FUNCTIONAL SERVICING REPORT

1177, 1183 & 1187 West 5th Street

(1333664 Ontario Inc.)

MAY 10, 2022

City of Hamilton

LandSmith ENGINEERING & CONSULTING LTD.

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Tables

1. Introduction

1.1. Background

LandSmith Engineering & Consulting Ltd. have been retained by 1333664 Ontario Inc. for the completion of a *Functional Servicing Report* in support of the development of three properties located at 1177, 1183 and 1187 West 5th Street in the City of Hamilton. The purpose of this report is to illustrate how the development of these properties from vacant land and single-family homes to the proposed ten-storey, 215-unit condo apartment can be accommodated by the available municipal services adjacent to the site.

1.2. Site Location & Topography

The site is located on the east side of West 5th Street and entails the two single family homes which are known municipally as 1177 & 1183 West 5th Street and a vacant grassed area municipally know as 1187 West 5th Street. Figure 1 on the following page illustrates the exact location of the site.

A topographic survey illustrating the existing conditions of the lands can be seen on the Grading Plan in Appendix 'C' for reference purposes. As can be seen through review of the survey, the western half of the site slopes from northeast to south southwest and directs stormwater runoff by sheet flow to West 5th Street right of way. The eastern portion of the site slopes from northwest to the southeast and conveys runoff by sheet flow to the adjacent commercial parking lot the east of the subject lands.

The portion of West 5th Street fronting the site slopes to the south. There is sidewalk along the east side of West 5th street fronting the site. Approximately half of the site fronting West 5th Street has curb and gutter which conveys flows down West 5th Street into the roadside ditch to the south. The other half of the site frontage contains a roadside ditch with no curb. The stormwater is conveyed by the roadside ditch to a culvert that crosses West 5th Street and is conveyed to the William Connell Stormwater Management Pond to the northwest.

1.3. Proposed Development

The current development proposal will entail the construction of a ten-storey condo apartment with 215 proposed units. To accommodate the City of Hamilton parking requirement ratio 24 surface parking stalls in the areas adjacent to the building and 208 underground parking stalls on 2 underground levels have been provided. The Site Plan prepared by KNYMH Architecture Solutions which illustrates the proposed layout of the site has been attached to this report within Appendix 'A' for reference purposes. This Site Plan was the basis of the following engineering analysis.

Figure 1: Site Location Plan

2. Servicing Analysis

2.1. Water Servicing

There is an existing 300mm diameter watermain along the frontages of the site which may be utilized for the construction of a service connection to the proposed building. A Preliminary Site Servicing Plan has been completed for submission with this report and is contained within Appendix 'C' for reference purposes. This plan illustrates the location of the proposed service for the building which is intended to be along West 5th Street where the watermain is in the boulevard and can be accessed without the necessity of the completion of a road-cut.

The existing 300mm diameter watermain is located within the east boulevard of West 5th Street. It is proposed to connect to the 300mm watermain at the south end of the property with a 150mm water service to provide both domestic and fire supply to the apartment building.

Hydrant flow testing data for the three nearest hydrants was obtained through The City of Hamilton the data was collected on June 20, 2014. The results of this recent flow testing are contained within the table below.

Hydrant ID	Address	Pressure Zone	Test Date	Static Pressure (psi)	Residual Pressure (psi)	Test Flow (IGPM)	~Flow @ 20psi (IGPM)
HC66H001	1073 West 5th St.	6	2014-06-20	68	65	910	4,067
HC66H005	1177West 5th St.	6	2014-06-20	60	56	1,000	3,467
HC66H004	West 5th St.	6	2014-06-20	60	56	1,030	3,571

Table 1: Hydrant Testing Data

This recent flow testing indicates that there can be expected to be (at minimum) 218.7 L/s (3467 IGPM) of available flow from the local 300mm watermain on West 5th Street for fire protection purposes at a system pressure of 20 psi.

The City of Hamilton have recently adjusted their requirements for the calculation of Fire Demands from the use of the Fire-Underwriter's Survey (1999) to a target-based requirement which is being used in conjunction with the Ontario Building Code (OBC) fire-flow calculation requirements. The current City target for Fire-flow for multiple-residential units with greater than 3 units is 150 L/s – this value was compared with a calculation of the required fire-flow based on the OBC Method. The description of the OBC calculation for fire-flow is contained within Appendix 'B' for reference. As can be seen the calculation results in the same fire-flow requirement of 150 L/s as the City's target flow method.

In addition to fire-flow demands, domestic water demands were calculated using the fixture unit method and Table 7.6.3.2.A of the Ontario Building Code. Fixture unit counts were provided by KNYMH Architecture Solutions and can be found in Appendix 'B'. It was determined that the proposed building has 1849 fixture units in use which is equivalent of a peak domestic flow rate of 18.8 L/s. counts were provided by Given the required calculation methods it appears that the local hydrants are sufficient to provide for both the peak domestic usage and the peak required fire-flow in this location.

2.2. Sanitary Servicing

There is an existing sanitary trunk sewer within West 5th Street which currently services the two single family dwellings at 1177 and 1183 West 5th Street which can be utilized for the servicing of the proposed building. This sanitary sewer is illustrated on Urbex Engineering's West 5th Street Plan and Profile which has been included in Appendix 'A' for reference purposes. The sewer has been designed for the entire area west of West 5th Street (Sheldon's Gate subdivision) and that at the present time there will be ample capacity for this development. At the frontage of the property the sanitary sewer is 375mm in diameter and installed at a slope of 0.35% which is sufficient for the servicing from the proposed building.

This sanitary trunk sewer has been designed as part of the Mewburn & Sheldon Neighborhoods Master Serving Plan to accommodate the subject lands as can be seen in the Master Servicing Plan located in Appendix 'A' for reference. Therefore, the existing sanitary sewer will have sufficient capacity to service the proposed development.

Based on the Ontario Building Code the calculation for expected generation of sanitary effluent based on the proposed building can be found in Appendix 'B'. The estimated peak instantaneous flow for the proposed apartment is 8.90 L/s.

2.3. Stormwater Management

2.3.1. Existing Conditions

The topography of the existing site has been described above in Section 1.2 and the topographic survey for the site is contained within Appendix 'A' for reference purposes. Based on the topographic information *Figure S1 – Existing Drainage Conditions* was created which described the existing drainage pattern of the site. This figure is contained within Appendix 'C' for reference purposes.

As can be seen, under existing conditions stormwater runoff from the site discharges to two locations. The rear (east) of the single-family lots and vacant drains via sheet flow to the adjacent commercial parking lot to the east (Area E2).

The front of the property adjacent to West 5th Street sheet flows towards the roadway and is collected by roadside ditches (Area E2). The West 5th Roadsides ditches flow to the south and ultimately flow into the existing William Connell Stormwater Management Pond.

2.3.2. Stormwater Criteria

The subject lands have been included in several drainage assessment completed by the City of Hamilton; in 2011 in the AMEC report 'West Mountain Drainage Assessment' and 2016 by IBI Group later refined the design the subject lands were included as Area **C-67F** and can be seen in The City of Hamilton Plan DR1 "William Connell City Wide Park Updated Future Ultimate Conditions Subcatchment Boundary Plan referenced in Appendix 'A'.

For the development of Sheldon's Gate Community Phase 1, Urbex Engineering designed the municipal sewers which included sewers on West 5th Street fronting the proposed development and allocated conveyance for the 100-year storm event within the proposed sewers and stormwater management system for the subject lands. The allowable 100-year flows from the subject lands can be seen in the Ultimate Overall Storm Drainage Area Plan attached in Appendix 'C' with detailed storm sewer design calculations (Urbex, 2022) in Appendix 'C'. The municipal sewers direct flows from West 5th Street through the Sheldon's Gate Community to the William Connell SWM Pond where stormwater quantity and quality controls will be adequately provided.

2.3.3. Stormwater Management Design

SWM Quantity Controls:

The peak runoff from the site under the developed condition will be limited to allowable flow for the subject lands that was designed as part of the Sheldon's Gate Phase 1 Community. Urbex's Ultimate

Storm Drainage Area Plan shows an allowable 100-year outflow for 1177 and 1183 West 5th Street (Area C-68f(i)) of 0.89m3/s and 0.098m3/s for 1187 (Area C-68f(h)). The sum of these flows represents the total allowable flow for the subject property of 0.187m^3/s as can be seen in Table 2 below.

Municipal Address	1177 & 1183 West 5th St	1187 West 5th St	**Total Allowable Discharge (m^3/s)**
Catchment ID	C-68F(i)	C-68F(h)	
5 Year Storm Allowable Flow (m^3/s)	0.050	0.056	0.106
25 Year Storm Allowable Flow (m^3/s)	0.71	0.79	0.150
100 Year Storm Allowable (m^3/s)	0.089	0.098	0.187

Table 2 – Allowable Outflows from Subject Lands

Figure S2 contained in Appendix 'D' illustrates the post-development catchment area which will be created through the grading of the site and construction of the proposed building and parking areas.

Hydrologic Analysis of the site in the post-development condition was completed using MIDUSS v2 and the Chicago 3-hour storm to ensure the total post-development discharge does not exceed allowable levels.

The following table summarizes the uncontrolled outflow from catchment A1.

Return Period (Yr.)	Total Discharge (Uncontrolled) (m^3/s)	Allowable Discharge(m^3/s)
5	0.082	0.106
25	0.127	0.150
100	0.180	0.187

Table 3 –Proposed Stormwater Discharge Conditions

As can be seen, the total uncontrolled discharge from the proposed development will be below the allowable discharge levels. No on-site quantity controls will be required for this development.

SWM Quality Controls:

Quality control measures will be provided by the existing downstream William Connell Stormwater Management Pond. The William Connell SWM Pond provides Level 1 (Enhanced) quality controls per the Ontario Ministry of Environment (MOE) Stormwater Management Planning and Design Manual, 2003. Therefore, no on-site quality controls will be required for this development.

3. Conclusions

In conclusion, based on the foregoing analysis we recommend that the development can be serviced in accordance with the requirements of the City of Hamilton as follows:

1. Water servicing can be provided through connection to the adjacent 200mm watermain along West 5th Street where indicated. There is ample water available for domestic usage and fire-flows based on the recently completed hydrant flow-tests.

2. There is an available sanitary sewer located on West 5th Street from which the proposed building can be serviced. The 300 mm diameter pipe has capacity to service the increased density due to the nature of the development.

3. Stormwater runoff from the site may be connected to the local municipal 525 mm storm sewer on West 5th Street. Quantity and quality control will be provided by the existing William Connell Stormwater Management Pond.

Thank you for your consideration of the above Functional Servicing Report, should you have any questions or require clarification with respect to any part of the above please do not hesitate to contact the undersigned.

Respectfully submitted,

Andrew Smith

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Principal & Director
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andrew@landsmithec.com

LICENSED PROFESSIONAL ENGINEER
Andrew Smith
A. P. SMITH
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Attachments:

Appendix 'A' – Background Information

Site Plan – KNYMH Architecture Solutions

West 5th Plan and Profile -Urbex Engineering Ltd.

Updated Future Ultimate Conditions Subcatchment Boundary Plan - IBI Group

Mewburn & Sheldon Neighborhoods Mater Servicing Plan Class EA – SCN Lavalin/MTE

Appendix 'B' – Water/Wastewater Servicing Calculations

City of Hamilton Hydrant Testing Data

Domestic Water Usage Calculations

Required Fire-Flow Calculations

Fire Separation Distances – Figure W1

Fixture Unit Counts - KNYMH Architecture Solutions

Sanitary Generation Assessment

Appendix 'C' – SWM Analysis

Pre-Development Storm Drainage Area – Figure S1

Post-Development Storm Drainage Area – Figure S2

MIDUSS V2 Output Files

Sewer Design Calculations – Urbex Engineering Ltd.

Ultimate Storm Drainage Area Plan -Urbex Engineering Ltd.

Appendix 'D' – Site Design Engineering Plans

Site Servicing and Sediment and Erosion Control Plan

Grading Plan

Appendix 'E' – City of Hamilton Existing Infrastructure Drawings

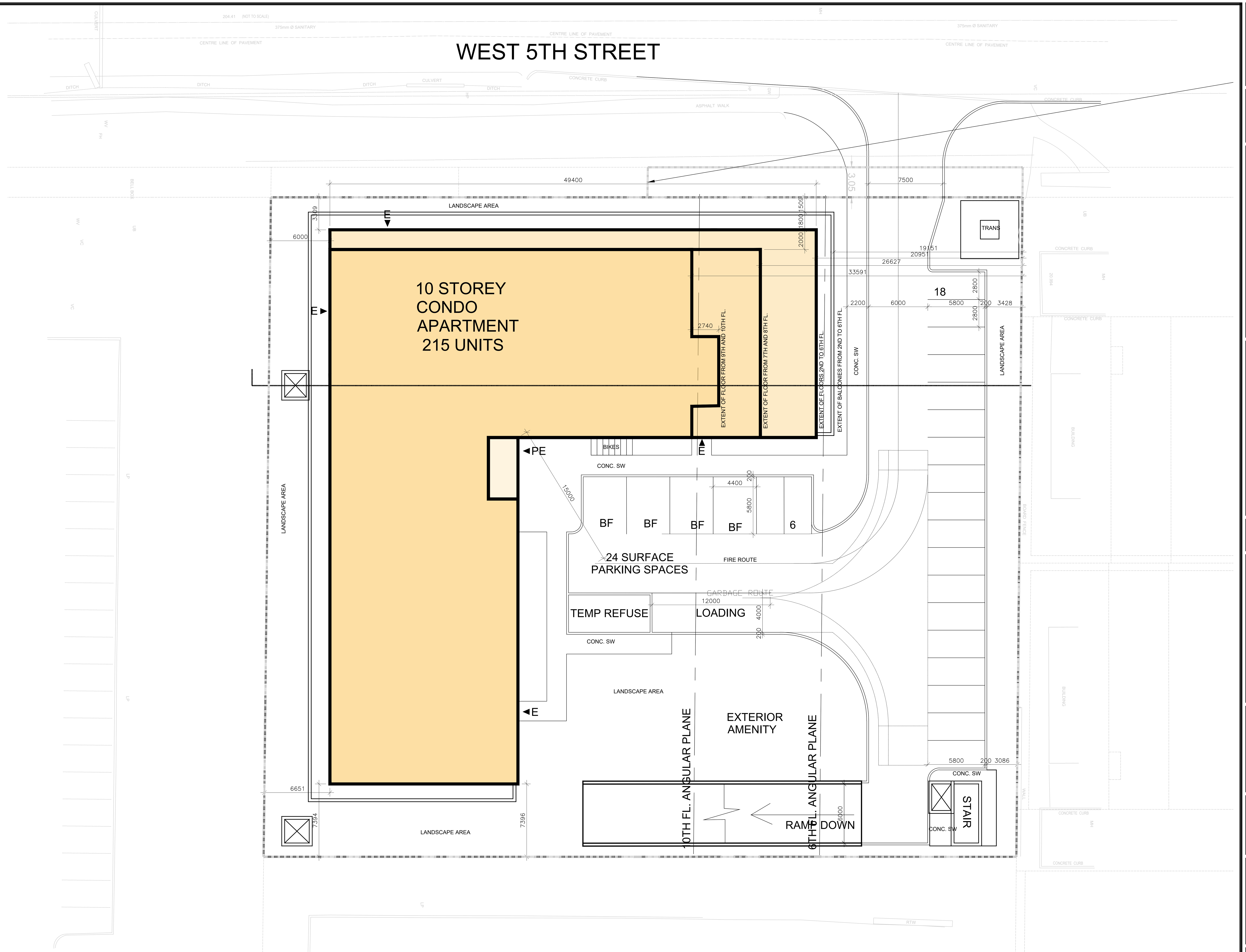
APPENDIX 'A' – Background Information

Site Plan – KNYMH Architecture Solutions

West 5th Plan and Profile -Urbex Engineering Ltd.

