

**re:** **Grading and Site Servicing Plans Review**  
**Proposed Residential Development**  
222 Baseline Road – Ottawa, Ontario

**to:** HP Urban – **Peter Hume** – [peter.hume@hpurban.ca](mailto:peter.hume@hpurban.ca)

**date:** October 20, 2025

**file:** PG6324-MEMO.01

---

Further to your request and authorization, Paterson Group (Paterson) prepared the current memorandum to provide a review from a geotechnical perspective for the grading and site servicing plans for the proposed residential building at the aforementioned site. This memorandum should be read in conjunction with Paterson Geotechnical Report PG6324-1 dated September 23, 2022.

## **1.0 Grading Plan Review**

Paterson reviewed the following grading plans prepared by T.L. Mak Engineering Consultants Ltd, regarding the aforementioned residential building:

- Proposed Site Grading and Servicing Plan – Project No. 824-74 – Drawing No. G-1 – Revision 3 dated September 26, 2025.

### **1.1 Proposed Grading**

Based on our review of the above noted grading plans, the proposed grade raises within the aforementioned site are acceptable from a geotechnical perspective. The proposed development is not subject to a permissible grade raise restriction. Therefore, lightweight fill is not required for building construction.

### **1.2 Bearing Medium**

Based on our review of the grading plans, it is expected that the proposed underside of footing (USF) elevation is 80.15 m. Upon reviewing the subsurface profile according to the completed boreholes, the footings are set to be founded over an existing fill layer. This bearing medium is not acceptable to provide sufficient bearing capacity as per the above-noted geotechnical report. Therefore, it is recommended that the footings be dropped to a maximum elevation of 79.3 m. Alternatively, the footings may be founded over concrete in-filled, vertical, zero-entry trenches, extended vertically to an elevation of 79.3 m, or deeper.



The trenches should extend horizontally to a minimum of 300 mm beyond the edges of the proposed footings in all directions. The concrete should consist of 20 MPa lean-mix (28-day strength). The side walls of the trenches can be used as forms in preparations of concrete placement.

If one of the above-noted methods are used, the bearing capacities provided in the geotechnical report can be used. In addition, frost protection of the proposed footings will not be required.

If the USF is kept as per the grading plans, a bearing resistance value of 75 kPa (SLS) and 125 kPa (ULS) should be utilized for the proposed footings. These values will be required to be verified in the field. If the fill is found to be in a loose state of compactness, proof-rolling of the subgrade will be required. If organic matter is found within the fill material, or if soft spots develop, these areas will be required to be removed and replaced with OPSS Granular A or B Type II engineered fill. If required, the engineered fill should be placed in maximum 300 mm thick loose lifts and compacted to a minimum of 98% of the material's standard Proctor maximum dry density (SPMDD). Furthermore, frost protection will be required to be implemented as per the recommendations provided in the following Subsection 1.3

### **1.3 Protection of Footings Against Frost Action**

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

Other exterior unheated footings, such as those for isolated exterior piers, are more prone to deleterious movement associated with frost action than the exterior walls of the proper structure. These footings should be provided with a minimum 2.1 m thick soil cover (or insulation equivalent).

Based on our review of above noted grading plan, the perimeter footings for the proposed development are not provided with sufficient soil cover for frost protection. Therefore, rigid insulation will be required. Reference should be made to Figure 1 – Insufficient Soil Cover (Footings), attached to the current memorandum.

To accommodate insufficient soil cover for the proposed footings, rigid insulation is required to achieve adequate frost protection. Rigid insulation recommendations are presented in Table 1 on the following page.



Thermal Condition	Soil Cover Provided (mm)	Insulation Dimensions	
		Thickness (mm)	Extension (mm)
<b>Heated</b>	1200-1500	25	Extend 900 mm horizontally beyond edge of footing face
	900-1200	50	Extend 1200 mm horizontally beyond edge of footing face
	600-900	75	Extend 1500 mm horizontally beyond edge of footing face
	300-600	100	Extend 1800 mm horizontally beyond edge of footing face
	0-300	125	Extend 2100 mm horizontally beyond edge of footing face
<b>Unheated</b>	1800-2100	25	Extend 600 mm horizontally beyond edge of footing face
	1200-1800	50	Extend 600 mm horizontally beyond edge of footing face
	900-1200	75	Extend 1200 mm horizontally beyond edge of footing face
	600-900	100	Extend 1800 mm horizontally beyond edge of footing face
	300-600	150	Extend 2100 mm horizontally beyond edge of footing face
	0-300	200	Extend 2100 mm horizontally beyond edge of footing face

All rigid insulation placed below the footings should consist of either Dow Chemical High-Load 40 (HL-40), Styro Rail SR.P400, or equivalent approved by Paterson. The rigid insulation placed below the footings should extend a minimum of 100 mm beyond the exterior edge of the footing. Styrofoam (SM) rigid insulation can be used beyond to extend beyond the footing face (above USF). Reference should be made to Figure 3 – Typical Rigid Insulation Detail, attached to this memorandum.

