPECTED 2095 PROSPECT STREET CITY OF BURLINGTON

MARCH 27TH, 2019

DVD # 19075 (SANITARY) (STORM)

No.	Date	Street	Start MH	Finish MH	Surv'd Len	Video
1	2019-03-27	2095 PROSPECT STREET - STORM	4	CB-8	22.0 m	19075
2	2019-03-27	2095 PROSPECT STREET - STORM	4	CB-7	37.0 m	19075
3	2019-03-27	2095 PROSPECT STREET - STORM	4	3	29.0 m	19075
4	2019-03-27	2095 PROSPECT STREET - STORM	CB-11	TEE	13.0 m	19075
5	2019-03-27	2095 PROSPECT STREET - STORM	CB-11	CB-10	25.0 m	19075
6	2019-03-27	2095 PROSPECT STREET - STORM	CB-10	CB-11	20.0 m	19075
7	2019-03-27	2095 PROSPECT STREET - STORM	5	6	23.2 m	19075
8	2019-03-27	2095 PROSPECT STREET - SAN	5A	6A	38.9 m	19075
9	2019-03-27	2095 PROSPECT STREET - SAN	4A	3A	27.8 m	19075
10	2019-03-27	2095 PROSPECT STREET - SAN	4A	N-EAST	14.0 m	19075
11	2019-03-27	2095 PROSPECT STREET - SAN	7A	TEE	15.0 m	19075
12	2019-03-27	2095 PROSPECT STREET - SAN	7A	BLDG	20.0 m	19075
13	2019-03-27	2095 PROSPECT STREET - SAN	7A	N-EAST	15.0 m	19075

Survey No:	1	Date:	2019-03-27
Time:	09:42		
PipeLenRef:	CB-8 X	Status:	Completed
Surveyed Length:	022.0 m		
Contractor:	AQUAFLOW	Contract No:	1
Job No:	1		
Catchment:	-	Division:	-
District:	-		
Street:	2095 PROSPECT STREET - STORM		
City:	BURLINGTON		
Start MH:	4	Location:	REAR N-WEST CORNER PARKING LOT
Depth:	00.00 m	Cover:	000.00 m
Invert:	000.00 m		
Finish MH:	CB-8	Location:	REAR N-WEST CORNER PARKING LOT
Depth:	00.00 m	Cover:	000.00 m
Invert:	000.00 m		
PipeLength:	2.40 m	Size (Dia):	0200 mm
Total Length:	022.0 m		
Use:	Storm	Material:	Concrete
Shape:	Circular		
Lining:		Purpose:	Assessment
Category:	Not Known		
Weather:	Dry	Location Code:	Urban Street
Direction:	Upstream		
Pre-cleaning:	Yes		
Year Laid:		Location:	
Video Tape:	19075	Comments:	

Structural Grade:	2	Total Score:	12	Peak Score:	12	Mean Score:	0.5
Operational Grade:	1	Total Score:	0	Peak Score:	0	Mean Score:	0

Index	Pho	Dist	CD	Code	Description/Remarks	Dim	Clock	Int	Score
0:00:14		000.0		ST	Start of Survey				
					Upstream (against flow)				
0:00:18		000.0		MH	Manhole				
					4				
0:00:22		000.0		WL	Water Level			10%	
0:00:59		002.0		GO	General Observation				
					SURCHARGED WATER DUE TO DOWNSTREAM LINE				
0:01:54		010.0		WL	Water Level			00%	
0:02:30		015.0		WL	Water Level			10%	
0:03:15		021.0		CL	Longitudinal Crack	10			10
0:03:25		021.0		WL	Water Level			00%	
0:03:45		021.0		JDL	Joint Displaced Large				2
0:03:54		021.0		GO	General Observation				
					PIPE DISPLACED / SETTLED 90% OF PIPE DIA				
0:04:04		022.0		GO	General Observation				
					VIEW OF CB-8				
0:04:10		022.0		MH	Manhole				
					CB-8				
0:05:15		022.0		FH	Finish of Survey				

Survey No:	2	Date:	2019-03-27
Time:	09:59		
PipeLenRef:	CB-7 X	Status:	Abandoned
Surveyed Length:	037.0 m		
Contractor:	AQUAFLOW	Contract No:	1
Job No:	1		
Catchment:	-	Division:	-
District:	-		
Street:	2095 PROSPECT STREET - STORM		
City:	BURLINGTON		
Start MH:	4	Location:	REAR N-WEST CORNER PARKING LOT
Depth:	00.00 m	Cover:	000.00 m
Invert:	000.00 m		
Finish MH:	CB-7	Location:	REAR N-WEST CORNER GRASS AREA
Depth:	00.00 m	Cover:	000.00 m
Invert:	000.00 m		
PipeLength:	2.40 m	Size (Dia):	0150 mm
Total Length:	045.0 m		
Use:	Storm	Material:	Concrete
Shape:	Circular		
Lining:		Purpose:	Assessment
Category:	Not Known		
Weather:	Dry	Location Code:	Urban Street
Direction:	Upstream		
Pre-cleaning:	Yes		
Year Laid:		Location:	
Video Tape:	19075	Comments:	

Structural Grade:	2	Total Score:	10	Peak Score:	10	Mean Score:	0.2
Operational Grade:	4	Total Score:	16	Peak Score:	5	Mean Score:	0.4

Index	Pho	Dist	CD	Code	Description/Remarks	Dim	Clock	Int	Score
0:00:17		000.0		ST	Start of Survey Upstream (against flow)				
0:00:21		000.0		MH	Manhole 4				
0:00:26		000.0		WL	Water Level			10%	
0:00:34		000.0		CU	Camera Underwater				
0:00:36		000.0		GO	General Observation SURCHARGED LINE DUE TO DOWNSTREAM PIPE				
0:01:19		005.5		CN	Connection	150mm	03		
0:01:21		005.5		WL	Water Level			00%	
0:01:37		007.0		CL	Longitudinal Crack		08		10
0:02:17		011.0		RFJ	Fine Roots at Joint				1
0:02:34		013.0		RT	Tap Roots				5
0:02:43		013.5		CN	Connection	150mm	09		
0:03:06		016.0		RT	Tap Roots				5
0:04:53		028.0		RT	Tap Roots				5
0:05:23		031.0		CN	Connection	150mm	09		
0:06:15		037.0		GO	General Observation CAN NOT PUSH CAMERA DUE TO FRICTION				
0:06:18		037.0		GO	General Observation APPROX. 8 METRES FROM CB-7				
0:08:02		037.0		SA	Survey Abandoned -				

Survey No:	3		Date: 2019-03-27	Time:	10:17
PipeLenRef:	4 X	Status:	Completed	Surveyed Length:	029.0 m
Contractor:	AQUAFLOW	Contract No:	1	Job No:	1
Catchment:	-	Division:	-	District:	-
Street:	2095 PROSPECT STREET - STORM			City:	BURLINGTON
Start MH:	4	Location:	REAR N-WEST CORNER PARKING LOT		
Depth:	00.00 m	Cover:	000.00 m	Invert:	000.00 m
Finish MH:	3	Location:	IN PARKING LOT TO THE WEST		
Depth:	00.00 m	Cover:	000.00 m	Invert:	000.00 m
PipeLength:	2.40 m	Size (Dia):	0200 mm	Total Length:	029.0 m
Use:	Storm	Material:	Concrete	Shape:	Circular
Lining:		Purpose:	Assessment	Category:	Not Known
Weather:	Dry	Location Code:	Urban Street	Direction:	Downstream
				Pre-cleaning:	Yes
Year Laid:		Location:			
Video Tape:	19075	Comments:			

Structural Grade:	1	Total Score:	0	Peak Score:	0	Mean Score:	0
Operational Grade:	1	Total Score:	0	Peak Score:	0	Mean Score:	0

Index	Pho	Dist	CD	Code	Description/Remarks	Dim	Clock	Int	Score
0:00:15		000.0		ST	Start of Survey Downstream (with flow)				
0:00:20		000.0		MH	Manhole 4				
0:00:24		000.0		WL	Water Level			20%	
0:00:29		000.0		GO	General Observation PIPE HAS BACKFALL + SURCHARGED UPSTREAM				
0:00:38		000.0		CU	Camera Underwater				
0:00:53		001.0		WL	Water Level			10%	
0:01:21		005.0		WL	Water Level			02%	
0:02:19		014.0		GO	General Observation TRANSITION FROM CONC. TO PVC				
0:03:36		026.0		WL	Water Level			10%	
0:04:05		029.0		WL	Water Level			00%	
0:04:05		029.0		MH	Manhole 3				
0:05:30		029.0		FH	Finish of Survey				

Survey No:	4	Date:	2019-03-27
Time:	10:43		
PipeLenRef:	CB-11 X	Status:	Abandoned
Surveyed Length:	013.0 m		
Contractor:	AQUAFLOW	Contract No:	1
Job No:	1		
Catchment:	-	Division:	-
District:	-		
Street:	2095 PROSPECT STREET - STORM		
City:	BURLINGTON		
Start MH:	CB-11	Location:	DRIVEWAY ON EAST SIDE OF BLDG
Depth:	00.00 m	Cover:	000.00 m
Invert:	000.00 m		
Finish MH:	TEE	Location:	AT MAIN STORM SEWER
Depth:	00.00 m	Cover:	000.00 m
Invert:	000.00 m		
PipeLength:	2.40 m	Size (Dia):	0250 mm
Total Length:	030.0 m		
Use:	Storm	Material:	Concrete
Shape:	Circular		
Lining:		Purpose:	Assessment
Category:	Not Known		
Weather:	Dry	Location Code:	Urban Street
Direction:	Downstream		
Pre-cleaning:	Yes		
Year Laid:		Location:	
Video Tape:	19075	Comments:	

Structural Grade:	4	Total Score:	80	Peak Score:	80	Mean Score:	2.7
Operational Grade:	1	Total Score:	0	Peak Score:	0	Mean Score:	0

Index	Pho	Dist	CD	Code	Description/Remarks	Dim	Clock	Int	Score
0:00:14		000.0		ST	Start of Survey Downstream (with flow)				
0:00:20		000.0		MH	Manhole CB-11				
0:00:24		000.0		WL	Water Level			00%	
0:01:15		006.0		GO	General Observation HANGING GASKET AT JOINT				
0:02:12		013.0		B	Sewer Broken		03-09		80
0:02:18		013.0		GO	General Observation UTILITY CROSS BORE THROUGH PIPE				
0:02:23		013.0		GO	General Observation CAMERA BLOCKED				
0:03:05		013.0		SA	Survey Abandoned -				

Survey No:	5	Date:	2019-03-27	Time:	10:55
PipeLenRef:	CB-10 X	Status:	Abandoned	Surveyed Length:	025.0 m
Contractor:	AQUAFLOW	Contract No:	1	Job No:	1
Catchment:	-	Division:	-	District:	-
Street:	2095 PROSPECT STREET - STORM			City:	BURLINGTON
Start MH:	CB-11	Location:	DRIVEWAY ON EAST SIDE OF BLDG		
Depth:	00.00 m	Cover:	000.00 m	Invert:	000.00 m
Finish MH:	CB-10	Location:	DRIVEWAY N-EAST SIDE OF BLDG		
Depth:	00.00 m	Cover:	000.00 m	Invert:	000.00 m
PipeLength:	1.00 m	Size (Dia):	0250 mm	Total Length:	040.0 m
Use:	Storm	Material:	Concrete	Shape:	Circular
Lining:		Purpose:	Assessment	Category:	Not Known
Weather:	Dry	Location Code:	Urban Street	Direction:	Upstream
				Pre-cleaning:	Yes
Year Laid:		Location:			
Video Tape:	19075	Comments:			

Structural Grade:	2	Total Score:	10	Peak Score:	10	Mean Score:	0.2
Operational Grade:	1	Total Score:	0	Peak Score:	0	Mean Score:	0

Index	Pho	Dist	CD	Code	Description/Remarks	Dim	Clock	Int	Score
0:00:21		000.0		ST	Start of Survey Upstream (against flow)				
0:00:25		000.0		MH	Manhole CB-11				
0:00:30		000.0		WL	Water Level			00%	
0:00:56		004.0		CL	Longitudinal Crack		08		10
0:02:59		025.0		GO	General Observation CAN NOT PUSH CAMERA DUE TO FRICTION				
0:04:15		025.0		SA	Survey Abandoned -				

Survey No:	6	Date:	2019-03-27	Time:	11:04
PipeLenRef:	CB-10 Y	Status:	Abandoned	Surveyed Length:	020.0 m
Contractor:	AQUAFLOW	Contract No:	1	Job No:	1
Catchment:	-	Division:	-	District:	-
Street:	2095 PROSPECT STREET - STORM			City:	BURLINGTON
Start MH:	CB-10	Location:	DRIVEWAY N-EAST SIDE OF BLDG		
Depth:	00.00 m	Cover:	000.00 m	Invert:	000.00 m
Finish MH:	CB-11	Location:	DRIVEWAY EAST SIDE OF BLDG		
Depth:	00.00 m	Cover:	000.00 m	Invert:	000.00 m
PipeLength:	1.00 m	Size (Dia):	0250 mm	Total Length:	040.0 m
Use:	Storm	Material:	Concrete	Shape:	Circular
Lining:		Purpose:	Assessment	Category:	Not Known
Weather:	Dry	Location Code:	Urban Street	Direction:	Downstream
				Pre-cleaning:	Yes
Year Laid:		Location:			
Video Tape:	19075	Comments:			

Structural Grade:	1	Total Score:	0	Peak Score:	0	Mean Score:	0
Operational Grade:	1	Total Score:	0	Peak Score:	0	Mean Score:	0

Index	Pho	Dist	CD	Code	Description/Remarks	Dim	Clock	Int	Score
0:00:12		000.0		ST	Start of Survey Downstream (with flow)				
0:00:18		000.0		MH	Manhole CB-10				
0:00:22		000.0		WL	Water Level			00%	
0:00:28		000.0		GO	General Observation REVERSE INSPECTION				
0:02:09		020.0		GO	General Observation REVERSE INSPECTION COMPLETED				
0:02:57		020.0		SA	Survey Abandoned -				

Survey No:	7	Date:	2019-03-27	Time:	11:35
PipeLenRef:	5 X	Status:	Abandoned	Surveyed Length:	023.2 m
Contractor:	AQUAFLOW	Contract No:	1	Job No:	1
Catchment:	-	Division:	-	District:	-
Street:	2095 PROSPECT STREET - STORM			City:	BURLINGTON
Start MH:	5	Location:	SOUTH BOULEVARD OPPOSITE #2095		
Depth:	00.00 m	Cover:	000.00 m	Invert:	000.00 m
Finish MH:	6	Location:	SOUTH SIDE OF ROAD 80 M EAST		
Depth:	00.00 m	Cover:	000.00 m	Invert:	000.00 m
PipeLength:	2.40 m	Size (Dia):	0375 mm	Total Length:	080.0 m
Use:	Storm	Material:	Concrete	Shape:	Circular
Lining:		Purpose:	Assessment	Category:	Not Known
Weather:	Dry	Location Code:	Urban Street	Direction:	Downstream
				Pre-cleaning:	Yes
Year Laid:		Location:			
Video Tape:	19075	Comments:			

Structural Grade:	1	Total Score:	0	Peak Score:	0	Mean Score:	0
Operational Grade:	1	Total Score:	0	Peak Score:	0	Mean Score:	0

Index	Pho	Dist	CD	Code	Description/Remarks	Dim	Clock	Int	Score
0:00:18		000.0		ST	Start of Survey Downstream (with flow)				
0:00:23		000.0		MH	Manhole 5				
0:00:29		000.0		WL	Water Level			00%	
0:01:43		004.9		CN	Connection	200mm	09		
0:01:50		004.9		GO	General Observation LIKELY BUILDING STORM OUTLET				
0:02:39		013.5		CN	Connection	250mm	09		
0:02:45		013.5		GO	General Observation CONNECTION FROM CB-10 + CB-11				
0:03:30		023.2		GO	General Observation BEYOND EAST LIMIT OF SITE				
0:03:33		023.2		SA	Survey Abandoned -				

Survey No:	8	Date:	2019-03-27	Time:	11:59
PipeLenRef:	5A X	Status:	Abandoned	Surveyed Length:	038.9 m
Contractor:	AQUAFLOW	Contract No:	1	Job No:	1
Catchment:	-	Division:	-	District:	-
Street:	2095 PROSPECT STREET - SAN			City:	BURLINGTON
Start MH:	5A	Location:	SOUTH SIDE ROAD OPPOSITE #2095		
Depth:	00.00 m	Cover:	000.00 m	Invert:	000.00 m
Finish MH:	6A	Location:	CENTRE OF ROAD 100 M EAST		
Depth:	00.00 m	Cover:	000.00 m	Invert:	000.00 m
PipeLength:	2.40 m	Size (Dia):	0250 mm	Total Length:	100.0 m
Use:	Sanitary	Material:	Concrete	Shape:	Circular
Lining:		Purpose:	Assessment	Category:	Not Known
Weather:	Dry	Location Code:	Urban Street	Direction:	Downstream
				Pre-cleaning:	Yes
Year Laid:		Location:			
Video Tape:	19075	Comments:			

Structural Grade:	1	Total Score:	0	Peak Score:	0	Mean Score:	0
Operational Grade:	1	Total Score:	0	Peak Score:	0	Mean Score:	0

Index	Pho	Dist	CD	Code	Description/Remarks	Dim	Clock	Int	Score
0:00:14		000.0		ST	Start of Survey Downstream (with flow)				
0:00:19		000.0		MH	Manhole 5A				
0:00:24		000.0		WL	Water Level			00%	
0:02:10		015.1		CN	Connection	150mm	09		
0:02:15		015.1		GO	General Observation CONNECTION FROM BUILDING #2095				
0:02:47		021.1		GO	General Observation STEAM DUE TO HOT WATER / COLD WINTER AIR				
0:03:59		038.9		GO	General Observation BEYOND EAST LIMIT OF SITE				
0:25:47		038.9		SA	Survey Abandoned -				

