

WATER/WASTEWATER GENERATION REPORT

for

1284 Main Street East

Hamilton, Ontario

Prepared for:

Delta Developments Joint Venture

Prepared by:

LANHACK CONSULTANTS INC.

1709 Upper James Street
Hamilton, ON L9B 1K7

Project No. 22043

November 18, 2022



Table of Contents

1.0	INTRODUCTION	1
1.1	Overview	1
1.2	Background Information	1
1.3	Geotechnical Investigation.....	2
2.0	Wastewater Assessment.....	3
2.1	Existing Sanitary Drainage System.....	3
2.2	Sanitary Demands.....	3
3.0	Proposed Water Assessment	5
3.1	Existing Water Distribution System	5
3.2	Domestic/Fire Water Demands.....	5
3.3	Proposed Water Servicing Plan and Analysis.....	6
4.0	Hydraulic Assessment.....	Error! Bookmark not defined.
5.0	Conclusion (Domestic/Fire and Sanitary).....	7
APPENDIX A: Fire Flow Requirements Calculations		
APPENDIX B: Site Plan and Engineering Drawings		



1.0 INTRODUCTION

1.1 Overview

Delta Developments Joint Venture have retained Lanhack Consultants Inc. to prepare a Water/Wastewater Generation Report (WWGR) in support of a proposed residential condominium, stacked townhouse and townhouse development containing a total of 975 units. The property is approximately 2.482 hectares bound by Main Street East, Maple Avenue, Graham Avenue South and Wexford Avenue South. Please refer to **Figure 1** for the Location Map and **Appendix B** for the Site Plan designed by Graziani and Corazza Architects Inc.

The site is currently developed with an existing school.

The site will be equipped with a water service connection to Main Street East and sanitary service connections to Graham Avenue South and Wexford Avenue South. The portion of the existing building to remain, Building H, as well as Buildings A, B, C, D, and E will be sprinklered. Buildings F and G will not be sprinklered.

This portion of the report will provide the conceptual framework for water distribution, fire flows and sanitary sewage for the development of this site. This report will also provide design drawings, prepared by Graziani and Corazza Architects Inc. and Lanhack Consultants Inc., in support of the planning applications.

Please refer to the Graziani and Corazza Architects Inc. and Lanhack Consultants Inc. drawings attached in **Appendix B** for additional information.

1.2 Background Information

The following documents were referenced in the preparation of this report:

Ref. 1: Comprehensive Development Guidelines and Financial Policies Manual (City of Hamilton, 2019)

Ref 2: Ontario Building Code (OBC - 2012)

Ref 3: Ministry of the Environment (MOE) – Design Guidelines for Drinking Water Systems (2008)

1.3 Geotechnical Investigation

The Geotechnical Report will be submitted by others under a separate cover.

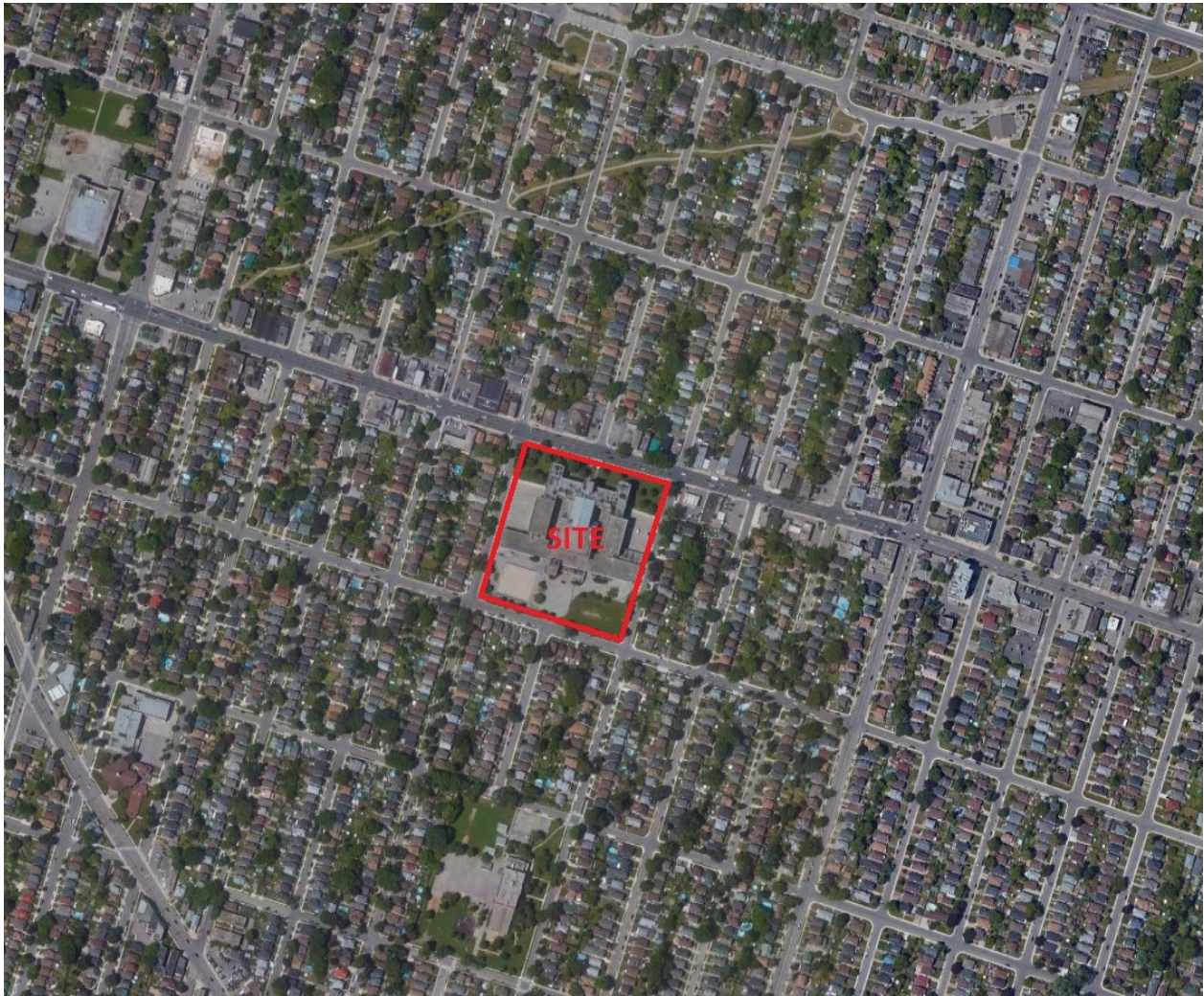


Figure 1: Location plan of 1284 Main Street East (via Google Maps)



2.0 Wastewater Assessment

The proposed condominium development will consist of two (2) 14-storey residential buildings, two (2) 4-storey stacked townhouse buildings and two (2) 3-storey townhouses buildings. The two (2) residential condominium buildings and the two (2) stacked townhouse buildings will contain 710 one-bedroom units and 248 two-bedroom units, totaling 958 units. The two (2) townhouses buildings will contain a total of 17 three-bedroom units. Based on the site plan and floor plans prepared by Graziani and Corazza Architects Inc., the design population and equivalent sanitary flow for the development were determined using the City of Hamilton Comprehensive Development Guidelines and Financial Policies Manual 2019.

2.1 Existing Sanitary Drainage System

The existing sanitary drainage system consists of an existing 1400mmØ combined sewer on Main Street East, an existing 600mmØ combined sewer on Graham Avenue South, and an existing 750mmØ sanitary sewer on Wexford Avenue South. There are two existing combined sewers on Maple Avenue (450mmØ and 300mmØ) which flow in opposite directions along Maple Avenue. See Servicing Plan in **Appendix B** for more details.

2.2 Sanitary Demands

The anticipated sanitary discharge from the proposed development was estimated using the City of Hamilton Development Guidelines (2019) and the Ontario Building Code (OBC 2012). The sanitary discharge flow from the subject site is summarized in **Table 2.1**.

Table 2.1: Sanitary Discharge Flow Rate

Type of Unit	Number of Bedrooms per Unit ⁽¹⁾	Average Daily Flow per Capita (L/d) ⁽²⁾	Total Number of Units ⁽³⁾	Design Population ⁽⁴⁾	Total Peak Flow (L/s) ⁽⁵⁾⁽⁶⁾	Including Infiltration Allowance (L/s) ⁽⁷⁾
1-Bedroom Unit	1.0	360	710	1,420	43.60	45.09
2-Bedroom Unit	2.0	360	248	992		
3-Bedroom Unit	3.0	360	17	102		
(1) Number of bedrooms based on site plan and floor plans prepared by Graziani and Corazza Inc.						
(2) Average Domestic Sewage Flow Rate from City of Hamilton Development Guideline Chapter E.1.4 Daily Flow = 360 L/day/capita						
(3) Refer to Statistics and Notes and Site Plan drawing prepared by Graziani and Corazza Inc. – Appendix B						
(4) Design population based on two (2) persons per sleeping room within a dwelling unit or suite. Refer to OBC Section 3.1.17.1.(1).(b)						
(5) Total Avg. Flow = [(Avg. Daily Flow per Capita) x (Total Design Population)] = [360 L/d/person x (1,420 persons + 992 persons+ 102 persons)] / 24 / 60 / 60 = 10.48 L/s						
(6) Total peak flow determined from City of Hamilton Development Guideline Chapter E.1.5 (Babbitt Formula) $M = 5 / P^{0.2} = 5 / (2,514/1,000)^{0.2} = 4.16$						
(7) Infiltration Allowance determined from the City of Hamilton development Guideline Chapter E.1.6. Infiltration Allowance of 0.6 L/s/ha was used for the site = 0.6 L/s x 2.482 ha = 1.49 L/s						

Total Sanitary Discharge Peak Flow Rate = 45.09 L/s

2.3 Proposed Servicing Plan and Capacity Analysis (Review based on peak flows)

The proposed development will be serviced with two 300mmØ sanitary service connections. One sanitary service connection will be connected to the existing 600mmØ combined sewer within the Graham Avenue South right-of-way and the other sanitary service will be connected to the existing 750mmØ sanitary sewer within the Wexford Avenue South right-of-way. As calculated in **Table 2.1**, the total anticipated peak sanitary sewer discharge from the proposed development is **45.09 L/s**.