The rigid insulation boards should be placed upon a level and flat surface with negligible gaps between abutting boards. Consideration can be given to placing a thin levelling mat consisting of a layer of compacted OPSS Granular A crushed stone, stone dust, or sand below the insulation layer, as required.

The placement of the insulation layers should be reviewed by Paterson personnel at the time of construction.



It is recommended that Paterson review the proposed footing and/or insulation details once the final detail design drawings are available for the above noted items prior to construction to ensure the effects of frost action are mitigated appropriately.

## **2.0 Site Servicing Plan Review**

Paterson reviewed the following general plan of services prepared by T.L. Mak Engineering Consultants Ltd, regarding the aforementioned residential building:

- Proposed Site Grading and Servicing Plan – Project No. 824-74 – Drawing No. G-1 – Revision 3 dated September 26, 2025.

### **2.1 Lateral Support Zones of Footings**

Based on our review of the above-noted site service plans, all services will be constructed outside the lateral zones of the proposed footings of the building and are acceptable from a geotechnical perspective.

### **2.2 Protection of Pipes Against Frost Action**

Insufficient frost protection has been provided for some of the proposed sanitary and storm sewer pipes throughout the subject site. Reference should be made to Figure 2 – Insufficient Soil Cover (Services), attached to the memorandum.

The sanitary and storm sewer pipes outlined on the above-noted figure are located within the frost zone of 2.1 m below the finished grade. Rigid insulation to provide adequate frost protection of the site servicing is recommended where insufficient frost cover has been provided. Any portion of the services installed at a depth of 2.1 m below the finished grade or deeper is considered to have sufficient soil cover for frost protection.

To accommodate insufficient soil cover for the proposed footings, rigid insulation is required to achieve adequate frost protection. Rigid insulation recommendations are presented in Table 2 on the following page.





<b>Table 2 – Frost Protection Recommendations for Services with Reduced Soil Cover</b>			
<b>Thermal Condition</b>	<b>Soil Cover Provided (mm)</b>	<b>Insulation Dimensions</b>	
		<b>Thickness (mm)</b>	<b>Extension (mm)</b>
Unheated	600 to 900	125	Extend 1200 mm horizontally beyond edge face of the pipe
	900 to 1200	100	Extend 1200 mm horizontally beyond edge face of the pipe
	1200 to 1500	75	Extend 900 mm horizontally beyond edge face of the pipe
	1500 to 1800	50	Extend 600 mm horizontally beyond edge face of the pipe
	1800 to <2100	25	Extend 300 mm horizontally beyond edge face of the pipe

All rigid insulation should consist of either Dow Chemical High-Load 40 (HL-40), Styro Rail SR.P400, or equivalent approved by Paterson. The placement of all insulation within the service trenches must be reviewed and approved by Paterson personnel at the time of construction. Reference should be made to Figure 3 – Typical Rigid Insulation Detail, attached to this memorandum.

**It should be noted that the invert elevation of the watermain pipes has not been presented in the above-noted site servicing drawings. Therefore, if insufficient soil cover is provided for watermain pipes, rigid insulation should be installed for the proposed watermain pipes as recommended in the above table (Table 2).**

We trust that the current submission meets your immediate requirements.

Best Regards,

**Paterson Group Inc.**

Owen R. Canton, B. Eng.