STARTLIGHT INVESTMENTS
Sewer TV Inspection Report

Survey No:	9	Date:	2019-03-27
Time:	12:29		
PipeLenRef:	4A X	Status:	Abandoned
Surveyed Length:	027.8 m		
Contractor:	AQUAFLOW	Contract No:	1
Job No:	1		
Catchment:	-	Division:	-
District:	-		
Street:	2095 PROSPECT STREET - SAN	City:	BURLINGTON
Start MH:	4A	Location:	NORTH SIDE ROAD OPPOSITE #2095
Depth:	00.00 m	Cover:	000.00 m
Invert:	000.00 m		
Finish MH:	3A	Location:	CENTRE OF ROAD 100 M WEST
Depth:	00.00 m	Cover:	000.00 m
Invert:	000.00 m		
PipeLength:	4.00 m	Size (Dia):	0250 mm
Total Length:	100.0 m		
Use:	Sanitary	Material:	Polyvinyl Chloride
Shape:	Circular		
Lining:		Purpose:	Assessment
Category:	Not Known		
Weather:	Dry	Location Code:	Urban Street
Direction:	Downstream		
Pre-cleaning:	Yes		
Year Laid:		Location:	
Video Tape:	19075	Comments:	

Structural Grade:	1	Total Score:	0	Peak Score:	0	Mean Score:	0
Operational Grade:	1	Total Score:	0	Peak Score:	0	Mean Score:	0

Index	Pho	Dist	CD	Code	Description/Remarks	Dim	Clock	Int	Score
0:00:14		000.0		ST	Start of Survey Downstream (with flow)				
0:00:18		000.0		MH	Manhole 4A				
0:00:22		000.0		WL	Water Level			00%	
0:01:47		016.2		CN	Connection	150mm	10		
0:02:38		027.8		GO	General Observation BEYOND WEST LIMIT OF SITE				
0:02:42		027.8		SA	Survey Abandoned -				

Survey No:	10	Date:	2019-03-27
Time:	12:39		
PipeLenRef:	N-EAST X	Status:	Completed
Surveyed Length:	014.0 m		
Contractor:	AQUAFLOW	Contract No:	1
Job No:	1		
Catchment:	-	Division:	-
District:	-		
Street:	2095 PROSPECT STREET - SAN		
City:	BURLINGTON		
Start MH:	4A	Location:	NORTH SIDE ROAD OPPOSITE #2095
Depth:	00.00 m	Cover:	000.00 m
Invert:	000.00 m		
Finish MH:	N-EAST	Location:	NORTH SIDE OF ROAD AT #2095
Depth:	00.00 m	Cover:	000.00 m
Invert:	000.00 m		
PipeLength:	4.00 m	Size (Dia):	0150 mm
Total Length:	014.0 m		
Use:	Sanitary	Material:	Polyvinyl Chloride
Shape:	Circular		
Lining:		Purpose:	Assessment
Category:	Not Known		
Weather:	Dry	Location Code:	Urban Street
Direction:	Upstream		
Pre-cleaning:	Yes		
Year Laid:		Location:	
Video Tape:	19075	Comments:	

Structural Grade:	1	Total Score:	0	Peak Score:	0	Mean Score:	0
Operational Grade:	1	Total Score:	0	Peak Score:	0	Mean Score:	0

Index	Pho	Dist	CD	Code	Description/Remarks	Dim	Clock	Int	Score
0:00:12		000.0		ST	Start of Survey				
					Upstream (against flow)				
0:00:16		000.0		MH	Manhole				
					4A				
0:00:20		000.0		WL	Water Level			00%	
0:01:37		014.0		GO	General Observation				
					PIPE CAPPED AT NORTH PROPERTY LINE				
0:01:43		014.0		MH	Manhole				
					N-EAST				
0:01:48		014.0		FH	Finish of Survey				

Survey No:	11	Date:	2019-03-27	Time:	12:51
PipeLenRef:	7A X	Status:	Completed	Surveyed Length:	015.0 m
Contractor:	AQUAFLOW	Contract No:	1	Job No:	1
Catchment:	-	Division:	-	District:	-
Street:	2095 PROSPECT STREET - SAN			City:	BURLINGTON
Start MH:	7A	Location:	ON GRASS NORTH SIDE AT #2095		
Depth:	00.00 m	Cover:	000.00 m	Invert:	000.00 m
Finish MH:	TEE	Location:	AT MAIN SANITARY SEWER		
Depth:	00.00 m	Cover:	000.00 m	Invert:	000.00 m
PipeLength:	1.00 m	Size (Dia):	0150 mm	Total Length:	015.0 m
Use:	Sanitary	Material:	Vitrified Clay	Shape:	Circular
Lining:		Purpose:	Assessment	Category:	Not Known
Weather:	Dry	Location Code:	Urban Street	Direction:	Downstream
				Pre-cleaning:	Yes
Year Laid:		Location:			
Video Tape:	19075	Comments:			

Structural Grade:	1	Total Score:	0	Peak Score:	0	Mean Score:	0
Operational Grade:	1	Total Score:	0	Peak Score:	0	Mean Score:	0

Index	Pho	Dist	CD	Code	Description/Remarks	Dim	Clock	Int	Score
0:00:14		000.0		ST	Start of Survey Downstream (with flow)				
0:00:18		000.0		MH	Manhole 7A				
0:00:22		000.0		WL	Water Level			30%	
0:01:19		005.0		CU	Camera Underwater				
0:01:57		011.0		GO	General Observation HEAVY SETTLEMENT AREA IN LINE 0 TO 11 M				
0:01:57		011.0		WL	Water Level			05%	
0:02:24		015.0		MH	Manhole TEE				
0:03:16		015.0		FH	Finish of Survey				

Survey No:	12	Date:	2019-03-27	Time:	12:58
PipeLenRef:	BLDG X	Status:	Completed	Surveyed Length:	020.0 m
Contractor:	AQUAFLOW	Contract No:	1	Job No:	1
Catchment:	-	Division:	-	District:	-
Street:	2095 PROSPECT STREET - SAN			City:	BURLINGTON
Start MH:	7A	Location:	ON GRASS NORTH SIDE AT #2095		
Depth:	00.00 m	Cover:	000.00 m	Invert:	000.00 m
Finish MH:	BLDG	Location:	S-EAST CORNER OF BLDG		
Depth:	00.00 m	Cover:	000.00 m	Invert:	000.00 m
PipeLength:	1.00 m	Size (Dia):	0150 mm	Total Length:	020.0 m
Use:	Sanitary	Material:	Vitrified Clay	Shape:	Circular
Lining:		Purpose:	Assessment	Category:	Not Known
Weather:	Dry	Location Code:	Urban Street	Direction:	Upstream
				Pre-cleaning:	Yes
Year Laid:		Location:			
Video Tape:	19075	Comments:			

Structural Grade:	1	Total Score:	0	Peak Score:	0	Mean Score:	0
Operational Grade:	3	Total Score:	2	Peak Score:	2	Mean Score:	0.1

Index	Pho	Dist	CD	Code	Description/Remarks	Dim	Clock	Int	Score
0:00:14		000.0		ST	Start of Survey Upstream (against flow)				
0:00:17		000.0		MH	Manhole 7A				
0:00:22		000.0		WL	Water Level			20%	
0:00:30		000.0		DEG	Debris Grease		04-08	10%	2
0:00:42		001.0		CU	Camera Underwater				
0:02:40		003.0		WL	Water Level			05%	
0:02:40		020.0		GO	General Observation PONDING WATER FROM 0 TO 3 METRES				
0:02:40		020.0		CN	Connection	100mm	12		
0:02:42		020.0		GO	General Observation AT LIMIT OF BUILDING				
0:02:44		020.0		MH	Manhole BLDG				
0:03:34		020.0		FH	Finish of Survey				

Survey No:	13	Date:	2019-03-27	Time:	13:04
PipeLenRef:	N-EAST Y	Status:	Completed	Surveyed Length:	015.0 m
Contractor:	AQUAFLOW	Contract No:	1	Job No:	1
Catchment:	-	Division:	-	District:	-
Street:	2095 PROSPECT STREET - SAN			City:	BURLINGTON
Start MH:	7A	Location:	ON GRASS NORTH SIDE AT #2095		
Depth:	00.00 m	Cover:	000.00 m	Invert:	000.00 m
Finish MH:	N-EAST	Location:	S-EAST OF BUILDING		
Depth:	00.00 m	Cover:	000.00 m	Invert:	000.00 m
PipeLength:	1.00 m	Size (Dia):	0100 mm	Total Length:	015.0 m
Use:	Sanitary	Material:	Polyvinyl Chloride	Shape:	Circular
Lining:		Purpose:	Assessment	Category:	Not Known
Weather:	Dry	Location Code:	Urban Street	Direction:	Upstream
				Pre-cleaning:	Yes
Year Laid:		Location:			
Video Tape:	19075	Comments:			

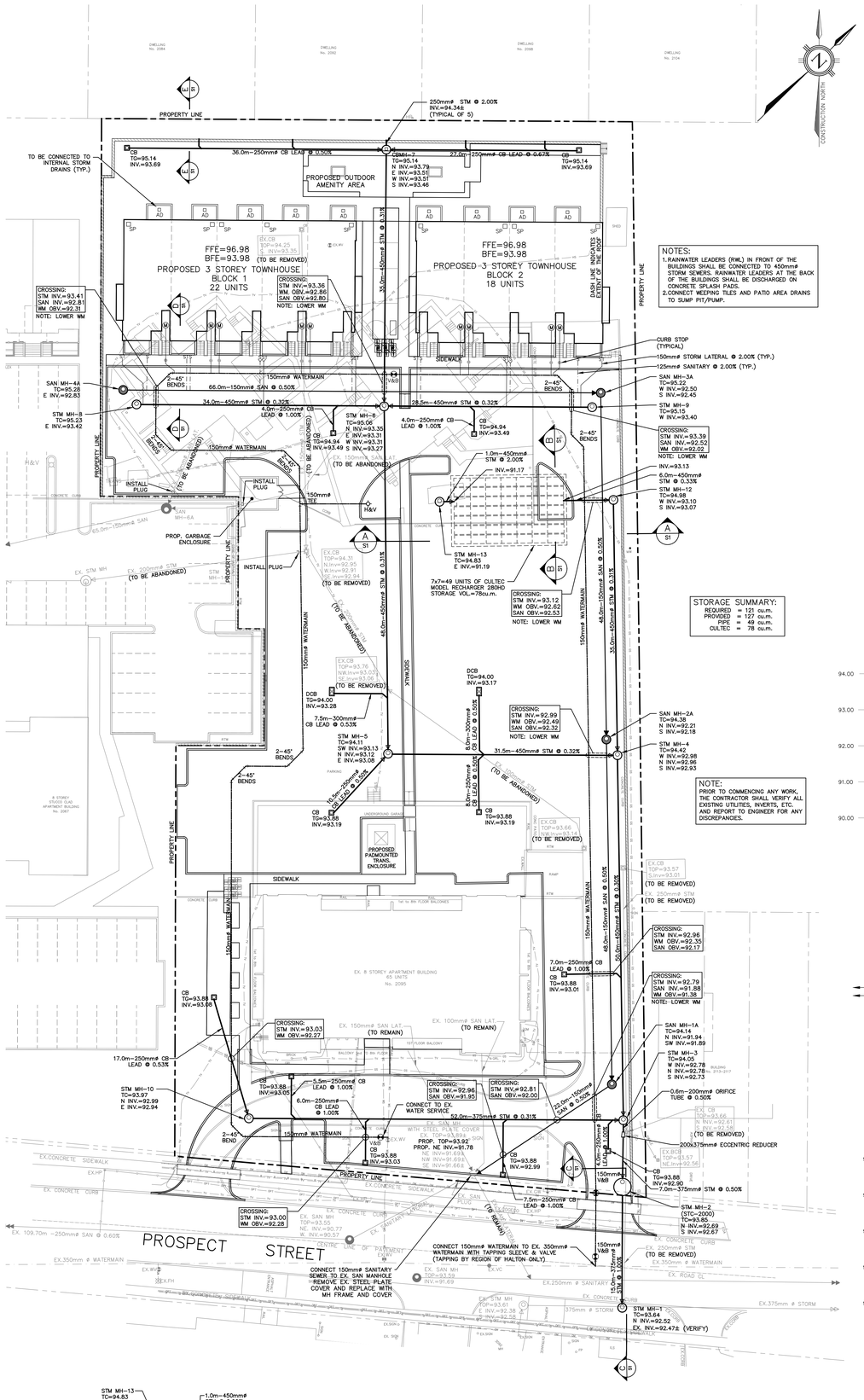
Structural Grade:	1	Total Score:	0	Peak Score:	0	Mean Score:	0
Operational Grade:	1	Total Score:	0	Peak Score:	0	Mean Score:	0

Index	Pho	Dist	CD	Code	Description/Remarks	Dim	Clock	Int	Score
0:00:09		000.0		ST	Start of Survey Upstream (against flow)				
0:00:14		000.0		MH	Manhole 7A				
0:00:18		000.0		WL	Water Level			00%	
0:00:43		001.0		GO	General Observation BEND LEFT				
0:01:51		012.0		WL	Water Level			30%	
0:01:53		012.0		CU	Camera Underwater				
0:02:30		015.0		GO	General Observation TEE CONNECTION INTO ANOTHER PIPE				
0:02:57		015.0		MH	Manhole N-EAST				
0:03:50		015.0		FH	Finish of Survey				

APPENDIX 'C'

Site Servicing Plan: Dwg. No. 1629-S1

Site Grading Plan: Dwg. No. 1629-G1



GENERAL NOTES

1. ALL THE CONSTRUCTION WORK FOR THIS PROJECT SHALL COMPLY WITH THE STANDARD DRAWINGS AND SPECIFICATIONS OF THE CITY OF BURLINGTON AND THE ONTARIO PROVINCIAL STANDARDS AND SPECIFICATIONS.
2. ALL SURFACE DRAINAGE SHALL BE COLLECTED AND DISCHARGED AT A LOCATION TO BE APPROVED PRIOR TO THE ISSUANCE OF A BUILDING PERMIT. DRAINAGE OF ABUTTING PROPERTIES SHALL NOT BE ADVERSELY AFFECTED.
3. PROPOSED ELEVATIONS ALONG SITE PROPERTY LINES MUST MATCH EXISTING ELEVATIONS.
4. A SILT FENCE MUST BE PLACED AROUND THE PERIMETER OF THE SITE.
5. AT ALL ENTRANCES TO THE SITE, THE ROAD CURB AND SIDEWALK WILL BE CONTINUOUS THROUGH THE DRIVEWAY. THE DRIVEWAY GRADE WILL BE COMPATIBLE WITH THE EXISTING SIDEWALK AND A CURB DEPRESSION WILL BE PROVIDED FOR AT EACH ENTRANCE.
6. SIDEWALK TO BE REMOVED AND REPLACED AS PER CITY STD. S–121.
7. THE PORTION OF THE DRIVEWAY WITHIN THE MUNICIPAL BOULEVARD MUST BE PAVED WITH 40mm HL3 AND 50mm HL8. BASE TO BE 150mm GRANULAR "A" (OR 130mm OF 20mm CRUSHER RUN LIMESTONE) AND 300mm GRANULAR "B" (OR 225mm OF 50mm CRUSHER RUN LIMESTONE) COMPACTED TO 100% STANDARD PROCTOR DENSITY.
8. A UTILITY CLEARANCE RADIUS OF 1.2 METRES BETWEEN THE PROPOSED DRIVEWAY ENTRANCE CURB RETURN AND ALL ABOVE GROUND UTILITIES MUST BE MAINTAINED.
9. ROAD OCCUPANCY / ACCESS PERMIT MUST BE OBTAINED 48 HOURS PRIOR TO COMMENCING ANY WORKS WITHIN THE MUNICIPAL ROAD ALLOWANCE.
10. THE SERVICE CONNECTION TRENCH WITHIN THE TRAVELED PORTION OF THE ROAD ALLOWANCE SHALL BE BACKFILLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE ROAD OCCUPANCY / ACCESS PERMIT APPLICATION.
11. WITHIN THE CITY'S RIGHT–OF–WAY, STORM SEWERS AND STORM SEWER CONNECTIONS MUST BE CONCRETE, OR APPROVED EQUAL, WITH TYPE 'B' BEDDING THROUGHOUT. THE STRENGTH OF THE CONCRETE PIPE MUST BE AS PER CITY STANDARD AND OF MINIMUM 65–D FOR REINFORCED PIPE.
12. THE MINIMUM CATCHBASIN LEAD DIAMETER ALLOWED IS 250mm.
13. ALL CATCHBASIN MANHOLES AND MANHOLES WITH INLET CONTROL DEVICES MUST HAVE A MINIMUM 0.3 METRE SUMP AND TOP AS PER MUNICIPAL STANDARDS.