3.0 Proposed Water Assessment

The proposed development will consist of a residential development will contain 710 one-bedroom units, 248 two-bedroom units, and 17 three-bedroom units, totaling 975 units. Based on the site plan and floor plans prepared by Graziani and Corazza Architects Inc., the design population for the development will be determined using the Ontario Building Code (OBC 2012), City of Hamilton Design Standards and the equivalent domestic water flow will be determined using the Design Guidelines for Drinking-Water Systems (MOE, 2008).

3.1 Existing Water Distribution System

The existing municipal water distribution system around the site consists of an existing 300mmØ watermain on Main Street East, an existing 150mmØ watermain on Graham Avenue South, Wexford Avenue South, and Maple Avenue. See Servicing Plan in **Appendix B** for more details.

3.2 Domestic/Fire Water Demands

The expected domestic demand for the proposed development was estimated according to the City of Hamilton Design Standards and MOE design criteria. The estimated water consumption was calculated based on an occupancy rate of 2.0 persons per sleeping room within a dwelling unit or suite as per OBC Section 3.1.17.1(1).(b). The design population will be taken at 2,514 persons at the domestic water demand at a rate of 360 L/day/capita. Anticipated water demands are summarized in **Table 3.1**.

Water supply calculations for fire protection were determined using the Ontario Building Code (OBC 2012) and the City of Hamilton Watermain Fire Flow Requirement Design Guidelines. See **Appendix B** for a detailed analysis. The required fire flow is **150.00 L/s**.

Table 3.1: Estimated Domestic Water Supply Demands

Expected Population ⁽¹⁾	Average Day Demand (L/s) ⁽²⁾	Maximum Day Demand (L/s) ⁽³⁾	Peak Hour Demand (L/s) ⁽⁴⁾	Fire Flow (L/s) ⁽⁵⁾	Max. Day + Fire Flow (L/s)
2,514	10.48	19.91	31.44	150.00	169.91

(1) Design population based on two (2) persons per sleeping room within a dwelling unit or suite.
Refer to OBC Section 3.1.17.1.(1).(b)

(2) Average Consumption Rate for Residential Area = 360 L/cap/day
= (360 L/d x 2,404 persons) / 24 / 60 / 60
= 10.02 L/s

(3) *Maximum Day Factor of 1.9 x Average Day Demand

(4) *Peak Hour Factor of 3.0 x Average Day Demand

(5) Fire Flow of (150.00 L/s) calculation based on greater of OBC and the City of Hamilton Watermain Fire Flow Requirement Design Guidelines - **Appendix A**

*Demand Factors from: City of Hamilton Water and Wastewater Masterplan, Class Environmental Assessment Report (November 2006)

3.3 Proposed Water Servicing Plan and Analysis

Water servicing for the site will include the installation of a 200mmØ fire service connected to the existing 300mmØ watermain on Main Street East. A 150mm diameter domestic service will be teed off the 200mmØ fire service to service the site. Refer to the Servicing Plan in **Appendix B** for more details.

There are seven (7) existing fire department connections surrounding the proposed development. There are two (2) fire hydrants being proposed on site located in the central courtyard between Buildings A and B. Refer to the Servicing Plan in **Appendix B** for more details.

Note: Typical water demand analysis would require a fixture-unit approach, but the floor plans have not been finalized yet. Instead, an equivalent population + 360 L/day/person + peak factors were used to determine the water rates. This will provide a rough estimate of water usage rates for the development (at a conservative rate of 360 L/day/person). A fixture-unit approach can be provided at a later date, if required, once floor plans have been finalized.



4.0 Conclusion (Domestic/Fire and Sanitary)

Based on the information provided herein, we conclude that the maximum water supply flow and the sanitary discharge at 1284 Main Street East meets the design requirements of the City of Hamilton and the Ministry of Environment (MOE). The available flows within the municipal system are adequate and are not expected to be negatively impacted from the proposed development. Therefore, it is recommended that:

Sanitary Drainage System

- The sanitary discharge for the subject site will drain to the existing 600mmØ combined sewer within the Graham Avenue South right of way and the existing 750mmØ sanitary sewer along Wexford Avenue South. The anticipated total peak discharge will be **45.09 L/s**.

Water Supply System

- The water supply for the subject site will be from the existing 300mmØ watermain along Main Street East. The anticipated maximum daily water consumption rate for the development will be **19.91 L/s**.
- A minimum fire suppression flow of **9,000 L/min (150.00 L/s)** will be required as per the Ontario Building Code and City of Hamilton Watermain Fire Flow Requirement Design Guidelines. As per Hydrant Flow Test Reports prepared by L&D Waterworks, the flow testing results, for the hydrants surrounding the proposed site, show a minimum theoretical available flow at 20psi of **4,544 gpm (286.68 L/s)**.

We trust the information enclosed is satisfactory. Should you have any questions please do not hesitate to contact our office.

Respectfully submitted,

Glenn Worley
Lanhack Consultants Inc.



Dave Hacking, P.Eng
Lanhack Consultants Inc.



APPENDIX A: Fire Flow Requirements Calculations

The following calculations are for the proposed development at 1284 Main Street East, Hamilton, Ontario. The required fire flow will be based calculated using the Ontario Building Code (OBC) and the City of Hamilton Watermain Fire Flow Requirement Design Guidelines, the greater of both methods will be used in the design calculations.

For this evaluation we will be using the worst-case scenario, which is Buildings A and B and the existing school retro fit, as the buildings are proposed to be connected.

Required Fire Flow calculated using the OBC:

The Ontario Building Code 2012 requires that a minimum water supply source 'Q' be provided at a minimum pressure of 140 kPa (20 psi). The minimum flow 'Q' can be calculated as:

$$Q = K \cdot V \cdot Stot$$

Determining 'K' – Water Supply Coefficient:

As per Graziani and Corazza Architects Inc. design, the building is classified under the OBC as 3.2.2.42 Group C, Any Height, Any Area, Sprinklered. Therefore, the building will be of non-combustible construction with fire separations and fire resistance ratings provided in accordance with Subsection 3.2.2.42.

Using the OBC Div. B – A-3.2.5.7. Table 1 we determine the value of 'K' as:

$$K = 10$$

Determining 'V' – Volume of Building:

The approximate volume of the proposed residential condominium building using drawings and information provided by Graziani and Corazza Architects Inc.

$$V = 102,164 \text{ m}^3$$

Determining 'S_{tot}' – Spatial Coefficient:

The spatial coefficient is based on the exposure distance from the property line and other buildings on the site to all sides of the proposed condominium building. Refer to site plan designed by Graziani and Corazza Architects Inc., **Appendix B**. The spatial coefficient can be calculated as:

$$S_{tot} = 1.0 + (S_N + S_E + S_S + S_W)$$

Each face to the proposed warehouse will be labelled as S_x with respect to the which direction that side is facing (i.e. North Face = S_N)



Side	Exposure Distance (m) ⁽¹⁾⁽²⁾⁽³⁾	Spatial Coefficient ⁽⁴⁾
Side S _N	24.17	0.00
Side S _E	6.75	0.20
Side S ₃	6.25	0.33
Side S ₄	6.25	0.33
<i>(1) Refer to site plan designed by Graziani and Corazza Architects Inc. – Appendix B</i>		
<i>(2) When facing a street, the property line shall be deemed to be the centre of the street as per the "Fire Protection Water Supply Guideline for Part 3 in the Ontario Building Code"</i>		
<i>(3) When facing a building the exposure distance was calculated using the mid-point between the two buildings</i>		
<i>(4) Spatial Coefficient from OBC Div. B – A-3.2.5.7. Figure 1</i>		

$$S_{\text{tot}} = 1.0 + (0.00 + 0.20 + 0.33 + 0.33) = 1.86$$

Determining 'Q' – Minimum Water Supply in Litres:

$$Q = K \cdot V \cdot S_{\text{tot}}$$

$$Q = 10 \times 102,164 \times 1.86$$

$$Q = 1,900,250 \text{ L}$$

Determining Minimum Water Supply Flow Rate:

