

FUNCTIONAL SERVICING REPORT IN SUPPORT OF RESIDENTIAL DEVELOPMENT

600-620 Lolita Gardens Residential Development

City of Mississauga, Ontario



8395 Jane Street, Suite 100
Vaughan, Ontario L4K 5Y2
Tel: (905) 326-1404

File Number: 18080

Prepared For:

Hanseatic Holdings Limited

1	Issued for Site Plan Application	July 19, 2019
No.	Revision	Date

*Hanseatic Holdings Limited***18080**

EXECUTIVE SUMMARY

This Functional Servicing Report has been prepared on behalf of Hanseatic Holdings Limited, the registered owner of the subject land in support of the proposed Residential Development. The servicing strategy for the proposed development is summarized as follows:

Water Servicing:

There is an existing 300mm watermain along Lolita Gardens, and an existing 300mm watermain along Dundas Street E towards the southeast. The proposed development can be serviced through a new connection to the 300mm watermain on Lolita Gardens. The existing watermain connections to Lolita Gardens and to Dundas Street E will remain.

A total maximum day plus fire flow demand was calculated to be 4,713 L/min. The supply capacity of the existing surrounding water distribution system will be confirmed through further testing that will be scheduled in the summer of 2019.

Sanitary Servicing:

The site is connected to an existing 300mm sanitary sewer along Lolita Gardens via an existing 200mm service connection. The existing 300mm sanitary sewer drains into an existing 1200mm trunk sanitary sewer that runs along the southwest side of the site. The proposed development can be serviced through a new sanitary connection to Lolita Gardens. The connection from the existing underground parking garage will be relocated and connected to the proposed sanitary system at an existing manhole.

In the proposed dry weather conditions, the development proposes a new 200m sanitary connection, which will operate at 72.4% of the full flow capacity, which is an increase of **21.1%** compared to the existing contribution of 51.3% from the existing 200mm connection that will be removed. Sanitary sewer capacity within the municipal system will be confirmed by the Region to ensure adequate capacity is available.

Stormwater Servicing:

The site is currently serviced through one 375mm storm connection to the existing 675mm storm sewer on Lolita Gardens. The existing storm system on Lolita Gardens conveys flows to the southwest and drains into a 900mm storm sewer downstream. The proposed development will be serviced through a new service connection to the existing storm sewer network on Lolita Gardens at an existing storm sewer manhole. The existing storm connection from the underground parking garage will be relocated as required.

During the 100-year storm event, in order to match the allowable release rate of **42 L/s, 89m³ of storage** will be required within the site. **90m³** of storage has been proposed, which satisfies

***Hanseatic Holdings Limited******18080***

the storage requirement. This storage will be provided by the underground storage tank within the parking garage of the proposed building. The site can also implement low impact development (LID) measures, which includes a green roof and an infiltration gallery to promote water balance/retention and water quality.



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1.0 INTRODUCTION

1.1 Background

This Functional Servicing Report has been prepared on behalf of **Hanseatic Holdings Limited** in support of the Residential development for the proposed 2.26 ha development. The purpose of this report is to demonstrate that the existing infrastructure within 600-620 Lolita Gardens and the surrounding area can accommodate the proposed development.

The subject site lies within the City of Mississauga, in the Region of Peel. It is located on the southeast side of Lolita Gardens and is bounded by Lolita Gardens towards the northwest, an existing commercial property towards the northeast, Dundas Street E to the southeast, and an existing long term care residence to the southwest. The site is currently a residential property consisting of two high-rise apartment buildings, a parking lot and a parking garage. **Figure 1 – Site Location** illustrates the subject site within the context of its surroundings. This application proposes the addition of a new 25-storey apartment building, underground parking structure, above ground parking, driveway and landscape features. The two existing apartment buildings will remain. The proposed development layout can be seen on **Figure 2 – General Plan**.

The existing site contains one sanitary service connection and one storm sewer connection to the existing parking garage that services the existing buildings, and two existing water service connections. The site generally slopes from northeast to southwest, as identified on **Figure 3 – Existing Conditions**. Existing site servicing information has been included in **Appendix A**.

1.2 Study Parameters

This servicing assessment is based on the following information:

- Topographic Survey, prepared by Speight, Van Nostrand & Gibson Limited,
- Conceptual Architectural Plans (600-620 Lolita Gardens), prepared by Quadrangle Architects Limited,
- Utility Locates Plan, prepared by Urban-X,
- As-Constructed Plan & Profile Plans, provided by the Region of Peel,
- Development Requirements Manual, City of Mississauga,
- Fire Underwriters Survey, 1999,
- Public Works Design, Specifications & Procedures Manual, by the Region of Peel, and
- Correspondence with Region/Town Staff,



2.0 WATER SUPPLY

2.1 Existing Water Supply

There is an existing 300mm watermain along Lolita Gardens, and an existing 300mm watermain along Dundas Street E towards the southeast. The existing apartment on 620 Lolita Gardens is serviced by a 200mm watermain connection connecting to the existing 300mm watermain. The parking garage and other existing building is serviced by a 200mm connection from the 300mm watermain on Dundas Street E.

There are two existing hydrants at the northwest of the site along Lolita Gardens and one hydrant towards the west on the existing long-term care residence property. There are also two hydrants on the southeast side of the site on Dundas Street E.

Pressure testing to confirm the available supply has not been completed at this time. Test are expected to be completed in the summer of 2019.

2.2 Proposed Water Supply

The proposed development can be serviced through a new connection to the 300mm watermain on Lolita Gardens. The existing watermain connections to Lolita Gardens and to Dundas Street E will remain. The proposed connection will enter the site through a meter room in the underground garage, which will be equipped with a backflow prevention device. The watermain connection will enter the underground garage as feasibly close to the proposed meter room as possible, which is located at the southeast corner of the proposed building. A hydrant is also proposed on site that will service the proposed building. Refer to **Figure 4 – Water Servicing Plan** and Drawing **C2 – Site Servicing Plan** for the existing and proposed watermain layout.

The Region of Peel's Water Design Criteria states that governing flows shall be calculated based on development type, as well as fire flow. A maximum day plus fire flow approach will be used to find the governing water demand. Peak design flows for the **residential maximum day** and **maximum hour demand** are calculated based on peaking factors of the average daily



demand within developments as per the Region of Peel standards. The Region of Peel outlines an average daily demand of **280 L/cap/d**, with a maximum daily peaking factor of 2.0 and a maximum hourly peaking factor of 3.0. Refer to **Appendix B** for the supporting calculations of the following proposed flows:

- Average Daily Demand = 356 L/min
- Maximum Day Demand = 713 L/min
- Maximum Hour Demand = 1069 L/min
- Fire Flow Demand = 4,000 L/min
- Maximum Day Demand plus Fire Flow Demand = **4,713 L/min** (governs)

The Region of Peel design criteria dictates the following system pressure requirements:

- Minimum Pressure Under Operating Conditions = 276 kPa
- Minimum Maximum Day + Fire Flow Pressure = 140 kPa
- Maximum Allowable Pressure in Distribution System = 689 kPa
- Maximum Allowable Pressure for Water Services = 550 kPa

A total maximum day plus fire flow demand was calculated to be 4,713 L/min. The supply capacity of the existing surrounding water distribution system will be confirmed through further testing that will be scheduled in the summer of 2019. The buildings mechanical system will be designed according to the site requirements during detailed design and the detailed sprinkler, and fire demand shall be determined by a qualified sprinkler consultant once detailed design of the building is required.



3.0 SANITARY SERVICING

3.1 Existing Sanitary Servicing

The site is connected to an existing 300mm sanitary sewer along Lolita Gardens via an existing 200mm service connection. The existing 300mm sanitary sewer drains into an existing 1200mm trunk sanitary sewer that runs along the southwest side of the site. Existing sanitary sewers are shown on **Figure 5 – Sanitary Servicing Plan**.

3.2 Proposed Sanitary Servicing

The proposed development can be serviced through a new sanitary connection to Lolita Gardens. The connection from the existing underground parking garage will be relocated and connected to the proposed sanitary system at an existing manhole. Existing sanitary infrastructure will need to be removed to construct the proposed internal sanitary network that will service the existing and proposed buildings on site. Refer to **Figure 5 –Sanitary Servicing Plan** and **C2 – Site Servicing Plan** for the existing and proposed sanitary sewer layout.

In the proposed dry weather conditions, the development proposes a new 200m sanitary connection, which will operate at 72.4% of the full flow capacity, which is an increase of **21.1%** compared to the existing contribution of 51.3% from the existing 200mm connection that will be removed. Sanitary sewer capacity within the municipal system will be confirmed by the Region to ensure adequate capacity is available. Supporting calculations for pre and post development conditions are included in **Appendix C**.



4.0 STORMWATER SERVICING

4.1 Existing Stormwater Drainage

The site is currently serviced through one 375mm storm connection to the existing 675mm storm sewer on Lolita Gardens. The existing storm system on Lolita Gardens conveys flows to the southwest and drains into a 900mm storm sewer downstream. The site is serviced internally and conveys flow collected via catchbasins into an existing storm sewer network to be discharged to the 675mm pipe on Lolita Gardens. The existing drainage generally flows from north to the south. The entire site is controlled, where drainage outlets to the existing 675mm storm sewer to the northwest of the site. The existing drainage areas are summarized in **Table 4.1** below and are shown on **Figure 3 – Existing Conditions Plan**.

The existing site is a residential development with two existing apartment buildings, a 1-storey amenity building, and a parking garage. The controlled pre-development drainage areas of the existing development are summarized in **Table 4.1** below:

Table 4.1 – Pre-Development Drainage Areas

ID	Area (Ha)	Runoff Coefficient
101	2.62	0.90
301 (External Drainage)	0.11	0.90

There are currently external contributing drainage areas entering the site from the properties to the north and east. This external drainage is conveyed via sheet flow through the landscaped area and parking of the site to Dundas Street E.

Note that the drainage areas outlined in **Table 4.1** are current drainage patterns; however, allowable release rate calculations will be based on drainage area boundaries set under post-development conditions. This is because the primary limits of the development is only the area of the proposed new building. This is further discussed in Section **4.2** below.



4.2 Allowable Release Rate

As per the City of Mississauga's design criteria and correspondence with the City, the site will control peak runoff flows from the 2-year to the 100-year storm event under post-development conditions to the 2-year pre-development release rate or less.

The new development proposes one new apartment building, while the remainder of the site will either remain unchanged or have a reduction in impervious area. Therefore, the allowable release rate will be governed by the drainage area around the proposed building. The boundaries of this area are governed by post-development area 201 as shown in **Figure 6 – Post-Development Drainage Plan**. These area limits were used to find the equivalent area characteristics under pre-development conditions.

Based on the City of Mississauga's specified IDF curves, the allowable minor system discharge, defined by the pre-development 2-year release rate, is calculated as follows:

$$Q_A = C \times A \times i \text{ (l/s)}$$

Table 4.2: Allowable Release Rate

A - Site Area (ha)	0.50
T_c (min)	15
C - Runoff Coefficient	0.50
i – Intensity (mm/hr)	60
Q - Release Rate (l/s)	42

Therefore, the proposed apartment building shall achieve the allowable flow of **42 L/s** to the existing 675mm ø storm sewer on Lolita Gardens. Refer to **Appendix D** for allowable release rate calculations.

4.3 Proposed Stormwater Servicing

The proposed development will be serviced through a new service connection to the existing storm sewer network on Lolita Gardens at an existing storm sewer manhole. The existing storm



connection from the underground parking garage will be relocated as required. Portions of the existing internal storm sewers and structures will need to be removed or relocated to accommodate the proposed parking garage and service the existing development. This work will have to be phased at the time of construction. Refer to **Figure 7 – Storm Servicing Plan** and **C2 – Site Servicing Plan** for the existing and proposed storm sewer layout.

4.4 Proposed Stormwater Management

Under proposed conditions the new apartment building comprises 0.12 ha of the site. The proposed 0.50 ha building drainage area around the building will be captured and conveyed to the existing 375mm storm sewer service connection. All storms up to the 100-year event will be controlled to the 2-year pre-development peak run-off rates of Area 201. The remainder of the site will maintain existing storm connections with the same or reduced imperviousness. Refer to **Figure 6 – Post-Development Drainage Plan** for the proposed drainage areas.

Table 4.3 below summarizes the 100-year post development storage requirements and proposed peak flow from Area 201. The size and release control will be confirmed with the building team through the site plan approval and building permitting process.

Table 4.3 – Peak Flow and Storage Summary - 100-Year Storm Event

Area ID	Area (ha)	Runoff Coefficient (with 1.25 adjustment ratio)	t_c (min)	Storage Available (m^3)	Storage Required (m^3)	Release Rate (L/s)	Description	Orifice Size (mm)
201	0.50	0.71	15	90	89	42	Building Area	-

During the 100-year storm event, in order to match the allowable release rate of **42 L/s, 89m³ of storage** will be required within the site. **90m³** of storage has been proposed, which satisfies the storage requirement. This storage will be provided by the underground storage tank within the parking garage of the proposed building. Refer to **Appendix D** for storage volume calculations.



The development proposal will result in a net reduction of 788m² of asphalt parking area. As such, additional water quality control measures should not be required.

The existing external drainage entering the site will be conveyed overland through sheet flow, to be directed to Dundas Street E to preserve existing drainage conditions.

4.4.1 Proposed LID Measures

The site can also implement low impact development (LID) measures, which includes a green roof and an infiltration gallery to promote water balance/retention and water quality. The development will seek to retain the 5mm storm event to achieve water balance targets in accordance with the City of Mississauga guidelines.

A green roof has been included in the design of the building, which is a LID technique that promotes improved stormwater quality and retention. An infiltration gallery is also proposed, which will have a volume of **11m³** and will provide adequate volume to achieve the 5mm water balance target. Refer to **Appendix D** for water balance calculations.



5.0 SITE GRADING

The site will be graded in accordance with the City of Mississauga standards, requirements under the Accessibility for Ontarians with Disabilities Act (AODA), and building design. The grading design will respect the existing overland drainage patterns to maintain effective operation of the existing storm infrastructure. This will minimize disturbance to the existing developed site and surrounding land. Refer to Drawing **C1 – Site Grading Plan**.

6.0 FUTURE DEVELOPMENT

At this point future development in the catchment of the existing storm sewer network on Lolita Gardens is unknown. The parcel immediately south of the site is a lot consisting of a long-term care facility and at-grade parking. Areas to the west consist of existing residential and area to the north and east of mostly commercial uses. Intensification beyond the proposed residential development has not been considered in this analysis.



7.0 CONCLUSIONS

Based on the assessment provided above, the existing adjacent infrastructure can accommodate the proposed change in lands use as follows:

Water Servicing:

There is an existing 300mm watermain along Lolita Gardens, and an existing 300mm watermain along Dundas Street E towards the southeast. The proposed development can be serviced through a new connection to the 300mm watermain on Lolita Gardens. The existing watermain connections to Lolita Gardens and to Dundas Street E will remain..

A total maximum day plus fire flow demand was calculated to be 4,713 L/min. The supply capacity of the existing surrounding water distribution system will be confirmed through further testing that will be scheduled in the summer of 2019.

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During the 100-year storm event, in order to match the allowable release rate of **42 L/s, 89m³ of storage** will be required within the site. **90m³** of storage has been proposed, which satisfies

*Hanseatic Holdings Limited***18080**

the storage requirement. This storage will be provided by the underground storage tank within the parking garage of the proposed building.