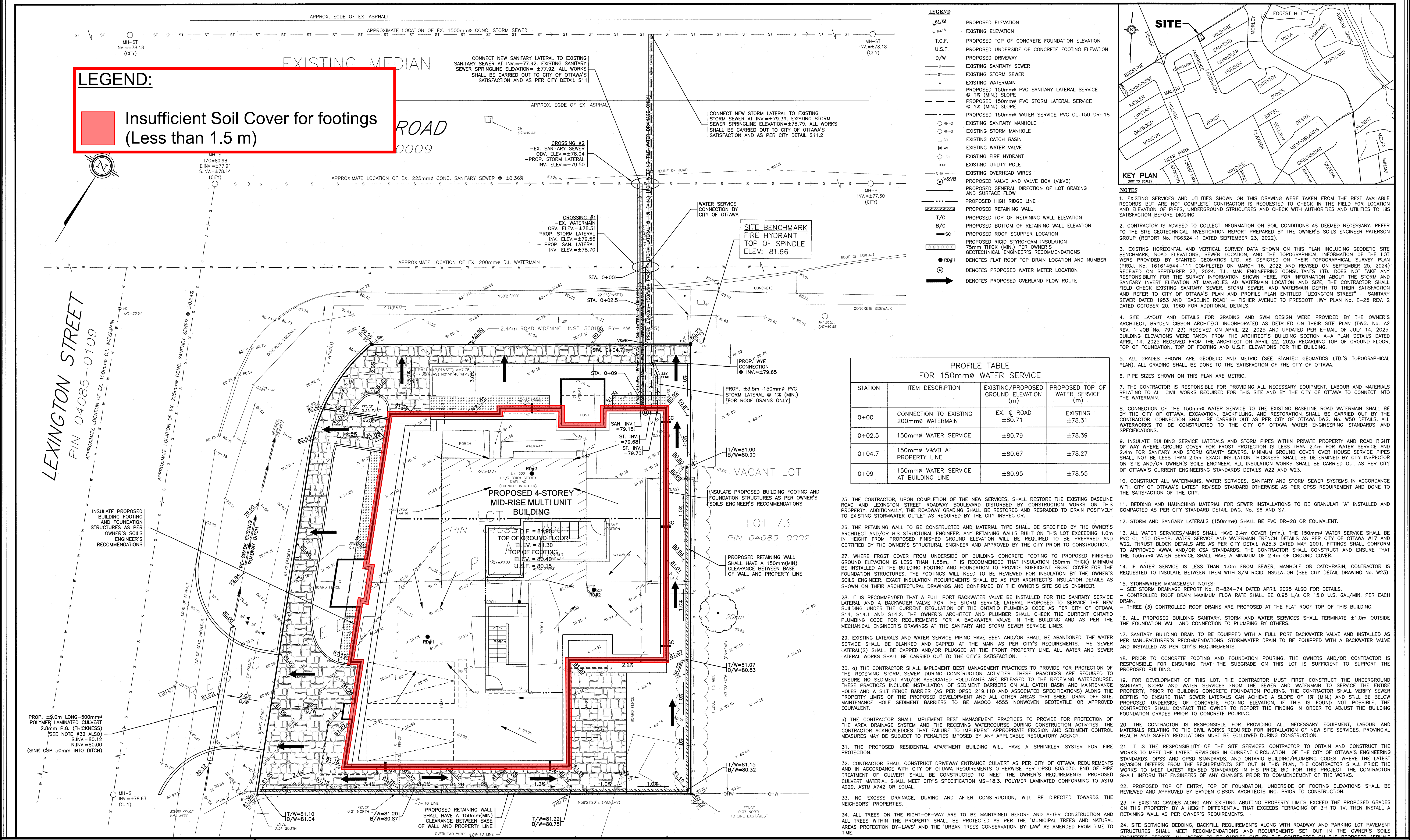


Faisal I. Abou-Seido, P.Eng.

**Attachments:**

- Figure 1 – Insufficient Soil Cover (Footings)
- Figure 2 – Insufficient Soil Cover (Services)
- Figure 3 - Typical Rigid Insulation Detail