Using OBC Div. B – A-3.2.5.7. Table 2 we can determine the minimum water supply flow rate using the value $Q = 1,900,250 \text{ L}$. Since the value of Q is greater than $270,000 \text{ L}$, we can determine the minimum water supply flow rate as:

$$\text{Flow Rate} = 9,000 \text{ L/min} = 150.00 \text{ L/s}$$

Required Fire Flow calculated using City of Hamilton Watermain Fire Flow Requirement Design Guidelines:

The building is classified as a Residential Multi (greater than 3 units) therefore we can determine the target available fire flow as:

$$\text{Flow Rate} = 150.00 \text{ L/s}$$



APPENDIX B: Site Plan and Engineering Drawings

- *Statistics and Notes prepared by Graziani and Corazza Architects Inc.*
- *Site Plan designed by Graziani and Corazza Architects Inc.*
- *Preliminary Grading, Erosion and Sediment Control Plan prepared by Lanhack Consultants Inc.*
- *Preliminary Servicing Plan prepared by Lanhack Consultants Inc.*

1284 MAIN STREET E
DELTA, HAMILTON

PROPOSED RESIDENTIAL
DEVELOPMENT

JOB.NO. 1939.21

SURVEY INFO

PLAN OF SURVEY
Part of
LOTS 1, 2, 3, 4, 189 to 199, BOTH INCLUSIVE
AND LOT 222
REGISTERED PLAN 512
AND PART OF
LOT 3
CONCESSION 3
SECTION 10
TOWNSHIP OF BARTON
IN THE
CITY OF HAMILTON

LIST OF DRAWINGS

A-101 - STATISTICS & NOTES
A-102 - SURVEY PLAN
A-103 - SITEPLAN
A-104 - ANGULAR PLANE DIAGRAMS

A-201 - P3 FLOOR PLAN
A-202 - P2 FLOOR PLAN
A-203 - P1 FLOOR PLAN

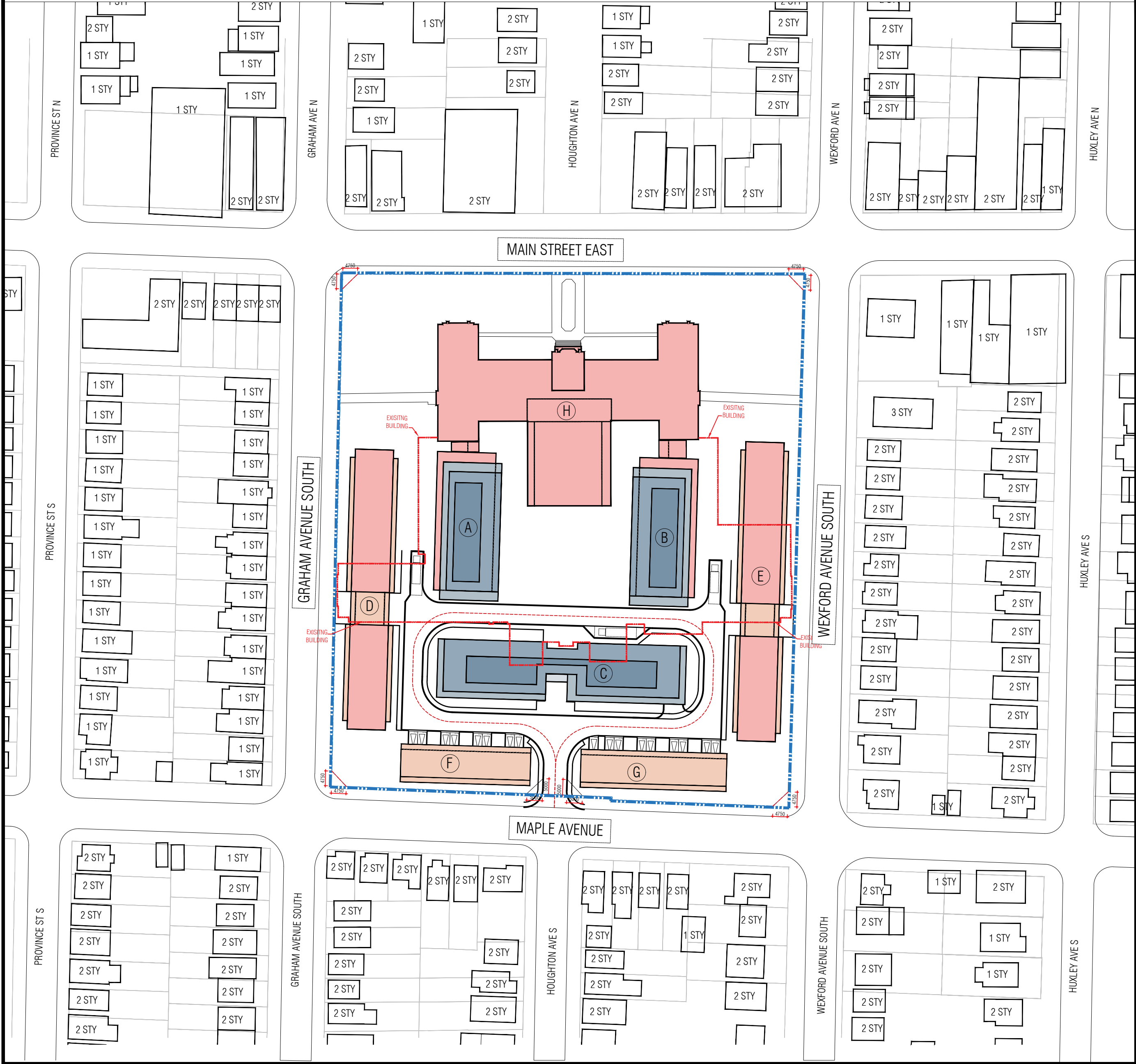
A-301 - COMPREHENSIVE GROUND FLOOR PLAN
A-302 - COMPREHENSIVE 2ND FLOOR PLAN
A-303 - COMPREHENSIVE 3RD FLOOR PLAN
A-304 - COMPREHENSIVE 4TH FLOOR PLAN
A-305 - COMPREHENSIVE 5TH FLOOR PLAN
A.311 - BUILDING H FLOOR PLANS
A.321 - BUILDINGS A & B FLOOR PLANS,
A.331- BUILDING C FLOOR PLANS,
A.332 - BUILDING C FLOOR PLANS,
A.341 - BUILDINGS D FLOOR PLANS,
A.351 - BUILDINGS E FLOOR PLANS,
A.361 - BUILDINGS F & G FLOOR PLANS,