We trust the information provided in the report meets with your requirements. Should there be any questions or comments, please feel free to contact the undersigned.

Sincerely,
Counterpoint Engineering Inc.

Jowell Liang
jliang@counterpointeng.com

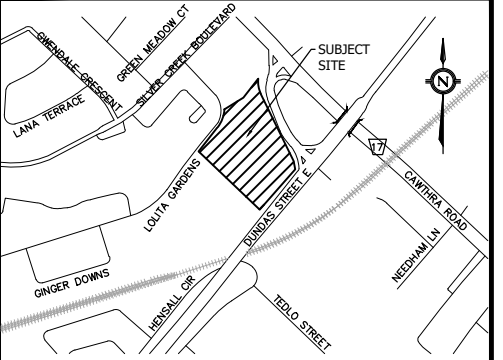
Patrick Turner, P.Eng, MEB
pturner@counterpointeng.com

**Hanseatic Holdings Limited****18080**

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Figures

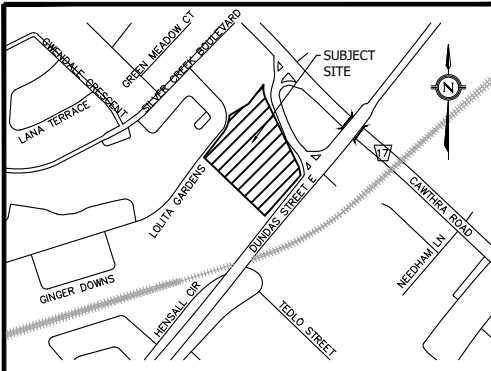
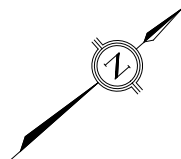
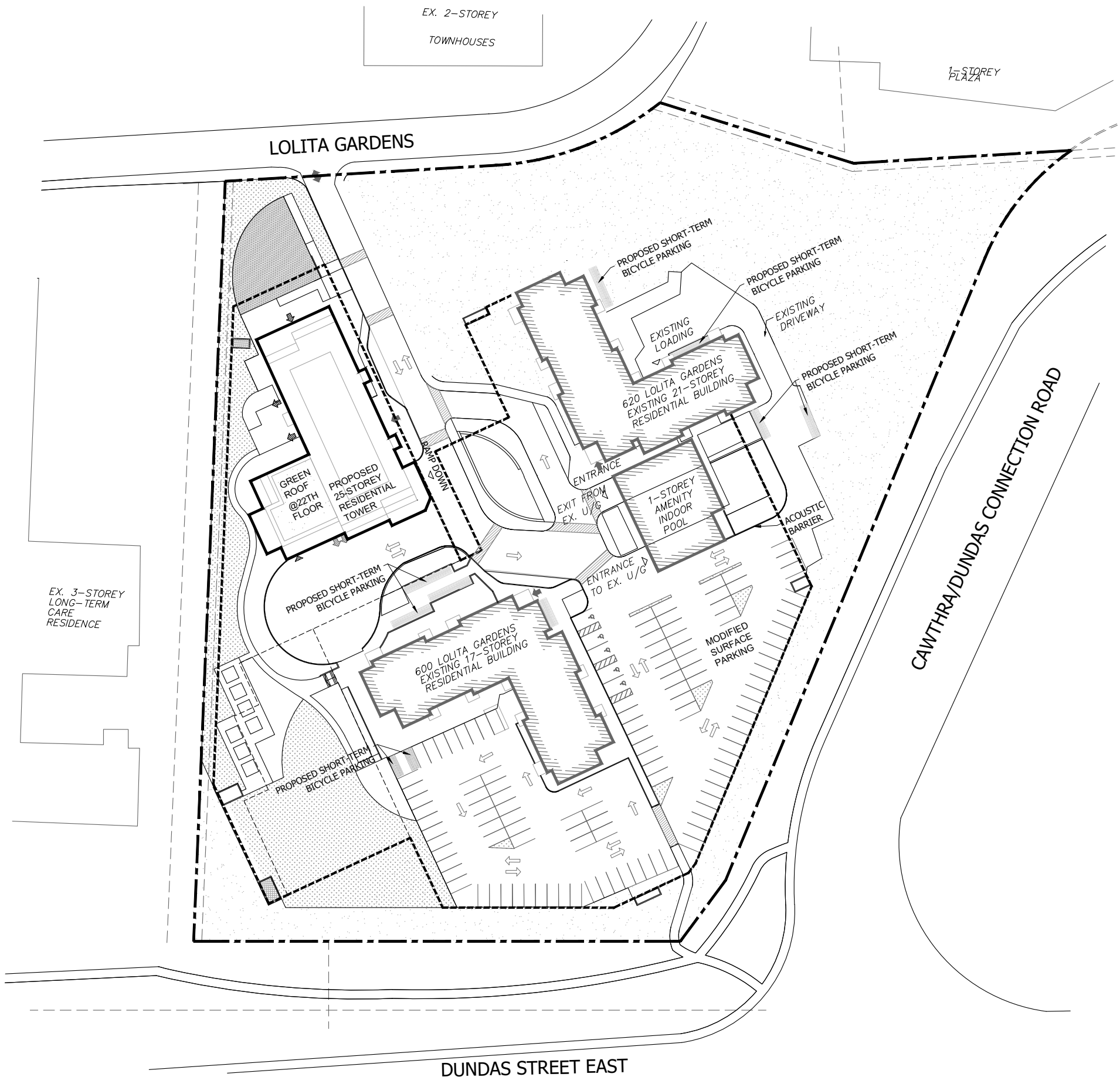


KEY PLAN

counterpoint 
ENGINEERING
COUNTERPOINT ENGINEERING INC.
8395 Jane St., Suite 100, Vaughan, ON L4K 5Y2 Phone 905.326.1404 Fax 905.326.1405


600-620 LOLITA GARDENS
MISSISSAUGA, ONTARIO

SITE LOCATION PLAN	
DESIGNED BY: JL	DATE: MAY 2019
CHECKED BY: PT	PROJECT No. 18080
DRAWING BY: JL	
CHECKED BY: PT	FIGURE No. 1
SCALE: NTS	



KEY PLAN

- LEGEND**
- PROPERTY LINE
 - LIMITS OF PROPOSED UNDERGROUND PARKING

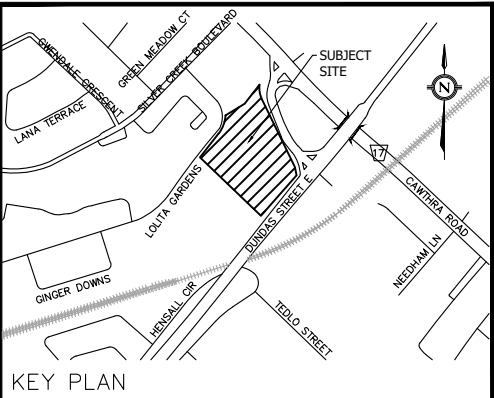
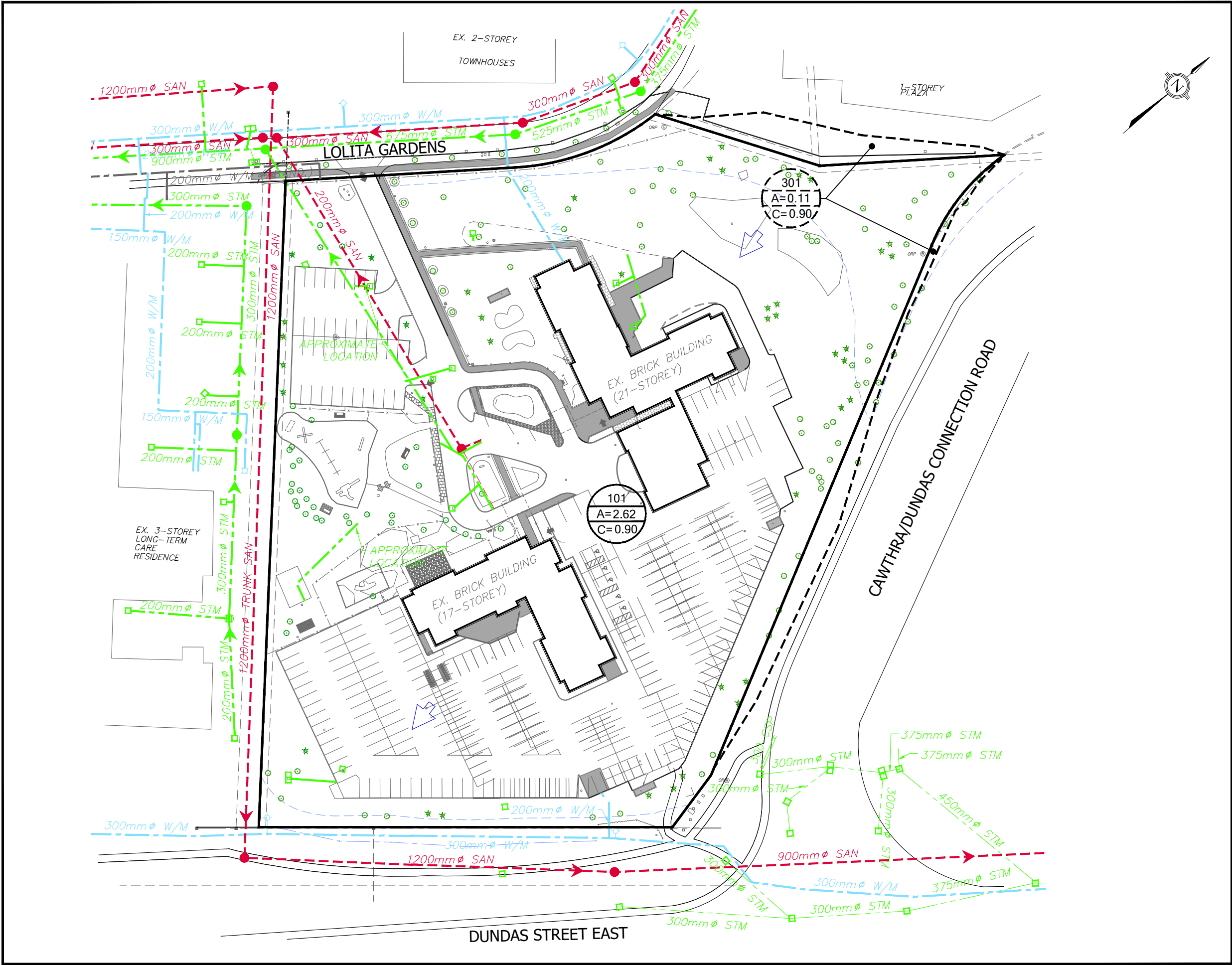


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600-620 LOLITA GARDENS
 MISSISSAUGA, ONTARIO

GENERAL PLAN

DESIGNED BY: JL	DATE: MAY 2019
CHECKED BY: PT	PROJECT No. 18080
DRAWING BY: JL	FIGURE No. 2
CHECKED BY: PT	
SCALE: 1:1000	

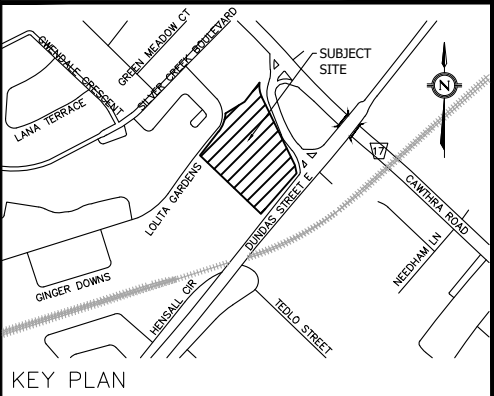
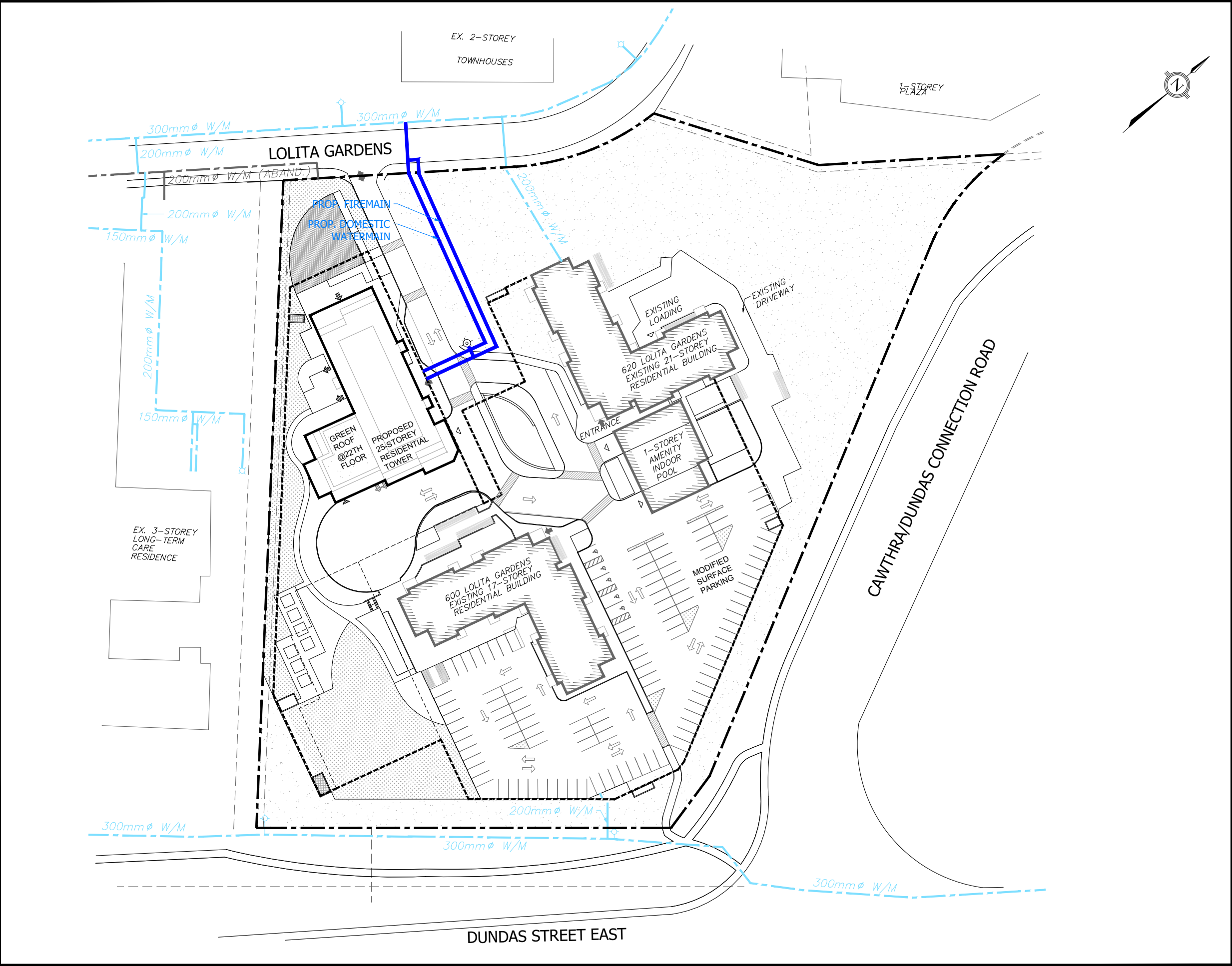


