2948 Baseline Road

Site Servicing and Stormwater Management Report

Stantec

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Prepared by:
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1 Introduction

Stantec Consulting Ltd. has been commissioned by 11034936 Ontario Inc. to prepare the following Site Servicing and Stormwater Management Report in support of a Zoning By-Law Amendment (ZBLA) and a Site Plan Control (SPC) application for the proposed development located at 2940 and 2946 Baseline Road in the Briar Green – Leslie Park neighbourhood of the City of Ottawa.

2940 Baseline Road is currently zoned GM [2138] S325 and is undeveloped. 2946 Baseline Road is currently zoned [2138] S325-h and developed as an existing commercial mall with surface parking.

The proposed development is bound by Baseline Road to the north, existing business and residential development to the east, existing residential development to the south, and Sandcastle Drive to the west. An illustration of the development location is illustrated shown in **Figure 1.1** below.

Figure 1.1: Key Plan of Site

2940 Baseline Road is part of the approved SPC application D07-12-14-0198 (also includes 2942 and 2944 Baseline Road). However, this approved application is being partially superseded by the current SPC application (D02-02-23-0046 and D07-12-23-0073). Amendments to the approved SPC application are being coordinated and submitted separately from the current SPC application.

The proposed Site Plan (dated July 16, 2025) prepared by Neuf Architects is provided in **Appendix A.1.**

The size of the proposed development boundary under the current SPC application is 1.6 ha. The development plan includes three residential building towers with ground level commercial space, and a common underground parking space supporting all three towers. The development is intended to proceed in three phases. Carrying forward from the approved SPC application (Phase 1 complete and Phase 2 under construction), Phase 3-4 is a 9-storey tower, Phase 5 is a 28-storey tower, and Phase 6 is a 30-storey tower.

A public park space of 0.12 ha is proposed to be provided from the overall total site area at the southwest corner of the site.

The proposed unit type breakdown is listed in **Table 1-1** below.

Table 1-1: Unit Type Breakdown

Unit Type	Tower 3-4	Tower 5	Tower 6	Total
Studio	16	25	30	**71**
One-bedroom	-	133	38	**171**
One-bedroom with den	223	73	87	**383**
Two-bedroom	32	50	133	**215**
Two-bedroom with den	-	4	3	**7**
Three-bedroom	16	6	2	**24**
Residential Total	**287**	**291**	**293**	**871**
Commercial (m^2)	**972**	**296**	**912**	**2180**

The unit type breakdown is based on the proposed development statistics as provided by the project architect. A copy of the proposed development statistics is provided in **Appendix A.1**.

1.1 Objectives

This site servicing and stormwater management (SWM) report assesses and identifies the site servicing and stormwater management (SWM) conditions which are generally consistent with City of Ottawa Design Guidelines and considers related pre-consultation advice provided by City of Ottawa staff.

The general and applicable site-specific objectives considered are summarized below. Specific technical design criteria details are described in the associated servicing sections of this report.

- Potable Water Servicing

  - Develop an assessment of the potable water and fire flow demand for the site.
  - Identify that the City of Ottawa water distribution system can supply adequate water pressure to the site for typical operational and emergency conditions.

- Wastewater (Sanitary) Servicing
  - Develop an assessment of the wastewater flow projected for the site.
  - Identify that the City of Ottawa sanitary sewer system can support the project wastewater flow from the site.

- Storm Sewer Servicing
  - Identify allowable flow contributions from the site to the City of Ottawa storm sewer (minor) and adjacent surface (major) drainage systems.
  - Identify applicable water quality control and water balance control targets.
  - Develop an assessment of the SWM system for the site to achieve applicable water quantity (minor and major system) control, water quality control, and water balance control targets.

- Site Grading Plan
  - Prepare a grading plan in accordance with the proposed site plan and existing grades. Identify key drainage patterns and grading features.

The accompanying figures and drawings illustrate the key components of the current servicing assessments.

2 Background

Documents referenced in preparing of this stormwater and servicing report for the 1146 Snow Street development include:

- *City of Ottawa Sewer Design Guidelines* (SDG), City of Ottawa, October 2012, including all subsequent technical bulletins
- *City of Ottawa Design Guidelines – Water Distribution*, City of Ottawa, July 2010, including all subsequent technical bulletins
- *Design Guidelines for Drinking Water Systems*, Ministry of the Environment, Conservation, and Parks (MECP), 2008
- *Fire Protection Water Supply Guideline* for Part 3 in the Ontario Building Code, Office of the Fire Marshal (OFM), October 2020
- *Water Supply for Public Fire Protection*, Fire Underwriters Survey (FUS), 2020
- *Fire Code*, National Fire Protection Agency, 2012
- Zoning By-Law Amendment & Site Plan Control Applications – 2946 Baseline Road – 1st Review Comments, File Number: D02-02-23-0046 & D07-12-23-0073 as provided by the City of Ottawa staff (see **Appendix B**).
- *2940/2946/2948 Baseline Road Development Servicing and Stormwater Management Report,* Novatech, Revised December 18, 2015
- *Geotechnical Investigation – Proposed Multi-Storey Building – Tower 4 to 6, 2946 Baseline Road, Ottawa, Ontario,* Paterson Group Inc., May 8, 2023

Details of the existing infrastructure located within the adjacent public roads are obtained from available City of Ottawa as-built records.

3 Water Servicing

3.1 Background

The site is within Pressure Zone 2W2C of the City of Ottawa's Water Distribution System.

The existing public watermains along the boundaries of the site consists of a 1200 mm diameter watermain in Baseline Road, and a 200 mm diameter ductile iron watermain in Sandcastle Drive.

Existing fire hydrants are located along Sandcastle Drive; three hydrants are immediately adjacent to the proposed development boundary.

3.2 Design Criteria

3.2.1 Water Demand and Allowable Pressure

The domestic water demand and allowable water pressure are assessed using the City of Ottawa Water Distribution Guidelines (2010) as amended, and the ISTB 2021-03 Technical Bulletin.

Residential Apartment Population Rate	
Bachelor and 1 Bedroom	1.4 persons / unit
2 Bedroom and 1 Bedroom with Den	2.1 persons / unit
3 Bedroom and 2 Bedroom with Den	3.1 persons / unit
3 Bedroom with Den	4.1 persons / unit

Residential Apartment Demand	
Average Daily (AVDY)	280 L/cap/day
Maximum Daily (MXDY)	2.5 x AVDY
Peak Hour (PKHR)	2.2 x MXDY

Allowable Water Pressure	
MXDY Flow	345 kPa (50 psi) to 552 kPa (80 psi)
PKHR Flow Minimum	276 kPa (40 psi.)
MXDY + Fire Flow	140 kPa (20 psi.)
Maximum Allowable for Occupied Area	552 kPa (80 psi)

3.2.2 Fire Flow and Hydrant Capacity

Detailed fire flow requirements are assessed using the Fire Underwriters Survey (FUS) methodology (2020). Site specific criteria considered are noted in Section 2.3.2.

Fire hydrant capacity is assessed based on Table 18.5.4.3 of the National Fire Protection Agency (NFPA) Fire Code document. A hydrant situated less than 76 m away from a building can supply a maximum capacity of 5,678 L/min, and a hydrant 76 to less than 152 m away can supply a maximum capacity of 3,785 L/min.

3.3 Water Demands

3.3.1 Domestic Water Demands

The domestic water demand is assessed based on the proposed development conditions described in **Table 1-1**, and the design criteria is described in **Section 3.2**.

The assessed domestic water demand for the site is summarized in **Table 3-1** below and detailed in **Appendix B.1**.

Table 3-1: Estimated Water Demands

Phase / Tower	Commercial Area (m^2)	Population	AVDY (L/s)	MXDY (L/s)	PKHR (L/s)
3-4	972	608	1.9	4.7	10.4
5	296	511	1.6	4.0	8.8
6	912	573	1.7	4.1	9.1
Total	**2180**	**1691**	**5.5**	**13.8**	**30.3**
Total may vary from sum of individual values due to rounding in calculations					

3.3.2 Fire Flow Demands

Based on the proposed development plan, the fire flow requirement is calculated in accordance with Fire Underwriters Survey (FUS) methodology. The building statistics used for the floor areas are included in **Appendix A.1**. Confirmation of the intended building construction, as provided by the project architect, is included in **Appendix A.3**.

The fire flow demand is assessed based on the following.

- Type II - Noncombustible Construction / Type IV-A - Mass Timber Construction (i.e., building construction materials with fire resistance rating as per Section 3.2.2.53 of the Ontario Building Code).

- Total effective building area is the gross floor area of the largest floor plus 25% of the floor area for each of the two immediately adjoining floors.
    - Vertical openings are protected.
- Occupancy and contents factor considering non-combustible materials.
- A fully supervised automatic sprinkler system that conforms to the NFPA 13 standard supplied by a standard water supply.
- Exposure distances based on current adjacent structures having Type V (no fire resistance rating) construction with no firewall or sprinkler systems.

The fire flow is assessed to be approximately 10,000 L/min (167 L/s) based on the results for Phase / Tower 3/4. Supporting calculations per the FUS methodology are provided in **Appendix B.2**.

3.4 Level of Servicing

3.4.1 Boundary Conditions

The assessed domestic water and fire flow demands are used to confirm the level of servicing available to the proposed development from the adjacent municipal watermain and hydrants. The associated hydraulic grade line (HGL) elevation boundary conditions provided by the City of Ottawa are summarized in **Table 3-2** (see **Appendix B.3** for correspondence).

Table 3-2: Boundary Conditions at Snow Street

HGL Condition	Elevation (m) at Connection Location		
	Baseline Road	**Sandcastle Drive 1**	**Sandcastle Drive 2**
Minimum HGL (m)	126.7		
Maximum HGL (m)	133.0		
Max. Day + Fire Flow (167 L/s) HGL(m)	129.5	120.6	122.7

The boundary condition request and confirmation is based on higher population and flow rate data than what is presented in **Table 3-1: Estimated Water Demands**. No update to the boundary conditions is made on the basis that the original request represents a more conservative condition relative to the current design intent.

3.4.2 Allowable Domestic Pressures

The proposed finished floor elevations of Tower 3-4, Tower 5, and Tower 6 are 80.75 m, 79.60 m, and 78.70 m, respectively. These elevations serve as the first-floor elevation for the calculation of residual pressures at ground level. From the boundary condition HGL elevations, the pressures at the first-floor

level are expected to range from 450 kPa to 512 kPa (65 psi to 74 psi**)** under normal operating conditions. The first-floor pressure is expected to be below the maximum allowable for occupied areas. The domestic pressure calculations are included in **Appendix B.3.**

Given the length of the private water main, the connection to a 1200 mm watermain, and the overall proximity to the adjacent public system a water main analysis is not completed.

To ensure adequate water pressure above the first-floor elevation, booster pump requirements are to be confirmed by the mechanical engineering consultant during subsequent stages of the development application process.

3.4.3 Allowable Fire Flow Pressures

From the boundary condition HGL elevations, the watermains and nearby fire hydrants can provide the required fire flow while maintaining the minimum residual pressure of 138 kPa (20 psi). The fire flow pressure calculations are included with the domestic pressure calculations in **Appendix B.3**.

3.4.4 Fire Hydrant Coverage

As noted in Section 3.1, three existing fire hydrants are located along Sandcastle Drive immediately adjacent to the proposed development boundary.

As part of the servicing plan, two additional hydrants within the overall development plan are proposed. The towers are to be sprinklered and Siamese (fire department) connections are to be provided. The locations of the Siamese connections are illustrated on **Drawing SSP-1**.

The existing and proposed fire hydrants satisfies the required hydrant coverage and flow capacity conditions based on:

- National Fire Protection Agency (NFPA) Table 18.5.4.3 in Appendix I of the City of Ottawa Technical Bulletin ISTB-2018-02 noting that a hydrant situated less than 76 m away from a building can supply a maximum capacity of 5,678 L/min.
- Section 3.2.5.16 of the Ontario Building Code, requiring the distance between the fire department connection and hydrant cannot be obstructed or more than 45 m.

3.5 Proposed Water Servicing

The proposed development is to be serviced by twin 200 mm service connections to each tower. Each twin 200 mm service connection is connected to the existing private 200 mm watermain system within the site. Extensions are to be coordinated with the mechanical engineering consultant.

The mechanical engineering consultant is responsible to confirm the water pressure within each building is adequate to meet building code requirements.

4 Wastewater Servicing

4.1 Background

The existing commercial building on the site is serviced by a sanitary service lateral connected to the existing 450 mm diameter sanitary sewer in Baseline Road. The service lateral and manholes will be decommissioned, capped, and abandoned at the property line per City Standard S11.4, as shown in Existing Conditions and Removals Plan (see **Drawing EX-1**).

4.2 Design Criteria

As outlined in the City of Ottawa Sewer Design Guidelines and the MECP Design Guidelines for Sewage Works, the following criteria were used to estimate the wastewater flow rates and to determine the size and location of the sanitary service lateral:

- Minimum velocity = 0.6 m/s (0.8 m/s for upstream sections)
- Maximum velocity = 3.0 m/s
- Manning roughness coefficient for all smooth wall pipes = 0.013
- Minimum size of sanitary sewer service = 135 mm diameter
- Minimum grade of sanitary sewer service = 1.0 % (2.0 % preferred)
- Average wastewater generation = 280 L/person/day (per City Design Guidelines)
- Peak Factor = based on Harmon Equation; maximum of 4.0 (residential)
- Harmon correction factor = 0.8
- Infiltration allowance = 0.33 L/s/ha (per City Design Guidelines)
- Minimum cover for sewer service connections – 2.0 m
- Population density for studio and one-bedroom apartments – 1.4 persons/apartment
- Population density for two-bedroom apartments – 2.1 persons/apartment
- Population density for three-bedroom apartments – 3.1 persons/apartment

4.3 Wastewater Generation and Servicing Design

The peak wastewater flow is assessed based on the proposed development conditions described in **Table 1-1**, and the design criteria is described in **Section 4.2**.

The assessed peak wastewater flow for the site is summarized in **Table 4-1**. Supporting calculations are provided in **Appendix C.1**.

Table 4-1: Estimated Peak Wastewater Flow

Phase / Tower	Residential			Commercial			Infiltration Flow (L/s)	Total Peak Flow (L/s)
	Population	Peak Factor	Peak Flow (L/s)	Area (ha)	Peak Factor	Peak Flow (L/s)		
3-4	608	3.34	6.6	0.10	1.5	0.03	0.3	6.9
5 & 6	1083	3.22	11.3	0.12	1.5	0.04	0.2	11.6
Total Estimated Wastewater Peak Flow (L/s):								**18.5**

The anticipated peak wastewater flows for the proposed development were provided to the City of Ottawa staff to evaluate the adequacy of the receiving municipal sanitary sewer system in the vicinity of the site and downstream network. The city confirmed that there are no concerns with the sanitary peak flow from the proposed development (see **Appendix C.2** for correspondence).

4.4 Proposed Sanitary Servicing

The proposed development is to be serviced with three connections to the existing 250 mm diameter sanitary sewer in Sandcastle Drive.

Towers 3-4 will be serviced by a 200 mm sanitary sewer connecting to the existing 250 mm diameter sanitary sewer in Sandcastle Drive, between Tower 5 and the Park.

Towers 5-6 will be serviced by a 250 mm sanitary sewer connecting to the existing 250 mm diameter sanitary sewer in Sandcastle Drive, between Towers 3 and 4.

The public park space is supported by a 150 mm sanitary connection to the existing 250 mm diameter sanitary sewer in Sandcastle Drive.

The proposed sanitary servicing is shown on **Drawing SSP-1**. Connections and service requirements are to be consistent with City of Ottawa guidelines and specifications. Extensions are to be coordinated with the mechanical engineer consultant.

The mechanical engineering consultant is responsible to confirm the appropriate backwater valve requirements are satisfied.

5 Stormwater Management and Servicing

5.1 Background

The existing storm drainage system along the boundaries of the site consists of curb and catch basins as part of a typical urban roadway section. Catch basins are connected to an associated storm sewer system. The existing storm sewer along the boundaries of the site consists of a 450 mm diameter concrete sewer within Baseline Road, and 300 mm and 450 mm diameter concrete sewers within Sandcastle Drive.

An existing private storm sewer system is also servicing the development portions of the property. A description of the existing conditions as they relate to the proposed development is provided in Section 5.3.

The stormwater management and servicing review for the proposed development considers conditions associated with the approved SPC application D07-12-14-0198 and the current SPC application (D02-02-23-0046 and D07-12-23-0073). As noted in Section 1.1, amendments to the approved SPC application are being coordinated and submitted separately from the current SPC application.

5.2 Design Criteria

The stormwater management (SWM) and storm sewer servicing are assessed using the City of Ottawa Sewer Design Guidelines (2012) as amended. The following design criteria are applied to the assessment of SWM and storm sewer servicing for the site.

- Quantity control required for the site up to and including the 100-yr storm event.
    - A maximum pre-development rational method runoff coefficient ‘C’ of 0.50 is applied.
    - Time of flow for modified rational method calculations should be not less than 10 minutes.
- The water quality control target is to the ‘Enhanced’ level with 80% total suspended solids (TSS) removal.
- Provide both pre and post development stormwater management plans, showing individual drainage areas and their respective coefficients.

5.3 Existing Drainage Conditions

The existing stormwater management and storm servicing condition within the boundary that also considers Phase 1 and 2 is considered represented by the approved SPC application D07-12-14-0198. A copy of the Stormwater Management Plan from this application is provided in **Appendix E.1** for reference. Related stormwater management calculation data from the *2940/2946/2948 Baseline Road*

Development Servicing and Stormwater Management Report, Novatech, Revised December 18, 2015 is also included in **Appendix E.1** for reference.

5.4 Stormwater Management Design

Based on the proposed development, drainage area boundaries are defined as illustrated on **Drawing SD-1**. Runoff coefficient values for modified rational method calculations are assigned to each drainage area based on the anticipated finished surface condition (e.g., asphalt, concrete, gravel, grass, etc.).

In addition to the drainage areas directly associated with the proposed development, a review of the local topographic data identified contributing area from the adjacent residential development area to the south. This additional external area is accommodated within the proposed development.

A summary of drainage areas and runoff coefficients are provided in **Table 5-1**. Further details can be found in **Appendix D.1**, while **Drawing SD-1** illustrates the proposed sub-catchments. As the park lands are City-designed, the park area has been excluded from both pre-development and post-development design.

Table 5-1: Summary of Post-Development Drainage Areas

Drainage Areas	Area (ha)	Runoff Coefficient, C	Outlet
Phase 1 and 2			
FREE1	0.07	0.57	Overland
PL1	0.78	0.89	EX STM MH 100
Phase 3-4			
CIST1-1 to CIST1-13	0.76	0.76	STM 100
EXT-1 and EXT-2	0.04	0.20	STM 100
OFF-SITE 4	0.03	0.90	Overland
Phase 5 and 6			
OFF-SITE 1	0.04	0.71	Overland
OFF-SITE 2	0.08	0.77	Overland
CIST2-1 to CIST2-12	0.48	0.81	STM 200
Total	**2.43**	**0.80**	

5.4.1 Allowable Release Rate

The rational method equation (Q = 2.78 CiA) is used to assess the allowable pre-development release rate from the site. The following parameters are used to assess the allowable release rate.

- A runoff coefficient of 0.50 is used to establish the allowable release rate.

- Rainfall intensity is for the City of Ottawa 5-year and 100-year design storm. A Time of Concentration of twenty minutes is applied based on the anticipated historical design value for the City of Ottawa. The resultant intensity is 70.25 mm/hr for the 5-year design storm and 119.95 mm/hr for the 100-year design storm. This is consistent with the 2015 Novatech report supporting the approved SPC application D07-12-14-0198.
- Contributing area considered is the overall boundary including 2940, 2942, 2944, and 2946 Baseline Road. The contributing area also includes the external areas contributing from the adjacent residential development area to the south, and excludes the future City-owned park subject to separate design by others.

Table 5-2: Allowable Release Rate

Design Storm	Pre-Development Flow Rate (L/s) for C=0.5, A=2.43 ha, Tc = 20 min
5-year	221.8
100-year	378.6

*Supporting calculations are provided in **Appendix D.1**.*

The target allowable release rates are apportioned to each storm sewer outlet to assess water quantity control measures to be applied.

5.4.1.1 Uncontrolled Areas

Uncontrolled areas represent drainage areas that cannot be graded to enter the site/building drainage collection system. As such, they are to sheet drain off the site to the adjacent roadways (see **Drawing SD-1**).

The following table lists the 5-year and 100-year peak flow rates from the uncontrolled runoff areas.

Table 5-3: Peak Uncontrolled 5-Year and 100-Year Run-Off

Area ID	Area (ha)	5-Year Uncontrolled Peak Flow (L/s)	100-Year Uncontrolled Peak Flow (L/s)
Phase 1 and 2			
FREE1	0.07	11.6	22.5
Phase 3 and 4			
OFF-SITE 4	0.03	7.6	14.4
Phase 5 and 6			
OFF-SITE 1	0.04	8.2	15.8
OFF-SITE 2	0.07	15.9	30.4
Total	**0.369**	**43.2**	**83.0**

The 100-year uncontrolled peak flow is subtracted from the allowable release rate to establish the allowable discharge rate from each storm sewer outlet. The related calculations are included with the MRM spreadsheet in **Appendix D.1**.

5.4.2 Quantity Control

Based on the proposed change to the site condition, quantity control measures are needed to manage stormwater runoff to the allowable release rate target associated with the proposed development.

A spreadsheet approach using the modified rational method (MRM) is applied to assess the quantity control volume required to control the 100-year post-development runoff rate to the allowable release rates assigned to each storm outlet. The MRM calculations are provided in **Appendix D.1**.

The allowable design flow rate and volume of stormwater storage required for each cistern system is summarized in **Table 5-4**.

Table 5-4: 5-Year and 100-Year Storage Requirement

Storm Outlet	Area IDs	Controlled Drainage Area (ha)	Storm Return Period	Allowable Discharge (L/s)	$V_{required}$ (m^3)
EX 100	PL1	0.78	5-Year	76.2	77
			100-Year	97.3	193
STM 100	CIST1-1 to CIST1-13	0.80	5-Year	21.3	124
			100-Year	21.3	296
STM 200	CIST2-1 to CIST2-12	0.48	5-Year	16.0	77
			100-Year	16.0	186

The 5-Year and 100-Year allowable discharge rates for area ‘PL1’ are unchanged from the findings presented in the 2015 Novatech report supporting the approved SPC application D07-12-14-0198. The 76.2 L/s and 97.3 L/s values are based on a 171 mm orifice with 1.55 m and 2.55 m of head respectively (see Novatech calculations in **Appendix E.1**).

With the change to the overall site development plan the length of storage pipe originally proposed in Phase 1 and 2 is now reduced. The total length of 1500 mm pipe is reduced from 118 m to 51.3 m and one 1500 mm diameter maintenance hole (CBMH110) is removed. Using the same methodology and considering the same total depth of 2.55 m from the Novatech 2015 analysis, the resultant storage volume in the 1500 pipe is 206 m^3. This exceeds the updated 100-Year storage volume requirement for area ‘PL1’ of 188 m^3 presented in **Table 5-4**. An updated storage calculation is provided in **Appendix D.2**.

For Phase 3-4 and Phase 5 and 6, the associated water quantity control storage volume presented in **Table 5-4** is to be accommodated entirely within the internal plumbing system of the proposed buildings.

The storage capacity of the exterior low points in the open space adjacent to Phase 3-4 is not considered significant enough to be counted as storage volume.

There is no surface ponding expected in the 2-Year event in the surface parking or drive aisles.

The proposed stormwater management plan provides adequate attenuation to meet the target release rate for the 5-Year and 100-Year storm events as shown in **Table 5-5** below.

Table 5-5: Estimated Post-Development Discharge

Area Type	5-Year (L/s)	100-Year (L/s)	Target (L/s)
Uncontrolled	43.2	83.0	**221.3**
Controlled Areas	113.5	134.6	
Total Flow to Sewer	**156.7**	**217.6**	

Flows from the uncontrolled areas are considered in the overall release rate for the site and the cistern storage will allow for the attenuation of peak flows to meet the allowable target release rate. The modified rational method calculations and the storm design sheet are provided in **Appendix D.1**.

5.4.3 Quality Control

For the existing Phase 1 and Phase 2, an oil-grit separator (OGS) unit is provided. The total contributing area to this existing OGS unit is now reduced based on the development plan now proposed for the overall site. No change to the existing OGS unit is proposed and the original design intent is still considered to be satisfied.

For the drainage areas associated with Phase 3 through Phase 6 that direct runoff to the internal building mechanical system, water quality control is to be incorporated into the stormwater management systems within each building that capture and control the flow into the respective storm outlets STM 100 and STM 200. The mechanical engineering consultant is responsible for confirming that the TSS removal target is achieved.

Water quality control of the areas contributing uncontrolled runoff and for the new public park space is not considered feasible.

5.5 Proposed Stormwater Servicing

The existing 375 mm storm sewer connected to the 600 mm storm sewer in Baseline Road remains the site service connection associated with Phase 1 and 2. The existing 171 mm orifice remains in place to provide the necessary flow control.

Phase 3-4 is to be serviced by a 300 mm diameter storm sewer connection to the existing 450 mm and diameter storm sewer in Sandcastle Drive. Flow controls are to be provided by the internal building mechanical system.

Phase 5 and 6 is to be serviced by a 300 mm diameter storm sewer connection to the existing 375 mm diameter storm sewer in Sandcastle Drive. Flow controls are to be provided by the internal building mechanical system.

The public park space is supported with a dedicated 200 mm storm sewer connection with no flow control measure applied. The storm sewer service for the public park is also connected to the 450 mm pipe in Sandcastle Drive.

The proposed storm sewer connections are illustrated on **Drawing SSP-1** and **Drawing SD-1**. A storm sewer design sheet is included in **Appendix D.2**.

The mechanical engineering consultant is responsible to confirm that the appropriate backwater valve requirements are satisfied, the nature of the foundation drainage system, and that any roof drainage systems (including internal storage systems, roof drains, scuppers, and applicable roof conditions) are adequate for accommodating the 100-Year design storm conditions. It is noted that the 100-Year SWM design condition is more stringent than the design condition associated with the typical building code requirements.

6 Other Considerations

6.1 Site Grading

A grading plan (see **Drawing GP-1**) is provided to support the stormwater management requirements and emergency overland flow routes, and provide for minimum cover requirements for water, sanitary, and storm servicing systems where possible. The proposed grading plan provides adequate emergency overland flow routes and generally maintains the existing drainage patterns within the adjacent public rights of way.

The nature of requirements associated with grade raise restrictions is being coordinated with the geotechnical engineering consultant. Grading modifications along the south boundary may still be applied to manage potential grade raise considerations.

6.2 Geotechnical

Geotechnical conditions for the site are investigated by Paterson Group with findings presented in the supporting investigation report *Geotechnical Investigation – Proposed Multi-Storey Building – Tower 4 to 6, 2946 Baseline Road* dated March 24, 2022 (provided under separate cover in support of the development application process). Recommendations from the geotechnical report are intended to be followed as they relate to the proposed servicing strategy for the site.

6.3 Utilities

Overhead (OH) hydro-wires run parallel to the north property line along the south side of Baseline Road, with branches servicing the adjacent sites in intervals. All utilities within the work area will require relocation during construction. The existing utility poles within the public right of way are to be protected during construction.

As the site is surrounded by existing residential and commercial development, Hydro Ottawa, Bell, Rogers, and Enbridge servicing is readily available through existing infrastructure to service this site. The exact size, location, and routing of utilities will be finalized after design circulation. Existing overhead wires and utility plants may need to be temporarily moved/reconfigured to allow sufficient clearance for the movement of heavy machinery required for construction. The relocation of existing utilities will be coordinated with the individual utility providers upon design circulation.

6.4 Erosion and Sediment Control During Construction

To protect downstream water quality and prevent sediment build-up in catch basins and storm sewers, erosion and sediment control measures must be implemented during construction. Erosion and sediment control (ESC) measures are the responsibility of the contractor. Recommendations for ESC implementation are summarized as follows.

- Implement best management practices to provide appropriate protection of the existing and proposed drainage system and the receiving water course(s).
- Limit the extent of the exposed soils at any given time.
- Re-vegetate exposed areas as soon as possible.
- Minimize the area to be cleared and grubbed.
- Protect exposed slopes with geotextiles, geogrid, or synthetic mulches.
- Install silt barriers/fencing around the perimeter of the site to prevent the migration of sediment offsite.
- Install track out control mats (mud mats) at the entrance/egress as shown in Drawing ECDS-1 to prevent migration of sediment into the public ROW.
- Provide sediment traps and basins during dewatering works.
- Install sediment traps (such as SiltSack® by Terrafix) between catch basins and frames.
- Schedule the construction works at times which avoid flooding due to seasonal rains.

The Contractor is also required to complete inspections and guarantee the proper performance of erosion and sediment control measures at least after every rainfall. The inspections are to include:

- Verification that water is not flowing under silt barriers.
- Cleaning and changing the sediment traps placed on catch basins.

The proposed location of silt fences, sediment traps, and other erosion control measures is shown on **Drawing ECDS-1**.

6.5 Regulatory Approvals

Given the nature of the anticipated site ownership and that the storm drainage is to be connected to an existing storm sewer, the site will not require an Environmental Compliance Approval (ECA) from the Ministry of the Environment, Conservation and Parks (MECP) under O.Reg. 525/98.

Requirements for the completion of registration for potential groundwater pumping with the Environmental Activity and Sector Registry (EASR) and the preparation of a Water Taking and Discharge Plan as stipulated under O.Reg. 63/16 are to be coordinated by the geotechnical and/or hydrogeological engineer and the excavation contractor as needed. Additionally, although not anticipated, an MECP Permit to Take Water (PTTW), required for dewatering volumes exceeding 400,000L/day is to be coordinated by the geotechnical and/or hydrogeological engineer and the excavation contractor as needed.

7 Closing

The water, wastewater, and storm water servicing conditions assessed in this report indicate that the existing public services immediately adjacent to the project site and the proposed servicing strategy are adequate to support the proposed development.

