



re: Site Servicing Plan Review
Proposed Self Storage Development
75 Michael Cowpland Drive – Ottawa, Ontario

to: Huntington Properties – **Mr. Mathieu Desjardins** –
mdesjardins@huntingtonproperties.ca

to: IBI Group – **Ms. Amy Zhuang** – Amy.Zhuang@ibigroup.com

date: September 5, 2023

file: PG3798-MEMO.02 Revision 1

Further to your request and authorization, Paterson Group (Paterson) prepared the current memorandum to document our review of the site servicing plan, and to provide associated recommendations from a geotechnical perspective for the aforementioned project. The following memorandum should be read in conjunction with the current Geotechnical Investigation Report Paterson Group Report PG3798-2 Revision 3, dated November 23, 2022.

Background Information

Based on the above noted geotechnical investigation, the subsurface profile across the subject site consists of a thin layer of topsoil and/or fill underlain by a silty clay deposit. Generally, the silty clay deposit was observed to have a hard to stiff, brown silty clay layer that changed into a stiff to soft, grey silty clay at about 2.3 to 3.8 m below the existing ground surface. Typically, the silty clay deposit extended down a depth of 6.4 m below existing grade.

Site Servicing Plan Review

Paterson reviewed the following grading and servicing plans prepared by IBI Group for the aforementioned development:

- General Plan of Services – Project No. 135470, Sheet No. C-001, Revision 4, dated July 19, 2023.
- Cross Sections – Project No. 135470, Sheet No. C-011, Revision 3 dated June 30, 2023

Based on our review of the above noted site service plans, the majority of the design details are considered to be acceptable from a geotechnical perspective. All proposed service pipes are sufficiently covered by adequate soil cover with no frost protection required.





Upon discussions with the design team, the proposed thickened edge slabs are now proposed to be placed on vertical, concrete in-filled trenches where adjacent service pipes are proposed. These trenches would lower the lateral support zone of the slabs below the service trenches ensuring that the proposed buildings are protected should future excavation is required for the proposed services for maintenance purposes. Additional information are discussed in the following sections.

It should be noted that insufficient frost protection has been provided for several segments of the existing storm sewer services, mostly related to the pipes from catch basins tying into the main storm drain throughout the subject site. At these locations, the invert level of the storm sewer services are located within the frost zone (i.e. approximately 1.8 m below the proposed finished grade).

Geotechnical Recommendations

Frost Protection for Service Pipes – North Corner

Due to the proposed grading and the addition of the proposed retaining wall, minimal frost cover is provided for the existing service alignments. Therefore, additional frost protection is recommended for these services.

It should be noted that the existing shallow services pipes along the north corner of the site will be subject to insulation due to the new proposed grading at the subject site. Depending on the soil cover above the invert level of the pipes, the following table indicates the minimum thickness of rigid insulation required to be placed directly above the obvert of the subject pipes. A minimum HI-40 rigid insulation panels should be placed directly above the existing pipes and should extend horizontally beyond the edges of the subject pipes as shown on *Figure 1 – Typical Rigid Insulation Detail* below.

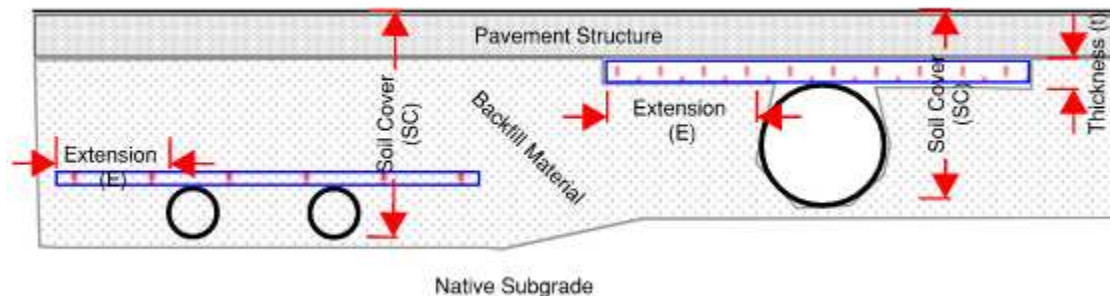


Figure 1 - Typical Rigid Insulation Detail

The recommended rigid insulation thicknesses based on the available soil cover are shown in Table 1 below.