Updated Future Ultimate Conditions Subcatchment Boundary Plan - IBI Group

Mewburn & Sheldon Neighborhoods Mater Servicing Plan Class EA – SCN Lavalin/MTE



	1B	2B	Total	Common Area	Suite Area	Total Area (SQ.FT)
1st	13	5	18	5793.780	12665.670	18459.450
2nd	16	7	23	1950.730	16303.790	18254.520
3rd	16	7	23	1951.730	16303.790	18255.520
4th	16	7	23	1952.730	16303.790	18256.520
5th	16	7	23	1953.730	16303.790	18257.520
6th	16	7	23	1954.730	16303.790	18258.520
7th	18	4	22	1922.760	14101.690	16024.450
8th	18	4	22	1923.760	14101.690	16025.450
9th	13	6	19	1926.200	12874.280	14800.480
10th	13	6	19	1927.200	12874.280	14801.480
Total	155	60	215	23257.350	148136.560	171393.910
	72%	28%		14%	86%	

1-14	0.7	14	9.8
15-50	0.85	35	29.75
51+	1	166	166
Total Parking Required			205.55

Total Parking Provided	
UG-1	100
UG-2	108
Surface	24
Total Parking Provided	232
Proposed Parking Ratio	1.08

Lockers	Bikes
110	123
124	99
234	222

KEY TO DETAIL LOCATION

No. DETAIL NUMBER
No. DRAWING SHEET NUMBER

DRAWING SETS ISSUED	No.	DATE (DD,MM,YY)	BY
CONCEPT DESIGN	01	23,05,18	GD
INCREASED SITE SIZE CONCEPT	02	07,01,20	MH
NEW CONCEPT	03	03,07,22	PM

ALL PREVIOUS ISSUES OF THIS DRAWING ARE SUPERSEDED

REVISIONS TO DRAWING	No.	DATE (DD,MM,YY)	BY

NOT FOR CONSTRUCTION

BUILDING PERMIT NUMBER:

NOT FOR CONSTRUCTION WITHOUT PERMIT

KNYMH
ARCHITECTURE • SOLUTIONS

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1006 SKYVIEW DRIVE • SUITE 101
BURLINGTON, ONTARIO • L7P 0V1
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TRUE NORTH

THIS DOCUMENT IS PRELIMINARY AND MAY NOT BE USED FOR REGULATORY APPROVAL, PERMIT OR CONSTRUCTION AND ARE FOR USE BY CONSULTANTS, SUBCONSULTANTS, OWNER AND CONTRACTORS TO PROVIDE THEIR INPUT TO THE COORDINATION OF THIS DOCUMENT.

PRELIMINARY

VALVASORI PROPERTIES
1187 WEST 5TH STREET
HAMILTON, ONTARIO

DRAWING SHEET TITLE:
SITE PLAN

DRAWING SCALE: 1:200

PROJECT NUMBER: 19002

DRAWN BY: MH

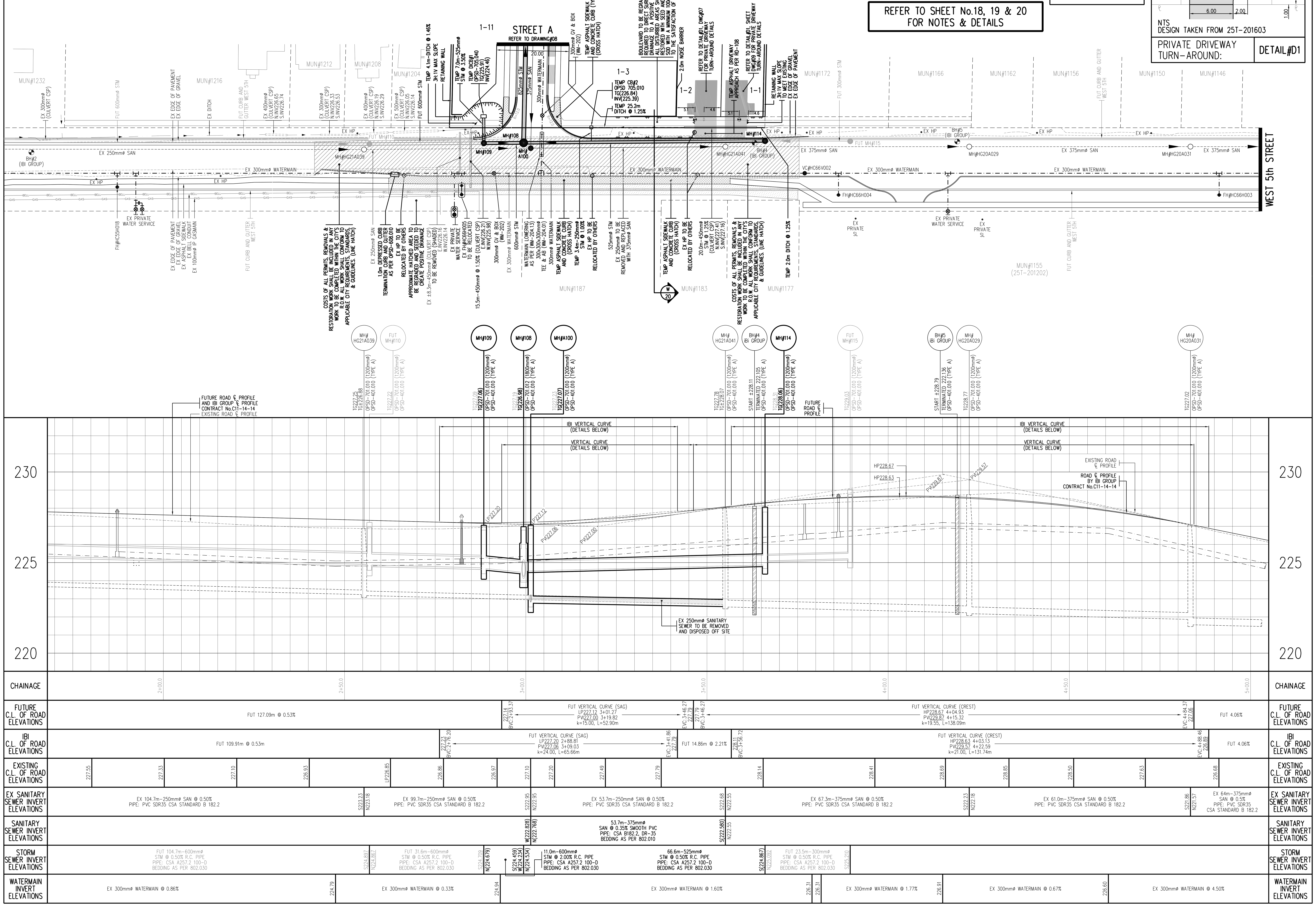
CHECKED BY: --

DRAWING VERSION: 001

PLOT DATE: March 9, 2022

DRAWING SHEET NUMBER: SP1

WEST 5th STREET



BOREHOLE SYMBOLOGY:
- TOPSOIL
- FILL
- CLAY
- SAND
- SILT

ENGINEERED FILL TO BE COMPACTED TO MINIMUM 98% S.P.D. (CROSS HATCH) PAVEMENT STRUCTURE:
40mm TOP COURSE ASPHALT
80mm BINDER COURSE ASPHALT
150mm GRANULAR 'A'
300mm GRANULAR 'B',
TOP COURSE ASPHALT = SUPERPAVE 9.5 (CATEGORY C), PG 58-28 ASPHALT CEMENT
BINDER COURSE ASPHALT = SUPERPAVE 19.0, (CATEGORY C), PG 58-28 ASPHALT CEMENT
GRANULAR 'B' = TYPE II 100% CRUSHED AGGREGATE.

NOTES:
- DRIVEWAY APPROACHES TO BE MAXIMUM 5.5m.
- CONCRETE DRVIEWAY APPROACHES AS PER RD-109.
- MINIMUM 1.2m CLEARANCE BETWEEN DRIVEWAY. AND FIRE HYDRANT/STREET FURNITURE.
- CURB & GUTTER AS PER OPSD-600.040.
- INDEPENDENT SIDEWALK AS PER OPSD-310.010.
- WHEELCHAIR RAMPS AS PER OPSD-310.033.
- ALL BENCHING IN MANHOLES TO FOLLOW OPSD-701.021.
- FOR R.O.W. DIMENSIONS, REFER TO DETAIL RD-113.01(MOD) ON DRAWING#12.
- WATERMAIN WITHIN ENGINEERED FILL TO HAVE MECHANICAL JOINT RESTRAINTS AS PER FORM 400.

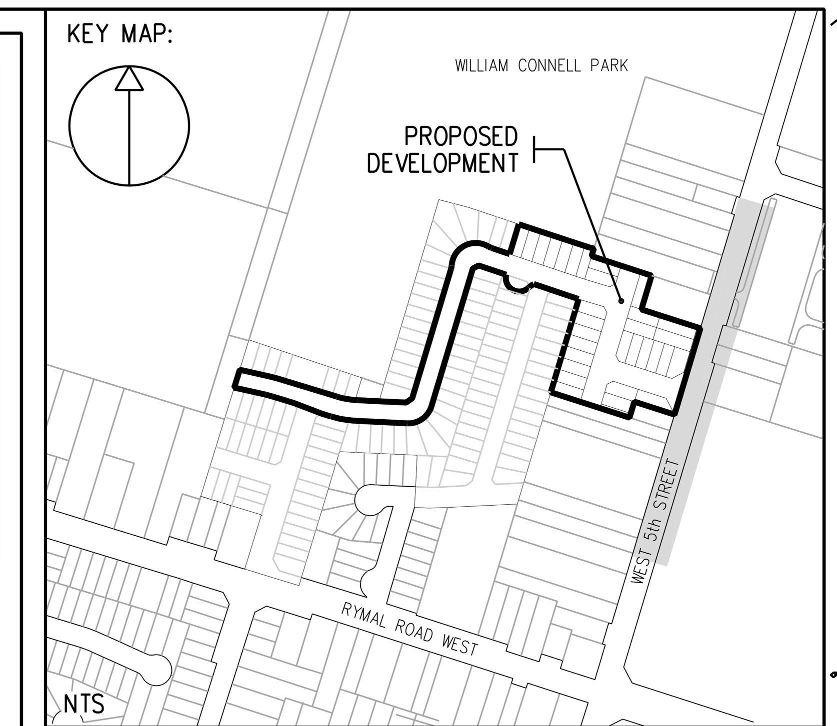
REFER TO SHEET No.18, 19 & 20 FOR NOTES & DETAILS

NORTH:

NTS
DESIGN TAKEN FROM 25T-201603

PRIVATE DRIVEWAY TURN-AROUND: DETAIL#D1

KEY MAP:



LEGEND:

BORE HOLE	BH#	CURB STOP	
TEST PIT	TP#	BACK FLOW PREVENTER	
DUAL PRIVATE DRAINS	D	BLOW-OFF VALVE	
SANITARY PRIVATE DRAIN	S	FIRE HYDRANT	
SUMP PUMP	(SP)	GATE VALVE	
WALK OUT	(WO)	REDUCER	
SILT FENCE			
FENCE			
TRANSFORMER			
HYDRO POLE OR STREET LIGHT	HP • OR • SL		
PEDESTAL (BELL AND/OR CABLE)			
WHEELCHAIR RAMP AS PER (OPSD 310.030) (DEPRESSED CURB)			

D0171-P01-17 (SHELDON'S GATE PHASE 1)

FOR APPROVAL

No.	DATE	BY	REVISION
2	2021-06-XX	HK/BW	2nd SUBMISSION
–	OCT 29, 2020	CC	HYDRO INFORMATION UPDATE
1	OCT 16, 2020	CC	1st SUBMISSION
--	AUG 21, 2020.	CC	HYDRAULIC GRADE LINE ADDED
--	JULY 27, 2020.	CC	1st SUBMISSION SET PREPARED

BENCHMARKS:
STATION: 0011965U070
TOWNSHIP: HAMILTON-WENTWORTH
CONCRETE WALL AT SOUTH END OF A CULVERT UNDER HIGHWAY No.53, 18.3m EAST OF CENTRE LINE OF UPPER JAMES STREET (HIGHWAY No.6), 13.7m SOUTH-WEST OF RYCKMAN'S GARAGE, 32.0m SOUTH OF CENTRE LINE OF HIGHWAY No.53, TABLET IN TOP OF WING WALL, 30cm FROM SOUTHEAST END, 15cm FROM SOUTHWEST FACE, 4.0m SOUTH-WEST OF POWER POLE No.201.
ORTHOMETRIC ELEV: 224.169m

STAMP:

CONSULTANT:
URBEX ENGINEERING LIMITED
161 REBECCA STREET
HAMILTON ON. L8R 1B9
TEL 905-522-3328
FAX 905-522-0452
EMAIL info@urbex.biz

MUNICIPALITY:
THE CITY OF HAMILTON

SHELDON'S GATE PHASE 1
HAMILTON, ONTARIO

WEST 5th STREET (2+30 TO 5+00)

CITY FILES: 25T-2013-05	FILE NAME: 07-SG01-5W02-2022-01.dwg
LAST SAVED BY: HARRY KANDILAS	SCALE: 1:500 HORIZONTAL 1:100 VERTICAL
LAST SAVED DATE: 2/16/2022 2:13 PM	SHEET No.: 07

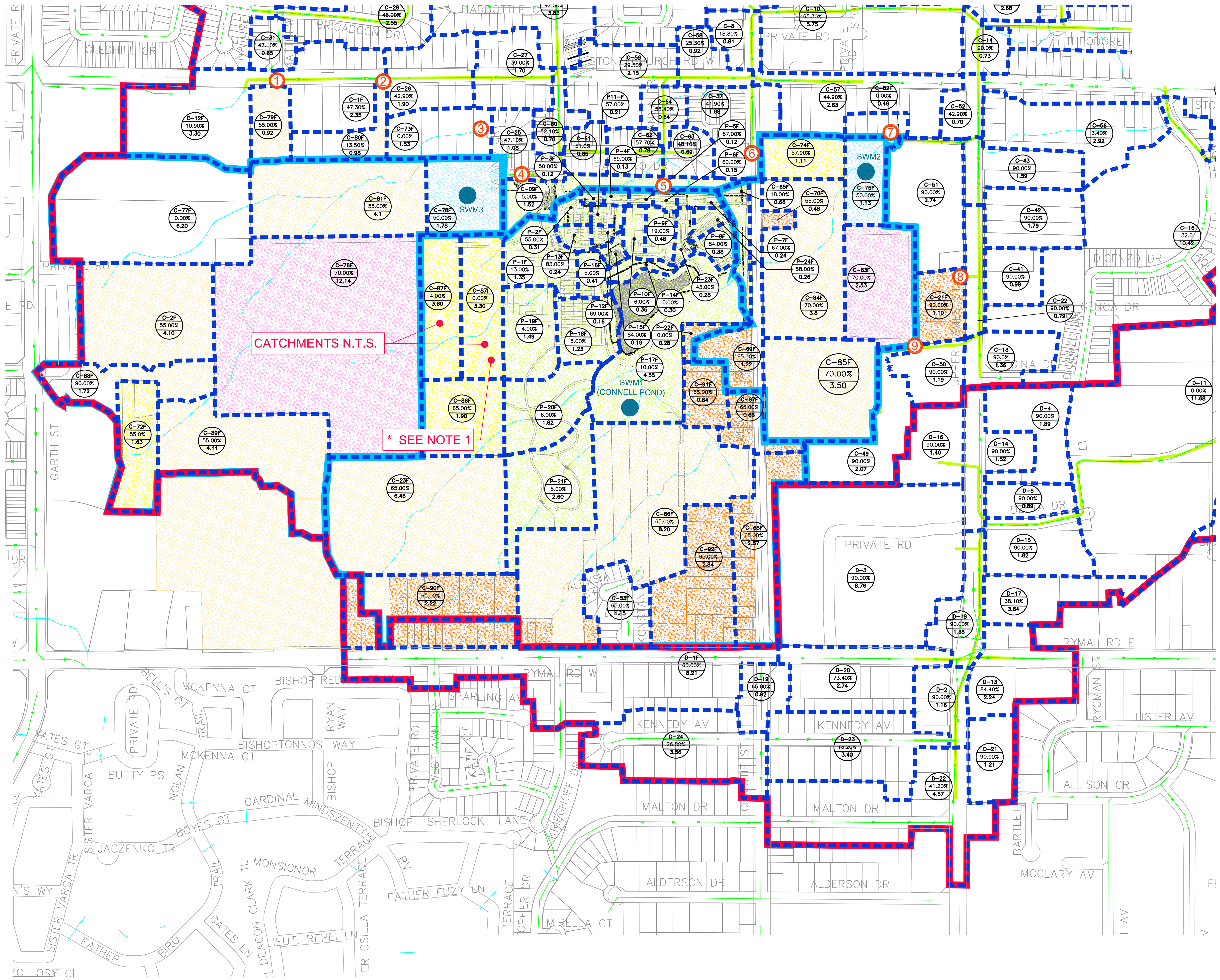
WILLIAM CONNELL CITY WIDE PARK

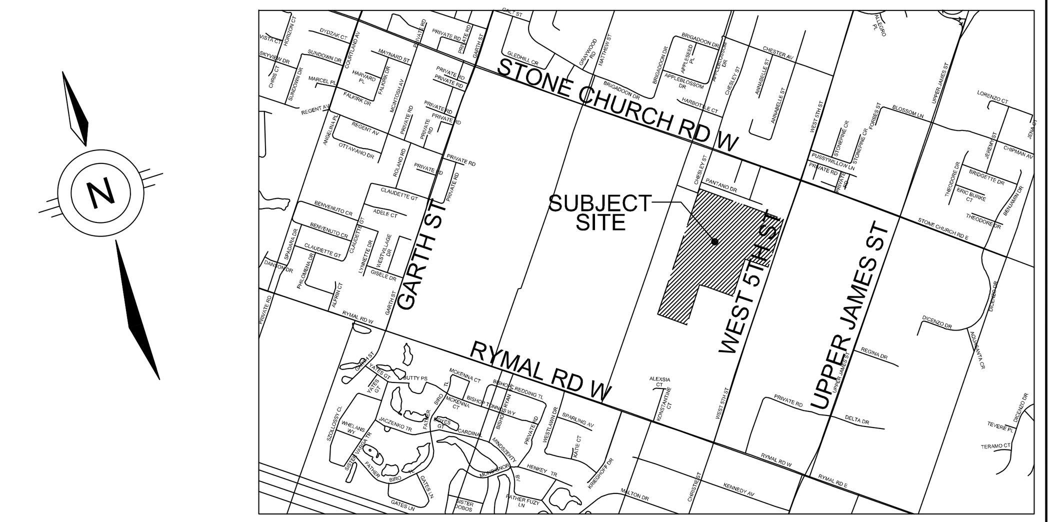
UPDATED FUTURE ULTIMATE CONDITIONS SUBCATCHMENT BOUNDARY PLAN

14-P-22 (DR1)

FILE No.	CONTRACT No. DRAWING No. 14-P-22 (DR1)	SHEET No. 28 of 29

DIMENSIONS SHOWN ON THIS PLAN ARE IN MILLIMETRES UNLESS OTHERWISE NOTED





NOTES:

1. C-87I – REPRESENTS INTERIM EXISTING CONDITION DRAINAGE TO PARK UNTIL FUTURE DEVELOPMENT OF C-87F AND SWM3 POND.

LEGEND:

- CATCHMENT BOUNDARY
- SUBCATCHMENT BOUNDARY
- SWM FACILITY DRAINAGE BOUNDARY
- PROPERTY BOUNDARY
- STORM SEWERS
- EXISTING OPEN WATERCOURSE
- MODELED TRUNK STORM SEWERS
- 5 OUTLET NUMBER
- PROPOSED SWM FACILITY LOCATION
- C-72F / 25.00% / 1.3 — SUBCATCHMENT NUMBER / TOTAL FUTURE ULTIMATE IMPERVIOUSNESS / SUBCATCHMENT AREA (ha)
- CURRENTLY PROPOSED RESIDENTIAL
- CURRENTLY PROPOSED PARKLANDS
- POTENTIAL FUTURE SWM BLOCK
- FUTURE INSTITUTIONAL
- POTENTIAL FUTURE RESIDENTIAL
- POTENTIAL FUTURE INFILL / INTENSIFICATION AREAS

DRAWING BACKGROUND INFORMATION SUPPLIED BY THE CITY FROM THE WEST CENTRAL MOUNTAIN DRAINAGE ASSESSMENT SUPPLEMENTAL CAPACITY ANALYSIS AND SWM SIZING, MEWBURN AND SHELDON NEIGHBOURHOODS, DATED OCTOBER 2011, BY AMEC ENVIRONMENT & INFRASTRUCTURE.