The mechanical engineering consultant is responsible to confirm:

- Water - The water pressure within each building is adequate to meet building code requirements.
- Sanitary - The appropriate backwater valve requirements are satisfied.
- Storm - The appropriate backwater valve requirements are satisfied, the nature of the foundation drainage system, and that any area drain, trench drain, and roof drainage systems (including internal storage systems, roof drains, scuppers, and applicable roof conditions) are adequate for accommodating the 100-Year design storm conditions. It is noted that the 100-Year SWM design condition is more stringent than the design condition associated with the typical building code requirements. That water quality control measures are implemented to achieve the 80% TSS removal target.

Appendices

Appendix A Background

A.1 Site Plan

BASELINE 3456
ZONING INFORMATION
2946 Baseline Road

2025-09-12

Bylaw 2008-250
Zoning – GM[2138] S325 -h

	Required (By-law)	Provided
Lot area (sq.m)		15 956,93
Gross floor area of all buildings (sq.m)		63 151
Maximum floor space index	No Maximum FSI - **As per Exception [2138] S325**	3,9
AREA A		
SETBACK (m)		
Minimum Front Setback (m)	4m - **As per Exception [2138] S325**	EXISTING
Minimum Corner Side Setback (m)	4m - **As per Exception [2138] S325**	4,6
Minimum Interior Side Yard Setbacks (m)	For a residential use building higher than 11 meters in height: 3 m	10,35
Minimum Rear Yard Setback (m)	From any portion of a rear lot line abutting a residential zone: 7.5 m	27,53
BUILDING		
Height (m)	For the tower closest to Baseline: 13 storeys and 42 m – **As per Exception [2138] S325** For a central tower: 16 storeys and 52 m For a tower located on the southern portion of Area A: 10 storeys and 29,5 m	EXISTING EXISTING 9 Storeys, 29,2 m
Number of towers	A maximum of three towers are permitted. - **As per Exception [2138] S325**	3
Floor plate by tower	1200 sq. m max. – **As per Exception [2138] S325**	TOWER 5: EXISTING ; TOWER 3: EXISTING, TOWER 3: 1632 sq. m
Distance minimum between towers	25 metre separation distance must be provided between each tower.	TOWER 1 & 2: 23, 73 m ; TOWER 2 & 3: 23,22 m
Minimum Rear lot line (m)	No tower is permitted to locate closer than 25 m	27,53
Indoor amenity space	May project above the height limit to a maximum of 4.5 metres.	COMPLIED
All non-residential uses	Limited to ground-floor	COMPLIED
Minimum width of landscaped area	Abutting a street, abutting a residential or institutional zone: 3 m but may be reduced to 1 meter where a minimum 1.4 meter high opaque screen is provided Section 110 - For a parking lot containing more than 10 but fewer than 100 spaces and abutting a street: 3m	SEE LANDSCAPE SEE LANDSCAPE
AREA B		
SETBACK (m)		
Minimum Front Setback (m)	4m - As per Exception [2138]	N.A.
Minimum Corner Side Setback (m)	4m - As per Exception [2138]	4
Minimum Rear Yard Setback (m)	From any portion of a rear lot line abutting a residential zone: 7.5 m	7,5
Minimum Interior Side Yard Setbacks (m)	For a residential use building higher than 11 meters: in height: 3 m	N.A.
BUILDING		
Height (m)	18 m	29,2
Number of towers	A maximum of three towers are permitted - **As per Exception [2138] S325**	3
Maximum floor space index	2, unless otherwise shown	TBC
Minimum width of landscaped area	Abutting a street, abutting a residential or institutional zone: 3 m but may be reduced to 1 meter where a minimum 1.4 meter high opaque screen is provided Section 110 - For a parking lot containing more than 10 but fewer than 100 spaces and abutting a street: 3m	SEE LANDSCAPE SEE LANDSCAPE
AREA C		
SETBACK (m)		
Minimum Front Setback (m)	4m - As per Exception [2138]	4,48
Minimum Corner Side Setback (m)	4m - As per Exception [2138]	5,7
Minimum Rear Yard Setback (m)	From any portion of a rear lot line abutting a residential zone: 7.5 m	N.A.
Minimum Interior Side Yard Setbacks (m)	For a residential use building higher than 11 meters: in height: 3 m	N.A.
BUILDING		
Height (m)	Two storey (11 metres) - **As per Exception [2138] S325**	30 Storeys, 98,80 m.
Gross floor area of all buildings (sq.m)	A maximum of 4,000 sq. m max cumulative – **As per Exception [2138] S325**	3162 sq. m

INFORMATION SUR LE PROJET - *PROJECT INFORMATION*
12762 **Baseline 3, 4, 5 & 6** *Projet Global / Overall Project*

2025-09-12

Province /*Province* Ontario
Zonage / *Zoning* City of Ottawa zoning By-law No. 2008-250
Superficie du Lot / *Property Area* 15 956,9 m² / *sq. m.* 171 760 pi² / *sq. ft*

STATISTIQUES SUR LE PROJET / *PROJECT STATISTICS*	Tour 6 / *Tower 6*	Tour 5 / *Tower 5*	Tour 3 et 4 / *Tower 3 & 4*
Hauteur du Bâtiment (m)/*Building Height* (m)	**98.8 m (30 étages / storeys)**	**91.2 m (28 étages / storeys)**	**29.20m (9 étages / storeys)**

STATISTIQUES DES UNITÉS / *UNIT STATISTICS*	Tour 6 / *Tower 6*	Tour 5 / *Tower 5*	Tour 3 et 4 / *Tower 3 & 4*	TOTAL
Studio / *Bachelor*	**30**	**25**	**16**	**71**
1 Chambre / *1 Bedroom*	**38**	**133**	**0**	**171**
1 Chambre + Den / *1 Bedroom + Den*	**87**	**73**	**223**	**383**
2 Chambre / *2 Bedroom*	**133**	**50**	**32**	**215**
2 Chambre + Den / *2 Bedroom + Den*	**3**	**4**	**0**	**7**
3 Chambre / *3 Bedroom*	**2**	**6**	**16**	**24**
3 Chambre + Den / *3 Bedroom + Den*	**0**	**0**	**0**	**0**
Total Number of Units	**293**	**291**	**287**	**871**

STATIONNEMENT RÉSIDENTIEL / *RESIDENTIAL PARKING*

PHASE / *PHASE*		EXIGÉ / *REQUIRED* #/Unité / *#/Unit*	Parking	FOURNIS / *PROVIDED* Ratio Moy. (m²) / *Avg. Ratio (m²)*	Location	Parking
Tour 6 - Résidentiel / *Tower 6 - Résidential*		**1,0 par unit**	**293**	**0,46**	Provided In T6	**54**
					Provided In T3 & t4	**82**
Tour 6 - Visitors / *Tower 6 - Visiteur*		**0,2/unit**	**59**	**0,20**	Provided In T6	**59**
Tour 6 - Accessible (inclus dans compte) / Accessible (included in count)	*Tower 6 -*	1-12=1 Type A 13-100=4% of total (50% Type A / 50% Type B) 101-200=1+3% of total (50% Type A / 50% Type B) 201-1000=2+2% of total (50% Type A / 50% Type B) 1001+=11+1% of total (50% Type A / 50% Type B)	9	1-12=1 Type A 13-100=4% of total (50% Type A / 50% Type B) 101-200=1+3% of total (50% Type A / 50% Type B) 201-1000=2+2% of total (50% Type A / 50% Type B) 1001+=11+1% of total (50% Type A / 50% Type B)		9
Tour 6 - Total Residential & Visitor Parking		**1,2/unit**	**352**	**0,66 / unit**		**195**
Tour 5 - Résidentiel / *Tower 5 - Résidential*		**1,0/unit**	**291**	**0,48**	Provided In T5	**66**
					Provided In T3 & t4	**73**
Tour 5 - Visitors / *Tower 5 - Visiteur*		**0,2/unit**	**58**	**0,21**	Provided In T5	**60**
Tour 5 - Accessible (inclus dans compte) / Accessible (included count)	*Tower 5 -*	1-12=1 Type A 13-100=4% of total (50% Type A / 50% Type B) 101-200=1+3% of total (50% Type A / 50% Type B) 201-1000=2+2% of total (50% Type A / 50% Type B) 1001+=11+1% of total (50% Type A / 50% Type B)	9	1-12=1 Type A 13-100=4% of total (50% Type A / 50% Type B) 101-200=1+3% of total (50% Type A / 50% Type B) 201-1000=2+2% of total (50% Type A / 50% Type B) 1001+=11+1% of total (50% Type A / 50% Type B)		9
Tower 5 - Total Residential & Visitor Parking		**1,2/unit**	**349**	**0,69 / unit**		**199**
Tour 3 & 4 - Résidentiel / *Tower 3 & 4 - Résidential*		**1,0/unit**	**287**	**0,46**	Provided In T3 & t4	**133**
Tour 3 & 4 - Visitors / *Tower 3 & 4 - Visiteur*		**0,2/unit**	**57**	**0,20**	Provided In T3 & t4	**57**
Tour 3 & 4 - Accessible (inclus dans compte) / Accessible (included count)	*Tower 3 & 4 -*	1-12=1 Type A 13-100=4% of total (50% Type A / 50% Type B) 101-200=1+3% of total (50% Type A / 50% Type B) 201-1000=2+2% of total (50% Type A / 50% Type B) 1001+=11+1% of total (50% Type A / 50% Type B)	9	1-12=1 Type A 13-100=4% of total (50% Type A / 50% Type B) 101-200=1+3% of total (50% Type A / 50% Type B) 201-1000=2+2% of total (50% Type A / 50% Type B) 1001+=11+1% of total (50% Type A / 50% Type B)		9
Tower 3 & 4 - Total Residential & Visitor Parking		**1,2/unit**	**344**	**0,66 / unit**		**190**
Total Residential & Visitor Parking		**1,2/unit**	**1045**	**0,68/unit**		**584**
Reduced parking stalls (Sec.106 up to 40%)	**234**					**87**

STATIONNEMENT COMMERCIALE / *COMMERCIAL PARKING*

PHASE / *PHASE*	Aire (m²) / *Area (m²)*	EXIGÉ / *REQUIRED* Ratio Moy. (m²) / *Avg. Ratio (m²)*	Commercial Parking	FOURNIS / *PROVIDED* Ratio Moy. (m²) / *Avg. Ratio (m²)*	Location	Commercial Parking
Tour 1 - Commerciale / *Tower 1 - Commercial*		73				**73**
Tour 6 - Commerciale / *Tower 6 - Commercial*	**799**	**3.4/100**	**28**	**3.4/100**		**28**
Tour 5 - Commerciale / *Tower 5 - Commercial*	**536**	**3.4/100**	**19**	**3.4/100**	Provided in T3 & T4.	**19**
Tour 3 et 4 - Commerciale / Tower 3 & 4 - Commercial	**346**	**3.4/100**	**12**	**3.4/100**		**12**
Tour 3 et 4 - Garderie / Tower 3 & 4 - Daycare (gross floor area)	**567**	**2.0/100**	**12**	**2.0/100**		**12**
Total Commercial Parking	**1681**	**3.4/100**	**144**	**3.4/100**		**144**

STATIONNEMENT POUR VÉLOS / *BICYCLE PARKING*

PHASE / *PHASE*	Unités / *Units*	Aire (m²) / *Area (m²)*	EXIGÉ / *REQUIRED* Ratio / *Ratio*	Bicycle Parking	FOURNIS / *PROVIDED* Ratio Moy. (m²) / *Avg. Ratio (m²)*	Location	Bicycle Parking
					0,65	Provided in T6	**189**
Tour 6 - Résidentiel / Tower 6 - Residential	**293**		**0,5/unit**	**147**		Provided in T3 & t4	**0**
					Total T6 Residential Bicycle parking		**189**
					1,02	Provided in T5	**296**
Tour 5 - Résidentiel / Tower 5 - Residential	**291**		**0,5/unit**	**146**		Provided in T3 & t4	**0**
					Total T5 Residential Bicycle parking		**296**
Tour 3 et 4 - Résidentiel / Tower 3 & 4 - Residential	**287**		**0,5/unit**	**144**	**1,76**	Provided In T3 & t4	**504**
					Total T34 Residential Bicycle parking		**504**
Total Residential Bicycle Parking	**871**		**0,5/unit**	**436**	**1,14**		**989**
Tour 6 - Commerciale / Tower 6 - Commercial		**799**	**1/250 m2**	**3**	**1/250 m2**	Provided In T6	**3**
Tour 5 - Commerciale / Tower 5 - Commercial		**536**	**1/250 m2**	**2**	**1/250 m2**	Provided In T5	**2**
Tour 3 ET 4 - Commerciale / Tower 3 & 4 - Commercial		**913**	**1/250 m2**	**3**	**1/250 m2**	Provided In T3 & t4	**6**
Total Commercial Bicycle Parking		**2248**	**1/250 m2**	**8**	**1/250 m2**		**11**

SURFACE DE PLANCHER HORS OEUVRE BRUTE - *GROSS FLOOR AREA*
12762 **Baseline 3, 4, 5 & 6** *Projet Global / Overall Project*

2025-09-12

Province /*Province* Ontario
Zonage / *Zoning* City of Ottawa zoning By-law No. 2008-250
Superficie du Lot / *Property Area* 15,956.9 m² / *sq. m.* 171,760 pi² / *sq. ft*

GROSS FLOOR AREAS	Tour 6 / *Tower 6*		Tour 5 / *Tower 5*		Tour 3 et 4 / *Tower 3 & 4*	
	m² / m²	pi² / ft²	m² / m²	pi² / ft²	m² / m²	pi² / ft²
Mechanical/ Roof		**0**	0	**0**	0	**0**
30th Floor	**715**	**7696**				
29th Floor	**715**	**7696**				
28th Floor	**715**	**7696**	**694**	**7470**		
27th Floor	**715**	**7696**	**694**	**7470**		
26th Floor	**715**	**7696**	**694**	**7470**		
25th Floor	**715**	**7696**	**694**	**7470**		
24th Floor	**715**	**7696**	**694**	**7470**		
23rd Floor	**715**	**7696**	**694**	**7470**		
22nd Floor	**715**	**7696**	**694**	**7470**		
21st Floor	**715**	**7696**	**694**	**7470**		
20th Floor	**715**	**7696**	**694**	**7470**		
19th Floor	**715**	**7696**	**694**	**7470**		
18th Floor	**715**	**7696**	**694**	**7470**		
17th Floor	**715**	**7696**	**694**	**7470**		
16th Floor	**715**	**7696**	**694**	**7470**		
15th Floor	**715**	**7696**	**694**	**7470**		
14th Floor	**715**	**7696**	**694**	**7470**		
13th Floor	**715**	**7696**	**694**	**7470**		
12th Floor	**715**	**7696**	**694**	**7470**		
11th Floor	**715**	**7696**	**694**	**7470**		
10th Floor	**715**	**7696**	**694**	**7470**		
9th Floor	**715**	**7696**	**694**	**7470**	**2973**	**32001**
8th Floor	**715**	**7696**	**694**	**7470**	**2973**	**32001**
7th Floor	**715**	**7696**	**694**	**7470**	**2973**	**32001**
6th Floor	**715**	**7696**	**694**	**7470**	**2973**	**32001**
5th Floor	**715**	**7696**	**694**	**7470**	**2973**	**32001**
4th Floor (Amenity)	**532**	**5726**	0	**0**	**2973**	**32001**
3rd Floor	**1176**	**12658**	**1323**	**14241**	**2973**	**32001**
2nd Floor	**1176**	**12658**	**1323**	**14241**	**2958**	**31840**
Ground Floor 2	0	**0**	**153**	**1647**	**1177**	**12669**
Ground Floor 1/Basement 0	**934**	**10053**	**695**	**7481**	0	0
Basement 1	0	**0**	0	**0**	0	0
Basement 2	0	**0**	0	**0**	0	0
Total GFA	**22408**	**241198**	**20150**	**216893**	**24946**	**268516**

Part 1 – Administration, Interpretation and Definitions
Gross floor area means the total area of each floor whether located above, at or below grade, measured from the interiors of outside walls and including floor area occupied by interior walls and floor area created by bay windows, but excluding: (a) floor area occupied by shared mechanical, service and electrical equipment that serve the building (By-law 2008-326) (b) common hallways, corridors, stairwells, elevator shafts and other voids, steps and landings; (By-law 2008-326) (By-law 2017-302) (c) bicycle parking; motor vehicle parking or loading facilities; (d) common laundry, storage and washroom facilities that serve the building or tenants; (e) common storage areas that are accessory to the principal use of the building; (By-law 2008- 326) (f) common amenity area and play areas accessory to a principal use on the lot; and (By-law 2008-326) (g) living quarters for a caretaker of the building. (surface de plancher hors oeuvre brute)

AIRE D'AGRÉMENT - *AMENITY AREA*
12762 **Baseline 3, 4, 5 & 6** *Projet Global / Overall Project*

2025-09-12

Province /*Province* Ontario
Zonage / *Zoning* City of Ottawa zoning By-law No. 2008-250
Superficie du Lot / *Property Area* 15,956.9 m² / *sq. m.* 171,760 pi² / *sq. ft*

PRIVATE AMENITY AREAS	Tour 6 / *Tower 6*	Tour 5 / *Tower 5*	Tour 3 et 4 / *Tower 3 & 4*	TOTAL
Ground Floor 1 / Basement 0			0	0
Ground Floor 2			0	0
2nd Floor	**206**	**123**	**612**	**941**
3rd Floor	**75**	**123**	**253**	**450**
4th Floor	**287**		**253**	**540**
6th & 8th Floors	**69**	**85**	**505**	**660**
5th, 7th & 9th Floors	**69**	**120**	**758**	**948**
10th Floor	**24**	**43**	0	**67**
11th to 28th Floors (Even)	**215**	**385**	0	**599**
11th to 28th Floors (Odd)	**208**	**360**	0	**568**
29th Floor	**23**	**40**	0	**63**
30th Floor	**24**	**43**	0	**67**
Total	**1152**	**451**	**2381**	**3985**

PUBLIC INDOOR AMENITY AREAS	Tour 6 / *Tower 6*	Tour 5 / *Tower 5*	Tour 3 et 4 / *Tower 3 & 4*	TOTAL
Ground Floor 1 / Basement 0	**106**	**151**	0	**257**
Ground Floor 2	0	**152**	**327**	**479**
2nd Floor		0	0	0
3rd Floor	0	0	0	0
4th Floor	**137**	**716**	0	**853**
5th to 9th Floors	0		0	0
10th Floor	0	0	0	0
11th to 28th Floors	0	0	0	0
29th and 30th Floors	0	0	0	0
Total	**243**	**1019**	**327**	**1589**

PUBLIC OUTOOR AMENITY AREAS	Tour 6 / *Tower 6*	Tour 5 / *Tower 5*	Tour 3 et 4 / *Tower 3 & 4*	TOTAL
Ground Floor 1 / Basement 0	0	0	0	0
Ground Floor 2	0	0	0	0
2nd Floor	0	0	**822**	**822**
3rd Floor	0	0	0	0
4th Floor	**582**	**870**	0	**1452**
5th to 9th Floors	0	0	0	0
10th Floor	0	0	**608**	0
11th to 28th Floors	0	0	0	0
29th and 30th Floors				
Total	**582**	**870**	**1430**	**2882**

12762 - BIKE SCHEDULE - GENERAL

LEVEL	TOWER	TYPE	COUNT
B1_T4	T3 & T4	HORIZONTAL BIKE PARKING	78
B1_T6	T5	HORIZONTAL BIKE PARKING	160
B1_T6	T6	HORIZONTAL BIKE PARKING	192
B2_T4	T3 & T4	HORIZONTAL BIKE PARKING	78
GF1B0_T4	T3 & T4	HORIZONTAL BIKE PARKING	78
GF2_T4	T3 & T4	HORIZONTAL BIKE PARKING	276
GF_T5	T5	HORIZONTAL BIKE PARKING	138
TOTAL: 1000			

12762 - BIKE SCHEDULE - TOWER 3 & 4

LEVEL	TOWER	TYPE	COUNT
B1_T4	T3 & T4	HORIZONTAL BIKE PARKING	78
B2_T4	T3 & T4	HORIZONTAL BIKE PARKING	78
GF1B0_T4	T3 & T4	HORIZONTAL BIKE PARKING	78
GF2_T4	T3 & T4	HORIZONTAL BIKE PARKING	276
TOTAL: 510			

12762 - BIKE SCHEDULE - TOWER 5 & 6

LEVEL	TOWER	TYPE	COUNT
B1_T6	T5	HORIZONTAL BIKE PARKING	160
B1_T6	T6	HORIZONTAL BIKE PARKING	192
GF_T5	T5	HORIZONTAL BIKE PARKING	138
TOTAL: 490			

12762 - PARKING SPACES SCHEDULE - GENERAL

LEVEL	TOWER	PARKING ALLOCATION	DESCRIPTION	COUNT
T1				
GF1B0_T4	T1	COMMERCIAL	2600mmx5200mm	73
COMMERCIAL: 73				
T1: 73				
T3 & T4				
GF1B0_T4	T3 & T4	COMMERCIAL	2600mmx5200mm	11
GF2_T4	T3 & T4	COMMERCIAL	2400mmx5200mm HANDICAP Type B	1
COMMERCIAL: 12				
GF2_T4	T3 & T4	DAYCARE	2600mmx5200mm	12
DAYCARE: 12				
B1_T4	T3 & T4	RESIDENTIAL	2600mmx5200mm	52
GF1B0_T4	T3 & T4	RESIDENTIAL	2600mmx5200mm	5
GF2_T4	T3 & T4	RESIDENTIAL	2600mmx5200mm	26
GF2_T4	T3 & T4	RESIDENTIAL	3400mmx5200mm HANDICAP Type A	4
RESIDENTIAL: 88				
B1_T4	T3 & T4	RESIDENTIAL (RED.)	2400mmX4600mm	12
B2_T4	T3 & T4	RESIDENTIAL (RED.)	2400mmX4600mm	5
GF1B0_T4	T3 & T4	RESIDENTIAL (RED.)	2400mmX4600mm	9
GF2_T4	T3 & T4	RESIDENTIAL (RED.)	2400mmX4600mm	19
RESIDENTIAL (RED.): 45				
B1_T4	T3 & T4	VISITOR	2600mmx5200mm	53
GF2_T4	T3 & T4	VISITOR	2400mmx5200mm HANDICAP Type B	3
GF2_T4	T3 & T4	VISITOR	3400mmx5200mm HANDICAP Type A	1
VISITOR: 57				
T3 & T4: 214				
T5				
GF1B0_T4	T5	COMMERCIAL	2600mmx5200mm	18
GF2_T4	T5	COMMERCIAL	2400mmx5200mm HANDICAP Type B	1
COMMERCIAL: 19				
B1_T5	T5	RESIDENTIAL	3400mmx5200mm HANDICAP Type A	3
B1_T5	T5	RESIDENTIAL	3660mmx5200mm HANDICAP Type B	1
B2_T4	T5	RESIDENTIAL	2600mmx5200mm	66
B2_T5	T5	RESIDENTIAL	2600mmx5200mm	39
RESIDENTIAL: 109				
B1_T5	T5	RESIDENTIAL (RED.)	2400mmx4600mm	9
B2_T4	T5	RESIDENTIAL (RED.)	2400mmX4600mm	7
B2_T5	T5	RESIDENTIAL (RED.)	2400mmx4600mm	14
RESIDENTIAL (RED.): 30				
B1_T5	T5	VISITOR	2600mmx5200mm	37
B1_T5	T5	VISITOR	3400mmx5200mm HANDICAP Type A	1
B1_T5	T5	VISITOR	3660mmx5200mm HANDICAP Type B	4
B2_T5	T5	VISITOR	2600mmx5200mm	18
VISITOR: 60				
T5: 218				
T6				
B2_T6	T6		2600mmx5200mm	1
T				
GF1B0_T4	T6	COMMERCIAL	2600mmx5200mm	24
GF2_T4	T6	COMMERCIAL	2400mmx5200mm HANDICAP Type B	1
GF2_T4	T6	COMMERCIAL	2600mmx5200mm	3
COMMERCIAL: 28				
B1_T6	T6	RESIDENTIAL	2600mmx5200mm	16
B1_T6	T6	RESIDENTIAL	3400mmx5200mm HANDICAP Type A	3
B1_T6	T6	RESIDENTIAL	3660mmx5200mm HANDICAP Type B	1
B2_T4	T6	RESIDENTIAL	2600mmx5200mm	66
B2_T6	T6	RESIDENTIAL	2600mmx5200mm	38
RESIDENTIAL: 124				
B1_T6	T6	RESIDENTIAL (RED.)	2400mmx4600mm	5
B2_T6	T6	RESIDENTIAL (RED.)	2400mmx4600mm	7
RESIDENTIAL (RED.): 12				
B1_T6	T6	VISITOR	2600mmx5200mm	38
B1_T6	T6	VISITOR	3400mmx5200mm HANDICAP Type A	1
B1_T6	T6	VISITOR	3660mmx5200mm HANDICAP Type B	4
B2_T6	T6	VISITOR	2600mmx5200mm	16
VISITOR: 59				
T6: 224				
TOTAL: 729				

12762 - PARKING SPACES SCHEDULE - TOWER 3 & 4

LEVEL	TOWER	PARKING ALLOCATION	DESCRIPTION	COUNT
T3 & T4				
GF1B0_T4	T3 & T4	COMMERCIAL	2600mmx5200mm	11
GF2_T4	T3 & T4	COMMERCIAL	2400mmx5200mm HANDICAP Type B	1
COMMERCIAL: 12				
GF2_T4	T3 & T4	DAYCARE	2600mmx5200mm	12
DAYCARE: 12				
B1_T4	T3 & T4	RESIDENTIAL	2600mmx5200mm	52
GF1B0_T4	T3 & T4	RESIDENTIAL	2600mmx5200mm	5
GF2_T4	T3 & T4	RESIDENTIAL	2600mmx5200mm	26
GF2_T4	T3 & T4	RESIDENTIAL	3400mmx5200mm HANDICAP Type A	4
RESIDENTIAL: 88				
B1_T4	T3 & T4	RESIDENTIAL (RED.)	2400mmX4600mm	12
B2_T4	T3 & T4	RESIDENTIAL (RED.)	2400mmX4600mm	5
GF1B0_T4	T3 & T4	RESIDENTIAL (RED.)	2400mmX4600mm	9
GF2_T4	T3 & T4	RESIDENTIAL (RED.)	2400mmX4600mm	19
RESIDENTIAL (RED.): 45				
B1_T4	T3 & T4	VISITOR	2600mmx5200mm	53
GF2_T4	T3 & T4	VISITOR	2400mmx5200mm HANDICAP Type B	3
GF2_T4	T3 & T4	VISITOR	3400mmx5200mm HANDICAP Type A	1
VISITOR: 57				
T3 & T4: 214				
TOTAL: 214				

12762 - PARKING SPACES SCHEDULE - TOWER 5 & 6

LEVEL	TOWER	PARKING ALLOCATION	DESCRIPTION	COUNT
T5				
GF1B0_T4	T5	COMMERCIAL	2600mmx5200mm	18
GF2_T4	T5	COMMERCIAL	2400mmx5200mm HANDICAP Type B	1
COMMERCIAL: 19				
B1_T5	T5	RESIDENTIAL	3400mmx5200mm HANDICAP Type A	3
B1_T5	T5	RESIDENTIAL	3660mmx5200mm HANDICAP Type B	1
B2_T4	T5	RESIDENTIAL	2600mmx5200mm	66
B2_T5	T5	RESIDENTIAL	2600mmx5200mm	39
RESIDENTIAL: 109				
B1_T5	T5	RESIDENTIAL (RED.)	2400mmx4600mm	9
B2_T4	T5	RESIDENTIAL (RED.)	2400mmX4600mm	7
B2_T5	T5	RESIDENTIAL (RED.)	2400mmx4600mm	14
RESIDENTIAL (RED.): 30				
B1_T5	T5	VISITOR	2600mmx5200mm	37
B1_T5	T5	VISITOR	3400mmx5200mm HANDICAP Type A	1
B1_T5	T5	VISITOR	3660mmx5200mm HANDICAP Type B	4
B2_T5	T5	VISITOR	2600mmx5200mm	18
VISITOR: 60				
T5: 218				
T6				
B2_T6	T6		2600mmx5200mm	1
T				
GF1B0_T4	T6	COMMERCIAL	2600mmx5200mm	24
GF2_T4	T6	COMMERCIAL	2400mmx5200mm HANDICAP Type B	1
GF2_T4	T6	COMMERCIAL	2600mmx5200mm	3
COMMERCIAL: 28				
B1_T4	T6	RESIDENTIAL	2600mmx5200mm	16
B1_T6	T6	RESIDENTIAL	3400mmx5200mm HANDICAP Type A	3
B1_T6	T6	RESIDENTIAL	3660mmx5200mm HANDICAP Type B	1
B2_T4	T6	RESIDENTIAL	2600mmx5200mm	66
B2_T6	T6	RESIDENTIAL	2600mmx5200mm	38
RESIDENTIAL: 124				
B1_T6	T6	RESIDENTIAL (RED.)	2400mmx4600mm	5
B2_T6	T6	RESIDENTIAL (RED.)	2400mmx4600mm	7
RESIDENTIAL (RED.): 12				
B1_T6	T6	VISITOR	2600mmx5200mm	38
B1_T6	T6	VISITOR	3400mmx5200mm HANDICAP Type A	1
B1_T6	T6	VISITOR	3660mmx5200mm HANDICAP Type B	4
B2_T6	T6	VISITOR	2600mmx5200mm	16
VISITOR: 59				
T6: 224				
TOTAL: 442				

*THE STATISTICAL DATA TAKES PRECEDENCE OVER THE DRAWINGS

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4. Les dimensions sur ces documents doivent être lues et non mesurées. / The dimensions on these documents must be read and not measured.

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OUVRAGE Project

BASELINE TOWER 3-6

EMPLACEMENT Location
2946 BASELINE ROAD, OTTAWA, ON

NO PROJET No.
12762.00

NO	RÉVISION	DATE (aa-mm-jj)
A	COORONATION	2025-07-04
B	FOR REVIEW	2025-08-08
C	FOR SPA COORDINATION	2025-09-12

DESSINE PAR Drawn by
A.I./J.T.

VÉRIFIÉ PAR Checked by
O.C.