- LEGEND
- DRAINAGE AREA BOUNDARY
 - - - EXTERNAL DRAINAGE AREA
 - 101 AREA ID
 - A=2.26 AREA (ha)
 - C=0.90 RUNOFF COEFFICIENT
 - EXISTING STORM SEWER
 - EXISTING CATCH BASIN
 - ➡ OVERLAND FLOW
 - EXISTING SANITARY SEWER
 - EXISTING WATERMAIN
 - ⬠ EXISTING FIRE HYDRANT
 - PROPERTY LINE
 - - - PROPOSED LIMIT OF UNDERGROUND PARKING

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600-620 LOLITA GARDENS
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EXISTING CONDITIONS PLAN	
DESIGNED BY: JL	DATE: MAY 2019
CHECKED BY: PT	PROJECT No. 18080
DRAWING BY: JL	FIGURE No. 3
CHECKED BY: PT	
SCALE: 1:1000	



LEGEND

- EXISTING WATERMAIN
- EXISTING FIRE HYDRANT
- PROPOSED WATER SERVICE
- PROPOSED FIRE HYDRANT
- PROPERTY LINE
- LIMITS OF PROPOSED UNDERGROUND PARKING

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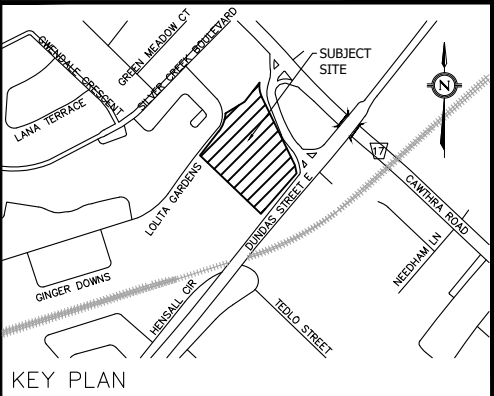
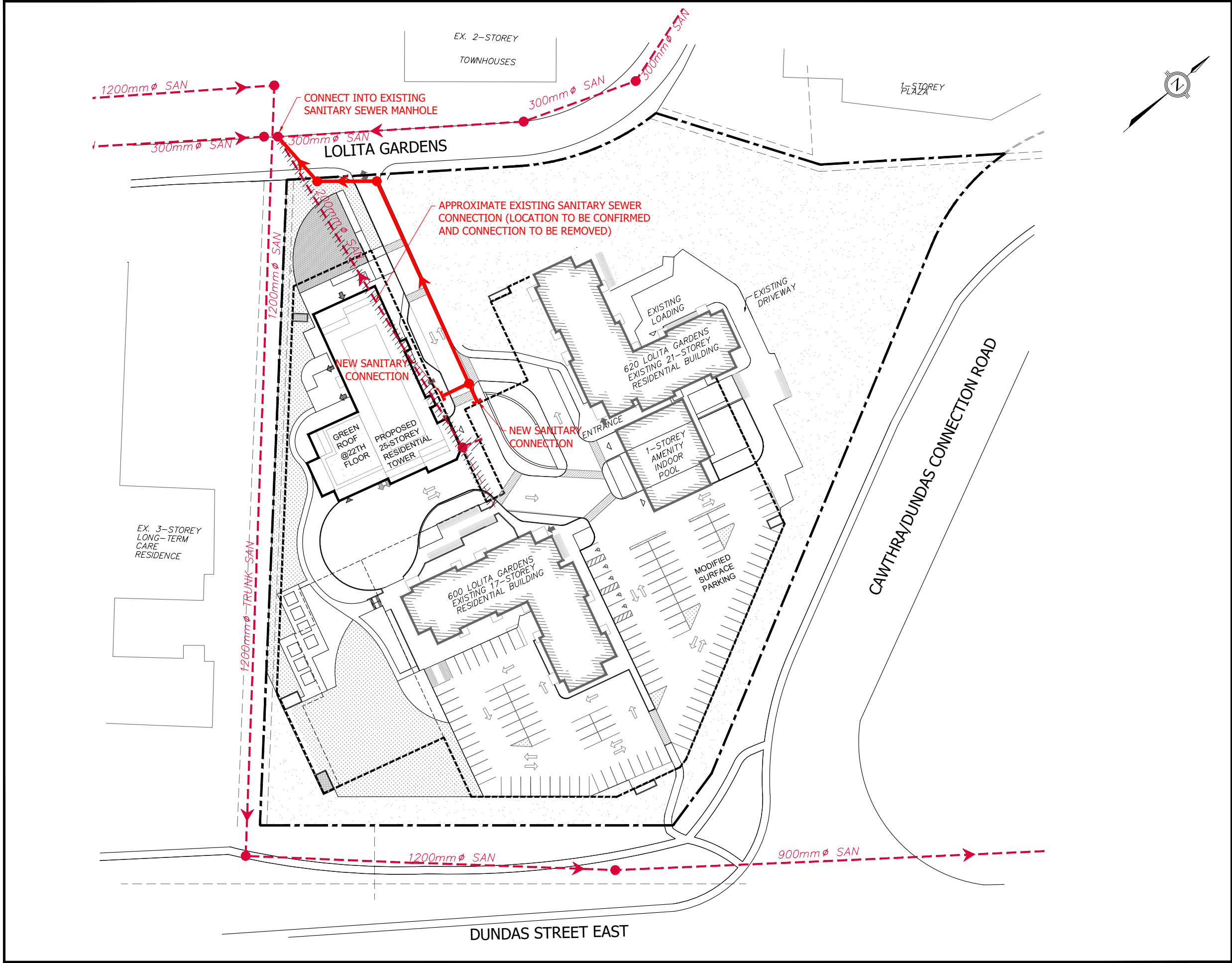
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600-620 LOLITA GARDENS
MISSISSAUGA, ONTARIO

WATER SERVICING PLAN

DESIGNED BY: JL	DATE: MAY 2019
CHECKED BY: PT	PROJECT No. 18080
DRAWING BY: JL	
CHECKED BY: PT	FIGURE No. 4
SCALE: 1:1000	



- LEGEND
- EXISTING SANITARY SEWER
 - PROPOSED SANITARY SEWER
 - EXISTING SANITARY SEWER TO BE REMOVED
 - PROPERTY LINE
 - LIMITS OF PROPOSED UNDERGROUND PARKING

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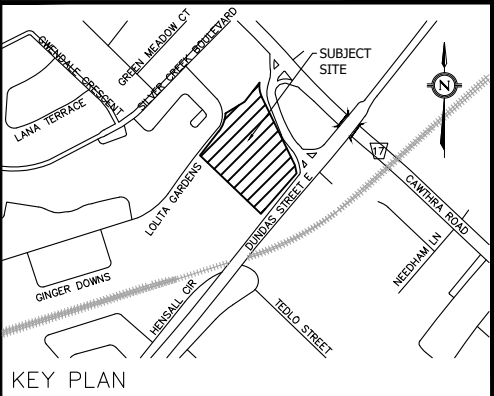
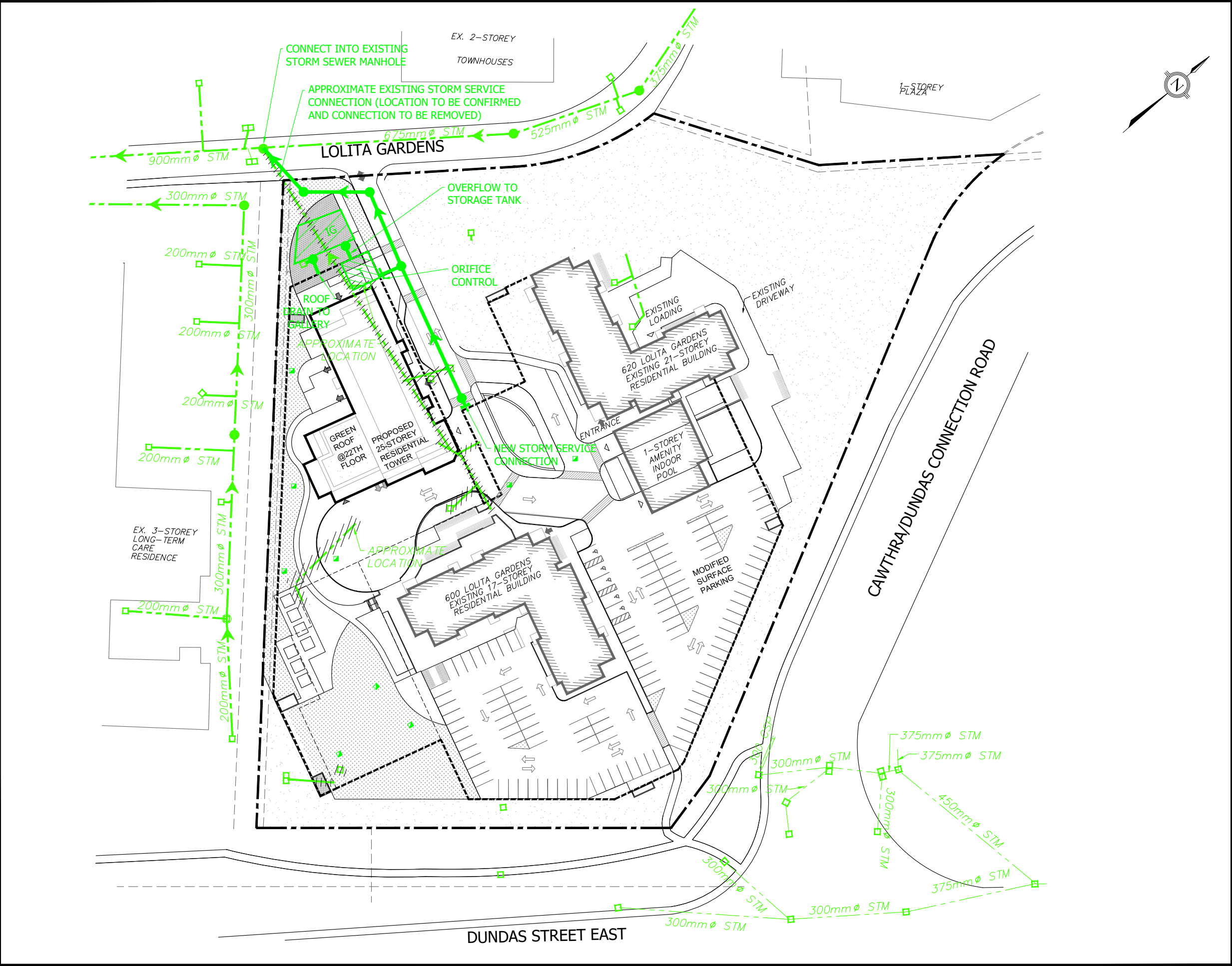
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600-620 LOLITA GARDENS

MISSISSAUGA, ONTARIO

SANITARY SERVICING PLAN

DESIGNED BY: JL	DATE: MAY 2019
CHECKED BY: PT	PROJECT No. 18080
DRAWING BY: JL	FIGURE No. 5
CHECKED BY: PT	
SCALE: 1:1000	



- LEGEND**
- EXISTING STORM SEWER
 - PROPOSED STORM SEWER
 - EXISTING STORM SEWER TO BE REMOVED
 - PROPOSED AREA DRAIN
 - PROPERTY LINE
 - LIMITS OF PROPOSED UNDERGROUND PARKING
 - INFILTRATION GALLERY (VOL = 11m³)
 - SWM STORAGE TANK (VOL = 90m³)

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MISSISSAUGA, ONTARIO

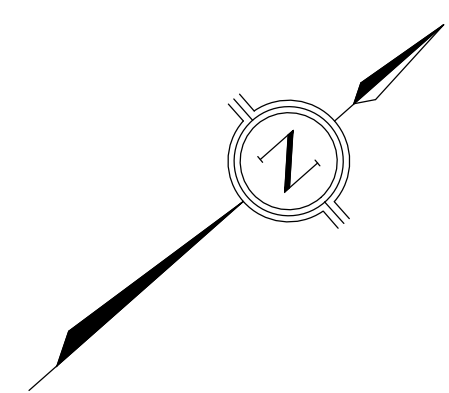
STORM SERVICING PLAN

DESIGNED BY: JL	DATE: MAY 2019
CHECKED BY: PT	PROJECT No. 18080
DRAWING BY: JL	FIGURE No. 7
CHECKED BY: PT	
SCALE: 1:1000	

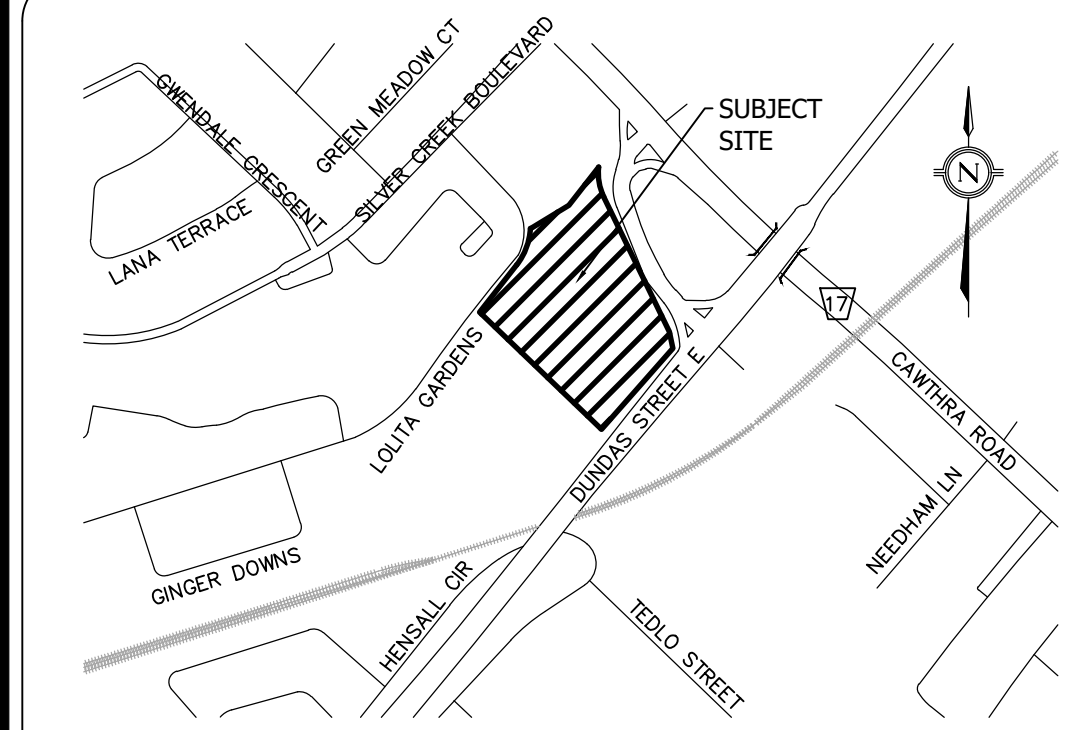


Park Properties
18080

Drawings












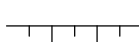
ELEVATION NOTE
ELEVATIONS ARE GEODETIC AND ARE DERIVED FROM
THE CITY OF MISSISSAUGA BENCHMARK No. 94