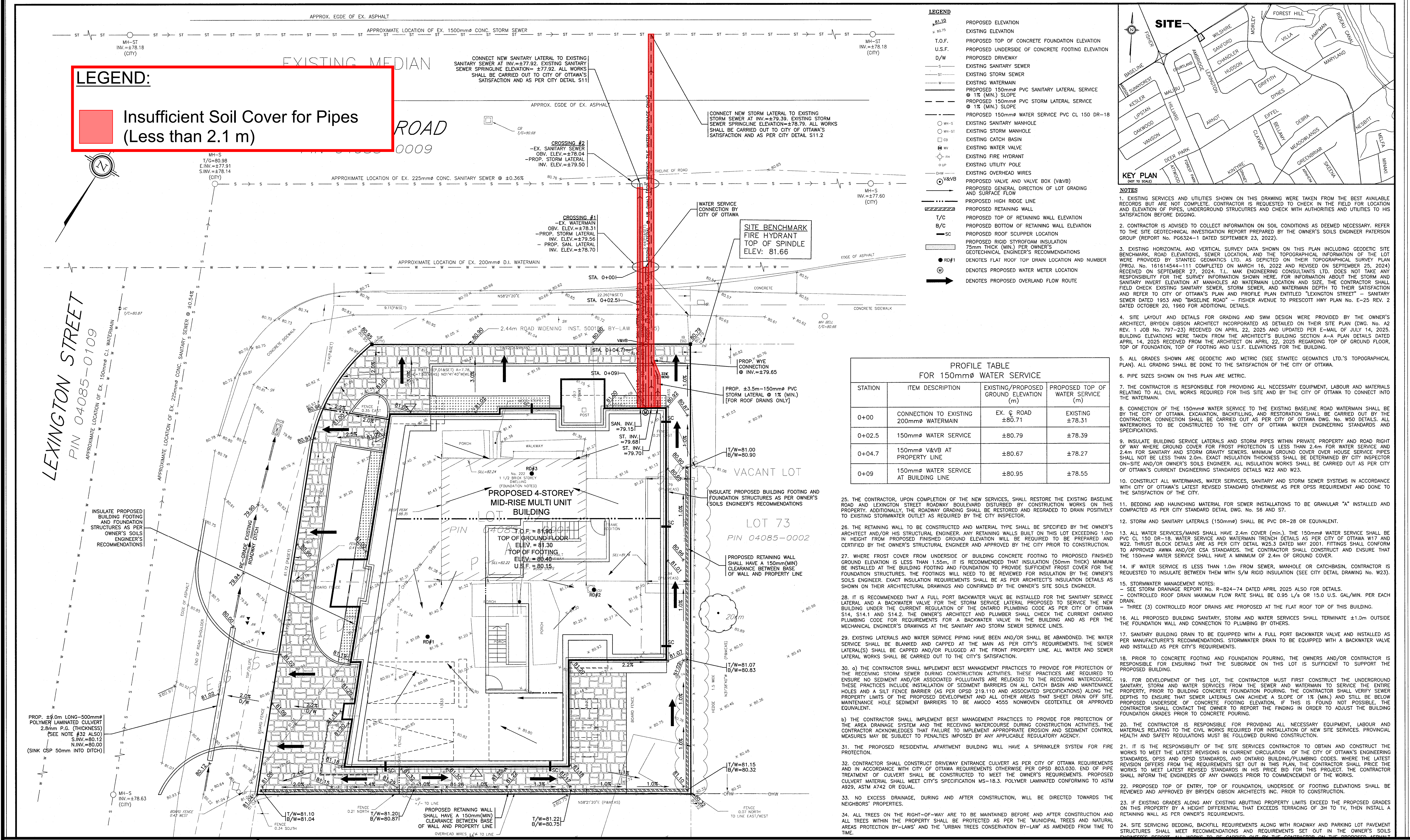
**LEGEND:**

Insufficient Soil Cover for footings (Less than 1.5 m)

**PROFILE TABLE  
FOR 150mmØ WATER SERVICE**

STATION	ITEM DESCRIPTION	EXISTING/PROPOSED GROUND ELEVATION (m)	PROPOSED TOP OF WATER SERVICE (m)
0+00	CONNECTION TO EXISTING 200mmØ WATERMAIN	EX. C. ROAD	EXISTING ±78.31
0+02.5	150mmØ WATER SERVICE	±80.79	±78.39
0+04.7	150mmØ V&VB AT PROPERTY LINE	±80.67	±78.27
0+09	150mmØ WATER SERVICE AT BUILDING LINE	±80.95	±78.55