STORM SEWERS

1. STORM SEWERS (250mm TO 450mm#) SHALL BE PVC, CSA B182.2 SDR 35 WITH LOCK–IN RUBBER SEALING RING.
2. STORM SEWERS (525mm# AND LARGER) SHALL BE REINFORCED CONCRETE, SEALED JOINTS WITH GASKETS AND 65–D.
3. SEWER BEDDING AS PER OPSD 802.010 OR 802.013 FOR FLEXIBLE PIPES AND OPSD 802.030 OR 802.013 FOR RIGID PIPES, CLASS 'B' BEDDING OR APPROVED BY CITY ENGINEER.
4. ALL MANHOLES AND CATCH BASINS SHALL BE AS FOLLOWS:
   A. OPSD 701.010 (1200mm#)
   B. OPSD 701.011 (1500mm#)
   C. OPSD 701.012 (1800mm#)
   D. OPSD 705.010 (600X600mm) FOR CB'S.
   E. RH 301.01 FOR CB ON LANDSCAPE AREAS.
5. MANHOLE AND CATCH BASIN (LANDSCAPE) COVER/ GRATING SHALL BE AS FOLLOWS:
   A. OPSD 401.010, TYPE 'A' – CLOSED COVER FOR MANHOLE AND STAMPED "DANGER–STORM"
   B. CITY STD. S–176 – BEEHIVE CATCH BASIN FRAME AND COVER FOR CB ON LANDSCAPE AREAS
6. SINGLE CATCHBASIN SHALL BE OPSD 705.010 WITH OPSD 400.020 GRATING.
7. DOUBLE CATCHBASIN SHALL BE OPSD 705.020 WITH OPSD 400.020 GRATING (IF APPLICABLE).
8. ALL MANHOLES TO BE BENCHED THROUGHOUT TO THE SPRING LINE.
9. SURROUND ALL MANHOLES AND CATCHBASINS WITH A MINIMUM OF 1.0 METRE GRANULAR 'A' OR APPROVED EQUAL BY THE CITY ENGINEER COMPACTED TO 100% S.P.D.

WATERMAINS

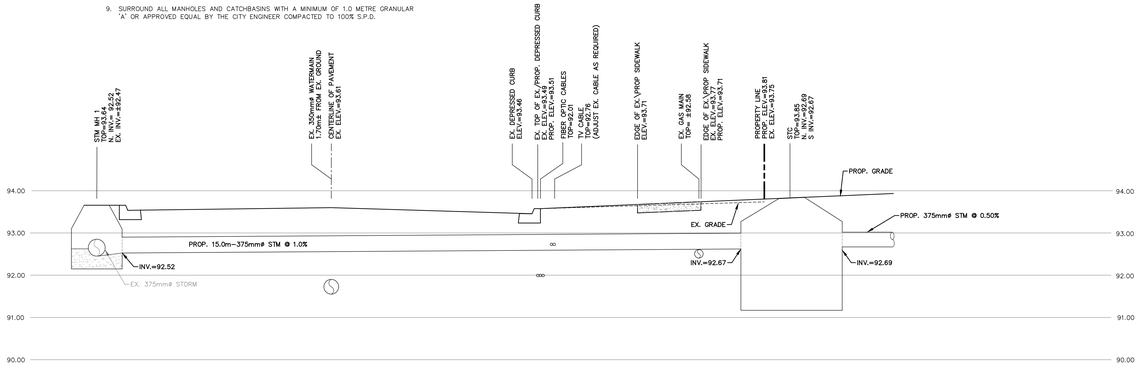
1. ALL MATERIALS AND CONSTRUCTION METHODS MUST CORRESPOND TO THE CURRENT REGION OF HALTON WORKS STANDARDS AND SPECIFICATIONS.
2. WATERMAIN AND / OR WATER SERVICE MATERIALS 100mm (4") AND LARGER MUST BE AWWA C–900–75 POLYVINYL CHLORIDE (PVC) DR18 INSTALLED WITH A 12 GAUGE TWH SOLID COPPER LIGHT COLOURED PLASTIC COATED TRACER WIRE BROUGHT TO THE SURFACE AT EACH VALVE BOX. SIZE 50mm (2") AND SMALLER COPPER TYPE "K" SOFT COPPER TUBING.
3. WATERMAINS AND / OR WATER SERVICES ARE TO HAVE A MINIMUM COVER OF 1.7m (5'6") WITH A MINIMUM HORIZONTAL SPACING OF 1.2m (4") FROM THEMSELVES AND ALL OTHER UTILITIES.
4. PROVISIONS FOR FLUSHING WATER LINE PRIOR TO TESTING, ETC. MUST BE PROVIDED WITH AT LEAST A 50mm (2") OUTLET ON 100mm (4") AND LARGER LINES. COPPER LINES ARE TO HAVE FLUSHING POINTS AT THE END, THE SAME SIZE AS THE LINE. THEY MUST ALSO BE HOSED OR PIPED TO ALLOW THE WATER TO DRAIN ONTO THE PARKING LOT OR DOWN THE DRAIN. ON FIRE LINES, FLUSHING OUTLET TO BE 100mm (4") DIAMETER MINIMUM ON A HYDRANT.
5. ALL CURB STOPS TO BE 3.0m (10') OFF THE FACE OF THE BUILDING UNLESS OTHERWISE NOTED.
6. HYDRANT AND VALVE AS PER OPSD 1105.010.
7. WATERMAINS TO BE INSTALLED TO GRADES AS SHOWN ON APPROVED SITE PLAN. COPY OF GRADE SHEET MUST BE SUPPLIED TO INSPECTOR PRIOR TO COMMENCEMENT OF WORK, WHERE REQUESTED BY INSPECTOR.
8. WATERMAINS MUST HAVE A MINIMUM VERTICAL CLEARANCE OF 0.30m (12") OVER / 0.50m (20") UNDER SEWERS AND ALL OTHER UTILITIES WHEN CROSSING.
9. ALL PROPOSED WATER PIPING MUST BE ISOLATED FROM EXISTING LINES IN ORDER TO ALLOW INDEPENDENT PRESSURE TESTING AND CHLORINATING FROM EXISTING SYSTEMS.
10. ALL LIVE TAPPING AND OPERATION OF REGION OF WATER VALVES SHALL BE ARRANGED THROUGH THE REGIONAL INSPECTOR ASSIGNED OR BY CONTACTING THE OPERATIONS AND MAINTENCE DIVISION.

SANITARY SEWERS

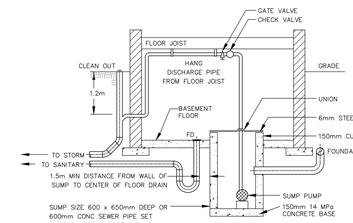
1. ALL SANITARY SEWERS SHALL BE SDR–28 PVC PIPE.
2. ALL BEDDING FOR SANITARY SEWERS SHALL BE IN ACCORDANCE WITH REGION OF HALTON STD. DWG. WITH GRANULAR COVER MATERIAL HAVING STONE SIZE NO GREATER THAN 25mm COMPACTED TO 95% SPMDD.
3. ALL MANHOLES SHALL BE IN ACCORDANCE WITH OPSD 701.010, OPSD 401.010 TYPE–A CLOSED COVER AND STAMPED "DANGER–SANITARY" AND BENCHING THROUGHOUT TO THE CROWN OF ALL PIPES ON A VERTICAL PROJECTION FROM SPRING LINE.

ADDITIONAL NOTES:

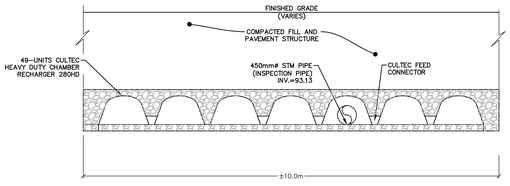
1. LOCATION OF ALL EXISTING UTILITIES IN THE FIELD TO BE ESTABLISHED BY THE CONTRACTOR.
2. THE CONTRACTOR(S) SHALL BE SOLELY RESPONSIBLE FOR LOCATES, EXPOSING, SUPPORTING AND PROTECTING OF ALL UNDERGROUND AND OVERHEAD UTILITIES AND STRUCTURES EXISTING AT THE TIME OF CONSTRUCTION IN THE AREA OF HIS WORK, WHETHER SHOWN ON THE PLAN OR NOT, AND FOR ALL REPAIRS AND CONSEQUENCES RESULTING FROM DAMAGE TO SAME.
3. THE CONTRACTOR(S) SHALL BE SOLELY RESPONSIBLE TO GIVE 72 HOURS WRITTEN NOTICE TO UTILITIES PRIOR TO CROSSING SUCH UTILITIES, FOR THE PURPOSE OF INSPECTION BY THE CONCERNED UTILITY. THIS INSPECTION WILL BE FOR THE DURATION OF THE CONSTRUCTION, WITH THE CONTRACTOR RESPONSIBLE FOR ALL COST ARISING FROM SUCH INSPECTION.



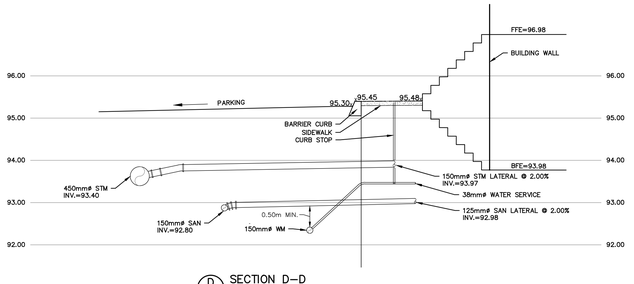
C S1 SECTION C – C
1:50



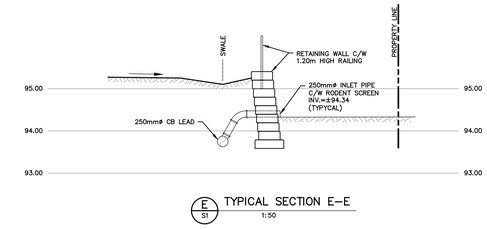
SUMP PUMP DETAIL
N.T.S.



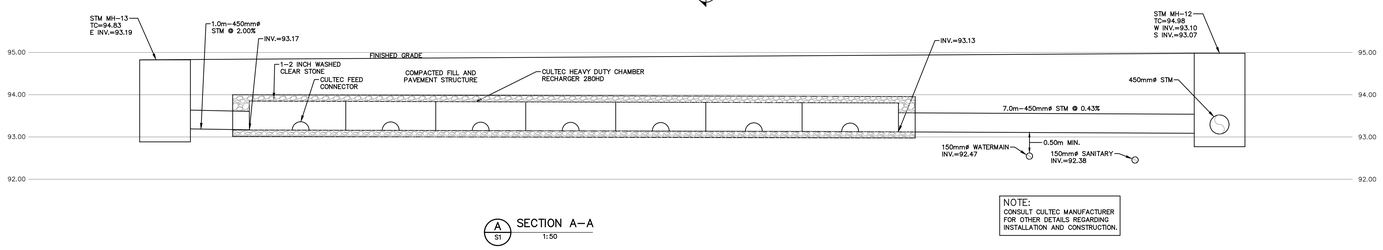
B S1 SECTION B–B
1:50



D S1 SECTION D–D
1:50

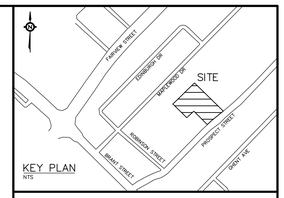


E S1 TYPICAL SECTION E–E
1:50



A S1 SECTION A–A
1:50

NOTE:
CONSULT CULTEC MANUFACTURER FOR OTHER DETAILS REGARDING INSTALLATION AND CONSTRUCTION.



KEY PLAN
NTS

LEGEND

- PROPOSED CATCHBASIN
- PROPOSED DOUBLE CATCHBASIN
- PROPOSED CATCHBASIN MANHOLE
- PROPOSED DOUBLE CATCHBASIN MANHOLE
- PROPOSED STORM MANHOLE
- PROPOSED SANITARY MANHOLE
- PROPOSED FIRE HYDRANT
- PROPOSED VALVE & BOX
- PROPOSED PLUG
- PROPOSED WATER METER
- PROPOSED DETECTOR VALVE IN CHAMBER
- PROPOSED DOUBLE HOUSE SERVICES
- PROPOSED SINGLE HOUSE SERVICE
- PROPOSED WATER SERVICE
- PROPOSED RAIN WATER LEADER
- PROPOSED SUMP PIT/PUMP
- PROPOSED STORM SEWER
- PROPOSED SANITARY SEWER
- PROPOSED WATERMAIN
- PROPOSED DRAINAGE DIRECTION
- PROPOSED SWALE DRAINAGE DIRECTION
- PROPOSED TREE HOARDING

BENCHMARK

BENCHMARK SET ON CITY PLATE SOUTHWEST CORNER, SOUTH SIDE OF CENTRAL PUBLIC SCHOOL FACING BALDWIN STREET, ELEVATION 90.583M.

THE TOPOGRAPHIC DETAIL SHOWN HEREON WAS COMPLETED ON OCT. 12th, 2016 BY S. DAN McLAREN, O.L.S. , ONTARIO LAND SURVEYORS.

FOR OPA / REZONING
NOT FOR CONSTRUCTION

No	Date	By/DRN	REVISIONS
3	MAY/07/19	PC/ZG	THIRD SUBMISSION OPA & RZA APPLICATION
2	OCT/29/18	PC/ZG	SECOND SUBMISSION OPA & RZA APPLICATION
1	DEC 11/17	PC/fg	ISSUED FOR OPA & RZA APPLICATION

Designed	JRE	Chk'd	PC
Drawn	JY	Chk'd	PC
Scale	1:250 0 2.5 5 10m		
APPROVALS			

Cad File 1629GS.dwg
Plot Date 05/17/19
References
Field Notes
Bell ☐ Hydro ☐
Gas ☐ Cable ☐
Traf. ☐ Water ☐

P. CIFONI — 100243 — Professional Engineers Province of Ontario

Consultant
TRAFALGAR ENGINEERING LTD.
481 MORDEN ROAD OAKVILLE, ONTARIO L6K 3W6
TEL: (905) 338–3366 FAX: (905) 338–7734
tel@trafalgareng.com

Municipality
CITY OF BURLINGTON
REGIONAL MUNICIPALITY OF HALTON

Title
PROPOSED RESIDENTIAL RE–DEVELOPMENT
SERVICING PLAN
2087–2103 PROSPECT STREET

REGIONAL APPROVAL:

REGION DESIGN OF WATER &/OR WASTEWATER SERVICES APPROVED SUBJECT TO DETAIL CONSTRUCTION CONFORMING TO HALTON REGION STANDARDS & SPECIFICATIONS & LOCATION APPROVAL FROM AREA MUNICIPALITY.

SIGNED: _____ DATED: _____

INFRASTRUCTURE PLANNING AND POLICY

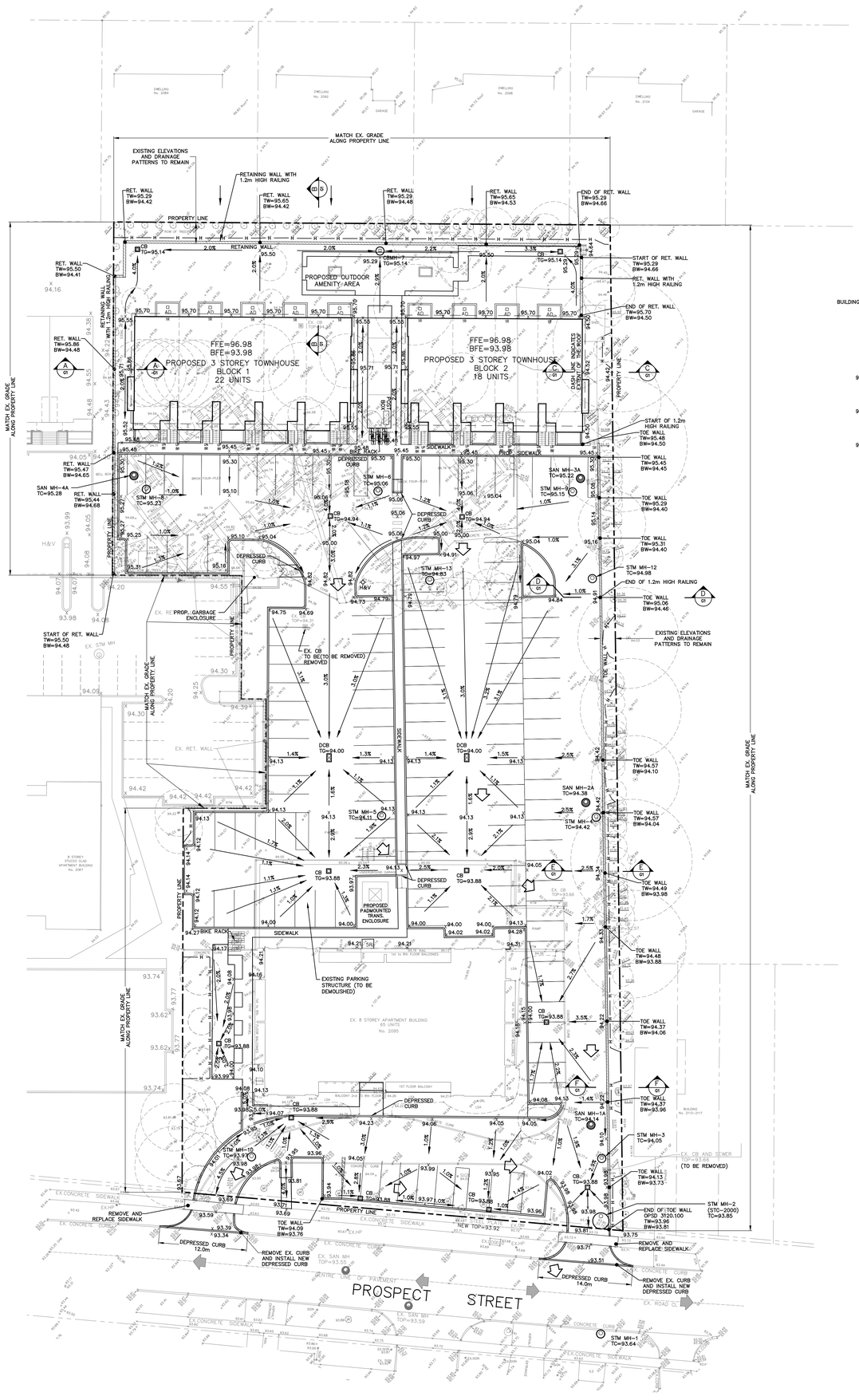
The Applicant shoe be aware that the approval of the water system on private property is the responsibility of the Local Municipality. Regardless, the Applicant must ensure that the Region of Halton's standards and specifications are met. (the Water and Wastewater Linear Delgn Manual may be obtained from the Data Management Group at 905–825–6032) Furthermore, all water quality tests must be completed to Halton Region's satisfaction, before the water supplycan be turned on.