KEY PLAN

LEGEND

- x121.65EX. EXISTING ELEVATION
 — 123.00 — EXISTING CONTOUR
 x123.00 PROPOSED ELEVATION
 x123.25 TC TOP OF CURB ELEVATION
 x123.55 TW TOP OF WALL ELEVATION
 x122.75 BW BOTTOM OF WALL ELEVATION
 EMERGENCY OVERLAND FLOW
 EXISTING FIRE HYDRANT
 EXISTING STORM MANHOLE
 EXISTING SANITARY MANHOLE
 H&V  PROPOSED FIRE HYDRANT AND VALVE
 V&B  PROPOSED VALVE AND BOX
 PROPOSED STORM MANHOLE
 PROPOSED CATCHBASIN
 PROPOSED SANITARY MANHOLE
 ————— PROPERTY LINE
 — — — — — SWALE
 x122.75 SW BOTTOM OF SWALE ELEVATION
 — 2.0% — PROPOSED SLOPE

 LIMIT OF GRADING

 3:1 GRADING

[illegible]

counterpoint
ENGINEERING



COUNTERPOINT ENGINEERING INC.
8395 Jane St., Suite 100, Vaughan, ON L4K 5Y2 Phone 905.326.1404 Fax 905.326.1405

ENGINEER'S STAMP

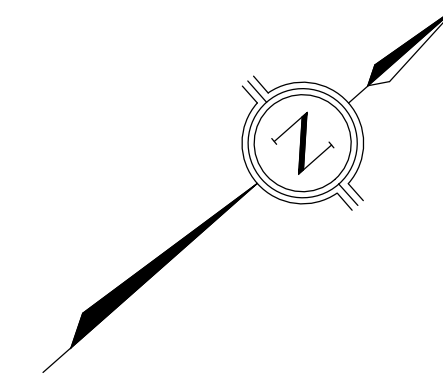
APPLICANT:
HANSEATIC HOLDINGS LIMITED
16 ESNA PARK DRIVE SUITE 200
MARKHAM, ONTARIO
PHONE: (905) 940-0310

SITE LOCATION:
600-620 LOLITA GARDENS
MISSISSAUGA, ONTARIO

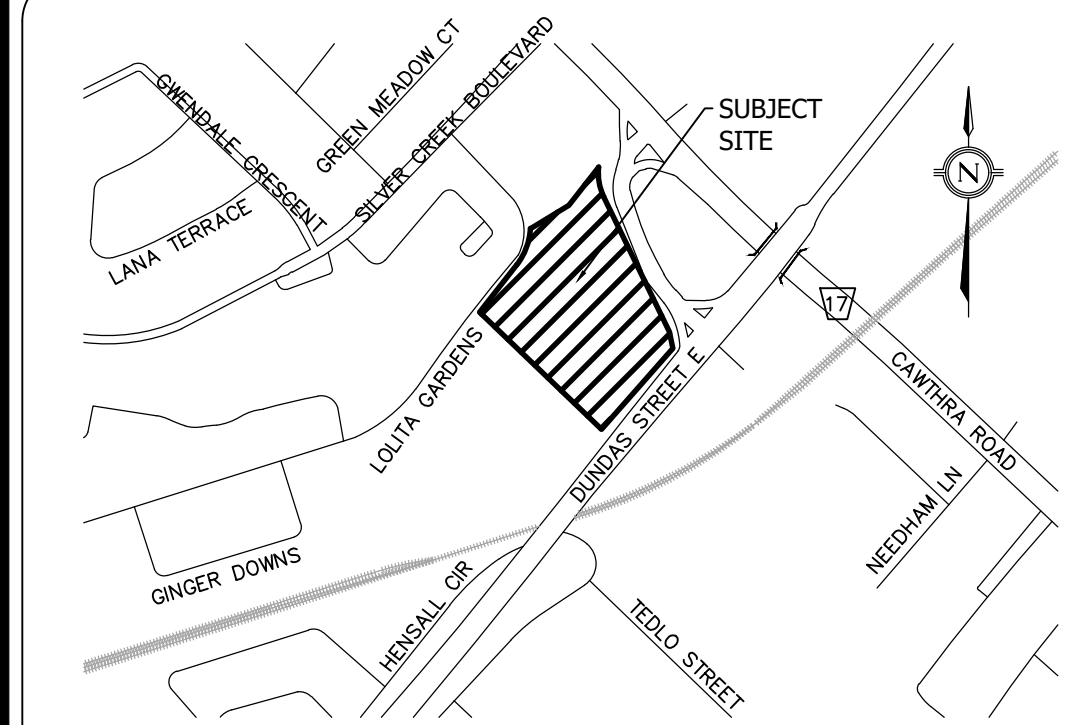
CONCEPTUAL SITE GRADING PLAN

DESIGNED BY: ES	CHECKED BY: PT	DATE: JULY 2019
DRAWING BY: ES	CHECKED BY: PT	PROJECT NO. 18080
SWM BY: ES	CHECKED BY: PT	DRAWING NO. C1
SCALE: 1:500m 		

REGION FILE No.:



ELEVATION NOTE
ELEVATIONS ARE GEODETIC AND ARE DERIVED FROM
THE CITY OF MISSISSAUGA BENCHMARK No. 94



KEY PLAN

LEGEND

- | | |
|-----|--------------------------------|
| | EXISTING HYDRANT |
| | EXISTING STORM SEWER |
| | EXISTING SANITARY SEWER |
| | EXISTING WATERMAIN |
| | PROPOSED STORM SEWER AND MH |
| | PROPOSED SANITARY SEWER AND MH |
| H&V | PROPOSED HYDRANT AND VALVE |
| V&B | PROPOSED VALVE AND BOX |
| | PROPOSED DETECTOR ASSEMBLY |
| | PROPOSED BACKFLOW PREVENTOR |
| | PROPOSED WATER METER |
| | PROPOSED WATERMAIN |
| | PROPERTY LINE |

1.	ISSUED FOR RE-ZONING APPROVAL	2019/07/19	PT	
No.	REVISIONS/ISSUED	DATE	BY	CITY

counterpoint
ENGINEERING

COUNTERPOINT ENGINEERING INC.
8395 Jane St., Suite 100, Vaughan, ON L4K 5Y2 Phone 905.326.1404 Fax 905.326.1405

ENGINEER'S STAMP

APPLICANT:
HANSEATIC HOLDINGS LIMITED
16 ESNA PARK DRIVE SUITE 200
MARKHAM, ONTARIO
PHONE: (905) 940-0310

SITE LOCATION:
600-620 LOLITA GARDENS
MISSISSAUGA, ONTARIO

CONCEPTUAL SITE SERVICING PLAN

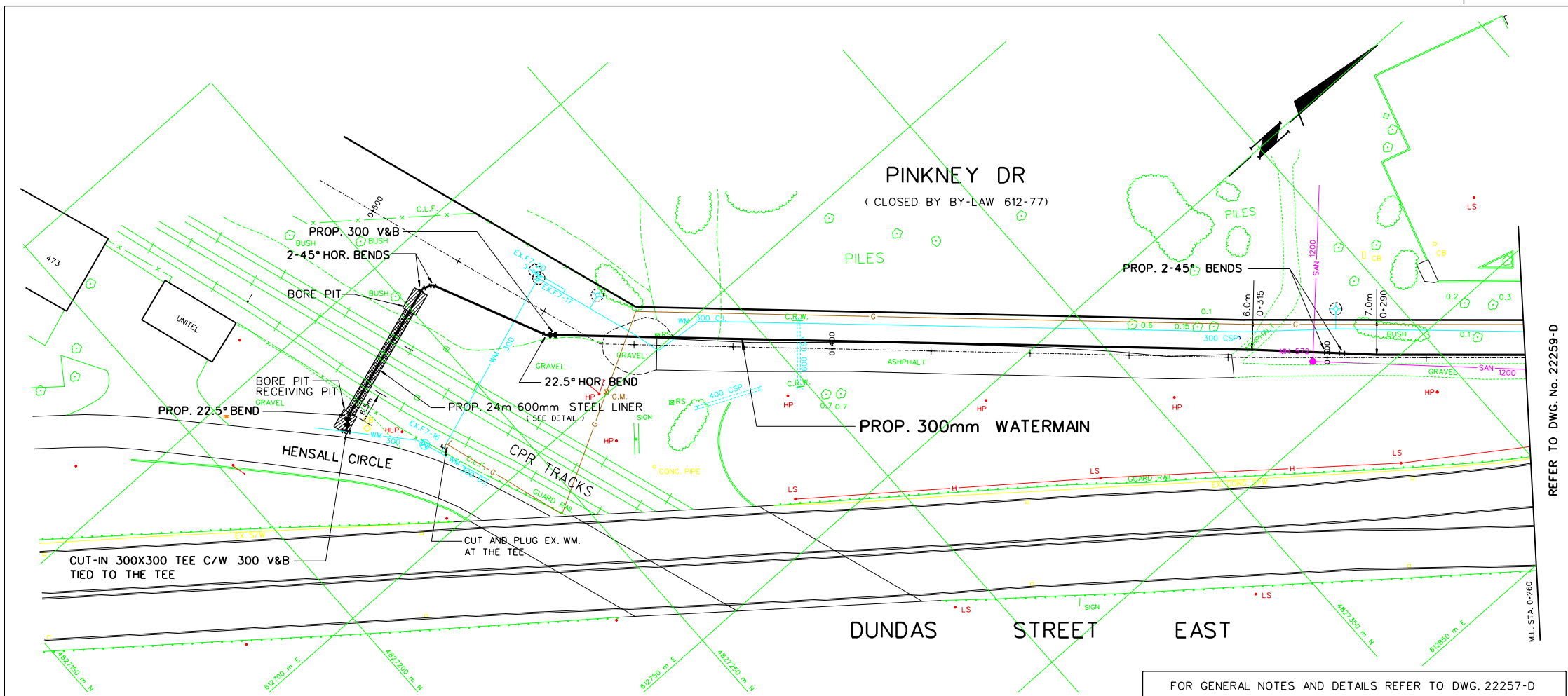
DESIGNED BY: ES	CHECKED BY: PT	DATE: JULY 2019
DRAWING BY: ES	CHECKED BY: PT	PROJECT NO. 18080
SWM BY: ES	CHECKED BY: PT	DRAWING NO. C2

REGION FILE No.:



Appendix A

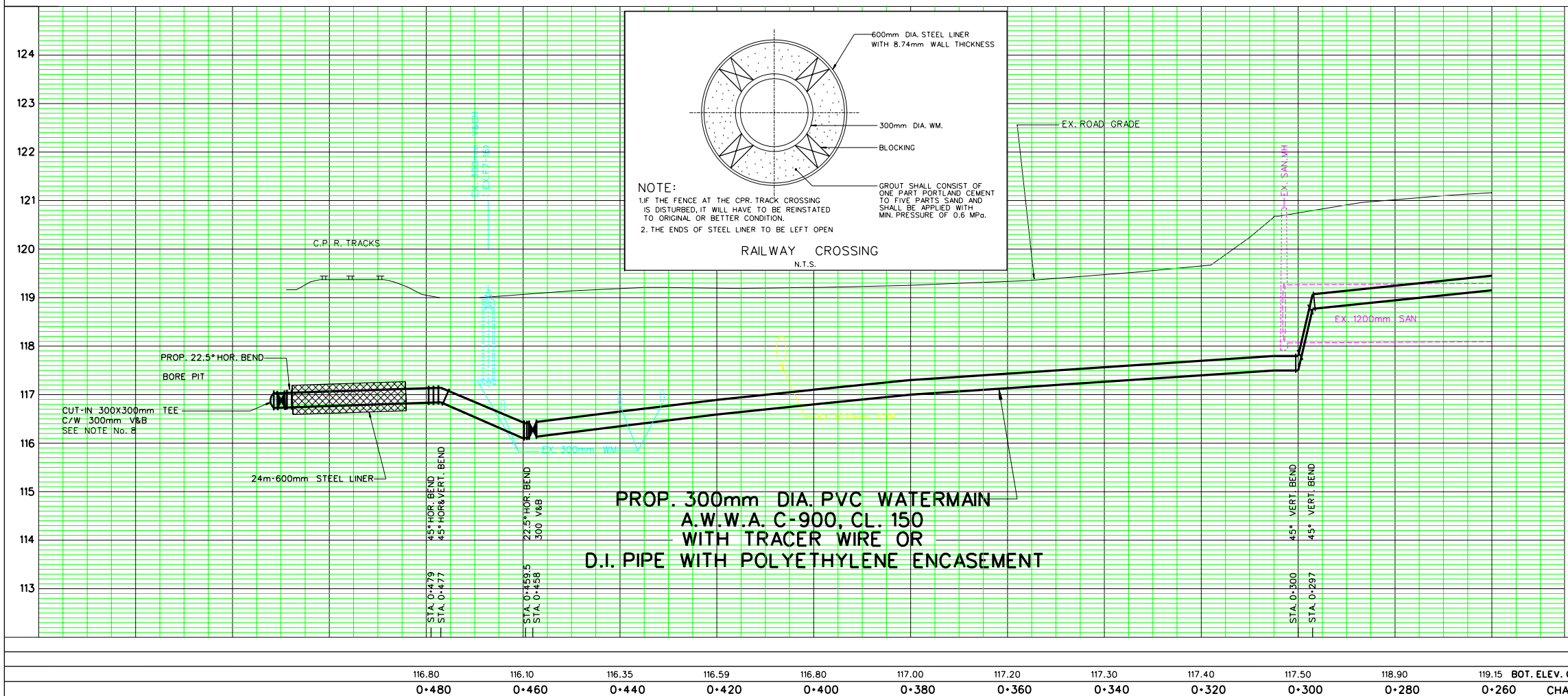
Background Information



REFER TO DWG. No. 22259-D

SERVICE DATA					
SERVICE	DATE	INIT.	SERVICE	DATE	INIT.
SAN MAINS			GAS MAINS	DEC. 23/94	J.P.
STORM SEWERS			BELL U/G CABLE	DEC. 15/94	J.P.
WATERMAINS			HYDRO U/G CABLE	DEC. 15/95	J.P.
TRANSIT	DEC. 1/94	J.P.	ONT. HYDRO	NOV. 30/94	J.P.
PARKS & REC.			CTV	JAN. 18/95	J.P.
ONT. CLEAN WATER	DEC. 19/94	J.P.			
REVISIONS					
DATE	DETAILS				INIT.
JUNE, 1997	AS CONSTRUCTED				J.P.