DATE (aa.mm.jj)
23/04/21

ÉCHELLE Scale
AS

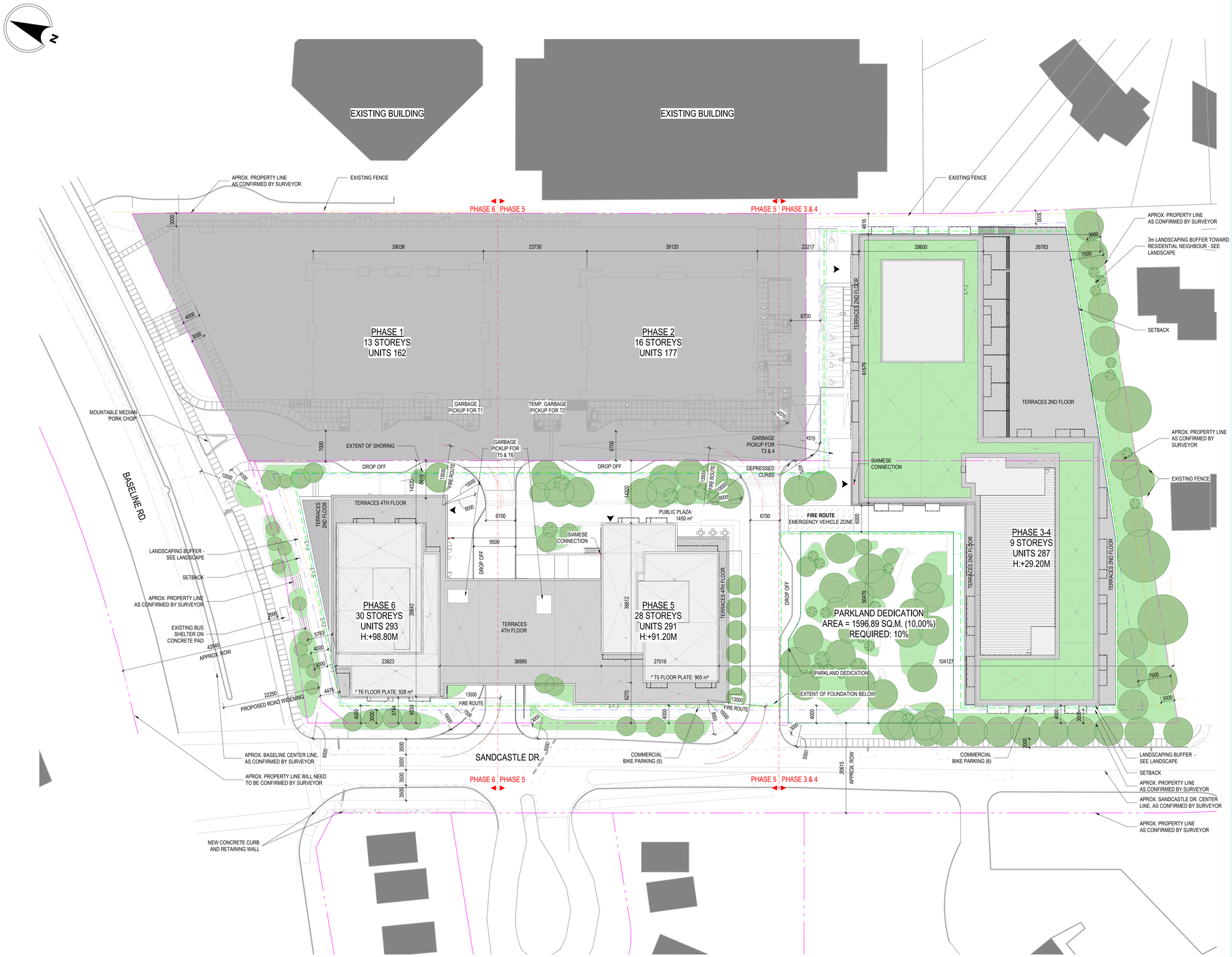
TITRE DU DESSIN Drawing Title
ZONING AND STATISTICS

RÉVISION Revision
C

NO. DESSIN Dwg Number
A001

D07-12-21-0085

14602



SITE PLAN
1 : 300 (A100)

GRAPHIC SCALE
0 7,5m 15,0m 22,5m 30,0m

NOTES:

- FOR PEDESTRIAN WALKING AREAS AND SURFACE MATERIALS REFER TO LANDSCAPE PLAN BY SITEFORM.
- PROPERTY BOUNDARY INFORMATION, EASEMENTS AND PINS DERIVED FROM TOPOGRAPHICAL PLAN OF SURVEY DATED MARCH 21st, 2023 BY ANN/S O'SULLIVAN, VOLLEBEKK LTD. JOB No 23653-23 BRIGIL PtLt35 C2 RF NP T F. FOR SURVEYOR'S PLAN REFER TO ARCHITECTURAL TECHNICAL DRAWINGS PG. 27.
- PIN 04694 - 1078 = 4357 m²
- PIN 04694 - 1075 = 11097 m²

NOTE:

LOT AREA : **15,956.93 SQ.M.**

PARKLAND AREA : **1596.89 SQ.M.**

PARKLAND DEDICATION: ≈ **10.00%**

TOTAL UNITS: **871**

Urban Design Guidelines for High-rise Buildings
*** Floor plate: The total area of a high-rise building floor measured from the exterior of the outside walls and includes the total floor area occupied by balconies.**

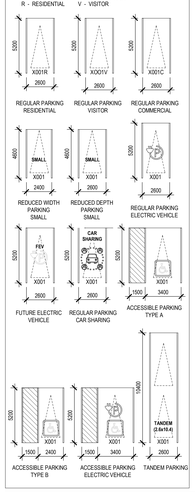
PROPOSED SITE LEGEND

- PROPERTY LINE
- SETBACK LINE
- LANDSCAPE BUFFER
- EXTENT OF UNDERGROUND PARKING LINE
- EXTENT OF SHORING LINE
- PHASING LINE
- EXISTING FENCE
- PARKLAND DEDICATION
- FIRE ROUTE
- CENTER LINE
- EXISTING BUILDINGS
- PREVIOUS PHASE
- SNOW REMOVAL AREA
- MAIN ENTRANCE
- LIGHT STANDARD - SEE ELEC ENG.
- WALL MOUNTED FIRE HYDRANT

GENERAL NOTE:
WHEN RETAINING WALL ARE GREATER THAN 1 M IN HEIGHT THE DESIGN WILL BE DONE BY A STRUCTURAL ENGINEER

TYPES OF PARKING SPOTS

X = PARKING LEVEL
R - RESIDENTIAL
C - COMMERCIAL
V - VISITOR



12762 - PARKING SPACES SCHEDULE - GENERAL

LEVEL	TOWER	PARKING ALLOCATION	DESCRIPTION	COUNT
T1				
GF1B0_T4	T1	COMMERCIAL	2600mmx5200mm	73
COMMERCIAL: 73				
T1: 73				
T3 & T4				
GF1B0_T4	T3 & T4	COMMERCIAL	2600mmx5200mm	11
GF2_T4	T3 & T4	COMMERCIAL	2400mmx5200mm HANDICAP Type B	1
COMMERCIAL: 12				
GF2_T4	T3 & T4	DAYCARE	2600mmx5200mm	12
DAYCARE: 12				
B1_T4	T3 & T4	RESIDENTIAL	2600mmx5200mm	52
GF1B0_T4	T3 & T4	RESIDENTIAL	2600mmx5200mm	5
GF2_T4	T3 & T4	RESIDENTIAL	2400mmx5200mm HANDICAP Type B	1
GF2_T4	T3 & T4	RESIDENTIAL	2600mmx5200mm	26
GF2_T4	T3 & T4	RESIDENTIAL	3400mmx5200mm HANDICAP Type A	4
RESIDENTIAL: 88				
B1_T4	T3 & T4	RESIDENTIAL (RED.)	2400mmX4600mm	12
B2_T4	T3 & T4	RESIDENTIAL (RED.)	2400mmX4600mm	5
GF1B0_T4	T3 & T4	RESIDENTIAL (RED.)	2400mmX4600mm	9
GF2_T4	T3 & T4	RESIDENTIAL (RED.)	2400mmX4600mm	19
RESIDENTIAL (RED.): 45				
B1_T4	T3 & T4	VISITOR	2600mmx5200mm	53
GF2_T4	T3 & T4	VISITOR	2400mmx5200mm HANDICAP Type B	3
GF2_T4	T3 & T4	VISITOR	3400mmx5200mm HANDICAP Type A	1
VISITOR: 57				
T3 & T4: 214				
T5				
GF1B0_T4	T5	COMMERCIAL	2600mmx5200mm	18
GF2_T4	T5	COMMERCIAL	2400mmx5200mm HANDICAP Type B	1
COMMERCIAL: 19				
B1_T5	T5	RESIDENTIAL	3400mmx5200mm HANDICAP Type A	3
B1_T5	T5	RESIDENTIAL	3660mmx5200mm HANDICAP Type B	1
B2_T4	T5	RESIDENTIAL	2600mmx5200mm	66
B2_T5	T5	RESIDENTIAL	2600mmx5200mm	39
RESIDENTIAL: 109				
B1_T5	T5	RESIDENTIAL (RED.)	2400mmx4600mm	9
B2_T4	T5	RESIDENTIAL (RED.)	2400mmX4600mm	7
B2_T5	T5	RESIDENTIAL (RED.)	2400mmx4600mm	14
RESIDENTIAL (RED.): 30				
B1_T5	T5	VISITOR	2600mmx5200mm	37
B1_T5	T5	VISITOR	3400mmx5200mm HANDICAP Type A	1
B1_T5	T5	VISITOR	3660mmx5200mm HANDICAP Type B	4
B2_T5	T5	VISITOR	2600mmx5200mm	19
VISITOR: 60				
T5: 218				
T6				
B2_T6	T6		2600mmx5200mm	1
1				
GF1B0_T4	T6	COMMERCIAL	2600mmx5200mm	24
GF2_T4	T6	COMMERCIAL	2400mmx5200mm HANDICAP Type B	1
GF2_T4	T6	COMMERCIAL	2600mmx5200mm	3
COMMERCIAL: 28				
B1_T4	T6	RESIDENTIAL	2600mmx5200mm	16
B1_T6	T6	RESIDENTIAL	3400mmx5200mm HANDICAP Type A	3
B1_T6	T6	RESIDENTIAL	3660mmx5200mm HANDICAP Type B	1
B2_T4	T6	RESIDENTIAL	2600mmx5200mm	66
B2_T6	T6	RESIDENTIAL	2600mmx5200mm	39
RESIDENTIAL: 124				
B1_T6	T6	RESIDENTIAL (RED.)	2400mmx4600mm	5
B2_T6	T6	RESIDENTIAL (RED.)	2400mmx4600mm	7
RESIDENTIAL (RED.): 12				
B1_T6	T6	VISITOR	2600mmx5200mm	39
B1_T6	T6	VISITOR	3400mmx5200mm HANDICAP Type A	1
B1_T6	T6	VISITOR	3660mmx5200mm HANDICAP Type B	4
B2_T6	T6	VISITOR	2600mmx5200mm	16
VISITOR: 59				
T6: 224				
TOTAL: 729				

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OUVRAGE Project

BASELINE TOWER 3-6

EMPLACEMENT Location
2946 BASELINE ROAD, OTTAWA, ON

NO PROJET No.
12762.00

NO	RÉVISION	DATE (aa-mm-jj)
A	COORDINATION	2025-05-09
B	COORDINATION	2025-06-20
C	COORDINATION	2025-08-06
D	FOR REVIEW	2025-08-08
E	FOR SPA COORDINATION	2025-09-12

DESSINÉ PAR Drawn by A.I. / J.T.
VÉRIFIÉ PAR Checked by O.C.
DATE (aa.mm.jj) 23/04/21
ÉCHELLE Scale AS
TITRE DU DESSIN Drawing Title INDICATED

PROPOSED SITE PLAN

RÉVISION Revision **E**
NO. DESSIN Dwg.Number **A100**

D01-12-21-0085
14602

Autodesk Docs://12762_BASELINE_R22/BASELINE_12762_ARC_TOWER 5-6_INT_R22.rvt

A.2 Pre-Consultation

File No.: PC2021-0177
Date: July 15, 2021

ADDRESS: 2946 Baseline Road
Pre-Consultation Meeting Minutes
Meeting Date: May 27, 2021

Attendee	Role	Organization
Lisa Stern	Planner	City of Ottawa
Jessica Valic	Engineering Project Manager	
Louise Cerveny	Parks Planner	
Mike Giampa	Transportation Project Manager	
Christopher Moise	Urban Designer	
Timothy Beed	Planner	Fotenn
Jean-Luc Rivard	Landowner	Brigil
Philip Thibert		

Comments from the Applicant:

- 3 towers (18 storeys, 15 storeys and 6 storeys) on 4-storey podiums, commercial proposed at grade along Baseline.
- Parkades may be provided above ground in the podium and wrapped.

Planning Comments:

1. The application will require a rezoning and complex site plan application. The application form, timeline and fees can be found here.
2. The site is within the General Urban Area. The site was rezoned in 2014 to GM[2138]S325-h. I have attached the report for your review. The zone permits an 8 storey residential building and two two-storey non-residential buildings subject to a holding provision. The holding provision contains requirements for: urban design, access, sanitary flows and Section 37.
3. Design Guidelines for High-rise buildings, Transit Oriented Development and Bird Friendly Guidelines apply.
4. The site is located on the south side of Baseline Road east of the Queensway Carleton Hospital. A future BRT station is identified at Baseline and the Hospital.
5. Please ensure that you are aware of the direction of the Draft Official Plan. It is expected that the draft Official Plan will be brought forward to Council for adoption in Fall 2021.
6. Section 37 will be required in accordance with the existing zone.
7. The connectivity within and through the site is consistent with the direction provided with the rezoning in 2014 and appreciated.
8. The provision of commercial space adjacent to Baseline Road is appreciated.
9. The Planning Rationale should discuss the existing and planned context of the area and compatibility with existing residential uses north of Baseline Road, west of Sandcastle and south of the site.
10. The height of the 20 storey building and heights of the podiums should discussed in the Planning Rationale to ensure that they are compatible with surrounding development and support a pedestrian oriented and pleasant public realm.
11. The integration of the proposed buildings with the public realm (including private roadways through the site) should be discussed in the Planning Rationale. Please ensure that lower levels

of the building have a high percentage of glazing, landscaping and street trees are provided, and the building facing Baseline should have direct entrances from Baseline Road.

12. If parking is provided within the podium, please discuss the approach to mitigating impacts on the public realm. To ensure a pedestrian oriented public realm it would be effective to wrap the building around the parkade.
13. Please consider the placement of the parking garage entrances on the public realm/pedestrian movements.
14. The provision of a plaza is appreciated and consistent with the objectives for the site identified with the 2014 rezoning. Please discuss the design intent for this space and integration of the proposed development with this amenity area in the Planning Rationale.
15. Cash-in-lieu of parkland and associated appraisal fee will be required as a condition of approval as per the Parkland Dedication Bylaw.
16. Please consult with the Ward Councillor prior to submission.

Urban Design:

1. This proposal does not reside within one of the City's Design Priority Areas and need not attend the City's UDRP.
2. We have the following issues/questions about the current design:
    a. The site layout seems to touch on a number of items that may satisfy the holding provision however the design needs to be developed further to better understand how it will meet those conditions;
    b. We recommend that additional analysis illustrate how the high-rise locations and design meet transition measures, tower separation and building design outlined in the City's high-rise guidelines;
    c. We are happy to review any design development details prior to full submission when changes to the design become more complicated and expensive;
3. A Design Brief is a required submittal for all Site Plan/Re-zoning applications. Please see the Design Brief Terms of Reference.
4. This is an exciting project in an area full of potential. We look forward to helping you achieve its goals with the highest level of design resolution. We are happy to assist and answer any questions regarding the above.

Engineering:

Water

Available Watermain

- 203mm (DI) – Sandcastle Dr
- 1220mm (C01) – Baseline Rd (Backbone Watermain)

1. As a local watermain is available for connection, connect to WM on Sandcastle Dr, not Baseline. Connections to backbone watermains are to be avoided where other alternatives are available.
2. Per WDG 4.3.1, where basic demand is greater than 50 m^3/day, there shall be a minimum of two water services, separated by an isolation valve, to avoid creation of vulnerable service area.
3. Per WDG 4.4.7.2, District Meter Area (DMA) Chamber is required for services greater than 150mm in diameter.

Boundary Conditions

Request prior to first submission. Contact assigned City Infrastructure Project Manager with the following information:

1. Location of service(s)
2. Type of development
3. Fire flow (per FUS method – include FUS calculation sheet with boundary condition request – boundary conditions will not be requested without fire flow calculations)
4. Average Daily Demand (l/s)
5. Maximum Hourly Demand (l/s)
6. Maximum Daily Demand (l/s)

Sanitary

Available Sanitary Sewer

- 250mm (CONC) – Sandcastle Dr
- 450mm (CONC) – Baseline Rd (Graham Creek Trunk Collector Sewer)

1. There may be limited capacity in the downstream sewer system (West Nepean Trunk). Refer to the following holding provision. Maximum allowable sanitary flow from site will be confirmed by City staff. Please provide preliminary estimate of sanitary flow.
    a. The sanitary flows from the subject site cannot exceed 14 litres/second until such time that the capacity study has been completed for the West Nepean trunk sewer, after which the allowed flows to be permitted for development for the site are to be in accordance with determinations made through the above noted study.
2. Where service lateral connection is greater than 50% of the diameter of the main sewer, a maintenance hole will be required at the connection.
3. Preference is to connect to local sewer on Sandcastle, not collector on Baseline Dr

Storm

Available Storm Sewer

- 300mm (CONC) – fronting 2946 Baseline
- 450mm (CONC) and 300mm (CONC) – Sandcastle Dr
- Both sewers ultimately outlet to Graham Creek

1. Roof drains to be connected downstream of any incorporated ICD within the SWM system.
2. Where service lateral connection is greater than 50% of the diameter of the main sewer, a maintenance hole will be required at the connection.

Stormwater Management

1. Quantity Control
    a. Required for the site up to and including the 100-yr storm event.
    b. Control to the 5-year storm event.
    c. Time of Concentration (Tc): pre-development or maximum=10min.
    d. Allowable runoff coefficient(c): Lesser of pre-development or c=0.5.
    e. If underground/inline stormwater storage is proposed, an average release rate equal to 50% of the determined peak allowable rate must be used. Otherwise, disregard the underground/inline storage as available storage or provide modeling to support the proposed design. The reasoning for this restriction is that the discharge rate at full storage is not representative of the discharge rate for more frequent storm events. Halving the discharge rate compensates for the inaccuracies of the modified rational method when underground storage is used.

f. Provide both pre and post development stormwater management plans, showing individual drainage areas and their respective coefficients.
g. If roof storage is proposed, please provide a roof drainage plan showing the 5 and 100-year storm ponding levels. Include the roof drain type, opening settings, and flow rate.
h. Per Technical Bulletin PIEDTB-2016-01 section 8.3.11.1 there shall be no surface ponding on private parking areas during the 2-year storm rainfall event.
i. Please note that the minimum orifice dia. for a plug style ICD is 83mm and the minimum flow rate from a vortex ICD is 6 L/s in order to reduce the likelihood of plugging.

2. Quality Control: Please consult with the Rideau Valley Conservation Authority (MVCA) regarding water quality control restrictions for the subject site. Include correspondence in report.
3. Ministry of Environment, Conservation, and Parks (MECP): Designer to determine if approval for sewage works under Section 53 of OWRA is required and to determine the type of application required. Reviews will be done through Transfer of Review or Direct Submission. If SWM will be integrated with neighboring 2940 Baseline Development, ECA will be required due to drainage across multiple parcels.

Phase I and Phase II ESA

1. Phase I ESA is a requirement; Phase II ESA requirement will be dependent on the result of the Phase I ESA.
2. As per the Ministry of the Environment, Guide for Completing Phase One Environmental Site Assessments under Ontario Regulation 153/04, dated June 2011, the date the last work was done on the records review, interviews and site reconnaissance for a Phase I Environmental Site Assessment (ESA) can be no more than 18 months old or an update is required.
3. Phase I ESA must include Ecolog ERIS Report.
4. Phase I ESAs and Phase II ESAs must conform to clause 4.8.4 of the Official Plan that requires that development applications conform to Ontario Regulation 153/04.
5. Phase I/II ESA to comment on the need for a Record of Site Condition.

Geotechnical Investigation

1. Updated Geotechnical Report is required for this development proposal. The Geotechnical Investigation must apply to the entire development area and recommendations applied to the current proposal
2. Clay soils a concern for this site; to be discussed in report
3. The Geotechnical Report shall also speak to any proposed underground stormwater storage and provide confirmation that the site subsurface characteristics (groundwater table elevation, soil type) are appropriate. Of note, the high groundwater table must be 1.0m above the bottom of any proposed storage system per MECP requirements.
4. The Geotechnical Report shall also discuss potential groundwater lowering effects on neighbouring structures and infrastructure

Exterior Lighting

1. If exterior light fixtures are proposed, provide a plan showing the location of all exterior fixtures and include a table providing fixture details (make, model, mounting heights). All external light fixtures must meet the criteria for full cut-off classification as recognized by the Illuminating Engineering Society of North America (IESNA or IES), resulting in minimal light spillage onto adjacent properties (as a guideline, 0.5 fc is normally the maximum allowable spillage). Provide certification letter from a relevant Professional Engineer.

Other

1. Retaining walls greater than 1.0m must be designed by a Professional Engineer. Plans to be submitted with the Application.

General Information

1. The Servicing Study Guidelines for Development Applications are available at the following address: https://ottawa.ca/en/city-hall/planning-and-development/information-developers/development-application-review-process/development-application-submission/guide-preparing-studies-and-plans#servicing-study-guidelines-development-applications
2. Servicing and site works shall be in accordance with the following documents:

- Ottawa Sewer Design Guidelines (October 2012) (including subsequent Technical Bulletins)
- Ottawa Design Guidelines – Water Distribution (2010) (including subsequent Technical Bulletins)
- Geotechnical Investigation and Reporting Guidelines for Development Applications in the City of Ottawa (2007)
- Ottawa Standard Tender Documents (latest version)

3. Record drawings and utility plans are also available for purchase from the City (Contact the City's Information Centre by email at InformationCentre@ottawa.ca or by phone at (613) 580-2424 x.44455).
4. Any proposed work in utility easements requires written consent of easement owner.
5. All submitted report and plan pdf documents to be flattened and unsecured to allow for editing and ease of use.
6. All documents prepared by Engineers shall be signed and dated on the seal.

Transportation:

1. Follow Traffic Impact Assessment Guidelines and proceed to the scoping report as soon as possible.
    - Please proceed to Step 4
2. Noise Impact Studies required for the following:
    - Road (within 100m of a collector)
    - Stationary
3. On site plan:
    - Show all details of the roads abutting the site up to and including the opposite curb; include such items as pavement markings, accesses and/or sidewalks.
    - Turning templates will be required for all accesses showing the largest vehicle to access the site; required for internal movements and at all access (entering and exiting and going in both directions).
    - Show all curb radii measurements; ensure that all curb radii are reduced as much as possible.
    - Show lane/aisle widths.
4. As the site proposed is residential, AODA legislation applies for all areas accessible to the public (i.e. outdoor pathways, parking, etc.).

Forestry:

TCR requirements:

1. a Tree Conservation Report (TCR) must be supplied for review along with the suite of other plans/reports required by the City
    a. an approved TCR is a requirement of Site Plan approval.
2. As of January 1 2021, any removal of privately-owned trees 10cm or larger in diameter, or publicly (City) owned trees of any diameter requires a tree permit issued under the Tree Protection Bylaw (Bylaw 2020 – 340); the permit will be based on an approved TCR and made available at or near plan approval.
3. The Planning Forester from Planning and Growth Management as well as foresters from Forestry Services will review the submitted TCR
    a. If tree removal is required, both municipal and privately-owned trees will be addressed in a single permit issued through the Planning Forester
    b. Compensation may be required for city owned trees – if so, it will need to be paid prior to the release of the tree permit
4. the TCR must list all trees on site by species, diameter and health condition
5. please identify trees by ownership – private onsite, private on adjoining site, city owned, co-owned (trees on a property line)
6. the TCR must list all trees on adjacent sites if they have a critical root zone that extends onto the development site
7. If trees are to be removed, the TCR must clearly show where they are, and document the reason they cannot be retained
8. All retained trees must be shown and all retained trees within the area impacted by the development process must be protected as per City guidelines available at Tree Protection Specification or by searching Ottawa.ca
    a. the location of tree protection fencing must be shown on a plan
    b. show the critical root zone of the retained trees
    c. if excavation will occur within the critical root zone, please show the limits of excavation
9. the City encourages the retention of healthy trees; if possible, please seek opportunities for retention of trees that will contribute to the design/function of the site.
10. For more information on the process or help with tree retention options, contact Mark Richardson mark.richardson@ottawa.ca or on City of Ottawa

LP tree planting requirements:

For additional information on the following please contact adam.palmer@Ottawa.ca

Minimum Setbacks

- Maintain 1.5m from sidewalk or MUP/cycle track.
- Maintain 2.5m from curb
- Coniferous species require a minimum 4.5m setback from curb, sidewalk or MUP/cycle track/pathway.
- Maintain 7.5m between large growing trees, and 4m between small growing trees. Park or open space planting should consider 10m spacing.
- Adhere to Ottawa Hydro's planting guidelines (species and setbacks) when planting around overhead primary conductors.

Tree specifications

- Minimum stock size: 50mm tree caliper for deciduous, 200cm height for coniferous.

- Maximize the use of large deciduous species wherever possible to maximize future canopy coverage
- Tree planting on city property shall be in accordance with the City of Ottawa's Tree Planting Specification; and include watering and warranty as described in the specification (can be provided by Forestry Services).
- Plant native trees whenever possible
- No root barriers, dead-man anchor systems, or planters are permitted.
- No tree stakes unless necessary (and only 1 on the prevailing winds side of the tree)

Hard surface planting

- Curb style planter is highly recommended
- No grates are to be used and if guards are required, City of Ottawa standard (which can be provided) shall be used.
- Trees are to be planted at grade

Soil Volume

- Please ensure adequate soil volumes are met:

Tree Type/Size	Single Tree Soil Volume (m3)	Multiple Tree Soil Volume (m3/tree)
Ornamental	15	9
Columnar	15	9
Small	20	12
Medium	25	15
Large	30	18
Conifer	25	15

Please note that these soil volumes are not applicable in cases with Sensitive Marine Clay.

Sensitive Marine Clay

- Please follow the City's 2017 Tree Planting in Sensitive Marine Clay guidelines

Please refer to the links to "Guide to preparing studies and plans" and fees for general information. Additional information is available related to building permits, development charges, and the Accessibility Design Standards. Be aware that other fees and permits may be required, outside of the development review process. You may obtain background drawings by contacting informationcentre@ottawa.ca.

These pre-con comments are valid for one year. If you submit a development application(s) after this time, you may be required to meet for another pre-consultation meeting and/or the submission requirements may change. You are as well encouraged to contact us for a follow-up meeting if the plan/concept will be further refined.
Please contact me at Lisa.Stern@ottawa.ca or at 613-580-2424 extension 21108 if you have any questions.

A.3 Building Construction Confirmation

From: Jérémy Turbide
To: Wu, Michael; Frank Puentes
Cc: Kilborn, Kris; Thiffault, Dustin; Renon, Ava; Alejandra Inzunza Peña; Michel Doth
Subject: RE: 2948 Baseline Road - Baseline Towers Construction Type Confirmation
Date: Monday, July 14, 2025 2:11:35 PM
Attachments: image001.png
image002.png
image003.png
image004.png

Hi Michael,

Please find below the answers to your questions:

- **Construction type of the buildings:** Noncombustible
- **Will the buildings be equipped with a fully supervised sprinkler system?** Yes
- **Will the buildings be equipped with protected vertical openings?** If you are referring to the mechanical and elevator shafts, then yes. Please let me know if you had something else in mind.

As for the roof plans identifying the locations of the amenity spaces and roof drains, they are not yet complete and will be provided soon.

Let me know if you need any further information.

Have a great day!

Best regards,

JÉRÉMY TURBIDE, LEED Green Associate
Technologue en Architecture, Architectural Technologist
T 514 847 1117 F 514 847 2287
630, boul. René-Lévesque O. 32e étage, Montréal (QC) H3B 1S6
NEUF ARCHITECTES INC. Confidentialité + Transmission
Montréal. Ottawa. Toronto

De : Wu, Michael <Michael.Wu@stantec.com>
Envoyé : 9 juillet 2025 10:39
À : Frank Puentes <fpuentes@neuf.ca>
Cc : Jérémy Turbide <jturbide@neuf.ca>; Kilborn, Kris <kris.kilborn@stantec.com>; Thiffault, Dustin <Dustin.Thiffault@stantec.com>; Renon, Ava <Ava.Renon@stantec.com>; Alejandra Inzunza Peña <ainzunzapena@neuf.ca>; Michel Doth <mdoth@neuf.ca>
Objet : RE: 2948 Baseline Road - Baseline Towers Construction Type Confirmation

Resending to copy Alejandra and Michel on the request per Jeremy's automatic email response, with the addition of requesting for the most-recent roof plans that identifies locations of any rooftop amenity space and roof drains.

Michael Wu, EIT
Civil Engineering Intern
He, him

From: Wu, Michael
Sent: July 9, 2025 10:31
To: Frank Puentes <fpuentes@neuf.ca>
Cc: jturbide@neuf.ca; Kilborn, Kris <kris.kilborn@stantec.com>; Thiffault, Dustin <Dustin.Thiffault@stantec.com>; Renon, Ava <Ava.Renon@stantec.com>
Subject: 2948 Baseline Road - Baseline Towers Construction Type Confirmation

Good morning, Frank:
I hope this email finds you well.
Can you please confirm the following building construction information below? We would need it for the calculation of the required fire flows per the FUS methodology for the proposed Baseline Towers.

- Construction Type of the buildings
- Will the buildings be equipped with a fully supervised sprinkler system?
- Will the buildings be equipped with protected vertical openings?

Please feel free to reach out to us if you have any questions.
Thank you,

Michael Wu, EIT
Civil Engineering Intern
He, him

Direct: (613) 738 6033
michael.wu@stantec.com

With every community, we redefine what's possible.

