

**PROPOSED REDEVELOPMENT  
1755 & 1805 Pickering Parkway,  
City of Pickering, Ontario**

# **FUNCTIONAL SERVICING AND STORM WATER MANAGEMENT REPORT**

## **BLOCK 1 - PHASE 1**

Prepared For:

**Pickering Ridge Lands Inc.  
&  
Bayfield Realty Advisors**

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REVISED: October 2025

**\* Please refer to the Master Servicing Study prepared by Odan Detech Group dated October 2025 for details on the ultimate development.**

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# 1. INTRODUCTION

## Site Description

The subject development comprises Phase 1 of a multi phased development, phase 1 has an area of 0.936 ha with a proposed future Right of Way of 0.258 ha. and is bound by existing commercial lands to the north, Highway 401 to the south, existing commercial lands to the east and Brock Road to the west.

Please refer to the Master Servicing Study prepared by Odan Detech Group dated October 2025 for details on the ultimate build out future development Blocks 2 to 7 including future Right of Way allowance.

Currently, the site is developed with multi-tenant, “big box” and smaller commercial retail establishments with associated asphalt parking lots. The topography of the site is relatively flat sloping northeast. The subject site known as First Pickering Place (FPP) is currently designated as “Mixed Use Areas – Specialty Retailing Node” in the Pickering Official Plan; the lands with this designation are intended to have the widest variety of uses and highest levels of activities. An aerial view of the site can be found in Appendix A showing surrounding uses. Refer to Exhibit 1 below for the site location. Exhibit 2 shows the plan of the redeveloped site and location of phase 1 within the site.

## Background

This report will evaluate the serviceability of the proposed Phase 1 redevelopment with respect to sanitary, water, and storm servicing. This report will also evaluate the stormwater management (SWM) strategy to meet the SWM requirements set out by regulatory agencies.



Exhibit 1 Location of the project site

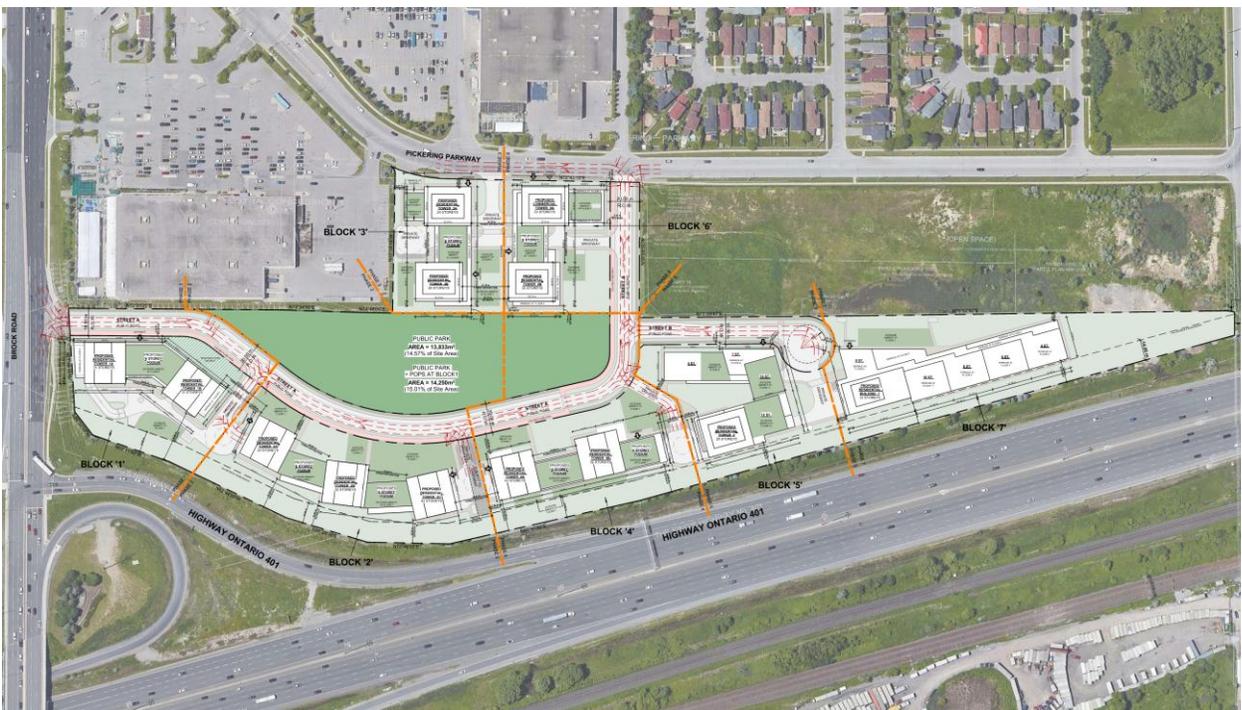


Exhibit 2 Full build out layout and location of Phase 1

## 2. SCOPE OF WORK

The Odan/Detech Group Inc. was retained by the owners, **Pickering Ridge Lands Inc. & Bayfield Realty Advisors** to propose a servicing scheme(s) for the Redevelopment of 1755 & 1805 Pickering Parkway (Pickering Design Centre). The scope of work related to this report involves Phase 1 Zoning and in brief involves the following:

- a) Gather information on the existing services for the Site and surrounding the Site.
- b) Work with or assemble a team of Consultants and Vendors to perform specialized tasks required for the global servicing assessment.
- c) Meetings/conversations with consulting team and landowners in order to coordinate developments.
- d) Produce Servicing Schemes that will allow for the development of the intensified site at full build out and focus on the development of Phase 1. The servicing analysis entails a review for sanitary wastewater, water distribution, storm water management and grading.

Currently, the proposed development area is divided into 7 blocks (Block '1' to Block '7'), of which Phase 1 corresponds to Block '1'. The proposed redevelopment in Phase 1 will consist of a mixed-use development with two towers of 31 storeys. The proposed building will have retail at grade, 678 apartment dwelling units, 4 level of underground parking and surface parking, and 1,365 m<sup>2</sup> of indoor amenity space required with 1,628 m<sup>2</sup> provided.

Refer to site plan prepared by Turner Fleischer Architects Inc. in Appendix A for additional information.

### 3. SANITARY SERVICING

#### Existing Sanitary Sewer Infrastructure

As constructed and design drawings obtained from the Region of Durham and the City of Pickering show that an existing 250 mm diameter sanitary sewer in Pickering Parkway are located as the main sanitary outlet of the subject site.

There are two existing sanitary sewer connections to the site, a 250mm sanitary outlet toward Pickering Parkway at the north of the site and a 150 mm sanitary outlet toward Notion Road at the east of the site.

Refer to Exhibit 3 for the location of the Site and the layout of the existing sanitary sewers in the area.

The majority of the sanitary flow from the existing commercial site is conveyed through an existing 250 mm diameter sanitary sewer west to east along Pickering Parkway. Then connected to a 250 mm diameter sanitary sewer at the intersection with Marshcourt Dr, which conveys the sanitary flow to the north. The 250 mm diameter sanitary sewer on Marshcourt Dr then increases to a 375 mm diameter sewer at the Region's easement and the sanitary sewer conveys the collected sanitary flow to a 375 mm diameter sanitary sewer on Notion Road. The 375 mm diameter sanitary sewer on Notion Road is connected to a 750 mm sanitary sewer on Orchard Road that conveys the collected flow to the east. The 750mm pipe is the outlet for the subject site. There is a site located to the south of the Region Easement located on the east side of Notion Road that is currently service via this existing sanitary sewer. The Site is service with a 300mm dia. Sanitary sewer south of the 375mm dia. Sanitary sewer on Notion Rd. and subsequently with a 200mm lateral.

The sanitary analysis will be conducted considering the flow from all sites that presently flow to Orchard Road and the future flow from the redevelopment of 1899 Brock Road and surrounding tributary areas which have been provided by the Region. Refer to Region sanitary maps and correspondence in Appendix B for additional information.

In completing the analysis, the following information will be used or relied upon:

- Drawings from City of Pickering.
- Drawings from The Regional Municipality of Durham.
- Sanitary system Maps from The Regional Municipality of Durham
- Design guidelines for sanitary sewers systems from The Regional Municipality of Durham
- Master Servicing & Stormwater Management Report -1899 Brock Road, SCHAEFFERS Consulting Engineers, May 2021
- Functional Servicing & Stormwater Management Report Residential Townhouse Development - 1856 Notion Road, GHD, Jan 2018

## **EXISTING SYSTEM REVIEW**

Based on findings in the MSS report by Odan Detech, the redeveloped site cannot be routed through the existing sewer system along Pickering Pkwy, Marshcourt Drive, easement between homes to Notion Road to Orchard Drive. Due to limitations of the existing sanitary sewer capacity, it would mean replacing a relatively deep sewer between two existing homes. The recommended and preferred routing would be along Pickering Pkwy to Notion Road to Orchard Drive.

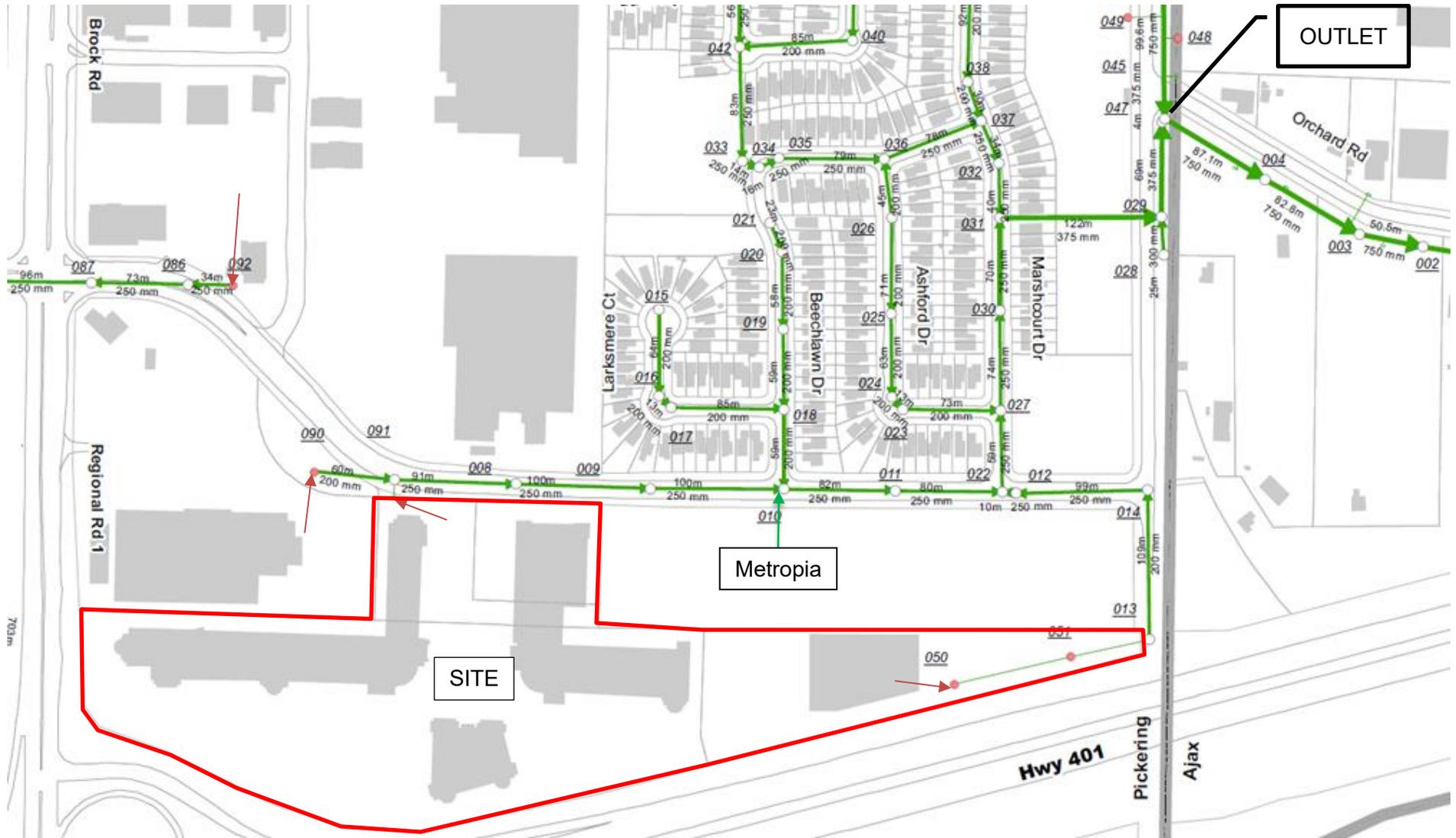


Exhibit 3 Durham Region layout of existing sanitary sewers

## REGION OF DURHAM PREFERRED SYSTEM

Discussion with the Region of Durham (Aaron Christie) regarding the redevelopment of the subject site and that of the proposed future development lands can be summed up as follows:

- 1) The Region solution for the intensification is to provide a sewage pump station (SP) on the south side of HWY 401. From this SP a large trunk sewer will be extended North under HWY 401 to Notion Road, then continue North on Notion Road. This pump station is outlined within the current Region's Capital Budget and 9-year forecast; however, this will be subject to further study as part of a Class Environmental Assessment. The applicant shall note that the timing for this future project cannot be determined at this time as indicated by the Region.
- 2) For the early Phases of this development, a new sanitary sewer is proposed along Pickering Parkway to Notion Road. This section of sewer will be sized for full build-out of Brock Precinct service area.
- 3) The applicant is proposing to construct a sanitary sewer along Notion Road to Orchard Road to utilise the remaining capacity in the Orchard Road Trunk Sanitary Sewer on an interim basis for the early phases of this proposed development.
- 4) Any cost sharing for works constructed by the developer will be determined as per the Region's cost share policy. Generally, the applicant will be responsible for the minimum size required to service their development along the full length of the constructed sanitary sewer.
- 5) Sanitary mapping has been provided by the Region which indicates proposed future development lands and the associated tributary areas which will ultimately discharge to the SP on the south side of HWY 401 via Pickering Parkway and the Notion Road trunk sewer. Population densities for these proposed development lands were provided by the Region. Refer to Exhibits 4, 5 & 6 below for the Region's sanitary mapping and related population densities.

**Region of Durham Sanitary Maps & Correspondence indicating population densities**

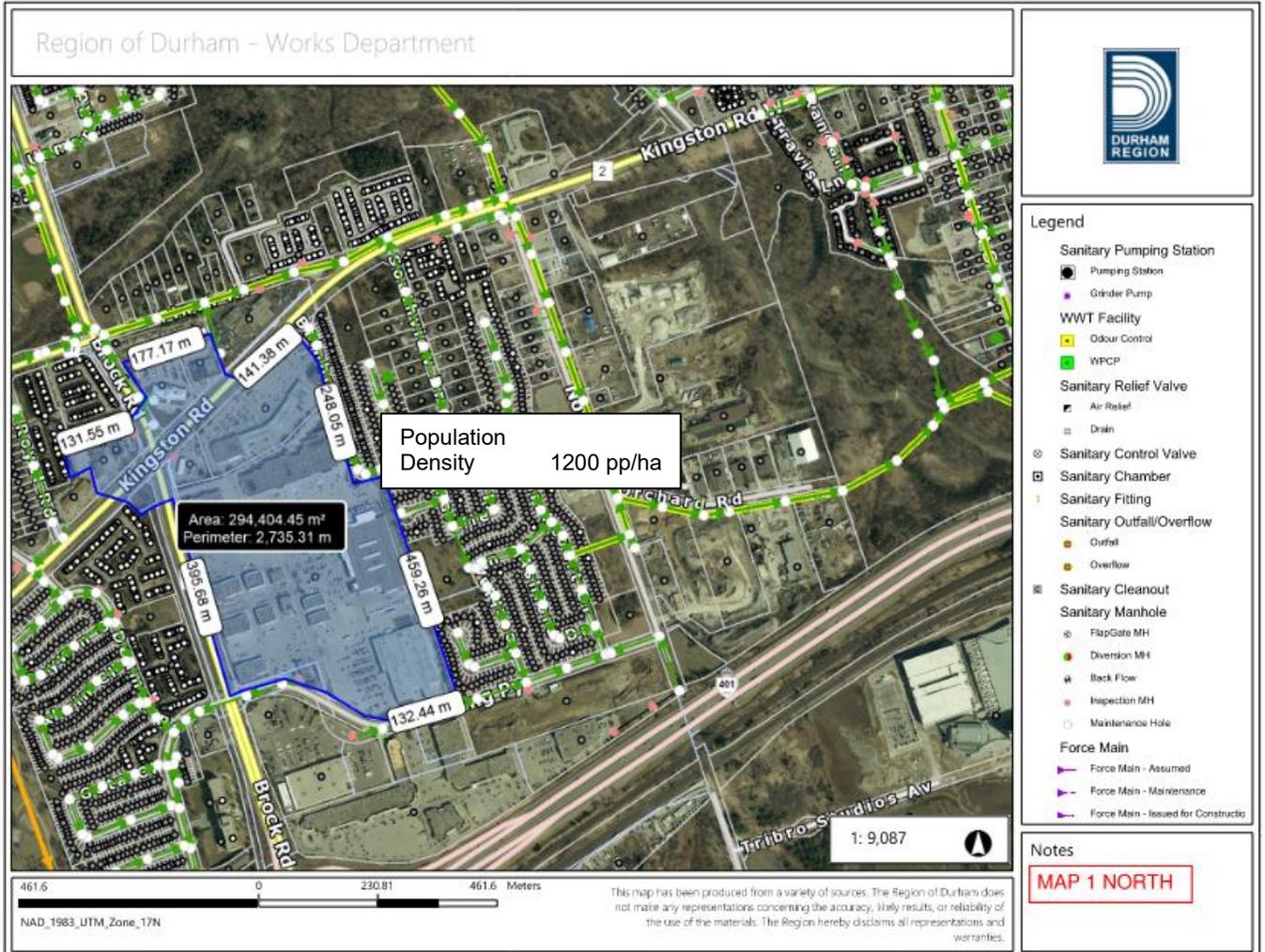


Exhibit 4 – Region Map 1 North [1899 Brock Rd & Mixed-use Lands]

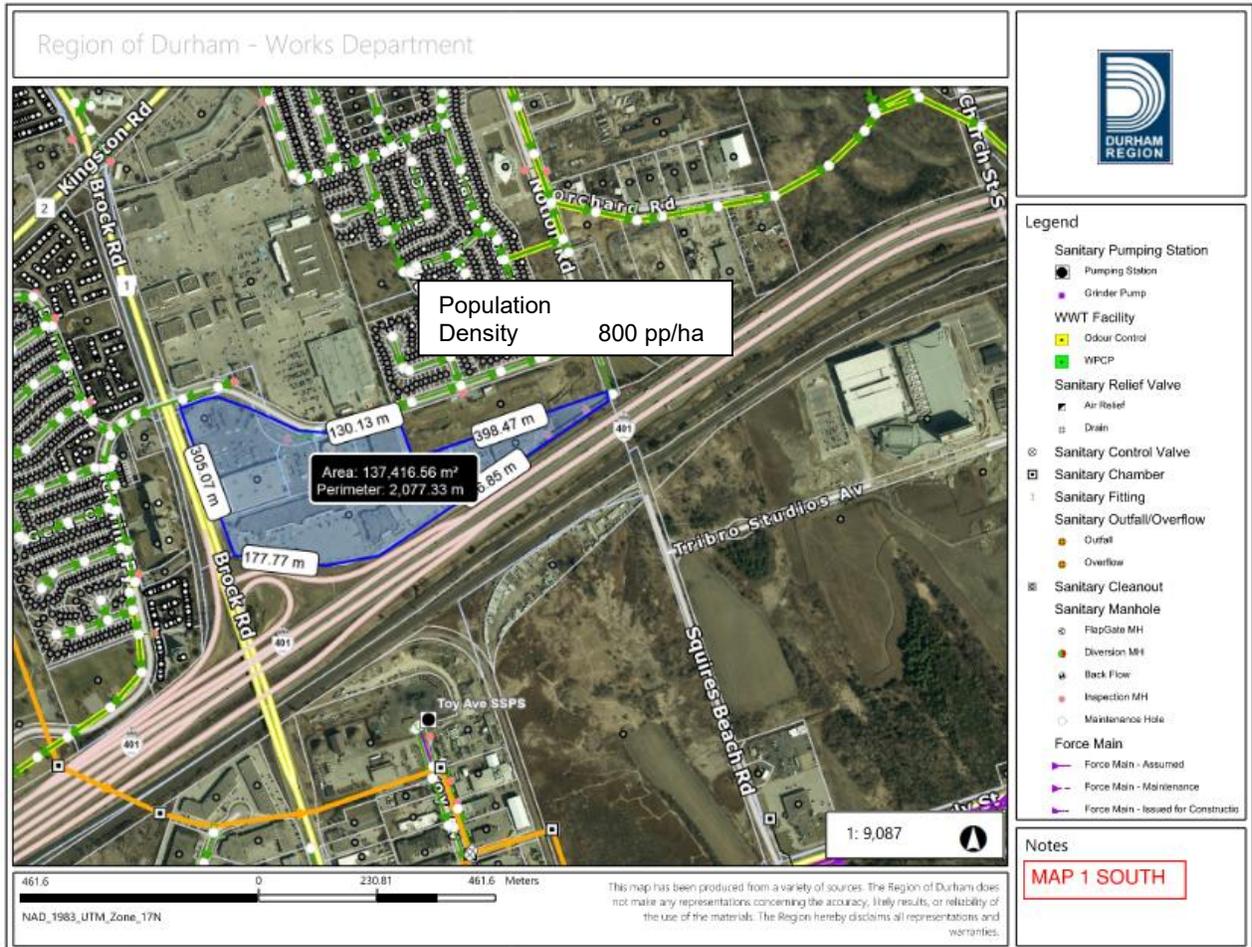


Exhibit 5 – Region Map 1 South [Subject site and 1731/1735 Pickering Pkwy]



Exhibit 6 – Region Map 2 South [Metropia Lands]

- 6) The Region has allowed for the Phase 1 of 1899 Brock Road to be discharged west ward to Brock Road and will therefore not be included in our Phase 1 downstream sanitary analysis.
- 7) The Phase 1 for the subject site will be allowed to discharge to Orchard Drive North on Notion Road, for the interim condition.
- 8) In the full build out condition the temporary sewers on Notion Road will be replaced by the Region with a trunk sewer. Thus, all the sewage from the existing and redeveloped sites will flow south in the Notion Road trunk, under HWY 401 to the new Region SP.
- 9) The Region prefers that the Sewer to Notion Road along Pickering Parkway be installed to accommodate the fully built out sites and the existing sites along the way.
- 10) The Region will allow a smaller sewer diameter pipe on Notion Road than on Pickering Parkway for the interim condition since the trunk sewer will replace this to flow South under the HWY 401.
- 11) Sanitary Capacity is assigned upon execution of a development agreement with the Region of Durham.