C.P. RAIL CROSSING		
ITEM	CARRIER PIPE	ENCASING PIPE
CONTENTS TO BE HANDLED	WATER	CARRIER PIPES
DIAMETER OF PIPE	300mm	600mm
PIPE MATERIAL	PVC OR DUCTILE IRON	STEEL
SPECIFICATION/GRADE	FOR PVC-AWWA C900, CL150 FOR D.I.-AWWA C151, CL350	
WALL THICKNESS	PVC PIPE - 18.62mm D.I. PIPE - 9.4mm	8.74mm
WORKING PRESSURE	690 KPa	
TYPE OF JOINT	PVC - PUSH ON D.I. PIPE - TYTON	
COATING	CEMENT (D.I. PIPE ONLY)	
PROTECTION AT THE END OF THE PIPE		BRICK
C.P.R. MILEAGE		SUBDIVISION
NOTES:		
- PIPE TO BE INSTALLED, OPERATED AND MAINTAINED IN ACCORDANCE WITH C.T.C. GENERAL ORDER E-10		
- MAXIMUM PRESSURE 1000 KPa TEST		
- NEAREST ACCESSIBLE VALVE TO NORTH 10m: AND SOUTH 4m:		
- ENCASUREMENT PIPE IS TO BE INSTALLED BY BORING		
- CAVITY BETWEEN LINER AND WATERMAIN TO BE GROUTED		



General Notes

- ALL DRIVEWAYS ASPHALT UNLESS OTHERWISE NOTED.
- ALL SERVICE LOCATIONS ARE APPROXIMATE AND MUST BE LOCATED ACCURATELY IN THE FIELD
- ⊙ DENOTES BUILDING - NOT LOCATED
- DENOTES BUILDING LOCATED

B.M. NO. _____ ELEV. _____

THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING ALL EXISTING UTILITIES PRIOR TO AND DURING CONSTRUCTION LOCATION OF EXISTING UTILITIES APPROXIMATE ONLY. TO BE VERIFIED IN FIELD BY CONTRACTOR.

DESIGNED BY _____ CHKD. _____ APPROVED BY _____

NOTICE TO CONTRACTOR

48 HOURS PRIOR TO COMMENCING WORK NOTIFY THE FOLLOWING

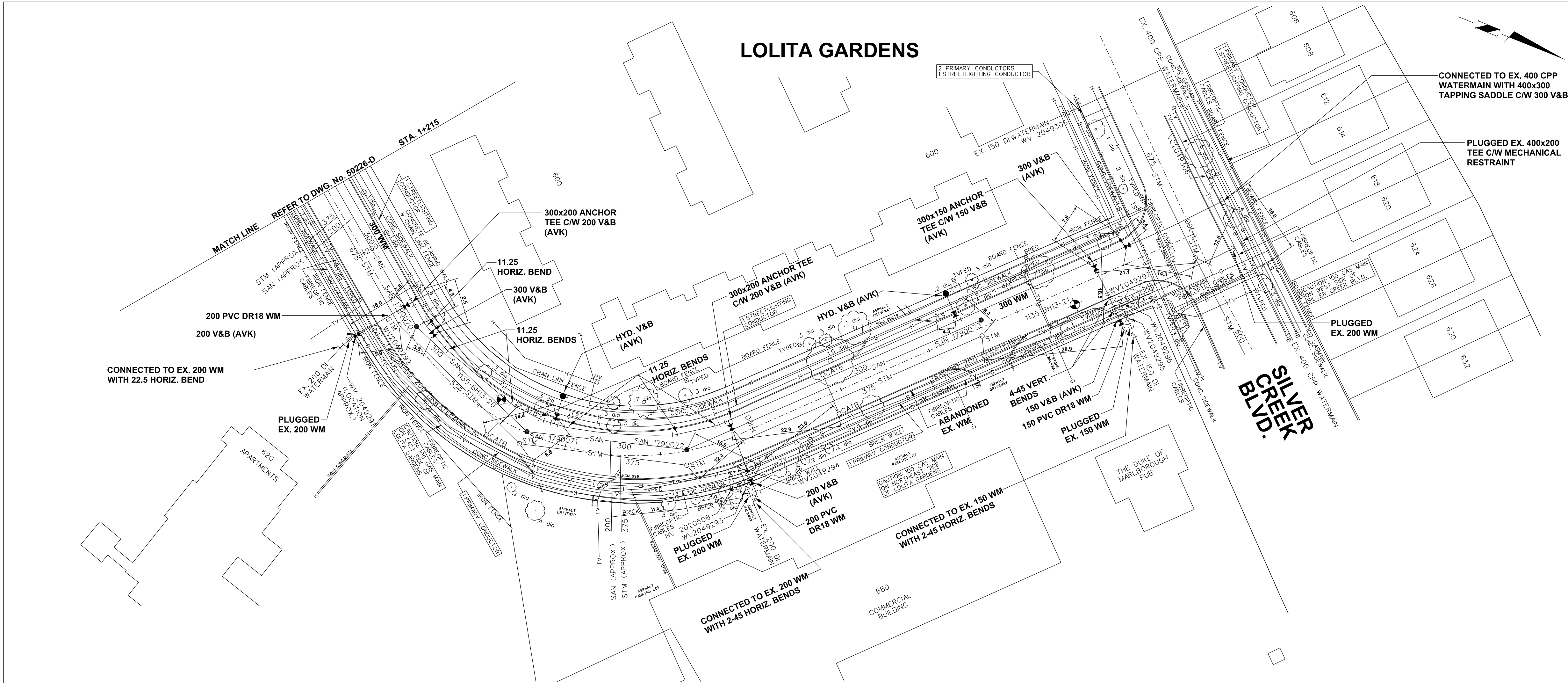
THE REGIONAL MUNICIPALITY OF PEEL
CITY OF MISSISSAUGA WORKS DEPT.
CITY OF BRAMPTON WORKS DEPT.
TOWN OF CALEDON WORKS DEPT.
BELL TELEPHONE COMPANY
CONSUMERS GAS COMPANY
MINISTRY OF TRANSPORTATION
ONTARIO CLEAN WATER AGENCY
HYDRO ELECTRIC POWER COMM. OF ONTARIO
HYDRO ELECTRIC COMM. CITY OF MISSISSAUGA
HYDRO ELECTRIC COMM. CITY OF BRAMPTON
CABLE TELEVISION

10m 0 10 20 30m HORIZONTAL SCALE
1m 0 1 2 3m VERTICAL SCALE

Region of Peel
Public Works

PINKNEY DRIVE
(CLOSED BY-LAW 612-77)
PROP. 300mm WATERMAIN
Sta. 0+260 To Sta. 0+500

LOTS	AREA	Z-21	PROJECT NO. 96-1330
RATIO	HOR. 1:500 VER. 1:50	DRAWN BY CAD/J.P.	CHECKED BY
DATE	JAN. 1996	SHEET 2 OF 2	PLAN NO. 22260-D



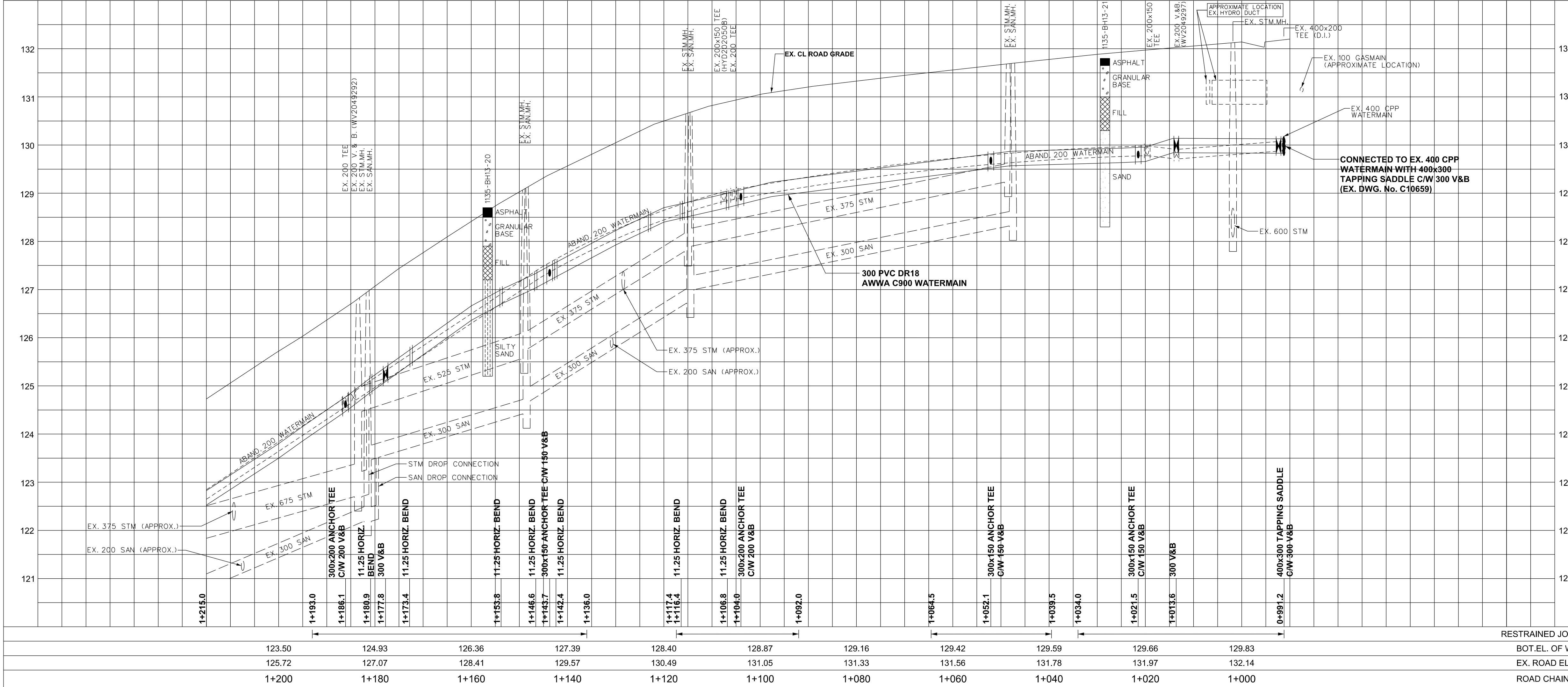
SERVICE DATA				
SERVICE	DATE	INIT.	SERVICE	DATE
SAN SEWERS	JAN. 18.13	M.R.T.	GAS MAINS	JAN. 18.13
STORM SEWERS	JAN. 18.13	M.R.T.	BELL U/G CABLE	JAN. 24.13
WATERMAINS	JAN. 18.13	M.R.T.	HYDRO U/G CABLE	JAN. 22.13
TRANSIT	N/A		HYDRO ONE	JAN. 10.13
PARKS & REC.	N/A		CTV	JAN. 22.13
ONT. CLEAN WATER	JAN. 29.13	A.L.	COMMUNIC. CABLES	MAR. 21.13

REVISIONS		
DATE	DETAILS	INIT.
JUNE 20, 2013	ISSUED FOR P.U.C.C.	N.M.S.
JAN. 15, 2013	ISSUED FOR TENDER	D.B.E.
FEB. 13, 2014	ISSUED FOR CONSTRUCTION	D.B.E.
JULY 10, 2015	REVISED AS RECORD DRAWING	D.B.E.

NOTE:
1. FOR GENERAL NOTES, DETAILS AND LEGEND SEE DWG. 50242-D

RECORD DRAWINGS.
NOTICE TO USERS
Information contained on this drawing may have changed since the completion of construction. Further, this drawing may contain information provided by others. No warranty is provided as to the accuracy and/or completeness of the information contained on these drawings. The recipient assumes all risks and liabilities associated with the use of the drawings. As such, Ainley & Associates Limited shall not be responsible for any errors or omissions which may result from incorporation of the information herein.

THIS DRAWING TO BE USED FOR WATERMAIN CONSTRUCTION ONLY



General Notes

All Driveways Are ASPHALT Unless Otherwise Noted
All Water and Sanitary Service Locations Are Approximate
And Must Be Located Accurately In The Field
All Horizontal And Vertical Bends Are In Degrees
All Pipes Size In mm
20C Existing Water Service, Size In mm
WS20 Proposed Water Service, Size In mm
B.M. No. 707 Elev. 125.326 (Geodetic)
Description: On the N. face at the E. corner of Silvercreek Public School
Location: On the W. side of Silver Creek Blvd., 300' S. of Mississauga Valley Blvd.
The Contractor Is Responsible For Locating And Protecting All Existing Utilities Prior To And During Construction. Location Of Existing Utilities Approximate Only. To Be Verified In Field By Contractor.

Approved by _____

NOTICE TO CONTRACTOR
48 HOURS PRIOR TO COMMENCING WORK NOTIFY THE FOLLOWING

THE REGIONAL MUNICIPALITY OF PEEL CITY OF MISSISSAUGA WORKS DEPT. CITY OF BRAMPTON WORKS DEPT. TOWN OF CALEDON WORKS DEPT. BELL CANADA ENBRIDGE INCORPORATED-GAS DISTRIBUTION ONTARIO MINISTRY OF TRANSPORTATION ONTARIO CLEAN WATER AGENCY HYDRO ONE NETWORKS ENERSOURCE, HYDRO MISSISSAUGA HYDRO ONE BRAMPTON	CABLE TELEVISION/FIBROPTIC PROVIDERS: BELL CANADA ENERSOURCE TELECOM HYDRO ONE TELECOM ROGERS CABLE ALLSTREAM PSN (PUBLIC SECTOR NETWORK) FUTUREWAY (FCI BROADBAND)
---	--

HORIZONTAL SCALE: 1m, 0, 10, 20, 30m
VERTICAL SCALE: 1m, 0, 1, 2, 3m

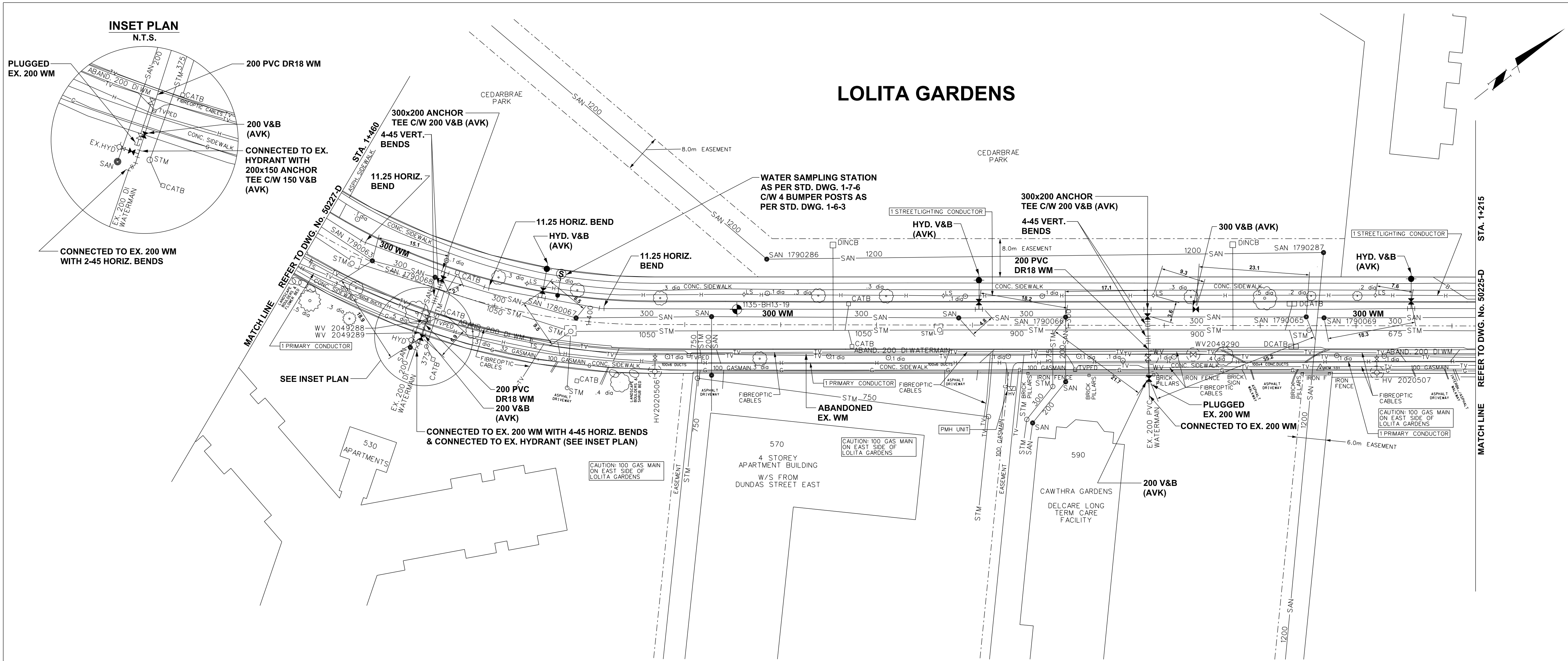
Region of Peel
Working for you

LOLITA GARDENS
(FROM SILVER CREEK BLVD. TO GINGER DOWNS)
300mm WATERMAIN

STA. 0+991.2 TO STA. 1+215.0

123.50	124.93	126.36	127.39	128.40	128.87	129.16	129.42	129.59	129.66	129.83
125.72	127.07	128.41	129.57	130.49	131.05	131.33	131.56	131.78	131.97	132.14
1+200	1+180	1+160	1+140	1+120	1+100	1+080	1+060	1+040	1+020	1+000