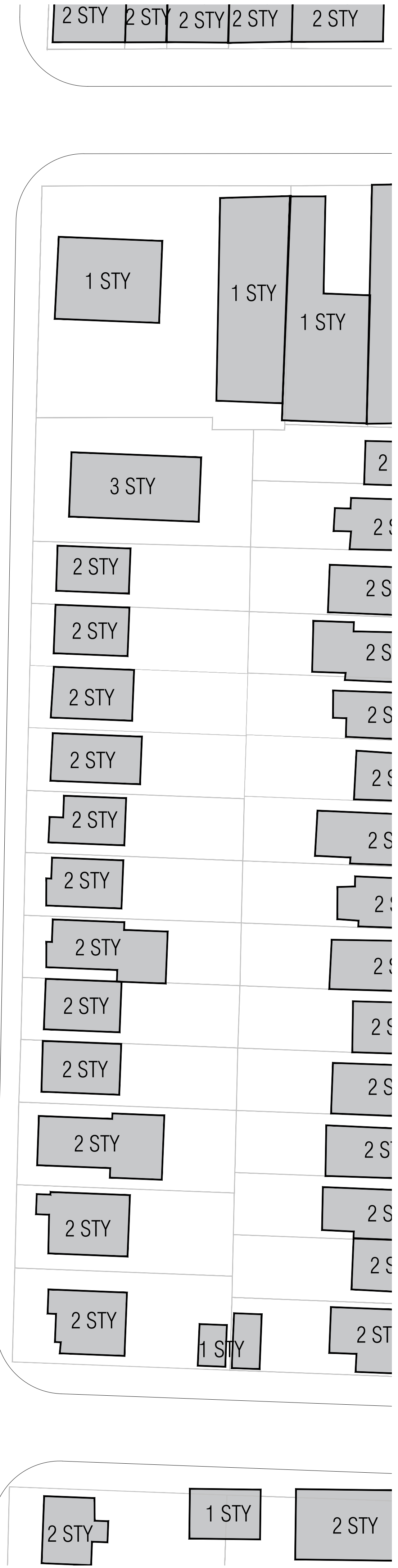
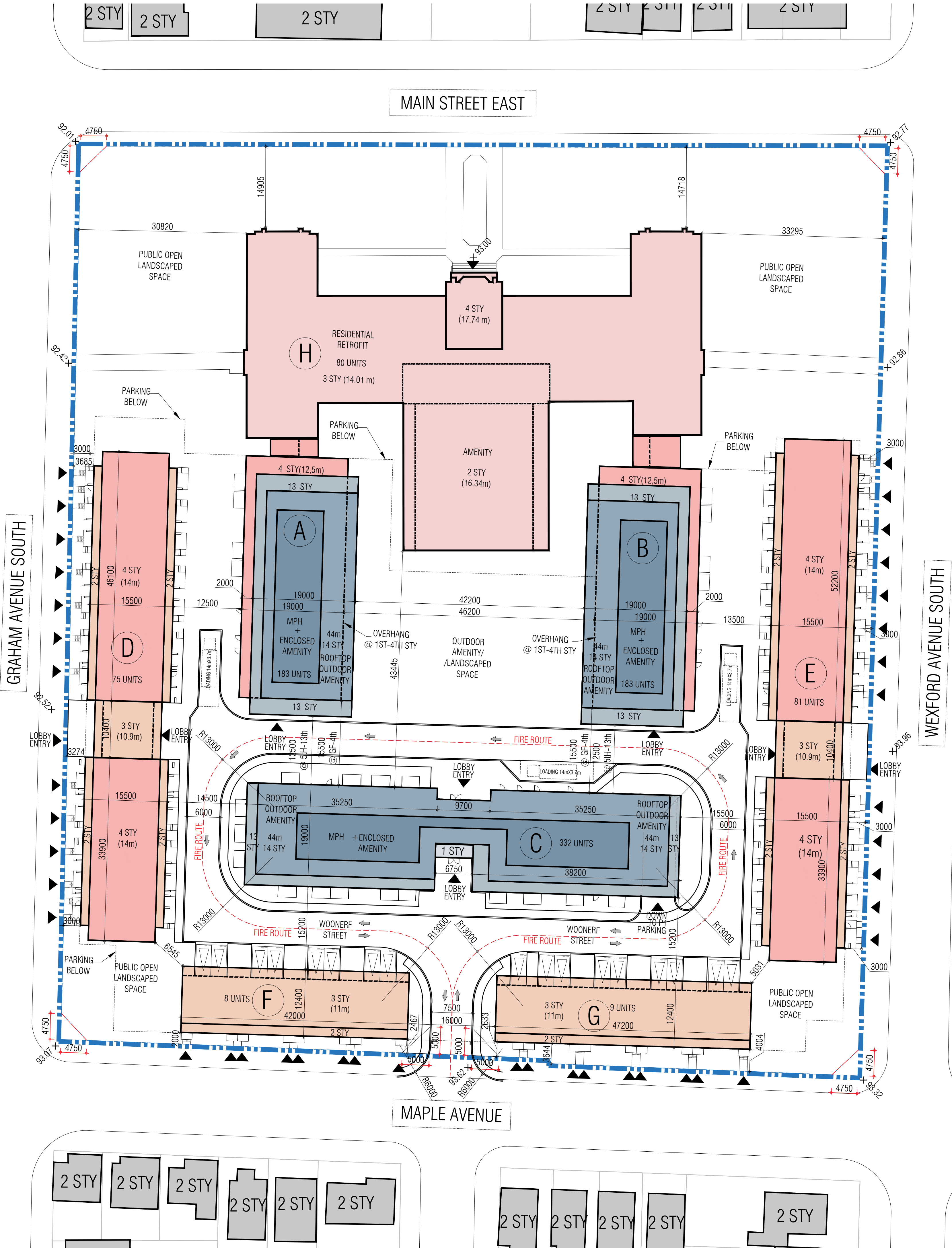
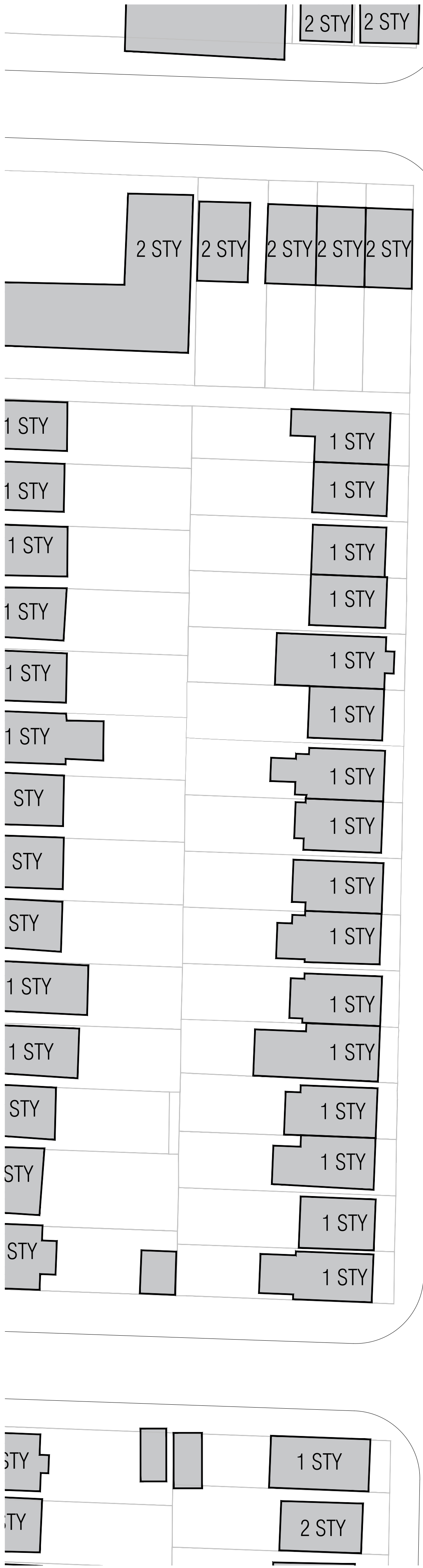
A.401 - BUILDINGS A,B,C, ELEVATIONS,
A.402 - BUILDINGS A,B,C, ELEVATIONS,
A.403 - BUILDINGS A,B,C, ELEVATIONS,
A.404 - BUILDING D, ELEVATIONS,
A.405 - BUILDINGS E,F,G ELEVATIONS,
A.501 - SECTIONS AND ANGULAR PLANES
A.502 - SECTIONS AND ANGULAR PLANES

A.601 - PERSPECTIVE RENDER
A.602 - PERSPECTIVE RENDER
A.603 - PERSPECTIVE RENDER
A.604 - PERSPECTIVE RENDER

A.611 - PERSPECTIVES
A.612 - PERSPECTIVES
A.613 - PERSPECTIVES

KEYPLAN: 1:1000





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2. TRANSMISSION OF ANY VIRUS OR DAMAGE TO THE RECEIVING ELECTRONIC SYSTEM WHEN INFORMATION IS TRANSFERRED.

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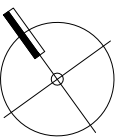
PROPOSED RESIDENTIAL DEVELOPMENT

DELTA

1284 MAIN STREET EAST

Hamilton	Ontario
PROJECT ARCHITECT:	B.G.
ASSISTANT DESIGNER:	A.G.
DRAWN BY:	A.G./R.A.
CHECKED BY:	D.B.
PLOT DATE:	NOV.14.2022
JOB #	1939.21