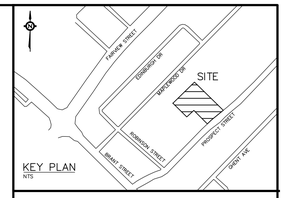
Municipal No.		Regional No.	
Contract No.	–	Consultant No.	1629–S1
		Sheet	

FILENAME: P:\1629 2095 Prospect St\Drawings\DWG\1629GS.dwg
PLOTTED: May 17, 2019 - 9:53am

GRADING NOTES :

1. ALONG ADJOINING PROPERTIES GRADE TO MEET EXISTING OR PROPOSED ELEVATIONS WITH SODDED SLOPES (MIN. 3H TO 1V).
2. SLOPES OF SWALES FOR "SPLIT" DRAINAGE SHALL BE NO LESS THAN 2.0% GRADE AND NO GREATER THAN 33% GRADE (3:1 SLOPES).
3. WHEN MATCHING TO EXISTING PROPERTIES WHERE A 2.0% GRADE CANNOT BE ACHIEVED, A 1.5% GRADE IS PERMITTED PROVIDED A 150mm SUB-DRAIN IS INSTALLED BELOW THE BOTTOM OF THE SWALE AND DRAINED TO A SUITABLE OUTLET, (WITH A MINIMUM 0.3M COVER OVER THE SUB-DRAIN), OR OTHER MITIGATION MEASURES.
4. UNLESS OTHERWISE NOTED, THE GROUND BETWEEN PROPOSED ELEVATIONS ON SIDE LOTS SHALL BE GRADED AS A STRAIGHT LINE.
5. TOP OF FOUNDATION WALLS FOR BUILDINGS SHALL BE 150mm (MIN) ABOVE FINISHED GRADE.
6. ALL FILL PLACED ON LOTS SHALL BE COMPACTED TO A MINIMUM 95% SPD (UNLESS OTHERWISE RECOMMENDED BY THE GEOTECHNICAL ENGINEER). ALL MATERIAL SHALL BE PLACED IN LAYERS NOT EXCEEDING 300mm LIFTS.
7. FOR DELINEATION OF TREE PROTECTION ZONES, BUFFERS, REMOVALS AND PROTECTION SCHEMATICS, ETC., REFER TO TREE PROTECTION PLAN.
8. LOT GRADING SHALL CONFORM STRICTLY WITH THIS PLAN. ANY CHANGES SHALL BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.





LEGEND

167.54	EXISTING ELEVATION
× 94.38	PROPOSED ELEVATION
167.54	EXISTING ELEVATION TO REMAIN
	EXISTING CONTOURS
	PROPOSED SWALE DIRECTION
	PROPOSED DRAINAGE DIRECTION
	PROPOSED EMERGENCY OVERLAND FLOW DIRECTION
	EXISTING EMERGENCY OVERLAND FLOW DIRECTION
	PROPOSED SLOPE
	EXISTING CATCHBASIN
	EXISTING DOUBLE CATCHBASIN
	EXISTING CATCHBASIN MANHOLE
	EXISTING STORM MANHOLE
	EXISTING SANITARY MANHOLE
	EXISTING FIRE HYDRANT
	EXISTING VALVE & BOX
	PROPOSED CATCHBASIN
	PROPOSED DOUBLE CATCHBASIN
	PROPOSED CATCHBASIN MANHOLE
	PROPOSED DITCH INLET MANHOLE
	PROPOSED STORM MANHOLE
	PROPOSED SANITARY MANHOLE
	PROPOSED VALVE & BOX
H H	PROPOSED TREE HOARDING
	PROPOSED RAIN WATER LEADER
	EXISTING TREE TO BE REMOVED
	EXISTING TREE TO REMAIN

FOR OPA / REZONING

NOT FOR CONSTRUCTION

BENCHMARK

BENCHMARK SET ON CITY PLATE SOUTHWEST CORNER, SOUTH SIDE OF CENTRAL PUBLIC SCHOOL FACING BALDWIN STREET, ELEVATION 90.583M.

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1	DEC 11/17	PC/ZG	ISSUED FOR OPA & RZA APPLICATION

Designed	JRE	Chk'd	PC
Drawn	JY	Chk'd	PC
Scale	1:250 (0, 2.5, 5, 10m)		
APPROVALS			

Cad File: 1629GS.dwg
Plot Date: 05/17/19
References
Field Notes

Bell ☐ Hydro ☐
Gas ☐ Cable ☐
Traf. ☐ Water ☐

Consultant
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481 MORDEN ROAD, OAKVILLE, ONTARIO L6K 3W6
TEL: (905) 338-3366 FAX: (905) 338-7734
tel@trafalgareng.com

Municipality
CITY OF BURLINGTON
REGIONAL MUNICIPALITY OF HALTON

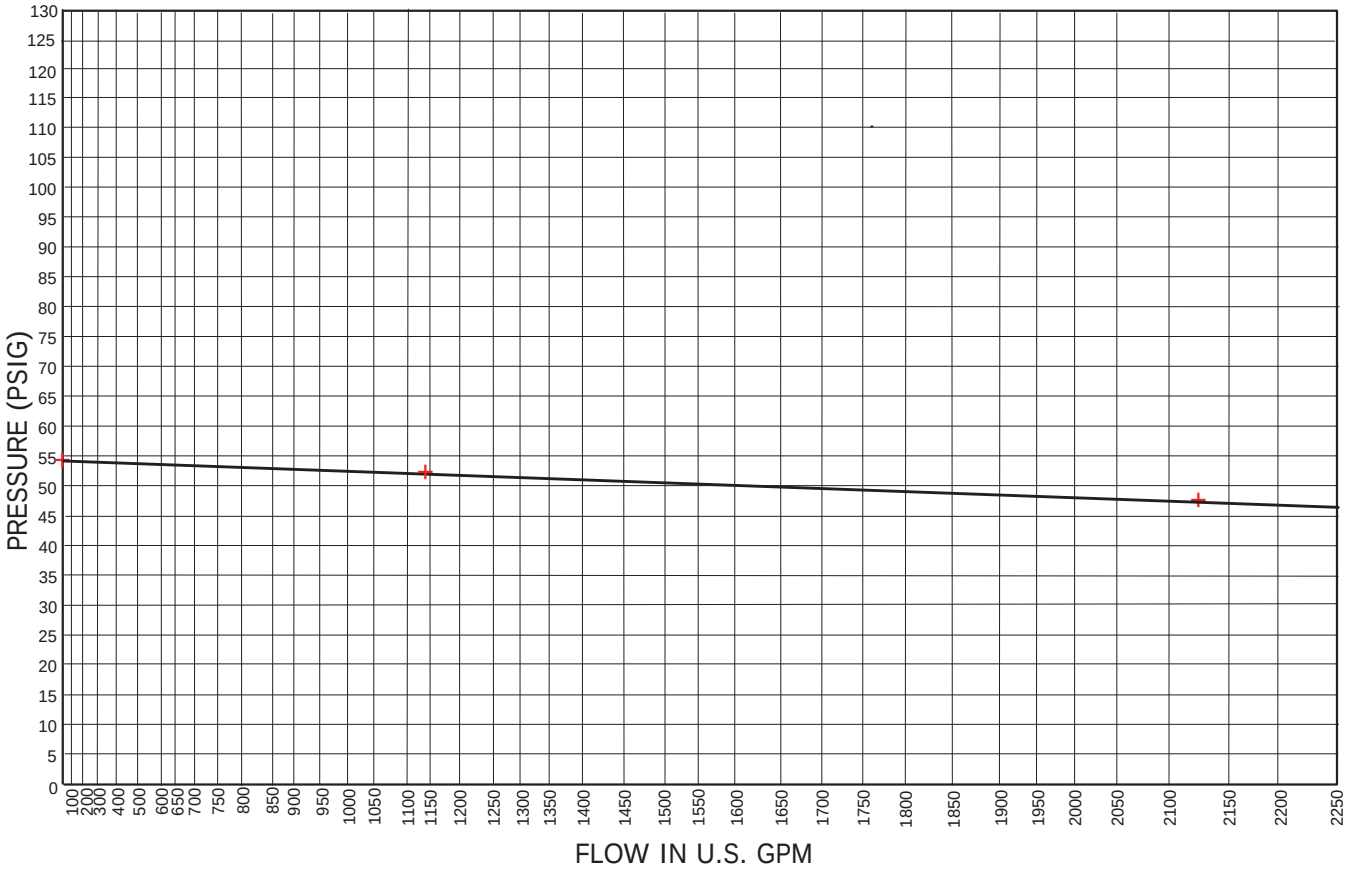
Title
PROPOSED RESIDENTIAL RE–DEVELOPMENT
GRADING PLAN
2087–2103 PROSPECT STREET

Municipal No.	Regional No.
Contract No. –	Consultant No. 1629–G1
	Sheet

FILENAME: P:\1629 2095 Prospect St\Drawings\DWG\1629GS.dwg
PLOTDATE: May 17, 2019 - 9:54am

APPENDIX 'D'

Water Information



PORT No.	PORT DIA. (in/mm)	PITOT (psig)	FLOW (usgpm)	RESIDUAL (psig)
1	2.50/63,5	46	1140	52
2	2.50/63,5	40/40	2120	48
THEORETICAL FLOW @ 20psi			5255	

General Data	
Test Date	24 June 2014
Test Time	10:00am
Pipe Dia.	350mm AC
Static	54psig

Site Information	
Site or Developer Name	Unknown
Site Address/Municipality	Prospect Street, Burlington (Region of Halton)
Location of Test Hydrant	2056 Prospect Street
Location of Base Hydrant	2090 Prospect Street
Technician's Comments	No conversion factor used for flow calculation based on round and flush internal nozzle configuration. Refer to attached letter for any further comments.
	Verified By: Mark Schmidt

TRAFALGAR ENGINEERING LTD.

THEORETICAL DEMAND PRESSURE (AT MAIN)

Project: 2095 Prospect Street
Desc: 3nd Submission RZA

Project No.: 1629
Prepared By: JN
Checked By: PC

Hydrant Residual Flow (Refer to Attached Flow Test Results)

Coefficient	C=	0.9	
Port Diameter	D=	2.5	(inch)
Pitot Pressure	P_{pit} =	46	(psig)
Residual Flow	Q_R =	1138	(us gpm)
Residual Flow	Q_R =	4307	(L/min)

Hydrant Theoretical Flow (Refer to Attached Flow Test Results)

Static Pressure	P_{stat} =	54	(psig)
Residual Pressure	P_{res} =	52	(psig)
Theoretical Pressure	P_{theo} =	20	(psig)
Theoretical Flow	Q_T =	5255	(us gpm)
Theoretical Flow	Q_T =	19890	(L/min)

Max. Demand Pressure

Maximum Demand	Q_D =	6087	(L/min)
Maximum Demand	Q_D =	1608	(us gpm)
Calculated Pressure	P=	50	(psig)

Where:

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

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

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

Notes:

Refer to attached hydrant flow test results for 350mm main on Prospect Street prepared by Jackson Waterworks dated June 24, 2014.

AECOM

Population Densities

Municipality	Residential Classification	PPU
Burlington	Low Density	3.00
	Medium Density	2.44
	High Density	1.62
Halton Hills	Low Density	3.12
	Medium Density	2.60
	High Density	1.94
Milton	Low Density	3.07
	Medium Density	2.64
	High Density	1.84
Oakville	Low Density	3.25
	Medium Density	2.59
	High Density	1.82

TRAFALGAR ENGINEERING LTD.

ESTIMATED WATER DEMAND

Project: 2095 Prospect Street
Desc: 3nd Submission RZA

Project No.: 1629
Prepared By: JN
Checked By: PC

	Occupancy Data					Peaking Factors			Demand Flow		
Land Use / Occupancy Type	Unit Count	Population Density (ppu)	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)
Existing Apartment Building	65	1.62	105	275	20	1.00	4.00	2.25	20	80	45
Proposed Stacked Townhouses	40	2.44	98	275	19	1.00	4.00	2.25	19	75	42
**PPU FROM WATER DESIGN CRITERIA, REGION OF HALTON WATER AND WASTEWATER MASTER PLAN											
TOTAL	**105**		**203**		**39**				**39**	**155**	**87**

Average Daily Demand: **39 (L/min)**
Minimum Hourly Demand: **39 (L/min)**
Maximum Hourly Demand: **155 (L/min)**
Maximum Daily Demand: **87 (L/min)**
Max. Daily Plus Fire: **6087 (L/min)**

Fire Flow
Using Fire Underwriters Survey Methodology:

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: Ordinary Coefficient: 1.00 Total Floor Area: 327 (m^2)

F = 4000 (L/min) Adequately Protected Vertical Openings: No

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**

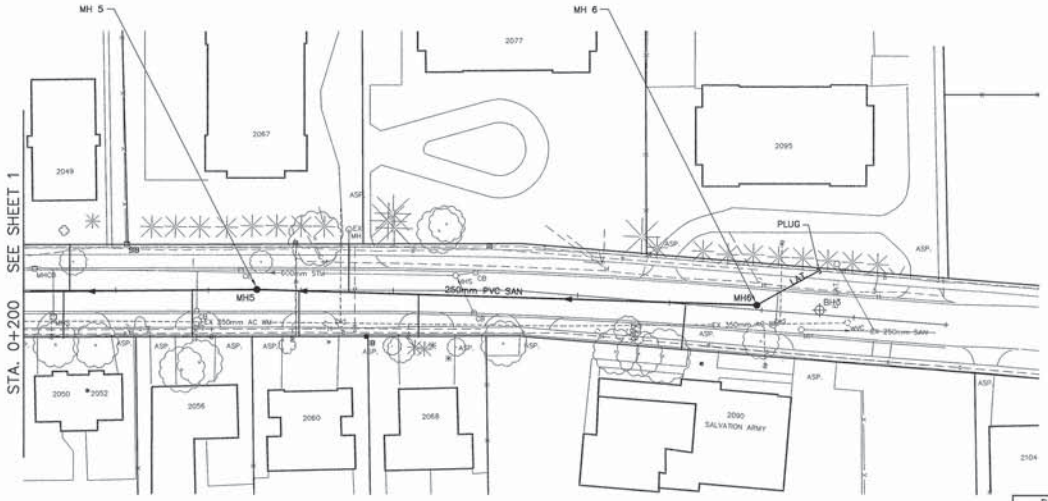
NFPA 13 Sprinkler:	No	Reduction:	0%
Standard Water Supply:	Yes	Reduction:	10%
Fully Supervised:	No	Reduction:	0%
		Total Reduction:	**10%**
		Sprinkler Reduction:	**340 (L/min)**

4. Adjust the value in No. 2 for exposure

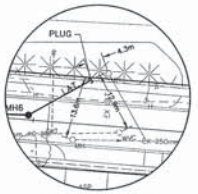
	Separation (m)	Charge
North	25	10%
East	0	25%
South	70	0%
West	0	25%
Total Charge:		**60%**
Exposure Charge:		**2040 (L/min)**

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

F = 5000 (L/min) ***A 2-HOUR DURATION FIRE REQUIRES A MINIMUM OF 6000 L/min, WHICH BECOMES THE GOVERNING CRITERIA.