CAD Area	Z-21	Area	Z-21	Project No.	13-1345
Checked by	W.L.S.	Drawn by	D.E.	Plan No.	50225-D
Date	JANUARY 2013	Sheet	5 of 22		



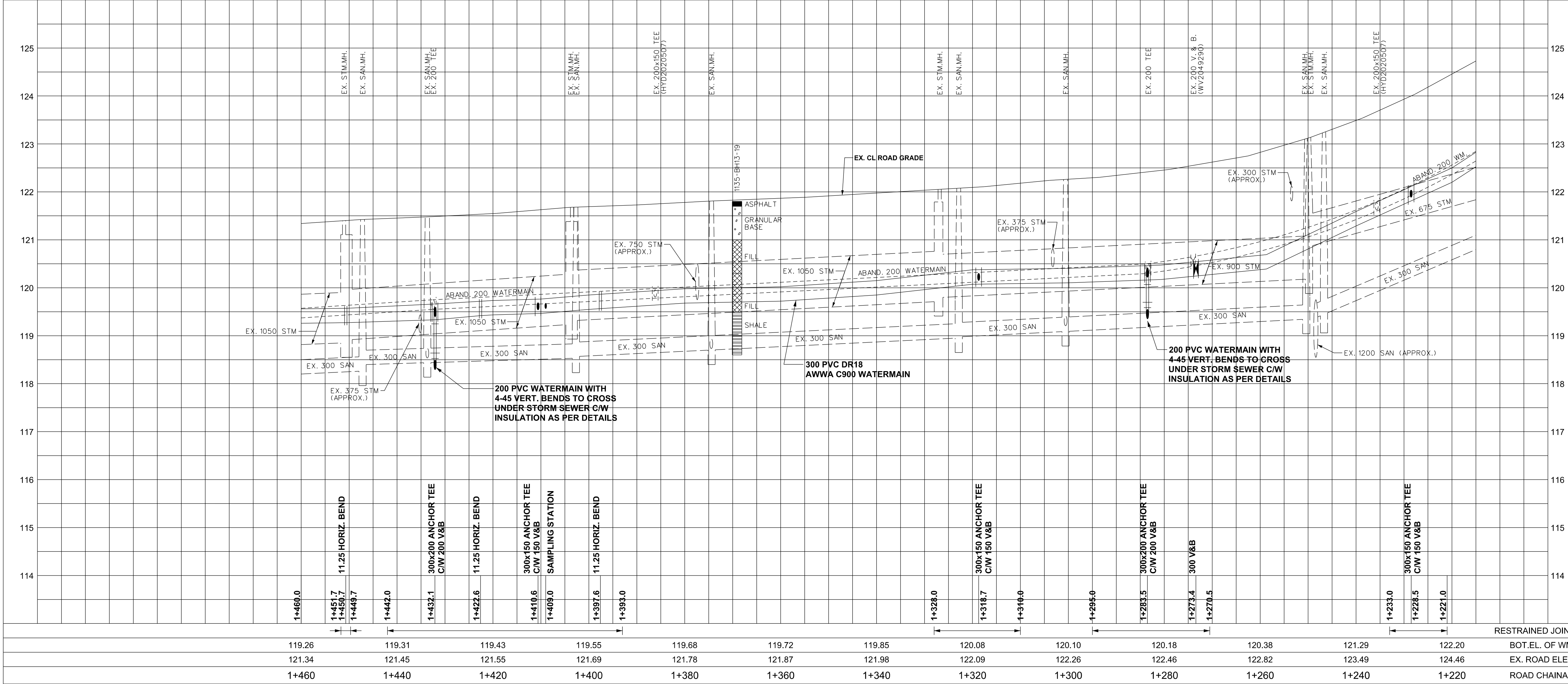
SERVICE DATA				
SERVICE	DATE	INIT.	SERVICE	DATE
SAN SEWERS	JAN. 18.13	M.R.T.	GAS MAINS	JAN. 18.13
STORM SEWERS	JAN. 18.13	M.R.T.	BELL U/G CABLE	JAN. 24.13
WATERMAINS	JAN. 18.13	M.R.T.	HYDRO U/G CABLE	JAN. 22.13
TRANSIT	N/A		HYDRO ONE	JAN. 10.13
PARKS & REC.	N/A		CTV	JAN. 22.13
ONT. CLEAN WATER	JAN. 29.13	A.L.	COMMUNIC. CABLES	MAR. 21.13

REVISIONS		
DATE	DETAILS	INIT.
JUNE 20, 2013	ISSUED FOR PUCC	N.M.S.
JAN. 15, 2014	ISSUED FOR TENDER	D.B.E.
FEB. 13, 2014	ISSUED FOR CONSTRUCTION	D.B.E.
JULY 10, 2015	REVISED AS RECORD DRAWING	D.B.E.

NOTE:
1. FOR GENERAL NOTES, DETAILS AND LEGEND SEE DWG. 50242-D

RECORD DRAWINGS
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THIS DRAWING TO BE USED FOR
WATERMAIN CONSTRUCTION ONLY



General Notes

All Driveways Are ASPHALT Unless Otherwise Noted
All Water And Sanitary Service Locations Are Approximate And Must Be Located Accurately In The Field
All Horizontal And Vertical Bends Are In Degress
All Pipes Size In mm
20C Existing Water Service, Size In mm
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B.M. No. 707 Elev. 125.326 (Geodetic)
Description: On the N. face at the E. corner of Silvercreek Public School
Location: On the W. side of Silver Creek Blvd., 300' S. of Mississauga Valley Blvd.
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Approved by _____

NOTICE TO CONTRACTOR
48 HOURS PRIOR TO COMMENCING WORK NOTIFY THE FOLLOWING

THE REGIONAL MUNICIPALITY OF PEE CITY OF MISSISSAUGA WORKS DEPT. CITY OF BRAMPTON WORKS DEPT. TOWN OF CALEDON WORKS DEPT. BELL CANADA ENBRIDGE INCORPORATED-GAS DISTRIBUTION ONTARIO MINISTRY OF TRANSPORTATION ONTARIO CLEAN WATER AGENCY HYDRO ONE NETWORKS ENERSOURCE, HYDRO MISSISSAUGA HYDRO ONE BRAMPTON	CABLE TELEVISION/FIBEROPTIC PROVIDERS: BELL CANADA ENERSOURCE TELECOM HYDRO ONE TELECOM ROGERS CABLE ALISTREAM PSN (PUBLIC SECTOR NETWORK) FUTUREWAY (FCI BROADBAND)
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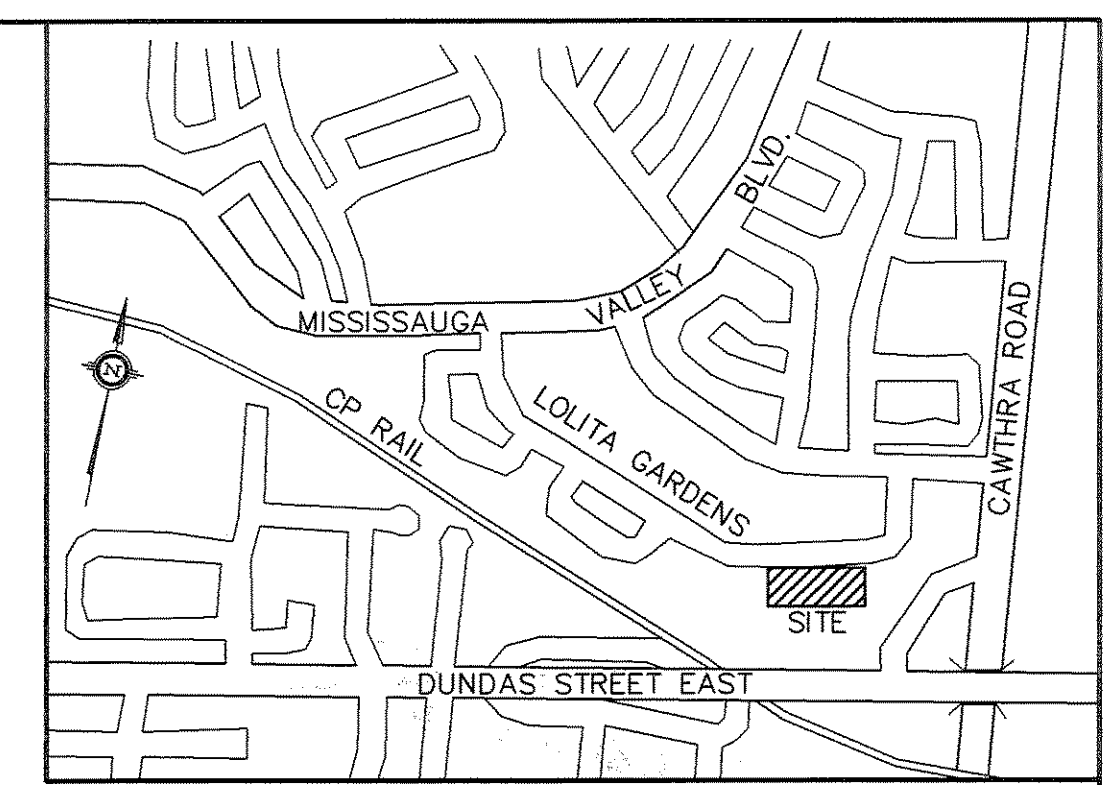
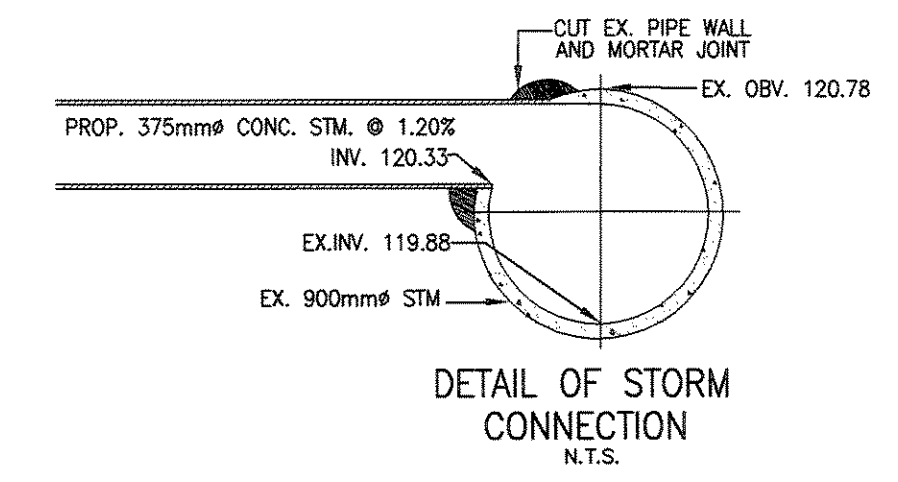
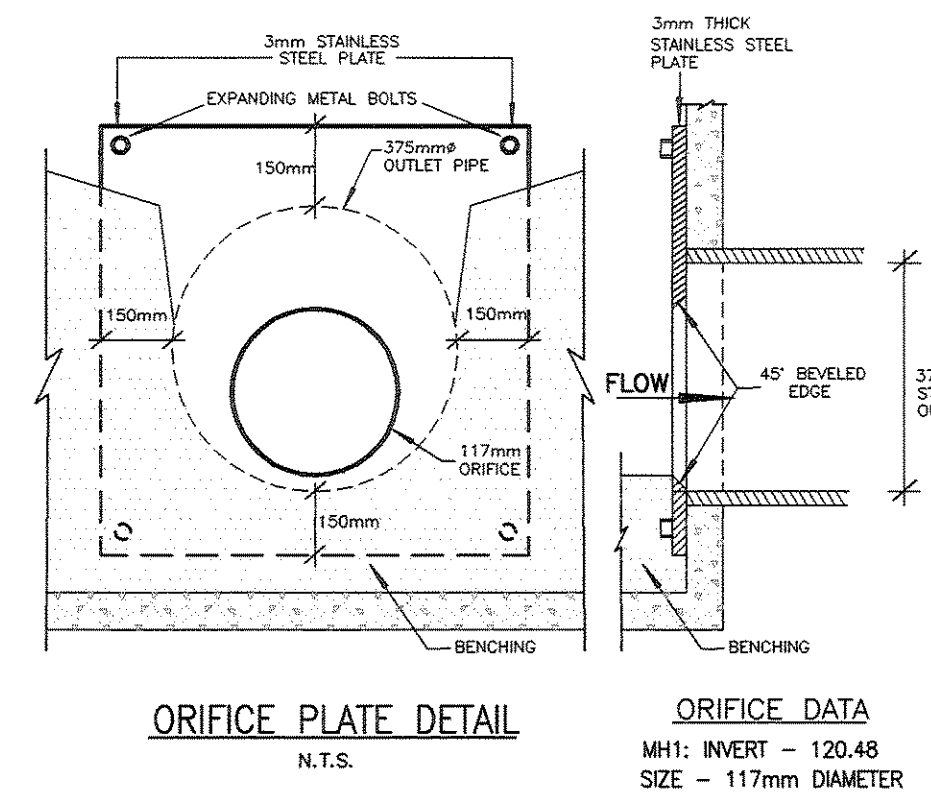
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VERTICAL SCALE: 1m, 0, 1, 2, 3m