The Region has also given us the approximate reserve capacity of the Orchard Drive sewer from where we show it on Exhibit 3 eastward. See the following e-mail from Aaron Christie.

Hello Mark,

At this time base your study on the assumption that there could be up to a capacity of 150 l/s available within the 750mm sanitary sewer at Orchard Road. This is based on preliminary input received from the Region of Durham and is subject to change as your application and development of the surrounding lands moves forward.

Based on my interpretation of the mapping, the 600mm watermain on Brock Road has a 300mm dia. tee to the west and then there is a 300mm x 300mm dia. tee and 90 degree bend providing the 300mm dia. watermain to the east across Brock Road to Pickering Parkway.

Thanks,



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My pronouns are he/his



**Design Criteria**

Sanitary flows for the subject site are calculated based on the Regional Municipality of Durham design specifications for sanitary sewers. The summary is as follows:

**Residential**

- Average flow: 364 L/person/day
- Infiltration: 22.5 m<sup>3</sup> gross ha/day (0.26 l/s/ha/day) – when foundation drains are not connected to the sanitary sewer.
- Peaking Factor:

$$K = 1 + \frac{14}{4 + P^{1/2}}$$

Where K=Harmon Peaking Factor, P = Population in thousands.  
 K-Maximum= 3.8m, K-Minimum= 1.5

- When the number and type of housing units within a proposed development are known, the calculation of population for the proposed development shall be based on the following:

<b>Type of Housing</b>	<b>Persons/ha</b>
Single Family Dwelling,	60
Semi-detached & Duplex	100
Townhouses	125
Apartment(s)	
- Low density (62 u/ha)	150
- Medium to low density (86 u/ha)	210
- Medium density (124 u/ha)	300
- High Density (274 u/ha)	600
u/ha = units per hectare	

<b>Type of Housing</b>	<b>Persons/Unit</b>
Single Family Dwelling, Semi-Detached and Links	3.5
Townhouses/Stacked Townhouses	3.0
Apartment(s)	
- 1 Bedroom or smaller (Bachelor)	1.5
- 1 Bedroom and Den	2.5
- 2 Bedroom	2.5
- 3 Bedroom	3.5
- 4 Bedroom or larger	4.5

**Commercial**

Design Flow: 180 m<sup>3</sup>/gross floor area ha/day (2.08 l/s/day) including infiltration and peaking effect.

## EXISTING SANITARY SEWER CAPACITY CALCULATION

The capacity of the existing sanitary sewer system from the subject site to Orchard Rd was evaluated in the MSS report by Odan Detech. The existing sanitary sewer was found to have insufficient capacity to accept Phase 1 of the subject development. Refer to the MSS report by Odan Detech for further details and information pertaining to the existing sanitary capacity, including sanitary design spread sheet and existing sanitary tributary plan.

## PROPOSED SANITARY SEWER DESIGN CONSIDERATION

Based on our discussion with the Region of Durham (Aaron Christie), that they (the Region) want the redeveloped flow from 1899 Brock Road and the updated tributary areas, provided by the Region, to flow from their Site east on Pickering Parkway to Notion Road.

Metropia is planning to develop a new townhouse development at 1856 Notion Road known as the Metropia Site. The details are contained within the “Functional Servicing and Stormwater Management Report”, by GHD, Jan 2018. The sanitary flow (6.78 L/s) from the development will be routed to the existing manhole (MH-H9-0010) on Pickering Parkway.

Since four existing retail buildings will remain operational within the site for phase one construction. The construction of new sewers will need to be phased to ensure drainage is maintained to the existing buildings.

Table 1 is a summary of the flows generated by the Site during Phase 1.

Table 1 – Proposed population and sanitary peak flow estimate (Phase 1)						
Unit Type /Land Use	Number of Units /Gross floor Area	Person s/ Unit	Population	Peaking Factor	Infiltration (L/sec)	Sanitary Flow (L/sec)
<b>North Sanitary Outlet to Pickering Parkway</b>						
Commercial (Ex.)	0.79 ha	-	-	1	-	1.65
Commercial (Prop.)	0.17 ha	-	-	1		0.35
Apartments (Prop.)	678 Units					
	126- 1 Bedroom	1.5				
	337- 2 Bedroom	2.5				
	207-3 Bedroom	3.5				
	8 -4 Bedroom	4.5	1793	3.62	0.31	27.28
<b>Total</b>	-	-	-	-		29.28
<b>East Sanitary Outlet to Notion Road</b>						
Commercial (Ex.)	0.425 ha	-	0.425 ha	1		0.88
<b>Total</b>	-	-	-	-		0.88

The total flow to the 750mm sanitary sewer outlet at Orchard Road for Phase 1 of the subject site including existing commercial is 66.37 L/sec. Refer to sanitary design sheets in Appendix B for detailed calculations of the Phase 1 development and the future ultimate build out development.

Existing sanitary flow into the Orchard Road outlet is 42.42 L/s (refer to MSS report by Odan Detech). Thus, the increase in flow, 23.95 L/s, is less than the available excess flow capacity of 150 L/s (provided by Durham Region), therefore the outlet sewer has adequate capacity for Phase 1 of the subject development.

## **SUMMARY AND RECOMMENDATION**

Based on the above review, analysis and findings of the MSS report by Odan Detech we offer the following summary and recommendations:

- 1) Phase 1 of First Pickering Place cannot be accommodated by the existing sanitary sewer system and present routing path. This would mean replacing a deep sanitary sewer between two existing houses and is not recommended. Refer to MSS report for detailed analysis of the existing conditions.
- 2) The 750 mm sanitary sewer on Orchard Road has sufficient capacity to accommodate Phase 1 of First Pickering Place and the existing uses.
- 3) We recommend that the owners of First Pickering Place build the sanitary sewer on Pickering Parkway from 1899 Brock Road site to Notion Road to accommodate the full build out of all future development sites and the existing flows. This recommendation allows the Pickering Parkway sanitary sewer to be installed and completed at one time rather than removing the road surface on separate occasions during future phasing. This section of sanitary sewer will be subject to development charges as discussed with the Region of Durham.
- 4) The sanitary pipe on Notion Road (from Pickering Parkway to Orchard Rd) will be sized to convey existing flows and flows from Phase 1 (First Pickering Place) to the existing Orchard Road sanitary sewer. The Region will allow this interim condition at limited capacity until such time that the Ultimate Trunk Sewer is constructed in the future to convey flows to the South SP. The interim pipe will be downsized from that on Pickering Parkway, the Region will allow this, since it is a temporary measure until the Region replaces it with a trunk sewer on Notion Road.

Refer to sanitary design spreadsheets in Appendix B for detailed calculations of Phase 1 development and the Ultimate build out development.

Table 2 – Offsite sewer improvements				
Sewer location	Upstream MH	Downstream MH	Sewer size, length and slope	Comments
Pickering Parkway	1899 Brock Road	EX MH H8-0091	600mm – 116m @ 1.0%	Future New pipe
Pickering Parkway	EX MH H8-0091	Prop MH21A	675mm – 67.1m @ 0.40%	Replacement pipe
Pickering Parkway	Prop MH21A	EX MH H9-0018	675mm – 24.1m @ 0.40%	Replacement pipe
Pickering Parkway	EX MH H9-0018	Prop MH15A	675mm – 52m @ 0.40%	Replacement pipe
Pickering Parkway	Prop MH15A	EX MH H9-0019	750mm – 48m @ 0.40%	Replacement pipe
Pickering Parkway	EX MH H9-0019	EX MH H9-0010	750mm – 100m @ 0.40%	Replacement pipe
Pickering Parkway	EX MH H9-0010	EX MH H9-0011	750mm – 83m @ 0.40%	Replacement pipe
Pickering Parkway	EX MH H9-0011	EX MH H9-0022	750mm – 80m @ 0.40%	Replacement pipe
Pickering Parkway	EX MH H9-0022	EX MH H9-0014	750mm – 110m @ 0.40%	Replacement pipe
Pickering Parkway	EX MH H9-0014	Prop MH 18A	450mm – 15m @ 0.22%	Interim Pipe Phase 1
Notion Road	Prop MH 18A	Prop MH 19A	450mm – 100m @ 0.22%	Interim Pipe Phase 1
Notion Road	Prop MH 19A	SAN MH H9-0029	450mm – 74m @ 0.22%	Interim Pipe Phase 1
Notion Road	Prop MH H9-0029	Prop MH H9-0045	450mm – 72m @ 0.22%	Replacement pipe
Notion Road	Prop MH H9-0045	Prop MH 17	450mm – 4m @ 0.23%	Replacement pipe

Note: Notion Road pipes are temporary and will be replaced by the Ultimate Regional Trunk sewer that will be directed South on Notion Road to the downstream SP south of Hwy. 401.

## 4. WATER SUPPLY AND DISTRIBUTION

### EXISTING SYSTEM:

First Pickering Place (FPP) existing water service is fed from a 300 mm Ø City main on Pickering Parkway. The Plaza has a 300mm Ø service main off of Pickering Parkway with a series of hydrants and lateral services inside the Plaza to feed the multiple buildings. Refer to Exhibit 7 for the Regions existing water system.

### REDEVELOPED SITE:

#### Fire Protection

Fire flows for Phase 1 will be supplied by a 300mm PVC fire service proposed to connect to the 600mm watermain on Brock St. as per discussions with the Region. This connection is proposed to loop to Pickering Parkway via a 300mm water main to the 300mm local water main connection at Pickering Parkway. These two locations will provide a looped system complete with an isolation valve on the Pickering Parkway and Brock Street mainlines. Refer to Figure 3 in Appendix E for details on layout of the proposed Phase 1 looped watermain system. This will ensure that a separate water main is provided to Phase 1 without interconnecting to the existing Plaza water main.

As per Ontario Building Code 3.2.9.7 (4), Residential Towers being over 84m tall require an additional source of water supply from a public water system. To meet this requirement a second 300mm PVC fire service will be connected to the looped 300mm watermain with isolation valves installed on the 300mm watermain between the two fire services. Isolation valves will also be installed at Pickering Parkway and Brock Street to create redundancy in the system. Further discussions at the Detailed Design Stage will occur with the Region to determine if a looped system is required during Phase 1 for redundancy as required by the OBC.

Refer to Figure 3 in Appendix E for details and locations of proposed watermain services.

#### Domestic Water Service

The domestic water supply is proposed to connect to the existing 300mm watermain on Pickering Parkway via a looped water main to Brock Street with a proposed 300mm PVC watermain. Refer to Figure 3 in Appendix E for location of proposed water services.

#### Proposed Site

The pressures and volumes must be sufficient for Peak hour conditions and under fire conditions as established by the Ontario Building Code. The MOE minimal residual pressure under fire conditions is 140 kPa (20.3 psi). According to the Durham Region, Design Criteria for Water mains the allowable pressures are as per Table 3.

Table 3 – Allowable pressures

SCENARIO	DURHAM REGION CRITERIA Allowable Pressure (kPa)		MOE Allowable Pressure (kPa)	
	min	max	max	max
Min. Hour	275	700	275	700
Average Day	275	700	275	700
Max Day	275	700	275	700
Max Hour	275	700	275	700
Maximum Day + Fire	140	700	140	700

To evaluate the potential water demand for fire protection, the development was assessed using the Fire Underwriters Survey (FUS) guide. As shown in Appendix C, the following assumptions were made to perform the calculations.

1. Proposed buildings shall be of Fire Resistive type construction, therefore a construction type coefficient of 0.6 will be applied.

Proposed buildings shall be equipped with an automatic sprinkler system which meets NFPA 13 sprinkler standard including a fully supervised system, system to be designed by Mechanical Engineer.

The water demand requirement for the site based on the new population is calculated as follows:

Residential (Domestic)

- |    |                               |                                    |           |
|----|-------------------------------|------------------------------------|-----------|
| a) | Average Day domestic demand - | using 364 L/cap/day (1793 persons) | 7.55 L/s  |
| b) | Max day demand -              | 1.9 x daily demand                 | 14.35 L/s |
| c) | Peak hour demand -            | 2.85 x daily demand                | 21.52 L/s |

Commercial (Domestic)

- |    |                               |  |          |
|----|-------------------------------|--|----------|
| a) | Average Day domestic demand - | using 5000 L/m <sup>2</sup> /day (1687.6m <sup>2</sup> ) | 0.10 L/s |
| b) | Max day demand -              | 1.9 x daily demand                                       | 0.19 L/s |
| c) | Peak hour demand -            | 2.85 x daily demand                                      | 0.53 L/s |
| d) | Fire flow                     |  | 167 L/s  |

Flow testing was conducted and results analysed using a hydraulic model KYPIPE for the full development site in the MSS report by Odan Detech. Available flow results from the report are shown below.

<b>Table 4 – Total Water Demand for Phase 1 – First Pickering Place</b>		
	L/s	USGM
Peak Day Demand	14.35	227.45
Fire Flow Demand	166.67	2,642
Total Water Demand	181.02	2869
Available Flow at Block 1 (from MSS)	374	5,928

The total water demand for the Phase 1 development is 181 L/s which is less than the available flow of 374 L/s. Therefore, the existing flow within the system is adequate to meet the domestic and fire demands for the proposed Phase 1 site.

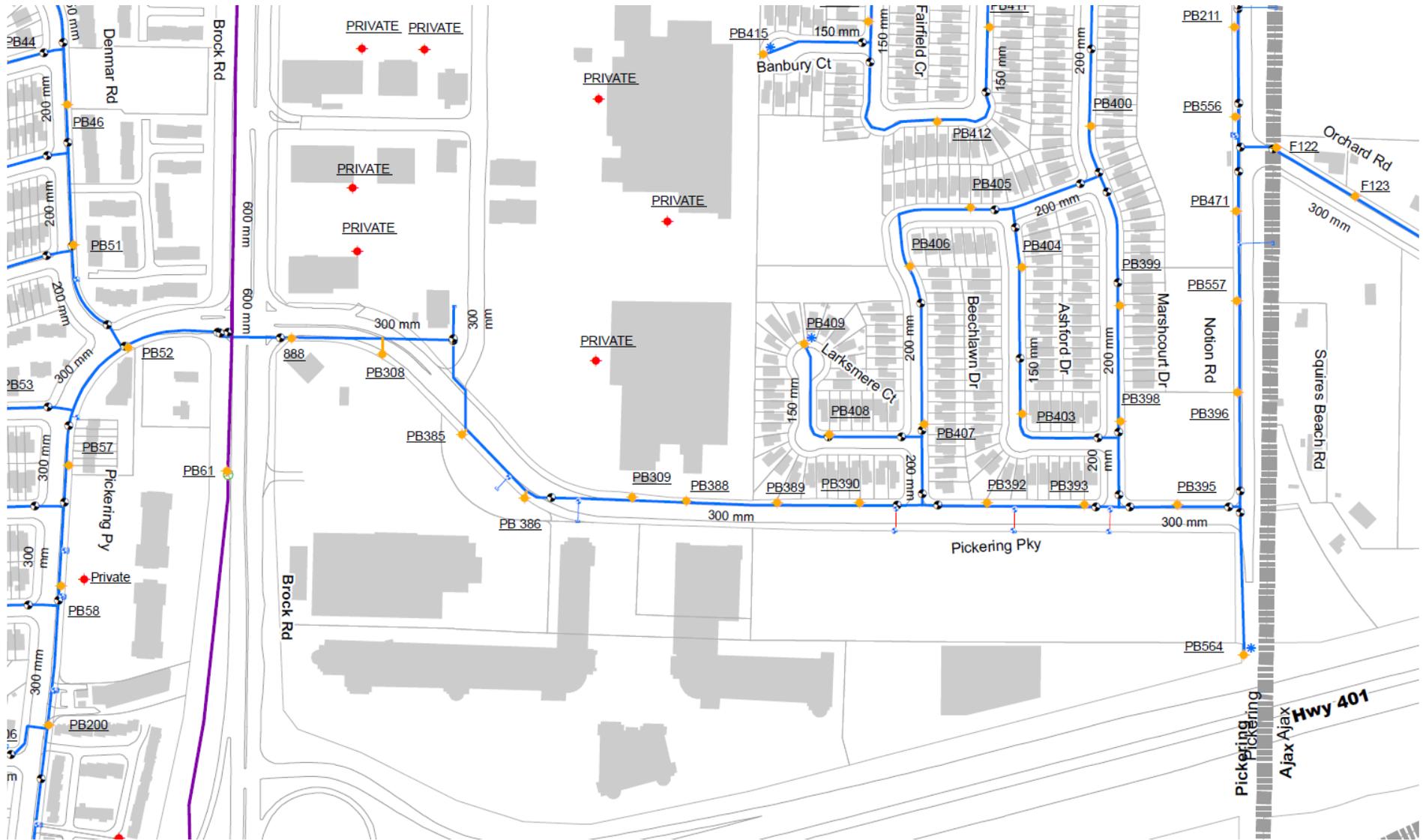


Exhibit 7 Durham Region layout of existing water system

## DISCUSSION OF RESULTS:

- The pipe sizes shown are required for the fire flows and to ensure velocities are below 5.0 m/sec for fire flows.
- First Pickering Place will require new mains and hydrants. Some will be relocated to suit the development.
- The pipe sizes chosen are adequate.
- Where pressures are greater than 80 psi (550 kPa) buildings will require pressure reducing valves prior to meter connection. Hydrant tests prior to permit stage will confirm this.
- Looping the watermain connection to Pickering Parkway is required to provide redundancy in the system for the development since buildings are taller than 84 m. The OBC requires a second connection to a public system when buildings are greater than 84 m. This routing will be through a proposed servicing Easement in favour of the Region and City during Phase 1 of the development.
- Phase 1 requires an interim condition watermain which will be looped within the noted Region and City Servicing Easement through the existing retail plaza to provide a redundancy to the system. This interim water main will be decommissioned within the future parkland and rerouted within the Right-of-Way in subsequent Phases. For layout and details of the proposed Phase 1 watermain looped system refer to Figure 3 in Appendix E.

## 5. STORMWATER MANAGEMENT & FOUNDATION WATERPROOFING

### Design Criteria

Stormwater management for the proposed development will follow the stormwater management criteria set out by the City of Pickering, Toronto and Region Conservation Authority and the Ontario Ministry of the Environment, Conservation and Parks.

A summary of the stormwater management criteria applicable to the site are as follows:

### Quantity Control:

The City of Pickering requires quantity control of Blocks 1 to 7 to a post development allowable flow based on a 5 year Design Storm to a runoff coefficient of  $C=0.50$  during this event. All storms up to and including the 100 Year Design storm must be controlled to this criterion.

Block 1 will follow this requirement to control flows to a  $C=0.50$  for the 5 Year Design Storm up to and including the 100 year design storm.

### Quality Control:

Quality control measures are to be designed to provide Enhanced Protection - long term average removal of 80% of Total Suspended Solids (TSS) on an annual loading basis from all runoff leaving the proposed development site based on the post-development level of imperviousness.

This can be achieved via filtration many methods and Low Impact Development Techniques (LID). To ensure that 80% TSS removal is achieved the use of a Jellyfish Filtration Oil Grit Separator (JFOGS) or similar approved equivalent would accomplish this.

### Water Balance:

Retention of the runoff from up to a 5mm storm event on site for reuse, evaporation or infiltration.

- Rain Harvesting
- Green Roofs
- Downspout Disconnection
- Soakaway Pits, Infiltration Trenches (Galleries) and Chambers
- Bioretention Facilities
- Vegetated Filter Strips
- Permeable Pavers
- Enhanced Grass Swales
- Dry Swales
- Perforated Pipe Systems

These techniques help to promote water quality and quantity and water reuse as it relates to stormwater management techniques. At the Stie Plan development stage these techniques will be reviewed in detailed to determine the ideal strategy for each development Block.

### **Existing Storm Servicing and Drainage Patterns**

As constructed and design plans and profiles drawings obtained from the Region of Durham and the City of Pickering show that the following storm sewers are located within and around the site.

Refer to Exhibit 8 for the existing storm sewer system and outlet for the Phase 1 subject site.

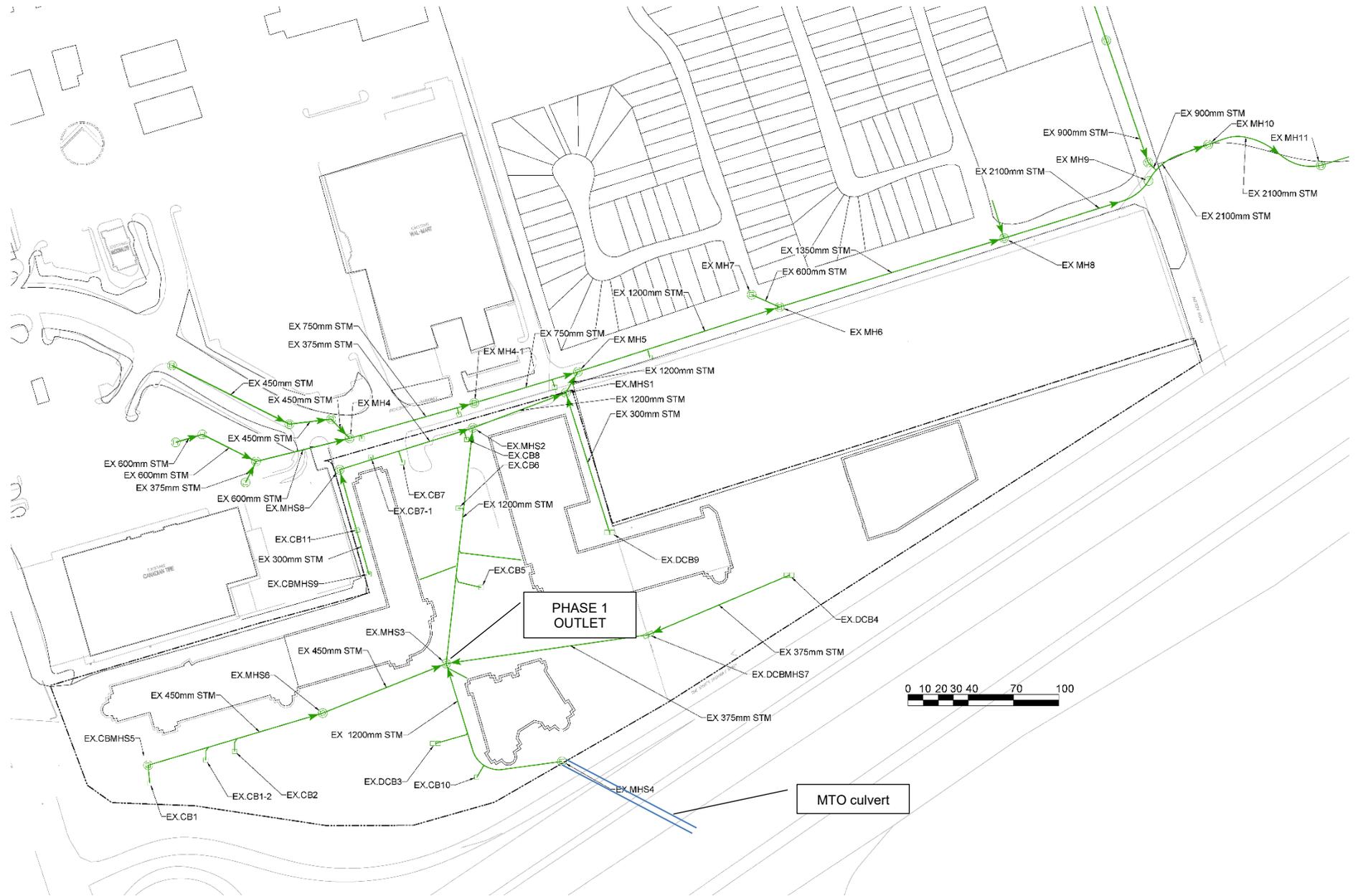


Exhibit 8 - City layout of existing Storm sewers and Site sewers

The drainage from the subject site can be summarized as follow:

1. MTO box culvert discharges flow from Hwy # 401 to a short ditch on the south side of the subject site. The flow is captured by an inlet structure attached to an existing 1200 ø storm sewer system which is routed north to Pickering Parkway where it discharges to a 1200 ø existing storm on Pickering Parkway. The pipe continues east on Pickering parkway, changes pipe sizes as shown on Exhibit 8, crosses Notion Road, continues east and discharges via a head wall to a drainage channel which empties into Duffin’s Creek.
2. The subject site drains via a series of catch basins and sewers which connect to the 1200 ø storm from the 401 to Pickering Parkway as described in 1 above.
3. The overland flow from the site is conveyed from the south through the lands onto the Pickering Parkway and ultimately conveyed via Pipes and existing channel, east of the Notion Road, to the Duffin’s Creek.
4. Currently, there is no stormwater quantity, quality control measures implemented within the existing site.