25. THE CONTRACTOR, UPON COMPLETION OF THE NEW SERVICES, SHALL RESTORE THE EXISTING BASELINE ROAD AND LEXINGTON STREET ROADWAY BULEVARD DISTURBED BY CONSTRUCTION WORKS ON THIS PROPERTY. ADDITIONALLY, THE ROADWAY GRADING SHALL BE RESTORED AND REGRADED TO DRAIN POSITIVELY TO EXISTING STORMWATER OUTLET AS REQUIRED BY THE CITY INSPECTOR.
26. THE RETAINING WALL TO BE CONSTRUCTED AND MATERIAL TYPE SHALL BE SPECIFIED BY THE OWNER'S ARCHITECT AND/OR HIS STRUCTURAL ENGINEER. ANY RETAINING WALLS BUILT ON THIS LOT EXCEEDING 1.0m IN HEIGHT FROM PROPOSED FINISHED GROUND ELEVATION WILL BE REQUIRED TO BE PREPARED AND CERTIFIED BY THE OWNER'S STRUCTURAL ENGINEER AND APPROVED BY THE CITY PRIOR TO CONSTRUCTION.
27. WHERE FROST COVER FROM UNDERSIDE OF BUILDING CONCRETE FOOTING TO PROPOSED FINISHED GROUND ELEVATION IS LESS THAN 1.55m, IT IS RECOMMENDED THAT INSULATION (50mm THICK) MINIMUM BE INSTALLED AT THE BUILDING FOOTING AND FOUNDATION TO PROVIDE SUFFICIENT FROST COVER FOR THE FOUNDATION STRUCTURES. THE FOOTINGS WILL NEED TO BE REVIEWED FOR INSULATION BY THE OWNER'S SOILS ENGINEER. EXACT INSULATION REQUIREMENTS SHALL BE AS PER ARCHITECT'S INSULATION DETAILS AS SHOWN ON THEIR ARCHITECTURAL DRAWINGS AND CONFIRMED BY THE OWNER'S SITE SOILS ENGINEER.
28. IT IS RECOMMENDED THAT A FULL PORT BACKWATER VALVE BE INSTALLED FOR THE SANITARY SERVICE LATERAL AND A BACKWATER VALVE FOR THE STORM SERVICE LATERAL PROPOSED TO SERVICE THE NEW BUILDING UNDER THE CURRENT REGULATION OF THE ONTARIO PLUMBING CODE AS PER CITY OF OTTAWA S14, S14.1 AND S14.2. THE OWNER'S ARCHITECT AND PLUMBER SHALL CHECK THE CURRENT ONTARIO PLUMBING CODE FOR REQUIREMENTS FOR A BACKWATER VALVE IN THE BUILDING AND AS PER THE MECHANICAL ENGINEER'S DRAWINGS AT THE SANITARY AND STORM SEWER SERVICE LINES.
29. EXISTING LATERALS AND WATER SERVICE PIPING HAVE BEEN AND/OR SHALL BE ABANDONED. THE WATER SERVICE SHALL BE BLANKED AND CAPPED AT THE MAN AS PER CITY'S REQUIREMENTS. THE SEWER LATERAL(S) SHALL BE CAPPED AND/OR PLUGGED AT THE FRONT PROPERTY LINE. ALL WATER AND SEWER LATERAL WORKS SHALL BE CARRIED OUT TO THE CITY'S SATISFACTION.
30. a) THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES TO PROVIDE FOR PROTECTION OF THE RECEIVING STORM SEWER DURING CONSTRUCTION ACTIVITIES. THESE PRACTICES ARE REQUIRED TO ENSURE NO SEDIMENT AND/OR ASSOCIATED POLLUTANTS ARE RELEASED TO THE RECEIVING WATERCOURSE. THESE PRACTICES INCLUDE INSTALLATION OF SEDIMENT BARRIERS ON ALL CATCH BASIN AND MAINTENANCE HOLES AND A SILT FENCE BARRIER (AS PER OPSD 219.110 AND ASSOCIATED SPECIFICATIONS) ALONG THE PROPERTY LIMITS OF THE PROPOSED DEVELOPMENT AND ALL OTHER AREAS THAT SHEET DRAIN OFF SITE. MAINTENANCE HOLE SEDIMENT BARRIERS TO BE AMCO 4555 NONWOVEN GEOTEXTILE OR APPROVED EQUIVALENT.
- b) THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES TO PROVIDE FOR PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE RECEIVING WATERCOURSE DURING CONSTRUCTION ACTIVITIES. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.
31. THE PROPOSED RESIDENTIAL APARTMENT BUILDING WILL HAVE A SPRINKLER SYSTEM FOR FIRE PROTECTION.
32. CONTRACTOR SHALL CONSTRUCT DRIVEWAY ENTRANCE CULVERT AS PER CITY OF OTTAWA REQUIREMENTS AND IN ACCORDANCE WITH CITY OF OTTAWA REQUIREMENTS OTHERWISE PER OPSD 803.030. END OF PIPE TREATMENT OF CULVERT SHALL BE CONSIDERED TO MEET THE OWNER'S REQUIREMENTS. PROPOSED CULVERT MATERIAL SHALL MEET CITY'S SPECIFICATION MS-18.3. POLYMER LAMINATED CONFORMING TO ASTM A929, ASTM A742 OR EQUAL.
33. NO EXCESS DRAINAGE, DURING AND AFTER CONSTRUCTION, WILL BE DIRECTED TOWARDS THE NEIGHBORS' PROPERTIES.
34. ALL TREES ON THE RIGHT-OF-WAY ARE TO BE MAINTAINED BEFORE AND AFTER CONSTRUCTION AND ALL TREES WITHIN THE PROPERTY SHALL BE PROTECTED AS PER THE "MUNICIPAL TREES AND NATURAL AREAS PROTECTION BY-LAWS" AND THE "URBAN TREES CONSERVATION BY-LAW" AS AMENDED FROM TIME TO TIME.