Appendix B Water Servicing

B.1 Domestic Water Demands

2948 Baseline Road, Ottawa, ON - Domestic Water Demand Estimates

Site Plan provided by Neuf Architects Ltd. (2025-09-13)

Project No. 160401676 Designed by: AR

Date 2025-07-04 Checked by: MW

Revision: 01 City File No. D07-12-23-0073

Population densities per Table 4.1 City of Ottawa Water Design Guidelines:		
Studio and 1 Bedroom	1.4	ppu
2 Bedroom	2.1	ppu
3 Bedroom	3.1	ppu

Demand conversion factors per Table 4.2 of the City of Ottawa Water Design Guidelines and Technical Bulletin ISTB-2021-03:		
Residential	280	L/cap/day
Commercial	28000	L/ha/day

Building ID	Commercial Floor Area (m²)	No. of Units	Population	Avg Day Demand		Max Day Demand [1,2]		Peak Hour Demand [1,2]	
				(L/min)	(L/s)	(L/min)	(L/s)	(L/min)	(L/s)
Building 3-4									
Studio		16	22	4.4	0.1	10.9	0.2	24.0	0.4
1 Bedroom		0	0	0.0	0.0	0.0	0.0	0.0	0.0
1 Bedroom + Den[3]		223	468	91.1	1.5	227.6	3.8	500.8	8.3
2 Bedroom		32	67	13.1	0.2	32.7	0.5	71.9	1.2
3 Bedroom		16	50	9.6	0.2	24.1	0.4	53.0	0.9
Commercial	972			1.9	0.0	2.8	0.0	5.1	0.1
Residential Subtotal		287	608	120.0	2.0	298.1	5.0	654.8	10.9
Building 3-4 Subtotal	**972**	**287**	**608**	**120.0**	**2.0**	**298.1**	**5.0**	**654.8**	**10.9**
Building 5									
Studio		25	35	6.8	0.1	17.0	0.3	37.4	0.6
1 Bedroom		133	186	36.2	0.6	90.5	1.5	199.1	3.3
1 Bedroom + Den[3]		73	153	29.8	0.5	74.5	1.2	163.9	2.7
2 Bedroom		50	105	20.4	0.3	51.0	0.9	112.3	1.9
2 Bedroom + Den[4]		4	12	2.4	0.0	6.0	0.1	13.3	0.2
3 Bedroom		6	19	3.6	0.1	9.0	0.2	19.9	0.3
Commercial	296			0.6	0.0	0.9	0.0	1.6	0.0
Residential Subtotal		291	511	99.3	1.7	248.2	4.1	546.0	9.1
Building 5 Subtotal	**296**	**291**	**511**	**99.8**	**1.7**	**249.0**	**4.2**	**547.5**	**9.1**
Building 6									
Studio		30	42	8.2	0.1	20.4	0.3	44.9	0.7
1 Bedroom		38	53	10.3	0.2	25.9	0.4	56.9	0.9
1 Bedroom + Den[3]		87	183	35.5	0.6	88.8	1.5	195.4	3.3
2 Bedroom		133	279	54.3	0.9	135.8	2.3	298.7	5.0
2 Bedroom + Den[4]		3	9	1.8	0.0	4.5	0.1	9.9	0.2
3 Bedroom		2	6	1.2	0.0	3.0	0.1	6.6	0.1
Commercial	912			1.8	0.0	2.7	0.0	4.8	0.1
Residential Subtotal		293	573	111.4	1.9	278.4	4.6	612.5	10.2
Building 6 Subtotal	**912**	**293**	**573**	**113.1**	**1.9**	**281.1**	**4.7**	**617.3**	**10.3**
Total Site :	**2180**	**871**	**1691**	**333.0**	**5.5**	**828.2**	**13.8**	**1819.6**	**30.3**

1 The City of Ottawa water demand criteria used to estimate peak demand rates for residential areas are as follows:
maximum day demand rate = 2.5 x average day demand rate
peak hour demand rate = 2.2 x maximum day demand rate (as per Technical Bulletin ISD-2010-02)

2 Water demand criteria used to estimate peak demand rates for commercial areas are as follows:
maximum daily demand rate = 1.5 x average day demand rate
peak hour demand rate = 1.8 x maximum day demand rate (as per Technical Bulletin ISD-2010-02)

3 Assumption that "1 bedroom + den" has density of 2.1 ppu

4 Assumption that "2 bedroom + den" has density of 3.1 ppu

B.2 Fire Flow Demands (2020 FUS)

Stantec

FUS Fire Flow Calculation Sheet - 2020 FUS Guidelines

Stantec Project #: 160401676
Project Name: 2948 Baseline Road
Date: 7/4/2025
Fire Flow Calculation #: 2
Description: Towers 5-6
Notes: 28-Storey and 30-Storey Mixed-Use, sprinklered with floor assemblies / load bearing walls as 1hr rated assemblies per OBC 3.2.2.52.

Step	Task	Notes										Value Used	Req'd Fire Flow (L/min)
1	Determine Type of Construction	Type II - Noncombustible Construction / Type IV-A - Mass Timber Construction										0.8	-
2	Determine Effective Floor Area	Sum of Largest Floor + 25% of Two Additional Floors					Vertical Openings Protected?					YES	-
		3109	3096	2626								4540	-
3	Determine Required Fire Flow	($F = 220 \times C \times A^{1/2}$). Round to nearest 1000 L/min										-	12000
4	Determine Occupancy Charge	Limited Combustible										-15%	10200
5	Determine Sprinkler Reduction	Conforms to NFPA 13										-30%	-5100
		Standard Water Supply										-10%	
		Fully Supervised										-10%	
		% Coverage of Sprinkler System										100%	
6	Determine Increase for Exposures (Max. 75%)	Direction	Exposure Distance (m)	Exposed Length (m)	Exposed Height (Stories)	Length-Height Factor (m x stories)	Construction of Adjacent Wall	Firewall / Sprinklered ?				-	-
		North	> 30	0	0	0-20	Type V	NO				0%	408
		East	20.1 to 30	92	13	> 100	Type I-II - Protected Openings	YES				0%	
		South	> 30	0	0	0-20	Type I-II - Protected Openings	YES				0%	
		West	20.1 to 30	24	2	41-60	Type V	NO				4%	
7	Determine Final Required Fire Flow	Total Required Fire Flow in L/min, Rounded to Nearest 1000L/min											6000
		Total Required Fire Flow in L/s											100.0
		Required Duration of Fire Flow (hrs)											2.00
		Required Volume of Fire Flow (m^3)											720

B.3 Boundary Conditions

From: Rasool, Rubina
To: Wu, Michael
Cc: Kilborn, Kris
Subject: RE: City File No. D07-12-23-0073 (2948 Baseline Road) Request for Sanitary Sewer Capacity Confirmation
Date: Monday, June 17, 2024 8:53:24 AM
Attachments: 2948 Baseline Road REVISED June 2024.pdf

Hello Michael,

There are no concerns for the proposed 17L/s sanitary release rate on either Baseline Road or Sandcastle Drive.

The following are boundary conditions, HGL, for hydraulic analysis at 2948 Baseline Road (zone 2W2C) with assumed to be connected to the 203 mm watermain on Sandcastle Drive and the 203 mm private connection to the 1220 mm on Baseline Road (see attached PDF for location).

All Connections:
Minimum HGL: 126.7 m
Maximum HGL: 133.0 m
Max Day + Fire Flow (166.7 L/s): 120.6 m (Connection 1), 122.7 m (Connection 2), 129.5 m (Connection 3)

These are for current conditions and are based on computer model simulation. Disclaimer: The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation.

Rubina

Rubina Rasool
Project Manager
Planning, Infrastructure and Economic Development Department
Development Review – West Branch
City of Ottawa
110 Laurier Avenue West Ottawa, ON K1P 1J1
613-580-2424 Ext. 24221
rubina.rasool@ottawa.ca

From: Wu, Michael <Michael.Wu@stantec.com>
Sent: June 06, 2024 9:16 AM
To: Rasool, Rubina <Rubina.Rasool@ottawa.ca>
Cc: Kilborn, Kris <kris.kilborn@stantec.com>
Subject: City File No. D07-12-23-0073 (2948 Baseline Road) Request for Sanitary Sewer Capacity Confirmation

Good morning, Rubina:

We are looking to confirm whether the downstream sanitary sewers in Sandcastle Drive have the capacity to receive an additional 17 L/s of peak sanitary flow from the proposed 2948 Baseline Road development.

Attached is the design sheet for your reference.

Please let us know if you have any questions or require additional information.

Thanks,

Michael Wu EIT
Civil Engineering Intern, Community Development

Direct: 1 (613) 738-6033
Michael.Wu@stantec.com

Stantec
300-1331 Clyde Avenue
Ottawa ON K2C 3G4

Appendix C Wastewater Servicing

C.1 Sanitary Design Sheet

Stantec

SUBDIVISION:
2948 Baseline Road

DATE: 2025-09-18
REVISION: 1
DESIGNED BY: MJS
CHECKED BY: MW

SANITARY SEWER DESIGN SHEET
(City of Ottawa)

FILE NUMBER: 160401676

DESIGN PARAMETERS

MAX PEAK FACTOR (RES.)=	4.0	AVG. DAILY FLOW / PERSON	280 l/p/day	MINIMUM VELOCITY	0.60 m/s
MIN PEAK FACTOR (RES.)=	2.0	COMMERCIAL	28,000 l/ha/day	MAXIMUM VELOCITY	3.00 m/s
PEAKING FACTOR (INDUSTRIAL):	2.4	INDUSTRIAL (HEAVY)	55,000 l/ha/day	MANNINGS n	0.013
PEAKING FACTOR (ICI >20%):	1.5	INDUSTRIAL (LIGHT)	35,000 l/ha/day	BEDDING CLASS	B
PERSONS / ONE BEDROOM	1.4	INSTITUTIONAL	28,000 l/ha/day	MINIMUM COVER	2.50 m
PERSONS / TWO BEDROOM	2.1	INFILTRATION	0.33 l/s/Ha	HARMON CORRECTION FACTOR	0.8
PERSONS / THREE BEDROOM	3.1				

LOCATION			RESIDENTIAL AREA AND POPULATION									COMMERCIAL		INDUSTRIAL (L)		INDUSTRIAL (H)		INSTITUTIONAL		GREEN / UNUSED		C+I+I	INFILTRATION			TOTAL	PIPE							
AREA ID NUMBER	FROM M.H.	TO M.H.	AREA	1 BED	UNITS 2 BED	3 BED	POP.	CUMULATIVE AREA	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW	AREA	ACCU. AREA	AREA	ACCU. AREA	AREA	ACCU. AREA	AREA	ACCU. AREA	AREA	ACCU. AREA	PEAK FLOW	TOTAL AREA	ACCU. AREA	INFILT. FLOW	FLOW	LENGTH	DIA	MATERIAL	CLASS	SLOPE	CAP. (FULL)	CAP. V PEAK FLOW	VEL. (FULL)
			(ha)					(ha)			(l/s)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(l/s)	(ha)	(ha)	(l/s)	(l/s)	(m)	(mm)			(%)	(l/s)	(%)	(m/s)
																												150						
R1A, G1A	BLDG STUB 1	MONITOR MH 1	0.50	16	255	16	608	0.50	608	3.34	6.6	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.32	0.0	0.82	0.82	0.3	6.9	2.5	150	PVC	DR 28	1.00	15.3	**44.91%**	0.86
	MONITOR MH	1	0.00	0	0	0	0	0.50	608	3.34	6.6	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.0	0.00	0.82	0.3	6.9	11.5	200	PVC	SDR 35	1.00	33.4	**20.59%**	1.05
																												200						
R2A, G2A	BLDG STUB 2	MONITOR MH 2	0.34	226	343	15	1083	0.34	1083	3.22	11.3	0.12	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.28	0.0	0.62	0.62	0.2	11.6	2.6	250	PVC	SDR 35	1.00	60.6	**19.05%**	1.22
	MONITOR MH 2	EX SAN MH 1	0.00	0	0	0	0	0.34	1083	3.22	11.3	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.0	0.00	0.62	0.2	11.6	11.9	250	PVC	SDR 35	1.00	60.6	**19.05%**	1.22
																												250						

C.2 Confirmation of Sanitary Sewer Capacity

From: Rasool, Rubina
To: Wu, Michael
Cc: Kilborn, Kris
Subject: RE: City File No. D07-12-23-0073 (2948 Baseline Road) Request for Sanitary Sewer Capacity Confirmation
Date: Monday, June 17, 2024 8:53:24 AM
Attachments: 2948 Baseline Road REVISED June 2024.pdf

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All Connections:
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Maximum HGL: 133.0 m
Max Day + Fire Flow (166.7 L/s): 120.6 m (Connection 1), 122.7 m (Connection 2), 129.5 m (Connection 3)

These are for current conditions and are based on computer model simulation. Disclaimer: The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation.

Rubina

Rubina Rasool
Project Manager
Planning, Infrastructure and Economic Development Department
Development Review – West Branch
City of Ottawa
110 Laurier Avenue West Ottawa, ON K1P 1J1
613-580-2424 Ext. 24221
rubina.rasool@ottawa.ca

From: Wu, Michael <Michael.Wu@stantec.com>
Sent: June 06, 2024 9:16 AM
To: Rasool, Rubina <Rubina.Rasool@ottawa.ca>
Cc: Kilborn, Kris <kris.kilborn@stantec.com>
Subject: City File No. D07-12-23-0073 (2948 Baseline Road) Request for Sanitary Sewer Capacity Confirmation

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Attached is the design sheet for your reference.

Please let us know if you have any questions or require additional information.

Thanks,

Michael Wu EIT
Civil Engineering Intern, Community Development

Direct: 1 (613) 738-6033
Michael.Wu@stantec.com

Stantec
300-1331 Clyde Avenue
Ottawa ON K2C 3G4

précautions supplémentaires.

Atención: Este correo electrónico proviene de fuera de Stantec. Por favor, tome precauciones adicionales.

Appendix D Stormwater Management

D.1 Modified Rational Method

Stormwater Management Calculations

File No: **160401676**
Project: **2948 Baseline Road**
Date: **September 2025**

SWM Approach:
Post-development to Pre-development flows

Post-Development Site Conditions:

Overall Runoff Coefficient for Site and Sub-Catchment Areas

Runoff Coefficient Table

Catchment Type	Sub-catchment Area ID / Description		Area (ha) "A"		Runoff Coefficient "C"	"A x C"		5-Year Runoff Coefficient	Runoff Coefficient "C"	"A x C"		100-Year Runoff Coefficient
Phase 1 and 2	PL1	Hard	0.769		0.9	0.692			1.0	0.769		
		Soft	0.011		0.2	0.002			0.25	0.003		
		Subtotal		0.780			0.694	0.89			0.772	0.99
Offsite (Non-Tributary)	FREE1	Hard	0.037		0.9	0.033			1.0	0.037		
		Soft	0.033		0.2	0.007			0.25	0.008		
		Subtotal		0.070			0.040	0.57			0.045	0.65
Controlled - Outlet 100	CIST1-1 to CIST1-13	Hard	0.617		0.9	0.555			1.0	0.617		
	STM 100	Soft	0.142		0.2	0.028			0.25	0.036		
		Subtotal		0.759			0.584	0.77			0.653	0.86
External	EXT	Hard	0.000		0.9	0.000			1.0	0.000		
		Soft	0.040		0.2	0.008			0.25	0.010		
		Subtotal		0.040			0.008	0.20			0.010	0.25
Offsite-4 (Non Tributary)	OFFSITE-4	Hard	0.029		0.9	0.026			1.0	0.029		
		Soft	0.000		0.2	0.000			0.25	0.000		
		Subtotal		0.029			0.026	0.90			0.029	1.00
Controlled - Outlet 200	CIST2-1 to CIST2-12	Hard	0.419		0.9	0.377			1.0	0.419		
	STM 200	Soft	0.063		0.2	0.013			0.25	0.016		
		Subtotal		0.482			0.390	0.81			0.435	0.90
Offsite-1 (Non-Tributary)	OFFSITE-1	Hard	0.029		0.9	0.026			1.0	0.029		
		Soft	0.011		0.2	0.002			0.25	0.003		
		Subtotal		0.040			0.028	0.71			0.032	0.79
Offsite-2 (Non-Tributary)	OFFSITE-2	Hard	0.058		0.9	0.052			1.0	0.058		
		Soft	0.013		0.2	0.003			0.25	0.003		
		Subtotal		0.071			0.055	0.77			0.061	0.86
		Hard	0.000		0.9	0.000			1.0	0.000		
		Soft	0.000		0.2	0.000			0.25	0.000		
		Subtotal		0.000			0.000	0.00			0.000	0.00
Total				**2.271**			**1.825**				**2.036**	
Overall Runoff Coefficient= C:								**0.80**				**0.90**

Total Phase 1 and 2 Areas	**0.78 ha**
Total Outlet 100 Areas	**0.80 ha**
Total Outlet 200 Areas	**0.48 ha**
Total Tributary Area to Outlet	**2.06 ha**
Total Phase 1 and 2 Uncontrolled Areas	**0.07 ha**
Total Outlet 100 Uncontrolled Areas	**0.03 ha**
Total Outlet 200 Uncontrolled Areas	**0.11 ha**
Total Other Uncontrolled Areas (Park)	**0.00 ha**
Total Uncontrolled Areas (Non-Tributary)	**0.21 ha**
Total Site	**2.27 ha**

Project #160401676, 2948 Baseline Road
Modified Rational Method Calculations for Storage

5 yr Intensity $I = a/(t + b)^c$
City of Ottawa

a =	998.071
b =	6.053
c =	0.814

t (min)	I (mm/hr)
10	104.2
15	83.6
20	70.3
25	60.9
30	53.9
35	48.5
40	44.2
45	40.6
50	37.7
55	35.1
60	32.9
65	31.0

5 -Year Allowable Flow Calculation for Full Site Area + External Area

Subdrainage Area: Total
Area (ha): 2.271
C: 0.50

Historical 20 minute Time of Concentration for existing site plan applied

tc (min)	I (5 yr) (mm/hr)	Qtarget (L/s)
20	70.25	**221.8**

5 -Year Target Flow Allocation

Time of Concentration (min): 10
Intensity (mm/hr): 104.19

	Controlled	Area (ha)	C	Flow (L/s) Calculated	Applied	
Phase 1-2 (EX 100)						
PL1	Y	0.780	0.89	201.1	76.2	
FREE1	Y	0.070	0.57	11.6	11.6	
Phase 3-4 (STM 100)						
STM 100	Y	0.759	0.77	169.1	21.3	
EXT	Y	0.040	0.20	2.3	0.0	Incl. in STM 100
Phase 5-6 (STM 200)						
STM 200	Y	0.482	0.81	112.9	16	
OFFSITE-1	N	0.040	0.71	8.2	8.2	
OFFSITE-2	N	0.071	0.77	15.9	15.9	
		Total		521.0	**149.2**	

5 -Year Allowable Flow Calculation for Phase 1-2 (EX 100)

Subdrainage Area: Tributary Area to Outlet
Area (ha): 0.850
C: 0.50

Assumed approximate current Time of Concentration

tc (min)	I (5 yr) (mm/hr)	Qtarget (L/s)
20	70.25	**83.0**

5-Year Modified Rational Method for Phase 1-2 (EX 100)

Subdrainage Area: FREE1
Area (ha): 0.07 At Outlet EX 100
C: 0.57

tc (min)	I (5 yr) (mm/hr)	Q1actual (L/s)			QUactual (L/s)
10	104.19	11.6			11.6
15	83.56	9.3			9.3
20	70.25	7.8			7.8
25	60.90	6.8			6.8
30	53.93	6.0			6.0
35	48.52	5.4			5.4
40	44.18	4.9			4.9
45	40.63	4.5			4.5
50	37.65	4.2			4.2
55	35.12	3.9			3.9
60	32.94	3.7			3.7
65	31.04	3.4			3.4

Subdrainage Area: PL1 Controlled - EX 100
Area (ha): 0.780
C: 0.89
Discharge (L/s): 76.2 From May 2015 Novatech SWM Report

tc (min)	I (5 yr) (mm/hr)	Qactual (L/s)	Qrelease (L/s)	Qstored (L/s)	Vstored (m^3)
10	104.19	201.1	76.2	124.9	74.9
15	83.56	161.3	76.2	85.1	**76.5**
20	70.25	135.6	76.2	59.4	71.3
25	60.90	117.5	76.2	41.3	62.0
30	53.93	104.1	76.2	27.9	50.2
35	48.52	93.6	76.2	17.4	36.6
40	44.18	85.3	76.2	9.1	21.8
45	40.63	78.4	76.2	2.2	6.0
50	37.65	72.7	72.7	0.0	0.0
55	35.12	67.8	67.8	0.0	0.0
60	32.94	63.6	63.6	0.0	0.0
65	31.04	59.9	59.9	0.0	0.0

Storage Volume Required (m^3) **77**

5 -Year Allowable Flow Calculation for Phase 3-4 (STM 100)

Subdrainage Area: Tributary Area to Outlet
Area (ha): 0.828
C: 0.50

Assumed approximate current Time of Concentration

tc (min)	I (5 yr) (mm/hr)	Qtarget (L/s)
20	70.25	**80.9**

Project #160401676, 2948 Baseline Road
Modified Rational Method Calculations for Storage

100 yr Intensity $I = a/(t + b)$
City of Ottawa

a =	1735.688
b =	6.014
c =	0.820

t (min)	I (mm/hr)
10	178.6
15	142.9
20	120.0
25	103.8
30	91.9
35	82.6
40	75.1
45	69.1
50	64.0
55	59.6
60	55.9
65	52.6

100-Year Flow Calculation for Full Site Area + External Area

Subdrainage Area: Total
Area (ha): 2.271
C: 0.50

Historical 20 minute Time of Concentration for existing site plan applied

tc (min)	I (100 yr) (mm/hr)	Q100yr (L/s)
20	119.95	**378.6**

100-Year Target Flow Allocation

Time of Concentration (min): 10
Intensity (mm/hr): 178.56

	Control	Area (ha)	C	Flow (L/s) Calculated	Applied	
Phase 1-2 (EX 100)						
PL1	Y	0.780	0.99	383.0	97.3	
FREE1	Y	0.070	0.65	22.5	22.5	
Phase 3-4 (STM 100)						
STM 100	Y	0.759	0.86	323.9	21.3	
EXT	Y	0.040	0.25	5.0	0.0	Incl. in STM 100
Phase 5-6 (STM 200)						
STM 200	Y	0.482	0.90	215.8	16	
OFFSITE-1	N	0.040	0.79	15.8	15.8	
OFFSITE-2	N	0.071	0.86	30.4	30.4	
		Total		996.3	**203.3**	

100-Year Allowable Flow Calculation for Phase 1-2 (EX 100)

Subdrainage Area: Tributary Area to Outlet
Area (ha): 0.850
C: 0.50

Assumed approximate current Time of Concentration

tc (min)	I (100 yr) (mm/hr)	Q100yr (L/s)
20	119.95	**141.7**

100-Year Modified Rational Method for Phase 1-2 (EX 100)

Subdrainage Area: FREE1
Area (ha): 0.07 At Outlet EX 100
C: 0.65

tc (min)	I (100 yr) (mm/hr)	Q1actual (L/s)			QUactual (L/s)
10	178.56	22.5			22.5
15	142.89	18.0			18.0
20	119.95	15.1			15.1
25	103.85	13.1			13.1
30	91.87	11.6			11.6
35	82.58	10.4			10.4
40	75.15	9.5			9.5
45	69.05	8.7			8.7
50	63.95	8.0			8.0
55	59.62	7.5			7.5
60	55.89	7.0			7.0
65	52.65	6.6			6.6

Subdrainage Area: PL1 Controlled - EX 100
Area (ha): 0.780
C: 0.99
Discharge (L/s): 97.3 From May 2015 Novatech SWM Report

tc (min)	I (100 yr) (mm/hr)	Qactual (L/s)	Qrelease (L/s)	Qstored (L/s)	Vstored (m^3)
10	178.56	383.0	97.3	285.7	171.4
15	142.89	306.5	97.3	209.2	188.3
20	119.95	257.3	97.3	160.0	**192.0**
25	103.85	222.8	97.3	125.5	188.2
30	91.87	197.1	97.3	99.8	179.6
35	82.58	177.1	97.3	79.8	167.7
40	75.15	161.2	97.3	63.9	153.4
45	69.05	148.1	97.3	50.8	137.2
50	63.95	137.2	97.3	39.9	119.7
55	59.62	127.9	97.3	30.6	101.0
60	55.89	119.9	97.3	22.6	81.4
65	52.65	112.9	97.3	15.6	61.0

Storage Volume Required (m^3) **193**

100-Year Allowable Flow Calculation for Phase 3-4 (STM 100)

Subdrainage Area: Tributary Area to Outlet
Area (ha): 0.828
C: 0.50

Assumed approximate current Time of Concentration

tc (min)	I (100 yr) (mm/hr)	Q100yr (L/s)
20	119.95	**138.1**

Project #160401676, 2948 Baseline Road
Modified Rational Method Calculations for Storage

5-Year Modified Rational Method for Phase 3-4 (STM 100)

Subdrainage Area: OFFSITE-4
Area (ha): 0.03 — At Outlet 100
C: 0.90

tc (min)	I (5 yr) (mm/hr)	Qactual (L/s)	Qrelease (L/s)	
10	104.19	7.6	7.6	
15	83.56	6.1	6.1	
20	70.25	5.1	5.1	
25	60.90	4.4	4.4	
30	53.93	3.9	3.9	
35	48.52	3.5	3.5	
40	44.18	3.2	3.2	
45	40.63	2.9	2.9	
50	37.65	2.7	2.7	
55	35.12	2.5	2.5	
60	32.94	2.4	2.4	
65	31.04	2.3	2.3	

Subdrainage Area: STM 100 + EXT — Controlled - Outlet 100
Area (ha): 0.80
C: 0.74
Discharge (L/s): 21.3

tc (min)	I (5 yr) (mm/hr)	Qactual (L/s)	Qrelease (L/s)	Qstored (L/s)	Vstored (m^3)
10	104.19	171.4	21.3	150.1	90.1
20	70.25	115.6	21.3	94.3	113.1
30	53.93	88.7	21.3	67.4	121.3
40	44.18	72.7	21.3	51.4	**123.3**
50	37.65	61.9	21.3	40.6	121.9
60	32.94	54.2	21.3	32.9	118.4
70	29.37	48.3	21.3	27.0	113.5
80	26.56	43.7	21.3	22.4	107.5
90	24.29	40.0	21.3	18.7	100.7
100	22.41	36.9	21.3	15.6	93.3
110	20.82	34.3	21.3	13.0	85.5
120	19.47	32.0	21.3	10.7	77.2

Storage Volume Required (m^3) **124**

5 -Year Allowable Flow Calculation for Phase 5-6 (STM 200)

Subdrainage Area: Tributary Area to Outlet
Area (ha): 0.593
C: 0.50

Assumed approximate equivalent Time of Concentration for existing storm sewer

tc (min)	I (5 yr) (mm/hr)	Qtarget (L/s)
20	70.25	**57.9**

5-Year Modified Rational Method for Phase 5-6 (STM 200)

Subdrainage Area: OFFSITE-1 OFFSITE-2 — Offsite (Non-Tributary)
Area (ha): 0.04 0.07 — At Outlet 200
C: 0.71 0.77

tc (min)	I (5 yr) (mm/hr)	Q1actual (L/s)	Q2actual (L/s)		QUactual (L/s)
10	104.19	8.2	15.9		24.1
15	83.56	6.6	12.7		19.3
20	70.25	5.5	10.7		16.2
25	60.90	4.8	9.3		14.1
30	53.93	4.2	8.2		12.5
35	48.52	3.8	7.4		11.2
40	44.18	3.5	6.7		10.2
45	40.63	3.2	6.2		9.4
50	37.65	3.0	5.7		8.7
55	35.12	2.8	5.4		8.1
60	32.94	2.6	5.0		7.6
65	31.04	2.4	4.7		7.2

Subdrainage Area: ´2-1 to CIST2-12 — Controlled - Outlet 200
Area (ha): 0.48
C: 0.81
Discharge (L/s): 16.0 5yr Qtarget less 100yr Uncontrolled QUactual

tc (min)	I (5 yr) (mm/hr)	Qactual (L/s)	Qrelease (L/s)	Qstored (L/s)	Vstored (m^3)
10	104.19	112.9	16.0	96.9	58.1
20	70.25	76.1	16.0	60.1	72.1
30	53.93	58.4	16.0	42.4	76.4
40	44.18	47.9	16.0	31.9	**76.5**
50	37.65	40.8	16.0	24.8	74.4
60	32.94	35.7	16.0	19.7	70.9
70	29.37	31.8	16.0	15.8	66.4
80	26.56	28.8	16.0	12.8	61.3
90	24.29	26.3	16.0	10.3	55.7
100	22.41	24.3	16.0	8.3	49.7
110	20.82	22.6	16.0	6.6	43.3
120	19.47	21.1	16.0	5.1	36.7

Storage Volume Required (m^3) **77**

SUMMARY TO OUTLET

Phase 1-2 (EX 100)

Allowable Flow to Public Storm Sewer	83.0 L/s	
Uncontrolled Area	0.070 ha	
Total 5yr Flow Uncontrolled	11.6 L/s	Tc = 10 min
Total 100yr Flow Uncontrolled	22.5 L/s	Tc = 10 min
Controlled Area	0.780 ha	
Total 5yr Flow to Outlet EX 100	201.1 L/s	Tc = 10 min
Total 5yr Flow from Outlet EX 100	76.2 L/s	

Project #160401676, 2948 Baseline Road
Modified Rational Method Calculations for Storage

100-Year Modified Rational Method for Phase 3-4 (STM 100)

Subdrainage Area: OFFSITE-4
Area (ha): 0.03 — At Outlet 100
C: 1.00

tc (min)	I (100 yr) (mm/hr)	Qactual (L/s)	Qrelease (L/s)	
10	178.56	14.4	14.4	
15	142.89	11.5	11.5	
20	119.95	9.7	9.7	
25	103.85	8.4	8.4	
30	91.87	7.4	7.4	
35	82.58	6.7	6.7	
40	75.15	6.1	6.1	
45	69.05	5.6	5.6	
50	63.95	5.2	5.2	
55	59.62	4.8	4.8	
60	55.89	4.5	4.5	
65	52.65	4.2	4.2	