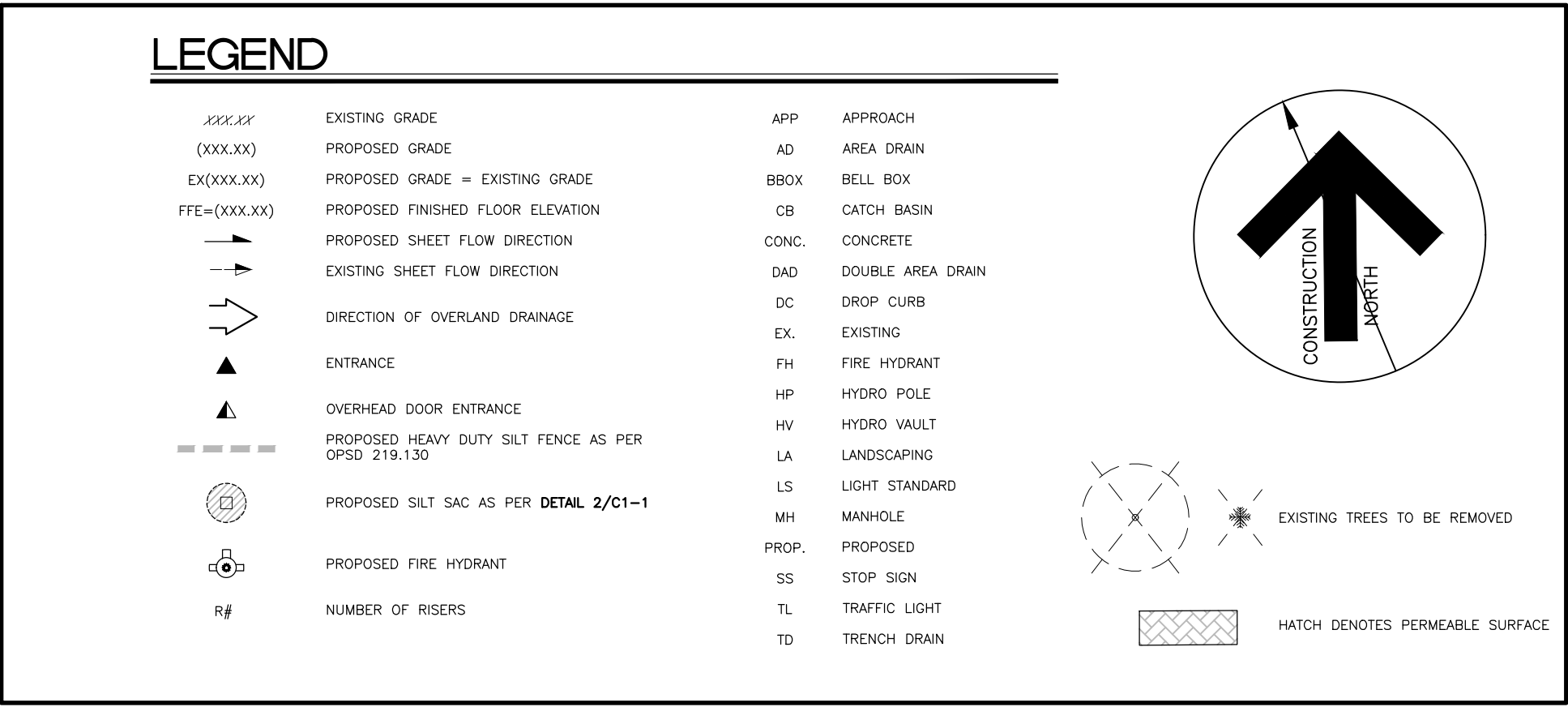
SITE PLAN



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A103

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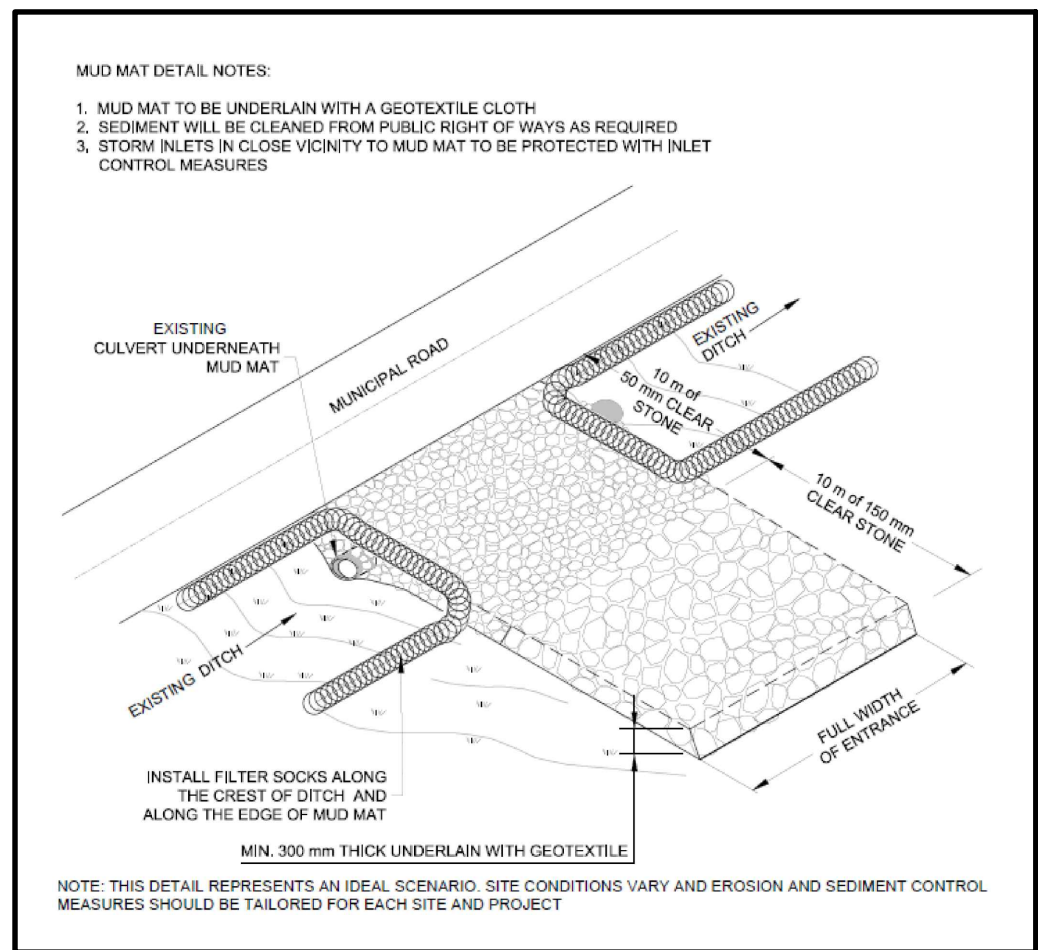
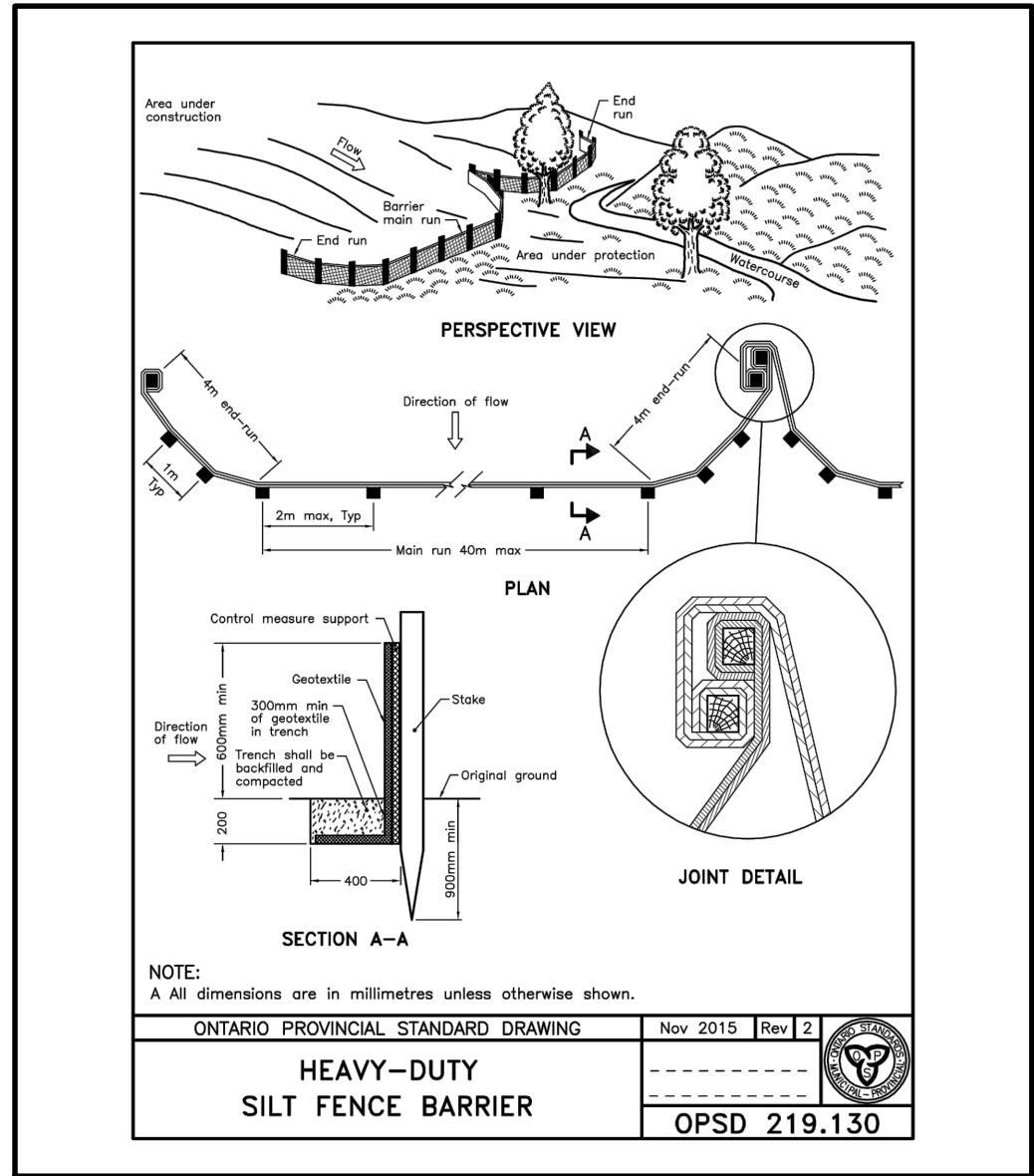
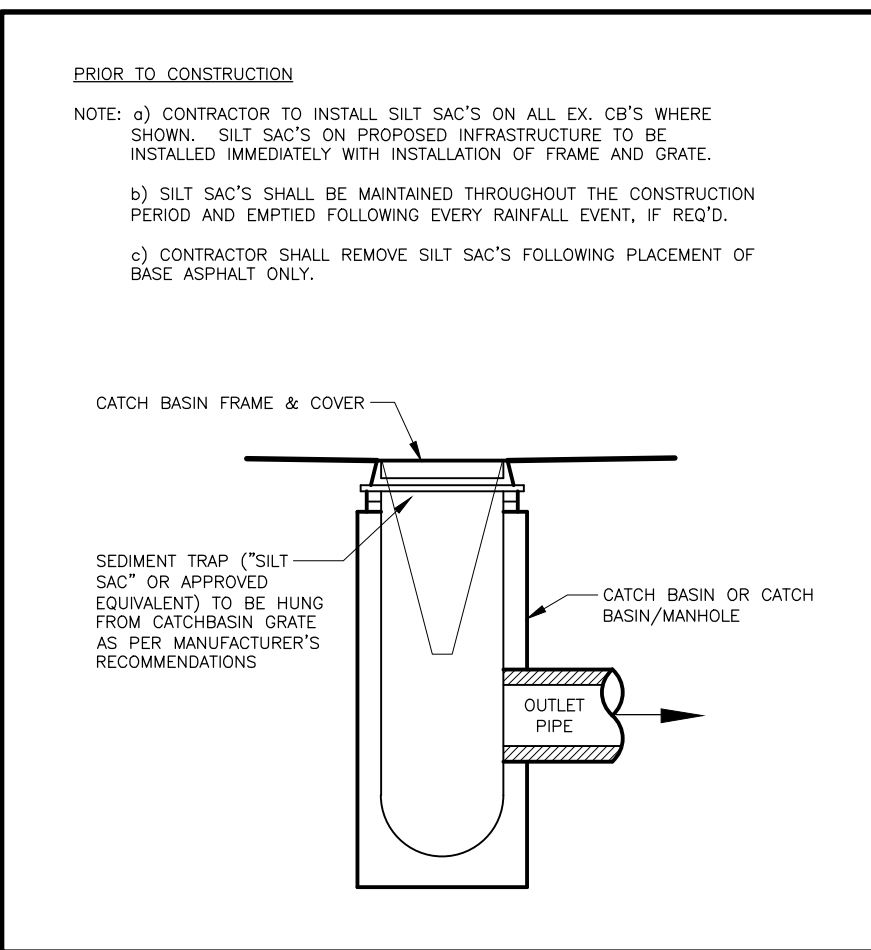