No.	REVISIONS	INITIAL	DATE
7.	MOE/HCA APPLICATION SUBMISSION	DF	2016/02/18
6	MOE/HCA SUBMISSION - CITY/HCA REVIEW	DF	2015/12/18
5.	50% DETAILED DESIGN SUBMISSION	DF	2015/08/17
4.	100% FUNCTIONAL PLAN - HCA SUBMISSION	DF	2015/06/26
3.	100% FUNCTIONAL DESIGN RESUBMISSION	DF	2015/03/24
2.	100% FUNCTIONAL DESIGN SUBMISSION	DF	2014/11/25
1.	50% FUNCTIONAL DESIGN SUBMISSION	DF	2014/10/01

DRAWN BY: D.F. DATE: SEPTEMBER 29, 2014

REFERENCE MATERIAL:
Surveyed By :
Sewer Plans :
Water Plans :
Survey Plan :
Regional Surveyor: City of Hamilton Public Works Department

Geodetic Bench Mark IndNo. 07720020068 Elevation= 229.005
Borehole Report -

SCALES
0 50 100 150 m
HOR – 1: 3500

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Project Manager (Design)
Monir Moniruzzaman, P. Eng.
Manager of Design
Sally Yong-Lee, P. Eng.

CITY OF HAMILTON
Public Works Department

WILLIAM CONNELL CITY WIDE PARK
UPDATED FUTURE ULTIMATE CONDITIONS
SUBCATCHMENT BOUNDARY PLAN
DR1

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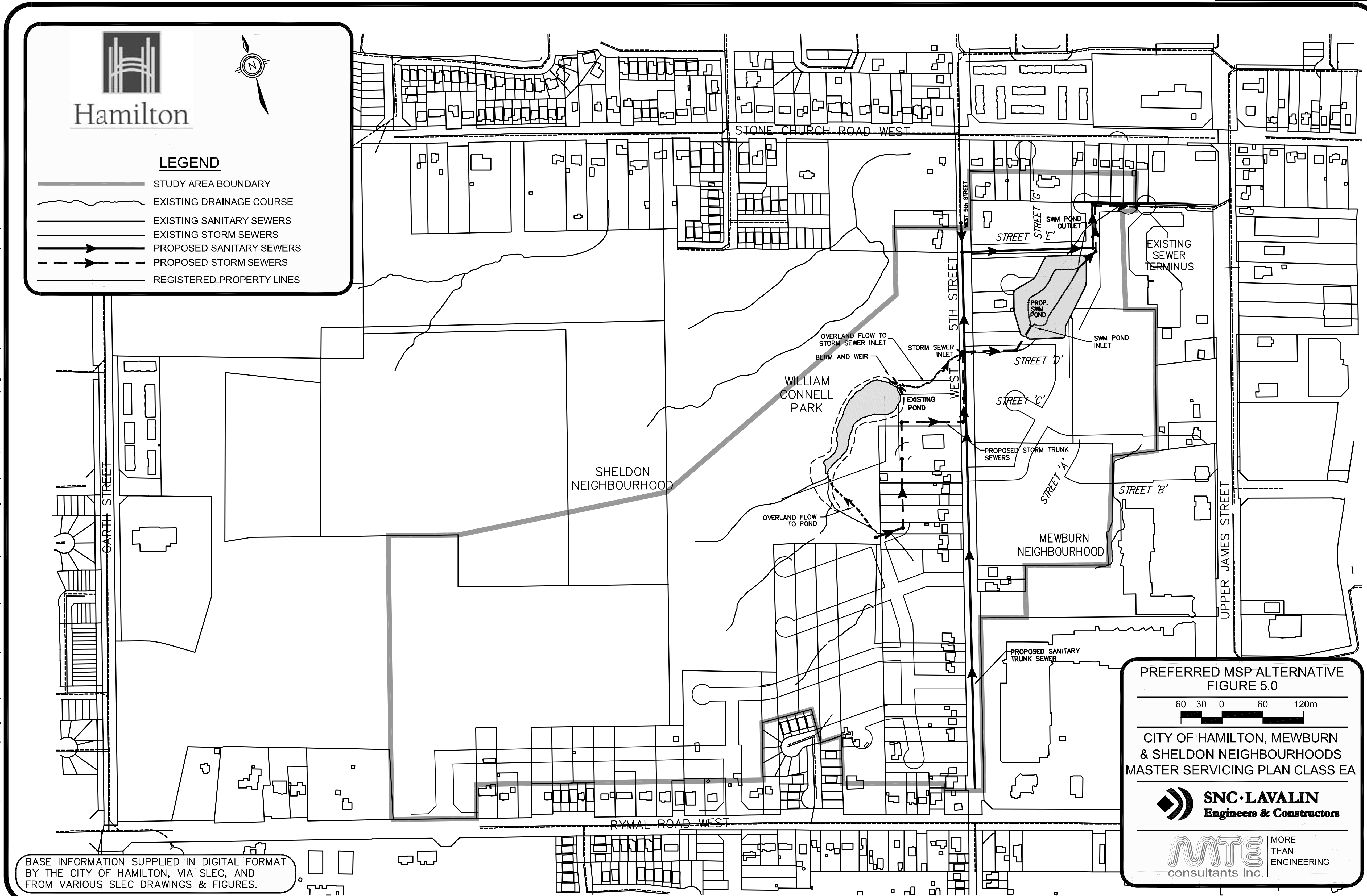
Appendix 'C'



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APPENDIX 'B' – Water/Wastewater Servicing Calculations

City of Hamilton Hydrant Testing Data

Domestic Water Usage Calculations

Required Fire-Flow Calculations

Fire Separation Distances – Figure W1

Fixture Unit Counts – KNYMH Architecture Solutions

Sanitary Generation Assessment

LandSmith ENGINEERING & CONSULTING LTD.

Summary of City-wide Hydrant Testing - Data as of January 7, 2015

Hydrant ID	Address	Pressure Zone	Date of Most Recent Two-hydrant Test as recorded in Hansen	Static Pressure (psi)	Residual Pressure (psi)	Test Flow (Imperial Gallons per minute)	DS R	DS R2	Theoretical Flow (IGPM) available at 20 psi residual
HC66H001	1073 WEST 5TH ST	6	20-06-2014 9:25:43 AM	68	65	910	3	48	4067
HC66H004	1177 WEST 5TH ST	6	20-06-2014 8:50:13 AM	60	56	1,000	4	40	3467
HC66H005	WEST 5TH ST	6	20-06-2014 8:35:14 AM	60	56	1,030	4	40	3571

Date: **2022-05-05**

DOMESTIC WATER USEAGE REQUIREMENTS

Project: 1177-1187 West 5th
Method: Fixture Unit Method, Per OBC Table 7.6.3.2.A

Fixtures: The number of fixtures was estimated based on discussions with the site owner and his servicing expectations, then rounded up for the sake of a conservative analysis.

Amount	***Fixture Type***	***Fixture Units Per***	***Total***	
275	Private Bathroom Group	3.6	990	
204	Kitchen Sink	1.4	285.6	
204	Dishwasher	1.4	285.6	
1	Public Bathroom Group	2.2	2.2	
204	Clothes Washer	1.4	285.6	
	Total:		***1849***	***1849***

1 - Reference Table 7.6.3.2.A, Ontario Building Code

Hydraulic Load: Fixture units are then transferred to Hydaulic Load based on Ontario Building Code Table 7.4.10.5.

Column 1	Column 2	Column 3	Column 4
Fixture Units in service	*Max Drainage Rate (Gal/m)*		
	Col. 1	Col. 1 × 10	Col. 1 × 100
100	53	174	900
90	51	164	835
80	49	153	750
70	47	140	680
60	44	128	600
50	41	115	520
40	38	102	435
30	33	88	350
20	27	72	262
10	21	53	174

Maximum hydraulic load is estimated to be 249 (248.71) Imperial Gallons / Minute

1849 Fixture Units = 249 GPM (IMP) = 18.8 L/s

The estimated maximum hydraulic load for the proposed building is 18.8 Liters per second.

ENGINEERING & CONSULTING LTD.

Date: 2022-05-05

FIRE FLOW DEMAND REQUIREMENTS

Project: 117-1187 West 5th Street, Hamilton
Method: OFM-TG-03-1999
FIRE PROTECTION WATER SUPPLY GUIDELINE FOR PART 3 IN THE ONTARIO BUILDING CODE
http://www.mcscs.jus.gov.on.ca/english/FireMarshal/Legislation/TechnicalGuidelinesandReports/TG-1999-03.html

Formula:

$$Q = K \times V \times S_{Tot}$$

Where:
Q = minimum supply of water in litres
K = water supply coefficient (Table 1)
V = total building volume in cubic meters
S_{Tot} = total of spacial coefficient tables

Volume (V)

	Area (m^2)	Height (m)	Volume (m^3)
Ground Floor Area:	1714.66	3.7	6344.2
2nd to 6th Floor	1695.91	16	27134.6
7th to 8th Floor	1488.72	6.4	9527.8
9th to 10th Floor	1375.01	6.7	9212.6
		Σ	**52219.2**

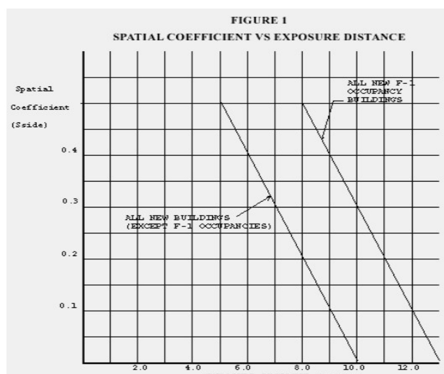
Total Volume (V) = 52219.2 (cu.m)

Water Supply Coefficient (K)
K: 18
OBC Part: C (Residential)
Construction Type: *Building is of combustible construction with fire separations and fire-resistance ratings provided in accordance with Subsection 3.2.2. of the OBC, including loadbearing walls, columns and arches. Noncombustible construction may be used in lieu of fire-resistance rating where permitted in Subsection 3.2.2. of the OBC.*

Spacial Coefficients (S)

		Distance (m)	
S_1	0	23.9	(North)
S_2	0	151.9	(East)
S_3	0	41.9	(South)
S_4	0	52.69	(West)

$S_{Tot} = 1.0 + S_1 + S_2 + S_3 + S_4 =$ **1**

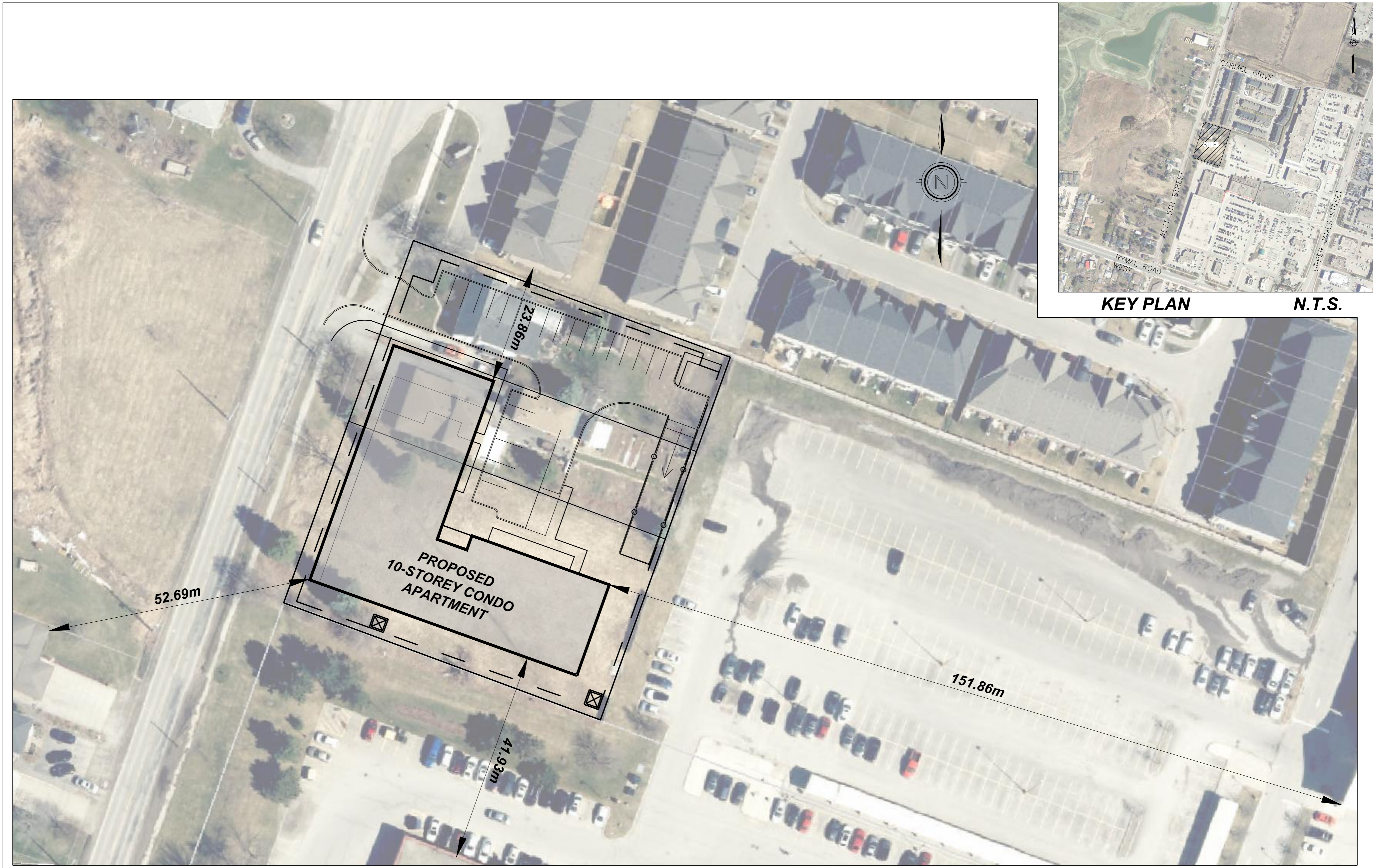


Q = ***939,946*** **L**

Required Flow Rate = ***9,000*** **L / Min**
150 **L / Sec**
1980 GPM (IMP)

Table 2:
Minimum Water Supply Flow Rates

Building Code, Part 3 Buildings	**Required Minimum Water Supply Flow Rate (L/min.)**
One-storey building with building area not exceeding 600m² (excluding F-1 occupancies)	1800
All other buildings	2700 (If **Q** ≤ 108,000L)(1) 3600 (If **Q** > 108,000L **and** ≤ 135,000L)(1) 4500 (If **Q** > 135,000L **and** ≤ 162,000L)(1) 5400 (If **Q** > 162,000L **and** ≤ 190,000L)(1) 6300 (If **Q** > 190,000L **and** ≤ 270,000L)(1) 9000 (If **Q** > 270,000L)(1)