A pre-development tributary plan has been prepared based on a drainage pattern analysis of the site’s digital terrain model created from existing topographic survey and information obtained from the Region and the City. The pre-development storm tributary plan is included in Appendix E.

**Pre-development/Allowable Flow Rates**

The post-development flows from the site will be limited to the 5-year design storm event at an allowable rate based on a runoff coefficient of C=0.50 up to the 100-year design storm event. Please note that the actual runoff coefficient for the existing site condition is much higher than C=0.5. The flows were calculated using both rational method. The City of Pickering’s Intensity Duration Frequency (IDF) curve values were used for rational method calculation.

The allowable flows for Phase 1 site are presented in Table 5.

Table 5 – Summary Table of Allowable Flows

Block #	Area	Q <sub>5yr Pre</sub>
Block 1	0.84	0.105

The existing Mall and City ROW are not included in the above as they will remain uncontrolled during Phase 1 which is the current existing Site Condition as this area is mainly asphalt and rooftop.

The post-development flows from the site will be limited to the pre-development flows for the 5-year design storm event. The pre-development flows were calculated based on pre-development tributary areas with runoff coefficient of 0.5. Please note that the actual runoff coefficient for the existing site condition is much higher than 0.5. The allowable flows were calculated using the rational method. The City of Pickering’s Intensity Duration Frequency (IDF) curve values were used for rational method calculation. Refer to Appendix for Rational Calculations.

**POST-DEVELOPMENT**

The SWM for the redeveloped First Pickering Place will establish/analyse the following:

1. Flows to the existing 1200 ø storm sewer based on the criteria established above.
2. Establish SWM criteria for Phase 1 in order to limit the flows.
3. Evaluate the flows entering the down-stream sewer system at the outlet.
4. Evaluate the water quality requirements.
5. Evaluate the water balance for the Site.
6. Make recommendations as to the implementation of the SWM.

Based on the description of the existing system City requires a flow reduction to a C =0.5 from the existing site C= 0.85. The post developed site will reduce the existing flows to the outlet at the existing 1200 ø sewer. Phase 1 allows outlet to the existing 1200 ø sewer. Refer to Appendix E for the site servicing drawings.

The City of Pickering uses the the 4 hour Chicago storm is the critical storm for all storage facilities.

Stormwater Management Criteria that must be included in the FSSR are as follows:

- Control of post-development peak flow rates from the 100 year design storm to 5 Year Design Storm Event at a runoff coefficient equal to C=0.50 for development Blocks.
- A maximum runoff coefficient of 0.5 should be used to represent pre-development conditions for Block 1.
- Follow Stormwater Management Design Guidelines, prepared by City of Pickering. Runoff Conveyance will be as follows, the minor system is to be designed to accommodate the 5-year storm, while the major overland system is to be designed for the 100-year storm event. Where there is no suitable overland flow route, the minor system must convey the 100-year storm after on site attenuation.

The following Table establishes the allowable flows from Block 1 based on a runoff coefficient of C=0.50 for the 5 year design storm event and provides for the required storage volumes of each block. In order to establish required storage volumes a conservative approach was taken at this stage using a runoff coefficient of C=0.90 for post development. This will be refined during the Site Plan approval and detailed design stage.

In general, a C=0.85 is used for apartment type developments. It is therefore likely that the runoff coefficient will be reduced further from C=0.90 through implementation of various Low Impact Design Techniques and Water Reuse at the time of Detailed Design during Site Plan approval.

Table 6 – Summary Table of SWMM Quantity Pre Development Allowable Flows and Storage

Block #	Area	Q <sub>5yr Pre</sub>	Volume
			Q <sub>100 Post</sub>
Block 1	0.84	0.105	187

Refer to Appendix D for detailed calculations related to storage volumes and orifice sizes based on the Rationale Method related to the above Table values.

The Tank Size and related storage techniques including locations will be finalized for Phase 1 development at the detailed design stage during Site Plan approval based on the finalized build form.

**SUMMMARY OF SWM Quantity Control Features:**

Refer to table 7 for the SWM used for quantity control on the redeveloped Site.

Table 7 – Summary Table of SWMM Quantity Features for Redeveloped Site

<b>BLOCK OR DESCRIPTION AND FLOW AREA TO TANK (ha)</b>	<b>SWMM FEATURE DESCRIPTION &amp; FOOTPRINT (m2)</b>	<b>VOLUME REQUIRED 100-year flow (m3) max of 4 hr Chicago or AES</b>	<b>ORIFICE CONTROL C=0.80</b>	<b>ORIFICE max head (m)</b>	<b>Maximum 100-year flow (L/sec)</b>
BLOCK 1 (0.84 ha)	1-Storage Tank (206)	* TANK 1 – 314	175 mm	1.52	105

All Maximum Volumes created by 4-hour Chicago storm.

Max volumes calculated using the modified rational method and City of Pickering IDF parameters.

\*Note – Tank Sizes have been provided with a safety factor of 1.5x and will be adjusted during the Site Plan approval stage based on detailed design. The safety factor has been applied to account for maximizing tank volumes should the system require pumping in order to minimize the footprint of the tank within the proposed building and underground parking.

Refer to Appendix for Rational Method calculations.

Table 8 summarizes the allowable flows for Block 1 – Phase 1.

<b>Table 8 – Target Release rates from development Block 1 Phase 1 to Pickering Parkway sewer</b>			
<b>Block #</b>	<b>Area (ha)</b>	<b>Allowable Release Rate (m<sup>3</sup>/s) 5 year Storm</b>	<b>Post-development Flows (m<sup>3</sup>/s) 100 Year Storm</b>
Block 1	0.84	0.130	0.105
Total Site (Excluding Park & Private Roads)	0.84	0.130	0.105

Rational method uses  $C = 0.5$  for 5 year event,  $T_c = 10$  min (conservative).

As per City criteria for; 100-year storm -  $C_a = 1.25$

For Detailed Rational Calculations related to Block 1 refer to Appendix D.

## 6. WATER BALANCE

The primary objective of the Water Balance Targets/Criteria is to capture and manage annual rainfall on the development site itself to preserve the pre-development hydrology (or “water balance”, which typically consists of three components: runoff, infiltration, and evapotranspiration) through a combination of infiltration, evapotranspiration, landscaping, rainwater reuse and/or other low impact development practices.

### Site Criteria

***In most cases, the minimum on-site runoff retention requires the proponent to retain all runoff from a small design rainfall event – typically 5mm through infiltration, evapotranspiration and rainwater reuse.***

The City of Pickering Stormwater Management Design Guidelines’ target for water balance is to provide runoff reduction from the site through infiltration, evapotranspiration and reuse of a minimum of 5mm of rainfall depth across all impervious surfaces.

### CITY OF PICKERING GUIDELINE WATER BALANCE SUMMARY

#### Project: 1755&1805 Pickering Parkway (First Pickering Place)

#### Project No.: 20266

Site Area (Phase 1)	8400	m <sup>2</sup>
Rainfall depth required to capture	5	mm
Captured Volume Target (5mm across entire site) (Total Area x Rainfall Depth)	42.0	m <sup>3</sup>

SURFACE TYPE	SURFACE CAPTURE (mm)	AREA (m <sup>2</sup> )	% OF SITE AREA	VOLUME CAPTURE (m <sup>3</sup> )
Green Roof	7	682	8.1	4.8
Landscaped Areas	5	921	11.0	4.6
Roof Area (Drains to Cistern for Reuse)	12.5	2309	27.5	28.9
Asphalt Driveway, Pavers and Concrete (Ground)	1	4488	53.4	4.5
<b>TOTAL</b>		<b>8400</b>	<b>100</b>	<b>38.2</b>

<b>CAPTURED VOLUME BY INTIAL ABSTRACTION (m<sup>3</sup>)</b>	<b>13.9</b>
<b>VOLUME OF CISTERN (m<sup>3</sup>)</b>	<b>28.9</b>
<b>CAPTURED VOLUME (m<sup>3</sup>)</b>	<b>42.7</b>

The site area and 5mm rainfall depth will be used to calculate the water balance target. The water balance target is as follows.

**Water Balance Target:**

$$\text{Site Area} * 5\text{mm} = (8400\text{m}^2 \times 0.005\text{m})$$

$$= 42.0\text{m}^3$$

\*Site area does not include 14m MTO Setback Lands.

It is proposed to achieve the above target through infiltration/absorption and rainwater harvesting for reuse. Other techniques will be considered at the Site Plan approval stage based on the finalized detailed site plan.

Further detail on water reuse will be presented in the Stormwater Management Report at the Site Plan Approval stage. Preliminary calculations are shown below.

**Water Balance Summary:**

Water Balance Target: **42.0m<sup>3</sup>**

**Capture:**

*Initial Abstraction (Absorption/ Infiltration/ Evapotranspiration)*

<i>Green Roofs (assumed)</i>	<i>4.8m<sup>3</sup></i>
<i>Planters &amp; Landscaping</i>	<u><i>4.6m<sup>3</sup></i></u>

*Total Captured Volume by Initial Abstraction* **13.9m<sup>3</sup>**

*Capture in Cistern from Roof Top for Reuse* **28.9m<sup>3</sup>**

**Total Volume Capture** **42.7m<sup>3</sup>**

**Reuse Potential from Cistern**

*Greywater toilet and urinal reuse (Retail)* **TBD**

*Irrigation requirement for landscaping* **TBD**

*Greywater wash-down area reuse (Underground Parking)* **TBD**

**Total Reuse Potential from Cistern** **>28.9m<sup>3</sup>**

***The total capture of 42.7m<sup>3</sup> meets the target volume of 42.0m<sup>3</sup>; therefore, the water balanced target can be achieved on site. In addition, the total on-site water re-use potential of shall exceed the minimum cistern capture requirement of 28.9 m<sup>3</sup>.***

## 7. WATER QUALITY

The water quality target for the subject development as required by City of Pickering is Enhanced Level of Protection - long term average removal of 80% Total Suspended Solids (TSS) on an annual loading basis from all runoff leaving the proposed development site based on the post-development level of imperviousness.

The site was divided according to surface conditions and the effective TSS removal for each surface condition was considered based on the treatment it would receive. The general basis of the effective TSS removal rates are as follows:

1. Rooftop areas are subject only to airborne particles and insignificant amounts of sediment transported by foot traffic. As such, an effective removal efficiency of 80% is utilized on a conventional roof to reflect the inherent runoff quality from a conventional roof.
2. Balconies and sodded areas are subject to insignificant amounts of sediment transport by foot traffic. An effective removal rate of 80% is used.
3. Driving and ground-level pedestrian surfaces which are open-to-above will be subject to Winter maintenance, therefore they are assumed to have an effective removal efficiency of 0% and filtration is thus required.

Block 1 is comprised of open-to-above driving and pedestrian areas which will be subject to future winter maintenance. Oil and Grit Separation (OGS) devices will be specified accordingly to provide 80% TSS Removal for the site. Flows from asphalt driveway, paver and concrete areas will be directed to an Oil/Grit Separator sized accordingly for the development prior to entering the SWM Tank.

Through the above inherent TSS removal rates and the OGS unit, the 80% TSS removal rate can be achieved.

At the Site Plan approval stage a Jellyfish Filtration Oil/Grit Separator will be sized to meet the required 80% TSS removal.

Further review to determine if alternative Train Treatment will be reviewed at that time.

## 8. SITE SERVICING PHASE 1

To maintain the operation of the existing Mall during Phase 1 it is recommended that during Phase 1 an Interim Municipal and Regional Servicing Easement is provided from the Private development in Phase 1 through the existing Mall Lands. This easement would be in favour of the Region and Municipality during an interim condition until the future Phases are developed and future Right-of-Way is constructed.

Providing a Municipal and Regional Servicing Easement during Phase 1 allows for the proposed Phase 1 to proceed while allowing for connection of the existing Mall to the new Municipal and Regional Easement during this Phase.

The proposed conceptual Phase 1 Servicing Schematic is provided in Appendix E - Figure PH1-Phase 1 Site Servicing and Easement Plan.

In general, the following is proposed for allowing Phase 1 Servicing to proceed:

- Construct sanitary storm and water servicing within Phase 1 through Municipal and Regional Servicing Easement.
- Maintain Existing Mall servicing within Mall lands and reconnect to Interim Municipal and Regional Servicing Easement.
- Maintain existing Storm sewer within Mall. Align with future ROW in subsequent phases. Based on the current layout for future Phasing the intent is to relocate the Storm Sewer during future Phases to be located outside of the Parkland.
- Subsequent Phasing will be reviewed at such time that the Phases proceed and will generally follow similar Phasing as identified during Phase 1 in which existing Mall services will be reconnect and adjusted to connect to the Municipal and Regional Servicing Easement. Refer to Figure PH1 Phase 1 Site Servicing and Easement Plan for general layout and notes related to Future Phasing.

In general, the addition of a Municipal and Regional Servicing Easement during Phase 1 will allow for Private Mall services and Phase 1 Private Development to connect to a Municipal and Regional Servicing Easement.

As the site develops to future Phases connection to the Municipal and Regional Servicing Easement can continue in future Phases and be adjusted as required to maintain existing Mall function. Detailed Phasing Plans will be provided at the Detailed Design stage for each Phase of the development as they are submitted. For future Phasing Concept plans for Phase 2-7 refer to Master Servicing Study prepared by The Odan/Detech Group Inc.

## 9. FOUNDATION WATERPROOFING STRATEGY

Dewatering discharge during construction and long term will be as follows:

At the Pre-consultation for 1755 & 1805 Pickering Parkway the City of Pickering made the following statement:

**Please note that the City will not accept discharge of foundation drainage to the storm system due to the potential for adverse impacts.**

**Please note that Region of Durham will not accept discharge of foundation drainage to the sanitary sewers. This statement is part of their sewer bylaw.**

Based on the above we recommend the Architect, Structural Engineer, Geotechnical Engineer and Mechanical Engineer devise a waterproofing system with the shoring and foundation design.

Based on the above we have not incorporated any allowance for foundation drainage in the SWM for the site.

### DISCUSSION OF RESULTS:

- The outlet for Phase 1 can be the existing 1200mm dia. storm sewer since the Phase 1 quantity controls will reduce the flow entering this pipe
- Phase 1 requires 314m<sup>3</sup> of storage for quantity control to meet the City of Pickering SWM design guidelines, storage volume will be provided by means of a storm water management tank located in the underground parking levels
- Orifice control for the storm water management tank will be a 175mm dia. orifice plate
- Flows from the site will be reduced at Phase 1 of the development, further flow reduction will occur at each subsequent phase of the ultimate build out (See MSS report by Odan Detech for further details)

## **10. GRADING CONSIDERATIONS**

The existing topography of the site generally slopes from west to northeast towards the low point of the site located on the east side of the Site. Under the new development and existing adjacent developments there are several grading constraints for this development to match. The constraints are the existing commercial buildings, intersection at Brock Road and MTO lands to the south.

For proposed grading of the redeveloped site refer to the Preliminary Grading Plan included in Appendix E.

## **11. EROSION AND SEDIMENT CONTROL**

Erosion and sediment controls for the site will be implemented according to the Golden Horseshoe Area Conservation Authorities' Erosion and Sediment Control Guidelines for Urban Construction. A detailed erosion control plan will be prepared upon final design and at Site Plan Approval Stage.

## **12. SOILS REPORT AND HYDROGEOLOGY:**

A preliminary Geotechnical investigation has been completed for the site. The purpose of the study is to characterize hydrogeological conditions and determine permitting requirements for the proposed development at the First Pickering Place. The study was completed by Terraprobe dated May 27, 2021 for Pickering Ridge Lands Inc. & Bayfield Realty Advisors.

Native clayey silt glacial till, underlying dense to very dense matrix of sandy silt to silty sand till is the typical soil underlying the site. The soils have some infiltration capacity. The water table underneath varies from 4 to 6 m below grade. Based on the grading it may be possible to provide infiltration galleries. The water table should be monitored further in order to get a wide range of potential water table levels. Monitoring will provide better confidence in the potential maximum ground water levels.

### 13. RECOMMENDATIONS:

- 1) We recommend that the owners of First Pickering Place build the sanitary sewer on Pickering Parkway from 1899 Brock Road site to Notion Road to accommodate the full build out of all future development sites and the existing flows. This section of sanitary sewer will be subject to development charges as discussed with the Region of Durham.
- 2) The sanitary pipe on Notion Road (from Pickering Parkway to Orchard Rd) will be sized to convey existing flows and flows from Phase 1 (First Pickering Place) to the existing Orchard Road sanitary sewer. The Region will allow this interim condition at limited capacity until such time that the Ultimate Trunk Sewer is constructed in the future to convey flows to the South SP. The interim pipe will be downsized from that on Pickering Parkway, the Region will allow this, since it is a temporary measure until the Region replaces it with a trunk sewer on Notion Road.
- 3) We recommend looping the watermain to Pickering Parkway, Notion Road or Brock Road to provide redundancy to the development since many buildings are taller than 84 m. The OBC requires a second connection to a public system when buildings are greater than 84 m.

### 14. CONCLUSIONS

The findings of our investigation and analysis can be concluded as follows:

The proposed site is serviceable with the added density with respect to sanitary, water and storm by connecting to the existing infrastructure in and around the site as outlined in this report.

Table 9 summarizes the SWM components of the proposed development.

Table 9 – Summary Information for Proposed Re-Development	
Allowable release rate from site (L/s)	130 L/s
Actual release rate from site (L/s) (100-year storm)	105L/s
Total Stormwater Storage Volume Required/Available in U/G Parking SWM Tank	314 m <sup>3</sup>
Cistern Tank For Stormwater Reuse	28.9 m <sup>3</sup>
Orifice tube size used	175 mm
Water Quality	80% TSS Achieved via Jellyfish Filtration OGS

## 15. REFERENCES

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5. Ontario Ministry of the Environment (March, 2003). **Stormwater Management Planning and Design Manual**. Ministry of the Environment, Ontario. ISBN 0-7794-2969-9.
6. Ontario Ministry of the Environment (2008). **Design Guidelines for Drinking-Water Systems**. Ministry of Environment, Ontario. ISBN 978-1-4249-8517-3.
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9. **NEW JERSEY STORM WATER BEST MANAGEMENT PRACTICES MANUAL**, April 2004.
10. **MNR Technical Guide – River and Streams Systems: Flooding Hazard Limits**, 2002.
11. **FEMA Chapter 4 - Flood Risk Assessment**.
12. **ROAD AND BRIDGE DECK DRAINAGE SYSTEMS** by MTO, November 1982.
13. **XPSWMM users Guide** by INNOVYZE 2021.
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15. **LOW IMPACT DEVELOPMENT STORMWATER MANAGEMENT MANUAL**, 2008, by Credit Valley Conservation Authority and Toronto Town Conservation Authority.
16. **Master Servicing and Stormwater Management Report**, for 1899 Brock Road, City of Pickering, May 2021 by SCHAEFFERS.
17. **Functional Servicing & Stormwater Management Report Residential Townhouse Development – 1856 Notion Road Durham Region – City of Pickering**, January 19, 2018, by GHD.
18. City of Pickering and Pickering Developments Inc. – **New Highway 401 Road Crossing (from Notion Road to Squires Beach Road) Schedule “C” Municipal Class Environmental Assessment**, October 2019, by AECOM.
19. **Master Servicing and Stormwater Management Report**, 1755 & 1805 Pickering Parkway, City of Pickering, January 2022, by ODAN/DETECH Group.

Respectfully Submitted:  
**The Odan Detech Group Inc.**



Oct. 6 2025

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Paul Hecimovic, P.Eng.

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Mark Harris, Dipl. Tech.