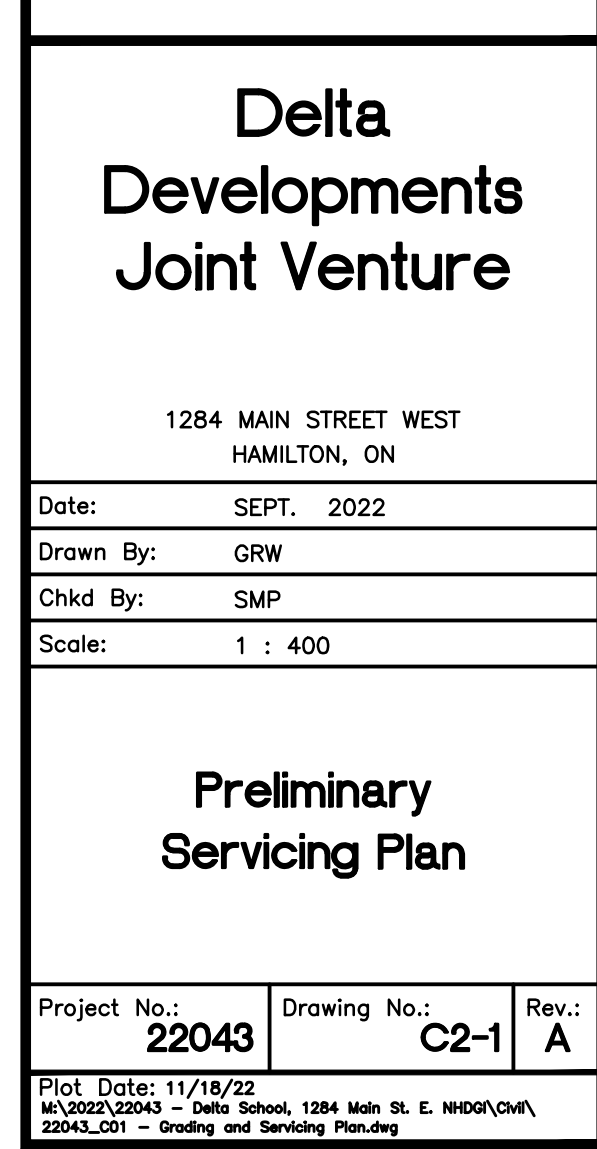
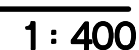
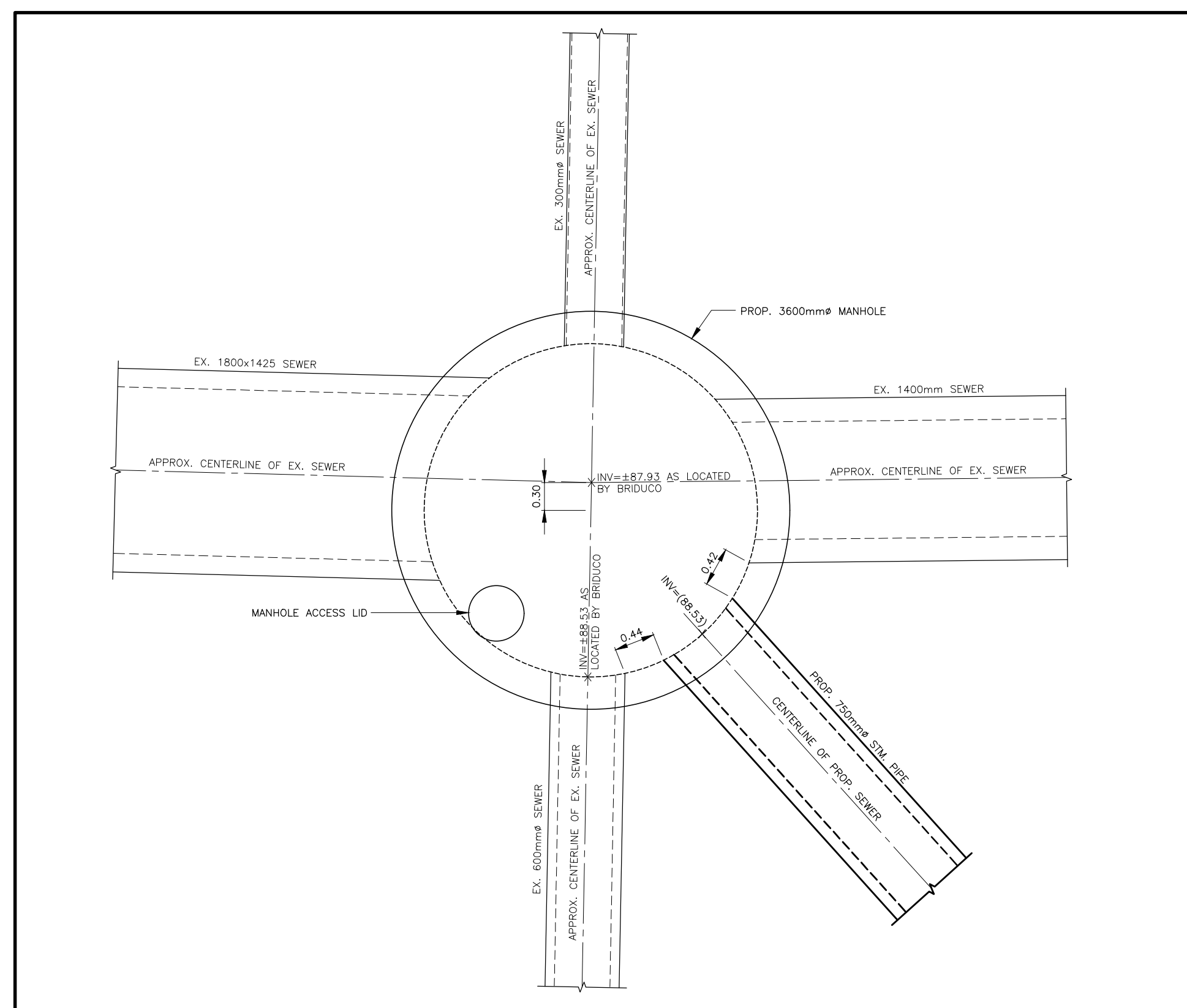
GENERAL GRADING NOTES