PROSPECT STREET





LEGEND

- BH1 — BOREHOLES– REFER TO TROW CONSULTANT REPORT #HAGE–0058031–A
- WATER BOXES
- EX. HYDRANT REMOVAL
- EX. G.V. & BOX REMOVAL
- EX. WVC OR EX. MH REMOVAL
- E–3 — PLUG
- *2095 — LATERAL TO BE LOCATED IN THE FIELD
- BORE & JACK

RESTRAINED LENGTHS FOR PVC WATERMAIN				
PIPE SIZE	45° H. BEND	SIZE ON SIZE TEE	VALVE, HYD., DEAD END	45° V. OFFSET*
150mm	1.71m	BR. ONLY	9.72m	4.21m / 2.23m

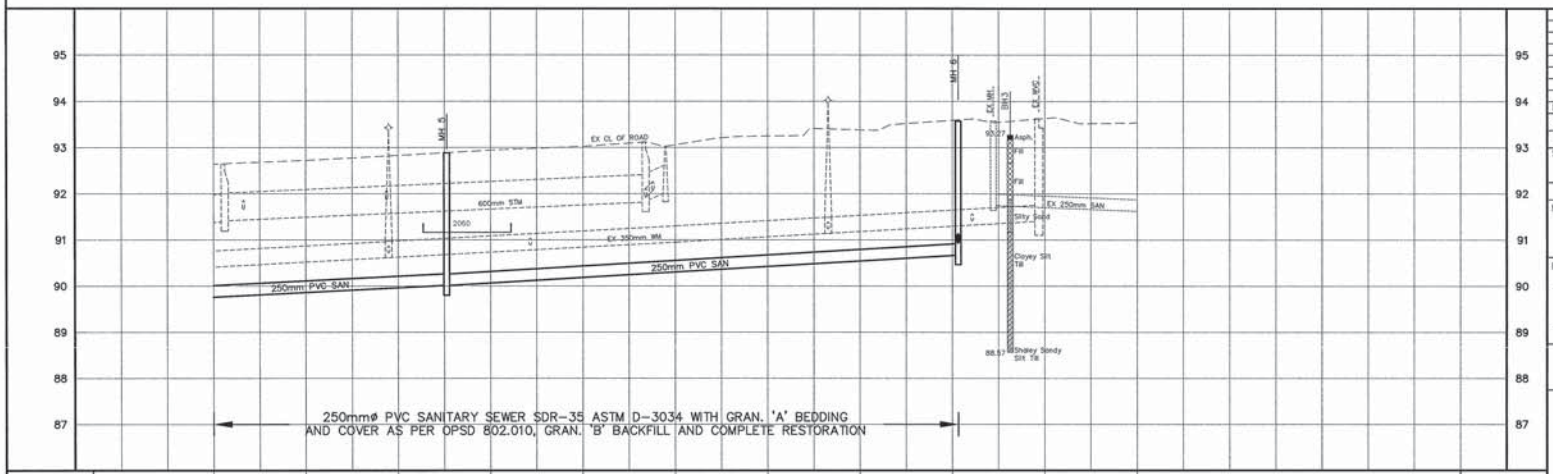
RESTRAINED LENGTHS FOR DUCTILE IRON WATERMAIN				
PIPE SIZE	45° H. BEND	SIZE ON SIZE TEE	VALVE, HYD., DEAD END	45° V. OFFSET*
150mm	1.3m	BR. ONLY	5.5m	6.4m / 1.0m

RESTRAINED LENGTHS FOR POLYETHYLENE–ENCASED DUCTILE IRON WATERMAIN				
PIPE SIZE	45° H. BEND	SIZE ON SIZE TEE	VALVE, HYD., DEAD END	45° V. OFFSET*
150mm	1.7m	BR. ONLY	15.4m	5.8m / 0.9m

200x150mm REDUCING TEE: BRANCH ONLY, ASSUMING 3m MIN. ATTACHED RUN LENGTH
*FIRST NUMBER REPRESENTS THE DOWN BEND
SECOND NUMBER REPRESENTS THE UP BEND

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

FOR GENERAL NOTES SEE SHEET 1



ELEVATIONS	93.83 … 93.53	ELEVATIONS
SANITARY SEWER INVERTS	140m @ 0.50% … 110.7m @ 0.60% (WSO.03, EBO.04, WSO.70, NSO.83)	SANITARY SEWER INVERTS
CHAINAGE	0+220 … 0+400 (0+250.49, 0+261.28)	CHAINAGE

NO	Date	By	REVISIONS	MANU	CAD
	03/04/05	D.C.	AS CONSTRUCTED	X	X

Design: WLT/JP — Ch'kd — Date: MAY 2004
Drawn: LC/DC — Ch'kd
Scale: Horiz. 1:500, Vert. 1:50
References
Field Notes
Stamp

APPROVALS
Municipal
Regional
Director, Design and Construction Services
Manager, Design Services

Halton

TITLE
250mm SANITARY SEWER REPLACEMENT
PROSPECT STREET
IN THE CITY OF BURLINGTON
FROM HOUSE #2050 TO #2095

Consultant File NO: B- 10572
CONTRACT NO: WS–1982–04
Drawing NO: SHEET 2 OF 6

B- 10572
PR–1982–04 2 of 6

APPENDIX 'E'

Sanitary Drainage Information and Calculations

AECOM

Population Densities

Municipality	Residential Classification	PPU
Burlington	Low Density	3.00
	Medium Density	2.44
	High Density	1.62
Halton Hills	Low Density	3.12
	Medium Density	2.60
	High Density	1.94
Milton	Low Density	3.07
	Medium Density	2.64
	High Density	1.84
Oakville	Low Density	3.25
	Medium Density	2.59
	High Density	1.82

TRAFALGAR ENGINEERING LTD.

ESTIMATED SANITARY FLOW

Project: 2095 Prospect Street EXISTING CONDITION **Project No.:** 1629
Desc: 3nd Submission RZA **Prepared By:** JN
Checked By: PC

Residential

Land Use / Occupancy Type	Unit Count	Population Density (ppu)	Eq. Population (cap.)	Per Cap. Demand (L/cap. Day)	Average Daily Dry Weather Flow (L/s)
Existing Apartment Building	65	1.62	105	275	0.3
Existing 4-Plex	8	2.44	20	275	0.1
TOTAL	**73**		**125**		**0.4**

Industrial / Commercial / Institutional

Land Use / Occupancy Type	GFA	Population Density (pers/ha)	Eq. Population (cap.)	Per Cap. Demand (L/Ha. Day)	Average Daily Dry Weather Flow (L/s)
TOTAL	**0**		**0**		**0.0**

Residential Peaking Factor:	4.22	
ICI Peaking Factor:		
Include ICI Peaking?	No	
Total Drainage Area:	0.96	(ha)
Infiltration Allowance:	0.286	(L/s ha)
Foundation Drain Allowance:	0.00	(L/s ha)
Residential Average Flow:	0.7	(L/s)
ICI Average Flow:	0.0	(L/s)
Groundwater Discharge:	0.0	(L/s)
Total Average Flow:	**0.7**	**(L/s)**
Residential Peak Flow:	1.9	(L/s)
ICI Peak Flow:	0.0	(L/s)
Groundwater Discharge:	0.0	(L/s)
Total Peak Flow:	**1.9**	**(L/s)**

TRAFALGAR ENGINEERING LTD.

ESTIMATED SANITARY FLOW

Project: 2095 Prospect Street
Desc: 3nd Submission RZA

Project No.: 1629
Prepared By: JN
Checked By: PC

Residential

Land Use / Occupancy Type	Unit Count	Population Density (ppu)	Eq. Population (cap.)	Per Cap. Demand (L/cap. Day)	Average Daily Dry Weather Flow (L/s)
Existing Apartment Building	65	1.62	105	275	0.3
Proposed Stacked Townhouses	40	2.44	98	275	0.3

**PPU FROM WATER DESIGN CRITERIA, REGION OF HALTON WATER AND WASTEWATER MASTER PLAN

TOTAL	**105**		**203**		**0.6**

Industrial / Commercial / Institutional

Land Use / Occupancy Type	GFA	Population Density (pers/ha)	Eq. Population (cap.)	Per Cap. Demand (L/Ha. Day)	Average Daily Dry Weather Flow (L/s)

TOTAL	**0**		**0**		**0.0**

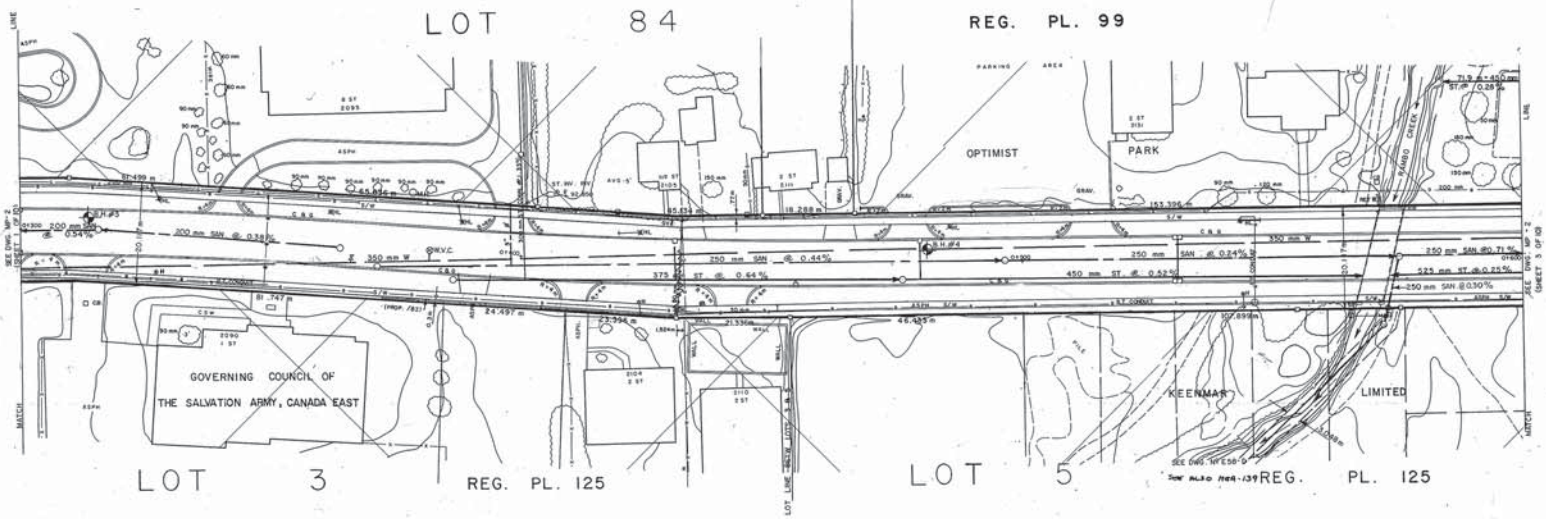
Residential Peaking Factor:	4.15	
ICI Peaking Factor:		
Include ICI Peaking?	No	
Total Drainage Area:	0.96	(ha)
Infiltration Allowance:	0.286	(L/s ha)
Foundation Drain Allowance:	0.00	(L/s ha)

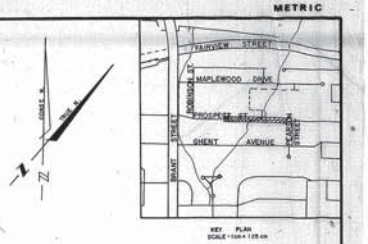
Residential Average Flow:	0.9	(L/s)
ICI Average Flow:	0.0	(L/s)
Groundwater Discharge:	0.0	(L/s)
Total Average Flow:	**0.9**	**(L/s)**

Residential Peak Flow:	3.0	(L/s)
ICI Peak Flow:	0.0	(L/s)
Groundwater Discharge:	0.0	(L/s)
Total Peak Flow:	**3.0**	**(L/s)**

METRIC

MP-2
SH. 2





For typical X-section, see Dwg. Nº MMS-74-D

1929 DATUM

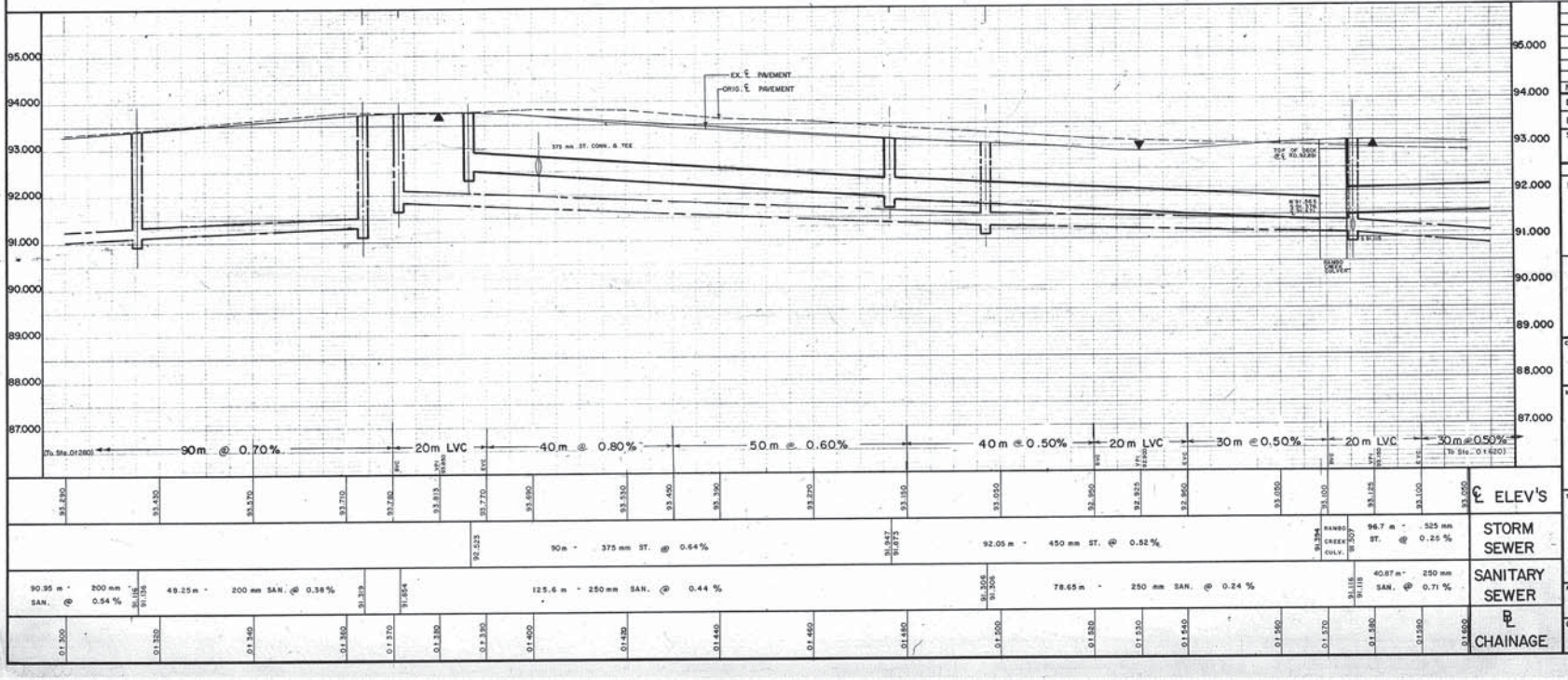
B.M. 2194 JOYCE STREET, LOT 5, REG. PLAN 1419, BRASS CAP, EASTERLY WALL, 0.435 m SOUTH OF NORTHEASTERLY CORNER, 0.076 m ABOVE GRADE. ELEVATION 95.344.

B.M. B.M. SET ON PLAQUE ON NORTHWEST FACE OF BRIDGE ABUTMENT NORTH SIDE OF PROSPECT STREET OVER CREEK BETWEEN OPTIMIST PARK POOL AND TOM THOMPSON SCHOOL. BRIDGE 38.100 m, WEST OF CENTRE LINE OF PEARSON STREET, 10.363 m, NORTH OF CENTRE LINE OF PROSPECT STREET, 0.152 m WEST OF MOST NORTHERLY CORNER AT SIDEWALK LEVEL. ELEVATION 93.226.

EXISTING ROAD BASE

YEAR CONSTRUCTED 1980

40 mm H.M. 3
60 mm H.M. 5
400 mm MIN. GRAN. "A"



Nº	Date	By	REVISIONS
2.	DEC/81	S.E.S.	AS CONSTRUCTED 80-41, P. 273, P.455
1.	JULY 3/80	S.E.S.	DESIGN, ZOOM DWG AND ADJUSTMENTS AS PER UNION GAS SUBMISSION

Design	J. HODSON	Checked	Date
Drawn	S. SEDGWICK	Checked	MARCH, 1980
Scale	Hor. 1:500, Vert. 1:50		

REFERENCES
S-1124-A-6
S-1125-A-6
S-1126-A-6
S-1130-A-6
S-1209-A-6

APPROVALS

Municipal

DIRECTOR OF PUBLIC WORKS

DATE

Regional

FIELD NOTES

STAMP

CONSULTANT

MUNICIPALITY

CITY OF BURLINGTON

DEPARTMENT OF PUBLIC WORKS

TITLE

PROSPECT STREET

300 m E. OF BRANT ST. - 7m W. OF PEARSON ST.