Subdrainage Area: STM 100 + EXT — Controlled - Outlet 100
Area (ha): 0.80
C: 0.83
Discharge (L/s): 21.3

tc (min)	I (100 yr) (mm/hr)	Qactual (L/s)	Qrelease (L/s)	Qstored (L/s)	Vstored (m^3)
10	178.56	328.9	21.3	307.6	184.5
20	119.95	220.9	21.3	199.6	239.5
30	91.87	169.2	21.3	147.9	266.2
40	75.15	138.4	21.3	117.1	281.0
50	63.95	117.8	21.3	96.5	289.5
60	55.89	102.9	21.3	81.6	293.9
70	49.79	91.7	21.3	70.4	**295.7**
80	44.99	82.9	21.3	61.6	295.5
90	41.11	75.7	21.3	54.4	293.8
100	37.90	69.8	21.3	48.5	291.0
110	35.20	64.8	21.3	43.5	287.3
120	32.89	60.6	21.3	39.3	282.8

Storage Volume Required (m^3) **296**

100 -Year Allowable Flow Calculation for Phase 5-6 (STM 200)

Subdrainage Area: Tributary Area to Outlet
Area (ha): 0.593
C: 0.50

Assumed approximate equivalent Time of Concentration for existing storm sewer

tc (min)	I (100 yr) (mm/hr)	Q100yr (L/s)
20	119.95	**98.9**

100-Year Modified Rational Method for Phase 5-6 (STM 200)

Subdrainage Area: OFFSITE-1 OFFSITE-2 — Offsite (Non-Tributary)
Area (ha): 0.04 0.07 — At Outlet 200
C: 0.79 0.86

tc (min)	I (100 yr) (mm/hr)	Q1actual (L/s)	Q2actual (L/s)		QUactual (L/s)
10	178.56	15.8	30.4		46.2
15	142.89	12.6	24.3		36.9
20	119.95	10.6	20.4		31.0
25	103.85	9.2	17.7		26.8
30	91.87	8.1	15.6		23.8
35	82.58	7.3	14.1		21.3
40	75.15	6.6	12.8		19.4
45	69.05	6.1	11.8		17.9
50	63.95	5.6	10.9		16.5
55	59.62	5.3	10.2		15.4
60	55.89	4.9	9.5		14.5
65	52.65	4.6	9.0		13.6

Subdrainage Area: ´2-1 to CIST2-12 — Controlled - Outlet 200
Area (ha): 0.48
C: 0.90
Discharge (L/s): 16.0 5yr Qtarget less 100yr Uncontrolled QUactual

tc (min)	I (100 yr) (mm/hr)	Qactual (L/s)	Qrelease (L/s)	Qstored (L/s)	Vstored (m^3)
10	178.56	215.8	16.0	199.8	119.9
20	119.95	145.0	16.0	129.0	154.8
30	91.87	111.0	16.0	95.0	171.1
40	75.15	90.8	16.0	74.8	179.6
50	63.95	77.3	16.0	61.3	183.9
60	55.89	67.6	16.0	51.6	**185.6**
70	49.79	60.2	16.0	44.2	185.5
80	44.99	54.4	16.0	38.4	184.2
90	41.11	49.7	16.0	33.7	181.9
100	37.90	45.8	16.0	29.8	178.9
110	35.20	42.5	16.0	26.5	175.2
120	32.89	39.8	16.0	23.8	171.0

Storage Volume Required (m^3) **186**

SUMMARY TO OUTLET

Phase 1-2 (EX 100)

Allowable Flow to Public Storm Sewer	83.0 L/s	
Uncontrolled Area	0.070 ha	
Total 5yr Flow Uncontrolled	N/A L/s	Tc = 10 min
Total 100yr Flow Uncontrolled	22.5 L/s	Tc = 10 min
Controlled Area	0.780 ha	
Total 100yr Flow to Outlet EX 100	383.0 L/s	Tc = 10 min
Total 100yr Flow from Outlet EX 100	97.3 L/s	

Project #160401676, 2948 Baseline Road
Modified Rational Method Calculations for Storage

Storage Volume Required	77	m^3	
Phase 3-4 (STM 100)			
Allowable Flow to Public Storm Sewer	80.9	L/s	
Uncontrolled Area	0.029	ha	
Total 5yr Flow Uncontrolled	7.6	L/s	Tc = 10 min
Total 100yr Flow Uncontrolled	14.4	L/s	Tc = 10 min
Controlled Area	0.799	ha	
Total 5yr Flow to Outlet 100	171.4	L/s	Tc = 10 min
Total 5yr Flow from Outlet 100	21.3	L/s	
Storage Volume Required	124	m^3	
Phase 5-6 (STM 200)			
Allowable Flow to Public Storm Sewer	57.9	L/s	
Uncontrolled Area	0.111	ha	
Total 5yr Flow Uncontrolled	24.1	L/s	Tc = 10 min
Total 100yr Flow Uncontrolled	46.2	L/s	Tc = 10 min
Controlled Area	0.482	ha	
Total 5yr Flow to Outlet 200	112.9	L/s	Tc = 10 min
Total 5yr Flow from Outlet 200	16.0	L/s	
Storage Volume Required	77	m^3	
Reference Areas			
Allowable Flow from Reference Areas	221.8	L/s	
5yr Design Flow to Storm Sewer	113.5	L/s	
5yr Uncontrolled Flow	43.2	L/s	
5yr Design Flow	156.7	L/s	

Project #160401676, 2948 Baseline Road
Modified Rational Method Calculations for Storage

Storage Volume Required	193	m^3	
Phase 3-4 (STM 100)			
Allowable Flow to Public Storm Sewer	80.9	L/s	
Uncontrolled Area	0.029	ha	
Total 5yr Flow Uncontrolled	N/A	L/s	
Total 100yr Flow Uncontrolled	14.4	L/s	Tc = 10 min
Controlled Area	0.799	ha	
Total 100yr Flow to Outlet 100	328.9	L/s	Tc = 10 min
Total 100yr Flow from Outlet 100	21.3	L/s	
Storage Volume Required	296	m^3	
Phase 5-6 (STM 200)			
Allowable Flow to Public Storm Sewer	57.9	L/s	
Uncontrolled Area	0.111	ha	
Total 5yr Flow Uncontrolled	N/A	L/s	
Total 100yr Flow Uncontrolled	46.2	L/s	Tc = 10 min
Controlled Area	0.482	ha	
Total 100yr Flow to Outlet 200	215.8	L/s	Tc = 10 min
Total 100yr Flow from Outlet 200	16.0	L/s	
Storage Volume Required	186	m^3	
Reference Areas			
Allowable Flow from Reference Areas	221.8	L/s	
100yr Design Flow to Storm Sewer	134.6	L/s	
100yr Uncontrolled Flow	83.0	L/s	
100yr Design Flow	217.6	L/s	

D.2 Storm Sewer Design Sheet

Stantec

2948 Baseline Road

DATE: 2025-09-26
REVISION: 2
DESIGNED BY: DT
FILE NUMBER: 160401676
CHECKED BY:

STORM SEWER DESIGN SHEET
(City of Ottawa)

DESIGN PARAMETERS

$I = a / (t+b)^c$ (As per City of Ottawa Guidelines, 2012)

	1:5 yr	1:100 yr
a =	998.071	1735.688
b =	6.053	6.014
c =	0.814	0.820

MANNING'S n = 0.013 BEDDING CLASS = B
MINIMUM COVER: 2.00 m
TIME OF ENTRY 10 min

LOCATION			DRAINAGE AREA															PIPE SELECTION										
AREA ID NUMBER	FROM M.H.	TO M.H.	AREA (5-YEAR) (ha)	AREA (10-YEAR) (ha)	AREA (ROOF) (ha)	C (-)	ACCUM. AREA (5YR) (ha)	A x C (5-YEAR) (ha)	ACCUM. AxC (5YR) (ha)	ACCUM. AREA (100YR) (ha)	A x C (100-YEAR) (ha)	ACCUM. AxC (100YR) (ha)	T of C (min)	$I_{5\text{-YEAR}}$ (mm/h)	$I_{10\text{-YEAR}}$ (mm/h)	$Q_{CONTROL}$ (L/s)	ACCUM. $Q_{CONTROL}$ (L/s)	Q_{ACT} (CIA/360) (L/s)	LENGTH (m)	PIPE WIDTH OR DIAMETEI (mm)	PIPE HEIGHT (mm)	PIPE SHAPE (-)	MATERIAL (-)	CLASS (-)	SLOPE %	Q_{CAP} (FULL) (L/s)	% FULL (-)	VEL. (FULL) (m/s)	VEL. (ACT) (m/s)
Tower 4 - Cistern 1	STM STUB 101A	STM 101	0.759	0.00	0.00	0.77	0.759	0.584	0.584	0.00	0.000	0.000	10.00	104.19	178.56	21.30	21.3	169.1	2.5	300	300	CIRCULAR	PVC	DR 28	1.00	96.2	**22.15%**	1.37	1.37
	STM 101	STM 100	0.000	0.00	0.00	0.00	0.000	0.000	0.584	0.00	0.000	0.000	10.03	104.03	178.28	21.30	21.3	168.9	15.3	300	300	CIRCULAR	PVC	DR 28	1.00	96.2	**22.15%**	1.37	1.37
													10.22																
Tower 5 & 6 - Cistern 2	STM STUB 200A	STM 200	0.482	0.00	0.00	0.81	0.482	0.390	0.390	0.00	0.000	0.000	10.00	104.19	178.56	16.00	16.0	113.0	1.9	300	300	CIRCULAR	PVC	DR 28	1.00	96.2	**16.64%**	1.37	1.37
	STM 200	EX.STM MH	0.000	0.00	0.00	0.00	0.000	0.000	0.390	0.00	0.000	0.000	10.02	104.07	178.35	16.00	16.0	112.9	13.9	300	300	CIRCULAR	PVC	DR 28	1.00	96.2	**16.64%**	1.37	1.37
													10.19																

Appendix E External Reports

E.1 Novatech 2015 SWM Plan and Analysis

ROOF DRAIN TABLE

ROOF DRAIN No.	1:5 YEAR RELEASE RATE	APPROX. 5 YR PONDING DEPTH	1:100 YEAR RELEASE RATE	APPROX. 100 YR PONDING DEPTH
PHASE 1	UNCONTROLLED	N/A	UNCONTROLLED	N/A
PHASE 2	UNCONTROLLED	N/A	UNCONTROLLED	N/A
PHASE 3	UNCONTROLLED	N/A	UNCONTROLLED	N/A

AREA PL 1 - INLET CONTROL DEVICE DATA - MH 101

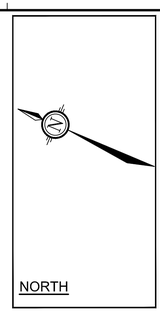
DESIGN EVENT	ORIFICE DIAMTER (mm)	DIAMETER OF OUTLET PIPE (mm)	DESIGN FLOW (L/s)	UPSTREAM HEAD (m)	REQUIRED VOLUME (m³)	VOLUME PROVIDED (m³)
1:5 YR	171	375	76.2	1.55	139	327
1:100 YR	171	375	97.3	2.55	325	327

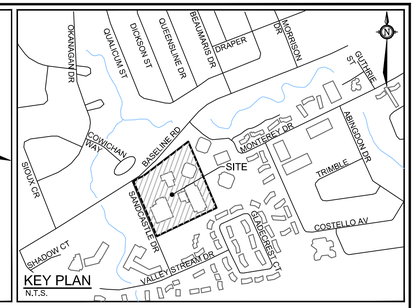
AREA PH 4 - INLET CONTROL DEVICE DATA - STMMH 122

DESIGN EVENT	ORIFICE DIAMTER (mm)	DIAMETER OF OUTLET PIPE (mm)	DESIGN FLOW (L/s)	UPSTREAM HEAD (m)	REQUIRED VOLUME (m³)	VOLUME PROVIDED (m³)
1:5 YR	73	300	19.4	3.11	15	74
1:100 YR	73	300	20.0	3.21	44	74

AREA PL 2 - INLET CONTROL DEVICE DATA - CBMH 112

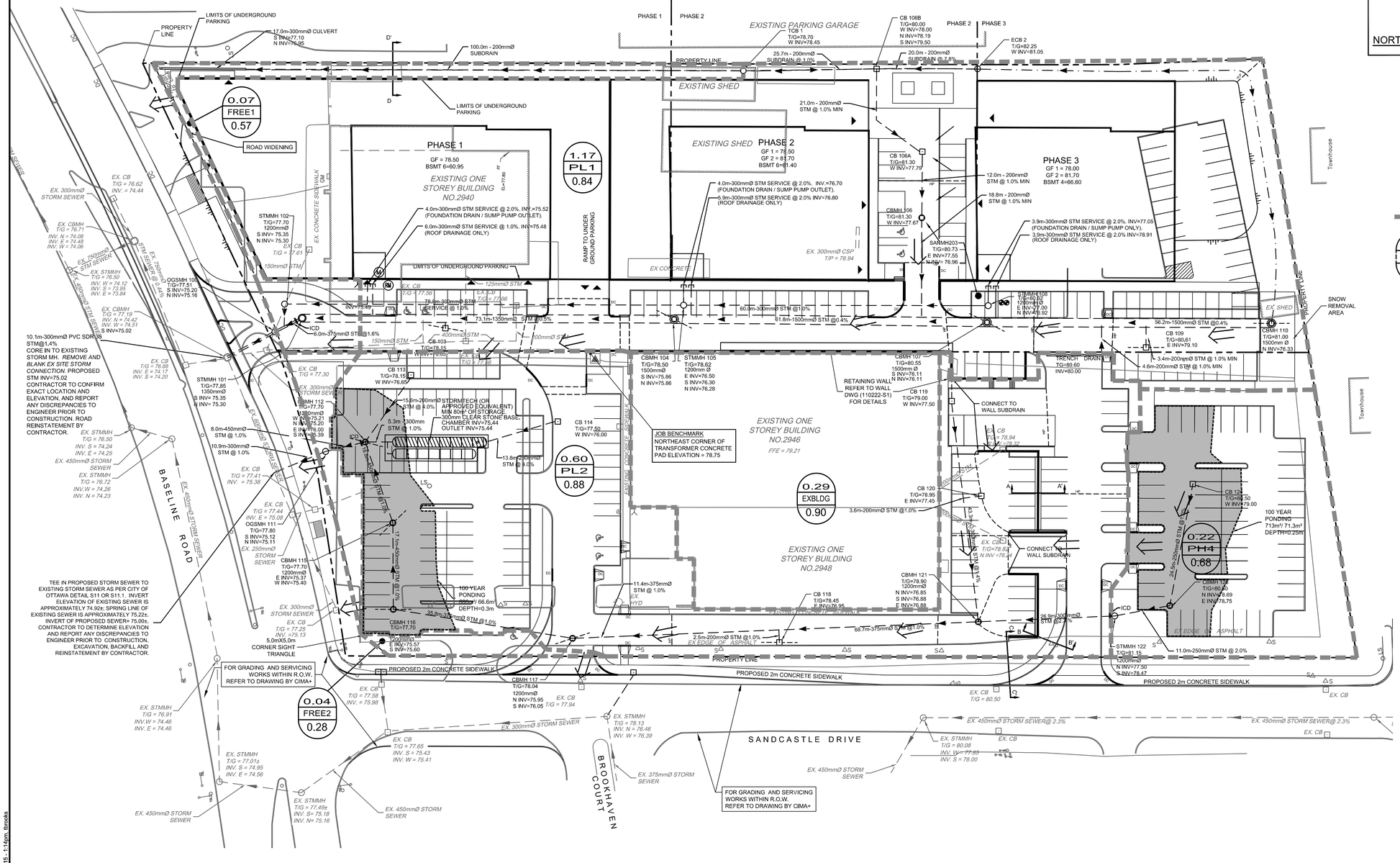
DESIGN EVENT	ORIFICE DIAMTER (mm)	DIAMETER OF OUTLET PIPE (mm)	DESIGN FLOW (L/s)	UPSTREAM HEAD (m)	REQUIRED VOLUME (m³)	VOLUME PROVIDED (m³)
1:5 YR	158	450	74.2	2.05	62	117
1:100 YR	158	450	80.0	2.35	165	184





LEGEND

- PROPOSED CURB
- PROPOSED DEPRESSED CURB (DC)
- PROPOSED CATCHBASIN (CB)
- PROPOSED SWALE
- PROPOSED BUILDING ENTRANCE
- DIRECTION OF MAJOR OVERLAND FLOW
- MAXIMUM SURFACE PONDING
- DRAINAGE AREA
- 0.085 / R1B / 0.2 — DRAINAGE AREA (hectares) / AREA I.D. / RUN-OFF COEFFICIENT
- EXISTING STORM MANHOLE
- EXISTING SANITARY MANHOLE (EX.CB)
- EXISTING CATCHBASIN (EX.DICB)
- EXISTING DITCH INLET CATCH BASIN (T/G)
- EXISTING TOP OF GRATE (VVB)
- EXISTING VALVE & VALVE BOX (HYD)
- EXISTING HYDRANT C/W VALVE (EX.UP)
- EXISTING UTILITY POLE C/W GUY WIRES (LS)
- EXISTING LIGHT STANDARD
- EXISTING FENCE
- EXISTING OVERHEAD WIRES



NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

NOT FOR CONSTRUCTION

No.	REVISION	DATE	BY
5.	REVISED PER CITY COMMENTS	DEC 18/15	ARM
4.	REVISED PER CITY COMMENTS	OCT 19/15	ARM
3.	REVISED PER CITY COMMENTS	JULY 21/15	ARM
2.	REVISED PER CITY COMMENTS	MAY 7/15	ARM
1.	ISSUED FOR SITE PLAN APPLICATION	DEC 19/14	MS

SCALE 1:400 (1:400 — 0 4 8 12 16)

DESIGN ARM
CHECKED MS
DRAWN IA
CHECKED MS
APPROVED MSP

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER — M. SAVIC 100102651 — DEC 18/15 — PROVINCE OF ONTARIO

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
CITY OF OTTAWA
2940/2946/2948 BASELINE ROAD

DRAWING NAME
STORMWATER MANAGEMENT PLAN

PROJECT No. 110222-00
REV REV # 5
DRAWING No. 110222-SWM

M:\2015\11\22\CAD\Design\110222-SWM.dwg, SWM, Dec 18, 2015 - 1:14pm, tbrooks

PLACEHOLDER.DWG - 914.4mmx609.6mm

PROJECT #: 110222

PROJECT NAME: 2940, 2946, 2948 BASELINE RD.
LOCATION: 2940, 2946, 2948 BASELINE RD.
DATE PREPARED: December 2014
DATE REVISED: May 2015
DATE REVISED: July 2015
DATE REVISED: Oct 2015
DATE REVISED: Dec 2015

NOVATECH
Engineers, Planners & Landscape Architects

TABLE D4: Controlled Flow - Parking Lot - 2940 Baseline(PL1)

Post Development Runoff Coefficient "C"

			5 Year Event		100 Year Event	
Area	Surface	Ha	"C"	C_{avg}	"C" + 25%	$*C_{avg}$
Total	Hard	0.375	0.90	0.84	1.00	0.93
1.169	Roof	0.681	0.90		1.00	
	Soft	0.113	0.20		0.25	

Runoff Coefficient Equation
$C = (A_{hard} \times 0.9 + A_{soft} \times 0.2)/A_{Tot}$
$*C = (A_{hard} \times 1.0 + A_{soft} \times 0.25)/A_{Tot}$
* Runoff Coefficient increases by 25% up to a maximum value of 1.00 for the 100-Year event

QUANTITY STORAGE REQUIREMENT - 5 YEAR

1.169 =Area (ha)
0.84 = C

Return Period	Time (min)	Intensity (mm/hr)	Flow Q (L/s)	Allowable Runoff (L/s)	Net Flow to be Stored (L/s)	Storage Req'd (m^3)
5 YEAR	10	104.19	284.43	76.2	208.23	124.94
	15	83.56	228.10	76.2	151.90	136.71
	20	**70.25**	**191.77**	**76.2**	**115.57**	**138.69**
	25	60.90	166.24	76.2	90.04	135.06
	30	53.93	147.21	76.2	71.01	127.83

QUANTITY STORAGE REQUIREMENT - 100 YEAR

1.169 =Area (ha)
0.93 = C

Return Period	Time (min)	Intensity (mm/hr)	Flow Q (L/s)	Allowable Runoff (L/s)	Net Flow to be Stored (L/s)	Storage Req'd (m^3)
100 YEAR	15	142.89	431.87	97.3	334.57	301.12
	20	119.95	362.53	97.3	265.23	318.28
	25	**103.85**	**313.86**	**97.3**	**216.56**	**324.84**
	30	91.87	277.66	97.3	180.36	324.64
	35	82.58	249.58	97.3	152.28	319.79

Equations:
Flow Equation
$Q = 2.78 \times C \times I \times A$
Where:
C is the runoff coefficient
I is the rainfall intensity, City of Ottawa IDF
A is the total drainage area

ORIFICE SIZING

Control Device				
Circular Plug Type ICD		171 mm		
Design Event	**Flow**	**Head**	**Orifice Area (m^2)**	**Circ (mm)**
1:5 Year	76.2	1.55	0.023031	171.0
1:100 Year	97.3	2.55	0.022927	171.0

Orifice Control Sizing
$Q = 0.6 \times A \times (2gh) \times 0.5$
Where:
Q is the release rate in m^3/s
A is the orifice area in m^2

g is the acceleration due to gravity, 9.81 m/s^2
h is the head of water above the orifice centre in m
d is the diameter of the orifice in m

PROJECT #: 110222

PROJECT NAME: 2940, 2946, 2948 BASELINE RD.
LOCATION: 2940, 2946, 2948 BASELINE RD.
DATE PREPARED: December 2014
DATE REVISED: May 2015
DATE REVISED: July 2015
DATE REVISED: Oct 2015

NOVATECH
Engineers, Planners & Landscape Architects

TABLE D5: Storage Provided - PL1

Max Water Elevation = 77.85

Description		Pipe Diameter (mm)	Length (m)	Depth (m)	Volume (cu.m)	Cumulative Volume (cu.m)
Pipe Storage						
		200	51.8	N/A	1.63	1.63
		1350	73.1	N/A	104.63	106.26
		1500	118	N/A	208.52	314.79
Catchbasin Storage	CB103	N/A	N/A	1.20	0.43	106.69
	CB106A	N/A	N/A	0.00	0.00	0.00
	CB106B	N/A	N/A	0.00	0.00	106.26
	CB109	N/A	N/A	0.00	0.00	314.79
CBMH/MH Storage						
	STMMH101	1350	N/A	2.55	3.65	318.44
	CBMH104	1350	N/A	1.99	2.85	321.28
	CBMH106	200	N/A	0.18	0.01	321.29
	CBMH107	1500	N/A	1.74	3.07	324.36
	CBMH110	1500	N/A	1.52	2.69	327.04
Surface Ponding						
	5 Year	N/A	N/A	0.00	0.00	327.04
	100 Year	N/A	N/A	0.00	0.00	327.04

TOTAL STORAGE = 327.04

PATERSON GROUP

Geotechnical Investigation

Proposed Multi-Storey Building

Tower 4 to 6

2946 Baseline Road
Ottawa, Ontario

Prepared for 11034936 Canada Inc

Report PG6107 – 1 Revision 1 dated May 8, 2023

Table of Contents

Appendices

1.0 Introduction

Paterson Group (Paterson) was commissioned by 11034936 Canada Inc. to complete a geotechnical investigation for the subject site located at 2946 Baseline Road in the City of Ottawa (refer to Figure 1 - Key Plan presented in Appendix 2). The objective of the investigation was to:

- ❑ determine the subsurface soil and groundwater conditions by means of boreholes and monitoring well program.

- ❑ provide preliminary geotechnical recommendations for the foundation design of the proposed buildings and provide geotechnical construction precautions which may affect the design.

The following report has been prepared specifically and solely for the aforementioned project which is described herein. The report contains our findings and includes geotechnical recommendations pertaining to the design and construction of the proposed development as understood at the time of this report.

Investigating the presence or potential presence of contamination on the subject property was not part of the scope of work of this present investigation. Therefore, the present report does not address environmental issues.

2.0 Proposed Development

Based on the current design information, it is understood that the proposed development will consist of three multi storey residential buildings (Tower 4 to 6). It is understood that the proposed development will consist of 2 to 3 levels of underground parking and storage area. The proposed underground levels are expected to link each residential tower. The current development phase will also include associated at grade asphalt parking areas, access lanes and landscaped areas. It is further anticipated that the site will be fully municipally serviced.

3.0 Method of Investigation

3.1 Field Investigation

Field Program

The field program for the current investigation was completed from February 8, 9, 10, 11 and 14, 2022. At that time, 10 boreholes were advanced to a maximum depth of 12.8 m below existing grade. The borehole locations were distributed in a manner to provide general coverage of the proposed development taking into consideration existing site features. The borehole locations are shown on Drawing PG6107-1 - Test Hole Location Plan included in Appendix 2.

A previous field investigation was also completed by others on site. Test hole data and locations were considered as part of this geotechnical report.

The boreholes were completed using a track-mounted auger drill rig operated by a two-person crew. All fieldwork was conducted under the full-time supervision of Paterson personnel under the direction of a senior engineer from the geotechnical division. The testing procedure consisted of auguring to the required depths and at the selected locations sampling the overburden.

Sampling and In Situ Testing

Soil samples were recovered from the auger flights and using a 50 mm diameter split-spoon sampler. The split-spoon samples were placed in sealed plastic bags and transported to our laboratory. The depths at which the auger and split-spoon samples were recovered from the boreholes are shown as AU and SS, respectively, on the Soil Profile and Test Data sheets in Appendix 1.

A Standard Penetration Test (SPT) was conducted in conjunction with the recovery of the split spoon samples. The SPT results are recorded as "N" values on the Soil Profile and Test Data sheets. The "N" value is the number of blows required to drive the split spoon sampler 300 mm into the soil after a 150 mm initial penetration using a 63.5 kg hammer falling from a height of 760 mm. This testing was done in general accordance with ASTM D1586-11 - Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils.

Undrained shear strength testing was carried out in cohesive soils using a field vane apparatus.

The overburden thickness was evaluated by a dynamic cone penetration test (DCPT). The DCPT consists of driving a steel drill rod, equipped with a 50 mm diameter cone at the tip, using a 63.5 kg hammer falling from a height of 760 mm. The number of blows required to drive the cone into the soil is recorded for each 300 mm increment.

Subsurface conditions observed in the test holes were recorded in detail in the field. Reference should be made to the Soil Profile and Test Data sheets presented in Appendix 1 for specific details of the soil profile encountered at the test hole locations.

Groundwater

PVC groundwater monitoring wells were installed within boreholes BH 1-22, BH 6-22, and BH 10-22 and flexible piezometers were installed in boreholes all other boreholes to permit monitoring of the groundwater level subsequent to the completion of the sampling program.

The groundwater observations are discussed in Subsection 4.3 and presented in the Soil Profile and Test Data sheets in Appendix 1.

3.2 Field Survey

The ground surface elevations at the test hole locations are referenced to a geodetic datum and measured on field by Paterson's personnel. The locations of the boreholes and the ground surface elevations for each borehole location are presented on Drawing PG6107-1 -Test Hole Location Plan in Appendix 2.

3.3 Laboratory Testing

The soil samples were recovered from the subject site and visually examined in Paterson's laboratory to review the field logs. All samples will be stored in the laboratory for a period of one month after issuance of this report. The samples will then be discarded unless otherwise directed.

3.4 Analytical Testing

One (1) soil sample was submitted for analytical testing to assess the corrosion potential for exposed ferrous metals and the potential of sulphate attacks against subsurface concrete structures. The sample was submitted to determine the concentration of sulphate and chloride, the resistivity and the pH of the sample. If available, the results are presented in Appendix 1 and are discussed further in Subsection 6.7.

4.0 Observations

4.1 Surface Conditions

The subject site is currently mostly paved areas and occupied by a commercial building. The site is relatively flat with a light slope down towards Baseline Road. The property is surrounded west by Sandcastle Drive, to the south by a residential development, to the north by Baseline Road and to the east by ongoing construction of Towers 1 to 3 of the subject development project.

4.2 Subsurface Profile

Overburden

Generally, the soil profile encountered at the test hole locations consists of a flexible asphalt pavement and granular crushed stones with silty clay or silty sand fill layer overlying a firm to very stiff brown silty clay crust followed by a deep, stiff to very stiff grey silty clay deposit. A layer of glacial till, consisting of sand and gravel within a silty clay soil matrix was encountered at boreholes BH 5-22 and BH 10-22.

A layer of grey silty sand with clay was encountered approximately 12.2 to 12.6 m below existing grade in BH 1-22. The silt and sand content of the silty clay material was also noted to increase with depth.

DCPT was completed at BH 2-22, BH 4-22, BH 6-22 and BH 9-22, practical refusal was encountered at a depth of 12.6, 12.6, 12.8 and 14.0 m respectively. Reference should be made to the Soil Profile and Test Data sheets in Appendix 1 for the details of the soil profile encountered at each test hole location.

Bedrock

Based on available geological mapping, the bedrock in the area is part of the Oxford formation, which consists of dolomite. Also, based on available geological mapping, the overburden thickness is expected to range from 10 to 15 m.

4.3 Groundwater

Groundwater level readings were recorded on February 24, 2022, at the piezometer and monitoring well locations. The groundwater level readings are presented in the Soil Profile and Test Data sheets in Appendix 1. Long-term groundwater level can also be estimated based on the observed color, moisture levels and consistency of the recovered soil samples. Based on these observations, the long-term groundwater level is expected between 4 to 5 m depth. It should be noted that groundwater levels are subject to seasonal fluctuations, therefore the groundwater levels could vary at the time of construction.

5.0 Discussion

5.1 Geotechnical Assessment

Foundation Design Considerations

From a geotechnical perspective, the subject site is considered suitable for the proposed development. It is expected that the anticipated building loads are too high to found the proposed building over a conventional shallow spread footing foundations. It is expected that the main tower super structures will be founded on piles while the surrounding levels of underground parking will be founded on conventional spread footings placed on an undisturbed stiff silty clay bearing surface.

Due to the presence of the silty clay layer, the subject site will be subjected to a permissible grade restriction. The permissible grade raise recommendations are further discussed in Subsection 5.3.

The above and other considerations are further discussed in the following sections.

5.2 Site Grading and Preparation

Stripping Depth

Topsoil and deleterious fill, such as those containing organics, should be stripped from under any buildings, paved areas, pipe bedding and other settlement sensitive structures.

Fill Placement

Fill placed for grading beneath the building area should consist, unless otherwise specified, of clean imported granular fill, such as Ontario Provincial Standard Specifications (OPSS) Granular A or Granular B Type II. The fill material should be tested and approved prior to delivery to the site. The fill should be placed in maximum 300 mm thick lifts and compacted to 98% of the material's standard Proctor maximum dry density (SPMDD).