Region of Peel
Working for you

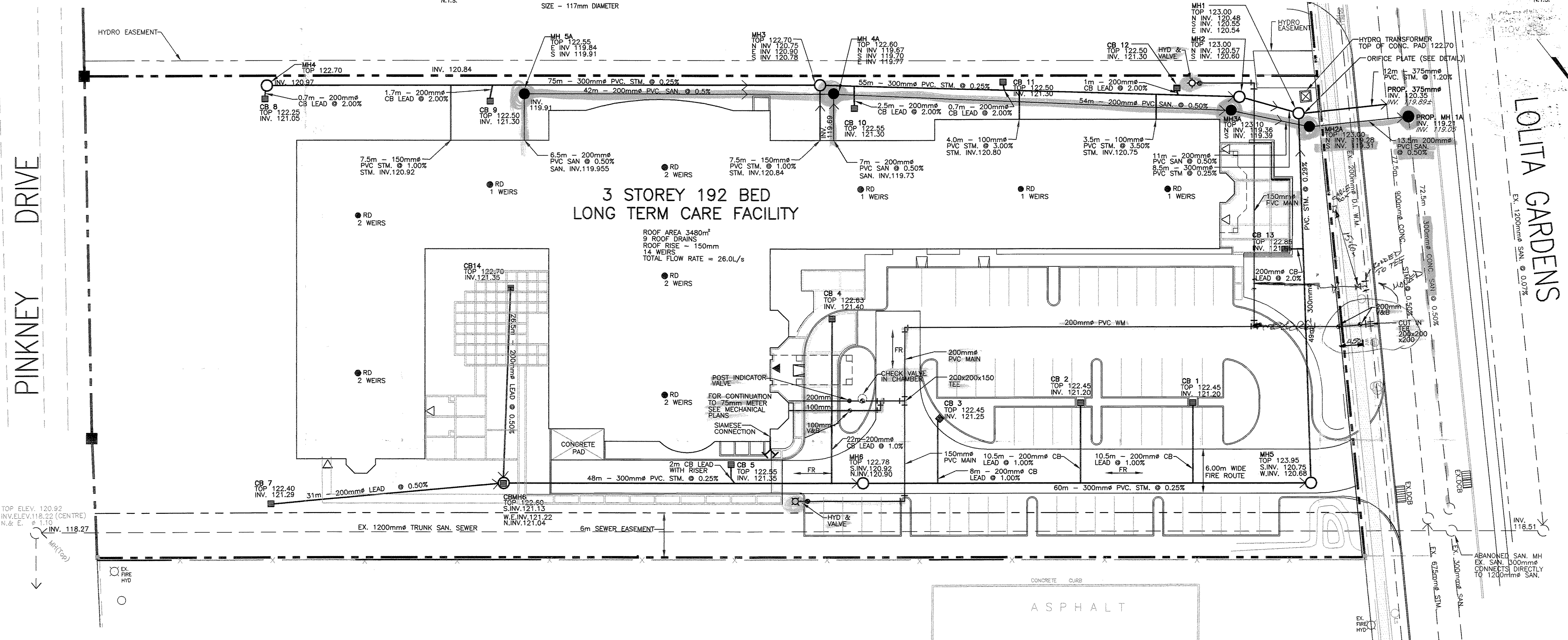
LOLITA GARDENS
(FROM SILVER CREEK BLVD. TO GINGER DOWNS)
300mm WATERMAIN

STA. 1+215.0 TO STA. 1+460.0

CAD Area	Z-21	Area	Z-21	Project No.	13-1345
Checked by	W.L.S.	Drawn by	D.E.	Plan No.	50226-D
Date	JANUARY 2013	Sheet	6 of 22		



as Constructed By
Faga Group
Sept. 10/02
SD



GENERAL NOTES

1. VERIFY ALL DIMENSIONS AND DO NOT SCALE DRAWINGS.
2. ALL MATERIALS AND CONSTRUCTION METHODS TO BE IN ACCORDANCE WITH THE LATEST CITY AND REGION STANDARDS AND SPECIFICATIONS.
3. PRIOR TO ANY CONSTRUCTION THE CONTRACTOR SHALL CHECK AND VERIFY ALL EXISTING AND PROPOSED SERVICES AND UTILITIES FOR THEIR LOCATION AND ELEVATION, REPORTING ANY DISCREPANCIES TO THE ENGINEER.
4. CONTRACTOR TO PROTECT ALL EXISTING UTILITIES FROM DAMAGE DURING CONSTRUCTION. CONTRACTOR IS TO NOTIFY AND OBTAIN STAKE OUTS OF ALL UTILITIES PRIOR TO START OF CONSTRUCTION.
5. ALL FILL WITHIN ROAD ALLOWANCE AND EASEMENTS TO BE COMPACTED TO MINIMUM 95% STD. PROCTOR DENSITY, AND FILL MATERIAL ARE TO BE CONFIRMED BY A SOIL.
6. ALL UNDERGROUND SERVICE CONNECTIONS WITHIN EXISTING ROAD TO BE BACKFILLED WITH UNSHRINKABLE FILL.
7. ALL DIMENSIONS TO BE CHECKED AND VERIFIED ON SITE PRIOR TO ANY CONSTRUCTION AND ANY DISCREPANCIES REPORTED TO THE ENGINEER.
8. THE TOPS OF ANY CURBS BORDERING DRIVEWAYS WITHIN THE MUNICIPAL BLVD. WILL BE FLUSH WITH THE MUNICIPAL SIDEWALK AND ROAD CURB.
9. THE TOPS OF MANHOLES AND CATCHBASIN TO BE ADJUSTED TO BASE ASPHALT GRADE.
10. ALL SURFACE DRAINAGE WILL BE SELF CONTAINED, COLLECTED AND DISCHARGED AT A LOCATION TO BE APPROVED PRIOR TO THE ISSUANCE OF A BUILDING PERMIT.
11. THE PORTIONS OF THE DRIVEWAY WITHIN THE MUNICIPAL BOULEVARD WILL BE PAVED BY THE APPLICANT.
12. AT THE ENTRANCES TO THE SITE, THE MUNICIPAL CURB AND SIDEWALK WILL BE CONTINUOUS THROUGH THE DRIVEWAY AND A CURB DEPRESSION WILL BE PROVIDED FOR EACH ENTRANCE.
13. THE TOPS OF ANY CURBS BORDERING THE DRIVEWAYS WITHIN THE MUNICIPAL BOULEVARD WILL BE FLUSH WITH THE MUNICIPAL ROAD CURB AND SIDEWALK.
14. SATISFACTORY ARRANGEMENTS ARE TO BE MADE WITH THE TRANSPORTATION AND WORKS DEPARTMENT FOR THE ERECTION OF HOARDING ADJACENT TO ALL EXISTING RESIDENTIAL PROPERTIES THROUGHOUT ALL PHASES OF CONSTRUCTION.
15. THE APPLICANT IS REQUIRED TO GRADE, TOPSOIL AND SOD THE BOULEVARD ON LOLITA GARDENS ACROSS THE FRONTAGE OF THE SITE.

WATERMAINS

1. ALL MATERIALS AND CONSTRUCTION METHODS MUST CORRESPOND TO CURRENT PEEL PUBLIC WORKS STANDARD AND SPECIFICATIONS.
2. WATER MAIN AND/OR WATER SERVICE MATERIALS TO BE P.V.C CLASS 150 IN SIZES 100mm UP TO AN INCLUDING 300mm MANUFACTURED TO AWWA SEC. C-900-89 COMPLETE WITH 14 GAUGE TRACER WIRE SIZES 50mm AND SMALLER ARE TO BE COPPER TYPE "K". WATERMAIN IS TO BE TESTED AT 200 PSI.
3. SURROUND ALL VALVE CHAMBERS WITH A MINIMUM OF 1.0m COMPACTED GRANULAR BACKFILL.
4. WATERMAIN AND/OR WATER SERVICE TO HAVE MINIMUM 1.7m COVER WITH A MINIMUM HORIZONTAL SPACING OF 1.2m FROM THEMSELVES AND ALL OTHER UTILITIES.
5. AT CROSSINGS WATERMAINS MUST HAVE A MINIMUM VERTICAL CLEARANCE OF 0.15m OVER / 0.30m UNDER SEWERS AND ALL OTHER UTILITIES.
6. ALL BENDS AND TEES TO BE AS PER REGION OF PEEL STD. DWGS. R.1-5-4, R.1-5-5, R.1-5-6 AND R.1-5-7.
7. WATERMAIN BEDDING AND TRENCH WIDTH TO BE PER REGION OF PEEL STD. DWG. R.1-5-1.
8. ALL HYDRANTS AND VALVES TO BE PER REGION OF PEEL STD. DWG'S R.1-6-1 DIMENSION A AND B AND TO HAVE PUMPER NOZZLE.
9. VALVE AND BOXES TO BE AS PER REGION OF PEEL STD. DWG. R.1-3-8.
10. PROVISIONS FOR FLUSHING WATER LINES PRIOR TO TESTING MUST BE PROVIDED WITH AT LEAST A 50mm OUTLET ON 100mm AND LARGER LINES. COPPER LINES ARE TO HAVE FLUSHING POINTS AT THE END THE SAME SIZE AS THE PIPE. THEY MUST ALSO BE PIPED TO ALLOW WATER TO DRAIN ONTO A PARKING LOT OR DOWN A DRAIN. ON FIRE LINES FLUSHING OUTLET TO BE 100mm DIAMETER MINIMUM ON HYDRANTS.
11. ALL CURBS STOPS ON WATER LINES TO BE 3.0m OFF THE FACE OF THE BUILDING UNLESS OTHERWISE NOTED.
12. ALL PROPOSED WATER PIPING MUST BE ISOLATED FROM EXISTING LINES IN ORDER TO ALLOW INDEPENDENT PRESSURE TESTING AND CHLORINATING FROM EXISTING SYSTEMS.
13. WATERMAINS TO BE INSTALLED TO GRADES AS SHOWN ON APPROVED SITE PLAN. COPY OF GRADE SHEET MUST BE SUPPLIED TO INSPECTOR PRIOR TO COMMENCEMENT OF WORK, WHERE REQUIRED BY INSPECTOR.

STORM SEWERS

1. SEWERS TO BE P.V.C.
2. SEWERS TO HAVE CLASS B BEDDING TO OPSD STANDARD 802.03.
3. SURROUND ALL MANHOLES AND CATCHBASINS WITH A MINIMUM OF 1.0m COMPACTED GRANULAR BACKFILL.
4. MANHOLE FRAME AND COVER SHALL BE OPSD STD 401.01.
5. STORM MANHOLE SHALL BE OPSD STANDARD 701.010.

CATCHBASINS

1. ALL CATCHBASINS LEADS TO BE 200mm P.V.C.
2. ALL CATCHBASINS IN GRASSED AREAS TO HAVE A CATCHBASIN FRAME AND GRATE AS PER OPSD 400.030. AND TO HAVE SEDIMENT BARRIER AS PER CITY STD. 2930.03.
3. CONNECTIONS MADE TO MAIN SEWER ON SITE TO BE AS PER OPSD STD 708.01.

SANITARY SEWERS

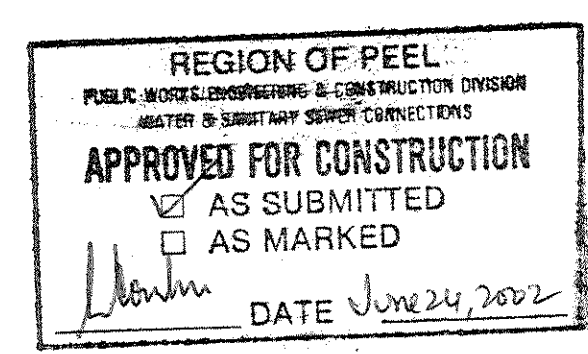
1. SEWERS TO HAVE CLASS "B" BEDDING TO REGION OF PEEL STANDARD R.2-3-1 (EXCEPT AS NOTED).
2. 250mm SANITARY PIPES TO BE P.V.C. DR 35, 200mm OR SMALLER SANITARY SEWER PIPES TO BE P.V.C. DR 28.
3. ALL SANITARY SEWER MANHOLES ARE TO BE REGION OF PEEL STANDARD R.2-1-1 WITH STANDARD R.2-1-4 BENCHING, STANDARD R.2-2-2 FRAME AND GRATE, STANDARD R.2-2-4 STEPS.
4. SURROUND ALL MANHOLES WITH A MINIMUM OF 1.0m COMPACTED GRANULAR BACKFILL.
5. SERVICE CONNECTIONS AS PER PEEL STANDARD 2.4.2

INSPECTORS COPY

RECEIVED

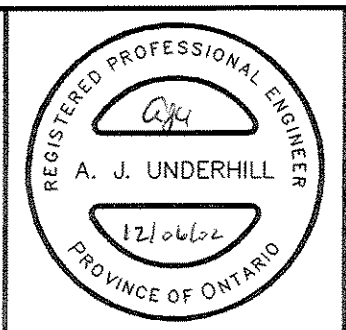
JUN 19 2001

PUBLIC WORKS
REGION OF PEEL



C-419980

SP01/341



58 Major Mackenzie Dr. East
Richmond Hill, Ontario
L4C 1G8
Phone: (905) 884-6748
Fax: (905) 884-7681

SITE SERVICING

NO.	REVISIONS	DATE	BY	SCALE
7.	REVISE AS PER SITE PLAN COMMENTS	05/15/02	AF	DESIGN J.L.W.
6.	AS PER CITY COMMENTS	05/02/02	AF	DRAWN AF
5.	ISSUED FOR TENDER	04/26/02	AF	CHECKED
4.	AS PER REVIEW OF REGION OF PEEL	03/11/02	AF	APPROVED
3.	ADDITION OF PATIOS AND REVERSED DRAINAGE	01/10/02	TKD	DATE JULY 11, 2001
2.	AS PER SITE PLAN COMMENTS	10/30/01	TKD	SCALE 1 : 300
1.	FOR SITE PLAN SUBMISSION	09/09/01	AF	

DEL CARE L.T.C. INC.

PROPOSED LONG TERM CARE FACILITY
590 LOLITA GARDENS - MISSISSAUGA

PROJECT NO.
01-233

DWG. NO.
SP1

SHEET
1

Box 02



Appendix B

Water Demand Calculations

Counterpoint Engineering Inc.

RESIDENTIAL WATER DEMAND CALCULATIONS

Project: 600-620 Lolita Gardens
Project No: 18080
Client: Park Properties
Location: Mississauga, Ontario

Prepared by: JL
Checked by:
Date: 21-Mar-19

Site Area: 2.62 ha
Average Daily Demand: 280 L/(cap*d)
Maximum Day Peaking Factor: 2.0
Peak Hour Peaking Factor: 3.0

Population Density by Landuse (as per Region of Peel standards)

Population Density (Singles) 50 p/ha
Population Density (Towns) 175 p/ha
Apartments: 475 p/ha

*The total population equivalent is greater than 475 p/ha under proposed conditions, so the following formula will be used to calculate population density (as per Region of Peel standards):

Apartments (> 475 p/ha):

Proposed Conditions:
$$\frac{2.7 \text{ ppu} \times (\# \text{ units})}{\text{area}} = \text{Population/ha}$$
$$= \frac{2.7 \text{ ppu} \times (679 \text{ units})}{2.62} = 700 \text{ persons/ha}$$

	Number of Units	Population Density (p/ha)	Population	Average Day Demand (L/min)	Maximum Day Demand (L/min)	Maximum Hour Demand (L/min)
<u>Existing Conditions</u>						
Total Existing:	408	475	1245	242	484	726
<u>Proposed Conditions</u>						
Total Proposed:	679	700	1833	356	713	1069
Total (L/min)	679	700	1833	356	713	1069
Total (L/day)	679	700	1833	513,324	1,026,648	1,539,972
Total (gpm)	679	700	1833	94	188	283

Counterpoint Engineering Inc.