KEY PLAN **N.T.S.**

SCALE:

0 10 20 30 40 50 60 70 80

1:1000

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PROJECT: 1177-1187 WEST 5TH STREET

FIRE SEPARATION DISTANCES
FIGURE W1

SUITE TYPES PER FLOOR & PLUMBING FEATURES

Name	SUITE AREA SQ FT	Area	# OF BEDROOMS 1 Bed Units	2 Bed Units	FLOOR FIRST	SECOND	THIRD	FORTH	FIFTH	SIXTH	SEVENTH	EIGHTH	NINTH	TENTH	UNIT BATHROOMS	KITCHEN SINK	DISHWASHER	LAUNDRY
TYPE 1	612 SF	56 m²	68	0	4	6	6	6	6	6	9	9	8	8	68	68	68	68
TYPE 1B	637 SF	54 m²	13	0	0	1	1	1	1	1	3	3	1	1	13	13	13	13
TYPE 2	694 SF	64 m²	0	10	1	1	1	1	1	1	1	1	1	1	20	10	10	10
TYPE 3	611 SF	57 m²	1	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1
TYPE 3B	729 SF	67 m²	0	9	0	1	1	1	1	1	1	1	1	1	18	9	9	9
TYPE 4	919 SF	85 m²	0	1	1	0	0	0	0	0	0	0	0	0	2	1	1	1
TYPE 5	914 SF	85 m²	0	1	1	0	0	0	0	0	0	0	0	0	2	1	1	1
TYPE 6	852 SF	68 m²	0	6	1	1	1	1	1	1	0	0	0	0	12	6	6	6
TYPE 7	632 SF	58 m²	6	0	1	1	1	1	1	1	0	0	0	0	6	6	6	6
TYPE 8	875 SF	81 m²	0	6	1	1	1	1	1	1	0	0	0	0	12	6	6	6
TYPE 9	747 SF	69 m²	18	0	3	3	3	3	3	3	0	0	0	0	18	18	18	18
TYPE 9B	724 SF	67 m²	6	0	1	1	1	1	1	1	0	0	0	0	6	6	6	6
TYPE 9C	563 SF	52 m²	4	0	0	0	0	0	0	0	1	1	1	1	4	4	4	4
TYPE 10	659 SF	61 m²	1	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1
TYPE 11	813 SF	75 m²	0	9	0	1	1	1	1	1	1	1	1	1	18	9	9	9
TYPE 12	776 SF	72 m²	9	0	0	1	1	1	1	1	1	1	1	1	9	9	9	9
TYPE 12B	949 SF	88 m²	0	2	0	0	0	0	0	0	0	0	1	1	4	2	2	2
TYPE 13	910 SF	84 m²	0	5	0	1	1	1	1	1	0	0	0	0	10	5	5	5
TYPE 13B	747 SF	69 m²	0	4	0	0	0	0	0	0	1	1	1	1	8	4	4	4
TYPE 14	618 SF	57 m²	2	0	0	0	0	0	0	0	1	1	0	0	2	2	2	2
TYPE 15	744 SF	69 m²	0	2	0	0	0	0	0	0	1	1	0	0	4	2	2	2
TYPE 16	948 SF	88 m²	0	7	0	1	1	1	1	1	0	0	1	1	14	7	7	7
TYPE 17	701 SF	65 m²	5	0	0	1	1	1	1	1	0	0	0	0	5	5	5	5
TYPE 18	938 SF	87 m²	0	9	0	1	1	1	1	1	1	1	1	1	18	9	9	9
TOTAL			133	71	16	22	22	22	22	22	21	21	18	18	275	204	204	204

KNYMH
ARCHITECTURE • SOLUTIONS

KNYMH INC.
1006 SKYVIEW DRIVE • SUITE 101
BURLINGTON, ONTARIO • L7P 0V1
P 905.639.6595
F 905.639.0394

info@knymh.com
www.knymh.com

no.	(dd.mm.yy) date	revision description

BUILDING PERMIT NUMBER
NOT FOR CONSTRUCTION WITHOUT PERMIT

THIS DOCUMENT IS INCOMPLETE AND MAY NOT BE USED FOR REGULATORY APPROVAL, PERMIT OR CONSTRUCTION AND ARE FOR USE BY CONSULTANTS, SUBCONSULTANTS, OWNER AND CONTRACTORS TO PROVIDE THEIR INPUT TO THE COORDINATION OF THIS DOCUMENT.

project
VALVASORI PROPERTIES
1187 WEST 5TH STREET
HAMILTON, ON

drawing sheet title
SUITE TYPES PER FLOOR & PLUMBING FEATURES

scale

orientation

drawn by
KNYMH

plot date
2022-05-02

project no.
19002

drawing no.
SK-A01

Date: 2022-05-10

<u>SANITARY GENERATION ASSESSEMENT</u>

Project: 1177-1187 West 5th
Method: Ontario Building Code (OBC), 8.2.1.3.A. & 3.1.17.1

Based on the Ontario Building Code the calculation for expected generation of sanitary effluent based on the proposed building is as follows:

Using Table 8.2.1.3.A 'Residential Occupancy'
Apartments, Condominiums, Other Multi-family dwellings – 275 L / day / person.

Section 3.1.17.1 'Occupant Load Determination' clause (b), *"two persons per sleeping room, or sleeping area in a dwelling unit or suite"*

<u>Residential Units:</u> 1 Bedroom Units: 131 x 2 persons = 262 persons
2 Bedroom Units: 71 x 4 persons = 284 persons
Total persons = 262 + 284 = 546 persons

275 L/day/ person x 546 persons = 150,150 L/day = 1.75 L/s

<u>Commercial Area:</u> Per water closet = 1230 L/day
2 Water closets (estimated) = 2460 L/Day = 0.03 L/s

Total Wastewater Generation = 1.78 L/s, Peaking Factor = 5x,
Estimated Peak Instantaneous Flow = 8.90 L/s

APPENDIX 'C' – SWM Analysis

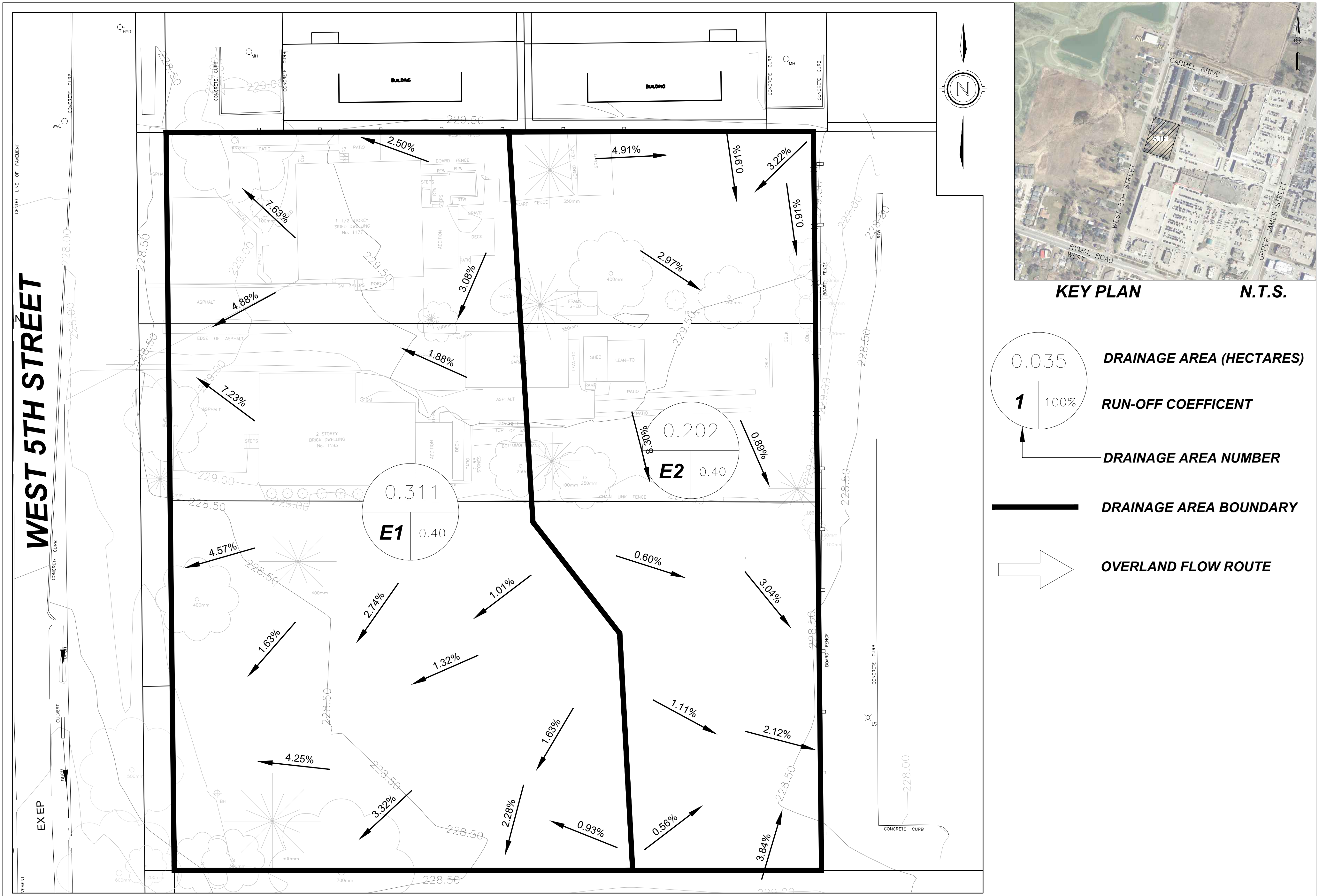
Pre-Development Drainage Area - Figure S1

Post-Development Drainage Area – Figure S2

MIDUSS v2 Output Files

Sewer Design Calculations - Urbex Engineering Ltd.

Ultimate Storm Drainage Area Plan – Urbex Engineering Ltd.



SCALE:

0 10 20 30 40

1:500

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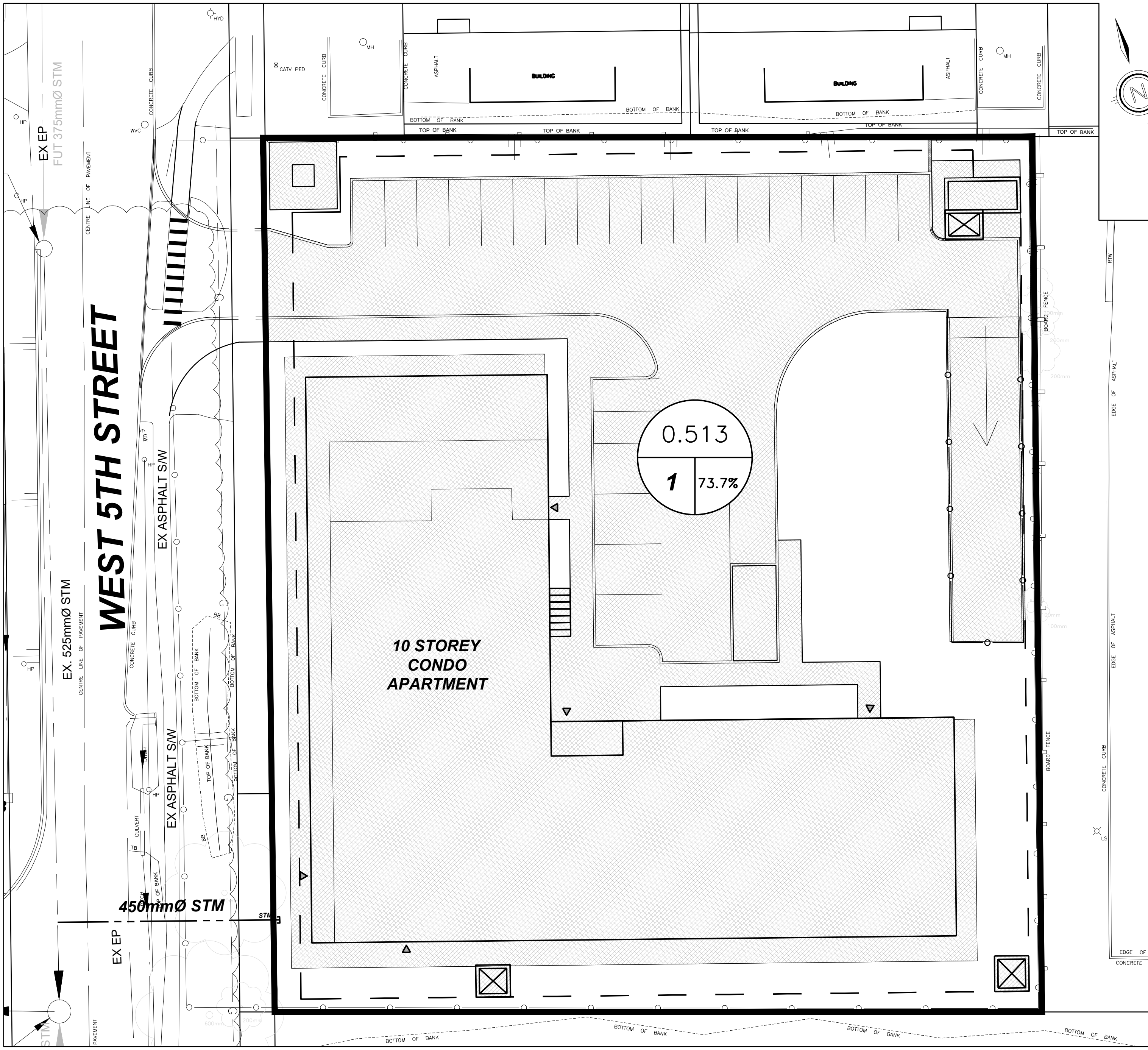
ENGINEERING & CONSULTING LTD.

PROJECT: 1177-1187 WEST 5TH STREET

PRE-DEVELOPMENT DRAINAGE AREA

FIGURE S1



KEY PLAN N.T.S.

0.035 DRAINAGE AREA (HECTARES)

1 100% RUN-OFF COEFFICENT

DRAINAGE AREA NUMBER

DRAINAGE AREA BOUNDARY

IMPERVIOUS SURFACE

SCALE:

0 10 20 30 40

1:500

LandSmith ENGINEERING & CONSULTING LTD.

PROJECT: 1177-1187 WEST 5TH STREET

POST-DEVELOPMENT DRAINAGE AREA

FIGURE S2

MIDUSS POST DEVELOPMENT ANALYSIS: AREA A1 (UNCONTROLLED)

5 YEAR DESIGN STORM

```
"               MIDUSS Output ----------------------------------------------->"
"               MIDUSS version                          Version 2.25  rev. 473"
"               MIDUSS created                                February 7, 2010"
"          10   Units used:                                          ie METRIC"
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"                             1177 & 1187 West 5th Street\SWM\Post-Development"
"               Output filename:          A1- POST DEV-5 YR UNCONTROLLED1.out"
"               Licensee name:                                       Dan Hodge"
"               Company                                              LandSmith"
"               Date & Time last used:                2022-04-29 at 2:42:26 PM"
" 31          TIME PARAMETERS"
"       5.000   Time Step"
"     180.000   Max. Storm length"
"    1500.000   Max. Hydrograph"
" 32          STORM Chicago storm"
"           1   Chicago storm"
"    1049.500   Coefficient A"
"       8.000   Constant B"
"       0.873   Exponent C"
"       0.500   Fraction R"
"     180.000   Duration"
"       1.000   Time step multiplier"
"            Maximum intensity            84.165    mm/hr"
"            Total depth                  32.566    mm"
"           6   005hyd   Hydrograph extension used in this file"
" 33          CATCHMENT 1"
"           1   Triangular SCS"
"           1   Equal length"
"           1   SCS method"
"           1   SITE UNCONTROLLED"
"      73.700   % Impervious"
"       0.513   Total Area"
"      40.000   Flow length"
"       0.500   Overland Slope"
"       0.135   Pervious Area"
"      40.000   Pervious length"
"       0.500   Pervious slope"
"       0.378   Impervious Area"
"      40.000   Impervious length"
"       0.500   Impervious slope"
"       0.250   Pervious Manning 'n'"
"      75.000   Pervious SCS Curve No."
"       0.164   Pervious Runoff coefficient"
"       0.100   Pervious Ia/S coefficient"
"       8.467   Pervious Initial abstraction"
"       0.015   Impervious Manning 'n'"
"      98.000   Impervious SCS Curve No."
"       0.837   Impervious Runoff coefficient"
"       0.100   Impervious Ia/S coefficient"
"       0.518   Impervious Initial abstraction"
"                    0.082     0.000     0.000     0.000 c.m/sec"
"            Catchment 1            Pervious   Impervious Total Area "
"            Surface Area           0.135      0.378      0.513      hectare"
"            Time of concentration  42.358     4.362      6.845      minutes"
"            Time to Centroid       164.841    104.300    108.256    minutes"
"            Rainfall depth         32.566     32.566     32.566     mm"
"            Rainfall volume        43.94      123.13     167.06     c.m"
"            Rainfall losses        27.228     5.317      11.080     mm"
"            Runoff depth           5.338      27.249     21.486     mm"
"            Runoff volume          7.20       103.02     110.22     c.m"
"            Runoff coefficient     0.164      0.837      0.660      "
"            Maximum flow           0.002      0.082      0.082      c.m/sec"
" 40          HYDROGRAPH Add Runoff "
"           4   Add Runoff "
"                    0.082     0.082     0.000     0.000"
```