MUNICIPAL DRAWING Nº	REGIONAL DRAWING Nº
MP-2	
CONTRACT Nº	SHEET 2 OF 10

S-GM
MP-2

APPENDIX 'F'

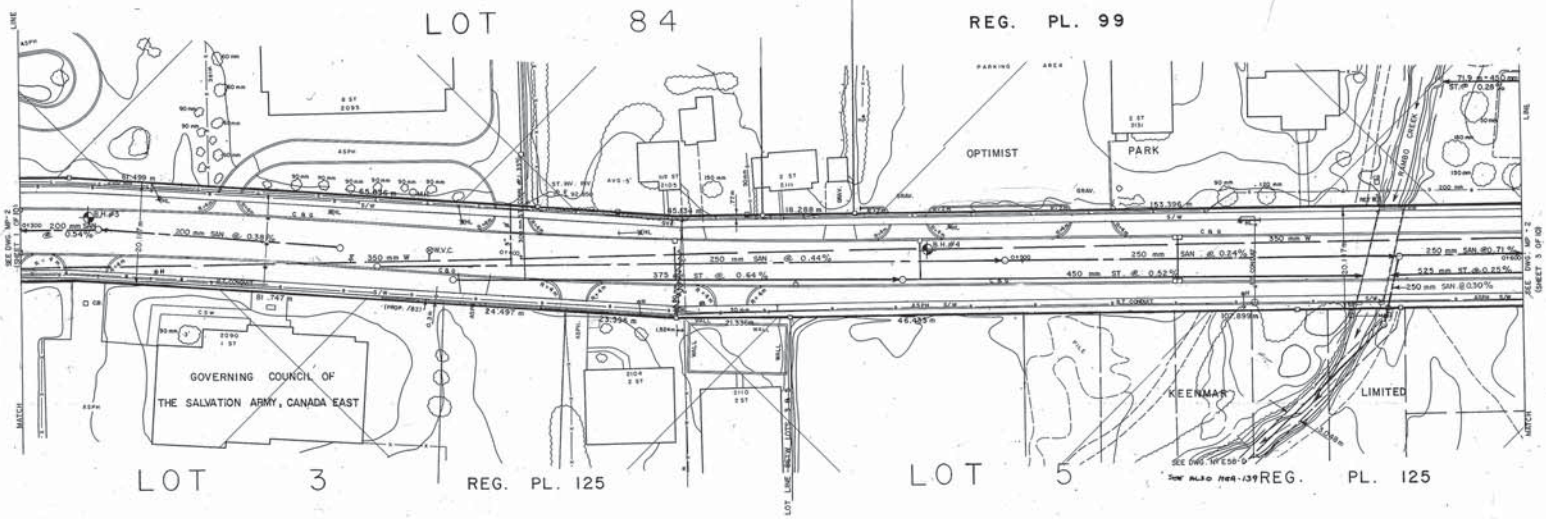
Storm Drainage Information

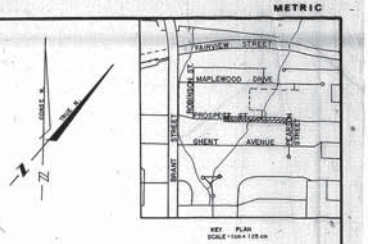
Stormwater Management Calculations

Storm Drainage Area Plan; Dwg. No. 1629-S2 (Post-development)

METRIC

MP-2
SH. 2





For typical X-section, see Dwg. Nº MMS-74-D

1929 DATUM

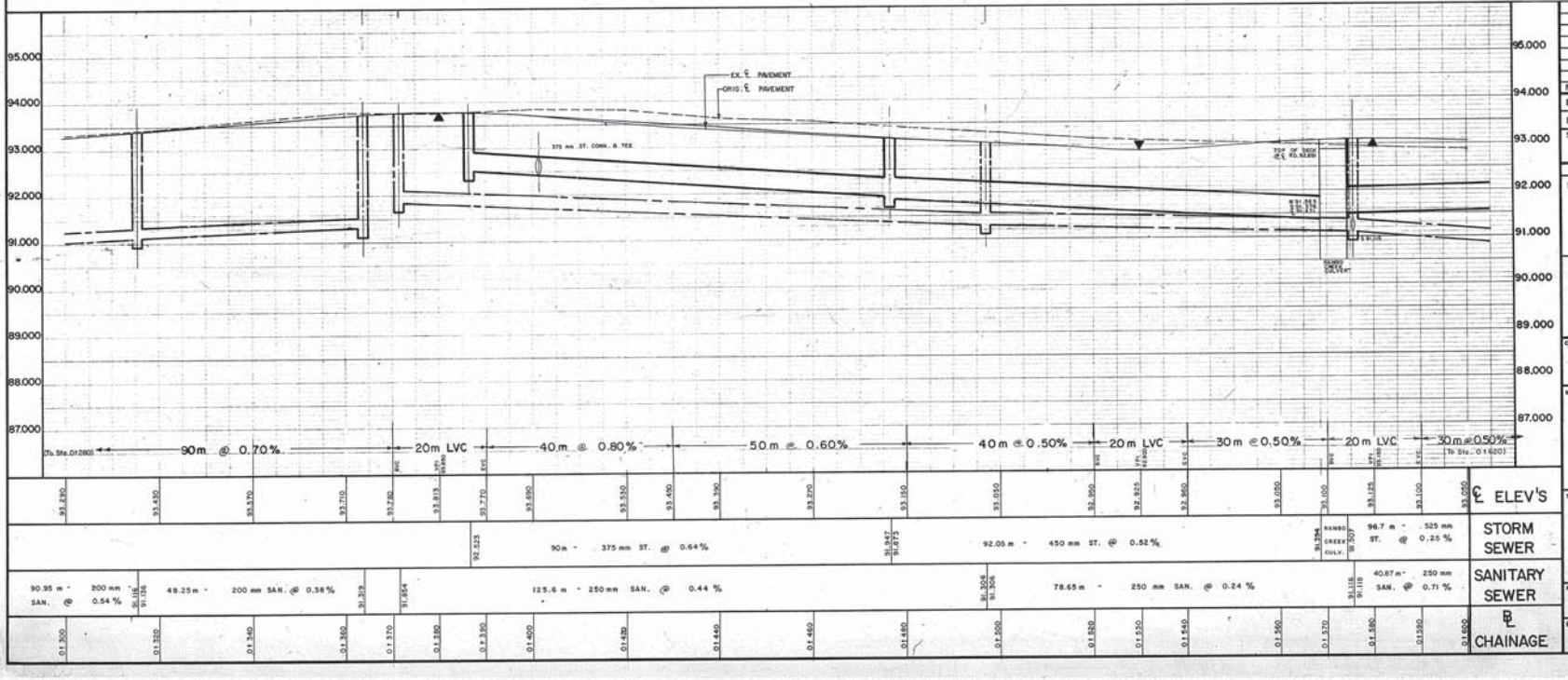
B.M. 2194 JOYCE STREET, LOT 5, REG. PLAN 1419, BRASS CAP, EASTERLY WALL, 0.435 m SOUTH OF NORTHEASTERLY CORNER, 0.076 m ABOVE GRADE. ELEVATION 95.344.

B.M. B.M. SET ON PLAQUE ON NORTHWEST FACE OF BRIDGE ABUTMENT NORTH SIDE OF PROSPECT STREET OVER CREEK BETWEEN OPTIMIST PARK POOL AND TOM THOMPSON SCHOOL. BRIDGE 38.100 m, WEST OF CENTRE LINE OF PEARSON STREET, 10.363 m, NORTH OF CENTRE LINE OF PROSPECT STREET, 0.152 m WEST OF MOST NORTHERLY CORNER AT SIDEWALK LEVEL. ELEVATION 93.226.

EXISTING ROAD BASE

YEAR CONSTRUCTED 1980

40 mm H.M. 3
60 mm H.M. 5
400 mm MIN. GRAN. "A"



Nº	Date	By	REVISIONS
2.	DEC/81	S.E.S.	AS CONSTRUCTED 80-41, P. 273, P.455
1.	JULY 3/80	S.E.S.	DESIGN, ZOOM DWG AND ADJUSTMENTS AS PER UNION GAS SUBMISSION

Design	J. HODSON	Checked	Date
Drawn	S. SEDGWICK	Checked	MARCH, 1980
Scale	Hor. 1:500, Vert. 1:50		

REFERENCES
S-1124-A-6
S-1125-A-6
S-1126-A-6
S-1130-A-6
S-1209-A-6

APPROVALS

Municipal

DIRECTOR OF PUBLIC WORKS

DATE

Regional

FIELD NOTES

STAMP

CONSULTANT

MUNICIPALITY

CITY OF BURLINGTON

DEPARTMENT OF PUBLIC WORKS

TITLE

PROSPECT STREET

300 m E. OF BRANT ST. - 7m W. OF PEARSON ST.

MUNICIPAL DRAWING Nº	REGIONAL DRAWING Nº
MP-2	
CONTRACT Nº	SHEET 2 OF 10

S-GM
MP-2

TRAFALGAR ENGINEERING LTD.

RUNOFF COEFFICIENT CALCULATIONS

Project: **Proposed Residential Re-development**
Location: **2095 Prospect Street, Burlington, ON**

Pre-Development Condition:

Item	Catchment Area (m^2)	Runoff Coefficient "c"
Impervious Area	5,241	0.90
Pervious Area	4,367	0.25
External	1,617	0.40
Total	11,225	0.58

Note: Use C = 0.60

Post-Development Condition:

Item	Catchment Area (m^2)	Runoff Coefficient "c"
Impervious Area	7,679	0.90
Pervious Area	1,929	0.25
External	1,617	0.40
Total	11,225	0.72

Project: Proposed Residential Re-development Project No.: 1629
Location: 2095 Prospect Street, Burlington, ON
Subject: SWM Calculations

A. Allowable Flows for the Whole Site:

A.1 $I_{5\text{-year}} = 697.40 / (T + 5)^{0.764}$
$= 697.40 / (10 + 5)^{0.764}$
$= 88.09$ mm/hr

where: T = 10 minutes
c = 0.60
Site Area = 0.9608 ha
External Area = 0.1617 ha
A_T = 1.1225 ha

$Q_{Allowable}$ = cIA /360
= (0.60 x 88.09 x 1.1225) / 360
= 0.165 m^3/s (to the storm sewer on Prospect Street)

B. Post-Development Flow for the Whole Site:

B.1 5-year Post Dev. Flow:

$Q_{Post\text{-}Dev}$ = cIA /360
= (0.72 x 88.09 x 1.1225) / 360
= 0.197 m^3/s

where: T = 10 minutes
c = 0.72

B.2 100-year Post Dev. Flow:

$Q_{Post\text{-}Dev}$ = (0.72 x 141.89 x 1.1225) / 360
= 0.319 m^3/s

where: T = 10 minutes
c = 0.72

C. Actual Release Rate (Orifice Discharge) and Orifice Tube Diameter:

Actual Release Rate (Orifice Discharge) at Elev. of 93.88 = 0.115 m^3/s
Orifice Tube Diameter = 200mmØ

Note:
The orifice tube discharge should be equal or less than the 5-year allowable flow. The orifice size was based on the water elevation of 93.88. This is lowest CB elevation and the crown elevation of Cultec storage system. The orifice tube discharge (0.115 m^3/s) is the flow discharging into the storm sewer and should be used to calculate storage volume. See Orifice Calculation in a separate sheet.

D. Storage Volume Required:

Storage Volume Required = 127 m^3

Note:
The storage volume was based on 200mmø orifice tube discharge (0.115 m^3/s) at maximum water elevation of 93.88m. See Storage Calculation in a separate sheet.

E. Storage Provided:

E.1 Pipe Storage:

450mmø pipe (227m) = 36.1 m^3
375mmø pipe (74m) = 8.2 m^3
250mm Pipe (98.5m) = 4.8m^3
Volume = 49 m^3

Note:
Neglect volume at MH's and CB's.

E.2 Cultec Storage:

Using 49 Units of Cultec Recharger 280HD at 1.83m^3/unit
Volume = 78 m^3

E.3 Total Storage Provided = 49 + 78 =127 m^3

Project: **2095 Prospect Street, Burlington, Ontario** Project No.: 1629

Subject: **Post-Development Run-off Coefficient**

A. Site Area and Runoff Coefficient:

Item No.	Total Area (Ha)	Impervious	Runoff Coef.	Pervious (Ha)	Runoff Coef.	Composite 'c'
1	0.0475	0.0172	0.90	0.0303	0.25	0.49
2	0.0734	0.0260	0.90	0.0474	0.25	0.48
3	0.0404	0.0127	0.90	0.0277	0.25	0.45
4	0.1131	0.1051	0.90	0.0080	0.25	0.85
5	0.0808	0.0713	0.90	0.0095	0.25	0.82
6	0.0893	0.0760	0.90	0.0133	0.25	0.80
7	0.1316	0.1198	0.90	0.0118	0.25	0.84
8	0.0633	0.0546	0.90	0.0087	0.25	0.81
9	0.0597	0.0525	0.90	0.0072	0.25	0.82
10	0.0809	0.0809	0.90	0.0000	0.25	0.90
11	0.0424	0.0318	0.90	0.0106	0.25	0.74
12	0.0275	0.0042	0.90	0.0233	0.25	0.35
13	0.0367	0.0273	0.90	0.0094	0.25	0.73
14	0.0224	0.0182	0.90	0.0042	0.25	0.78
15	0.0329	0.0261	0.90	0.0068	0.25	0.77
16	0.0189	0.0142	0.90	0.0047	0.25	0.74
Total	**0.9608**	**0.7379**	0.90	**0.2229**	0.25	**0.75**

B. External Area and Runoff Coefficient:

Item No.	Area (Ha)	Runoff Coef.
101	0.0477	0.40
102	0.0736	0.40
103	0.0404	0.40
Total Area	**0.1617**	**0.40**

C. Composite Runoff Coefficient:

Item	Area (Ha)	Runoff Coef.
Site Area	0.9608	0.75
External	0.1617	0.40
Total	1.1225	**0.70**



EXTERNAL = 1,617 m²
IMPERVIOUS = 5,241 m²
PERVIOUS = 4,367 m²
TOTAL SITE AREA = 9,608 m² (EXCLUDING EXTERNAL)

COMPOSITE "C":

$$C = \frac{5{,}241\ (0.90) + 4{,}367\ (0.25) + 1{,}617\ (0.40)}{9{,}608 + 1{,}617}$$

$C = 0.58$

LEGEND

IMPERVIOUS
PERVIOUS
EXTERNAL

PROJECT No. 1629

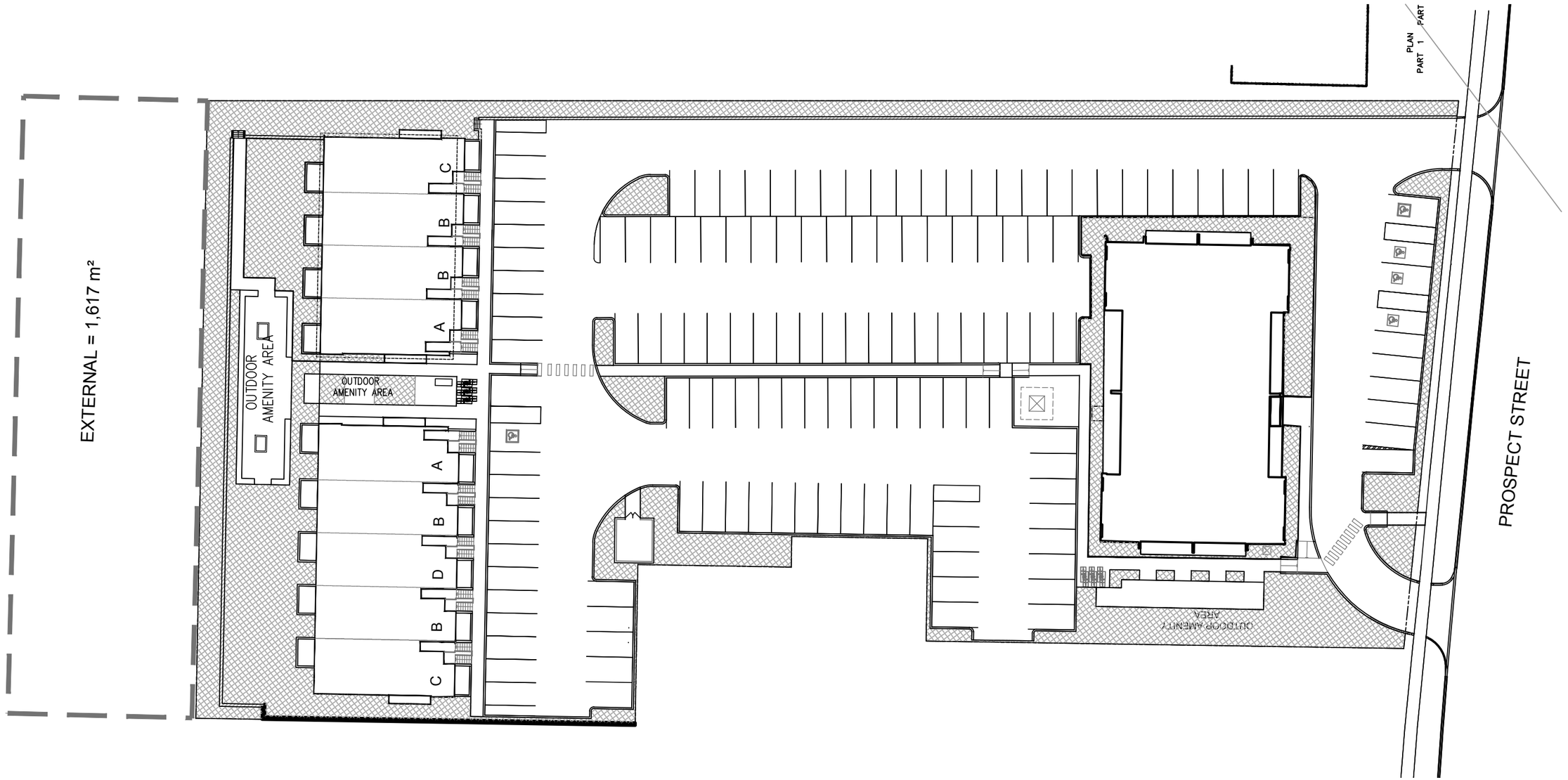
PROJECT TITLE
PROPOSED RESIDENTIAL RE-DEVELOPMENT
2087-2103 PROSPECT STREET

DRAWING TITLE
PRE-DEVELOPMENT RUN-OFF COEFFICIENT

TRAFALGAR ENGINEERING LTD.
TEL: (905) 338-3366 FAX: (905) 338-7734
tel@trafalgareng.com

DESIGNED BY	JRE	SCALE	1:500	DRAWING No.
DRAWN BY	JY	DATE	AUGUST, 2017	FIG.1

FILENAME: P:\1629 2095 Prospect St\Drawings\DWG\1629-postdev.dwg
PLOTDATE: Dec 18, 2018 - 2:11pm



EXTERNAL = 1,617 m^2
IMPERVIOUS = 7,679 m^2
PERVIOUS = 1,929 m^2
TOTAL SITE AREA = 9,608 m^2 (EXCLUDING EXTERNAL)

COMPOSITE "C":

$$C = \frac{7{,}679\ (0.90) + 1{,}929\ (0.25) + 1{,}617\ (0.40)}{9{,}608 + 1{,}617}$$

$C = 0.72$

LEGEND

- IMPERVIOUS
- PERVIOUS
- EXTERNAL

PROJECT No.1629

PROJECT TITLE
PROPOSED RESIDENTIAL RE-DEVELOPMENT
2087-2103 PROSPECT STREET

DRAWING TITLE
POST-DEVELOPMENT RUN-OFF COEFFICIENT

TRAFALGAR ENGINEERING LTD.
TEL: (905) 338-3366 FAX: (905) 338-7734
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DESIGNED BY	JRE	SCALE	1:500	DRAWING No.
DRAWN BY	JY/ZG	DATE	AUGUST, 2017	FIG.2

FILENAME: P:\1629 2095 Prospect St\Drawings\DWG\1629-postdev.dwg
PLOTDATE: May 17, 2019 - 10:03am

TRAFALGAR ENGINEERING LTD.