Site-excavated soil, whether native or existing fill, can be placed as general landscaping fill where settlement is a minor concern of the ground surface. These materials should be spread in thin lifts and at least compacted by the tracks of the spreading equipment to minimize voids. If these materials are to be placed to increase the subgrade level for areas to be paved, the fill should be compacted in maximum 300 mm thick lifts and to a minimum density of 95% of the respective SPMDD.

Non-specified existing fill and site-excavated soils are not suitable for placement as backfill against foundation walls due to the frost heave potential of the site excavated soils below settlement sensitive areas, such as concrete sidewalks and exterior concrete entrance areas.

5.3 Foundation Design

Conventional shallow Footings

Strip footings, up to 3 m wide, and pad footings, up to 6 m wide, placed over an undisturbed, stiff grey silty clay bearing surface expected at the underground parking elevation can be designed using bearing resistance value at serviceability limit states (SLS) of **150 kPa** and a factored bearing resistance value at ultimate limit states (ULS) of **225 kPa**.

A geotechnical resistance factor of 0.5 was applied to the reported bearing resistance values at ULS.

Footings placed over engineered fill, approved by the geotechnical consultant, can be designed using the above noted bearing resistance values.

An undisturbed soil bearing surface consists of one from which all topsoil and deleterious materials, such as loose, frozen or disturbed soil, have been removed prior to the placement of concrete for footings.

The bearing resistance value given for footings at SLS will be subjected to potential post construction total and differential settlements of 25 and 20 mm, respectively.

Lateral Support

The bearing medium under footing-supported structures is required to be provided with adequate lateral support with respect to excavations and different foundation levels. Above the groundwater level, adequate lateral support is provided to a stiff silty clay when a plane extending down and out from the bottom edge of the footing at a minimum of 1H:1V passes only through in situ soil or engineered fill.

Raft Foundation

Consideration could be given to raft foundation, if the buildings loads exceed the bearing resistance values provided for a conventional shallow footings. The following parameters may be used for raft design over a firm to stiff silty clay bearing surface.

For design purposes, it was assumed that the base of the raft foundation will be located at a minimum depth of 6 m below ground surface.

The amount of settlement of the raft slab will be dependent on the sustained raft contact pressure. The bearing resistance value at SLS (contact pressure) of **200 kPa** will be considered acceptable. The loading conditions for the contact pressure are based on sustained loads, that are generally taken to be 100% Dead Load and 50% Live Load. The factored bearing resistance (contact pressure) at ULS can be taken as **300 kPa**. A geotechnical resistance factor of 0.5 was applied to the bearing resistance value at ULS.

The modulus of subgrade reaction was calculated to be **4 MPa/m** for a contact pressure of **200 kPa**. The raft foundation design is required to consider the relative stiffness of the reinforced concrete slab and the supporting bearing medium.

The proposed building constructed over the silty clay deposit within the subject site can be designed using the above parameters with a total and differential settlement of 25 and 15 mm, respectively.

Piled Foundation

It is expected that the proposed buildings could be constructed over concrete filled steel pipe piles driven to refusal on the bedrock surface.

For deep foundations, concrete-filled steel pipe piles are generally utilized in the Ottawa area. Applicable pile resistance at SLS values and factored pile resistance at ULS values are given in Table 1. A resistance factor of 0.4 has been incorporated into the factored ULS values. Note that these are all geotechnical axial resistance values.

The geotechnical pile resistance values were estimated using the Hiley dynamic formula, to be confirmed during pile installation with a program of dynamic monitoring. For this project, the dynamic monitoring of 2 to 4 piles is recommended. This is considered to be the minimum monitoring program, as the piles under shear walls may be required to be driven using the maximum recommended driving energy to achieve the greatest factored resistance at ULS values. Re-striking of all piles at least once will also be required after at least 48 hours have elapsed since initial driving.

Table 1 - Pile Foundation Design Data

Pile Outside Diameter (mm)	Pile Wall Thickness (mm)	Geotechnical Axial Resistance		Final Set (blows/ 12 mm)	Transferred Hammer Energy (kJ)
		SLS (kN)	Factored at ULS (kN)		
245	9	925	1110	6	27
245	11	1050	1260	6	31
245	13	1200	1440	6	35

Permissible Grade Raise Recommendations

The grade raise restriction for the subject site was calculated to be **2.0 m** above original ground surface.

To reduce potential long term liabilities, consideration should be given to accounting for larger groundwater lowering and providing means to reduce long term groundwater lowering (e.g. clay dykes, restriction on planting around the settlement sensitive structures, etc.). It should be noted that building over silty clay deposits increases the likelihood of building movements and therefore of cracking. The use of steel reinforcement in foundations placed at key structural locations will tend to reduce foundation cracking as compared to unreinforced foundations.

5.4 Design for Earthquakes

The proposed site can be taken as seismic site response Class C as defined in the Ontario Building Code 2012 (OBC 2012; Table 4.1.8.4.A) for foundations considered at this site. The soils underlying the site are not susceptible to liquefaction.

5.5 Basement Slab

With the removal of all topsoil and deleterious fill material, the native soil will be considered to be an acceptable subgrade surface on which to commence backfilling for the basement slab. Any soft areas should be removed and backfilled with appropriate backfill material. OPSS Granular A or Granular B Type II, with a maximum particle size of 50 mm, are recommended for backfilling below the floor slab. It is recommended that the upper 200 mm of sub-floor fill consist of OPSS Granular A crushed stone. All backfill materials within the footprint of the proposed building should be placed in maximum 300 mm thick loose layers and compacted to at least 98% of the SPMDD.

A concrete mud slab should be placed to protect the native soil from worker traffic and equipment before pouring the raft slab.

Any soft areas should be removed and backfilled with appropriate backfill material. OPSS Granular B Type II, with a maximum particle size of 50 mm, are recommended for backfilling below the floor slab.

5.6 Basement Wall

There are several combinations of backfill materials and retained soils that could be applicable for the basement walls of the subject structure. However, the conditions can be well-represented by assuming the retained soil consists of a material with an angle of internal friction of 30 degrees and a bulk (drained) unit weight of 20 kN/m^3. The applicable effective (undrained) unit weight of the retained soil can be taken as 13 kN/m^3, where applicable. A hydrostatic pressure should be added to the total static earth pressure when using the effective unit weight.

Lateral Earth Pressures

The static horizontal earth pressure (p_o) can be calculated using a triangular earth pressure distribution equal to $K_o \cdot \gamma \cdot H$ where:

K_o = at-rest earth pressure coefficient of the applicable retained soil, 0.5
γ = unit weight of fill of the applicable retained soil (kN/m^3)
H = height of the wall (m)

An additional pressure having a magnitude equal to $K_o \cdot q$ and acting on the entire height of the wall should be added to the above diagram for any surcharge loading, q (kPa), that may be placed at ground surface adjacent to the wall. The surcharge pressure will only be applicable for static analyses and should not be used in conjunction with the seismic loading case.

Actual earth pressures could be higher than the “at-rest” case if care is not exercised during the compaction of the backfill materials to maintain a minimum separation of 0.3 m from the walls with the compaction equipment.

Seismic Earth Pressures

The total seismic force (P_{AE}) includes both the earth force component (P_o) and the seismic component (ΔP_{AE}). The seismic earth force (ΔP_{AE}) can be calculated using $0.375 \cdot a_c \cdot \gamma \cdot H^2/g$ where:

a_c = $(1.45-a_{max}/g)a_{max}$
γ = unit weight of fill of the applicable retained soil (kN/m^3)
H = height of the wall (m)
g = gravity, 9.81 m/s^2

The peak ground acceleration, (a_{max}), for the Ottawa area is 0.32g according to OBC 2012. Note that the vertical seismic coefficient is assumed to be zero.

The earth force component (P_o) under seismic conditions can be calculated using $P_o = 0.5\ K_o\ \gamma\ H^2$, where $K_o = 0.5$ for the soil conditions noted above.

The total earth force (P_{AE}) is considered to act at a height, h (m), from the base of the wall, where:

$h = \{P_o \cdot (H/3) + \Delta P_{AE} \cdot (0.6 \cdot H)\} / P_{AE}$

The earth forces calculated are unfactored. For the ULS case, the earth loads should be factored as live loads, as per OBC 2012.

5.7 Pavement Structure

Car only parking areas, access lanes and heavy truck parking areas are anticipated at this site. The proposed pavement structures are shown in Tables 2 and 3.

Table 2 - Recommended Pavement Structure - Car Only Parking Areas

Thickness (mm)	Material Description
50	**Wear Course -** HL-3 or Superpave 12.5 Asphaltic Concrete
150	**BASE** - OPSS Granular A Crushed Stone
300	**SUBBASE** - OPSS Granular B Type II
SUBGRADE - Either fill, in situ soil, or OPSS Granular B Type I or II material placed over in situ soil or fill	

Table 3 - Recommended Pavement Structure
Access Lanes and Heavy Truck Parking Areas

Thickness (mm)	Material Description
40	**Wear Course** - Superpave 12.5 Asphaltic Concrete
50	**Binder Course** - Superpave 19.0 Asphaltic Concrete
150	**BASE** - OPSS Granular A Crushed Stone
450	**SUBBASE** - OPSS Granular B Type II
SUBGRADE - Either fill, in situ soil, or OPSS Granular B Type I or II material placed over in situ soil or fill	

Minimum Performance Graded (PG) 58-34 asphalt cement should be used for this project.

If soft spots develop in the subgrade during compaction or due to construction traffic, the affected areas should be excavated and replaced with OPSS Granular B Type II material. The pavement granular base and subbase should be placed in maximum 300 mm thick lifts and compacted to a minimum of 98% of the material's SPMDD using suitable vibratory equipment.

The pavement granular base and subbase should be placed in maximum 300 mm thick lifts and compacted to a minimum of 98% of the material's SPMDD using suitable compaction equipment.

Pavement Structure Drainage

Satisfactory performance of the pavement structure is largely dependent on keeping the contact zone between the subgrade material and the base stone in a dry condition. Failure to provide adequate drainage under conditions of heavy wheel loading can result in the fine subgrade soil being pumped into the voids in the stone subbase, thereby reducing its load carrying capacity.

Where silty clay is encountered at subgrade level, consideration should be given to installing subdrains during the pavement construction. These drains should be constructed according to City of Ottawa specifications. The drains should be connected to a positive outlet. The subgrade surface should be crowned to promote water flow to the drainage lines. The subdrains will help drain the pavement structure, especially in early Spring when the subgrade is saturated and weaker and, therefore, more susceptible to permanent deformation.

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6.0 Design and Construction Precautions

6.1 Foundation Drainage and Backfill

It is recommended that a drainage geocomposite, such as Miradrain G100N or Delta Drain 6000 installed on the exterior foundation walls and extend down to the footing level. It is further recommended that 100 to 150 mm diameter drainage sleeves at 5 m spacing be cast in the footing or at the foundation wall/footing interface to allow the infiltration of water to flow to the interior underfloor drainage system.

In areas where a perimeter drainage pipe consisting of a 150 mm perforated corrugated plastic pipe, surrounded on all sides by a minimum of 150 mm of 19 mm clear crushed stone is placed at the footing level. The requirement for the drainage sleeves noted above can be reduced to 15 m spacing.

The exterior perimeter and underfloor drainage system should direct water to the sump pit(s) within the lower basement area.

A damp proofing layer such as Bakor 710-11 or equivalent should be applied to the foundation prior to the installation of the composite drainage layer.

Underfloor Drainage

Underfloor drainage will be required to control water infiltration. For preliminary design purposes, we recommend that 100 to 150 mm diameter perforated pipes be placed at 5 m centres. The spacing of the underfloor drainage system should be confirmed at the time of completing the excavation when water infiltration can be better assessed.

Water Suppression System

A water suppression system will be required for the basement level below a geodetic elevation of 73.20 m to avoid dewatering the surrounding areas adjacent to buildings with shallower founding depths which can cause differential settlement. To manage and control groundwater water infiltration over the long term, the following water suppression system is recommended to be installed for the exterior foundation walls and underfloor drainage (refer to Figure 2 – Water Suppression System in Appendix 2 for an illustration of this system cross-section):

- ❑ A concrete mud slab will be required to create a horizontal hydraulic barrier to lessen the water infiltration at the base of the excavation and will consist of a 300 mm thick layer of 25 MPa compressive strength concrete. The 300 mm minimum thickness is required to enable the support of construction traffic until the footings, pile caps and grade beams are poured and the area is backfilled for the lower floor slab to resist minor buoyancy forces and hydrostatic pressure.

- A waterproofing membrane will be required to lessen the effect of water infiltration for the underground parking P-3 Levels starting at underside of P-2 Level which is approximately 6-7 m below finished grade. The waterproofing membrane will consist of bentonite panels or approved equivalent fastened to the soldier pile and timber lagging shoring system. The membrane should extend to the bottom of the excavation at the founding level of the proposed footings over the concrete mud slab.

- A composite drainage layer will be placed from finished grade to the bottom of the foundation wall. It's recommended that the composite drainage system (such as Delta Drain 6000 or equivalent) extend down to the bottom of the foundation wall. It's expected that 150 mm diameter sleeves placed at 3 m centres be cast in the foundation wall at the footing interface to allow the infiltration of water to flow to an interior perimeter drainage pipe. The perimeter drainage pipe should direct water to the sump pit(s) within the lower basement area. Water infiltration will result from two sources. The first will be water infiltration from the upper 6-7 m which is above the vertical waterproofed area. The second source will be groundwater breaching the waterproofing membrane.

Membranes and drainage board should be installed as per manufacturer's specification. Paterson should review any proposal by supplier prior to the field work.

Elevator Pit Waterproofing

The elevator shaft exterior foundation walls should be waterproofed to avoid any infiltration into the elevator pit. It is recommended that a waterproofing membrane, such as Colphene Torch'n Stick (or approved other) be applied to the exterior of the elevator shaft foundation wall.

The Colphene Torch'n Stick waterproofing membrane should extend over the vertical portion of the raft slab and down to the top of the footing in accordance with the manufacturer's specifications. A continuous PVC waterstop such as Southern waterstop 14RCB or equivalent should be installed within the interface between the concrete base slab below the elevator shaft foundation walls.

The 150 mm diameter perforated corrugated pipe underfloor drainage should be placed along the perimeter of the exterior sidewalls and provided a gravity connection to the sump pump basin or the elevator sump pit.

The foundation wall of the elevator shaft and buildings sump pit should host a PVC sleeve to allow any water trapped within the interior side of the structures to be discharged to the associated sump pump. A minimum 100 mm diameter perforated, corrugated drainage pipe should extend from the sleeve towards the associated drainage system by gravity drainage and mechanical connection to the associated system. Also, the contractor should ensure that the opening is properly sealed to prevent water from entering the subject structure.

A protection board should be placed over the waterproofing membrane to protect the waterproofing membrane from damage during backfilling operations. The area between the pit structure and bedrock/soil excavation face can be in-filled with lean concrete, OPSS Granular A or Granular B Type II crushed stone.

It should be noted that a waterproofed concrete (with Xypex Additive, or equivalent) is optional for this waterproofing option. Refer to the attached Figure 3- Elevator Waterproofing Detail, for specific details of the waterproofing recommendation.

Foundation Backfill

Backfill against the exterior sides of the foundation walls should consist of free-draining non frost susceptible granular materials. The greater part of the site excavated materials will be frost susceptible and, as such, are not recommended for re-use as backfill against the foundation walls, unless used in conjunction with a drainage geocomposite, such as Miradrain G100N or Delta Drain 6000, connected to the perimeter foundation drainage system. Imported granular materials, such as clean sand or OPSS Granular B Type I granular material, should otherwise be used for this purpose.

Adverse Effects of Dewatering on Adjacent Properties

Based on the expected foundation level of Towers 4 to 6 and the depth of the groundwater level, the proposed building could be founded just below the long term groundwater table and match Towers 1 to 3. Any minor dewatering will be temporary during the construction period and will be considered relatively negligible for the neighbouring buildings. Therefore, adverse effects to the surrounding buildings or properties are not expected due to the proposed development. A water suppression system will be used for the foundation walls extending lower than 73.2 m.

6.2 Protection of Footings Against Frost Action

Perimeter footings, of heated structures are required to be insulated against the deleterious effect of frost action. A minimum of 1.5 m thick soil cover (or equivalent) should be provided in this regard.

A minimum of 2.1 m thick soil cover (or equivalent) should be provided for other exterior unheated footings.

The underground parking area should not require protection against frost action due to the founding depth. Unheated structures, such as the access ramp wall footings, may be required to be insulated against the deleterious effect of frost action. A minimum of 2.1 m of soil cover alone, or a minimum of 0.6 m of soil cover, in conjunction with foundation insulation, should be provided.

6.3 Excavation Side Slopes

Temporary Side Slopes

The temporary excavation side slopes anticipated should either be excavated to acceptable slopes or retained by shoring systems from the beginning of the excavation until the structure is backfilled.

The excavation side slopes above the groundwater level extending to a maximum depth of 3 m should be cut back at 1H:1V or flatter. A field review should be completed by Paterson at the time of construction to assess the side slope of excavation deeper than 3 m. The subsurface soil is considered to be mainly a Type 2 and 3 soil according to the Occupational Health and Safety Act and Regulations for Construction Projects.

Excavated soil should not be stockpiled directly at the top of excavations and heavy equipment should maintain safe working distance from the excavation sides.

Slopes in excess of 3 m in height should be periodically inspected by the geotechnical consultant in order to detect if the slopes are exhibiting signs of distress.

A trench box is recommended to protect personnel working in trenches with steep or vertical sides. Services are expected to be installed by “cut and cover” methods and excavations should not remain open for extended periods of time.

Temporary Shoring

Temporary shoring may be required for the overburden soil to complete the required excavations where insufficient room is available for open cut methods. The shoring requirements designed by a structural engineer specializing in those works will depend on the depth of the excavation, the proximity of the adjacent structures and the elevation of the adjacent building foundations and underground services. The design and implementation of these temporary systems will be the responsibility of the excavation contractor and their design team. Inspections and approval of the temporary system will also be the responsibility of the designer. Geotechnical information provided below is to assist the designer in completing a suitable and safe shoring system. The designer should take into account the impact of a significant precipitation event and designate design measures to ensure that a precipitation will not negatively impact the shoring system or soils supported by the system. Any changes to the approved shoring design system should be reported immediately to the owner’s structural designer prior to implementation.

The temporary system could consist of soldier pile and lagging system or interlocking steel sheet piling. Any additional loading due to street traffic, construction equipment, adjacent structures and facilities, etc., should be included to the earth pressures described below. These systems could be cantilevered, anchored or braced. Generally, it is expected that the shoring systems will be provided with tie-back rock anchors to ensure their stability. The shoring system is recommended to be adequately supported to resist toe failure and inspected to ensure that the sheet piles extend well below the excavation base. It should be noted if consideration is being given to utilizing a raker style support for the shoring system that lateral movements can occur and the structural engineer should ensure that the design selected minimizes these movements to tolerable levels.

The earth pressures acting on the shoring system may be calculated with the following parameters.

Table 4 - Soil Parameters

Parameters	Values
Active Earth Pressure Coefficient (K_a)	0.33
Passive Earth Pressure Coefficient (K_p)	3
At-Rest Earth Pressure Coefficient (K_o)	0.5
Dry Unit Weight (γ), kN/m^3	20
Effective Unit Weight (γ), kN/m^3	13

The active earth pressure should be calculated where wall movements are permissible while the at-rest pressure should be calculated if no movement is permissible. The dry unit weight should be calculated above the groundwater level while the effective unit weight should be calculated below the groundwater level.

The hydrostatic groundwater pressure should be included to the earth pressure distribution wherever the effective unit weight are calculated for earth pressures. If the groundwater level is lowered, the dry unit weight for the soil/bedrock should be calculated full weight, with no hydrostatic groundwater pressure component.

For design purposes, the minimum factor of safety of 1.5 should be calculated.

6.4 Pipe Bedding and Backfill

Bedding and backfill materials should be in accordance with the most recent Material Specifications & Standard Detail Drawings from the Department of Public Works and Services, Infrastructure Services Branch of the City of Ottawa.

A minimum of 150 mm of OPSS Granular A should be placed for bedding for sewer or water pipes when placed on soil subgrade. The bedding should extend to the spring line of the pipe. Cover material, from the spring line to a minimum of 300 mm above the obvert of the pipe should consist of OPSS Granular A (concrete or PSM PVC pipes) or sand (concrete pipe). The bedding and cover materials should be placed in maximum 225 mm thick lifts and compacted to 95% of the material's SPMDD.

Where hard surface areas are considered above the trench backfill, the trench backfill material within the frost zone (about 1.8 m below finished grade) should match the soils exposed at the trench walls to reduce the potential differential frost heaving. The trench backfill should be placed in maximum 300 mm thick loose lifts and compacted to a minimum of 95% of the SPMDD.

To reduce long term lowering of the groundwater level at this site, clay seals should be provided in the service trenches. The seals should be at least 1.5 m long and should extend from trench wall to trench wall. Generally, the seals should extend from the frost line and fully penetrate the bedding, subbedding and cover material. The barriers should consist of relatively dry and compatible brown silty clay placed in maximum 225 mm thick loose layers and compacted to a minimum of 95% of the material's SPMDD. The clay seals should be placed at the site boundaries and at stratigic locations at no more than 60 m intervals in the service trenches.

6.5 Groundwater Control

Groundwater Control for Building Construction

Due to the relatively impervious nature of the silty clay materials, it is anticipated that groundwater infiltration into the excavations should be low and controllable using open sumps. It is also expected that sandy layers encountered towards the south of the site will allow for more water infiltration in the excavation. The contractor should be prepared to control the water and discharge it away from any bearing surface. Pumping from open sumps should be sufficient to control the groundwater influx through the sides of shallow excavations.

It is expected that the site will be dewatered using one or multiple dry wells placed at the bottom of the excavation. Pumps should be running within the wells until the foundations is completely backfilled.

Permit to Take Water

A temporary Ministry of the Environment, Conservation and Parks (MECP) permit to take water (PTTW) may be required for this project if more than 400,000 L/day of ground and/or surface water is to be pumped during the construction phase. A minimum of 4 to 5 months should be allowed for completion of the PTTW application package and issuance of the permit by the MECP.

For typical ground or surface water volumes being pumped during the construction phase, between 50,000 to 400,000 L/day, it is required to register on the Environmental Activity and Sector Registry (EASR). A minimum of two to four weeks should be allotted for completion of the EASR registration and the Water Taking and Discharge Plan to be prepared by a Qualified Person as stipulated under O.Reg. 63/16. If a project qualifies for a PTTW based upon anticipated conditions, an EASR will not be allowed as a temporary dewatering measure while awaiting the MECP review of the PTTW application.

The contractor should be prepared to direct water away from all bearing surfaces and subgrades, regardless of the source, to prevent disturbance to the founding medium.

Long-term Groundwater Control

The recommendations for the proposed building long-term groundwater control are presented in Subsection 6.1. Any groundwater encountered along the building perimeter or sub-slab drainage system will be directed to the proposed building cistern/sump pit. Provided the proposed groundwater infiltration control system is properly implemented and approved by the geotechnical consultant at the time of construction, the groundwater flow should be low (i.e.- less than 25,000 L/day) with peak periods noted after rain events. A more accurate estimate can be provided at the time of construction, once groundwater infiltration levels are observed. The groundwater flow should be controllable using conventional open sumps.

6.6 Winter Construction

Precautions must be taken if winter construction is considered for this project.

The subsurface conditions mostly consist of frost susceptible materials. In presence of water and freezing conditions ice could form within the soil mass. Heaving and settlement upon thawing could occur.

In the event of construction during below zero temperatures, the founding stratum should be protected from freezing temperatures by the installation of straw, propane heaters and tarpaulins or other suitable means. The base of the excavations should be insulated from sub-zero temperatures immediately upon exposure and until such time as heat is adequately supplied to the building and the footings are protected with sufficient soil cover to prevent freezing at founding level.

The trench excavations and pavement construction are also difficult activities to complete during freezing conditions without introducing frost in the subgrade or in the excavation walls and bottoms. Precautions should be taken if such activities are to be carried out during freezing conditions.

6.7 Corrosion Potential and Sulphate

The results of the analytical testing of one (1) soil sample show that the sulphate content is less than 0.1%. This result is indicative that Type 10 Portland cement (normal cement) would be appropriate. The results of the chloride content and pH indicate that they are not significant factors in creating a corrosive environment for exposed ferrous metals at this site while the resistivity tests yielded results indicative of a non aggressive to slightly aggressive corrosive environment.

7.0 Recommendations

For the foundation design data provided herein to be applicable that a materials testing and observation services program is required to be completed. The following aspects be performed by the geotechnical consultant:

- ❑ Observation of all bearing surfaces prior to the placement of concrete.
- ❑ Sampling and testing of the concrete and fill materials.
- ❑ Observation of piling activities, if applicable.
- ❑ Observation of foundation drainage and waterproofing installation, if applicable.
- ❑ Observation of the placement of the foundation insulation, if applicable.
- ❑ Periodic observation of the condition of unsupported excavation side slopes in excess of 3 m in height, if applicable.
- ❑ Observation of all subgrades prior to backfilling and follow-up field density tests to determine the level of compaction achieved.
- ❑ Field density tests to determine the level of compaction achieved.
- ❑ Sampling and testing of the bituminous concrete including mix design reviews.

A report confirming the construction has been conducted in general accordance with the recommendations could be issued, upon request, following the completion of a satisfactory materials testing and observation program by the geotechnical consultant.

8.0 Statement of Limitations

The recommendations made in this report are in accordance with our present understanding of the project. We request that we be permitted to review the grading plan once available and our recommendations when the drawings and specifications are complete.

A geotechnical investigation of this nature is a limited sampling of a site. The recommendations are based on information gathered at the specific test locations and can only be extrapolated to an undefined limited area around the test locations. The extent of the limited area depends on the soil, bedrock and groundwater conditions, as well the history of the site reflecting natural, construction, and other activities. Should any conditions at the site be encountered which differ from those at the test locations, we request notification immediately in order to permit reassessment of our recommendations.

The present report applies only to the project described in this document. Use of this report for purposes other than those described herein or by person(s) other than 11034936 Canada Inc or their agent(s) is not authorized without review by Paterson Group for the applicability of our recommendations to the altered use of the report.

Paterson Group Inc.

Nicolas Seguin, EIT

Joey R. Villeneuve, M.A.Sc., P.Eng, ing.