- ALL RETAINING WALLS, WALKWAYS, CURBS, ETC., SHALL BE PLACED A MIN. OF 0.45m OFF THE PROPERTY LINE. ALL WALLS 1.0m OR HIGHER SHALL BE DESIGNED BY A P.E.NG.
- SHOULD A RETAINING WALL BE REQUIRED, THE TOP OF WALL ELEVATIONS SHALL BE SET 150mm ABOVE THE PROPOSED SIDE WALK SWALES.
- RETAINING WALLS 0.6m IN HEIGHT OR GREATER REQUIRE CONSTRUCTION OF A FENCE OR GUARD RAIL AT THE TOP OF THE REAR OF THE WALL. GUARDS FOR RETAINING WALLS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS OF EXTERIOR GUARDS AS CONTAINED IN THE ONTARIO BUILDING CODE.
- SLOPES OF SWALES FOR BOTH "BACK TO FRONT" AND "SPLIT" DRAINAGE SHALL BE NO LESS THAN 2.0% GRADE AND NO GREATER THAN 33% GRADE (3:1 SLOPES).
- TOP OF FOUNDATION WALLS FOR BUILDINGS SHALL BE 150mm (MIN) ABOVE FINISHED GRADE.
- DRIVEWAY SLOPES SHALL NOT BE LESS THAN 2% AND NOT MORE THAN 7.0% REVERSED SLOPED DRIVEWAYS IN NEW DEVELOPMENTS ARE NOT PERMITTED.
- 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.
- FOR DELINEATION OF TREE PROTECTION ZONES, BUFFERS, REMOVALS AND PROTECTION SCHEMATICS, ETC., REFER TO TREE PROTECTION PLAN.
- LOT GRADING FOR ALL LOTS IN THE SUBDIVISION SHALL CONFORM STRICTLY WITH THIS PLAN. ANY CHANGES, UNLESS APPROVED PRIOR TO CONSTRUCTION BY THE CITY, SHALL RESULT IN NON ACCEPTANCE OF THE SUBDIVISION BY THE CITY.
- IF GRADING IS REQUIRED ON LANDS ADJACENT TO THE DEVELOPMENT WHICH ARE NOT OWNED BY THE DEVELOPER, THEN THE DEVELOPER MUST OBTAIN WRITTEN PERMISSION FROM THE ADJACENT PROPERTY OWNER TO ALLOW THE DEVELOPER TO GRADE ON THE ADJACENT LANDS, OTHERWISE RETAINING WALLS MUST BE USED.
- THE WRITTEN PERMISSION REQUIRED FROM THE ADJACENT LANDOWNER SHALL BE OBTAINED PRIOR TO ENTERING THE LANDS. SHOULD PERMISSION NOT BE OBTAINED OR IS WITHDRAWN PRIOR TO COMMENCING THE WORK, THEN THE DEVELOPER SHALL LIMIT HIS ACTIVITIES TO THE LIMITS OF THE DEVELOPMENT SITE.
- DRIVEWAY AND DRIVEWAY APPROACHES SHALL BE LOCATED SUCH THAT HYDRO VAULTS AND OTHER STREET FURNITURE ARE A MIN. OF 1.2m FROM THE PROJECTIONS OF THE OUTSIDE GARAGE WALLS.

BEFORE STARTING WORK

- THE CONTRACTOR SHALL NOTIFY THE CITY OF HAMILTON AND LANHACK CONSULTANTS INC. AT LEAST 48 HOURS PRIOR TO COMMENCING CONSTRUCTION.
- THE POSITION OF THE POLE LINES, CONDUITS, WATERMANS, SEWERS, AND OTHER UTILITIES AND STRUCTURES ARE NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED.
- PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, ALL BENCHMARKS, ELEVATIONS, DIMENSIONS, AND GRADES MUST BE CHECKED BY THE CONTRACTOR AND ANY DISCREPANCIES REPORTED TO THE ENGINEER.
- ALL EXISTING UNDERGROUND UTILITIES WITHIN THE LIMITS OF CONSTRUCTION SHALL BE LOCATED, MARKED AND PROTECTED. ANY UTILITIES DAMAGED OR DISTURBED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE ENGINEER, AT THE CONTRACTOR'S EXPENSE.
- AT LEAST TWO DIFFERENT BENCHMARKS MUST BE REFERRED TO AT ALL TIMES.







APPENDIX C: Hydrant Flow Test Reports prepared by L&D Waterworks Inc.

Hydrant Flow Test Report

SITE NAME: **Delta Secondary**
SITE ADDRESS / MUNICIPALITY: **1284 Main Street East Hamilton, On**
TEST HYDRANT LOCATION : **1305 Main Street East
(Hydrant ID # HB17H055)**
**1333 Main Strret East
(Hydrant ID # HB17H059)**
BASE HYDRANT LOCATION:
TEST BY: Luzia Wood

TEST DATE:
Sept 07,2022

TEST TIME:
9:50AM

TEST DATA

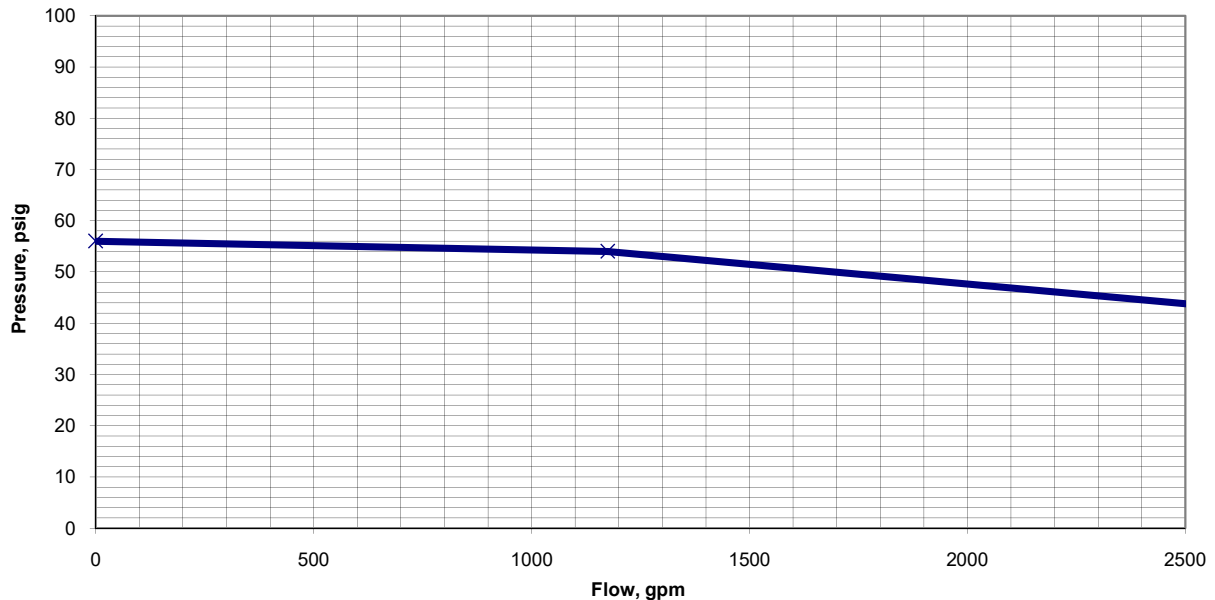
FLOW HYDRANT	Pipe Diam. (in / mm)	300mmC.I.		
			<u>PITOT 1</u>	<u>PITOT 2</u>
SIZE OPENING (inches):			<u>2.5</u>	<u>2.5</u>
COEFFICIENT (note 1):			<u>0.90</u>	<u>0.90</u>
PITOT READING (psi):			<u>49</u>	<u>38 / 38</u>
FLOW (usgpm):			<u>1175</u>	<u>2069</u>

THEORETICAL FLOW @ 20 PSI 5594

BASE HYDRANT Pipe Diam. 300mmC.I.
(in / mm)
STATIC READING (psi): 56 RESIDUAL 1 (psi): 54 RESIDUAL 2 (psi): 50

REMARKS: Flow Test #01, Secondary vale to hydrants were full open.

NOTE 1: Conversion factor of .90 used for flow calculation based on rounded and flush internal nozzle configuration. No appreciable difference in pipe invert between flow and base hydrants.



L & D Waterworks Inc.

491 Port Maitland Rd
Dunnville, ON N1A 2W6
Ph: 289.684.6747



Hydrant Flow Test Report

SITE NAME: **Delta Secondary**
SITE ADDRESS / MUNICIPALITY: **1284 Main Street East Hamilton, On**
TEST HYDRANT LOCATION : **30 Grahm Ave South**
(Hydrant ID # HB17H052)
8 Grahm Ave South
BASE HYDRANT LOCATION: **(Hydrant ID # HB17H053)**
TEST BY: Luzia Wood

TEST DATE:
Sept 07, 2022

TEST TIME:
10:16AM

TEST DATA

FLOW HYDRANT Pipe Diam. 150mm C.I.
(in / mm)

	<u>PITOT 1</u>	<u>PITOT 2</u>
SIZE OPENING (inches):	<u>2.5</u>	<u>2.5</u>
COEFFICIENT (note 1):	<u>0.90</u>	<u>0.90</u>
PITOT READING (psi):	<u>38</u>	<u>13 / 13</u>
FLOW (usgpm):	<u>1034</u>	<u>1210</u>

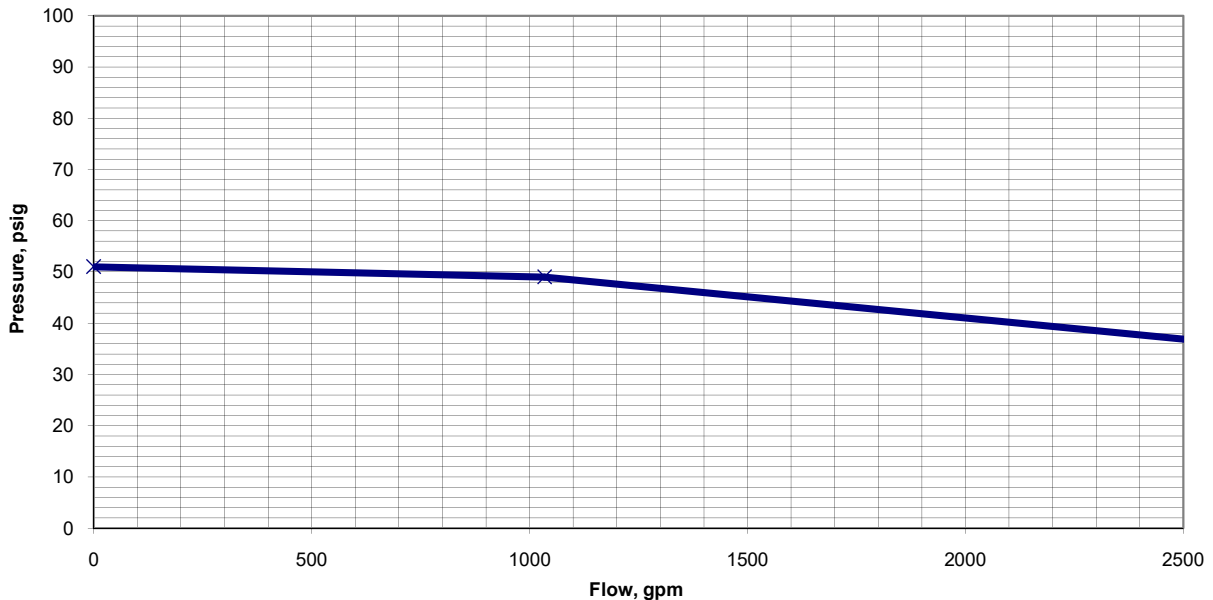
THEORETICAL FLOW @ 20 PSI 4544

BASE HYDRANT Pipe Diam. 150mm C.I.
(in / mm)

STATIC READING (psi): 51 RESIDUAL 1 (psi): 49 RESIDUAL 2 (psi): 44

REMARKS: Flow Test #02, Secondary vale to hydrants were full open.