25 YEAR DESIGN STORM

```
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"                            1177 & 1187 West 5th Street\SWM\Post-Development"
"               Output filename:          A1- POST DEV-25 YR UNCONTROLLED1.out"
"               Licensee name:                                      Dan Hodge"
"               Company                                             LandSmith"
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" 31         TIME PARAMETERS"
"       5.000   Time Step"
"     180.000   Max. Storm length"
"    1500.000   Max. Hydrograph"
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"           1   Chicago storm"
"    1343.700   Coefficient A"
"       9.000   Constant B"
"       0.814   Exponent C"
"       0.500   Fraction R"
"     180.000   Duration"
"       1.000   Time step multiplier"
"            Maximum intensity           122.292    mm/hr"
"            Total depth                  56.544    mm"
"           6   025hyd   Hydrograph extension used in this file"
" 33         CATCHMENT 1"
"           1   Triangular SCS"
"           1   Equal length"
"           1   SCS method"
"           1   SITE UNCONTROLLED"
"      73.700   % Impervious"
"       0.513   Total Area"
"      40.000   Flow length"
"       0.500   Overland Slope"
"       0.135   Pervious Area"
"      40.000   Pervious length"
"       0.500   Pervious slope"
"       0.378   Impervious Area"
"      40.000   Impervious length"
"       0.500   Impervious slope"
"       0.250   Pervious Manning 'n'"
"      75.000   Pervious SCS Curve No."
"       0.308   Pervious Runoff coefficient"
"       0.100   Pervious Ia/S coefficient"
"       8.467   Pervious Initial abstraction"
"       0.015   Impervious Manning 'n'"
"      98.000   Impervious SCS Curve No."
"       0.883   Impervious Runoff coefficient"
"       0.100   Impervious Ia/S coefficient"
"       0.518   Impervious Initial abstraction"
"                    0.127     0.000     0.000     0.000 c.m/sec"
"            Catchment 1            Pervious   Impervious Total Area "
"            Surface Area           0.135      0.378      0.513      hectare"
"            Time of concentration  28.725     3.715      6.480      minutes"
"            Time to Centroid       145.924    102.393    107.205    minutes"
"            Rainfall depth         56.544     56.544     56.544     mm"
"            Rainfall volume        76.29      213.78     290.07     c.m"
"            Rainfall losses        39.151     6.604      15.164     mm"
"            Runoff depth           17.393     49.939     41.380     mm"
"            Runoff volume          23.47      188.81     212.28     c.m"
"            Runoff coefficient     0.308      0.883      0.732      "
"            Maximum flow           0.007      0.126      0.127      c.m/sec"
" 40         HYDROGRAPH Add Runoff "
"           4   Add Runoff "
"                    0.127     0.127     0.000     0.000"
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100 YEAR DESIGN STORM