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## **APPENDIX A**

Aerial Photo of Existing Site

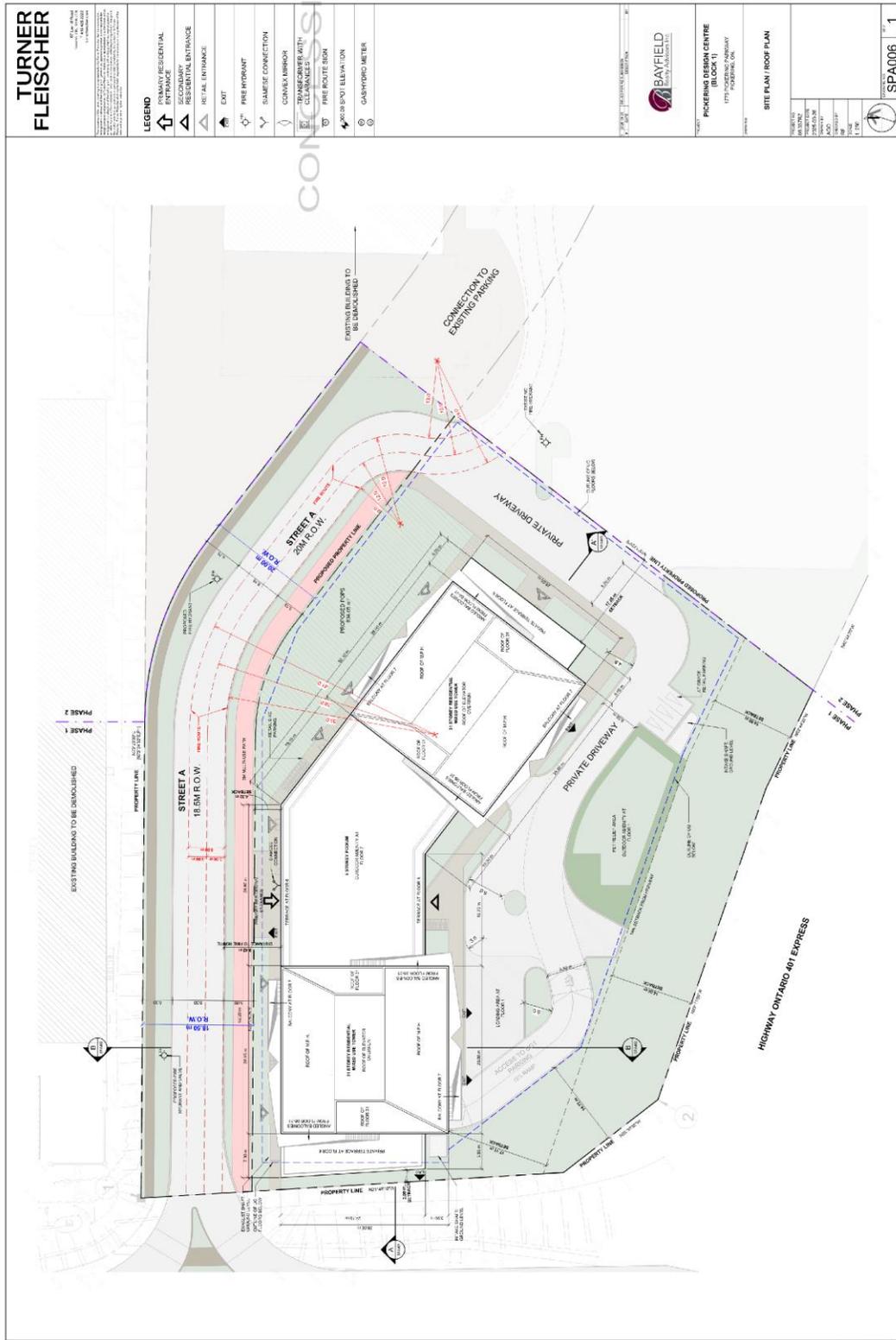
Phase 1 Site Plan of the Proposed Development (reduced)

Ultimate Site Plan of the Proposed Development (reduced)

**Aerial Photo of Existing Site**



**Phase 1 Site Plan of the Proposed Development (reduced)**



**Ultimate Site Plan of the Proposed Development (reduced)**



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## **APPENDIX B**

Redeveloped site Phase 1 sanitary sewer design sheet

Redeveloped sites (subject site, 1899 Brock Road and surrounding tributaries) sanitary sewer design sheet

**SCENARIO 2:** PHASE 1 CONDITIONS  
Redeveloped subject site Phase 1 sanitary sewer design sheet **PROPOSED PIPE SIZES**

DESIGNED BY: A. Ma  
CHECKED BY:

**FIGURE S-4**

DATE: 2025-09-05

STREET	TRIB ID	UPSTREAM MH	DOWNSTREAM MH	RESIDENTIAL						COMMERCIAL			INDUST.		FLOW (L/s)					EXISTING SEWER					PRESENT CONDITION	NOTES						
				LOT AREA		POP. DENSITY (Persons/ha)	POP. DENSITY (Persons/Unit)	# OF UNITS	POP.	PEAK FLOW FACTOR, K <sub>11</sub>	LOT AREA (Ha)	FLOOR SPACE INDEX	GROSS FLOOR AREA		GROSS FLOOR AREA	RESIDENTIAL FLOW		COMM. 2.08 l/s	INDUS. 2.08 l/s see note	INSTIT. 1.30 l/s	TOTAL FLOW l/s	Length	Size	Slope			Full Flow Capacity	Full Flow Velocity	% Full			
				UNIT (ha)	ACCUM. (ha)								GFA (ha)	ACCUM. (ha)		UNIT (ha)	ACCUM. (ha)													INFIL. 0.26 (L/s)	SEWAGE 0.0042 (L/s)	L (m)
																												Total				
Canadian Tire Site	4	EX.MH090	EX MH H8-0091									0.79	0.79					1.65			1.65	59.82	200	0.30	17.96	0.57	9.2					
Pickering Parkway		EX MH H8-0091	Prop MH9A	0.52	0.52								0.79								1.78	49.00	675	0.45	563.88	1.58	0.3	pipe sized for full build-out				
Subject Site	P1	Prop MHBK1	Prop MH2A	1.08	1.12		2.5	678	1695	3.64			0.17	0.17							26.56	19.97	300	2.00	136.76	1.93	19.4	pipe sized for full build-out				
Subject Site		Prop MH2A	Prop MH3A		1.12				1695	3.64				0.17							26.56	53.47	300	1.00	96.70	1.37	27.5	pipe sized for full build-out				
Subject Site	P2	Prop MH3A	Prop MH4A	2.59	2.59				1695	3.64			0.28	0.28							27.17	33.35	300	0.70	80.91	1.14	33.6	pipe sized for full build-out				
Subject Site		Prop MH4A	Prop MH5A		3.71				1695	3.64				0.45							27.82	33.36	300	0.70	80.91	1.14	34.4	pipe sized for full build-out				
Subject Site		Prop MH5A	Prop MH6A		3.71				1695	3.64				0.45							27.82	22.14	300	0.70	80.91	1.14	34.4	pipe sized for full build-out				
Subject Site		Prop MH6A	Prop MH6A-1		3.71				1695	3.64				0.45							27.82	4.84	300	3.92	191.46	2.71	14.5	Interim pipe Phase 1				
Subject Site		Prop MH6A-1	Prop MH6A-2		3.71				1695	3.64				0.45							27.82	49.90	300	0.50	68.38	0.97	40.7	Interim pipe Phase 1				
Subject Site	P3,2	Prop MH6A-2	Prop MH6A-3	2.18	2.18				1695	3.64		1.50	1.50								29.60	64.81	300	0.50	68.38	0.97	43.3	Interim pipe Phase 1				
Subject Site		Prop MH6A-3	Prop MH6A-4		5.89				1695	3.64				1.95							31.50	57.90	450	0.50	201.60	1.27	15.6	Interim pipe Phase 1				
Subject Site		Prop MH6A-4	Prop MH6A-5		5.89				1695	3.64				1.50							30.57	29.96	450	0.50	201.60	1.27	15.2	Interim pipe Phase 1				
Subject Site		Prop MH6A-5	Prop MH21A		5.89				1695	3.64				1.95							31.50	13.94	450	0.50	201.60	1.27	15.6	Interim pipe Phase 1				
Pickering Parkway	13	Prop MH9A	SAN MH H9-0091	0.25	0.77				1695	3.64				2.74							31.82	67.05	675	0.40	531.63	1.49	6.0	pipe sized for full build-out				
Pickering Parkway		SAN MH H9-0091	Prop MH21A		0.77				1695	3.64				2.74							31.82	24.10	675	0.40	531.63	1.49	6.0	pipe sized for full build-out				
Pickering Parkway	14	SAN MH H9-0018	Prop MH15A	0.24	0.24				1695	3.64				2.74							31.68	52.03	675	0.40	531.63	1.49	6.0	pipe sized for full build-out				
Pickering Parkway		Prop MH15A	SAN MH H9-0019		0.24				1695	3.64				2.74							31.68	47.95	750	0.40	704.10	1.59	4.5	pipe sized for full build-out				
Pickering Parkway	15	SAN MH H9-0019	SAN MH H9-0010	0.28	0.28				1695	3.64				2.74							31.69	99.80	750	0.40	704.10	1.59	4.5	pipe sized for full build-out				
BEECHLAWN DR	7	EX MH018	EX MH H9-0010	2.89	2.89		3.5	63	EX MH	221	3.80										4.27	59.00	200	0.95	31.97	1.02	13.4					
METROPIA	6	EX MH3A	EX MH H9-0010	2.09	2.09		3	130	390	3.80											6.77	38.20	200	1.00	32.80	1.04	20.6					
Pickering Parkway	16	EX MH H9-0010	EX MH H9-0011	0.22	5.48				2306	3.54				2.74							41.37	82.50	750	0.40	704.10	1.59	5.9	pipe sized for full build-out				
Pickering Parkway	17	EX MH H9-0011	EX MH-H9-0022	0.24	5.72				2306	3.54				2.74							41.44	80.00	750	0.40	704.10	1.59	5.9	pipe sized for full build-out				
Pickering Parkway	18	EX MH-H9-0022	EX MH H9-0014	0.22	5.94				2306	3.54				2.74							41.49	110.10	750	0.40	704.10	1.59	5.9	pipe sized for full build-out				
Subject Site	5	SAN MH 35-34	SAN MH 35-33									0.42	0.42								0.88	145.74	150	1.00	15.23	0.86	5.8					
Notion Road	20	SAN MH 35-33	SAN MH H9-0014	0.50	0.50								0.42								1.01	109.40	200	1.82	44.25	1.41	2.3					
MARSHCOURT DR		EX-MH-35-8	EX-MH-35-25		0.00																0.00	58.90	250	0.44	38.08	0.78	0.0	pipe to remain as cleanout access				
ASHFORD DR	8	EX.MH023	SAN MH 35-25	1.93	1.93		3.5	44	154	3.80											2.96	73.00	200	0.10	10.37	0.33	28.5					
MARSHCOURT DR	9	SAN MH 35-25	SAN MH 35-26	0.29	2.22		3.5	8	28	3.80											1.02	72.80	250	0.54	43.70	0.89	2.3					
MARSHCOURT DR	10	SAN MH 35-26	SAN MH 35-27	0.60	2.82		3.5	14	49	3.80											1.51	70.30	250	0.55	44.10	0.90	3.4					
MARSHCOURT DR	11, 12	EX MH 032	SAN MH 35-27	17.39	17.39		3.5	262	917	3.80			0.67	0.67							4.52	14.64	1.39		20.55	40.50	250	0.27	30.90	0.63	66.5	
EASEMENT		SAN MH 35-27	SAN MH H9-0029	0.00	20.21				966	3.80				0.67							5.25	15.42	1.39		22.06	124.01	375	0.16	70.13	0.63	31.5	
NOTION ROAD	24	SAN MH H9-0014	Prop MH 13A	0.03	0.53				2306	3.54				3.16							0.14	34.25	6.58		40.97	14.50	450	0.20	127.50	0.80	32.1	Interim pipe Phase 1
NOTION ROAD	22	Prop MH 13A	Prop MH 14A	0.30	0.83				2306	3.54				3.16							0.22	34.25	6.58		41.05	100.00	450	0.22	133.73	0.84	30.7	Interim pipe Phase 1
NOTION ROAD	21,23	Prop MH 14A	SAN H9-0029	0.95	1.78				2306	3.54				3.16	0.66						0.46	34.25	6.58	1.3728	42.67	101.80	450	0.22	133.73	0.84	31.9	Interim pipe Phase 1
NOTION ROAD		SAN MH H9-0029	SAN MH H9-0045		20.21				3272	3.41				3.83	0.66						5.25	46.86	7.98	1.3728	61.46	71.80	450	0.22	133.73	0.84	46.0	Interim pipe Phase 1
NOTION ROAD		SAN MH H9-0045	SAN MH 17		20.21				3272	3.41				3.83	0.66						5.25	46.86	7.98	1.3728	61.46	3.46	450	0.23	136.73	0.86	44.9	Interim pipe Phase 1
ORCHARD ROAD		SAN MH 17	SAN MH 18		20.21																											
																								61.46		750	Available capacity at Orchard Rd 750mm dia. pipe is 150 L/s. Total		see note below about capacity			

**Design Criteria** as per The Regional Municipality of Durham 'Design Specifications for Sanitary Sewers'  
Average daily per capita flow = 364 L/cap/day (Residential)  
Average daily per capita flow = 180,000 L/GFA hectares/day (commercial&industrial)  
I = Unit of peak extraneous flow when foundation drains are NOT connected to the storm sewer = 0.26 L/s/ha  
Q(p) = peak population flow (L/s) Q(i) = peak extraneous flow (L/s)  
Q(d) = peak design flow (L/s)  
PEAKING FACTOR (Harmon; Residential) M = 1 + 14/(4+(P/1000)^0.5)  
PEAK POPULATION FLOW, Q(p) = q\*P\*M / 86400 L / Sec.  
PEAK EXTRANEAL FLOW, Q(i) = I\*A L / Sec.  
PEAK DESIGN FLOW, Q(d) = Q(p) + Q(i) L / Sec.  
PIPE ROUGHNESS, n = 0.013 For Manning's Equation

- NOTES:**
- 1) MINIMUM VELOCITY = 0.60 m/s
  - 2) MAXIMUM VELOCITY = 3.65 m/s
  - 3) INFILTRATION 0.26 l/s = 22.5 m3/ha/DAY  
INFILTRATION 0.52 l/s = 45.0 m3/ha/DAY (Foundation Drain Connections)
  - 4) COMMERCIAL 2.08 l/s (local sewers) 1.04 l/s (trunk sewers)
  - 5) EXISTING CONDITION INCLUDES COMMITTED DEVELOPMENT
  - 6) USE ACTUAL METRIC I.D. PIPE SIZE IN mm
  - 7) COMMERCIAL FLOOR SPACE INDEX=50% UNLESS OTHERWISE KNOWN

**Population Density by Land Use**

Housing Type	Density
Single & Semi Detached	3.5 P/u
Townhouse	3.0 P/u
1 Bedroom	1.5 P/u
2 Bedroom and 1 Bedroom+Den	2.5 P/u
3 Bedroom	3.5 P/u
4 Bedroom	4.5 P/u

Housing Type	Density
Single Family	60 persons/ha
Semi Detached & Duplex	100 persons/ha

flow calculated here does not include the existing sanitary flows conveyed south on Notion Rd to Orchard Rd.



\* ASSUMED 150 L/s AVAILABLE EXCESS FLOW CAPACITY AT ORCHARD ROAD as per correspondence with Durham Region

**SCENARIO 3:** CONCEPTUAL FULL BUILDOUT CONDITIONS  
Full development of subject site and future tributary sanitary design sheet

DESIGNED BY: S. Ahone 0.013  
CHECKED BY: M. Al-Awa 09/09/2021

DATE: 2025-01-17

**FIGURE S-5**

STREET	TRIB ID	UPSTREAM MH	DOWNSTREAM MH	RESIDENTIAL							COMMERCIAL			INDUST.		FLOW (L/s)				EXISTING SEWER					PRESENT CONDITION	NOTES		
				LOT AREA		POP. DENSITY (Persons/ha)	POP. DENSITY (Persons/Unit)	# OF UNITS	POP.	PEAK FLOW FACTOR, K <sub>p</sub>	LOT AREA (Ha)	FLOOR SPACE INDEX	GROSS FLOOR AREA		GROSS FLOOR AREA	RESIDENTIAL FLOW		COMM. 2.08 l/s	TOTAL FLOW l/s	Length	Size		Slope	Full Flow Capacity Q <sub>cap</sub>			Full Flow Velocity V	% Full Q(d)/Q <sub>cap</sub>
				UNIT (ha)	ACCUM. (ha)								GFA (ha)	ACCUM. (ha)		UNIT (ha)	ACCUM. (ha)				INFIL. 0.26 (L/s)	SEWAGE 0.0042 (L/s)						
1899 Brock Road	P9	Prop MH16A	EX SAN MH H9-0091	29.50	29.50	1200			35400		2.41						7.67	357.88	0.00	365.55	116.00	600	1.00	614.01	2.17	59.5	FUTURE PROPOSED	
Canadian Tire Lands	P10	EX.MH090	EX SAN MH H9-0091	4.25	4.25	800			3400		3.40						1.11	48.49	0.00	49.59	59.82	200	0.30	17.96	0.57	276.1	EX PIPE OUTSIDE SCOPE OF WORK	
Subject Site	P1	Prop MHBK1	Prop MH2A	1.12	1.12	2.5	678	1695			3.64		0.15	0.15			0.29	25.92	0.31	26.52	19.97	300	2.00	136.76	1.93	19.4	PROPOSED	
Subject Site		Prop MH2A	Prop MH3A					1695			3.64		0.15	0.15			0.29	25.92	0.31	26.52	53.47	300	1.00	96.70	1.37	27.4	PROPOSED	
Subject Site		Prop MH3A	Prop MH4A					1695			3.64		0.15	0.15			0.29	25.92	0.31	26.52	33.35	300	0.70	80.91	1.14	32.8	PROPOSED	
Subject Site		Prop MH4A	Prop MH5A					1695			3.64		0.15	0.15			0.29	25.92	0.31	26.52	33.36	300	0.70	80.91	1.14	32.8	PROPOSED	
Subject Site		Prop MH5A	Prop MH6A					1695			3.64		0.15	0.15			0.29	25.92	0.31	26.52	22.14	300	0.70	80.91	1.14	32.8	PROPOSED	
Subject Site	P2	Prop MHBK2	Prop MH6A	2.59	2.59	2.5	1199	2998			3.44		0.09	0.09			0.67	43.34	0.19	44.20	12.03	300	2.00	136.76	1.93	32.3	PROPOSED	
Subject Site		Prop MH6A	Prop MH7A					4693			3.27		0.24	0.24			0.96	64.46	0.50	65.92	24.07	450	0.70	238.54	1.50	27.6	PROPOSED	
Subject Site		Prop MH7A	Prop MH8A					4693			3.27		0.24	0.24			0.96	64.46	0.50	65.92	29.51	450	0.70	238.54	1.50	27.6	PROPOSED	
Subject Site	P3	Prop MHBK4	Prop MH8A	1.65	1.65	2.5	1047	2618			3.49		0.09	0.09			0.43	38.39	0.19	39.01	11.91	300	2.00	136.76	1.93	28.5	PROPOSED	
Subject Site		Prop MH8A	Prop MH9A					7310			3.09		0.33	0.33			1.39	94.82	0.69	96.90	55.51	450	0.70	238.54	1.50	40.6	PROPOSED	
Subject Site		Prop MH9A	Prop MH10A					7310			3.09		0.33	0.33			1.39	94.82	0.69	96.90	18.31	450	0.70	238.54	1.50	40.6	PROPOSED	
Subject Site		Prop MH10A	Prop MH11A					7310			3.09		0.33	0.33			1.39	94.82	0.69	96.90	18.31	450	0.70	238.54	1.50	40.6	PROPOSED	
Subject Site		Prop MH11A	Prop MH12A					7310			3.09		0.33	0.33			1.39	94.82	0.69	96.90	16.51	450	0.70	238.54	1.50	40.6	PROPOSED	
Subject Site	P5	Prop MHBK7	Prop MH24A	1.41	1.41	2.5	490	1225			3.74		0.00	0.00			0.37	19.25	0.00	19.62	19.47	300	1.00	96.70	1.37	20.3	PROPOSED	
Subject Site		Prop M24A	Prop MH23A					1225			3.74		0.00	0.00			0.37	19.25	0.00	19.62	72.41	300	0.70	80.91	1.14	24.2	PROPOSED	
Subject Site	P6	Prop MHBK5	Prop MH13A	1.19	1.19	2.5	588	1470			3.69		0.11	0.11			0.31	22.76	0.23	23.29	11.45	300	2.00	136.76	1.93	17.0	PROPOSED	
Subject Site		Prop MH13A	Prop MH12A					2695			3.48		0.11	0.11			0.68	39.41	0.23	40.31	50.25	300	0.70	80.91	1.14	49.8	PROPOSED	
Subject Site	P4	Prop MH122A	Prop MH12A	1.38	1.38			0			0.00		0.00	0.00			0.36	0.00	0.00	0.36	9.73	300	2.00	136.76	1.93	0.3	PROPOSED	
Subject Site		Prop MH12A	Prop MH23A					10005			2.95		0.44	0.44			2.43	124.15	0.92	127.49	13.47	450	0.80	255.01	1.60	50.0	PROPOSED	
Subject Site	P8	Prop MHBK6	Prop MH23A	0.85	0.85	2.5	461	1153			3.76		0.05	0.05			0.22	18.20	0.10	18.52	9.96	300	2.00	136.76	1.93	13.5	PROPOSED	
Subject Site		Prop MH23A	Prop MH14A					11158			2.91		0.49	0.49			2.65	136.24	1.02	139.91	86.30	450	0.80	255.01	1.60	54.9	PROPOSED	
Subject Site	P7	Prop MHBK3	EX MH H9-0091	0.69	0.69	2.5	646	1615			3.66		0.09	0.09			0.18	24.80	0.19	25.17	14.49	300	2.00	136.76	1.93	18.4	PROPOSED	
Pickering Parkway	13	EX MH H9-0018	Prop MH21A	0.25	34.69			40415			2.35		0.09	0.09			9.02	399.19	0.19	408.39	67.05	675	0.40	531.63	1.49	76.8	PROPOSED	
Pickering Parkway		Prop MH21A	EX MH H9-0018	0.00	34.69			40415			2.35		0.09	0.09			9.02	399.19	0.19	408.39	24.10	675	0.40	531.63	1.49	76.8	PROPOSED	
Pickering Parkway	14	EX MH H9-0018	Prop MH15A	0.24	34.93			40415			2.35		0.09	0.09			9.08	399.19	0.19	408.45	52.03	675	0.40	531.63	1.49	76.8	PROPOSED	
Pickering Parkway		Prop MH14A	Prop MH15A	0.00	10.19			11158			2.91		0.49	0.49			2.65	136.24	1.02	139.91	14.50	450	0.80	255.01	1.60	54.9	PROPOSED	
Pickering Parkway		Prop MH15A	EX MH H9-0019	0.00	45.12			51573			2.25		0.58	0.58			11.73	487.81	1.21	500.75	47.95	750	0.40	704.10	1.59	71.1	PROPOSED	
Pickering Parkway	15	EX MH H9-0019	EX MH H9-0010	0.28	45.40			51573			2.25		0.58	0.58			11.80	487.81	1.21	500.82	99.80	750	0.40	704.10	1.59	71.1	PROPOSED	
BEECHLAWN DR	7	EX MH018	EX MH H9-0010	2.89	2.89	3.5	63	221			3.80						0.75	3.52		4.27	59.00	200	0.95	31.97	1.02	13.4	EX	
METROPIA	20	SAN MH3A	SAN MH H9-0010	2.09	2.09	3	130	390			3.80						0.54	6.22		6.77	38.20	200	1.00	32.80	1.04	20.6	EX	
MARSHCOURT DR		EX MH H9-0022	EX MH 35-25								0.00						0.00	0.00	0.00	0.00	68.00	250	0.41	38.08	0.78	0.0	pipe to remain as cleanout access	
ASHFORD DR	8	EX.MH023	SAN MH 35-25	1.93	1.93	3.5	44	154			3.80						0.50	2.46		2.96	73.00	200	0.10	10.37	0.33	28.5	EX	
MARSHCOURT DR	9	SAN MH 35-25	SAN MH 35-26	0.29	2.22	3.5	8	182			3.80						0.58	2.90	0.00	3.48	72.80	250	0.54	43.70	0.89	8.0	EX	
MARSHCOURT DR	10	SAN MH 35-26	SAN MH 35-27	0.60	2.82	3.5	14	231			3.80						0.73	3.69	0.00	4.42	70.30	250	0.55	44.10	0.90	10.0	EX	
MARSHCOURT DR	11	EX MH 032	SAN MH 35-27	17.39	17.39	3.5	262	917			3.80						4.52	14.64	0.00	19.16	40.50	250	0.27	30.90	0.63	62.0	EX	
EASEMENT		SAN MH 35-27	SAN MH H9-0029		20.21			1148			3.76						5.25	18.13	0.00	23.39	124.01	375	0.16	70.13	0.63	33.3	outlet to Region Trunk on Notion Rd*	
Pickering Parkway	16	SAN MH H9-0010	SAN MH H9-0011	0.22	50.60			52183			2.25		0.58	0.58			13.16	492.55	1.21	506.91	80.09	750	0.40	704.10	1.59	72.0	PROPOSED	
Pickering Parkway	17	SAN MH H9-0011	SAN MH H9-0022	0.24	50.84			52183			2.25		0.58	0.58			13.22	492.55	1.21	506.97	80.10	750	0.40	704.10	1.59	72.0	PROPOSED	
Pickering Parkway	18	SAN MH H9-0022	SAN MH H9-0014	0.22	51.06			52183			2.25		0.58	0.58			13.28	492.55	1.21	507.03	110.13	750	0.40	704.10	1.59	72.0	PROPOSED	
Notion Road		SAN MH H9-0014	MH 18A																	507.03	14.47	750	0.28	589.09	1.33	86.1	outlet to Region Trunk on Notion Rd	