NOTE 1: Conversion factor of .90 used for flow calculation based on rounded and flush internal nozzle configuration. No appreciable difference in pipe invert between flow and base hydrants.



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Hydrant Flow Test Report

SITE NAME: **Delta Secondary**
SITE ADDRESS / MUNICIPALITY: **1284 Main Street East Hamilton, On**
TEST HYDRANT LOCATION : **Across From House# 582 Maple Ave
(Hydrant ID # HB17H060)**
**30 Grahm Ave South
(Hydrant ID # HB17H052)**
BASE HYDRANT LOCATION:
TEST BY: Luzia Wood

TEST DATE:
Sept 07,2022

TEST TIME:
10:40AM

TEST DATA

FLOW HYDRANT Pipe Diam. 150mm C.I.
 (in / mm)

	<u>PITOT 1</u>	<u>PITOT 2</u>
SIZE OPENING (inches):	<u>2.5</u>	<u>2.5</u>
COEFFICIENT (note 1):	<u>0.90</u>	<u>0.90</u>
PITOT READING (psi):	<u>38</u>	<u>13 / 13</u>
FLOW (usgpm):	1034	1210

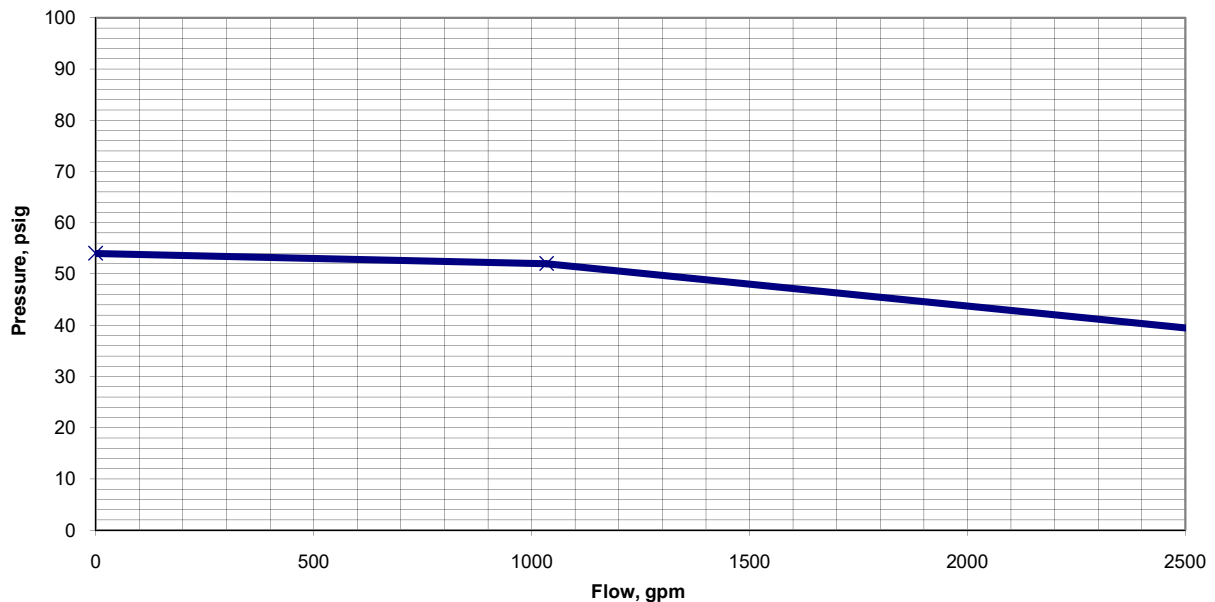
THEORETICAL FLOW @ 20 PSI 4777

BASE HYDRANT Pipe Diam. 150mm C.I.
 (in / mm)

STATIC READING (psi): 54 RESIDUAL 1 (psi): 52 RESIDUAL 2 (psi): 42

REMARKS: Flow Test #03, Secondary vale to hydrants were full open.

NOTE 1: Conversion factor of .90 used for flow calculation based on rounded and flush internal nozzle configuration. No appreciable difference in pipe invert between flow and base hydrants.



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Hydrant Flow Test Report

SITE NAME: **Delta Secondary**
SITE ADDRESS / MUNICIPALITY: **1284 Main Street East Hamilton, On**
TEST HYDRANT LOCATION : **19 Wexford Ave South
(Hydrant ID # HB24H010)**
**49 Wexford Ave South
(Hydrant ID # HB24H009)**
BASE HYDRANT LOCATION:
TEST BY: Luzia Wood

TEST DATE:
Sept 07,2022

TEST TIME:
11:00AM

TEST DATA

FLOW HYDRANT Pipe Diam. (in / mm) 150mm C.I.

	<u>PITOT 1</u>	<u>PITOT 2</u>
SIZE OPENING (inches):	<u>2.5</u>	<u>2.5</u>
COEFFICIENT (note 1):	<u>0.90</u>	<u>0.90</u>
PITOT READING (psi):	<u>40</u>	<u>15 / 15</u>
FLOW (usgpm):	1061	1300

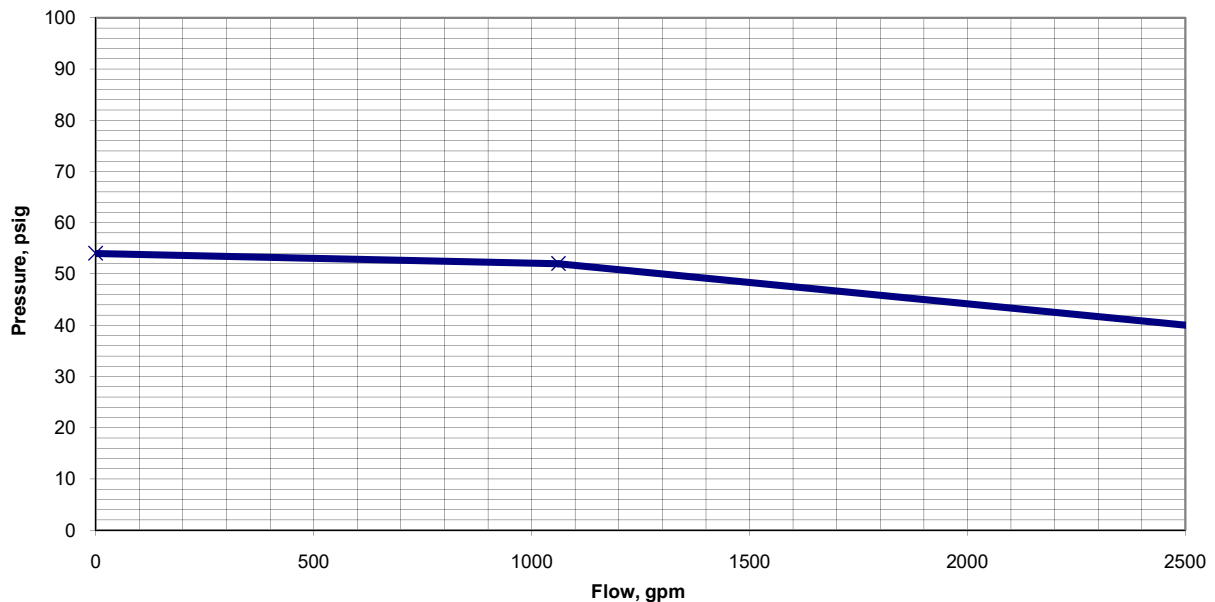
THEORETICAL FLOW @ 20 PSI 4901

BASE HYDRANT Pipe Diam. (in / mm) 150mm C.I.

STATIC READING (psi): 54 RESIDUAL 1 (psi): 52 RESIDUAL 2 (psi): 48

REMARKS: Flow Test #04, Secondary vale to hydrants were full open.

NOTE 1: Conversion factor of .90 used for flow calculation based on rounded and flush internal nozzle configuration. No appreciable difference in pipe invert between flow and base hydrants.



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