```
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"               MIDUSS created                                February 7, 2010"
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"                             1177 & 1187 West 5th Street\SWM\Post-Development"
"               Output filename:         A1- POST DEV-100 YR UNCONTROLLED1.out"
"               Licensee name:                                       Dan Hodge"
"               Company                                              LandSmith"
"               Date & Time last used:               2022-05-02 at 9:14:04 AM"
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"     180.000   Max. Storm length"
"    1500.000   Max. Hydrograph"
" 32         STORM Chicago storm"
"           1   Chicago storm"
"    2137.400   Coefficient A"
"      11.000   Constant B"
"       0.836   Exponent C"
"       0.500   Fraction R"
"     180.000   Duration"
"       1.000   Time step multiplier"
"            Maximum intensity          167.691    mm/hr"
"            Total depth                 79.444    mm"
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" 33         CATCHMENT 1"
"           1   Triangular SCS"
"           1   Equal length"
"           1   SCS method"
"           1   SITE UNCONTROLLED"
"      73.700   % Impervious"
"       0.513   Total Area"
"      40.000   Flow length"
"       0.500   Overland Slope"
"       0.135   Pervious Area"
"      40.000   Pervious length"
"       0.500   Pervious slope"
"       0.378   Impervious Area"
"      40.000   Impervious length"
"       0.500   Impervious slope"
"       0.250   Pervious Manning 'n'"
"      75.000   Pervious SCS Curve No."
"       0.407   Pervious Runoff coefficient"
"       0.100   Pervious Ia/S coefficient"
"       8.467   Pervious Initial abstraction"
"       0.015   Impervious Manning 'n'"
"      98.000   Impervious SCS Curve No."
"       0.913   Impervious Runoff coefficient"
"       0.100   Impervious Ia/S coefficient"
"       0.518   Impervious Initial abstraction"
"                    0.180     0.000     0.000     0.000 c.m/sec"
"            Catchment 1           Pervious   Impervious Total Area "
"            Surface Area          0.135      0.378      0.513      hectare"
"            Time of concentration 22.762     3.263      5.937      minutes"
"            Time to Centroid      136.227    100.794    105.654    minutes"
"            Rainfall depth        79.444     79.444     79.444     mm"
"            Rainfall volume       107.19     300.36     407.55     c.m"
"            Rainfall losses       47.132     6.893      17.475     mm"
"            Runoff depth          32.313     72.552     61.969     mm"
"            Runoff volume         43.60      274.30     317.90     c.m"
"            Runoff coefficient    0.407      0.913      0.780      "
"            Maximum flow          0.016      0.176      0.180      c.m/sec"
" 40         HYDROGRAPH Add Runoff "
"           4   Add Runoff "
"                    0.180     0.180     0.000     0.000"
```

URBEX ENGINEERING LIMITED
161 Rebecca Street, Hamilton, ON. L8R 1B9

DESIGNED BY	C. Corsini
DATE	November 11, 2019
REVISED BY	H. Kandilas
DATE	April 2022

LICENSED PROFESSIONAL ENGINEER
04/12/22
C. J. RIDD
100550142
PROVINCE OF ONTARIO

CITY OF HAMILTON

STORM SEWER DESIGN (5 YEAR DESIGN)

Sheldon's Gate Phase 1

SUBMISSION #2 - ULTIMATE DEVELOPMENT

URBEX FILE No. : **D0171-P01-17**

CITY OF HAMILTON FILE No. : **25T-201305**

PIPE ROUGHNESS (n)			DESIGN STORM PARAMETERS
< 600	=	0.013	i5=1049.5/(td+8)^0.803
≥ 600	=	0.013	
DESIGN VELOCITIES			DESIGN STORM PARAMETERS
MIN =	0.90	m/s	Q=0.0028(I5)(AC)
MAX =	3.65	m/s	
MINIMUM PIPE SIZE			MAXIMUM PIPE CAPACITY
300	mm		85%
TIME OF CONCENTRATION			STORM YEAR EVENT
10	minutes		5

AREA	STREET NAME	MANHOLE		TIME IN MINUTES			STORM WATER STUDY							PROPOSED SEWER DESIGN				CAPACITY (m^3/s)	VELOCITY (m/s)	PERCENT FULL (%)
		FROM	TO	ELAPSED UPPER END	FLOW IN SECTION	ELAPSED LOWER END	AREA (ha)	C	CUMULATIVE AREA	A X C	CUMULATIVE A X C	i (mm/hr)	Q (m^3/s)	LENGTH (m)	DIAMETER	TYPE	GRADE (%)			
PATHWAY 1																				
C-68F(a)	WEST 5th STREET	FUT MH#113	FUT MH#112	10.00	0.53	10.53	0.255	0.65	0.255	0.166	0.166	103.038	0.048	30.5	300	SMOOTH PVC	0.50	0.068	0.966	70.3%
C-68F(b)	WEST 5th STREET	FUT MH#112	FUT MH#111	10.53	1.21	11.74	0.802	0.65	1.057	0.521	0.687	100.681	0.194	103.2	525	REIN. CONCRETE	0.50	0.317	1.420	61.1%
C-68F(c)	WEST 5th STREET	FUT MH#111	FUT MH#110	11.74	1.12	12.86	0.757	0.65	1.814	0.492	1.179	95.688	0.316	104.7	600	REIN. CONCRETE	0.50	0.453	1.552	69.7%
C-68F(d)	WEST 5th STREET	FUT MH#110	MH#109	12.86	0.34	13.20	0.220	0.65	2.034	0.143	1.322	91.524	0.339	31.6	600	REIN. CONCRETE	0.50	0.453	1.552	74.8%
C-68F(e)	WEST 5th STREET	MH#109	MH#108	13.20	0.06	13.26	0.036	0.65	2.070	0.023	1.346	90.346	0.340	11.0	600	REIN. CONCRETE	2.00	0.906	3.104	37.6%
C-68F(g)	WEST 5th STREET	FUT MH#115	MH#114	10.00	0.41	10.41	0.172	0.65	0.172	0.112	0.112	103.038	0.032	23.5	300	SMOOTH PVC	0.50	0.068	0.966	47.4%
C-68F(i)	MUN No.1177-1183	FUT	MH#114	10.00	0.45	10.45	0.268	0.65	0.268	0.174	0.174	103.038	0.050	30.0	375	SMOOTH PVC	0.50	0.117	1.105	43.1%
C-68F(i)	MUN No.1177-1183 - 100YR	FUT	MH#114	10.00	0.45	10.45	0.268	0.65	0.268	0.174	0.174	181.813	0.089	30.0	375	SMOOTH PVC	0.50	0.117	1.105	76.1%
													0.038	***Additional Flow Captured (100 YR)***						
C-68F(h)	MUN No.1187	FUT	MH#114	10.00	0.45	10.45	0.257	0.75	0.257	0.193	0.193	103.038	0.056	30.0	375	SMOOTH PVC	0.50	0.117	1.105	47.7%
C-68F(h)	MUN No.1187 - 100YR	FUT	MH#114	10.00	0.45	10.45	0.257	0.75	0.257	0.193	0.193	181.813	0.098	30.0	375	SMOOTH PVC	0.50	0.117	1.105	84.2%
													0.043	***Additional Flow Captured (100 YR)***						
C-68F(f)	WEST 5th STREET	MH#114	MH#108	10.45	0.78	11.23	0.227	0.65	0.924	0.148	0.626	101.005	0.258	66.6	525	REIN. CONCRETE	0.50	0.317	1.420	81.3%
STM106	STREET A	MH#108	MH#107	13.26	0.62	13.88	0.499	0.65	3.493	0.324	2.296	90.144	0.660	71.3	825	REIN. CONCRETE	0.50	1.059	1.919	62.4%
STM106	STREET A	MH#107	MH#105	13.88	0.14	14.02	0.000	0.00	3.493	0.000	2.296	88.090	0.647	15.7	825	REIN. CONCRETE	0.50	1.059	1.919	61.1%
C-92F(b)	FUT STREET B	FUT MH#118	MH#106	10.00	0.88	10.88	1.964	0.65	1.964	1.277	1.277	103.038	0.368	130.0	525	REIN. CONCRETE	1.50	0.549	2.459	67.0%
STM105	FUT STREET B	MH#106	MH#105	10.88	0.31	11.19	0.278	0.65	2.242	0.181	1.457	99.159	0.405	45.5	525	REIN. CONCRETE	1.50	0.549	2.459	73.6%
STM104	STREET B	MH#105	MH#104	14.02	0.42	14.44	0.226	0.65	5.961	0.147	3.900	87.652	1.038	51.2	900	REIN. CONCRETE	0.50	1.335	2.034	77.7%
STM104	STREET B	MH#104	MH#101	14.44	0.10	14.54	0.000	0.00	5.961	0.000	3.900	86.333	1.024	12.1	900	REIN. CONCRETE	0.50	1.335	2.034	76.7%
EXT STM100	FUT STREET B	FUT MH#117	MH#103	10.00	1.46	11.46	0.913	0.65	0.913	0.593	0.593	103.038	0.171	112.6	450	REIN. CONCRETE	0.50	0.210	1.281	81.4%
STM103	STREET B	MH#103	MH#102	11.46	0.23	11.70	0.271	0.65	1.184	0.176	0.770	96.764	0.209	20.0	525	REIN. CONCRETE	0.50	0.317	1.420	65.7%
STM103	STREET B	MH#102	MH#101	11.70	0.14	11.84	0.000	0.00	1.184	0.000	0.770	95.837	0.207	12.0	525	REIN. CONCRETE	0.50	0.317	1.420	65.1%
STM102	STREET C	MH#101	MH#100	14.54	0.27	14.80	0.129	0.65	7.274	0.084	4.754	86.028	1.226	27.8	1050	REIN. CONCRETE	0.30	1.560	1.746	78.6%
STM101	STREET C	MH#100	MH#P2	14.80	0.14	14.94	0.072	0.65	7.346	0.047	4.801	85.222	1.226	15.1	1050	REIN. CONCRETE	0.30	1.560	1.746	78.6%

URBEX ENGINEERING LIMITED

161 Rebecca Street, Hamilton, ON. L8R 1B9

DESIGNED BY	C. Corsini
DATE	November 11, 2019
REVISED BY	H. Kandilas
DATE	April 2022

LICENSED PROFESSIONAL ENGINEER
04/12/22
C. J. RIDD
100550142
PROVINCE OF ONTARIO

CITY OF HAMILTON

STORM SEWER DESIGN (5 YEAR DESIGN)

Sheldon's Gate Phase 1

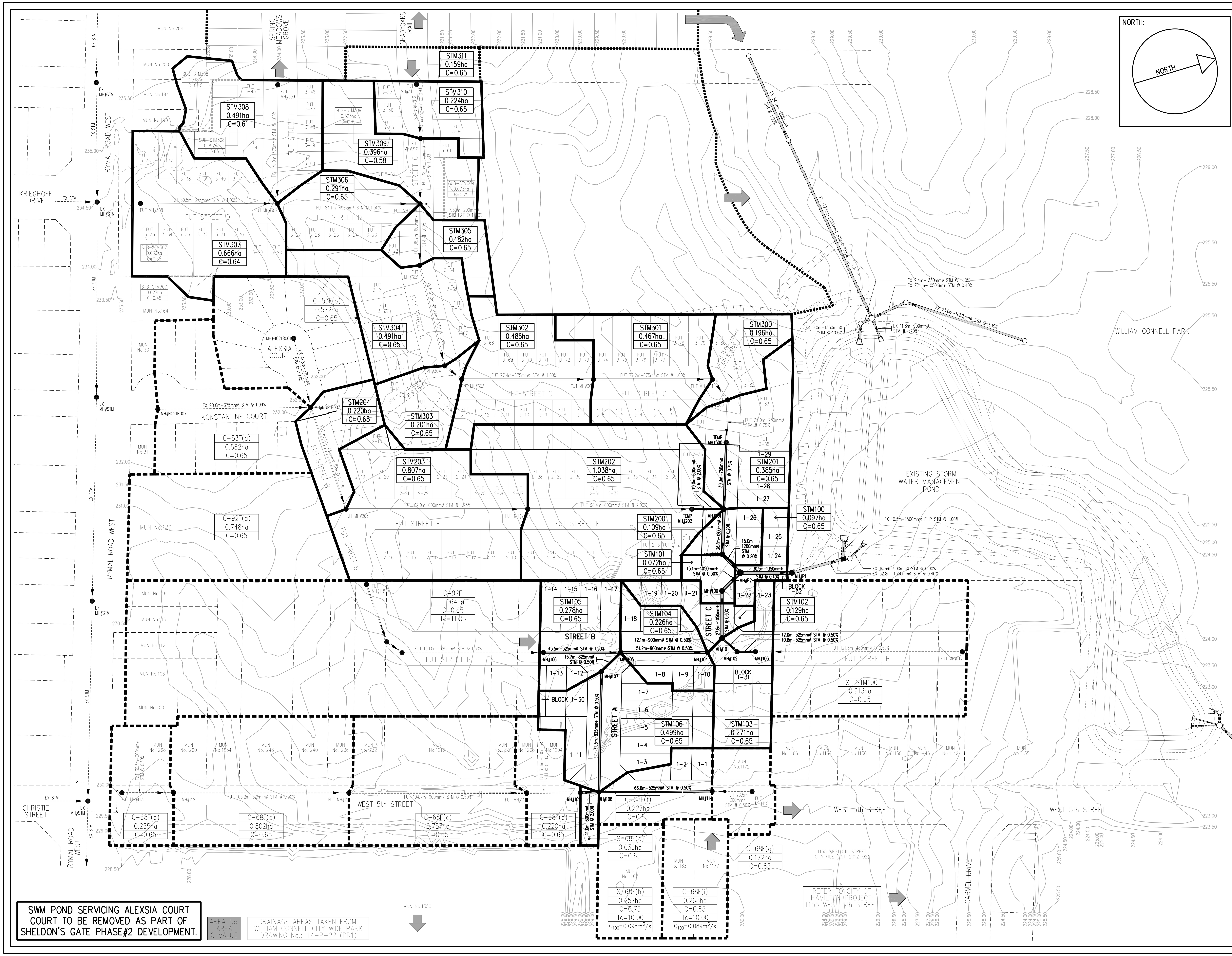
SUBMISSION #2 - ULTIMATE DEVELOPMENT

URBEX FILE No. : D0171-P01-17

CITY OF HAMILTON FILE No. : 25T-201305

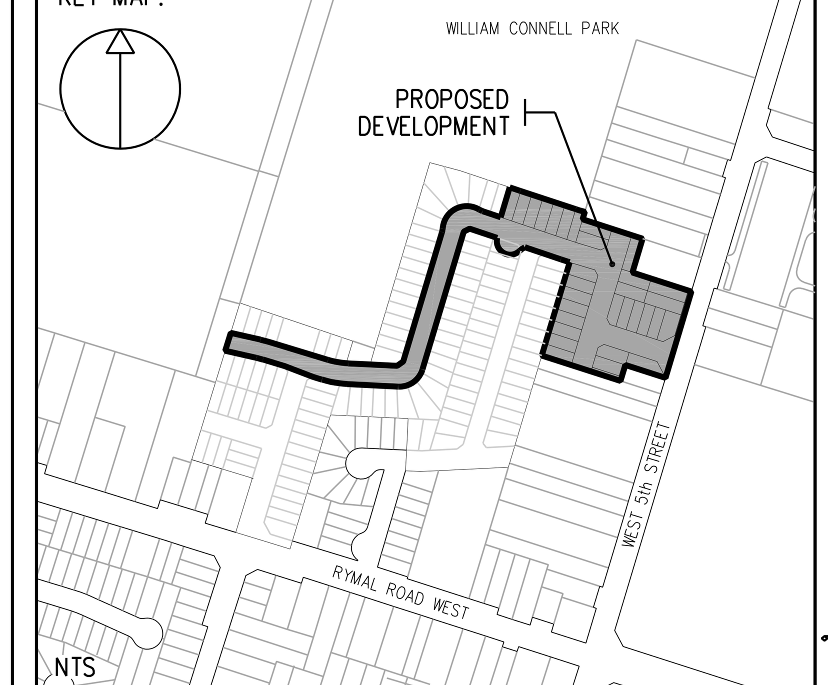
PIPE ROUGHNESS (n)			DESIGN STORM PARAMETERS
< 600	=	0.013	i5=1049.5/(td+8)^0.803
≥ 600	=	0.013	
DESIGN VELOCITIES			DESIGN STORM PARAMETERS
MIN =	0.90	m/s	Q=0.0028(I5)(AC)
MAX =	3.65	m/s	
MINIMUM PIPE SIZE			MAXIMUM PIPE CAPACITY
300	mm		85%
TIME OF CONCENTRATION			STORM YEAR EVENT
10	minutes		5

AREA	STREET NAME	MANHOLE FROM	MANHOLE TO	TIME IN MINUTES: ELAPSED UPPER END	FLOW IN SECTION	ELAPSED LOWER END	STORM WATER STUDY: AREA (ha)	C	CUMULATIVE AREA	A X C	CUMULATIVE A X C	i (mm/hr)	Q (m^3/s)	PROPOSED SEWER DESIGN: LENGTH (m)	DIAMETER	TYPE	GRADE (%)	CAPACITY (m^3/s)	VELOCITY (m/s)	PERCENT FULL (%)
PATHWAY 2																				
C-53F(a)	KONSTANTINE COURT	HG21B007	HG21B003	10.00	0.92	10.92	0.582	0.65	0.582	0.378	0.378	103.038	0.109	90.0	375	SMOOTH PVC	1.09	0.172	1.632	63.4%
C-53F(b)	ALEXSIA COURT	HG21B001	HG21B003	10.00	0.52	10.52	0.572	0.65	0.572	0.372	0.372	103.038	0.107	41.8	375	SMOOTH PVC	0.74	0.142	1.345	75.6%
STM204	FUT STREET B	HG21B003	FUT MH#203	10.92	0.39	11.31	0.220	0.65	1.374	0.143	0.893	98.999	0.248	63.5	450	REIN. CONCRETE	2.27	0.448	2.730	55.2%