**NOTES:**  
 1) MINIMUM VELOCITY = 0.60 m/s  
 2) MAXIMUM VELOCITY = 3.65 m/s  
 3) INFILTRATION 0.26 l/s = 22.5 m<sup>3</sup>/Ha/DAY  
 4) COMMERCIAL 2.08 l/s (local sewers) 1.04 l/s (trunk sewers)  
 5) EXISTING CONDITION INCLUDES COMMITTED DEVELOPMENT  
 6) USE ACTUAL METRIC I.D. PIPE SIZE IN mm  
 7) COMMERCIAL FLOOR SPACE INDEX=50% UNLESS OTHERWISE KNOWN

**Population Density by Land Use**

Housing Type	Density
Single & Semi Detached	3.5 P/Unit
Townhouse	3.0 P/Unit
1 Bedroom	1.5 P/Unit
2 Bedroom and 1 Bedroom+Den	2.5 P/Unit
3 Bedroom	3.5 P/Unit
4 Bedroom	4.5 P/Unit
Single Family	60 persons/ha
Semi Detached & Duplex	100 persons/ha

**Design Criteria** as per The Regional Municipality of Durham 'Design Specifications for Sanitary Sewers'  
 Average daily per capita flow = 364 L/cap/day (Residential)  
 Average daily per capita flow = 180,000 L/GFA hectares/day (commercial&industrial)  
 I = Unit of peak extraneous flow when foundation drains are NOT connected to the storm sewer = 0.26 L/s/ha  
 Q(p) = peak population flow (L/s) Q(i) = peak extraneous flow (L/s)  
 Q(d) = peak design flow (L/s)  
 PEAKING FACTOR (Harmon; Residential) M = 1 + 14/(4+P/1000\*0.5)  
 PEAK POPULATION FLOW, Q (p) = q<sup>\*</sup>P<sup>\*</sup>M / 86400 L / Sec.  
 PEAK EXTRANEIOUS FLOW, Q(i) = I<sup>\*</sup>A L / Sec.  
 PEAK DESIGN FLOW, Q(d) = Q(p) + Q(i) L / Sec

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## **APPENDIX C**

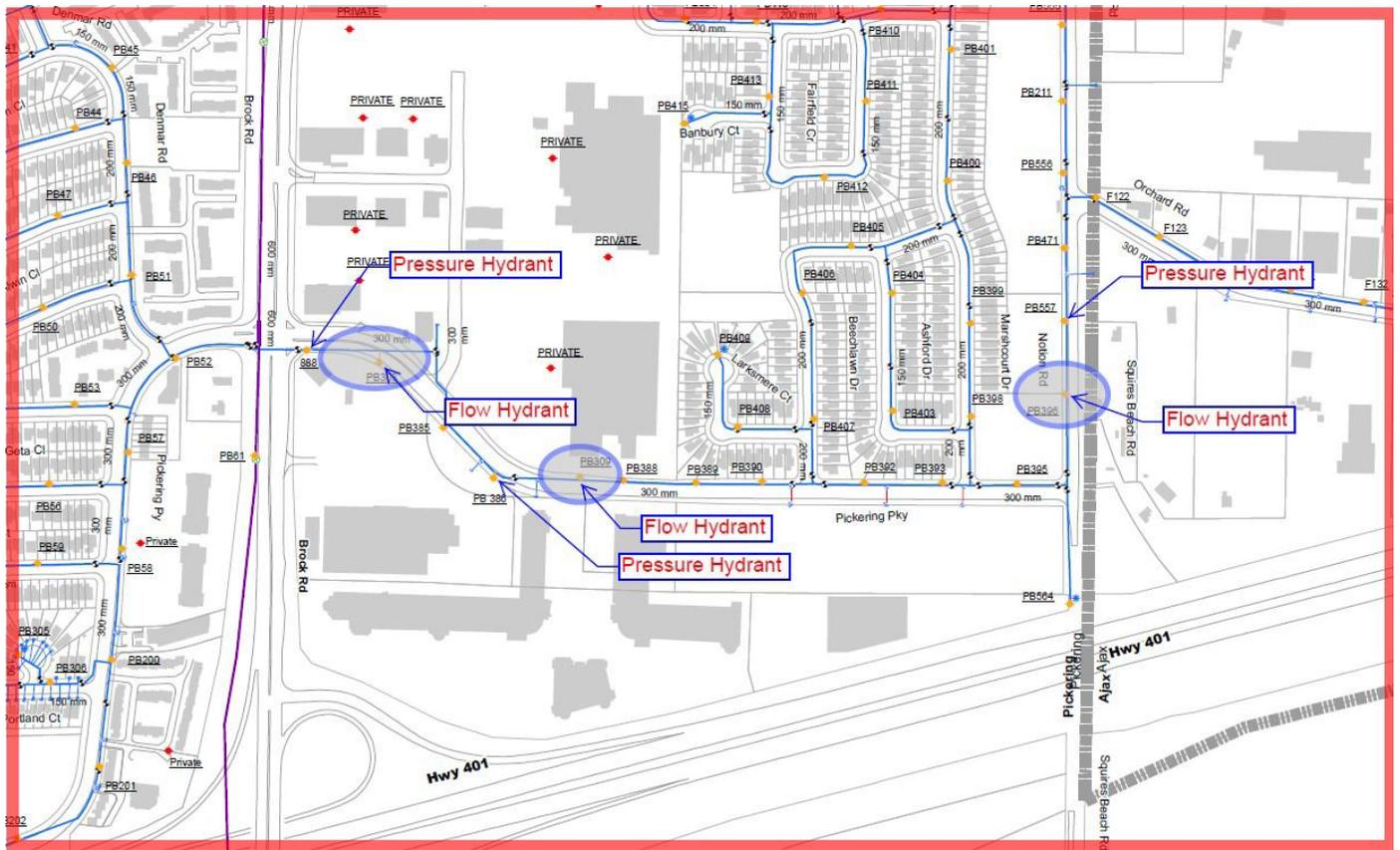
FUS Fire Demand Calculations  
Location of hydrant flow tests  
Hydrant flow tests

FIRST PICKERING PLACE FUNCTIONAL SERVICING AND STORM WATER MANAGEMENT REPORT  
PICKERING, ONTARIO

**FUS Fire Demand Calculations**

WATER SUPPLY FOR PUBLIC FIRE PROTECTION , FIRE UNDERWRITERS SURVEY GUIDE FOR DETERMINATION OF REQUIRED FIRE FLOWS										
<b>F = 220 x C x V A</b> Where: F = required fire flow in liters per minute C= Coefficient related to the type of construction A = the total floor area in square meters (excluding basements) in the building considered										
LOCATION:	20266 - Phase 1 (Block 1)			PROJECT:	31 Storey Residential - Mixed Use					
OBC OCCUPANCY:	Mixed Use			PROJECT No:	21241					
BUILDING FOOT PRINT (m2):	18461							Contents	Charge	
# OF STOREYS	31							Non-Combustible	-25%	
								Limited Combustible	-15%	
								Combustible	0%	
								Free Burning	15%	
								Rapid Buring	25%	
CONSTRUCTION CLASS:	Fire Resistive									
AUTOMATED SPRINKLER PROTECTION		Credit	Total							
NFPA 13 sprinkler standard	yes	30%	50%					Coefficient related to type of construction		
Standard Water Supply	yes	10%						1.5	Wood Frame	
Fully Supervised System	yes	10%						1	Ordinary	
		50%						0.8	Non combustible	
								0.6	Fire Resistive	
CONTENTS FACTOR:	Limited Combustible			CHARGE:	-15%					
EXPOSURE 1 (south)	Distance to Exposure Building (m)							Separation	Charge	
	Length - Height	>45	0					0-3 m	25%	
EXPOSURE 2 (east)	Distance to Exposure Building (m)	21.0	10					3.1 - 10 m	20%	
	Length - Height							10.1 - 20 m	15%	
EXPOSURE 3 (west)	Distance to Exposure Building (m)	>45	0					20.1 - 30 m	10%	
	Length - Height							30.1 - 45 m	5%	
EXPOSURE 4 (north)	Distance to Exposure Building (m)	27.9	10					> 45 m	0%	
	Length - Height							Firewall	10%	
				Total:	20	no more than 75%				
ARE BUILDINGS CONTIGUOUS:	NO									
FIRE RESISTANT BUILDING	Are vertical openings and exterior vertical communications protected with a minimum one (1) hr rating?						NO			
CALCULATIONS	C =	0.6	Fire Resistive							
	A =	15569	m2	Total				STOREY AREAS m2		
	F =	16470	L/min					1715	1	
Round to Nearest 1000 L/min	F =	16000	L/min	must be > 2000 L/min				1454	2	
								1454	3	
CORRECTION FACTORS:								1454	4	
OCCUPANCY	-2400	L/min						1454	5	
FIRE FLOW ADJUSTED FOR OCCUPANCY	13600	L/min						1289	6	
REDUCTION FOR SPRINKLER	-6800	L/min						728	7	
EXPOSURE CHARGE	2720	L/min						778	8-15 (8)	
								762	16-31 (16)	
REQUIRED FIRE FLOW	F =	9520	L/min							
Round to Nearest 1000 L/min	F =	10000	L/min	2642	usgm					
	F =	166.67	L/sec							

**Location of hydrant flow tests**



FIRST PICKERING PLACE FUNCTIONAL SERVICING AND STORM WATER MANAGEMENT REPORT  
PICKERING, ONTARIO



FLOWMETRIX  
INDU-TECH  
PROCESS  
WESTCAN

Fire Flow Testing Report

Residual Hydrant #  
NFPA Colour Code

**PB557**  
**BLUE**

DATE: September 8, 2021  
TIME: 10:30 AM

ADDRESS: 1972 Notion Rd  
Pickering, ON

SIZE-inches/mm: 12 300  
MATERIAL: PVC

CONTACT INFO: The Odan/Detech Group Inc.  
Mark Harris  
C: (905) 632-3811 ext.122  
E: mark@odandetech.com

RESIDUAL HYDRANT INFO.

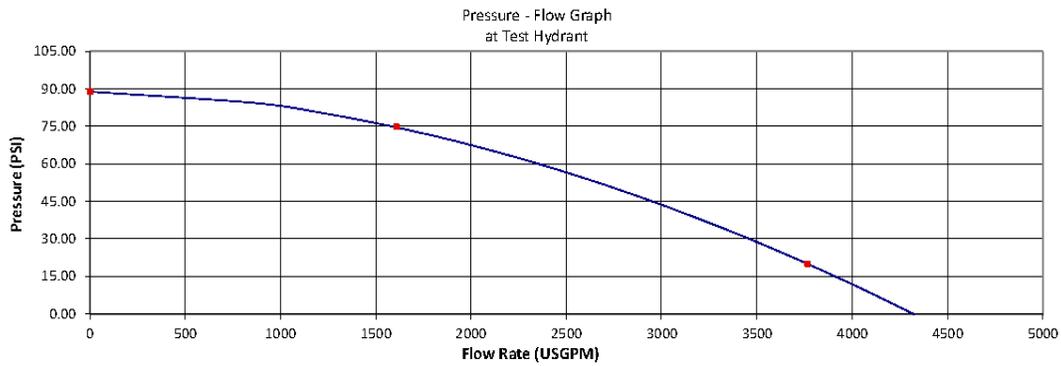
HYDRANT #: PB557  
N.F.P.A. COLOUR CODE: BLUE  
STATIC PRESSURE: 88.9 psi  
RESIDUAL PRESSURE: 74.6 psi  
PRESSURE DROP: 14.3 psi  
% PRESSURE DROP: 16.0 % psi

Flow on Water Main At Test Hydrant - 20 psi 3766 USGPM

FLOW HYDRANT(S) INFO.

HYDRANT ASSET ID	HYD. # PORTS	OUTLET DIAMETER (INCHES)	NOZZLE COEFFICIENT	DIFFUSER TYPE	DIFFUSER COEFFICIENT	PITOT READING (psi)	PITOT FLOW (USGPM)	FLOW METER (USGPM)
PB396	2	2.5	Round	LPD250	0.90	28.4	804	0
		2.5	Round	LPD250	0.90	28.4	804	0
Total Flow (USGPM)							1609	0
Total Flow (USGPM)							1609	0

FIRE FLOW CHART



COMMENTS

OPERATOR: FMX Jordan Whitlock  
OPERATOR: FMX Denis Kriventsev  
OPERATOR: Region of Durham

FIRST PICKERING PLACE FUNCTIONAL SERVICING AND STORM WATER MANAGEMENT REPORT  
PICKERING, ONTARIO



FLOWMETRIX  
INDU-TECH  
PROCESS  
WESTCAN

Fire Flow Testing Report

Residual Hydrant #  
N.F.P.A. Colour Code

**PB386**  
**BLUE**

DATE: September 8, 2021  
TIME: 10:45 AM

ADDRESS: 1735 Pickering Pkwy  
Pickering, ON

SIZE-Inches/mm: 12 300  
MATERIAL: PVC

CONTACT INFO: The Odan/Detech Group Inc.  
Mark Harris  
C: (905) 632-3811 ext.122  
E: mark@odandetech.com

RESIDUAL HYDRANT INFO.

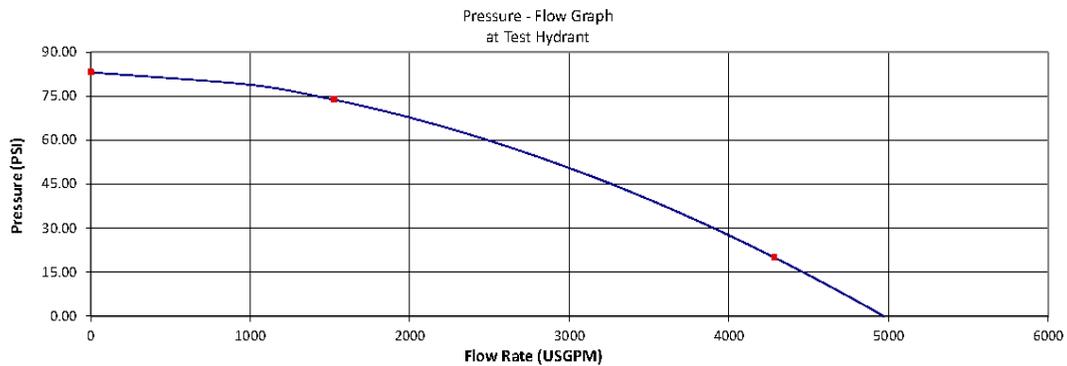
HYDRANT # PB386  
N.F.P.A. COLOUR CODE BLUE  
STATIC PRESSURE 83.2 psi  
RESIDUAL PRESSURE 73.8 psi  
PRESSURE DROP 9.3 psi  
% PRESSURE DROP 11.2 % psi

Flow on Water Main At Test Hydrant - 20 psi 4283 USGPM

FLOW HYDRANT(S) INFO.

HYDRANT ASSET ID	HYD. # PORTS	OUTLET DIAMETER (INCHES)	NOZZLE COEFFICIENT	DIFFUSER TYPE	DIFFUSER COEFFICIENT	PITOT READING (psi)	PITOT FLOW (USGPM)	FLOW METER (USGPM)
PB309	2	2.5	Round	LPD250	0.90	25.5	762	0
		2.5	Round	LPD250	0.90	25.5	762	0
Total Flow (USGPM)							1525	0
Total Flow (USGPM)							1525	

FIRE FLOW CHART



COMMENTS

OPERATOR FMX Jordan Whitlock  
OPERATOR FMX Denis Kriventsev  
OPERATOR Region of Durham



FLOWMETRIX  
 INDU-TECH  
 PROCESS  
 WESTCAN

**Fire Flow Testing Report**

Residual Hydrant #  
 NFPA Colour Code

**PB888**  
**BLUE**

DATE September 8, 2021  
 TIME 11:00 AM

ADDRESS 1785 Pickering Pkwy  
 Pickering, ON

SIZE-Inches/mm 12 300  
 MATERIAL PVC

CONTACT INFO The Odan/Detech Group Inc.  
 Mark Harris  
 C: (905) 632-3611 ext.122  
 E: mark@odandetech.com

**RESIDUAL HYDRANT INFO.**

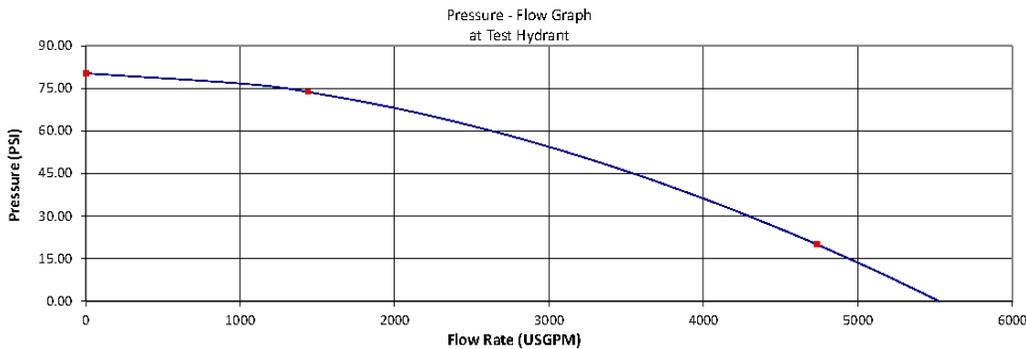
HYDRANT # PB888  
 N.F.P.A. COLOUR CODE BLUE  
 STATIC PRESSURE 80.3 psi  
 RESIDUAL PRESSURE 73.7 psi  
 PRESSURE DROP 6.7 psi  
 % PRESSURE DROP 8.3 % psi

Flow on Water Main At Test Hydrant - 20 psi 4735 USGPM

**FLOW HYDRANT(S) INFO.**

HYDRANT ASSET ID	HYD. # PORTS	OUTLET DIAMETER (INCHES)	NOZZLE COEFFICIENT	DIFFUSER TYPE	DIFFUSER COEFFICIENT	PITOT READING (psi)	PITOT FLOW (USGPM)	FLOW METER (USGPM)
PB308	2	2.5	Round	LPD250	0.90	22.7	720	0
		2.5	Round	LPD250	0.90	22.7	720	0
Total Flow (USGPM)							1439	0
Total Flow (USGPM)							1439	

**FIRE FLOW CHART**



**COMMENTS**

OPERATOR FMX Jordan Whitlock  
 OPERATOR FMX Denis Kriventsev  
 OPERATOR Region of Durham

---

## **APPENDIX D**

Rational Method Calculations  
Water Balance Calculations  
Jellyfish ETV Certification

<b>Modified Rational Method</b>					
Project:	1755 & 1805 Pickering PKWY	Date:	10/6/2025		
Project No.:	20266				
Municipality:	Pickering				
Catchment No.	Block 1				
Area (ha):	0.840	100-year Rainfall			
Runoff Coefficient:	0.500	Intensity (I) :	A/(T+B)^C		
100-Yr Runoff Coefficient:	0.900	A:	2096.43		
*Target Flow (m3/s):	0.105 (5-yr Allowable)	B:	6.485		
	Note: Adjusted to Orifice	C:	0.863		
Initial Time:	10 min				
Increment:	5 min				
Time	I	Peak Flow	Runoff Vol.	Discharge Vol.	Storage
min	mm/hr	m3/s	m3	m3	m3
10	186.7	0.392	235.4	63	172.4
15	148.5	0.312	281.0	94.5	186.5
<b>20</b>	<b>124.0</b>	<b>0.261</b>	<b>312.7</b>	<b>126</b>	<b>186.7</b>
25	106.8	0.224	336.7	157.5	179.2
30	94.1	0.198	355.8	189	166.8
35	84.2	0.177	371.6	220.5	151.1
40	76.3	0.160	384.9	252	132.9
45	69.9	0.147	396.5	283.5	113.0
50	64.5	0.136	406.7	315	91.7
55	59.9	0.126	415.8	346.5	69.3
60	56.0	0.118	424.0	378	46.0
65	52.6	0.111	431.4	409.5	21.9
70	49.7	0.104	438.3	441	-2.7
75	47.0	0.099	444.6	472.5	-27.9
80	44.7	0.094	450.5	504	-53.5
* Target Flow is calculated based on 5-year storm event-Rational Method					
I5= 1082.901/(T+6.007)^0.837					
Tc= 10 min					
I5=106.4 mm/hr.					

**ORIFICE DISCHARGE CALCULATOR - SWM TANK - BLK 1**

This program calculates the discharge from a circular orifice when given elevations and orifice diameters by the user.