**LEGEND:**

Insufficient Soil Cover for Pipes (Less than 2.1 m)

- LEGEND**
- PROPOSED ELEVATION
  - EXISTING ELEVATION
  - PROPOSED TOP OF CONCRETE FOUNDATION ELEVATION
  - T.O.F.
  - U.S.F.
  - PROPOSED UNDERSIDE OF CONCRETE FOOTING ELEVATION
  - PROPOSED DRIVEWAY
  - EXISTING SANITARY SEWER
  - EXISTING STORM SEWER
  - EXISTING WATERMAIN
  - PROPOSED 150mm $\varnothing$  PVC SANITARY LATERAL SERVICE @ 1% (MIN.) SLOPE
  - PROPOSED 150mm $\varnothing$  PVC STORM LATERAL SERVICE @ 1% (MIN.) SLOPE
  - PROPOSED 150mm $\varnothing$  WATER SERVICE PVC CL 150 DR-18
  - EXISTING SANITARY MANHOLE
  - EXISTING STORM MANHOLE
  - EXISTING CATCH BASIN
  - EXISTING WATER VALVE
  - EXISTING FIRE HYDRANT
  - EXISTING UTILITY POLE
  - EXISTING OVERHEAD WIRES
  - PROPOSED VALVE AND VALVE BOX (V&VB)
  - PROPOSED GENERAL DIRECTION OF LOT GRADING AND SURFACE FLOW
  - PROPOSED HIGH RIDGE LINE
  - PROPOSED RETAINING WALL
  - PROPOSED TOP OF RETAINING WALL ELEVATION
  - PROPOSED BOTTOM OF RETAINING WALL ELEVATION
  - PROPOSED ROOF SCUPPER LOCATION
  - PROPOSED RIGID STYROFOAM INSULATION 75mm THICK (MIN.) PER OWNER'S GEOTECHNICAL ENGINEER'S RECOMMENDATIONS
  - RO#1
  - RO#2
  - RO#3
  - RO#4
  - RO#5
  - RO#6
  - RO#7
  - RO#8
  - RO#9
  - RO#10
  - RO#11
  - RO#12
  - RO#13
  - RO#14
  - RO#15
  - RO#16
  - RO#17
  - RO#18
  - RO#19
  - RO#20
  - RO#21
  - RO#22
  - RO#23
  - RO#24
  - RO#25
  - RO#26
  - RO#27
  - RO#28
  - RO#29
  - RO#30
  - RO#31
  - RO#32
  - RO#33
  - RO#34
  - RO#35
  - RO#36
  - RO#37
  - RO#38
  - RO#39
  - RO#40
  - RO#41
  - RO#42
  - RO#43
  - RO#44
  - RO#45
  - RO#46
  - RO#47
  - RO#48
  - RO#49
  - RO#50
  - RO#51
  - RO#52
  - RO#53
  - RO#54
  - RO#55
  - RO#56
  - RO#57
  - RO#58
  - RO#59
  - RO#60
  - RO#61
  - RO#62
  - RO#63
  - RO#64
  - RO#65
  - RO#66
  - RO#67
  - RO#68
  - RO#69
  - RO#70
  - RO#71
  - RO#72
  - RO#73
  - RO#74
  - RO#75
  - RO#76
  - RO#77
  - RO#78
  - RO#79
  - RO#80
  - RO#81
  - RO#82
  - RO#83
  - RO#84
  - RO#85
  - RO#86
  - RO#87
  - RO#88
  - RO#89
  - RO#90
  - RO#91
  - RO#92
  - RO#93
  - RO#94
  - RO#95
  - RO#96
  - RO#97
  - RO#98
  - RO#99
  - RO#100