C-92F(a)	FUT DEVELOPMENT	UPSTREAM	FUT MH#203	10.00	0.26	10.26	0.748	0.65	0.748	0.486	0.486	103.038	0.140	20.0	450	REIN. CONCRETE	0.50	0.210	1.281	66.7%
STM203	FUT STREET E	FUT MH#203	FUT MH#202	11.31	0.73	12.03	0.807	0.65	2.929	0.525	1.904	97.399	0.519	107.0	600	REIN. CONCRETE	1.25	0.716	2.454	72.5%
STM202	FUT STREET E	FUT MH#202	MH#201	12.03	0.62	12.65	1.038	0.65	3.967	0.675	2.579	94.552	0.683	115.4	600	REIN. CONCRETE	2.00	0.906	3.104	75.4%
STM307	FUT STREET D	FUT MH#308	FUT MH#307	10.00	0.86	10.86	0.666	0.64	0.666	0.426	0.426	103.038	0.123	80.5	375	SMOOTH PVC	1.00	0.165	1.563	74.6%
STM308	FUT STREET F	FUT MH#309	FUT MH#307	10.00	0.75	10.75	0.491	0.61	0.491	0.300	0.300	103.038	0.086	70.0	375	SMOOTH PVC	1.00	0.165	1.563	52.4%
STM306	FUT STREET D	FUT MH#307	FUT MH#306	10.86	0.63	11.49	0.291	0.65	1.448	0.189	0.915	99.255	0.254	84.1	450	REIN. CONCRETE	1.50	0.364	2.219	69.8%
STM310+311	FUT STREET C	FUT MH#311	FUT MH#310	10.00	0.32	10.32	0.383	0.65	0.383	0.249	0.249	103.038	0.072	32.0	300	SMOOTH PVC	1.50	0.118	1.673	61.0%
STM309	FUT STREET C	FUT MH#310	FUT MH#306	10.32	0.34	10.65	0.396	0.58	0.779	0.230	0.479	101.596	0.136	38.5	375	SMOOTH PVC	1.50	0.202	1.914	67.4%
STM305	FUT STREET C	FUT MH#306	FUT MH#305	11.49	0.27	11.76	0.182	0.65	2.409	0.118	1.512	96.664	0.409	36.2	600	REIN. CONCRETE	1.00	0.641	2.195	63.9%
STM304	FUT STREET C	FUT MH#305	FUT MH#304	11.76	0.46	12.23	0.491	0.65	2.900	0.319	1.831	95.583	0.490	61.0	600	REIN. CONCRETE	1.00	0.641	2.195	76.5%
STM303	FUT STREET C	FUT MH#304	FUT MH#303	12.23	0.09	12.32	0.201	0.65	3.101	0.131	1.962	93.821	0.515	12.9	675	REIN. CONCRETE	1.00	0.876	2.374	58.8%
STM302	FUT STREET C	FUT MH#303	FUT MH#302	12.32	0.54	12.86	0.486	0.65	3.587	0.316	2.278	93.485	0.596	77.4	675	REIN. CONCRETE	1.00	0.876	2.374	68.0%
STM301	FUT STREET C	FUT MH#302	FUT MH#301	12.86	0.49	13.36	0.467	0.65	4.054	0.304	2.581	91.524	0.661	70.2	675	REIN. CONCRETE	1.00	0.876	2.374	75.5%
STM300	FUT STREET C	FUT MH#301	FUT MH#300	13.36	0.11	13.47	0.196	0.65	4.250	0.127	2.708	89.824	0.681	15.0	750	REIN. CONCRETE	0.75	1.006	2.206	67.7%
STM201	FUT STREET C	FUT MH#300	FUT MH#201	13.47	0.49	13.95	0.385	0.65	4.635	0.250	2.959	89.443	0.741	64.3	750	REIN. CONCRETE	0.75	1.006	2.206	73.7%
STM200	STREET C	MH#201	MH#200	13.95	0.29	14.24	0.109	0.65	8.711	0.071	5.608	87.850	1.379	26.7	1200	REIN. CONCRETE	0.20	1.819	1.558	75.8%
STM101	STREET C	MH#200	MH#P2	14.24	0.16	14.40	0.072	0.65	8.783	0.047	5.655	86.943	1.377	15.0	1200	REIN. CONCRETE	0.20	1.819	1.558	75.7%
STM100	EASEMENT	MH#P2	MH#P1	14.94	0.21	15.16	0.097	0.65	16.226	0.063	10.519	84.792	2.578	30.5	1350	REIN. CONCRETE	0.40	3.522	2.383	73.2%
	SWM POND	MH#P1	POND	15.16	0.23	15.39	0.000	0.00	16.226	0.000	10.519	84.165	2.560	32.8	1350	REIN. CONCRETE	0.40	3.522	2.383	72.7%



D0171–P01–17 (SHELDON'S GATE PHASE 1)

KEY MAP:



LEGEND:

TRIBUTARY ID	STMXX
TRIBUTARY AREA	ha
COEFFICIENT OF IMPERVIOUSNESS	C=XXX
DENOTES LIMIT OF STORM TRIBUTARY AREA	
DENOTES LIMIT OF EXISTING STORM TRIBUTARY AREA	
OVERLAND FLOW ROUTE	

FOR APPROVAL

No.	DATE	BY	REVISION
2	2021-06-XX	HK/BW	2nd SUBMISSION
–	OCT 29, 2020	CC	HYDRO INFORMATION UPDATE
1	OCT 16, 2020	CC	1st SUBMISSION
--	AUG 21, 2020.	CC	HYDRAULIC GRADE LINE ADDED
--	JULY 27, 2020.	CC	1st SUBMISSION SET PREPARED

BENCHMARKS:
STATION: 0011965U070
TOWNSHIP: HAMILTON-WENTWORTH
CONCRETE WALL AT SOUTH END OF A CULVERT UNDER HIGHWAY No.53, 18.3m EAST OF CENTRE LINE OF UPPER JAMES STREET (HIGHWAY No.6), 13.7m SOUTH-WEST OF RYCKMAN'S GARAGE, 32.0m SOUTH OF CENTRE LINE OF HIGHWAY No.53, TABLET IN TOP OF WING WALL, 30cm FROM SOUTHEAST END, 15cm FROM SOUTHWEST FACE, 4.0m SOUTH-WEST OF POWER POLE No.201. ORTHOMETRIC ELEV: 224.169m

STAMP:

CONSULTANT:
URBEX ENGINEERING LIMITED
161 REBECCA STREET
HAMILTON ON. L8R 1B9
TEL 905-522-3328
FAX 905-522-0452
EMAIL info@urbex.biz

MUNICIPALITY:
THE CITY OF HAMILTON

SHELDON'S GATE PHASE 1
HAMILTON, ONTARIO

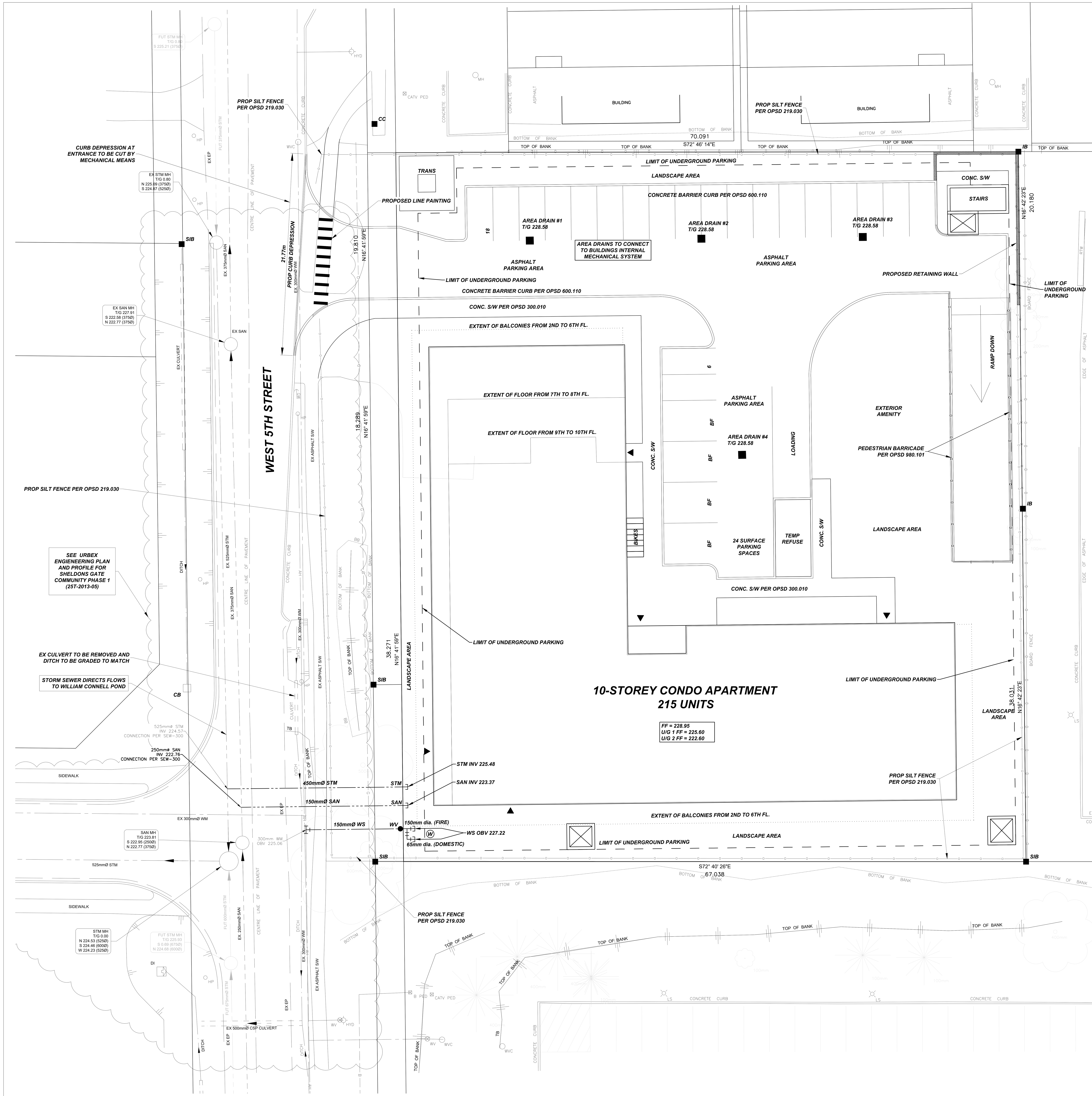
ULTIMATE STORM DRAINAGE AREA PLAN

CITY FILES: 25T-2013-05	FILE NAME: 14-SG01-STM-ULT-2022-01.dwg
LAST SAVED BY: HARRY KANDILAS	SCALE: 1:1000
LAST SAVED DATE: 2/16/2022 2:47 PM	SHEET No.: 14

APPENDIX 'D' – Site Design Engineering Plans

Site Servicing and Sediment and Erosion Control Plan

Grading Plan



STANDARD NOTES

B. SITE STORM SEWERS

1. CONSTRUCTION OF PPRIVATE STORM SEWERS SHALL BE IN ACCORDANCE WITH CITY STANDARDS AND SPECIFICATIONS (LATEST EDITION) AND THE MINISTRY OF THE ENVIRONMENT GUIDELINES (LATEST EDITION).
2. STORM SEWERS (200MM TO 450MM) SHALL BE PVC PIPE, CSA B182.2, SDR-35
3. COVER AND BEDDING MATERIAL FOR PVC PIPE SHALL BE GRANULAR 'A' AS PER OPSD 802.010 OR 802.013.
4. PVC PIPE SHALL REQUIRE SPECIAL PROCEDURES AS PER CITY SPECIFICATIONS.
5. ALL SEWERS SHALL BE FLUSHED PRIOR TO VIDEO INSPECTION.
6. MANHOLE FRAMES AND COVERS SHALL BE AS PER OPSD 401.010 (OPEN)
7. PVC SEWERS ARE TO BE TESTED FOR DEFLECTION (MANDREL PASSAGE) AFTER INSTALLATION. PRIOR TO ACCEPTANCE BY THE CITY PIPE DEFLECTION TESTING SHALL BE REPEATED.
8. ALTERNATE MATERIALS MAY BE ACCEPTABLE PROVIDED APPROVAL HAS FIRST BEEN OBTAINED FROM THE CITY/ENGINEER.

C. PRIVATE DRAINS

1. CONSTRUCTION OF PRIVATE DRAINS SHALL BE IN ACCORDANCE WITH CITY STANDARDS AND SPECIFICATIONS (LATEST EDITION) AND THE MINISTRY OF THE ENVIRONMENT GUIDELINES (LATEST EDITION).
2. TO BE LOCATED AS INDICATED ON THE FACE OF THE PLAN.
3. 200MM SANITARY PRIVATE DRAINS SHALL BE PVC PIPE CSA B182.1 M-1983, SDR-28 AS PER FORM 50 (ANY COLOR OTHER THAN WHITE). WOOD MARKING AT THE END OF THE SANITARY PRIVATE DRAIN SHALL BE PAINTED RED.
4. COVER AND BEDDING MATERIAL FOR PRIVATE DRAINS SHALL BE GRANULAR 'A' INSTALLED AS PER OPSD 802.010 OR 802.013.
5. MINIMUM FALL FOR PRIVATE DRAINS SHALL BE 2.0% SLOPE.
6. TOP OF PRIVATE DRAINS AT STREET LINE SHALL BE IN ACCORDANCE WITH THE INVERT ELEVATION INDICATED ON THE PLAN AT THE BUILDING FACE, LESS SLOPE TO STREET LINE AT 2%.
7. PRIVATE DRAIN CONNECTIONS TO THE MUNICIPAL SEWER SHALL BE AS PER CITY STANDARD DRAWING SEW-300.

B. WATER SERVICES

1. CONSTRUCTION OF PRIVATE WATER SERVICES SHALL BE IN ACCORDANCE WITH CITY STANDARDS AND SPECIFICATIONS (LATEST EDITION) AND THE MINISTRY OF THE ENVIRONMENT GUIDELINES (LATEST EDITION).
2. WATER SERVICE CONNECTION SHALL BE AS PER CUT-IN TEE COMPLETE WITH ANCHOR BLOCK TO CITY OF HAMILTON STANDARD WM 204.01 - WITH CURB-STOP IMMEDIATELY ADJACENT TO THE STREET LINE.
3. GRANULAR BEDDING AS PER WM-200.01 AND WM-200.02 TO BE GRANULAR 'D' AS PER FORM 600.
4. VALVE BOXES TO BE CONSTRUCTED AT PROPERTY LIMIT AS PER WM-202.

C. SURFACE WORKS

1. CONCRETE CURBS AND GUTTERS SHALL BE AS PER OPSD 600.110, CONCRETE MUST HAVE MIN 30 MPA 28-DAY STRENGTH.
2. CURB DEPRESSIONS AT DRIVEWAYS SHALL BE AS PER OPSD 600.110 AND OPSD 351.010.
3. 1.5M CONCRETE SIDEWALK AS PET HAMILTON STANDARD DRAWING RD-103 (125MM THICKNESS, MIN. 30 MPA STRENGTH WITH GRANULAR 'A' BASE AS REQUIRED TO PROVIDE A LEVELLING COURSE FOR THE CONCRETE. AT DRIVEWAYS CONCRETE DEPTH TO BE 175MM.
4. DRIVE AISLE SHALL CONSIST OF A MINIMUM OF 300MM GRANULAR 'B', 150MM GRANULAR 'A', 80MM HL8 & 40MM HL3. CONSTRUCTED ABOVE SUB-GRADE MATERIAL COMPACTED TO 100% SPD.
5. PARKING AREAS SHALL CONSIST OF A MINIMUM OF 300MM GRANULAR 'A' AND 60MM HL3, CONSTRUCTED ABOVE SUB-GRADE MATERIAL COMPACTED TO 100% SPD.
6. ROAD RESTORATION WITHIN CUTS FOR SERVICE INSTALLATIONS SHALL BE AS PER RD-100.01. GRANULAR 'A' SHALL BE USED TO MATCH EXISTING DEPTH OF GRANULAR WITHIN ROADWAY.
7. ASPHALT RESTORATION WITHIN THE MUNICIPAL ROAD SHALL INCLUDE BASE COURSE OF 80MM SUPERPAVE 19.0 AND TOP COURSE OF 40MM SUPERPAVE 9.5 (TRAFFIC CATEGORY C), PG 58-28 ASPHALT CEMENT.
8. BOULEVARD AREAS DISTURBED BY CONSTRUCTION SHALL BE RESTORED WITH MIN. 100MM DEPTH TOPSOIL AND SOD.

D. COMPACTION REQUIREMENTS

1. ALL BEDDING AND BACKFILL MATERIAL, ROAD SUB-GRADES AND GENERALLY ALL MATERIAL USED FOR LOT GRADING, FILL SECTIONS ETC. SHALL BE COMPACTED TO MINIMUM 100% SPD UNLESS OTHERWISE RECOMMENDED BY A GEOTECHNICAL ENGINEER.
2. ALL MATERIALS SHALL BE PLACED IN LIFTS NOT EXCEEDING 300MM IN DEPTH.
3. ALL GRANULAR ROAD BASE MATERIALS SHALL BE COMPACTED TO 100% SPD.

E. SILTATION AND EROSION CONTROL

1. SILTATION CONTROL BARRIERS SHALL BE PLACED AS DETAILED ON THE PLAN ACCORDING TO DETAIL 'B' (THIS SHEET)
2. ALL SILTATION CONTROL MEASURES SHALL BE CLEANED AND MAINTAINED AFTER EACH RAINFALL EVENT TO THE SATISFACTION OF THE CITY OF HAMILTON.
3. CATCH BASIN SEDIMENT CONTROL DEVICES SHALL BE SILTSACK BY ACF ENVIRONMENTAL OR APPROVED EQUIVALENT, TO BE PLACED AS PER THE MANUFACTURER'S RECOMMENDATIONS (IF APPLICABLE).
4. ADDITIONAL SILTATION CONTROL MEASURES MAY BE REQUIRED AS PER FIELD CONDITIONS AS DETERMINED BY THE CITY.

LEGEND

SAN	EXISTING SANITARY MAINTENANCE HOLE
SAN	PROPOSED SANITARY MAINTENANCE HOLE
PLUG	EXISTING PLUG
PLUG	PROPOSED PLUG
STM MH	EXISTING STORM MAINTENANCE HOLE
STM MH	PROPOSED STORM MAINTENANCE HOLE
CB	EXISTING CATCH BASIN
CB	PROPOSED CATCH BASIN/AREA DRAIN