Discharge based on orifice equ.:  $Q = CA \times \sqrt{2gh}$

**Tank Area**  
137.5 m<sup>2</sup>

Orifice Diameter = 0.1750 m  
 Orifice Area = 0.0241 m<sup>2</sup>  
 Discharge Coeff. = 0.8000

**Q-allowable**  
105 l/sec

**100-year  
 Top of Tank (free board)**

Head (m)	Discharge(m <sup>3</sup> /s)	Discharge (L/s)	Vol (m <sup>3</sup> )
0	0.0000	0	0
0.20	0.0381	38	28
0.40	0.0539	54	55
0.80	0.0762	76	110
1.00	0.0852	85	138
1.52	0.1051	105	209
1.80	0.1144	114	248
			@1.5x@x1.5 Area
			314   206

**Water Balance Calculations**

**CITY OF PICKERING GUIDELINE WATER BALANCE SUMMARY**

**Project: 1755&1805 Pickering Parkway (First Pickering Place)**

**Project No.: 20266**

Site Area (Phase 1)	8400	m <sup>2</sup>
Rainfall depth required to capture	5	mm
Captured Volume Target (5mm across entire site) (Total Area x Rainfall Depth)	42.0	m <sup>3</sup>

SURFACE TYPE	SURFACE CAPTURE (mm)	AREA (m <sup>2</sup> )	% OF SITE AREA	VOLUME CAPTURE (m <sup>3</sup> )
Green Roof	7	682	8.1	4.8
Landscaped Areas	5	921	11.0	4.6
Roof Area (Drains to Cistern for Reuse)	12.5	2309	27.5	28.9
Asphalt Driveway, Pavers and Concrete (Ground)	1	4488	53.4	4.5
<b>TOTAL</b>		<b>8400</b>	<b>100</b>	<b>38.2</b>

<b>CAPTURED VOLUME BY INTIAL ABSTRACTION (m<sup>3</sup>)</b>	<b>13.9</b>
<b>VOLUME OF CISTERN (m<sup>3</sup>)</b>	<b>28.9</b>
<b>CAPTURED VOLUME (m<sup>3</sup>)</b>	<b>42.7</b>

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## **APPENDIX E**

Figure PH1 – Phase 1 – Site Servicing and Easement Plan

Figure 1 – Preliminary Site Servicing Plan

Figure 2 – Preliminary Grading Plan

Figure 3 – Post Development Watermain Service

Figure 4 – Post Development Storm Service

Figure 5a – Post Development Sanitary Service

Figure 5b – Post Development Sanitary Service

Figure 6 – Post Sanitary Tributary Area Plan

Figure 7 – Pre-Development Storm Tributary Area Plan

Figure 8 – Post Development Storm Tributary Area Plan

Figure 9 – Notion Road – Profile

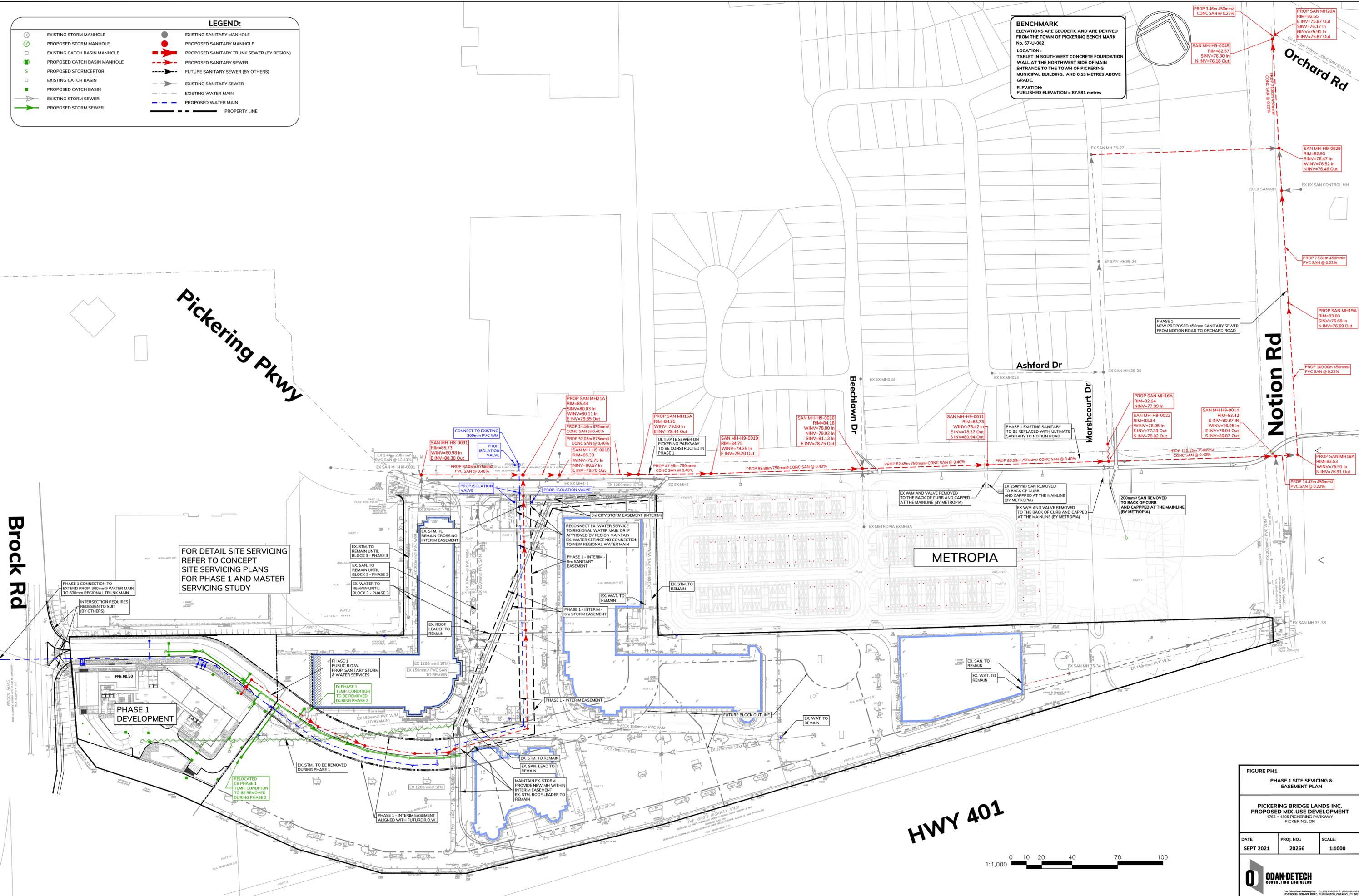
Figure 10 – Pickering Parkway – Profile 1/2

Figure 11 – Pickering Parkway – Profile 2/2

**LEGEND:**

- EXISTING STORM MANHOLE
- PROPOSED STORM MANHOLE
- EXISTING CATCH BASIN MANHOLE
- PROPOSED CATCH BASIN MANHOLE
- PROPOSED STORMCEPTOR
- EXISTING CATCH BASIN
- PROPOSED CATCH BASIN
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING SANITARY MANHOLE
- PROPOSED SANITARY MANHOLE
- PROPOSED SANITARY TRUNK SEWER (BY REGION)
- PROPOSED SANITARY SEWER
- FUTURE SANITARY SEWER (BY OTHERS)
- EXISTING SANITARY SEWER
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- PROPERTY LINE

**BENCHMARK**  
 ELEVATIONS ARE GEODETIC AND ARE DERIVED FROM THE TOWN OF PICKERING BENCH MARK No. 67-U-002  
 LOCATION: TABLE IN SOUTHWEST CONCRETE FOUNDATION WALL AT THE NORTHWEST SIDE OF MAIN ENTRANCE TO THE TOWN OF PICKERING MUNICIPAL BUILDING. AND 0.53 METRES ABOVE GRADE.  
 ELEVATION: PUBLISHED ELEVATION = 87.581 metres



Pickering Pkwy

Brock Rd

Notion Rd

Orchard Rd

Ashford Dr

Beechdown Dr

Marshcourt Dr

METROPIA

HWY 401

FOR DETAIL SITE SERVICING REFER TO CONCEPT SITE SERVICING PLANS FOR PHASE 1 AND MASTER SERVICING STUDY

**FIGURE PH1**  
 PHASE 1 SITE SERVICING & EASEMENT PLAN

PICKERING BRIDGE LANDS INC.  
 PROPOSED MIX-USE DEVELOPMENT  
 1755 + 1805 PICKERING PARKWAY  
 PICKERING, ON

DATE: SEPT 2021	PROJ. NO.: 20266	SCALE: 1:1000
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**ODAN-DETECH**  
 CONSULTING ENGINEERS

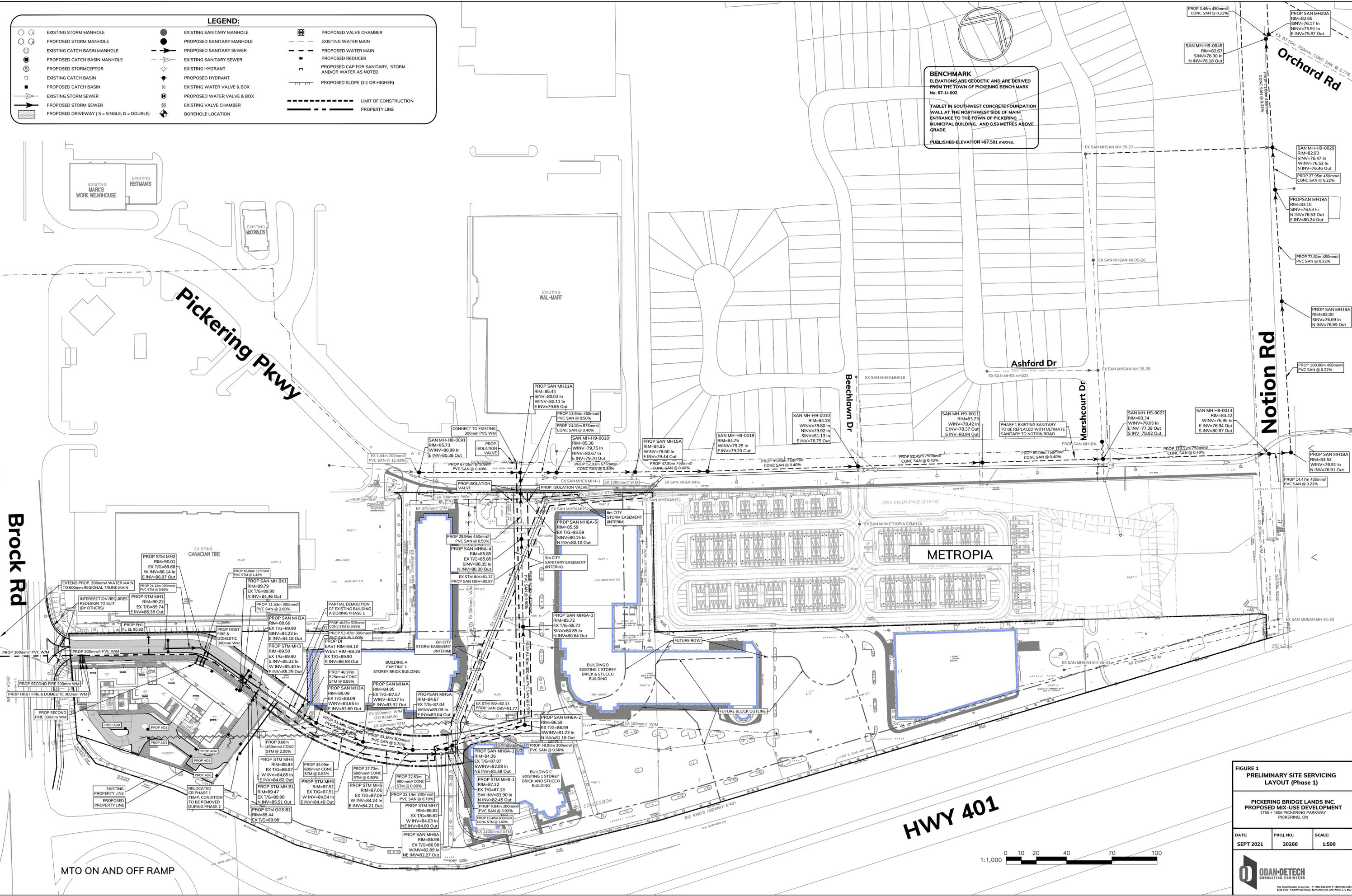
The Odan+Detech Group Inc. P. (905) 632-3811 F. (905) 632-2863  
 220 SOUTH SERVICE ROAD, BURLINGTON, ONTARIO, L7R 4R2



**LEGEND:**

	EXISTING STORM MANHOLE		EXISTING SANITARY MANHOLE		PROPOSED VALVE CHAMBER
	PROPOSED STORM MANHOLE		EXISTING WATER MAIN		EXISTING WATER MAIN
	EXISTING CATCH BASIN MANHOLE		PROPOSED SANITARY SEWER		PROPOSED WATER MAIN
	PROPOSED CATCH BASIN MANHOLE		PROPOSED REDUCER		PROPOSED CAP FOR SANITARY, STORM AND/OR WATER AS NOTED
	PROPOSED STORMCEPTOR		EXISTING HYDRANT		PROPOSED SLOPE (3:1 OR HIGHER)
	EXISTING CATCH BASIN		PROPOSED HYDRANT		LIMIT OF CONSTRUCTION
	PROPOSED CATCH BASIN		PROPOSED WATER VALVE & BOX		PROPERTY LINE
	EXISTING STORM SEWER		EXISTING VALVE CHAMBER		
	PROPOSED STORM SEWER		BOREHOLE LOCATION		
	PROPOSED DRIVEWAY (S = SINGLE, D = DOUBLE)				

**BENCHMARK**  
 ELEVATIONS ARE GEODETIC AND ARE DERIVED FROM THE TOWN OF PICKERING BENCHMARK No. 67-U-002  
 TABLET IN SOUTHWEST CONCRETE FOUNDATION WALL AT THE NORTHWEST SIDE OF MAIN ENTRANCE TO THE TOWN OF PICKERING MUNICIPAL BUILDING, AND 0.53 METRES ABOVE GRADE.  
 PUBLISHED ELEVATION = 87.581 metres.



**FIGURE 1**  
**PRELIMINARY SITE SERVICING LAYOUT (Phase 1)**

PICKERING BRIDGE LANDS INC.  
 PROPOSED MIX-USE DEVELOPMENT  
 1755 + 1805 PICKERING PARKWAY  
 PICKERING, ON

DATE: SEPT 2021	PROJ. NO.: 20266	SCALE: 1:500
--------------------	---------------------	-----------------

**ODAN-DETECH**  
 CONSULTING ENGINEERS

The Olan+Detech Group Inc. P. (905) 632-3811 F. (905) 632-2863  
 220 SOUTH SERVICE ROAD, BURLINGTON, ONTARIO, L7R 4R2

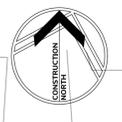




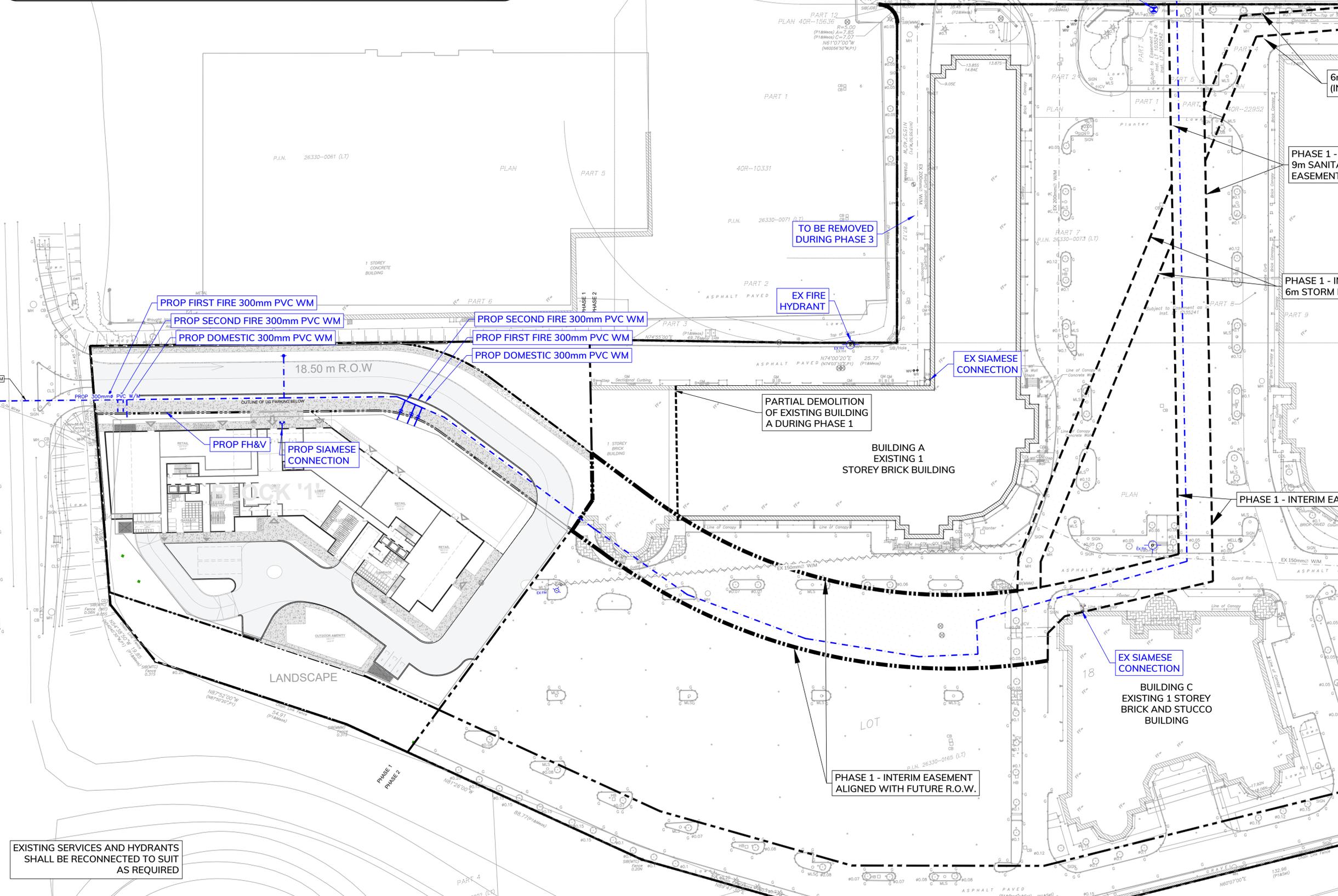
**LEGEND:**

	EXISTING STORM MANHOLE		EXISTING SANITARY MANHOLE		PROPOSED VALVE CHAMBER
	PROPOSED STORM MANHOLE		PROPOSED SANITARY MANHOLE		EXISTING WATER MAIN
	EXISTING CATCH BASIN MANHOLE		PROPOSED SANITARY SEWER		PROPOSED WATER MAIN
	PROPOSED STORMCEPTOR		EXISTING SANITARY SEWER		PROPOSED REDUCER
	EXISTING CATCH BASIN		EXISTING HYDRANT		PROPOSED CAP FOR SANITARY, STORM AND/OR WATER AS NOTED
	PROPOSED CATCH BASIN		PROPOSED HYDRANT		DENOTES PIPE TO BE REMOVED
	EXISTING STORM SEWER		EXISTING WATER VALVE & BOX		PROPOSED SLOPE (3:1 OR HIGHER)
	PROPOSED STORM SEWER		PROPOSED WATER VALVE & BOX		LIMIT OF CONSTRUCTION
			EXISTING VALVE CHAMBER		PROPERTY LINE
			PROPOSED SIAMESE CONNECTION		

**BENCHMARK**  
 ELEVATIONS ARE GEODETIC AND ARE DERIVED FROM THE TOWN OF PICKERING BENCHMARK No. 67-U-002  
 LOCATION: TABLET IN SOUTHWEST CONCRETE FOUNDATION WALL AT THE NORTHWEST SIDE OF MAIN ENTRANCE TO THE TOWN OF PICKERING MUNICIPAL BUILDING. AND 0.53 METRES ABOVE GRADE.