Report Distribution:

- ❑ 6382983 Canada Inc. (Brigil Construction)
- ❑ Paterson Group Inc

APPENDIX 1

SOIL PROFILE AND TEST DATA SHEETS

SYMBOLS AND TERMS

BOREHOLE LOGS BY OTHERS

ANALYTICAL TESTING RESULTS

patersongroup Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Proposed Mix-Use, Hi-Rise Development
2940 Baseline Road, Ottawa, Ontario

DATUM Geodetic

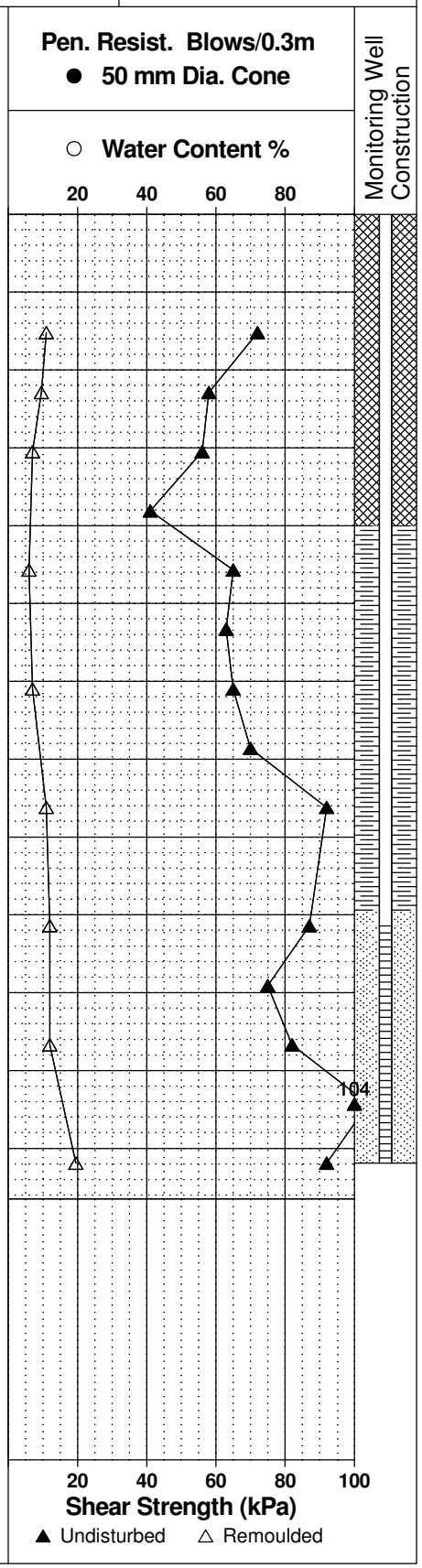
FILE NO. PG6107

REMARKS

HOLE NO. BH 1-22

BORINGS BY CME-55 Low Clearance Drill **DATE** 2022 February 8

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	79.58
ASPHALT 0.05		AU	1				
FILL: Granuar Crushed Stone 0.36							
		SS	2	83	6	1	78.58
Stiff to very stiff grey **SILTY CLAY**						2	77.58
						3	76.58
						4	75.58
						5	74.58
						6	73.58
						7	72.58
						8	71.58
		SS	3	100	2	9	70.58
						10	69.58
						11	68.58
12.19						12	67.58
Grey **SILTY SAND** with clay 12.65							
End of Borehole							



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SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Proposed Mix-Use, Hi-Rise Development
2940 Baseline Road, Ottawa, Ontario

DATUM Geodetic

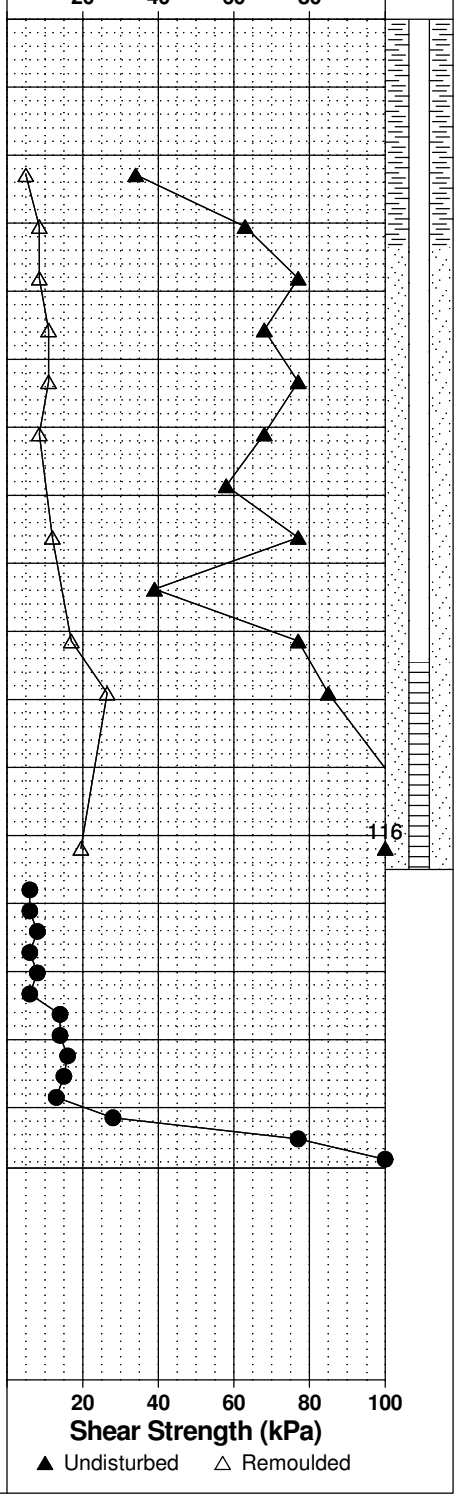
FILE NO. PG6107

REMARKS

HOLE NO. BH 2-22

BORINGS BY CME-55 Low Clearance Drill **DATE** 2022 February 8

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	80.91
ASPHALT 0.03		AU	1				
FILL: Granular Crushed stone with brown silty sand 0.30		SS	2	100	8	1	79.91
		SS	3	42	2	2	78.91
Firm to stiff brown **SILTY CLAY**						3	77.91
- Grey by 2.5 m depth						4	76.91
						5	75.91
						6	74.91
						7	73.91
						8	72.91
						9	71.91
						10	70.91
		SS	4	83	2	11	69.91
- Very stiff by 12.0 m depth		SS	5	100	1	12	68.91
12.65						13	67.91
Dynamic Cone Penetration Test commenced at 12.65 m depth.						14	66.91
						15	65.91
16.89						16	64.91
End of Borehole							
Practical refusal to DCPT at 16.89 m depth							
(Piezometer dry/blocked - Feb 24, 2022)							



Piezometer Construction

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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Proposed Mix-Use, Hi-Rise Development
2940 Baseline Road, Ottawa, Ontario

DATUM Geodetic

FILE NO. PG6107

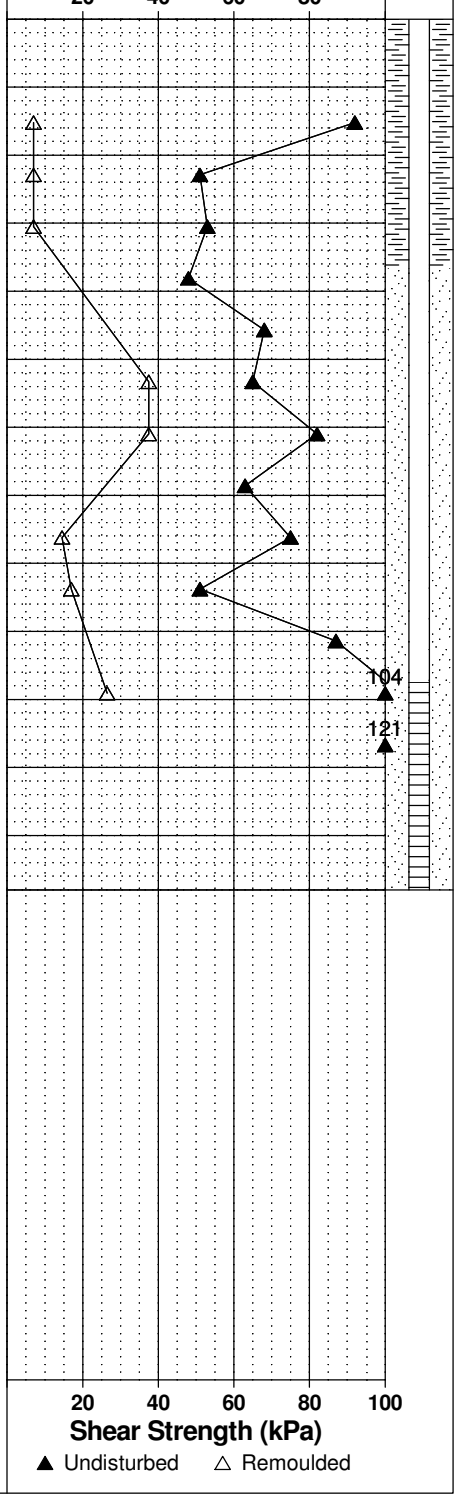
REMARKS

HOLE NO. BH 3-22

BORINGS BY CME-55 Low Clearance Drill **DATE** 2022 February 9

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	80.90
ASPHALT 0.03		AU	1				
FILL: Granular crushed stone with brown silty sand 0.36		SS	2	83	9	1	79.90
Firm to very stiff brown **SILTY CLAY**						2	78.90
- Grey by 2.2 m depth						3	77.90
						4	76.90
						5	75.90
						6	74.90
						7	73.90
						8	72.90
						9	71.90
						10	70.90
						11	69.90
		SS	3	100		12	68.90
12.80		SS	4	100	5		
End of Borehole							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone
○ Water Content %



Piezometer Construction

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Proposed Mix-Use, Hi-Rise Development
2940 Baseline Road, Ottawa, Ontario

DATUM Geodetic

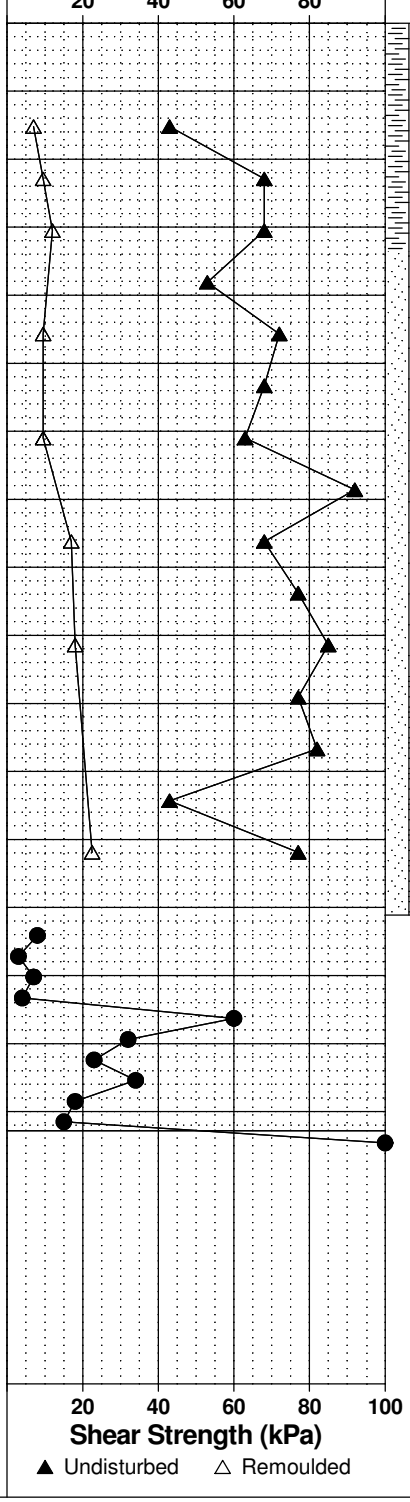
FILE NO. PG6107

REMARKS

HOLE NO. BH 4-22

BORINGS BY CME-55 Low Clearance Drill **DATE** 2022 February 9

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	79.19
ASPHALT 0.03		AU	1				
FILL: Granular crushed stone with silty sand some clay 0.48		SS	2	83	3	1	78.19
Firm to stiff brown **SILTY CLAY**						2	77.19
- Grey by 2.5 m depth						3	76.19
						4	75.19
						5	74.19
- Increasing silt and sand content with depth						6	73.19
						7	72.19
						8	71.19
						9	70.19
						10	69.19
						11	68.19
12.65						12	67.19
Dynamic Cone Penetration Test commenced at 13.11 m depth.						13	66.19
						14	65.19
						15	64.19
16.28						16	63.19
End of Borehole							
Practical refusal to DCPT at 16.28 m depth							



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Proposed Mix-Use, Hi-Rise Development
2940 Baseline Road, Ottawa, Ontario

DATUM Geodetic

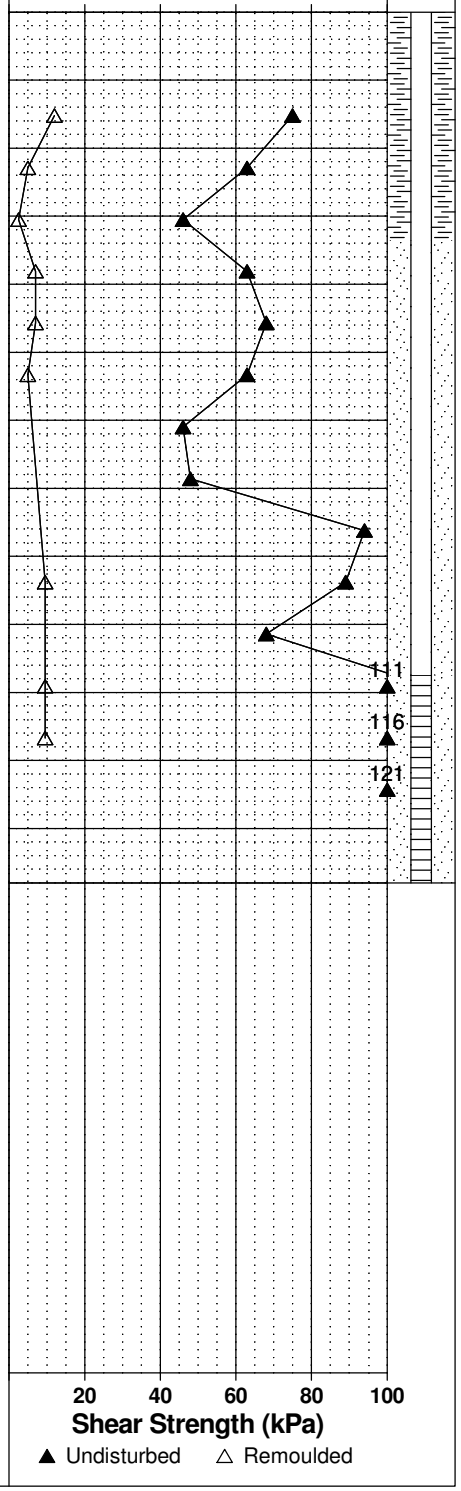
FILE NO. PG6107

REMARKS

HOLE NO. BH 5-22

BORINGS BY CME-55 Low Clearance Drill **DATE** 2022 February 10

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	78.96
ASPHALT 0.08		AU	1				
FILL: Granular crushed stone with sand 0.53		SS	2	100	17	1	77.96
Firm to very stiff brown **SILTY CLAY**						2	76.96
- Grey by 2.2 m depth						3	75.96
						4	74.96
						5	73.96
						6	72.96
						7	71.96
						8	70.96
						9	69.96
						10	68.96
11.28						11	67.96
GLACIAL TILL: Grey silty clay with sand, sand, gravel, cobbles and boulders							
12.80		SS	3	50	2	12	66.96
End of Borehole							
(Piezometer dry/blocked - Feb 24, 2022)							



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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Proposed Mix-Use, Hi-Rise Development
2940 Baseline Road, Ottawa, Ontario

DATUM Geodetic

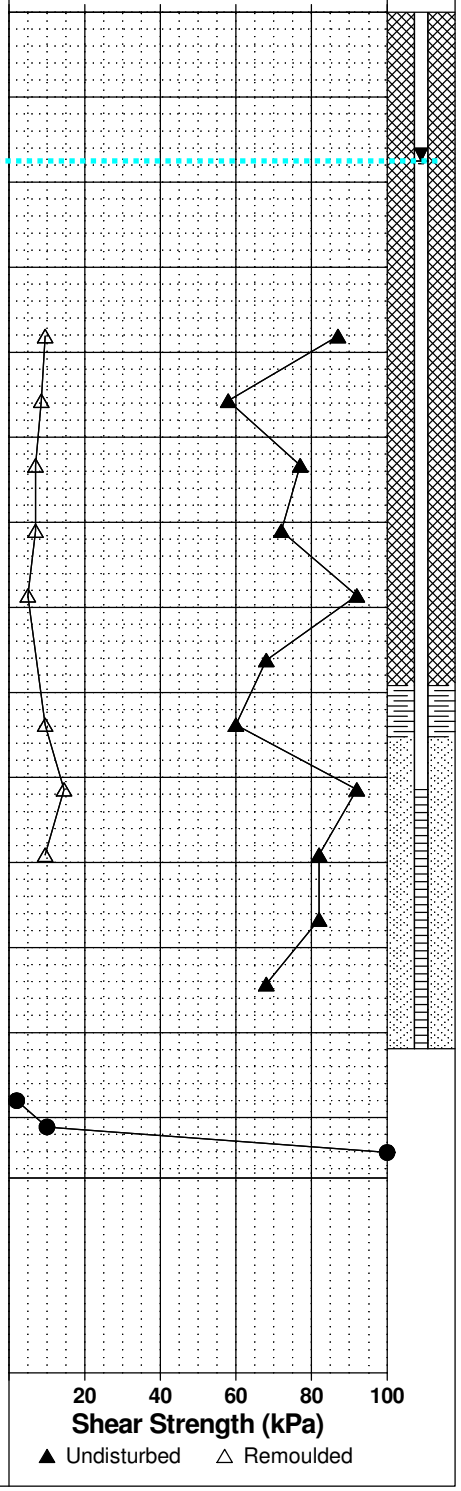
FILE NO. PG6107

REMARKS

HOLE NO. BH 6-22

BORINGS BY CME-55 Low Clearance Drill **DATE** 2022 February 10

SOIL DESCRIPTION		STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Monitoring Well Construction
GROUND SURFACE										
ASPHALT	0.08		AU	1			0	78.89		
FILL: Granular crushed stone	0.30		AU	2						
FILL: Brown silty sand	0.81		SS	3	100	16	1	77.89		
Stiff brown **SILTY CLAY**			SS	4	100	18	2	76.89		
			SS	5	100	11				
			SS	6	100	4	3	75.89		
- Grey by 4.5 m depth							4	74.89		
- Silt content increasing with depth							5	73.89		
							6	72.89		
							7	71.89		
							8	70.89		
							9	69.89		
							10	68.89		
							11	67.89		
							12	66.89		
	12.80		SS	7	83	3				
Dynamic Cone Penetration Test commenced at 12.80 m depth							13	65.89		
	13.71									
End of Borehole										
Practical refusal to DCPT at 13.71 m depth										
(GWL at 1.75 m depth - Feb 24, 2022)										



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SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Proposed Mix-Use, Hi-Rise Development
2940 Baseline Road, Ottawa, Ontario

DATUM Geodetic

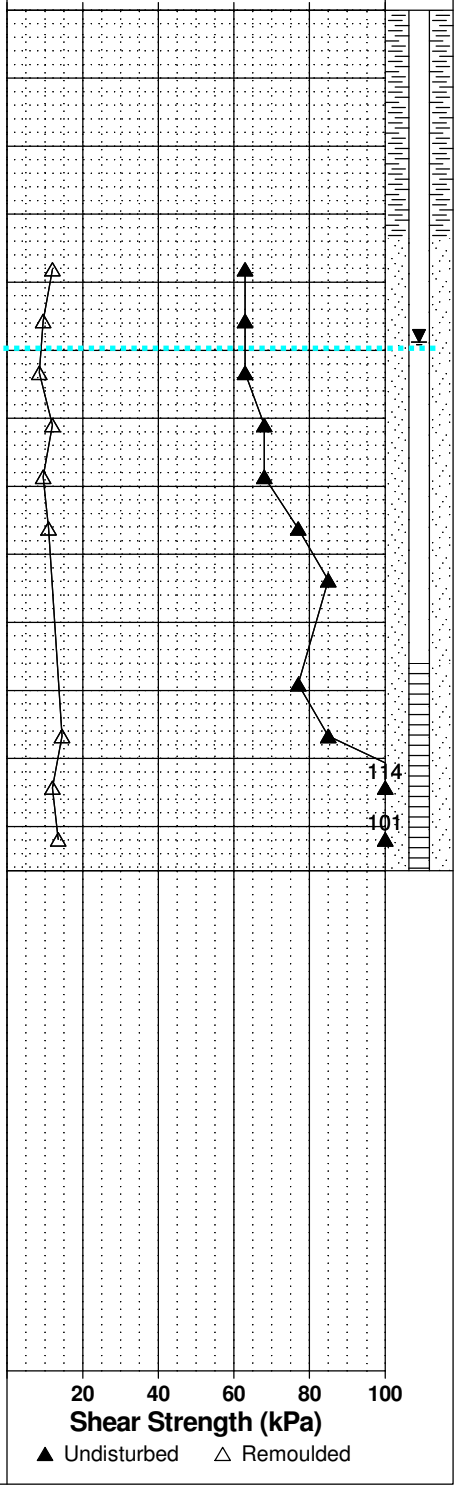
FILE NO. PG6107

REMARKS

HOLE NO. BH 7-22

BORINGS BY CME-55 Low Clearance Drill **DATE** 2022 February 11

SOIL DESCRIPTION		STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE							0	78.69
ASPHALT	0.08		AU	1				
FILL: Granular crushed stone	0.53						1	77.69
FILL: Brown silty sand with gravel	1.47		SS	2	33	50+		
			SS	3	75	23	2	76.69
Very stiff to stiff brown **SILTY CLAY**			SS	4	92	13		
			SS	5	83	4	3	75.69
							4	74.69
- Grey by 4.5 m depth							5	73.69
- Increasing silt content with depth							6	72.69
							7	71.69
							8	70.69
							9	69.69
			SS	6	100	1	10	68.69
							11	67.69
							12	66.69
	12.65							
End of Borehole								
(GWL at 4.88 m depth - Feb 24, 2022)								



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SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Proposed Mix-Use, Hi-Rise Development
2940 Baseline Road, Ottawa, Ontario

DATUM Geodetic

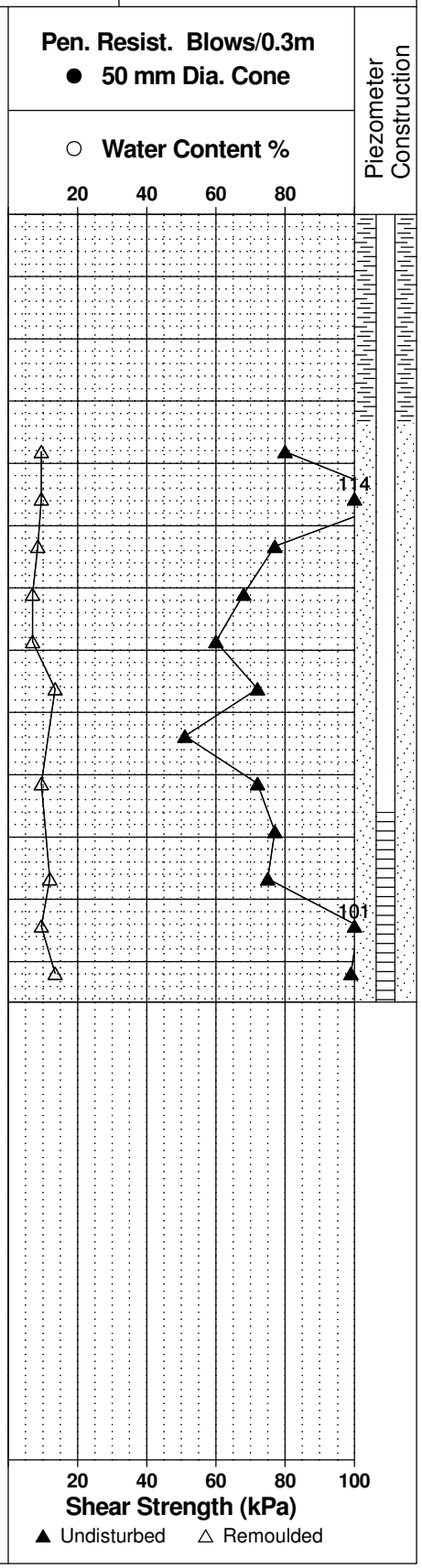
FILE NO. PG6107

REMARKS

HOLE NO. BH 8-22

BORINGS BY CME-55 Low Clearance Drill **DATE** 2022 February 11

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	78.84
ASPHALT 0.05		AU	1				
FILL: Brown silty sand with gravel and fractured rock 1.45		SS	2	42	50+	1	77.84
Very stiff to stiff brown **SILTY CLAY**		SS	3	100	19	2	76.84
		SS	4	100	9	3	75.84
		SS	5	100	4	4	74.84
- Grey by 4.5 m depth						5	73.84
						6	72.84
						7	71.84
						8	70.84
						9	69.84
						10	68.84
						11	67.84
12.65						12	66.84
End of Borehole							



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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Proposed Mix-Use, Hi-Rise Development
2940 Baseline Road, Ottawa, Ontario

DATUM Geodetic

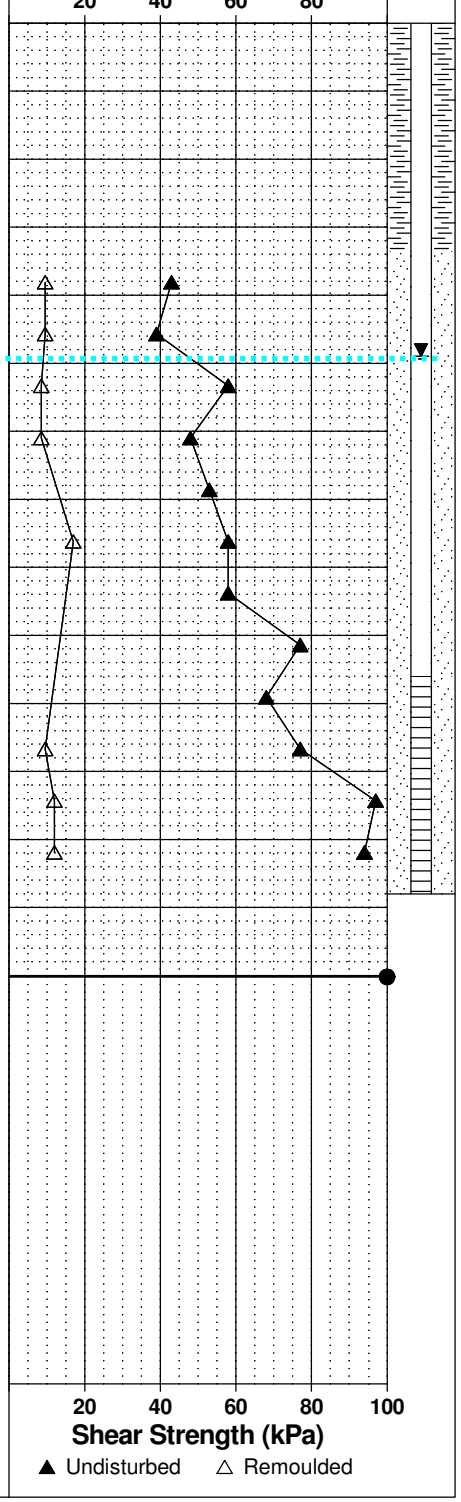
FILE NO. PG6107

REMARKS

HOLE NO. BH 9-22

BORINGS BY CME-55 Low Clearance Drill **DATE** 2022 February 14

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	77.82
ASPHALT 0.05		AU	1				
FILL: Brown silty sand with garvel 0.51		SS	2	100	20	1	76.82
Stiff to firm brown **SILTY CLAY**		SS	3	100	9	2	75.82
		SS	4	100	5	3	74.82
		SS	5	100	4	4	73.82
- Grey by 4.5 m depth						5	72.82
						6	71.82
						7	70.82
						8	69.82
						9	68.82
						10	67.82
						11	66.82
						12	65.82
12.80							
Dynamic Cone Penetration Test commenced at 12.80 m depth						13	64.82
14.02						14	63.82
End of Borehole							
Practical refusal to DCPT at 14.02 m depth							
(GWL at 4.90 m depth - Feb 24, 2022)							



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SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Proposed Mix-Use, Hi-Rise Development
2940 Baseline Road, Ottawa, Ontario

DATUM Geodetic

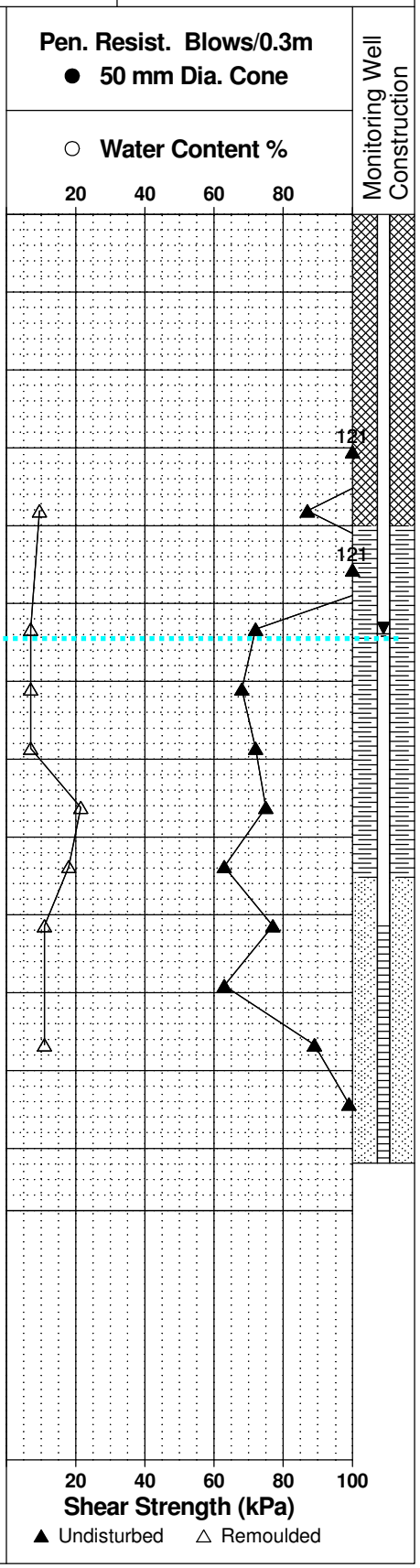
FILE NO. PG6107

REMARKS

HOLE NO. BH10-22

BORINGS BY CME-55 Low Clearance Drill **DATE** 2022 February 14

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	78.29
ASPHALT 0.05		AU	1				
FILL: Brown silty sand with gravel		SS	2	83	28	1	77.29
1.45							
Very stiff to stiff brown **SILTY CLAY**		SS	3	100	12	2	76.29
		SS	4	100	8	3	75.29
						4	74.29
- Grey by 4.5 m depth						5	73.29
						6	72.29
						7	71.29
						8	70.29
						9	69.29
						10	68.29
						11	67.29
12.19						12	66.29
GLACIAL TILL: Grey silty clay with sand, gravel, trace cobbles and boulders 12.80		SS	5	100	5		
End of Borehole							
(GWL at 5.39 m depth - Feb 24, 2022)							



SYMBOLS AND TERMS

SOIL DESCRIPTION

Behavioural properties, such as structure and strength, take precedence over particle gradation in describing soils. Terminology describing soil structure are as follows:

Desiccated	-	having visible signs of weathering by oxidation of clay minerals, shrinkage cracks, etc.
Fissured	-	having cracks, and hence a blocky structure.
Varved	-	composed of regular alternating layers of silt and clay.
Stratified	-	composed of alternating layers of different soil types, e.g. silt and sand or silt and clay.
Well-Graded	-	Having wide range in grain sizes and substantial amounts of all intermediate particle sizes (see Grain Size Distribution).
Uniformly-Graded	-	Predominantly of one grain size (see Grain Size Distribution).

The standard terminology to describe the strength of cohesionless soils is the relative density, usually inferred from the results of the Standard Penetration Test (SPT) 'N' value. The SPT N value is the number of blows of a 63.5 kg hammer, falling 760 mm, required to drive a 51 mm O.D. split spoon sampler 300 mm into the soil after an initial penetration of 150 mm.

Relative Density	'N' Value	Relative Density %
Very Loose	<4	<15
Loose	4-10	15-35
Compact	10-30	35-65
Dense	30-50	65-85
Very Dense	>50	>85

The standard terminology to describe the strength of cohesive soils is the consistency, which is based on the undisturbed undrained shear strength as measured by the in situ or laboratory vane tests, penetrometer tests, unconfined compression tests, or occasionally by Standard Penetration Tests.

Consistency	Undrained Shear Strength (kPa)	'N' Value
Very Soft	<12	<2
Soft	12-25	2-4
Firm	25-50	4-8
Stiff	50-100	8-15
Very Stiff	100-200	15-30
Hard	>200	>30

SYMBOLS AND TERMS (continued)

SOIL DESCRIPTION (continued)

Cohesive soils can also be classified according to their “sensitivity”. The sensitivity is the ratio between the undisturbed undrained shear strength and the remoulded undrained shear strength of the soil.

Terminology used for describing soil strata based upon texture, or the proportion of individual particle sizes present is provided on the Textural Soil Classification Chart at the end of this information package.

ROCK DESCRIPTION

The structural description of the bedrock mass is based on the Rock Quality Designation (RQD).

The RQD classification is based on a modified core recovery percentage in which all pieces of sound core over 100 mm long are counted as recovery. The smaller pieces are considered to be a result of closely-spaced discontinuities (resulting from shearing, jointing, faulting, or weathering) in the rock mass and are not counted. RQD is ideally determined from NXL size core. However, it can be used on smaller core sizes, such as BX, if the bulk of the fractures caused by drilling stresses (called “mechanical breaks”) are easily distinguishable from the normal in situ fractures.