DCB	EXISTING DOUBLE CATCH BASIN
DCB	PROPOSED DOUBLE CATCH BASIN
DICB	EXISTING DITCH INLET CATCH BASIN
DICB	PROPOSED DITCH INLET CATCH BASIN
CBMH	EXISTING CATCH BASIN MAINTENANCE HOLE
CBMH	PROPOSED CATCH BASIN MAINTENANCE HOLE
11.25° BEND	PROPOSED 11.25° WATERMAIN BEND
22.5° BEND	PROPOSED 22.5° WATERMAIN BEND
45° BEND	PROPOSED 45° WATERMAIN BEND
90° BEND	PROPOSED 90° WATERMAIN BEND
CROSS	EXISTING WATERMAIN CROSS
CROSS	PROPOSED WATERMAIN CROSS
REDUCER	EXISTING WATERMAIN REDUCER
REDUCER	PROPOSED WATERMAIN REDUCER
TEE	EXISTING WATERMAIN TEE
TEE	PROPOSED WATERMAIN TEE
WV	EXISTING WATER VALVE
WV	PROPOSED WATER VALVE
100.50	EXISTING ELEVATION
	PROPOSED ELEVATION
	PROPOSED APRON ELEVATION
	PROPOSED SWALE ELEVATION
	PROPOSED ENTRANCE LOCATION
W	PROPOSED WATER METER LOCATION
	PROPOSED SILT FENCE

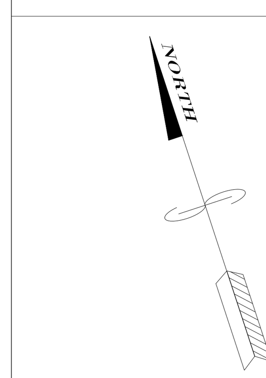
KEY PLAN N.T.S.

GENERAL NOTES:

1. TENDERE'R SHALL SATISFY THEMSELVES AS TO THE NATURE OF THE GROUND AND BID ACCORDINGLY.
2. ALL ROCK LINE INDICATIONS SHOWN ON THE PLAN MUST BE VERIFIED BY THE CONTRACTOR.
3. CONTRACTOR SHALL VERIFY LOCATIONS AND INVERTS OF ALL EXISTING SANITARY AND STORM SEWERS AND WATERMAINS, PRIVATE DRAINS AND WATER SERVICES, GAS MAINS, CABLE TV, HYDRO AND TELEPHONE DUCTS ETC AT START OF CONSTRUCTION.

NO:	DATE:	DESCRIPTION:
2	2022-05-05	ISSUED FOR ZONING SUBMISSION
1	2022-04-05	ISSUED FOR INTERNAL REVIEW

REVISIONS



SEAL

LandSmith ENGINEERING & CONSULTING LTD.

LandSmith Engineering & Consulting Ltd.
Suite 332, 3-35 Stone Church Rd.
Ancaster, ON L9K 1S4
andrew@landsmithec.com
289-775-9374

CLIENT:
VALVASORI PROPERTIES

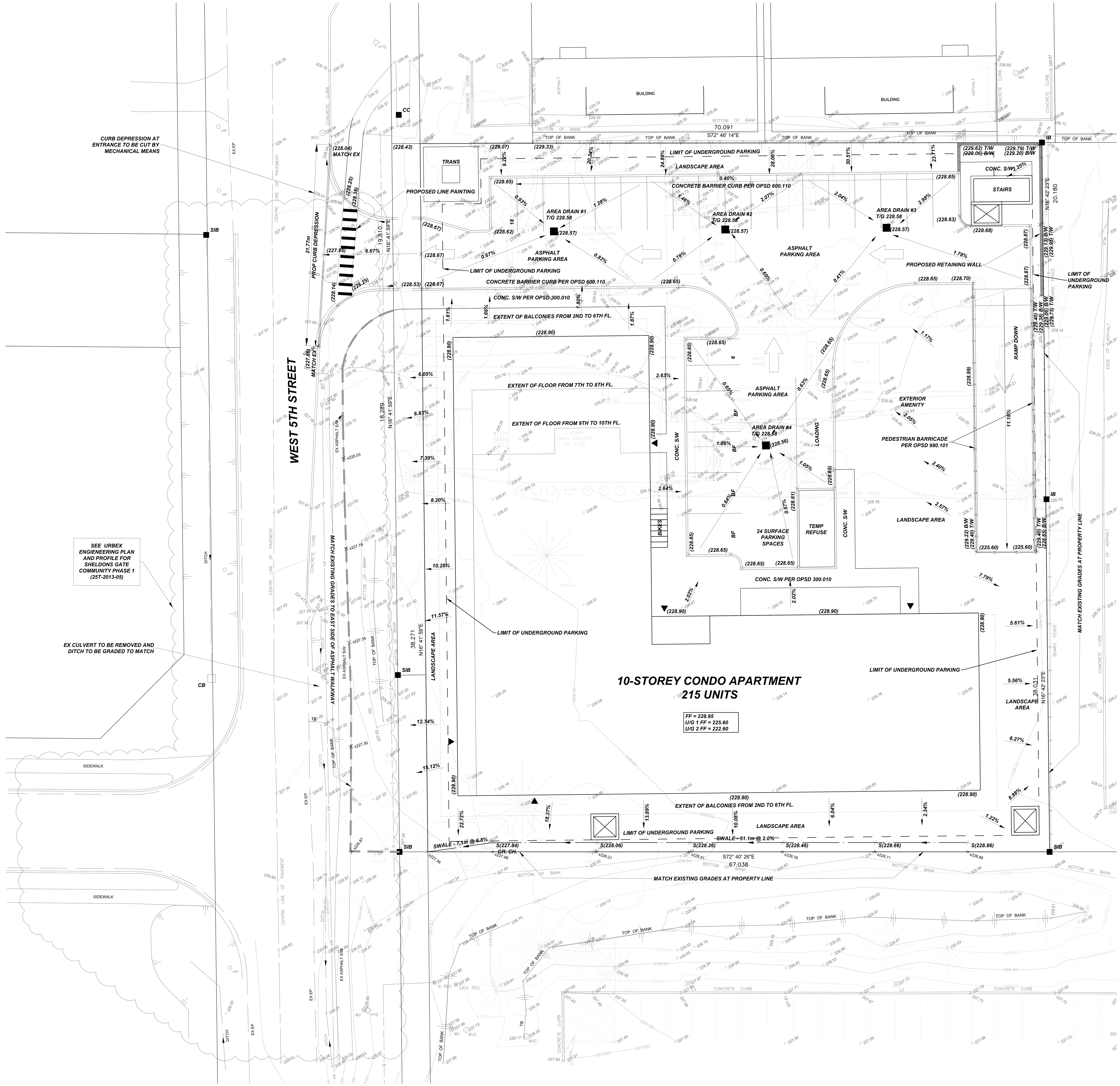
MUNICIPALITY:
CITY OF HAMILTON

PROJECT NAME:
1177-1187 WEST 5TH STREET

TITLE:
SITE SERVICING AND SEDIMENT AND EROSION CONTROL PLAN

SCALE:	1:200	DATE:	2022-05-05
CHECKED BY:	AS	DESIGNED BY:	AS
DWG No:	2021VP38	SHEET No:	S1

DRAWING FILE: Z:\Project Files\PROJECTS\1177 & 1187 West 5th Street\CAD\1177-1187 WEST 5th BASE.dwg PLOTTED: May 05, 2022 - 1:14pm PLOTTED BY: Don



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7. PRIVATE DRAIN CONNECTIONS TO THE MUNICIPAL SEWER SHALL BE AS PER CITY STANDARD DRAWING SEW-300.

B. WATER SERVICES

1. CONSTRUCTION OF PRIVATE WATER SERVICES SHALL BE IN ACCORDANCE WITH CITY STANDARDS AND SPECIFICATIONS (LATEST EDITION) AND THE MINISTRY OF THE ENVIRONMENT GUIDELINES (LATEST EDITION).
2. WATER SERVICE CONNECTION SHALL BE AS PER CUT-IN TEE COMPLETE WITH ANCHOR BLOCK TO CITY OF HAMILTON STANDARD WM 204.01 - WITH CURB-STOP IMMEDIATELY ADJACENT TO THE STREET LINE.
3. GRANULAR BEDDING AS PER WM-200.01 AND WM-200.02 TO BE GRANULAR 'D' AS PER FORM 600.
4. VALVE BOXES TO BE CONSTRUCTED AT PROPERTY LIMIT AS PER WM-202.

C. SURFACE WORKS

1. CONCRETE CURBS AND GUTTERS SHALL BE AS PER OPSD 600.110, CONCRETE MUST HAVE MIN 30 MPA 28-DAY STRENGTH.
2. CURB DEPRESSIONS AT DRIVEWAYS SHALL BE AS PER OPSD 600.110 AND OPSD 351.010.
3. 1.5M CONCRETE SIDEWALK AS PET HAMILTON STANDARD DRAWING RD-103 (125MM THICKNESS, MIN. 30 MPA STRENGTH WITH GRANULAR 'A' BASE AS REQUIRED TO PROVIDE A LEVELLING COURSE FOR THE CONCRETE. AT DRIVEWAYS CONCRETE DEPTH TO BE 175MM.
4. DRIVE AISLE SHALL CONSIST OF A MINIMUM OF 300MM GRANULAR 'B', 150MM GRANULAR 'A', 80MM HL8 & 40MM HL3. CONSTRUCTED ABOVE SUB-GRADE MATERIAL COMPACTED TO 100% SPD.
5. PARKING AREAS SHALL CONSIST OF A MINIMUM OF 300MM GRANULAR 'A' AND 60MM HL3, CONSTRUCTED ABOVE SUB-GRADE MATERIAL COMPACTED TO 100% SPD.
6. ROAD RESTORATION WITHIN CUTS FOR SERVICE INSTALLATIONS SHALL BE AS PER RD-100.01. GRANULAR 'A' SHALL BE USED TO MATCH EXISTING DEPTH OF GRANULAR WITHIN ROADWAY.
7. ASPHALT RESTORATION WITHIN THE MUNICIPAL ROAD SHALL INCLUDE BASE COURSE OF 80MM SUPERPAVE 19.0 AND TOP COURSE OF 40MM SUPERPAVE 9.5 (TRAFFIC CATEGORY C), PG 58-28 ASPHALT CEMENT.
8. BOULEVARD AREAS DISTURBED BY CONSTRUCTION SHALL BE RESTORED WITH MIN. 100MM DEPTH TOPSOIL AND SOD.

D. COMPACTION REQUIREMENTS

1. ALL BEDDING AND BACKFILL MATERIAL, ROAD SUB-GRADES AND GENERALLY ALL MATERIAL USED FOR LOT GRADING, FILL SECTIONS ETC. SHALL BE COMPACTED TO MINIMUM 100% SPD UNLESS OTHERWISE RECOMMENDED BY A GEOTECHNICAL ENGINEER.
2. ALL MATERIALS SHALL BE PLACED IN LIFTS NOT EXCEEDING 300MM IN DEPTH.
3. ALL GRANULAR ROAD BASE MATERIALS SHALL BE COMPACTED TO 100% SPD.

E. SILTATION AND EROSION CONTROL

1. SILTATION CONTROL BARRIERS SHALL BE PLACED AS DETAILED ON THE PLAN ACCORDING TO DETAIL 'B' (THIS SHEET)
2. ALL SILTATION CONTROL MEASURES SHALL BE CLEANED AND MAINTAINED AFTER EACH RAINFALL EVENT TO THE SATISFACTION OF THE CITY OF HAMILTON.
3. CATCH BASIN SEDIMENT CONTROL DEVICES SHALL BE SILTSACK BY ACF ENVIRONMENTAL OR APPROVED EQUIVALENT, TO BE PLACED AS PER THE MANUFACTURER'S RECOMMENDATIONS (IF APPLICABLE).
4. ADDITIONAL SILTATION CONTROL MEASURES MAY BE REQUIRED AS PER FIELD CONDITIONS AS DETERMINED BY THE CITY.

LEGEND

100.00	EXISTING ELEVATION
x100.00	EXISTING ELEVATION (CALCULATED)
(100.00)	PROPOSED ELEVATION
(100.00)	PROPOSED APRON ELEVATION
S(100.00)	PROPOSED SWALE ELEVATION
	PROPOSED DOWNSPOUT
	PROPOSED SWALE
	PROPOSED SILT FENCE
	PROPOSED ENTRANCE LOCATION
	OVERLAND FLOW ROUTE
CB	EXISTING CATCH BASIN
CB	PROPOSED CATCH BASIN
DCB	EXISTING DOUBLE CATCH BASIN
DCB	PROPOSED DOUBLE CATCH BASIN
DICB	EXISTING DITCH INLET CATCH BASIN
DICB	PROPSED DITCH INLET CATCH BASIN
WV	EXISTING WATER VALVE
WV	PROPOSED WATER VALVE

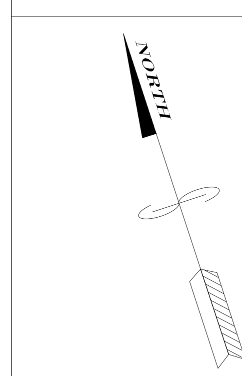
KEY PLAN N.T.S.

GENERAL NOTES:

1. TENDERE'R SHALL SATISFY THEMSELVES AS TO THE NATURE OF THE GROUND AND BID ACCORDINGLY.
2. ALL ROCK LINE INDICATIONS SHOWN ON THE PLAN MUST BE VERIFIED BY THE CONTRACTOR.
3. CONTRACTOR SHALL VERIFY LOCATIONS AND INVERTS OF ALL EXISTING SANITARY AND STORM SEWERS AND WATERMAINS, PRIVATE DRAINS AND WATER SERVICES, GAS MAINS, CABLE TV, HYDRO AND TELEPHONE DUCTS ETC AT START OF CONSTRUCTION.

NO:	DATE:	DESCRIPTION:
2	2022-05-05	ISSUED FOR ZONING SUBMISSION
1	2022-04-05	ISSUED FOR INTERNAL REVIEW

REVISIONS



SEAL

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Ancaster, ON L9K 1S4
andrew@landsmithec.com
289-775-9374

CLIENT
VALVASORI PROPERTIES

MUNICIPALITY:
CITY OF HAMILTON

PROJECT NAME:
1177-1187 WEST 5TH STREET

TITLE:
SITE GRADING PLAN

SCALE: 1:200		DATE: 2022-05-05	
CHECKED BY: AS		DESIGNED BY: AS	
DWG No: 2021VP38		SHEET No: G1	

DRAWING FILE: Z:\Project Files\PROJECTS\1177 & 1187 West 5th Street\CAD\1177-1187 WEST 5th BASE.dwg PLOTTED: May 05, 2022 - 1:15pm PLOTTED BY: Don

APPENDIX 'E'

City of Hamilton Existing Infrastructure Drawings

ENGINEERING & CONSULTING LTD.

WEST 5th STREET

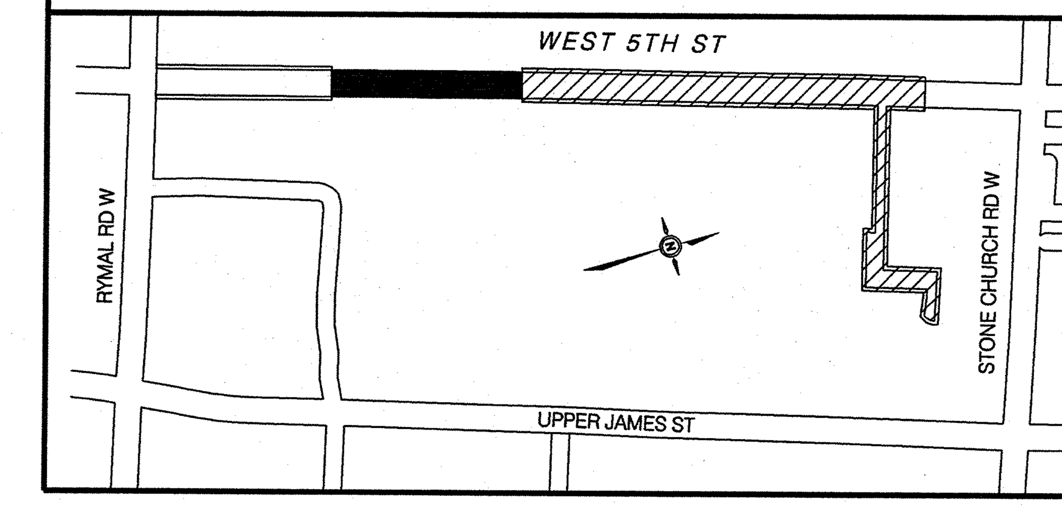
WEST 5th STREET

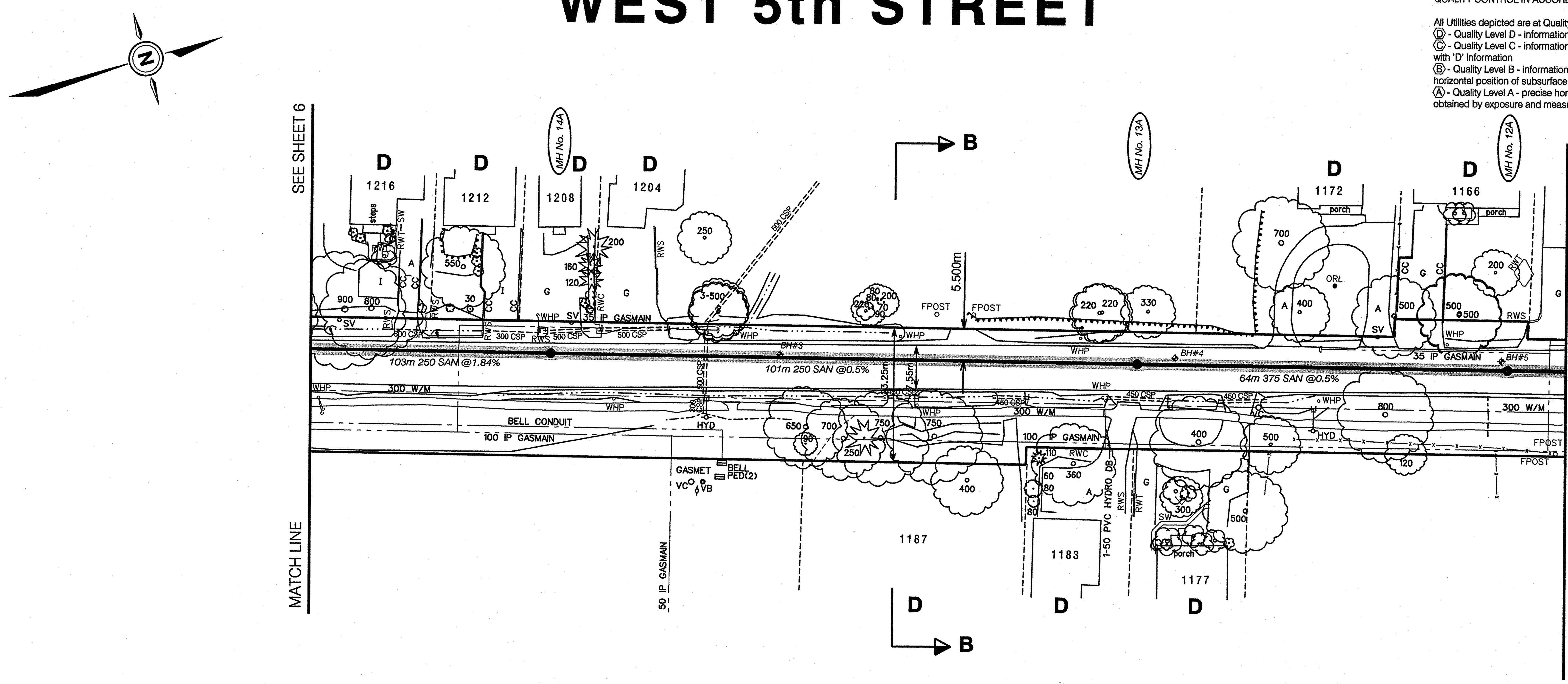
QUALITY CONTROL IN ACCORDANCE WITH ASCE STANDARD 38-02

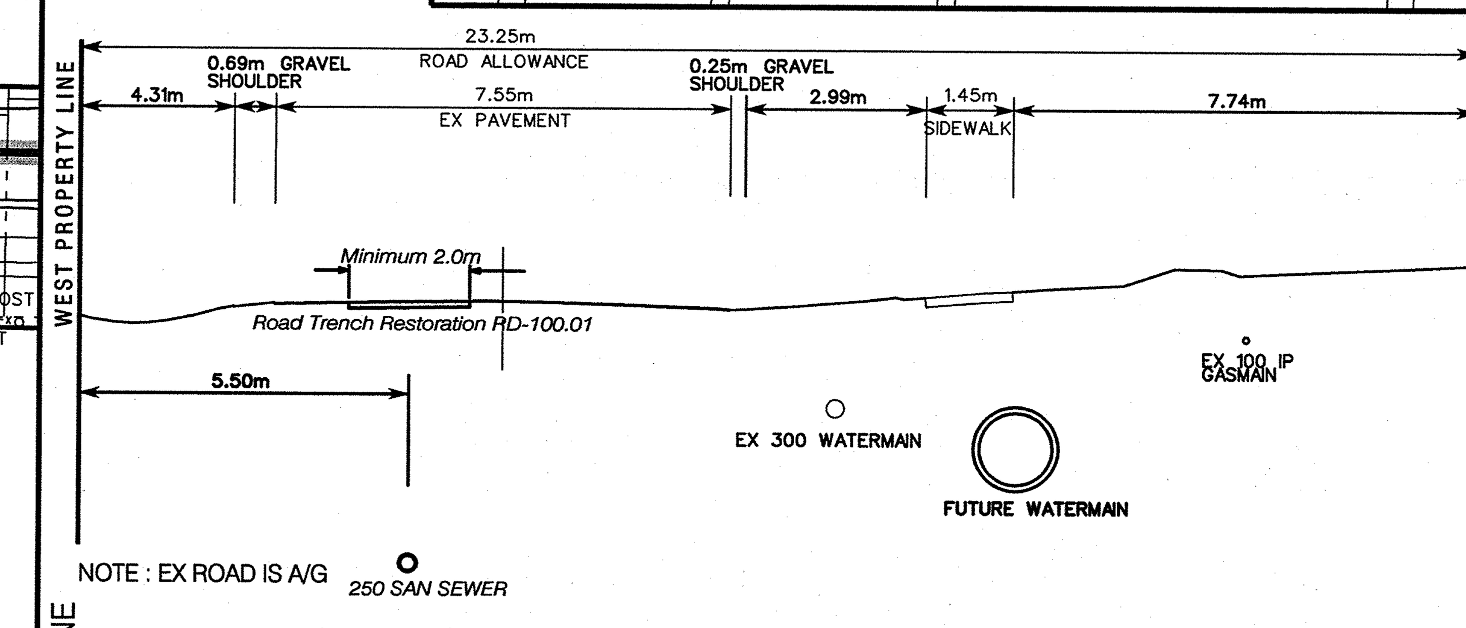
All Utilities depicted are at Quality Level C unless otherwise noted.
(D) - Quality Level D - information derived from existing records
(C) - Quality Level C - information obtained from field survey combined with 'D' information
(B) - Quality Level B - information obtained in field and indicates horizontal position of subsurface utility
(A) - Quality Level A - precise horizontal and vertical location of utility obtained by exposure and measurement

FILE No.	CONTRACT No. PW-07-36 (S) DRAWING No. 07-S-08	SHEET No. 5 OF 6

DIMENSIONS SHOWN ON THIS PLAN ARE IN MILLIMETRES UNLESS OTHERWISE NOTED

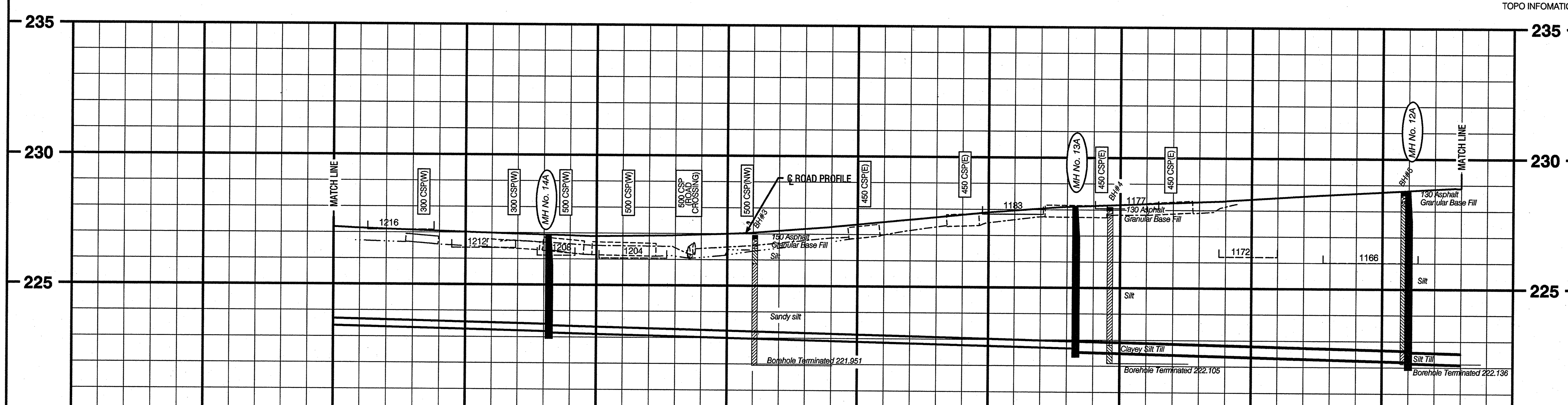






ROADWAY CROSS-SECTION
SECTION 'B-B'
SCALE 1:100

D DENOTES 150mm DIA JUNCTION AND RISER UNLESS OTHERWISE NOTED
THIS DRAWING IS FOR SANITARY SEWER CONSTRUCTION ONLY
TOPO INFOMATION TO BE FIELD VERIFIED BY CONTRACTOR



SEWER REPAIRS and OVERFLOWS

C.B. REMOVALS/REPLACEMENTS

EXISTING SEWER MANHOLES

PROPOSED SANITARY SEWER: 103m - 250 SAN SEWER @ 0.5% P.V.C. SDR35 CSA Standard B 182.2 | OPSD 701.010 S 222.23 N 223.18 | 101m - 250 SAN SEWER @ 0.5% P.V.C. SDR35 CSA Standard B 182.2 | OPSD 701.010 S 222.68 N 222.55 | 64m - 375 SAN SEWER @ 0.5% P.V.C. SDR35 CSA Standard B 182.2 | OPSD 701.010 S 222.23 N 222.18 | 64m - 375 SAN SEWER @ 0.5% P.V.C. SDR35 CSA Standard B 182.2

EXISTING ℄ OF ROADWAY CHAINAGE	EXISTING ℄ OF ROAD PROFILE ELEVATIONS
2+15	227.21
2+25	227.12
2+40	227.02
2+55	226.93
2+70	226.90
2+85	226.97
3+00	227.12
3+15	227.38
3+30	227.68
3+45	227.96
3+60	228.15
3+75	228.27
3+90	228.43
4+05	228.61
4+20	228.79
4+30	228.87

No.	REVISIONS	INITIAL	DATE

DRAWN BY: RCP/BY — DATE: May 28, 2007

REFERENCE MATERIAL:
Surveyed By : D. Lenko
Sewer Plans : 88-S-4
Sewer Sheets: HG19, HG20, HG21
Water Plans : Z-89, 72-W-335
Road Plans : 03-H-23, 06-H-4

Geodetic Bench Mark Index No. 21-03 — Elevation=221.731m
Borehole Report- GTR_1221

SCALES
HORIZONTAL 1:500 (0 5m 10m 20m)
VERTICAL 1:100 (0 1m 2m 4m)

Project Manager (Design)
H.J. Thomas Ho, P. Eng.
Manager of Design
Gary Moore, P. Eng.

CITY OF HAMILTON
Public Works Department

WEST 5th STREET
Sanitary Sewer Installation
From : 50m North Rymal Road West
To : Mewburn Easement

07-S-08 (5)