Fire Underwriters Survey - Required Fire Flow - Proposed Building

Project: 600-620 Lolita Gardens
 Project No: 18080
 Location: Mississauga, Ontario

Guide for Determination of Required Flow Copyright I.S.O

where

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

F = the required fire flow in litres per minute.
 C = coefficient related to the type of construction.
 = 1.5 for wood frame construction (structure essentially all combustible).
 = 1.0 for ordinary construction (brick or other masonry walls, combustible floor and interior).
 = 0.8 for non-combustible construction (unprotected metal structural components, masonry or metal walls).
 = 0.6 for fire-resistive construction (fully protected frame, floors, roof).
 A = The total floor area in square metres (including all storeys, but excluding basements at least 50 percent below grade) in the building being considered.

Type of Construction	Class Factor
WF Wood Frame	1.5
OC Ordinary Construction	1.0
NC Non-Combustible	0.8
FC Fire-Resistive	0.6

Area Notes for Fire Resistive Buildings (from FUS manual, 1999):

If Vertical Openings are inadequately protected (less than 1-hour fire rating): Area is the total of the two largest adjoining floors (above ground level) plus 50% of the area of each of the next 8 adjoining floors above that.

Contents	% Reduction
NC Non-Combustible	25
LC Limited Combustible	15
C Combustible	0
FB Free Burning	15
RB Rapid Burning	25

If Vertical Openings are adequately protected (at least 1-hour fire rating): Area is the total of the largest floor (above ground level) plus 25% of the area of each of the next 2 immediately adjoining floors above that.

- 1) **Fire Flow**
 Type of Construction:

NC
0.8

 C =

0.8

 A =

1661

 m²
 F =

7,000

 L/min
 *Note: Assuming Vertical Openings are adequately protected.
 Area is the total of the largest floor (Ground) plus 25% of the next 2 adjoining floors above.

- 2) **Occupancy Reduction**
 Contents Factor:

LC
-15%

 Reduction of

-15%

 =

-1,050

 L/min
 F = 7000L/min +

-1050

 L/min =

5,950

 L/min

- 3) **System Type Reduction**
 NFPA 13 Sprinkler:

YES	30%
-----	-----

 Standard Water Supply:

YES	10%
-----	-----

 Fully Supervised:

YES	10%
-----	-----

 Total

50%

 Reduction of

50%

 L/min =

2,975

 L/min
 F = 5950L/min -

2,975

 L/min =

2,975

 L/min

- 4) **Separation Charge**
 Building Face
- | Dist(m) | Charge |
|------------|--------|
| North 55.2 | 0% |
| East 38.6 | 5% |
| South 28.8 | 10% |
| West 27.6 | 10% |
| Total | 25% |
- 25% of 5950 L/min =

1,488

 L/min
 (max exposure charge can be 75%)

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

F = 2975L/min + 1488L/min =

4,463

 L/min (2,000L/min < F < 45,000L/min)
 F =

4,000

 L/min (round to the nearest 1,000L/min)
 F =

67

 L/s
 F =

1,057

 gpm



Appendix C

Sanitary Design Flow Calculations

Counterpoint Engineering Inc.

SANITARY SEWER DESIGN SHEET

Project:600-620 Lolita Gardens

Client:Park Properties

Job No.:18080

Prepared by:PW

Checked by:

Date:20-Mar-19

File No.

Minimum Dia. =150 mm

Mannings "n"=0.013

Minimum Velocity =0.6 m/s

Minimum Grade =0.5 %

Avg. Domestic Flow⁽¹⁾ =302.8 Lcpd

Avg. Commercial Flow =Lcpd

Infiltration⁽²⁾ =0.2 l/s/ha

Residential Population⁽³⁾pple

Max. Peaking Factor=4.0

Min. Peaking Factor=2.0

Maximum Velocity =3 m/s

Peaking Factor M = 1 +14/(4 + p^{1/2})

p = populations (in thousands)

1	2	3	4	5	6	7	8	9	10	14	15	16	17	20	21	22	23	24	25	26	27	28	
STREET	MANHOLE		TRIBUTARY AREAS (ha)				Proposed Residential 302.8Lpcd			Residential	Average Res. Flow	Residential	MAX. RES.	Infiltration	DESIGN PEAK FLOW	SEWER							
			INCREMENT			TOTAL (CUM)	POP. DENSITY	POP. EQUIV.	TOTAL	TOTAL POP.	(L/s)	PEAK	SAN. Flow		EXPECT.	SIZE	SLOPE	Capacity	V(m/s)		Flow depth	Qa/Qf	
	FROM	TO	RES	COM	IND/INST		Per./Ha	Persons	Persons		Total	FACTOR	(L/s)	(L/s)	(L/s)	(mm)	(%)	(L/s)	FULL	ACTUAL	%	%	
<u>Existing Conditions</u>																							
To Lolita Gardens	MH	PIPE	2.62			2.62	475	1245	1245	1245	4.36	3.74	16.30	0.52	16.82	200	1.00	32.8	1.04	1.05	50.5%	51.3%	
<u>Proposed Conditions</u>																							
To Lolita Gardens	MH	PIPE	2.62			2.62	700	1833	1833	1833	6.43	3.61	23.23	0.52	23.75	200	1.00	32.8	1.04	1.14	63.0%	72.4%	

Note:

Infiltration Flow is the total of infiltration per area (0.2 L/s/ha.)

Under proposed conditions, the population density is greater than 475 persons/ha. Therefore, the following formula shall be used to calculate population density (as per Region of Peel standards):

$$\frac{2.7\text{ ppu} \times (\# \text{ units})}{\text{area}} = \text{Population/ha}$$

—————>

$$\frac{2.7\text{ ppu} \times (679 \text{ units})}{2.62} = \mathbf{700} \text{ persons/ha}$$

PAGE 1 OF 1



Appendix D

Stormwater Management Calculations

SWM DESIGN CALCULATIONS

Drainage Areas and Runoff Coefficient Calculations for 2 to 100-year Storms

Project Name: 600 Lolita Gardens

Municipality: Mississauga, ON

Project No.: 18080

Date: 30-Apr-19

Prepared by: J.L.

Checked by: R.K

Last Revised: 30-Apr-19

Adjustment Ratio:	1	1.1	1.2	1.25
Runoff Coefficients:	2 to 10-year	25-year	50-year	100-year
Landscaped/Grass:	0.25	0.28	0.30	0.31
Gravel:	0.50	0.55	0.60	0.63
Pavement:	0.90	0.99	1.00	1.00
Roof:	0.90	0.99	1.00	1.00

Runoff Coefficients based on City of Mississauga Standards

2 to 10-year Storm Properties

Pre-Development (within development limits):

Pervious		Impervious		Runoff Coefficient	Total Area (m ²)	Total Area (ha)
Landscaped (m ²)	Gravel (m ²)	Paved (m ²)	Roof (m ²)			
2802	401	1750	22	0.50	4975	0.50

Post-Development (within development limits):

Pervious		Impervious		Runoff Coefficient	Total Area (m ²)	Total Area (ha)
Landscaped (m ²)	Gravel (m ²)	Paved (m ²)	Roof (m ²)			
1917	320	1523	1214	0.62	4975	0.50

25-year Storm Properties

Pre-Development (within development limits):

Pervious		Impervious		Runoff Coefficient	Total Area (m ²)	Total Area (ha)
Landscaped (m ²)	Gravel (m ²)	Paved (m ²)	Roof (m ²)			
2802	401	1750	22	0.55	4975	0.50

Post-Development (within development limits):

Pervious		Impervious		Runoff Coefficient	Total Area (m ²)	Total Area (ha)
Landscaped (m ²)	Gravel (m ²)	Paved (m ²)	Roof (m ²)			
1917	320	1523	1214	0.69	4975	0.50

50-year Storm Properties

Pre-Development (within development limits):

Pervious		Impervious		Runoff Coefficient	Total Area (m ²)	Total Area (ha)
Landscaped (m ²)	Gravel (m ²)	Paved (m ²)	Roof (m ²)			
2802	401	1750	22	0.57	4975	0.50

Post-Development (within development limits):

Pervious		Impervious		Runoff Coefficient	Total Area (m ²)	Total Area (ha)
Landscaped (m ²)	Gravel (m ²)	Paved (m ²)	Roof (m ²)			
1917	320	1523	1214	0.70	4975	0.50

Counterpoint Engineering Inc.

8395 Jane Street, Suite 100 Vaughan, Ontario L4K 5Y2

TEL: (905) 326-1404 FAX: (905) 326-1405

www.counterpointeng.com

SWM DESIGN CALCULATIONS

Drainage Areas and Runoff Coefficient Calculations for 2 to 100-year Storms

Project Name: 600 Lolita Gardens

Prepared by: J.L.

Municipality: Mississauga, ON

Checked by: R.K

Project No.: 18080

Last Revised: 30-Apr-19

Date: 30-Apr-19

Adjustment Ratio:	1	1.1	1.2	1.25
Runoff Coefficients:	2 to 10-year	25-year	50-year	100-year
<i>Landscaped/Grass:</i>	0.25	0.28	0.30	0.31
<i>Gravel:</i>	0.50	0.55	0.60	0.63
<i>Pavement:</i>	0.90	0.99	1.00	1.00
<i>Roof:</i>	0.90	0.99	1.00	1.00

Runoff Coefficients based on City of Mississauga Standards

100-year Storm Properties

Pre-Development (within development limits):

Pervious		Impervious		Runoff Coefficient	Total Area (m ²)	Total Area (ha)
Landscaped (m ²)	Gravel (m ²)	Paved (m ²)	Roof (m ²)			
2802	401	1750	22	0.58	4975	0.50

Post-Development (within development limits):

Pervious		Impervious		Runoff Coefficient	Total Area (m ²)	Total Area (ha)
Landscaped (m ²)	Gravel (m ²)	Paved (m ²)	Roof (m ²)			
1917	320	1523	1214	0.71	4975	0.50

Area Imperviousness

Landscaped (m ²)	Gravel (m ²)	Paved (m ²)	Roof (m ²)	Imperviousness	Total Area (m ²)
0.00	0.00	1.00	1.00		
1917	320	1523	1214	0.55	4975

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TEL: (905) 326-1404 FAX: (905) 326-1405

www.counterpointeng.com



SWM DESIGN CALCULATIONS

2-Year Pre-Development Flow Rate Calculations

Project Name: 600 Lolita Gardens

Municipality: Mississauga, ON

Project No.: 18080

Date: 30-Apr-19

Prepared by: J.L.

Checked by: R.K

Last Revised: 30-Apr-19

Rainfall Data

Location:	Mississauga, ON	a	610
Event	2-year	b	4.6
		c	0.78

Site Data

Area (ha)	0.50
Runoff Coefficient	0.50
AC	0.25
Tc (min)	15
Rainfall Intensity (mm/hr)	60
Rational Flow Rate (l/s)	42

The Rational Equation:

$$Q = \frac{(C)(i)(A)}{360}$$

where,

- Q = the design flow (m³/s)
- C = the site specific runoff coefficient
- A = the drainage area (ha)
- i = rainfall intensity (mm/hr)



SWM DESIGN CALCULATIONS
Post-Development Required Storage Calculations for 100-year Storm

Project Name: 600 Lolita Gardens

Municipality: Mississauga, ON

Project No.: 18080

Date: 30-Apr-19

Prepared by: J.L.

Checked by: R.K

Last Revised: 30-Apr-19

Rainfall Data

Location:	Mississauga, ON	a	1450
Event	100-year	b	4.9
		c	0.78

Site Data

Area (ha)	0.50
Runoff Coefficient	0.71
AC	0.35
Tc (min)	15
Time Increment (min)	5
Release Rate (l/s)	42
Storage Required (m ³)	89

With 1.25 Adj. Ratio

The Rational Equation:

$$Q = \frac{(C)(i)(A)}{360}$$

where,

Q = the design flow (m³/s)
C = the site specific runoff coefficient
A = the drainage area (ha)
i = rainfall intensity (mm/hr)

Time	Rainfall Intensity	Storm Runoff	Runoff Volume	Released Volume	Storage Volume
(min)	(mm/hr)	(m ³ /s)	(m ³)	(m ³)	(m ³)
15	141	0.14	124	37	87
20	118	0.12	139	50	89
25	102	0.10	151	62	89
30	91	0.09	161	75	86
35	82	0.08	169	87	82
40	75	0.07	176	100	76
45	69	0.07	182	112	70
50	64	0.06	188	125	63
55	60	0.06	193	137	56
60	56	0.06	198	150	48
65	53	0.05	202	162	40
70	50	0.05	207	175	32
75	48	0.05	210	187	23
80	45	0.04	214	199	15
85	43	0.04	218	212	6
90	42	0.04	221	224	0
95	40	0.04	224	237	0
100	38	0.04	227	249	0
105	37	0.04	230	262	0
110	36	0.04	233	274	0
115	35	0.03	235	287	0
120	34	0.03	238	299	0
125	33	0.03	240	312	0
130	32	0.03	242	324	0
135	31	0.03	245	337	0
140	30	0.03	247	349	0
145	29	0.03	249	362	0

Counterpoint Engineering

Water Balance

As per City of Mississauga Standards

600-620 Lolita Gardens

Initial Abstraction Asphalt/Roof, I	1 mm
Initial Abstraction Pervious and Gravel, P	5 mm
As per MOECC guidelines	

Type of Area (within development limits)	Area	Units	% Redevelopment Area
Impervious Asphalt/Paved Area/Roof	0.27	ha	55%
Pervious Grass/Landscaped/Gravel	0.22	ha	45%
Total Area (within development limits)	0.50	ha	

Initial Abstraction (credit)= 2.8 mm

Required Development Retention = (Excess Rainfall- Initial Abstraction) * (Total Development Area)

Required Development Retention = (5.0mm- 1.4mm) * (3.32ha)

Required Development Retention (debit)= 10.9 m³

Infiltration Gallery 11.0 m³



Appendix E

Correspondence with Town Staff

Jowell Liang

From: Ghazwan Yousif <Ghazwan.Yousif@mississauga.ca>
Sent: September 18, 2018 8:38 AM
To: Peter Warnica
Subject: RE: 600 Lolita Gardens - Mississauga

Good morning Peter,

This site within the Cooksville Creek watershed. It will be necessary to implement on-site stormwater management techniques into the design to limit the 100 year post development stormwater discharge to the two year pre-development levels. The first 5mm of runoff shall be retained on site. The storm sewer outlet for the subject site is the existing 675mm diameter storm sewer on Lolita Gardens.

Also, make sure to apply LID techniques.

Regards,
Ghazwan

From: Peter Warnica [mailto:pwarnica@counterpointeng.com]
Sent: Monday, September 17, 2018 10:34 AM
To: Ghazwan Yousif
Subject: 600 Lolita Gardens - Mississauga

Hi Ghazwan,

I hope all is well.

We have been retained to prepare a functional servicing report for a new development at 600 Lolita Gardens. Could you let me know what the SWM criteria is for this area and also if there are any issues with the storm system in the area.

Regards
Peter

Peter Warnica, C.E.T.
Counterpoint Engineering Inc.
8395 Jane Street, Suite 100
Vaughan, ON L4K 5Y2
Direct: 905 326-3097
Mobile: 416 460-4544
www.counterpointeng.com
pwarnica@counterpointeng.com

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