**Brock Rd**



EXISTING SERVICES AND HYDRANTS SHALL BE RECONNECTED TO SUIT AS REQUIRED

**FIGURE 3**  
**FUNCTIONAL SITE SERVICING PLAN WATERMAIN**

PICKERING BRIDGE LANDS INC.  
 PROPOSED MIX-USE DEVELOPMENT  
 1755 + 1805 PICKERING PARKWAY  
 PICKERING, ON

DATE: SEPT 2021	PROJ. NO.: 20266	SCALE: 1:500
--------------------	---------------------	-----------------

**ODAN-DETECH**  
 CONSULTING ENGINEERS

The Olan/Detech Group Inc. P. 0905 622-3811 F. 0905 622-2825  
 2220 SOUTH SERVICE ROAD, BURLINGTON, ONTARIO, L7R 4K2

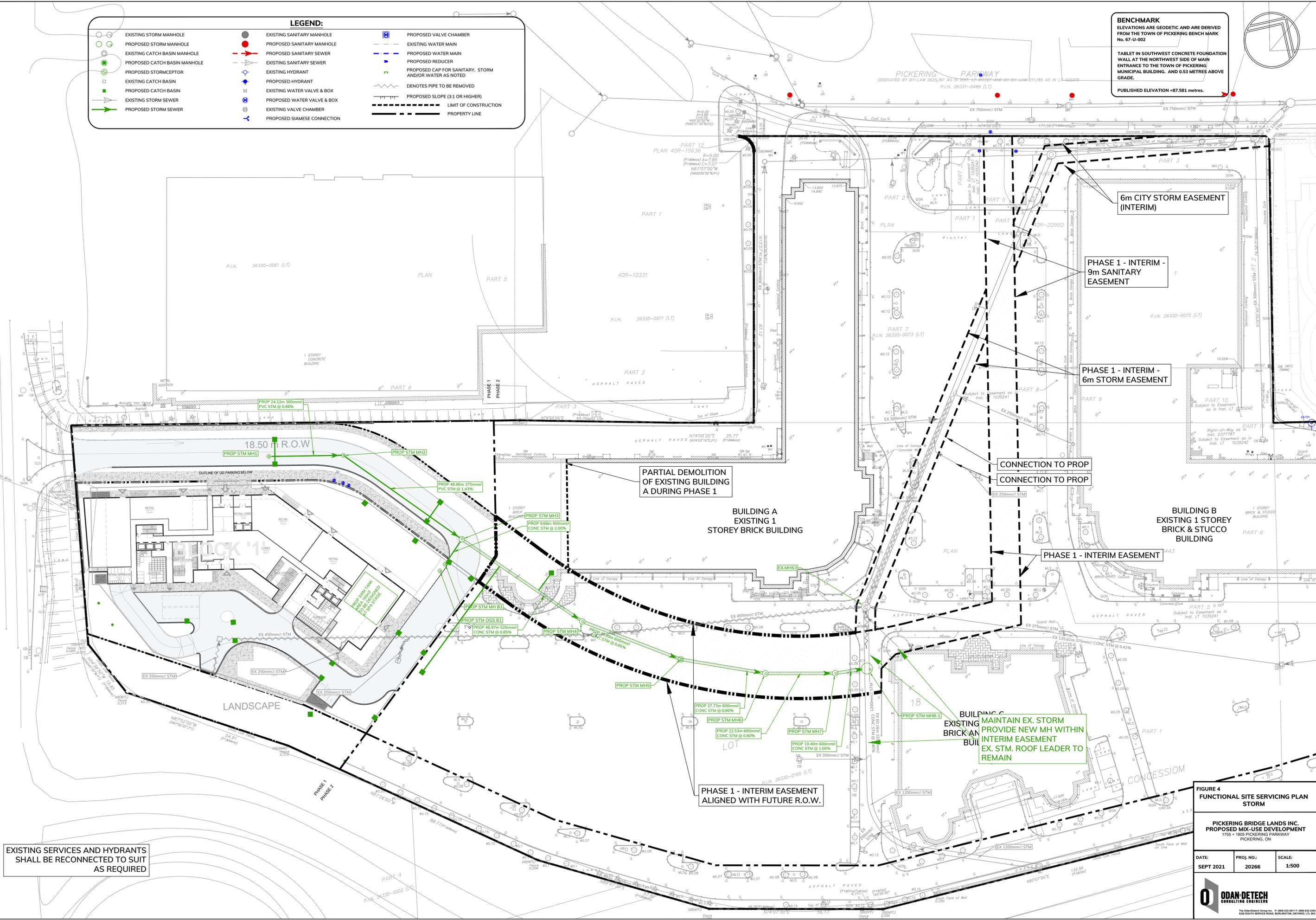
LEGEND:			
	EXISTING STORM MANHOLE		EXISTING SANITARY MANHOLE
	PROPOSED STORM MANHOLE		PROPOSED SANITARY MANHOLE
	EXISTING CATCH BASIN MANHOLE		EXISTING SANITARY SEWER
	PROPOSED CATCH BASIN MANHOLE		EXISTING HYDRANT
	PROPOSED STORMCEPTOR		PROPOSED HYDRANT
	EXISTING CATCH BASIN		EXISTING WATER VALVE & BOX
	PROPOSED CATCH BASIN		EXISTING VALVE CHAMBER
	EXISTING STORM SEWER		PROPOSED SIAMESE CONNECTION
	PROPOSED STORM SEWER		PROPOSED VALVE CHAMBER
			EXISTING WATER MAIN
			PROPOSED WATER MAIN
			PROPOSED REDUCER
			PROPOSED CAP FOR SANITARY, STORM AND/OR WATER AS NOTED
			DENOTES PIPE TO BE REMOVED
			PROPOSED SLOPE (3:1 OR HIGHER)
			LIMIT OF CONSTRUCTION
			PROPERTY LINE

**BENCHMARK**  
ELEVATIONS ARE GEODETIC AND ARE DERIVED FROM THE TOWN OF PICKERING BENCH MARK No. 67-U-002

TABLET IN SOUTHWEST CONCRETE FOUNDATION WALL AT THE NORTHWEST SIDE OF MAIN ENTRANCE TO THE TOWN OF PICKERING MUNICIPAL BUILDING, AND 0.53 METRES ABOVE GRADE.

PUBLISHED ELEVATION = 87.581 metres.

Brock Rd



EXISTING SERVICES AND HYDRANTS SHALL BE RECONNECTED TO SUIT AS REQUIRED

**FIGURE 4**  
**FUNCTIONAL SITE SERVICING PLAN STORM**

PICKERING BRIDGE LANDS INC.  
PROPOSED MIX-USE DEVELOPMENT  
1755 + 1805 PICKERING PARKWAY  
PICKERING, ON

DATE: SEPT 2021	PROJ. NO.: 20266	SCALE: 1:500
--------------------	---------------------	-----------------

**ODAN-DETECH**  
CONSULTING ENGINEERS

The Odan+Detech Group Inc. P. 0905 622-3811 F. 0905 622-2863  
220 SOUTH SERVICE ROAD, BURLINGTON, ONTARIO, L7R 4K2

1899 BROCK ROAD

Pickering Pkwy

Bechlawn Dr

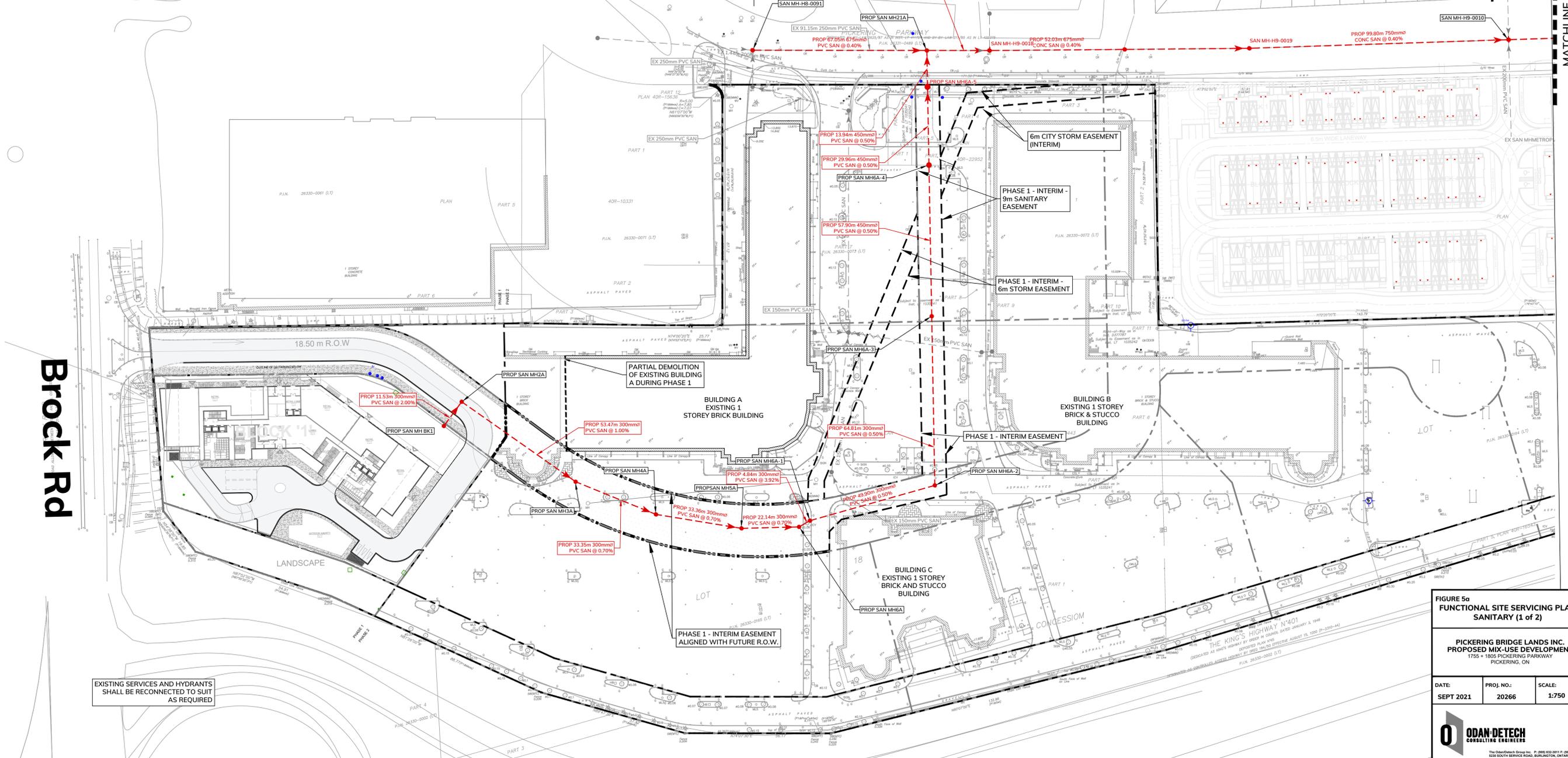
Brock Rd

**LEGEND:**

	EXISTING STORM MANHOLE		EXISTING SANITARY MANHOLE		PROPOSED VALVE CHAMBER
	PROPOSED STORM MANHOLE		PROPOSED SANITARY MANHOLE		EXISTING WATER MAIN
	EXISTING CATCH BASIN MANHOLE		PROPOSED SANITARY SEWER		PROPOSED WATER MAIN
	PROPOSED CATCH BASIN MANHOLE		EXISTING SANITARY SEWER		PROPOSED REDUCER
	PROPOSED STORMCEPTOR		EXISTING HYDRANT		PROPOSED CAP FOR SANITARY, STORM AND/OR WATER AS NOTED
	EXISTING CATCH BASIN		PROPOSED HYDRANT		DENOTES PIPE TO BE REMOVED
	PROPOSED CATCH BASIN		EXISTING WATER VALVE & BOX		PROPOSED SLOPE (3:1 OR HIGHER)
	EXISTING STORM SEWER		PROPOSED WATER VALVE & BOX		LIMIT OF CONSTRUCTION
	PROPOSED STORM SEWER		EXISTING VALVE CHAMBER		PROPERTY LINE
			PROPOSED SIAMSE CONNECTION		

**BENCHMARK**  
 ELEVATIONS ARE GEODETIC AND ARE DERIVED FROM THE TOWN OF PICKERING BENCH MARK No. 67-U-002  
**LOCATION:**  
 TABLE IN SOUTHWEST CONCRETE FOUNDATION WALL AT THE NORTHWEST SIDE OF MAIN ENTRANCE TO THE TOWN OF PICKERING MUNICIPAL BUILDING. AND 0.53 METRES ABOVE GRADE.  
**ELEVATION:**

TO NOTION ROAD  
 PIPES TO BE SIZED AND CONSTRUCTED FOR FULL BUILD-OUT OF SUBJECT SITE, 1899 BROCK ROAD AND FUTURE DEVELOPMENTS (PER REGION)



MATCHLINE  
FIGURE 5b

**FIGURE 5a**  
**FUNCTIONAL SITE SERVICING PLAN**  
**SANITARY (1 of 2)**

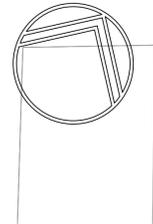
PICKERING BRIDGE LANDS INC.  
 PROPOSED MIX-USE DEVELOPMENT  
 1755 + 1805 PICKERING PARKWAY  
 PICKERING, ON

DATE: SEPT 2021  
 PROJ. NO.: 20266  
 SCALE: 1:750



The Odan+Detech Group Inc. P. 0905 622-2811 F. 0905 622-2825  
 2220 SOUTH SERVICE ROAD, BURLINGTON, ONTARIO, L7R 4K2

**BENCHMARK**  
 ELEVATIONS ARE GEODETIC AND ARE DERIVED FROM THE TOWN OF PICKERING BENCH MARK No. 67-U-002  
 LOCATION: TABLET IN SOUTHWEST CONCRETE FOUNDATION WALL AT THE NORTHWEST SIDE OF MAIN ENTRANCE TO THE TOWN OF PICKERING MUNICIPAL BUILDING. AND 0.53 METRES ABOVE GRADE.  
 ELEVATION:



**Orchard Rd**

**Easement**

**Notion Rd**

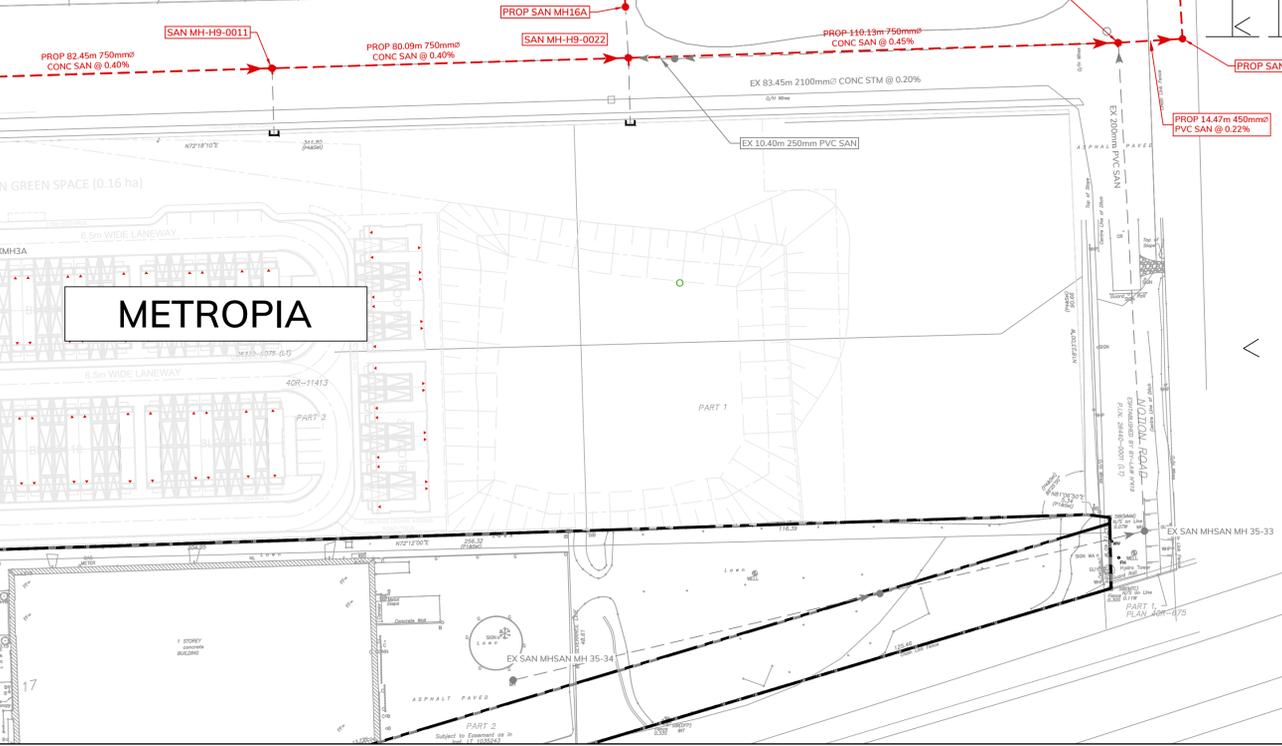
**Ashford Dr**

**Marshcourt Dr**

CONTINUES

TO OUTLET AT ORCHARD ROAD  
 PIPES TO BE SIZED FOR PHASE 1  
 THROW AWAY ONCE REGION  
 CONSTRUCTS TRUNK SEWER

MATCHLINE  
 FIGURE 5a



**LEGEND:**

	EXISTING STORM MANHOLE		EXISTING SANITARY MANHOLE		PROPOSED VALVE CHAMBER
	PROPOSED STORM MANHOLE		PROPOSED SANITARY MANHOLE		EXISTING WATER MAIN
	EXISTING CATCH BASIN MANHOLE		PROPOSED SANITARY SEWER		PROPOSED WATER MAIN
	PROPOSED CATCH BASIN MANHOLE		EXISTING SANITARY SEWER		PROPOSED REDUCER
	PROPOSED STORMCEPTOR		EXISTING HYDRANT		PROPOSED CAP FOR SANITARY, STORM AND/OR WATER AS NOTED
	EXISTING CATCH BASIN		PROPOSED HYDRANT		DENOTES PIPE TO BE REMOVED
	PROPOSED CATCH BASIN		EXISTING WATER VALVE & BOX		PROPOSED SLOPE (3:1 OR HIGHER)
	EXISTING STORM SEWER		PROPOSED WATER VALVE & BOX		LIMIT OF CONSTRUCTION
	PROPOSED STORM SEWER		EXISTING VALVE CHAMBER		PROPERTY LINE
			PROPOSED SIAMESE CONNECTION		

EXISTING SERVICES AND HYDRANTS SHALL BE RECONNECTED TO SUIT AS REQUIRED

**FIGURE 5b**  
**FUNCTIONAL SITE SERVICING PLAN**  
**SANITARY (2 of 2)**

PICKERING BRIDGE LANDS INC.  
 PROPOSED MIX-USE DEVELOPMENT  
 1755 + 1805 PICKERING PARKWAY  
 PICKERING, ON

DATE: SEPT 2021    PROJ. NO.: 20266    SCALE: 1:750

**ODAN-DETECH**  
 CONSULTING ENGINEERS

The Odan/Detech Group Inc. P. (905) 632-3811 F. (905) 632-2963  
 2220 SOUTH SERVICE ROAD, BURLINGTON, ONTARIO, L7R 4R2

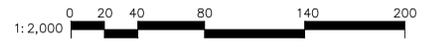
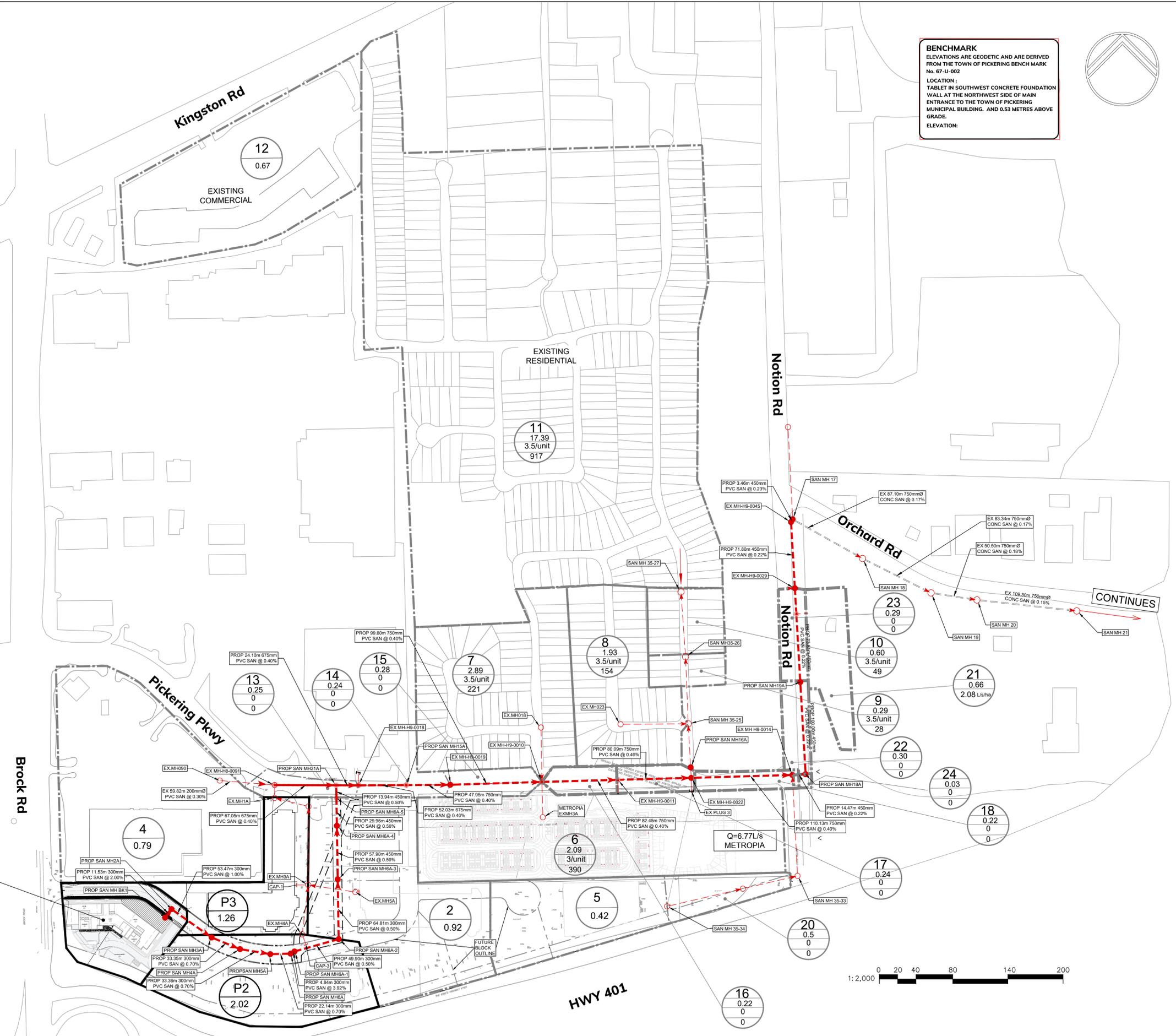
**BENCHMARK**  
 ELEVATIONS ARE GEODETIC AND ARE DERIVED FROM THE TOWN OF PICKERING BENCH MARK No. 67-11-002  
 LOCATION: TABLET IN SOUTHWEST CONCRETE FOUNDATION WALL AT THE NORTHWEST SIDE OF MAIN ENTRANCE TO THE TOWN OF PICKERING MUNICIPAL BUILDING. AND 0.53 METRES ABOVE GRADE.  
 ELEVATION:



**LEGEND**

- EXISTING SANITARY MANHOLE
  - PROPOSED SANITARY MANHOLE
  - - - EXISTING SANITARY SEWER
  - - - PROPOSED SANITARY SEWER
  - - - EXISTING DRAINAGE AREA
  - PHASE 1 DRAINAGE AREA
- COMMERCIAL
- 5 — TRIBUTARY AREA ID NO.
  - 0.42 — GROSS FLOOR AREA (ha)
- RESIDENTIAL
- 9 — TRIBUTARY AREA ID NO.
  - 0.29 — TRIBUTARY AREA (ha)
  - 60 — POPULATION DENSITY (Persons/ha)
  - 17 — EQUIVALENT POPULATION

**P1 PHASE 1 - 'BLOCK 1'**  
 A = 1.12ha  
 RESIDENTIAL  
 POP. DENSITY: 2.5(PP/UNIT)  
 # UNITS: 678  
 RES POP = 1,695  
 RETAIL/COMMERCIAL  
 GFA: 0.15ha [1,506<sup>2</sup>]