RQD %	ROCK QUALITY
90-100	Excellent, intact, very sound
75-90	Good, massive, moderately jointed or sound
50-75	Fair, blocky and seamy, fractured
25-50	Poor, shattered and very seamy or blocky, severely fractured
0-25	Very poor, crushed, very severely fractured

SAMPLE TYPES

SS	-	Split spoon sample (obtained in conjunction with the performing of the Standard Penetration Test (SPT))
TW	-	Thin wall tube or Shelby tube
PS	-	Piston sample
AU	-	Auger sample or bulk sample
WS	-	Wash sample
RC	-	Rock core sample (Core bit size AXT, BXL, etc.). Rock core samples are obtained with the use of standard diamond drilling bits.

SYMBOLS AND TERMS (continued)

GRAIN SIZE DISTRIBUTION

MC%	-	Natural moisture content or water content of sample, %
LL	-	Liquid Limit, % (water content above which soil behaves as a liquid)
PL	-	Plastic limit, % (water content above which soil behaves plastically)
PI	-	Plasticity index, % (difference between LL and PL)
Dxx	-	Grain size which xx% of the soil, by weight, is of finer grain sizes These grain size descriptions are not used below 0.075 mm grain size
D10	-	Grain size at which 10% of the soil is finer (effective grain size)
D60	-	Grain size at which 60% of the soil is finer
Cc	-	Concavity coefficient = $(D30)^2$ / (D10 x D60)
Cu	-	Uniformity coefficient = D60 / D10

Cc and Cu are used to assess the grading of sands and gravels:
Well-graded gravels have: $1 < Cc < 3$ and $Cu > 4$
Well-graded sands have: $1 < Cc < 3$ and $Cu > 6$
Sands and gravels not meeting the above requirements are poorly-graded or uniformly-graded.
Cc and Cu are not applicable for the description of soils with more than 10% silt and clay
(more than 10% finer than 0.075 mm or the #200 sieve)

CONSOLIDATION TEST

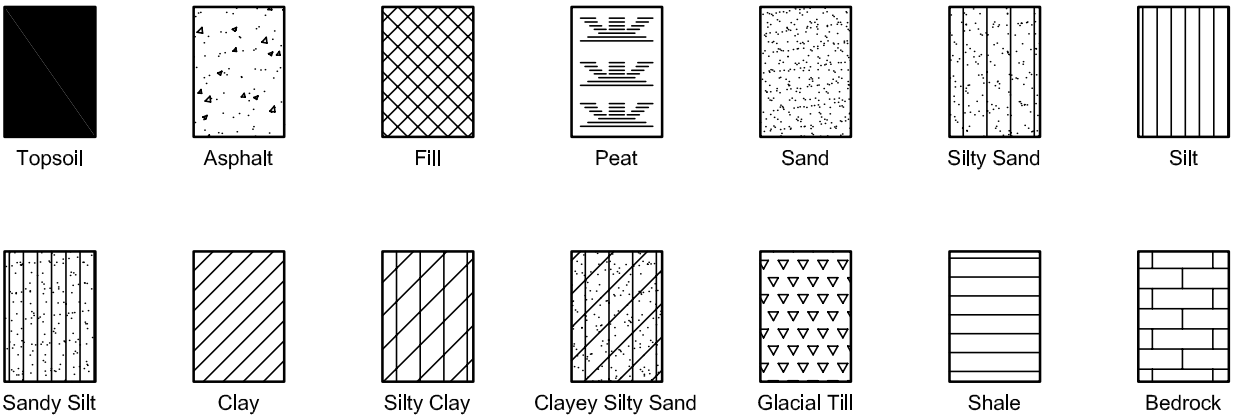
p'_o	-	Present effective overburden pressure at sample depth
p'_c	-	Preconsolidation pressure of (maximum past pressure on) sample
Ccr	-	Recompression index (in effect at pressures below p'_c)
Cc	-	Compression index (in effect at pressures above p'_c)
OC Ratio		Overconsolidaton ratio = p'_c / p'_o
Void Ratio		Initial sample void ratio = volume of voids / volume of solids
Wo	-	Initial water content (at start of consolidation test)

PERMEABILITY TEST

k	-	Coefficient of permeability or hydraulic conductivity is a measure of the ability of water to flow through the sample. The value of k is measured at a specified unit weight for (remoulded) cohesionless soil samples, because its value will vary with the unit weight or density of the sample during the test.

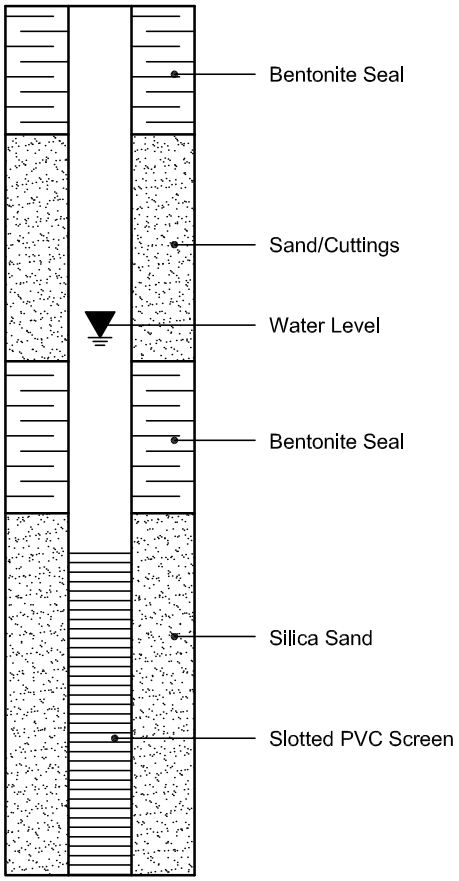
SYMBOLS AND TERMS (continued)

STRATA PLOT

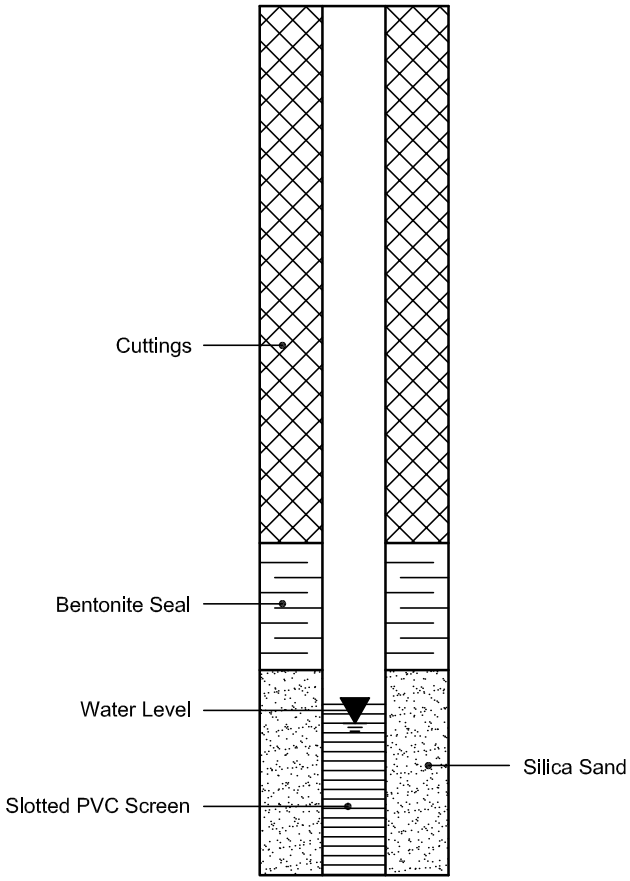


MONITORING WELL AND PIEZOMETER CONSTRUCTION

MONITORING WELL CONSTRUCTION



PIEZOMETER CONSTRUCTION



SPL Consultants Limited
Geotechnical Environmental Materials Hydrogeology

LOG OF BOREHOLE BH13-7

PROJECT: Brigil 2940 Baseline Road
CLIENT: Brigil Platinum
PROJECT LOCATION: 2940-2948 Baseline Road
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
Method: Hollow Stem Augers
Diameter: 203mm
Date: May/07/2013

REF. NO.: 1599-710
ENCL NO.:

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
77.7						
77.6	**Asphalt** 125 mm					
0.1	**Sandy Silt** some clay, brown, damp, loose (Fill)	1	SS	9		
		2	SS	9		77
76.2						
1.5	**Silty Clay** trace sand, brown, moist, stiff	3	SS	10		
		4	SS	4	W. L. 22.9 m May 14, 2013	76
		5	SS	2		75
	- grey below 3.7 m	6	SS	1		74
	- wet below 4.5 m	7	SS	WH		73
			VANE			
			VANE			72
		8	SS	WH		
			VANE			71
			VANE			
		9	SS	WH		70
69.5						
8.2	**END OF BOREHOLE**					

Notes:

1) 50mm dia. monitoring well installed upon completion
2) Depth of Water

Date	Depth
14/05/2013	2.7 m BSL

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & SENSITIVITY × LAB VANE
25 50 75 100 125

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
25 50 75

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

SPL SOIL LOG 1599-710.GPJ SPL.GDT 23/5/13

SPL Consultants Limited
Geotechnical Environmental Materials Hydrogeology

LOG OF BOREHOLE BH13-8

PROJECT: Brigil 2940 Baseline Road
CLIENT: Brigil Platinum
PROJECT LOCATION: 2940-2948 Baseline Road
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
Method: Hollow Stem Augers
Diameter: 203mm
Date: Feb/05/2013

REF. NO.: 1599-710
ENCL NO.:

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & SENSITIVITY × LAB VANE 25 50 75 100 125	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) 25 50 75	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
79.7											
0.0	**Sand and Gravel** trace clay, grey, damp, firm (Fill)		1	SS	7				○		43 44 13
79.0							79				
0.8	**Silty Clay** trace gravel, grey, moist, firm		2	SS	7				○		
	- 32.5 mm gravel lens		3	SS	8				○		
77.9							78				
1.8	**END OF BOREHOLE**										

GRAPH NOTES: $+^{3}$, $\times^{3}$: Numbers refer to Sensitivity; ○ ε_f=3% Strain at Failure

SPL SOIL LOG 1599-710.GPJ SPL.GDT 23/5/13

SPL Consultants Limited
Geotechnical Environmental Materials Hydrogeology

LOG OF BOREHOLE BH13-9

PROJECT: Brigil 2940 Baseline Road
CLIENT: Brigil Platinum
PROJECT LOCATION: 2940-2948 Baseline Road
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
Method: Hollow Stem Augers
Diameter: 203mm
Date: May/07/2013

REF. NO.: 1599-710
ENCL NO.:

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & SENSITIVITY × LAB VANE 25 50 75 100 125	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) 25 50 75	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
78.6											
78.5 0.1	**Asphalt** 50 mm										
	Sand Gravel some gravel, some organics, brown, damp (FIII)		1	AS			78		○		18 66 16
77.6 1.1	**Sand and Gravel** brown, damp (Fill)		2	AS					○		
77.1 1.5	**END OF BOREHOLE**										

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

SPL SOIL LOG 1599-710.GPJ SPL.GDT 23/5/13

SPL Consultants Limited
Geotechnical Environmental Materials Hydrogeology

LOG OF BOREHOLE BH13-10

PROJECT: Brigil 2940 Baseline Road
CLIENT: Brigil Platinum
PROJECT LOCATION: 2940-2948 Baseline Road
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
Method: Hollow Stem Augers
Diameter: 203mm
Date: May/07/2013

REF. NO.: 1599-710
ENCL NO.:

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" BLOWS / 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & SENSITIVITY × LAB VANE (25 50 75 100 125)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (25 50 75)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
77.5											
77.4 / 0.0	**Asphalt** 100 mm										
77.3 / 0.1	**Gravelly Sand** some silt, brown, damp (Fill)		1	AS	15		77				30 54 16
76.1											
1.4	**END OF BOREHOLE**										

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ○ ε_f=3% Strain at Failure

SPL SOIL LOG 1599-710.GPJ SPL.GDT 23/5/13

Certificate of Analysis

Report Date: 22-Feb-2022

Client: Paterson Group Consulting Engineers

Order Date: 15-Feb-2022

Client PO: 33745

Project Description: PG6107

	Client ID:	BH8-22 - SS4	-	-	-
	Sample Date:	11-Feb-22 09:00	-	-	-
	Sample ID:	2208197-01	-	-	-
	MDL/Units	Soil	-	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	74.4	-	-	-
General Inorganics					
pH	0.05 pH Units	7.29	-	-	-
Resistivity	0.10 Ohm.m	24.0	-	-	-
Anions					
Chloride	5 ug/g dry	174	-	-	-
Sulphate	5 ug/g dry	93	-	-	-

APPENDIX 2

FIGURE 1 – KEY PLAN

FIGURE 2 – WATER SUPPRESSION SYSTEM

FIGURE 3 – ELEVATOR PIT WATERPROOFING

DRAWING PG6107-1 - TEST HOLE LOCATION PLAN

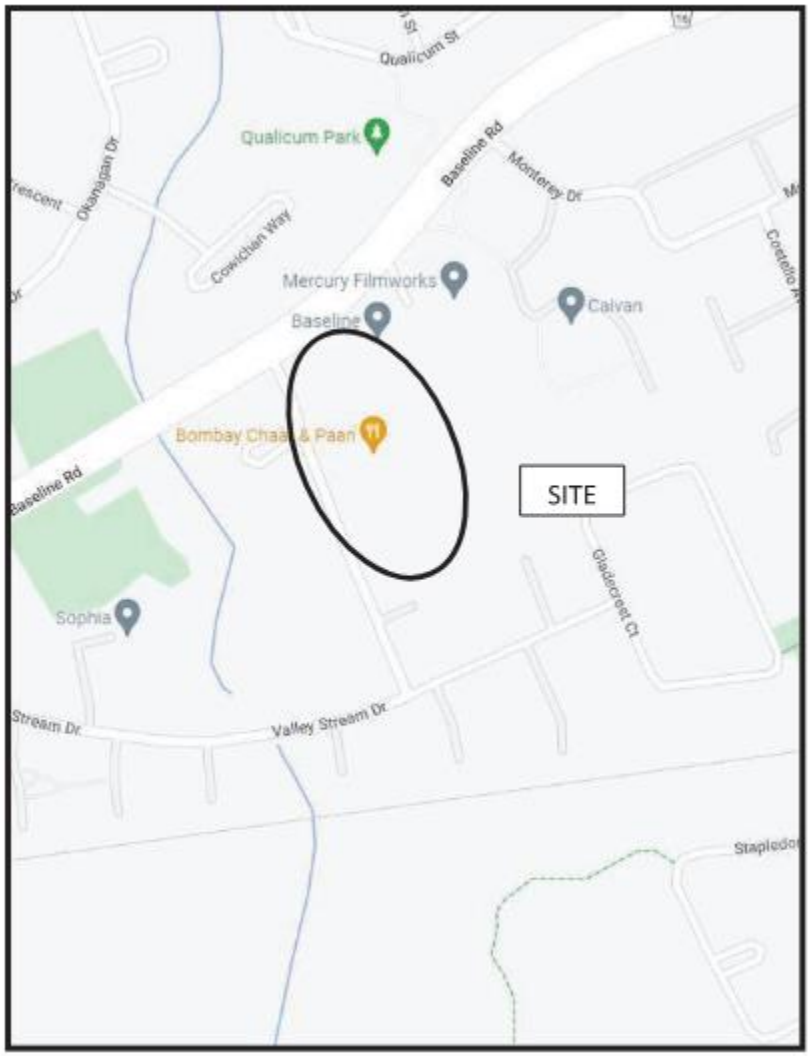
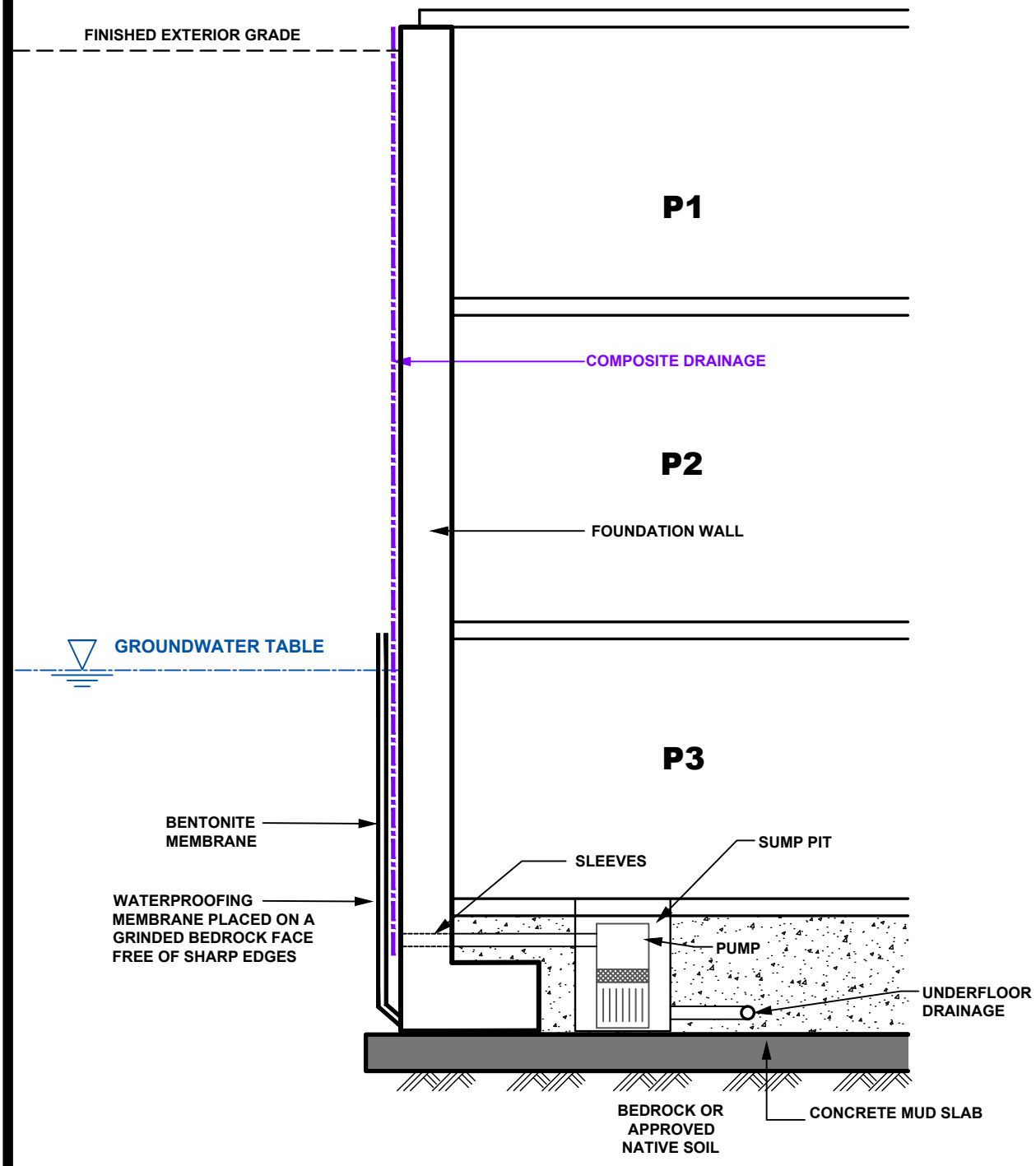


FIGURE 1

KEY PLAN

PATERSON GROUP



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BRIGIL CONSTRUCTION

GEOTECHNICAL INVESTIGATION
2946 BASELINE ROAD
OTTAWA, ONTARIO

Title:

WATER SUPPRESSION SYSTEM

Date:	Report No.:
03/2023	PG6107-1
Scale:	Drawing No.:
N.T.S.	FIGURE 2
Drawn by: NFRV	Checked by: BN

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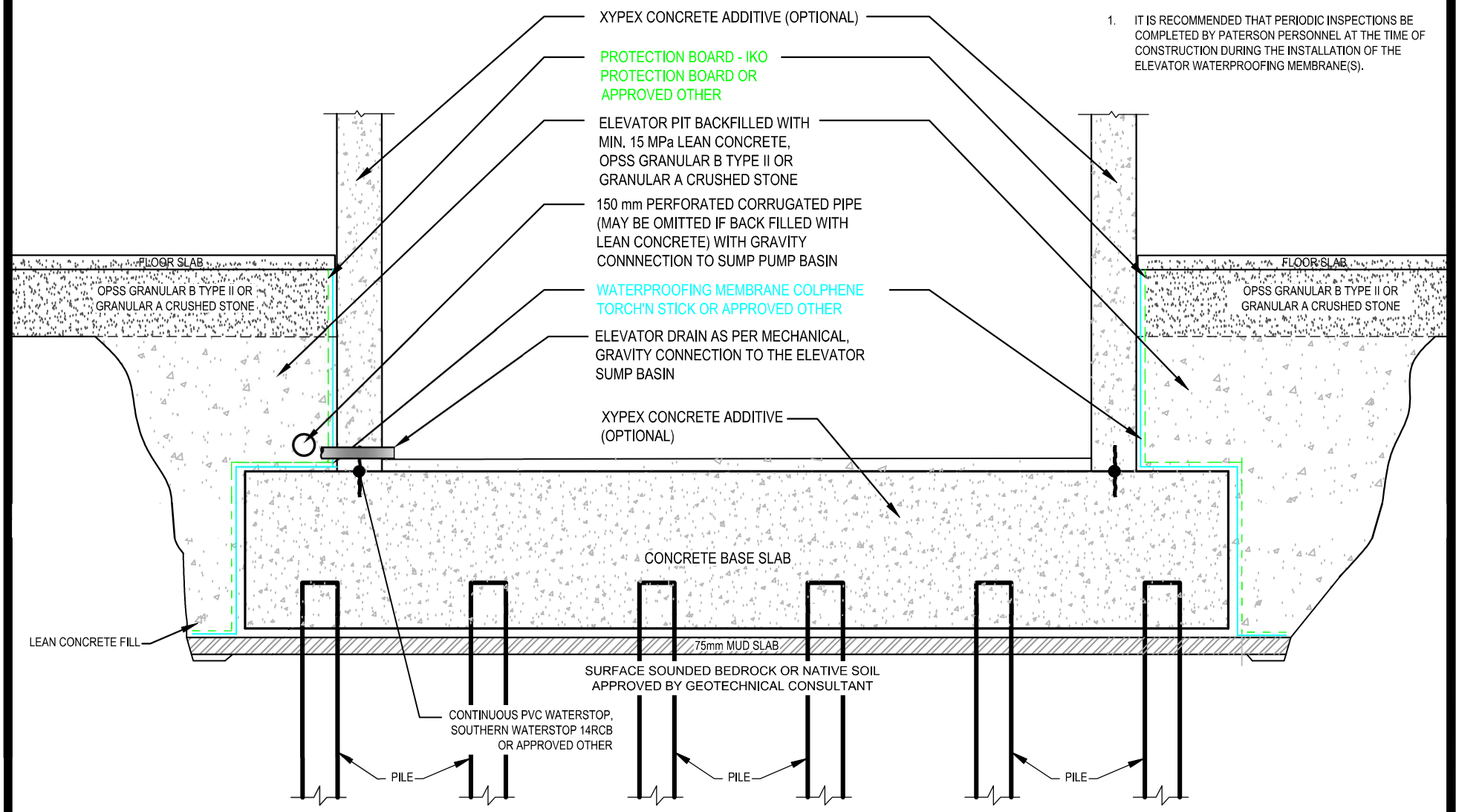
NOTES:

1. IT IS RECOMMENDED THAT PERIODIC INSPECTIONS BE COMPLETED BY PATERSON PERSONNEL AT THE TIME OF CONSTRUCTION DURING THE INSTALLATION OF THE ELEVATOR WATERPROOFING MEMBRANE(S).



PATERSON GROUP
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BIRGIL CONSTRUCTION

PROPOSED MULTI-STOREY BUILDING
2946 BASELINE ROAD

OTTAWA, **ONTARIO**

Title:

ELEVATOR PIT WATERPROOFING

Scale: N.T.S.	**Date:** 03/2023
Drawn by: NFRV	**Report No.:** PG6107
Checked by: JV	**Drawing No.:** FIGURE 3
Approved by: DJG	**Revision No.:**

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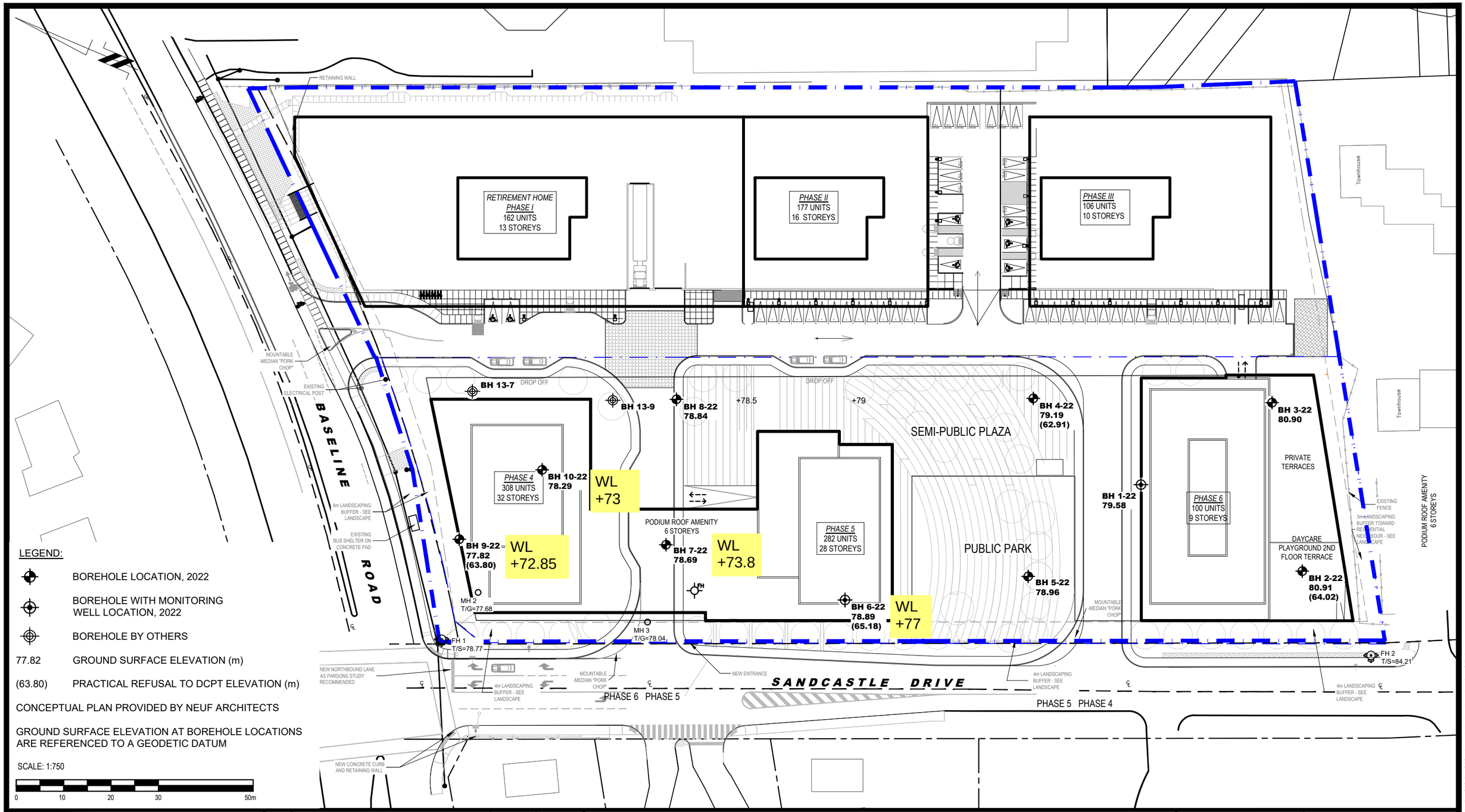

LEGEND:

- BOREHOLE LOCATION, 2022
- BOREHOLE WITH MONITORING WELL LOCATION, 2022
- BOREHOLE BY OTHERS
- 77.82 GROUND SURFACE ELEVATION (m)
- (63.80) PRACTICAL REFUSAL TO DCPT ELEVATION (m)

CONCEPTUAL PLAN PROVIDED BY NEUF ARCHITECTS

GROUND SURFACE ELEVATION AT BOREHOLE LOCATIONS ARE REFERENCED TO A GEODETIC DATUM

SCALE: 1:750

0 10 20 30 50m

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NO.	REVISIONS	DATE	INITIAL
1	UPDATED TO NEW CONCEPTUAL PLAN	03/03/2023	JV

BRIGIL CONSTRUCTION
GEOTECHNICAL INVESTIGATION
PROPOSED RESIDENTIAL BUILDING
2946 BASELINE ROAD
OTTAWA, ONTARIO

Title:
TEST HOLE LOCATION PLAN

Scale: 1:750	Date: 02/2022
Drawn by: YA	Report No.: PG6107-1
Checked by: BN	Dwg. No.: PG6107-1
Approved by: FA	Revision No.: 1

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APPENDIX 3

TYPICAL FOUNDATION SLEEVE INSTALLATION

Typical 150 mm Diameter Sleeve Installation

Photo 1 – Step 1: It is recommended that the upper 1/3 of the 150 mm drainage sleeve be cut at a 45 degree angle to hydraulically connect the composite foundation drainage board to the interior and underfloor drainage system.

Photo 2 – Step 2: It is recommended that the 150 mm diameter drainage sleeve be installed by carefully cutting an 'X' shaped incision through the composite foundation drainage and inserting the 150 mm diameter drainage sleeve inside the 'X' by pulling the four (4) triangular flaps towards the installer.

Photo 3 – Step 3: Apply a suitable primer prior to the placement of the adhesive tape such as 3M tape, WP200 BlueSkine or equivalent.

Photo 4 – Step 4: An adhesive such as 3M tape, BlueSkin, or equivalent be utilized to seal the 150 mm drainage sleeve to the composite foundation drainage board to act as a barrier in preventing concrete from blocking connection during the placement of the exterior concrete foundation wall.

Photo 5 – Step 5: As an additional precaution, it is also recommended that an adhesive tape be placed on the interior outlet end of the drainage sleeve between the temporary form work to further prevent concrete from entering the drainage sleeve during the placement of concrete. Once the temporary form work has been removed, the adhesive tape can be cut away to allow groundwater to have a positive gravity connection to the interior perimeter and underfloor drainage system.

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