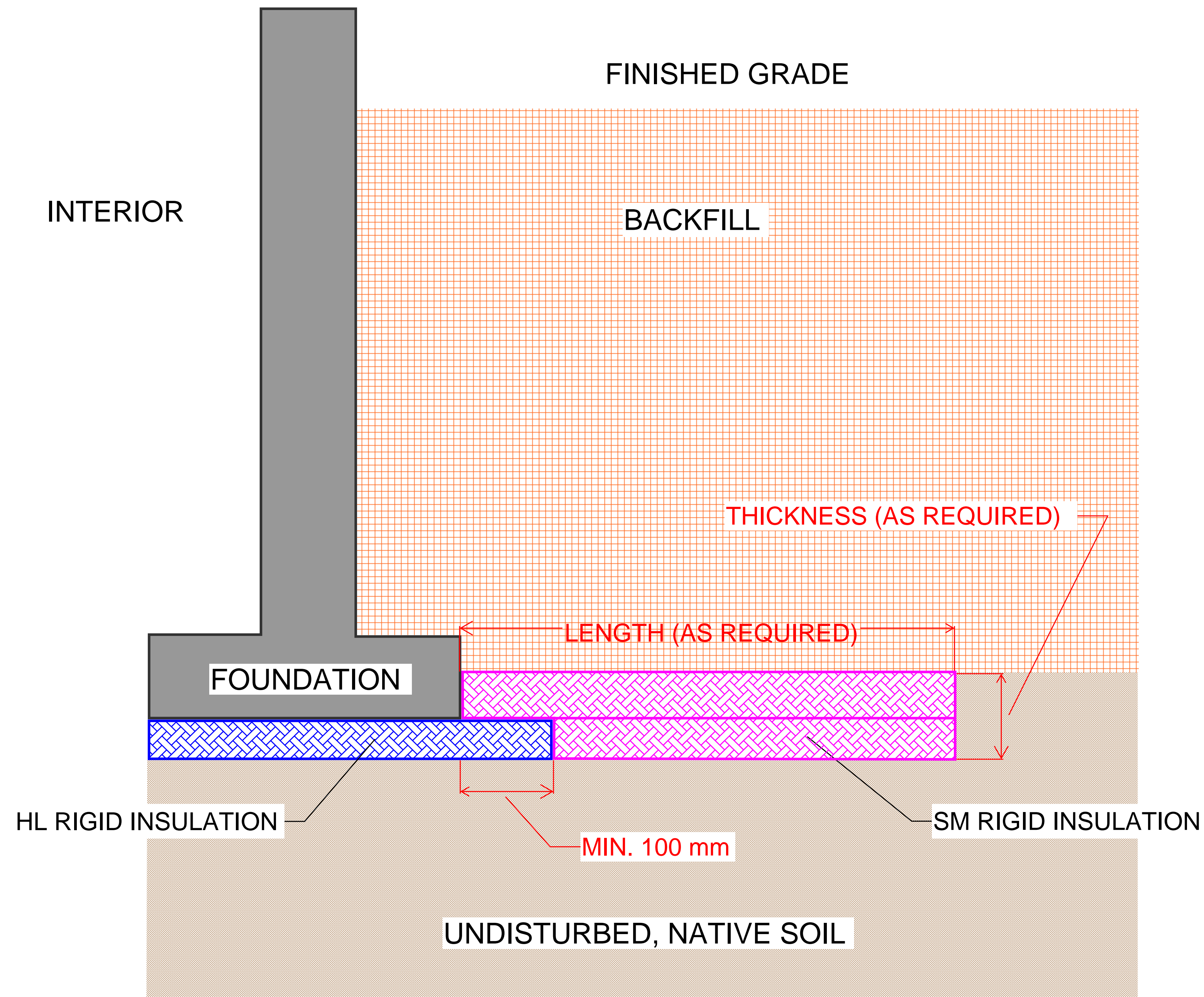
**PROFILE TABLE FOR 150mm $\varnothing$  WATER SERVICE**

STATION	ITEM DESCRIPTION	EXISTING/PROPOSED GROUND ELEVATION (m)	PROPOSED TOP OF WATER SERVICE (m)
0+00	CONNECTION TO EXISTING 200mm $\varnothing$ WATERMAIN	EX. $\varnothing$ ROAD	EXISTING $\pm 78.31$
0+02.5	150mm $\varnothing$ WATER SERVICE	$\pm 80.79$	$\pm 78.39$
0+04.7	150mm $\varnothing$ V&VB AT PROPERTY LINE	$\pm 80.67$	$\pm 78.27$
0+09	150mm $\varnothing$ WATER SERVICE AT BUILDING LINE	$\pm 80.95$	$\pm 78.55$