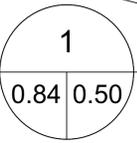
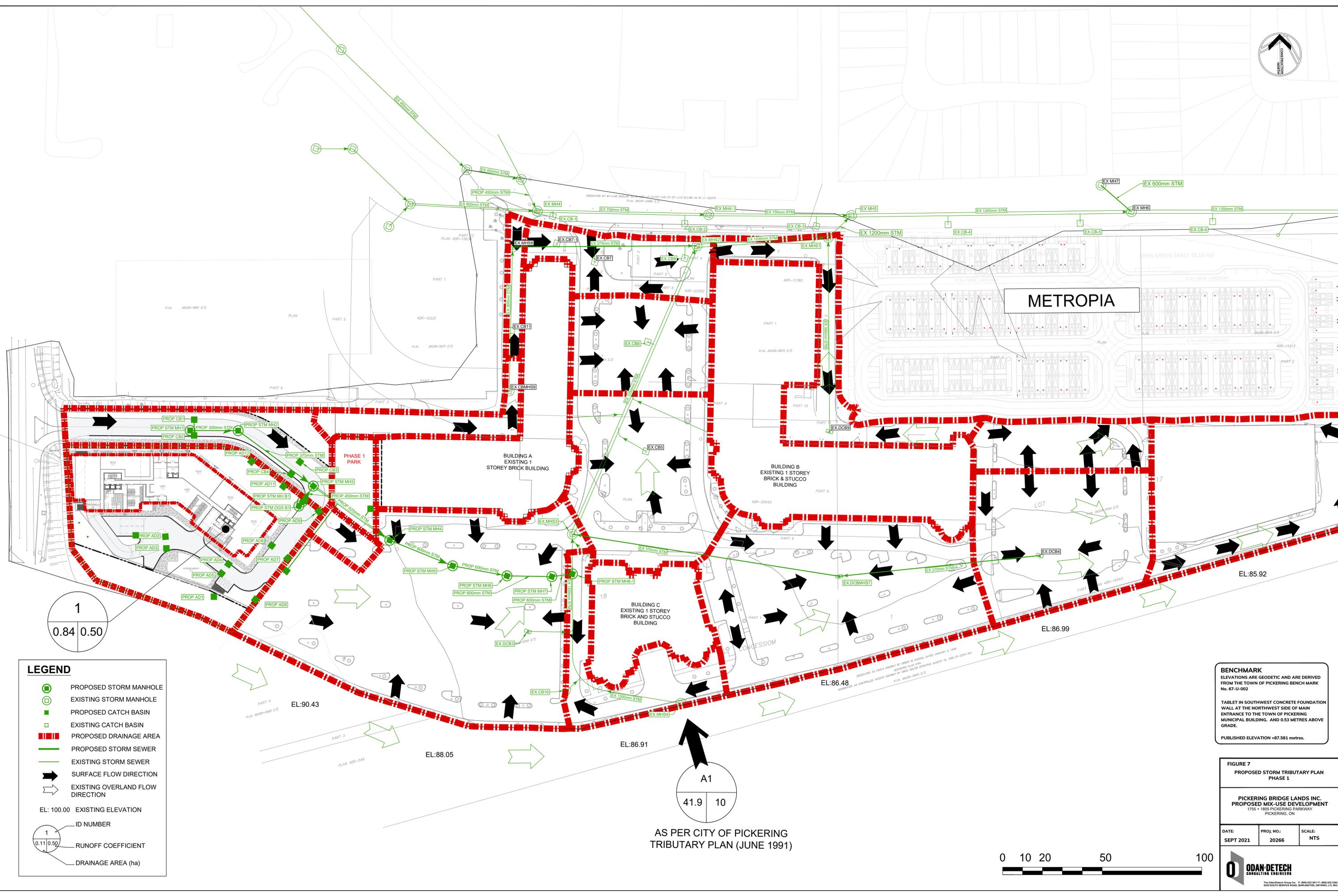
**FIGURE 6**  
 PHASE 1 CONDITIONS  
 SANITARY TRIBUTARY PLAN

PICKERING BRIDGE LANDS INC.  
 PROPOSED MIX-USE DEVELOPMENT  
 1755 + 1805 PICKERING PARKWAY  
 PICKERING, ON

DATE: SEPT 2021	PROJ. NO.: 20266	SCALE: 1:2000
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**ODAN-DETECH**  
 CONSULTING ENGINEERS

The Odan+Detech Group Inc. P. 0905 632-3911 F. 0905 632-3933  
 2220 SOUTH SERVICE ROAD, BURLINGTON, ONTARIO, L7R 4K2



**LEGEND**

- PROPOSED STORM MANHOLE
- EXISTING STORM MANHOLE
- PROPOSED CATCH BASIN
- EXISTING CATCH BASIN
- PROPOSED DRAINAGE AREA
- PROPOSED STORM SEWER
- EXISTING STORM SEWER
- SURFACE FLOW DIRECTION
- EXISTING OVERLAND FLOW DIRECTION

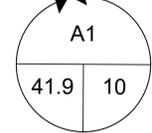
EL: 100.00 EXISTING ELEVATION

1 ID NUMBER

0.11 0.50 RUNOFF COEFFICIENT

DRAINAGE AREA (ha)

**BENCHMARK**  
 ELEVATIONS ARE GEODETIC AND ARE DERIVED FROM THE TOWN OF PICKERING BENCH MARK No. 67-U-002  
 TABLET IN SOUTHWEST CONCRETE FOUNDATION WALL AT THE NORTHWEST SIDE OF MAIN ENTRANCE TO THE TOWN OF PICKERING MUNICIPAL BUILDING, AND 0.53 METRES ABOVE GRADE.  
 PUBLISHED ELEVATION =87.581 metres.



AS PER CITY OF PICKERING TRIBUTARY PLAN (JUNE 1991)

**FIGURE 7**  
 PROPOSED STORM TRIBUTARY PLAN PHASE 1

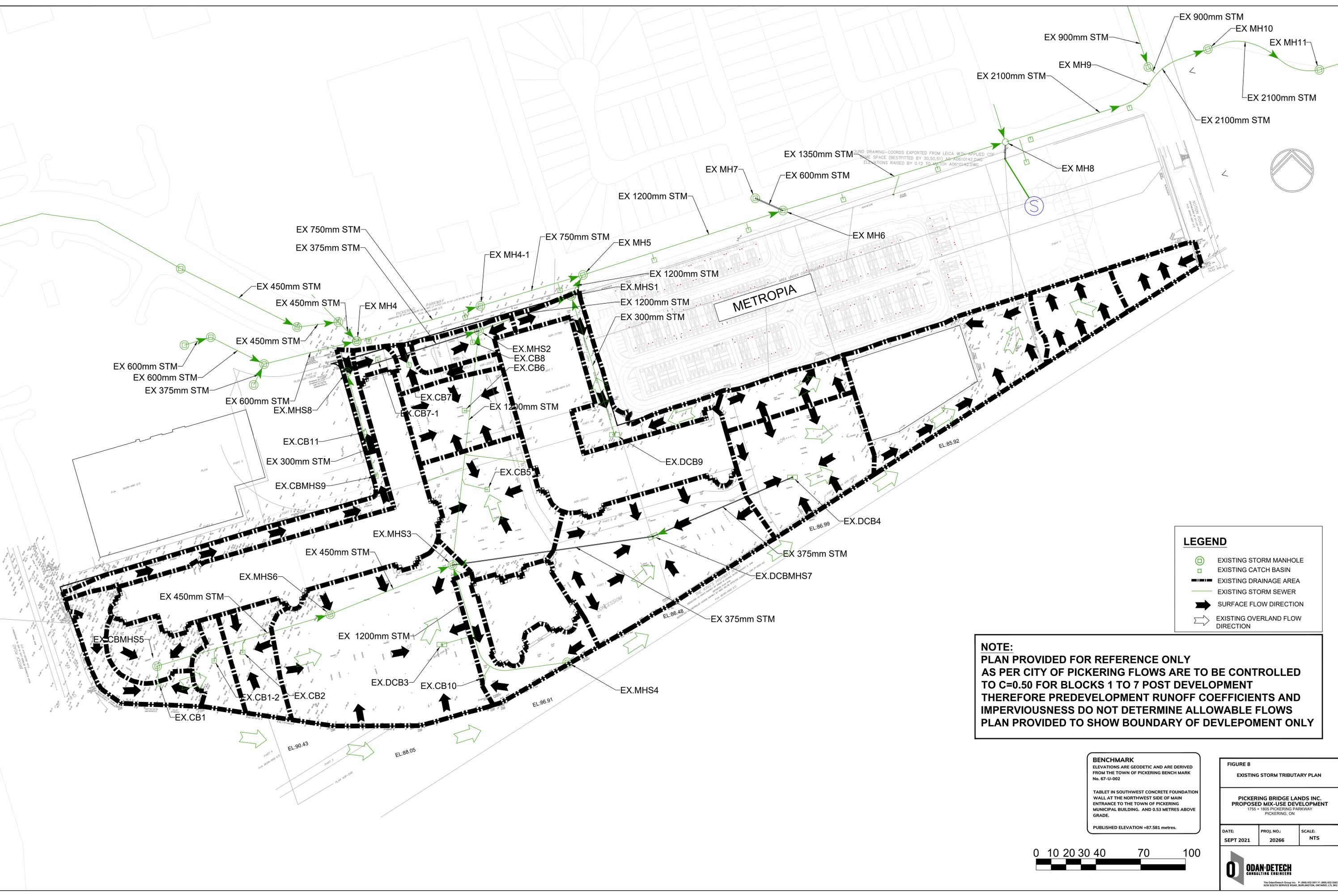
PICKERING BRIDGE LANDS INC.  
 PROPOSED MIX-USE DEVELOPMENT  
 1755 + 1805 PICKERING PARKWAY  
 PICKERING, ON

DATE: SEPT 2021	PROJ. NO.: 20266	SCALE: NTS
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**ODAN-DETECH**  
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 2220 SOUTH SERVICE ROAD, BURLINGTON, ONTARIO, L7R 4R2

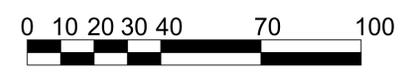


**LEGEND**

- EXISTING STORM MANHOLE
- EXISTING CATCH BASIN
- EXISTING DRAINAGE AREA
- EXISTING STORM SEWER
- SURFACE FLOW DIRECTION
- EXISTING OVERLAND FLOW DIRECTION

**NOTE:**  
 PLAN PROVIDED FOR REFERENCE ONLY  
 AS PER CITY OF PICKERING FLOWS ARE TO BE CONTROLLED  
 TO C=0.50 FOR BLOCKS 1 TO 7 POST DEVELOPMENT  
 THEREFORE PREDEVELOPMENT RUNOFF COEFFICIENTS AND  
 IMPERVIOUSNESS DO NOT DETERMINE ALLOWABLE FLOWS  
 PLAN PROVIDED TO SHOW BOUNDARY OF DEVELOPMENT ONLY

**BENCHMARK**  
 ELEVATIONS ARE GEODETIC AND ARE DERIVED  
 FROM THE TOWN OF PICKERING BENCH MARK  
 No. 67-U-002  
 TABLET IN SOUTHWEST CONCRETE FOUNDATION  
 WALL AT THE NORTHWEST SIDE OF MAIN  
 ENTRANCE TO THE TOWN OF PICKERING  
 MUNICIPAL BUILDING, AND 0.53 METRES ABOVE  
 GRADE.  
 PUBLISHED ELEVATION =87.581 metres.



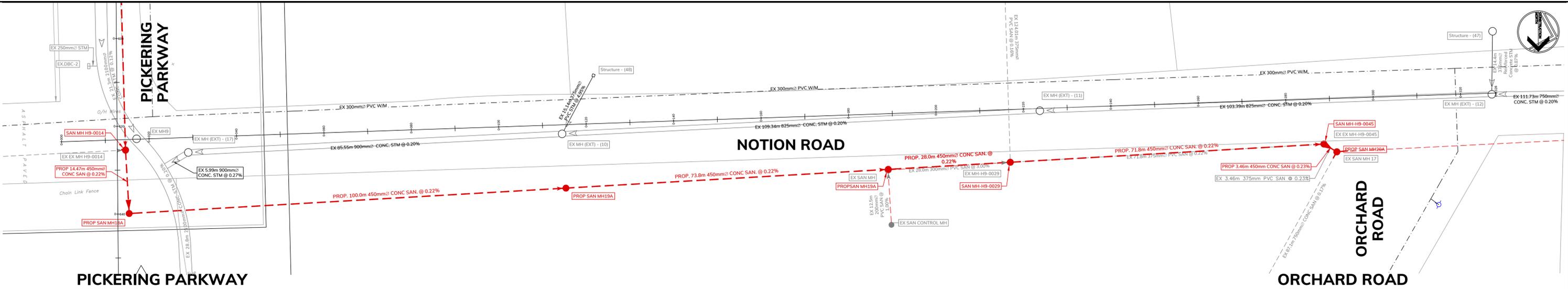
**FIGURE 8**  
 EXISTING STORM TRIBUTARY PLAN

PICKERING BRIDGE LANDS INC.  
 PROPOSED MIX-USE DEVELOPMENT  
 1755 + 1805 PICKERING PARKWAY  
 PICKERING, ON

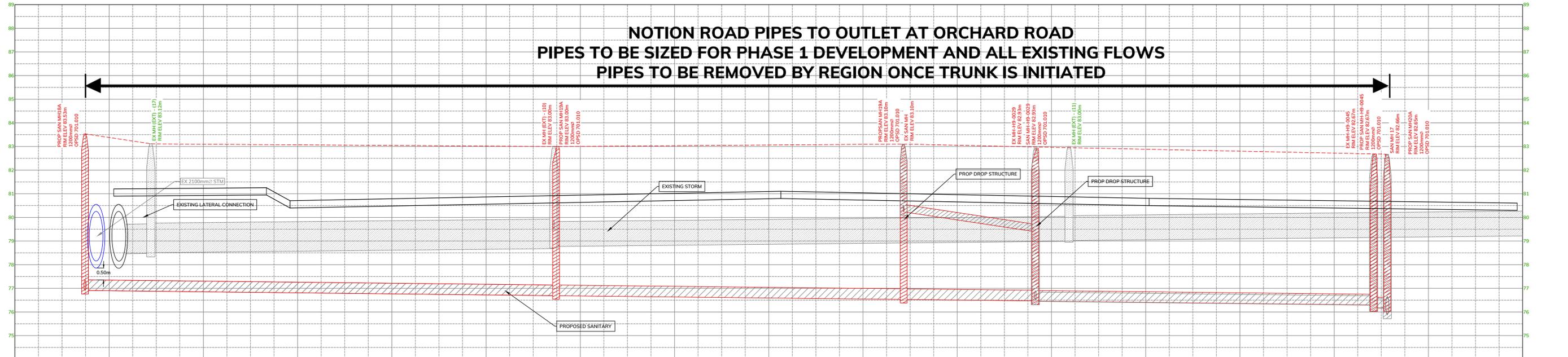
DATE: SEPT 2021	PROJ. NO.: 20266	SCALE: NTS
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**ODAN-DETECH**  
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 2220 SOUTH SERVICE ROAD, BURLINGTON, ONTARIO, L7R 4R2



**NOTION ROAD PIPES TO OUTLET AT ORCHARD ROAD  
PIPES TO BE SIZED FOR PHASE 1 DEVELOPMENT AND ALL EXISTING FLOWS  
PIPES TO BE REMOVED BY REGION ONCE TRUNK IS INITIATED**



EXISTING ELEVATION	0+000	0+020	0+040	0+060	0+080	0+100	0+120	0+140	0+160	0+180	0+200	0+220	0+240	0+260	0+280	0+300	0+320	EXISTING ELEVATION
EXISTING SANITARY SEWER INVERT																		EXISTING SANITARY SEWER INVERT
PROPOSED SANITARY SEWER INVERT	W 76.91 N 76.91			PROP 100.00m 450mm CONC SAN @ 0.22% SDR-35 ASTM D-3034 CSA B182.2 BEDDING AS PER S-200.010			S 76.69 N 76.69	PROP 73.81m 450mm CONC SAN @ 0.22% SDR-35 ASTM D-3034 CSA B182.2 BEDDING AS PER S-200.010			S 76.52 N 76.52	PROP 27.95m 450mm CONC SAN @ 0.22% SDR-35 ASTM D-3034 CSA B182.2 BEDDING AS PER S-200.010			S 76.30 N 76.30	PROP 71.80m 450mm CONC SAN @ 0.22% SDR-35 ASTM D-3034 CSA B182.2 BEDDING AS PER S-200.010	S 76.30 N 76.18 E 76.07 N 76.91	PROPOSED SANITARY SEWER INVERT
EXISTING STORM SEWER INVERT	EX 5.99m 900mm STM @ 0.27%	N 76.88 S 76.85		EX 85.55m 900mm STM @ 0.20%			N 76.88 S 76.85	EX 109.34m 825mm STM @ 0.20%			S 76.52 N 76.52				S 76.30 N 76.18	EX 103.39m 825mm STM @ 0.20%	EX 3.46m 375mm SAN @ 0.23%	EXISTING STORM SEWER INVERT
EXISTING WATERMAIN TOP OF PIPE ELEVATION		EX 300mm PVC W/M		EX 300mm PVC W/M			EX 300mm PVC W/M				EX 300mm PVC W/M				EX 300mm PVC W/M		EX 300mm PVC W/M	EXISTING WATERMAIN TOP OF PIPE ELEVATION

SCALES  
HOR 1:400  
VER 1:80

**FIGURE 9**  
**NOTION ROAD PROFILE**  
**(0+000 to 0+320)**

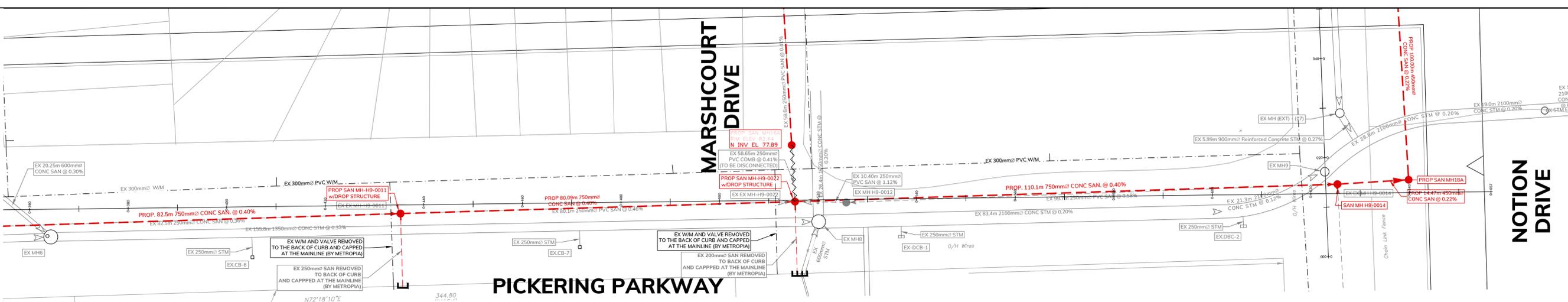
**PICKERING BRIDGE LANDS INC.**  
**PROPOSED MIX-USE DEVELOPMENT**  
1755 - 1805 PICKERING PARKWAY  
PICKERING, ON

DATE: SEPT 2021	PROJ. NO.: 20266	SCALE: AS NOTED
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**ODAN-DETECH**  
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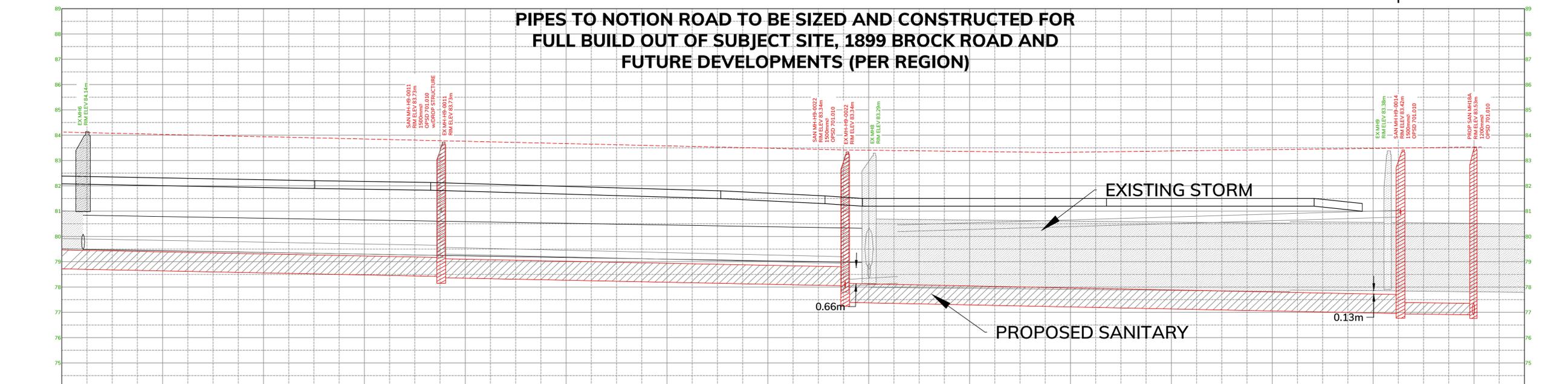


SEE FIGURE 10

SANITARY IS ON NORTH SIDE

NOTION ROAD

PIPES TO NOTION ROAD TO BE SIZED AND CONSTRUCTED FOR FULL BUILD OUT OF SUBJECT SITE, 1899 BROCK ROAD AND FUTURE DEVELOPMENTS (PER REGION)



EXISTING ELEVATION	0+360	0+380	0+400	0+420	0+440	0+460	0+480	0+500	0+520	0+540	0+560	0+580	0+600	0+620	0+640	0+650	EXISTING ELEVATION
PROPOSED SANITARY	PROP 82.45m 750mm CONC SAN @ 0.40% PVC-SDR 35 ASTM D-3034 CSA B182.2 BEDDING AS PER S-200.010			PROP 80.09m 750mm CONC SAN @ 0.40% PVC-SDR 35 ASTM D-3034 CSA B182.2 BEDDING AS PER S-200.010		PROP 110.13m 750mm CONC SAN @ 0.40% PVC-SDR 35 ASTM D-3034 CSA B182.2 BEDDING AS PER S-200.010			PROP 14.47m 450mm CONC SAN @ 0.22% PVC-SDR 35 ASTM D-3034 CSA B182.2 BEDDING AS PER S-200.010								
EXISTING SANITARY	EX 82.45m 250mm SAN @ 0.36% (TO BE REMOVED)			EX 80.09m 250mm SAN @ 0.46% (TO BE REMOVED)		EX 99.74m 250mm SAN @ 0.58% (TO BE REMOVED)											
EXISTING STORM SEWER INVERT	EX 155.84m 1350mm STM @ 0.33%			EX 300mm PVC WM		EX 300mm PVC WM			EX 83.45m 2100mm STM @ 0.20%			EX 28.79m 2100mm STM @ 0.20%					
EXISTING WATERMAIN TOP OF PIPE ELEVATION	EX 300mm PVC WM			EX 300mm PVC WM		EX 300mm PVC WM			EX 300mm PVC WM			EX 300mm PVC WM					

**FIGURE 11**  
**PICKERING PARKWAY PROFILE**  
 (0+360 to 0+650)

PICKERING BRIDGE LANDS INC.  
 PROPOSED MIX-USE DEVELOPMENT  
 1755 + 1805 PICKERING PARKWAY  
 PICKERING, ON

DATE: SEPT 2021    PROJ. NO.: 20266    SCALE: AS NOTED

**ODAN-DETECH**  
 CONSULTING ENGINEERS

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