ORIFICE SIZE CALCULATIONS

Project Name:	**2087 Prospect Street**	
Project No.:	**1629**	
Orifice Formula:	**$Q = CA\,(2gh)^{1/2}$**	
Gravitational Acceleration, g	**9.807**	**m/sec^2**
Pre-Development Flow (m^3/s)	**0.165**	**(m^3/s)**
Uncontrolled Flow (m^3/s)	**0**	**(m^3/s)**
Allowable Flow (m^3/s)	**0.165**	**(m^3/s)**
Control Device:	**Orifice Tube**	

Parameters	Values	Remarks
Orifice Outlet Coefficient "C"	0.81	
Ponding Elevation (m)	93.88	
Invert Elevation (m)	92.73	
Orifice Diameter (mm)	200	
Area of the Orifice (m^2)	0.0314	
Hydraulic Head, h (m)	1.050	
Orifice Discharge (m^3/s)	0.115	Okay

Notes:
1. Ponding Elevation is the maximum water level.
2. Invert Elevation is the invert of the orifice.
3. Hydraulic Head is measured from the centre line of the orifice up to the maximum water level.
4. Orifice Discharge shall be used to calculate storage volume.

Conclusion:
1. Orifice Discharge (0.115 m^3/s) is less than the allowable discharge (0.165 m^3/s). Therefore, a 200 diameter orifice can be used for quantity control.

TIME minutes	100-year INTENSITY mm/hr	Post Q (100-year Post) m^3/s	Control Q (Orifice Q) m^3/s	Q Stored m^3/s	STORAGE m^3
0	0.0	0.000	0.115		
10	141.89	0.319	0.115	0.204	122.13
11	135.09	0.303	0.115	0.188	124.26
12	129.00	0.290	0.115	0.175	125.72
13	123.51	0.277	0.115	0.162	126.58
14	118.53	0.266	0.115	0.151	126.93
15	113.99	0.256	0.115	0.141	126.82
16	109.84	0.247	0.115	0.132	126.32
17	106.02	0.238	0.115	0.123	125.47
18	102.49	0.230	0.115	0.115	124.30
19	99.23	0.223	0.115	0.108	122.85
20	96.19	0.216	0.115	0.101	121.14
21	93.36	0.210	0.115	0.095	119.19
22	90.72	0.204	0.115	0.089	117.03

Site - Controlled

Area (ha)	1.1225

Pre-Development

Area (ha)	1.1225	
C	0.60	
Tc (min)	10.00	
Intensity mm/hr	88.09	
Qc	0.165	(m^3/s)
less uncontrolled (see below left)	0.0000	(m^3/s)
Qcontrol	0.165	(m^3/s)

Post-Development

C	0.72
Time Incr.	1.0

Return Period 5-year
Intensity
$i = a/(T+b)^c$ (mm/hr)
where,

c =	0.764
b =	5
a =	697.40

Orifice Discharge:
0.115 (m^3/s)

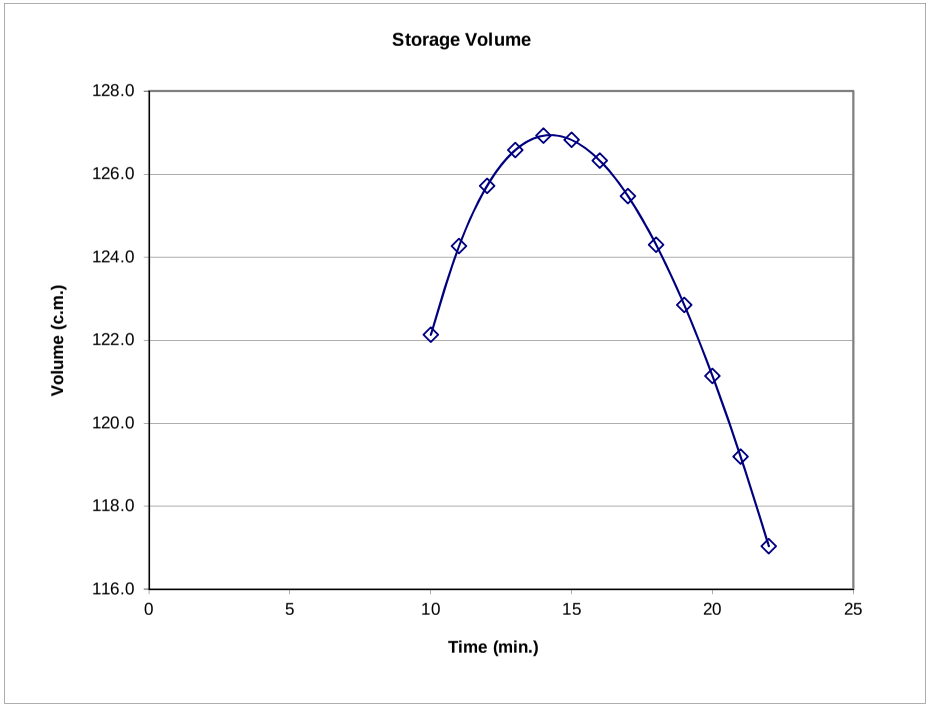
Post Storm

Return Period	100-year
Intensity $i = a/(T+b)^c$ (mm/hr) where,	
c =	0.761
b =	5
a =	1114.20

Site - Uncontrolled

Area (ha)	0.0000
C	0.25
Tc (min)	10.00
Intensity mm/hr	141.89
Qun-control(m^3/s)	0.0000

Max. Storage in m^3:
Volume: 127
(Rounded)



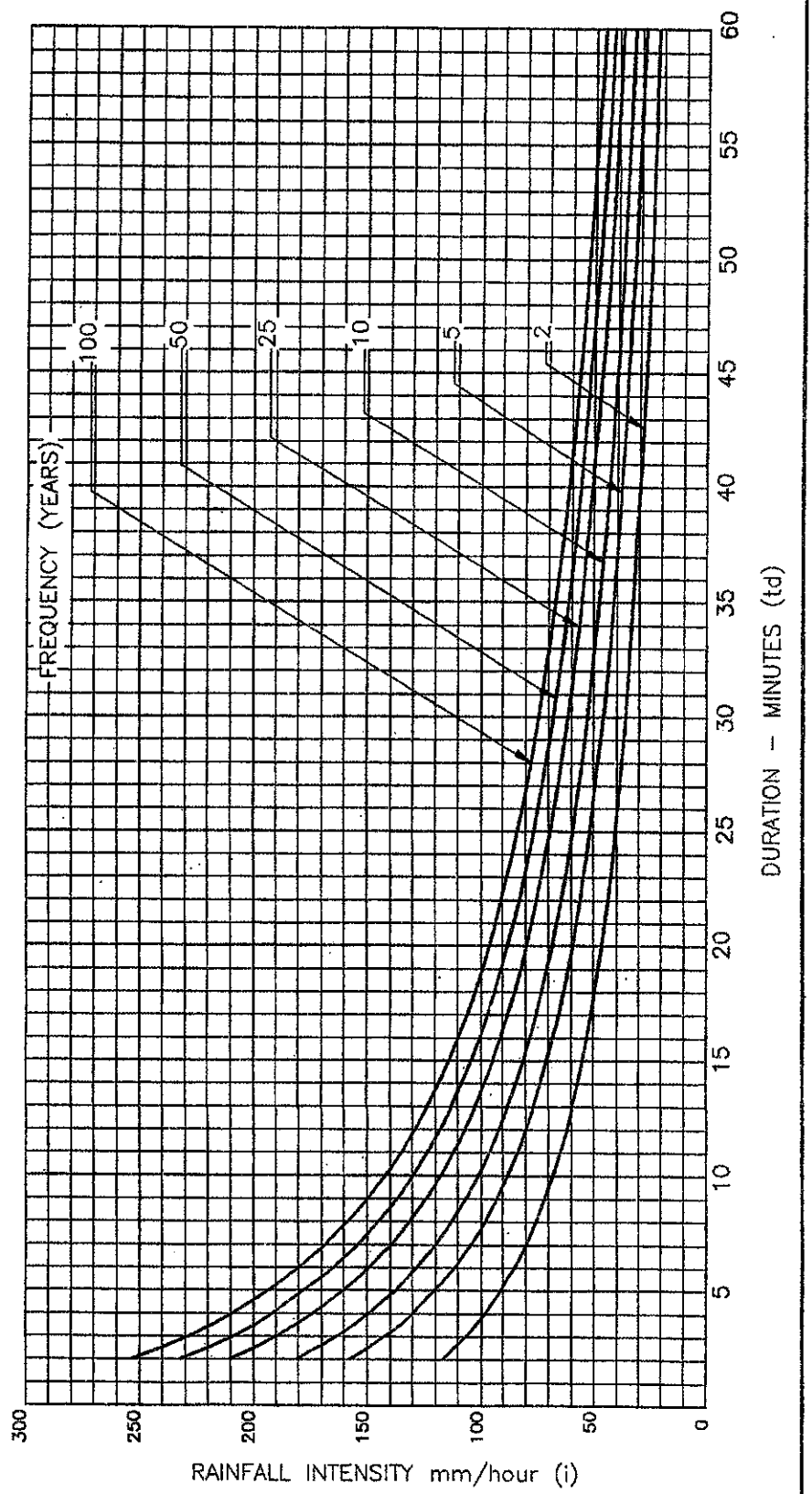
DATE: JUNE/98	REV. 2

EQUATION OF CURVE

$$i_{100} = \frac{1114.20}{(td+5)^{0.761}} \qquad i_{10} = \frac{798.50}{(td+5)^{0.763}}$$

$$i_{50} = \frac{1019.40}{(td+5)^{0.761}} \qquad i_{5} = \frac{697.40}{(td+5)^{0.764}}$$

$$i_{25} = \frac{926.90}{(td+5)^{0.762}} \qquad i_{2} = \frac{592.60}{(td+6)^{0.780}}$$



APPROVED	CITY OF BURLINGTON	METRIC
F. Eichenbaum DIRECTOR OF ENGINEERING DATE: Feb. 17/99	ENGINEERING DEPARTMENT	SCALE: N.T.S.
	INTENSITY, DURATION, FREQUENCY CURVES	DWG. NO. S-IDF

TRAFALGAR ENGINEERING LTD.

Consulting Engineers

Project Name : Proposed Residential Re-development

Project No. : 1629

Date : Dec. 17, 2018

STORM SEWER DESIGN SHEET (Metric)

5-year Storm

City of Burlington

Intensity = $A / (T_d + B)^C$

A= 697.40

B= 5

C= 0.764

Item No.	LOCATION	FROM MH	TO MH	DRAINAGE AREA Area (ha)	Runoff Coeff. ('c')	A x R (ha x 'c')	Accum. A x R (ha x 'c')	RUNOFF T of C (min)	Intensity (mm/hr)	Expected Flow (m^3/s)	PROPOSED SEWER Length (m)	Gradient (%)	Pipe Size (mm)	Manning's Coeff. (n)	Capacity (m^3/s)	Velocity (m/s)	Time of Flow (min)	Fraction Full (%)
101	External			0.0477	0.40	0.019	0.019											
1	Backyard	CB	CBMH7	0.0475	0.49	0.023	0.042	10.00	88.09	0.010	36.0	0.50	250	0.013	0.042	0.86	0.70	25
103	External			0.0404	0.40	0.016	0.016											
3	Backyard	CB	CBMH7	0.0404	0.45	0.018	0.034	10.00	88.09	0.008	27.0	0.67	250	0.013	0.049	0.99	0.45	17
102	External			0.0736	0.40	0.029	0.029											
2	Backyard	CBMH7	MH6	0.0734	0.48	0.035	0.141	10.70	85.08	0.033	35.0	0.31	450	0.013	0.159	1.00	0.58	21
4	Driveway/Parking	MH8	MH6	0.1131	0.85	0.096	0.096	10.00	88.09	0.024	34.0	0.32	450	0.013	0.161	1.01	0.56	15
5	Driveway/Parking	MH9	MH6	0.0808	0.82	0.066	0.066	10.00	88.09	0.016	28.5	0.32	450	0.013	0.161	1.01	0.47	10
6	Driveway/Parking	MH6	MH5	0.0893	0.80	0.071	0.375	11.28	82.73	0.086	48.0	0.31	450	0.013	0.159	1.00	0.80	54
8	Driveway/Parking	CB	MH5	0.0633	0.81	0.051	0.051	10.00	88.09	0.013	10.5	0.50	250	0.013	0.042	0.86	0.20	30
10				0.0809	0.90	0.073	0.073											
7				0.1316	0.84	0.111	0.111											
9	Driveway/Parking	MH5	MH4	0.0597	0.82	0.049	0.659	12.09	79.75	0.146	31.5	0.32	450	0.013	0.161	1.01	0.52	90
11	Driveway/Parking	MH4	MH3	0.0424	0.74	0.031	0.690	12.60	77.95	0.149	50.0	0.30	450	0.013	0.156	0.98	0.85	96
12	Sideyard	CB	MH10	0.0275	0.35	0.010	0.010	10.00	88.09	0.002	17.0	0.53	250	0.013	0.043	0.88	0.32	5
13				0.0367	0.73	0.027	0.027											
14				0.0224	0.78	0.017	0.017											
15				0.0329	0.77	0.025	0.025											
16	Driveway/Parking	MH10	MH3	0.0189	0.74	0.014	0.093	10.32	86.68	0.022	52.0	0.31	375	0.013	0.098	0.88	0.98	23
	Driveway/Parking	MH3	MH2	0.0000	0.72	0.000	0.783	13.45	75.20	0.164	7.0	0.50	375	0.013	0.124	1.12	0.10	N.A.
	Driveway/Parking	MH2	MH1	0.0000	0.72	0.000	0.783	13.56	74.88	0.163	15.0	1.00	375	0.013	0.175	1.59	0.16	N.A.
		Total Area		1.1225														

Note:
An Orifice Tube will be installed after MH3, which will serve as a control device.

Computed by: JRE

Checked by: PC

TRAFALGAR ENGINEERING LTD.

Consulting Engineers

Project Name : Proposed Residential Re-development

Project No. : 1629

Date : Dec. 17, 2018

STORM SEWER DESIGN SHEET (Metric)