Table 1 - Rigid Insulation Recommendations for Storm Sewer Pipes with Reduced Soil Cover			
Thermal Condition	Soil Cover Provided (mm)	Insulation Dimensions	
		Thickness (mm)	Extension (mm)
Unheated	600 to 900	125	Extend 1200 mm horizontally beyond edge face of the sewer
	900 to 1200	100	Extend 1200 mm horizontally beyond edge face of the sewer
	1200 to 1500	75	Extend 900 mm horizontally beyond edge face of the sewer
	1500 to 1800	50	Extend 600 mm horizontally beyond edge face of the sewer
	1800 to <2100	25	Extend 300 mm horizontally beyond edge face of the sewer

Notes: All designs are based on a freezing index of 1000°C-days

All rigid insulation should consist of either Dow Chemical High-Load 40 (HI-40) or equivalent other 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.

Thickened Edge Slab Lateral Support Zone Lowering

Due to the anticipated depth and proximity of the proposed service pipes to the proposed thickened edge slab footprints, it is expected the lateral support zones for the proposed structures will be negatively impacted by the service installation works. Further, future maintenance that could be considered throughout the proposed service alignments would require trenches that would impact the proposed buildings lateral support zones. Based on this, it is recommended to lower the lateral support zones for thickened edge footings located adjacent to impacting service alignments. This may be accomplished by sub-excavating a near-vertical trench located directly below the overlying footing footprint and in-filled with minimum 17 MPa lean-concrete.

It is recommended the near-vertical trenches extend a minimum of 150 mm horizontally beyond the overlying footing footprint. Based on our review, the lean-concrete trench detail has been incorporated satisfactorily into the above-noted site servicing plans with the exception of widening the trench a minimum of 150 mm beyond the face of the overlying thickened edge footing footprint.



Where the lean-concrete trenches will terminate within the frost zone for a heated building, it is recommended to extend a minimum 100 mm thick layer of HI-40 rigid insulation a minimum horizontal distance of 900 mm beyond the overlying building footprint. The location of this insulation is depicted in blue on *Figure 1 – Thickened Edge Slab Insulation Details and Plan* attached to this memorandum. Where the lean-concrete trench is anticipated to extend below frost zone for a heated building, the exterior building insulation has been omitted from the above-noted plan.

The placement of the lean-concrete trench and rigid insulation should be reviewed and approved by Paterson personnel at the time of construction.

Stormtech Underground Storage Tanks

Paterson reviewed the locations and founding depths for the proposed Stormtech Underground Storage MC-3500 units to be located throughout the subject site. Based on our review of the subsurface profile and associated geotechnical information for the subject site, the stormwater chambers will be founded upon a native, in-situ, stiff brown silty clay layer. Further, it is expected the proposed tank inverts will be located at least 1 m above the seasonally high and the long-term groundwater table throughout the subject site. Based on this, it is not anticipated localized dewatering of the groundwater table will take place throughout the subject site by the implementation of the proposed tanks. Therefore, the proposed storage tanks considered acceptable from a geotechnical perspective.

We trust that this information satisfies your immediate requirements.

Best Regards,

Paterson Group Inc.

Drew Petahtegoose, B.Eng.



Faisal I. Abou-Seido, P.Eng.

Attachments

- Figure 1 – Thickened Edge Slab Insulation Details and Plan

PG3798-MEMO.02 REVISION 1 - FIGURE 1 - THICKENED-EDGE SLAB INSULATION DETAILS AND PLAN

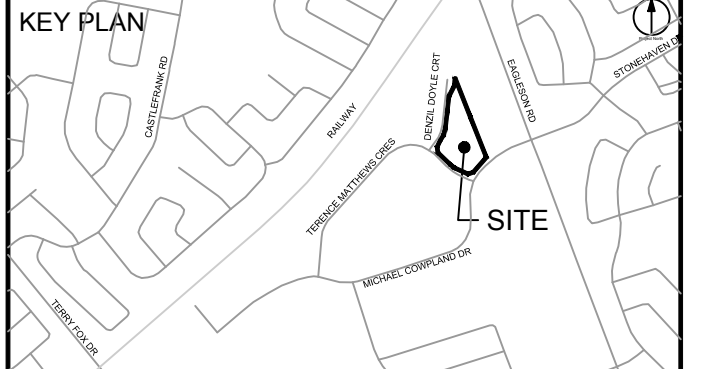
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ISSUES