25. THE CONTRACTOR, UPON COMPLETION OF THE NEW SERVICES, SHALL RESTORE THE EXISTING BASELINE ROAD AND LEXINGTON STREET ROADWAY BULEVARD DISTURBED BY CONSTRUCTION WORKS ON THIS PROPERTY. ADDITIONALLY, THE ROADWAY GRADING SHALL BE RESTORED AND REGRADED TO DRAIN POSITIVELY TO EXISTING STORMWATER OUTLET AS REQUIRED BY THE CITY INSPECTOR.
26. THE RETAINING WALL TO BE CONSTRUCTED AND MATERIAL TYPE SHALL BE SPECIFIED BY THE OWNER'S ARCHITECT AND/OR HIS STRUCTURAL ENGINEER. ANY RETAINING WALLS BUILT ON THIS LOT EXCEEDING 1.0m IN HEIGHT FROM PROPOSED FINISHED GROUND ELEVATION WILL BE REQUIRED TO BE PREPARED AND CERTIFIED BY THE OWNER'S STRUCTURAL ENGINEER AND APPROVED BY THE CITY PRIOR TO CONSTRUCTION.
27. WHERE FROST COVER FROM UNDERSIDE OF BUILDING CONCRETE FOOTING TO PROPOSED FINISHED GROUND ELEVATION IS LESS THAN 1.55m, IT IS RECOMMENDED THAT INSULATION (50mm THICK) MINIMUM BE INSTALLED AT THE BUILDING FOOTING AND FOUNDATION TO PROVIDE SUFFICIENT FROST COVER FOR THE FOUNDATION STRUCTURES. THE FOOTINGS WILL NEED TO BE REVIEWED FOR INSULATION BY THE OWNER'S SOILS ENGINEER. EXACT INSULATION REQUIREMENTS SHALL BE AS PER ARCHITECT'S INSULATION DETAILS AS SHOWN ON THEIR ARCHITECTURAL DRAWINGS AND CONFIRMED BY THE OWNER'S SITE SOILS ENGINEER.
28. IT IS RECOMMENDED THAT A FULL PORT BACKWATER VALVE BE INSTALLED FOR THE SANITARY SERVICE LATERAL AND A BACKWATER VALVE FOR THE STORM SERVICE LATERAL PROPOSED TO SERVICE THE NEW BUILDING UNDER THE CURRENT REGULATION OF THE ONTARIO PLUMBING CODE AS PER CITY OF OTTAWA S14, S14.1 AND S14.2. THE OWNER'S ARCHITECT AND PLUMBER SHALL CHECK THE CURRENT ONTARIO PLUMBING CODE FOR REQUIREMENTS FOR A BACKWATER VALVE IN THE BUILDING AND AS PER THE MECHANICAL ENGINEER'S DRAWINGS AT THE SANITARY AND STORM SEWER SERVICE LINES.
29. EXISTING LATERALS AND WATER SERVICE PIPING HAVE BEEN AND/OR SHALL BE ABANDONED. THE WATER SERVICE SHALL BE BLANKED AND CAPPED AT THE MAN AS PER CITY'S REQUIREMENTS. THE SEWER LATERAL(S) SHALL BE CAPPED AND/OR PLUGGED AT THE FRONT PROPERTY LINE. ALL WATER AND SEWER LATERAL WORKS SHALL BE CARRIED OUT TO THE CITY'S SATISFACTION.
30. a) THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES TO PROVIDE FOR PROTECTION OF THE RECEIVING STORM SEWER DURING CONSTRUCTION ACTIVITIES. THESE PRACTICES ARE REQUIRED TO ENSURE NO SEDIMENT AND/OR ASSOCIATED POLLUTANTS ARE RELEASED TO THE RECEIVING WATERCOURSE. THESE PRACTICES INCLUDE INSTALLATION OF SEDIMENT BARRIERS ON ALL CATCH BASIN AND MAINTENANCE HOLES AND A Silt FENCE BARRIER (AS PER OPSD 219.110 AND ASSOCIATED SPECIFICATIONS) ALONG THE PROPERTY LIMITS OF THE PROPOSED DEVELOPMENT AND ALL OTHER AREAS THAT SHEET DRAIN OFF SITE. MAINTENANCE HOLE SEDIMENT BARRIERS TO BE AMCO 4555 NONWOVEN GEOTEXTILE OR APPROVED EQUIVALENT.
- b) THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES TO PROVIDE FOR PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE RECEIVING WATERCOURSE DURING CONSTRUCTION ACTIVITIES. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.
31. THE PROPOSED RESIDENTIAL APARTMENT BUILDING WILL HAVE A SPRINKLER SYSTEM FOR FIRE PROTECTION.
32. CONTRACTOR SHALL CONSTRUCT DRIVEWAY ENTRANCE CULVERT AS PER CITY OF OTTAWA REQUIREMENTS AND IN ACCORDANCE WITH CITY OF OTTAWA REQUIREMENTS OTHERWISE PER OPSD 803.030. END OF PIPE TREATMENT OF CULVERT SHALL BE CONSIDERED TO MEET THE OWNER'S REQUIREMENTS. PROPOSED CULVERT MATERIAL SHALL MEET CITY'S SPECIFICATION MS-18.3. POLYMER LAMINATED CONFORMING TO ASTM A929, ASTM A742 OR EQUAL.
33. NO EXCESS DRAINAGE, DURING AND AFTER CONSTRUCTION, WILL BE DIRECTED TOWARDS THE NEIGHBORS' PROPERTIES.
34. ALL TREES ON THE RIGHT-OF-WAY ARE TO BE MAINTAINED BEFORE AND AFTER CONSTRUCTION AND ALL TREES WITHIN THE PROPERTY SHALL BE PROTECTED AS PER THE "MUNICIPAL TREES AND NATURAL AREAS PROTECTION BY-LAWS" AND THE "URBAN TREES CONSERVATION BY-LAW" AS AMENDED FROM TIME TO TIME.

**Figure 2 - Insufficient Soil Cover (Services)**

# FOOTINGS



# SERVICES