100-year Storm

City of Burlington

Intensity = $A / (T_d + B)^C$

A= 1114.20

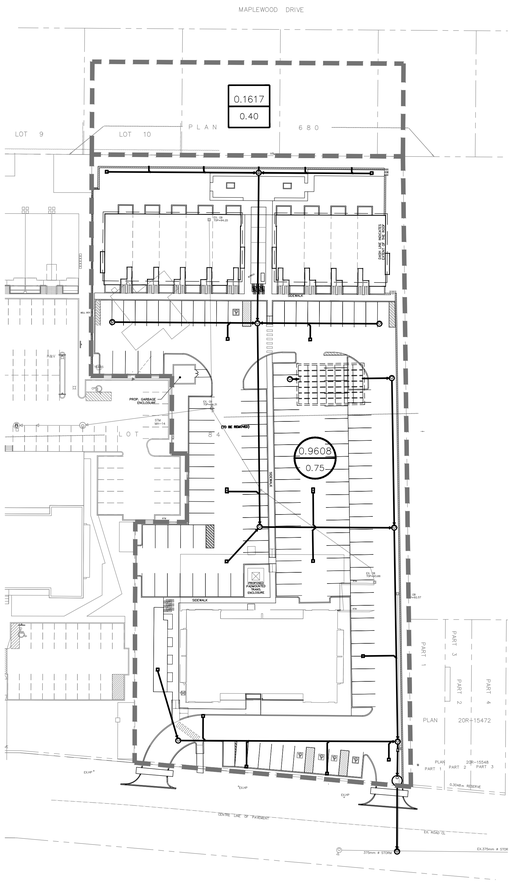
B= 5

C= 0.761

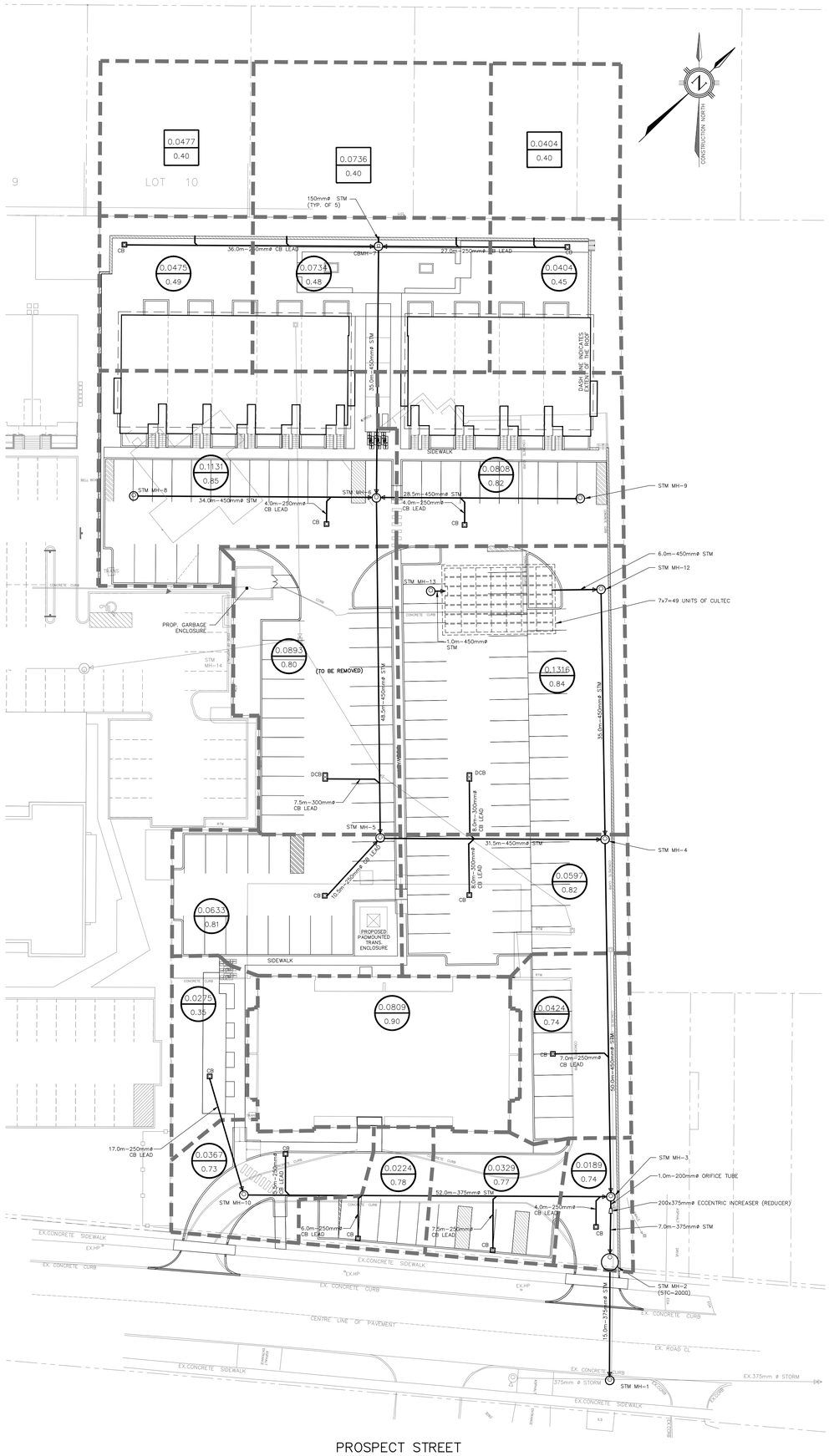
Item No.	LOCATION	FROM MH	TO MH	DRAINAGE AREA Area (ha)	Runoff Coeff. ('c')	A x R (ha x 'c')	Accum. A x R (ha x 'c')	RUNOFF T of C (min)	Intensity (mm/hr)	Expected Flow (m^3/s)	PROPOSED SEWER Length (m)	Gradient (%)	Pipe Size (mm)	Manning's Coeff. (n)	Capacity (m^3/s)	Velocity (m/s)	Time of Flow (min)	Fraction Full (%)
101	External			0.0477	0.40	0.019	0.019											
1	Backyard	CB	CBMH7	0.0475	0.49	0.023	0.042	10.00	141.89	0.017	36.0	0.50	250	0.013	0.042	0.86	0.70	40
103	External			0.0404	0.40	0.016	0.016											
3	Backyard	CB	CBMH7	0.0404	0.45	0.018	0.034	10.00	141.89	0.014	27.0	0.67	250	0.013	0.049	0.99	0.45	28
102	External			0.0736	0.40	0.029	0.029											
2	Backyard	CBMH7	MH6	0.0734	0.48	0.035	0.141	10.70	137.05	0.054	35.0	0.31	450	0.013	0.159	1.00	0.58	34
4	Driveway/Parking	MH8	MH6	0.1131	0.85	0.096	0.096	10.00	141.89	0.038	34.0	0.32	450	0.013	0.161	1.01	0.56	23
5	Driveway/Parking	MH9	MH6	0.0808	0.82	0.066	0.066	10.00	141.89	0.026	28.5	0.32	450	0.013	0.161	1.01	0.47	16
6	Driveway/Parking	MH6	MH5	0.0893	0.80	0.071	0.375	11.28	133.29	0.139	48.0	0.31	450	0.013	0.159	1.00	0.80	88
8	Driveway/Parking	CB	MH5	0.0633	0.81	0.051	0.051	10.00	141.89	0.020	10.5	0.50	250	0.013	0.042	0.86	0.20	48
10				0.0809	0.90	0.073	0.073											
7				0.1316	0.84	0.111	0.111											
9	Driveway/Parking	MH5	MH4	0.0597	0.82	0.049	0.659	12.09	128.50	0.235	31.5	0.32	450	0.013	0.161	1.01	0.52	146
11	Driveway/Parking	MH4	MH3	0.0424	0.74	0.031	0.690	12.60	125.62	0.241	50.0	0.30	450	0.013	0.156	0.98	0.85	154
12	Sideyard	CB	MH10	0.0275	0.35	0.010	0.010	10.00	141.89	0.004	17.0	0.53	250	0.013	0.043	0.88	0.32	9
13				0.0367	0.73	0.027	0.027											
14				0.0224	0.78	0.017	0.017											
15				0.0329	0.77	0.025	0.025											
16	Driveway/Parking	MH10	MH3	0.0189	0.74	0.014	0.093	10.32	139.62	0.036	52.0	0.31	375	0.013	0.098	0.88	0.98	37
	Driveway/Parking	MH3	MH2	0.0000	0.72	0.000	0.783	13.45	121.20	0.264	7.0	0.50	375	0.013	0.124	1.12	0.10	N.A.
	Driveway/Parking	MH2	MH1	0.0000	0.72	0.000	0.783	13.56	120.68	0.263	15.0	1.00	375	0.013	0.175	1.59	0.16	N.A.
												Note:						
												An Orifice Tube will be installed after MH3, which will serve as a						
												control device.						
		Total Area		1.1225														

Computed by: JRE

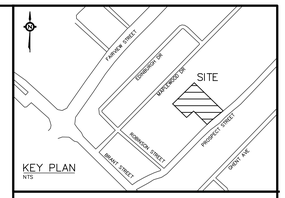
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PROSPECT STREET
SCALE: 1:500



PROSPECT STREET
SCALE: 1:250



LEGEND

- EXISTING CATCHBASIN
- EXISTING CATCHBASIN MANHOLE
- EXISTING STORM MANHOLE
- PROPOSED CATCHBASIN
- PROPOSED CATCHBASIN MANHOLE
- PROPOSED STORM MANHOLE
- PROPOSED STORM SEWER
- PROPOSED DOUBLE HOUSE STORM SERVICES
- PROPOSED DRAINAGE AREA BOUNDARY
- PROPOSED EMERGENCY OVERLAND FLOW DIRECTION
- 0.9608 / 0.75 — INTERNAL AREA IN HECTARE / RUN-OFF COEFFICIENT
- 0.1617 / 0.40 — EXTERNAL AREA IN HECTARE / RUN-OFF COEFFICIENT

FOR OPA / REZONING
NOT FOR CONSTRUCTION

BENCHMARK

ELEVATIONS SHOWN ON THIS PLAN ARE IN METRES AND WERE FROM GPS OBSERVATIONS USING THE CAN-NET NETWORK.

DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

SURVEY INFORMATION CONTAINED IN THIS DRAWING ARE FROM DWG. No. 2012-235 BY MacDONALD TAMBLYN LORD SURVEYING LTD. DECEMBER 12, 2012

No	Date	By/DRN	REVISIONS
3	MAY/07/19	PC/ZG	THIRD SUBMISSION OPA & RZA APPLICATION
2	OCT/29/18	PC/ZG	SECOND SUBMISSION OPA & RZA APPLICATION
1	DEC 11/17	PC/jy	ISSUED FOR OPA & RZA APPLICATION

Design	JRE	Chk'd	PC
Drawn	JY	Chk'd	PC
Scale	AS SHOWN		
APPROVALS			

Cad File 1629GS.dwg
Plot Date 05/07/19
References
Field Notes

Bell ☐ Hydro ☐
Gas ☐ Cable ☐
Traf. ☐ Water ☐

LICENSED PROFESSIONAL ENGINEER P. CIPONI PROVINCE OF ONTARIO

Consultant
TRAFALGAR ENGINEERING LTD.
481 MORDEN ROAD, OAKVILLE, ONTARIO L6K 3W6
TEL: (905) 338-3366 FAX: (905) 338-7734
tel@trafalgareng.com

Municipality
CITY OF BURLINGTON
REGIONAL MUNICIPALITY OF HALTON

Title
PROPOSED RESIDENTIAL RE-DEVELOPMENT
POST-DEVELOPMENT DRAINAGE AREA PLAN
2087-2103 PROSPECT STREET

Municipal No.	Regional No.
Contract No. —	Consultant No. 1629-S2
	Sheet

FILENAME: P:\1629 2090 Prospect St\Drawings\DWG\1629GS.dwg
PLOTTED: May 07, 2019 - 10:51am

Brief Stormceptor Sizing Report - 2095 Prospect Street

Project Information & Location			
Project Name	2095 Prospect Street	**Project Number**	1629
City	Burlington	**State/ Province**	Ontario
Country	Canada	**Date**	12/4/2017
Designer Information		**EOR Information (optional)**	
Name	James Nelson	**Name**	
Company	Trafalgar Engineering Ltd	**Company**	
Phone #	905-338-3366	**Phone #**	
Email	jnelson@trafalgareng.com	**Email**	

Stormwater Treatment Recommendation

The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	2095 Prospect Street
Target TSS Removal (%)	80
TSS Removal (%) Provided	81
Recommended Stormceptor Model	STC 2000

The recommended Stormceptor Model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizing Summary		
Stormceptor Model	**% TSS Removal Provided**	**% Runoff Volume Captured Provided**
STC 300	66	84
STC 750	77	93
STC 1000	78	93
STC 1500	78	93
STC 2000	81	97
STC 3000	82	97
STC 4000	85	99
STC 5000	86	99
STC 6000	88	99
STC 9000	91	100
STC 10000	91	100
STC 14000	93	100
StormceptorMAX	Custom	Custom

Stormceptor®

FORTERRA

Sizing Details

Drainage Area	
Total Area (ha)	1.12
Imperviousness %	70.0

Rainfall	
Station Name	TORONTO CENTRAL
State/Province	Ontario
Station ID #	0100
Years of Records	18
Latitude	45°30'N
Longitude	90°30'W

Water Quality Objective	
TSS Removal (%)	80.0
Runoff Volume Capture (%)	90.00
Oil Spill Capture Volume (L)	
Peak Conveyed Flow Rate (L/s)	114.00
Water Quality Flow Rate (L/s)	

Up Stream Storage	
Storage (ha-m)	Discharge (cms)
0.000	0.000
0.013	0.114

Up Stream Flow Diversion	
Max. Flow to Stormceptor (cms)	

Particle Size Distribution (PSD)
The selected PSD defines TSS removal

Fine Distribution		
Particle Diameter (microns)	Distribution %	Specific Gravity
20.0	20.0	1.30
60.0	20.0	1.80
150.0	20.0	2.20
400.0	20.0	2.65
2000.0	20.0	2.65

Notes

• Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor, which uses the EPA Rainfall and Runoff modules.
• Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal defined by the selected PSD, and based on stable site conditions only, after construction is completed.
• For submerged applications or sites specific to spill control, please contact your local Stormceptor representative for further design assistance.

For Stormceptor Specifications and Drawings Please Visit:
http://www.imbriumsystems.com/technical-specifications

CULTEC
Founder of Plastic Chamber Technology
Stormwater and Septic Solutions
Since 1986
1-800-4-CULTEC
custservice@cultec.com

Prepared For:		
Name		
Company Name		
Street Address		
City		
State		Zip
Phone		
Fax		
Email		

Project Information:		
Name		
Street Address 2087-2103 Prospect Street		
Burlington		
State		Zip

Date: (mm/dd)

Engineer:		
Name Paul Cifoni		
Company Name Trafalgar Engineering		
Street Address		
City		
State		Zip
Phone		
Fax		
Email		

Calculations Performed By:		
Name		
Company Name		
Street Address		
City		
State		Zip
Phone		
Fax		
Email		

Input Given Parameters

Unit of Measure	Metric	
Select Model	Recharger 280HD	
Stone Porosity	40.0%	
Number of Header Systems	1 Header	
Stone Depth **Above** Chamber	6	mm
Stone Depth **Below** Chamber	6	mm
Workable Bed Depth	2.00	meters
Max. Bed Width	10.00	meters
Storage Volume Required	72.00	cu. meters



Image for visual reference only.May not reflect selected model.

Chamber Specifications		
Height	673.0	mm
Width	1194.00	mm
Length	2.44	meters
Installed Length	2.13	meters
Bare Chamber Volume	1.21	cu. meters
Installed Chamber Volume	1.50	cu. meters
Bed Depth	1.11	meters
Bed Width	9.73	meters
Storage Volume Provided	78.46	cu. meters

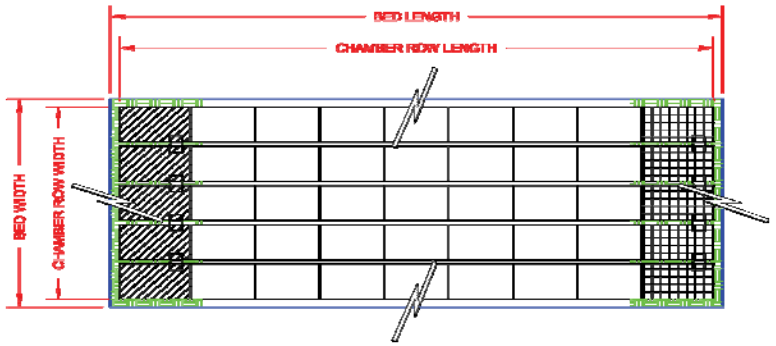
Materials List

Recharger 280HD Stormwater System by CULTEC, Inc.

Approx. Unit Count - not for construction	48	pieces
Actual Number of Chambers Required	49	pieces
Starter Chambers	7	pieces
Intermediate Chambers	35	pieces
End Chambers	7	pieces

HVLV FC-24 Feed Connector	6	pieces
CULTEC No. 410™ Filter Fabric	377.78	sq. meters
CULTEC No. 20L Polyethylene Liner	9.73	meters
Stone	45.35	cu. meters

Bed Detail



Number of Rows Wide	7	pieces
Number of Chambers Long	7	pieces
Chamber Row Width	9.12	meters
Chamber Row Length	15.24	meters
Bed Width	9.73	meters
Bed Length	15.85	meters
Bed Area Required	154.18	sq. meters

Bed detail for reference only. Not project specific. Not to scale. Use CULTEC StormGenie to output project specific detail.

CULTEC, Inc.
P.O. Box 280, Brookfield, CT 06804 USA
Phone: 203-775-4416 - Fax: 203-775-1462 - **www.cultec.com**

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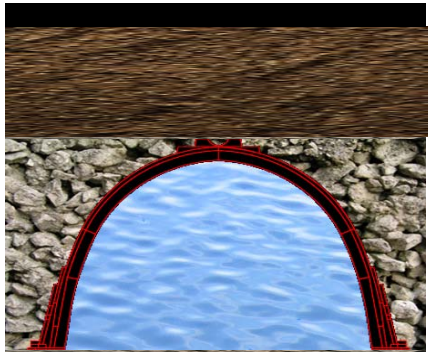
Project Name: Name **Date:** (mm/dd)

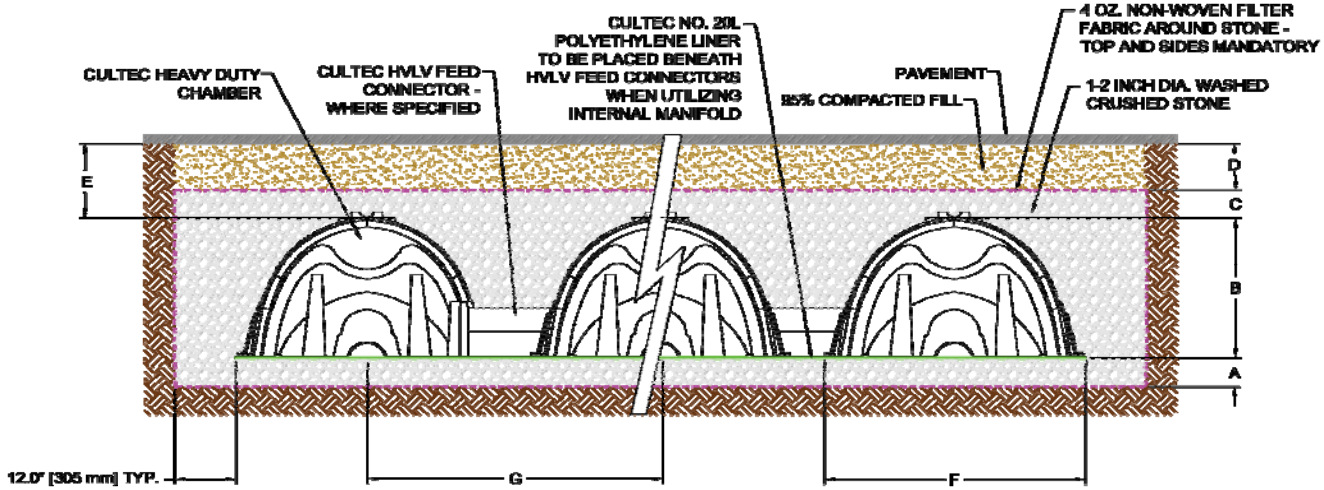
Cross Section Detail



Conceptual graphic only. Not job specific.

Recharger 280HD		
Pavement	**76**	mm
95% Compacted Fill	**350**	mm
Stone Above	**6**	mm
Chamber Height	**673.1**	mm
Stone Below	**6**	mm
Effective Depth	**685.3**	mm
Bed Depth	**1111.0**	mm





A	Depth of Stone Base	**6.0**	mm
B	Chamber Height	**673.0**	mm
C	Depth of Stone Above Units	**6.0**	mm
D	Depth of 95% Compacted Fill	**350.0**	mm
E	Max. Depth of Cover Allowed Above Crown of Chamber	**3.7**	meters
F	Chamber Width	**1194.0**	mm
G	Center to Center Spacing	**1.32**	meters

Breakdown of Storage Provided by Recharger 280HD Stormwater System		
Chambers	**60.26**	cu. meters
Feed Connectors	**0.06**	cu. meters
Stone	**18.14**	cu. meters
Total Storage Provided	**78.46**	cu. meters

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