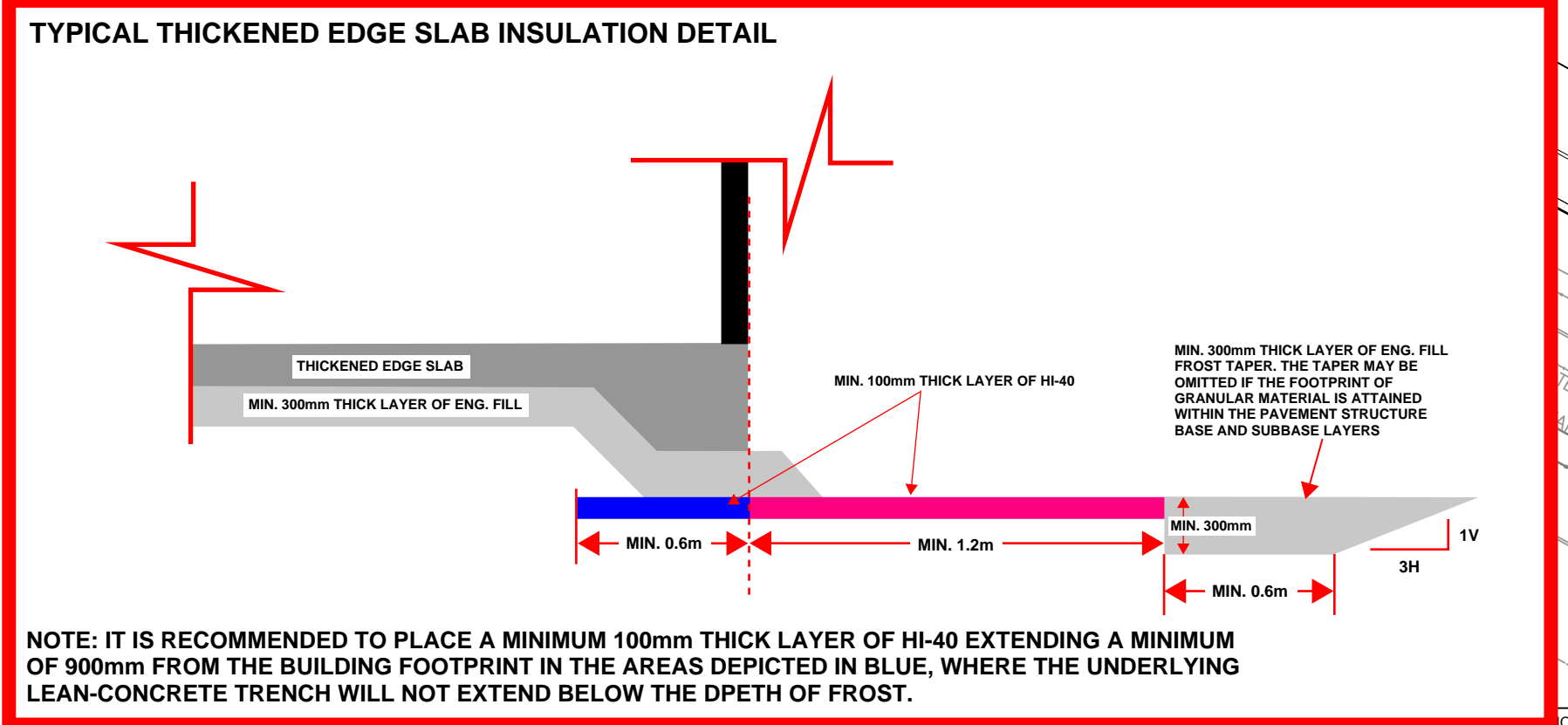
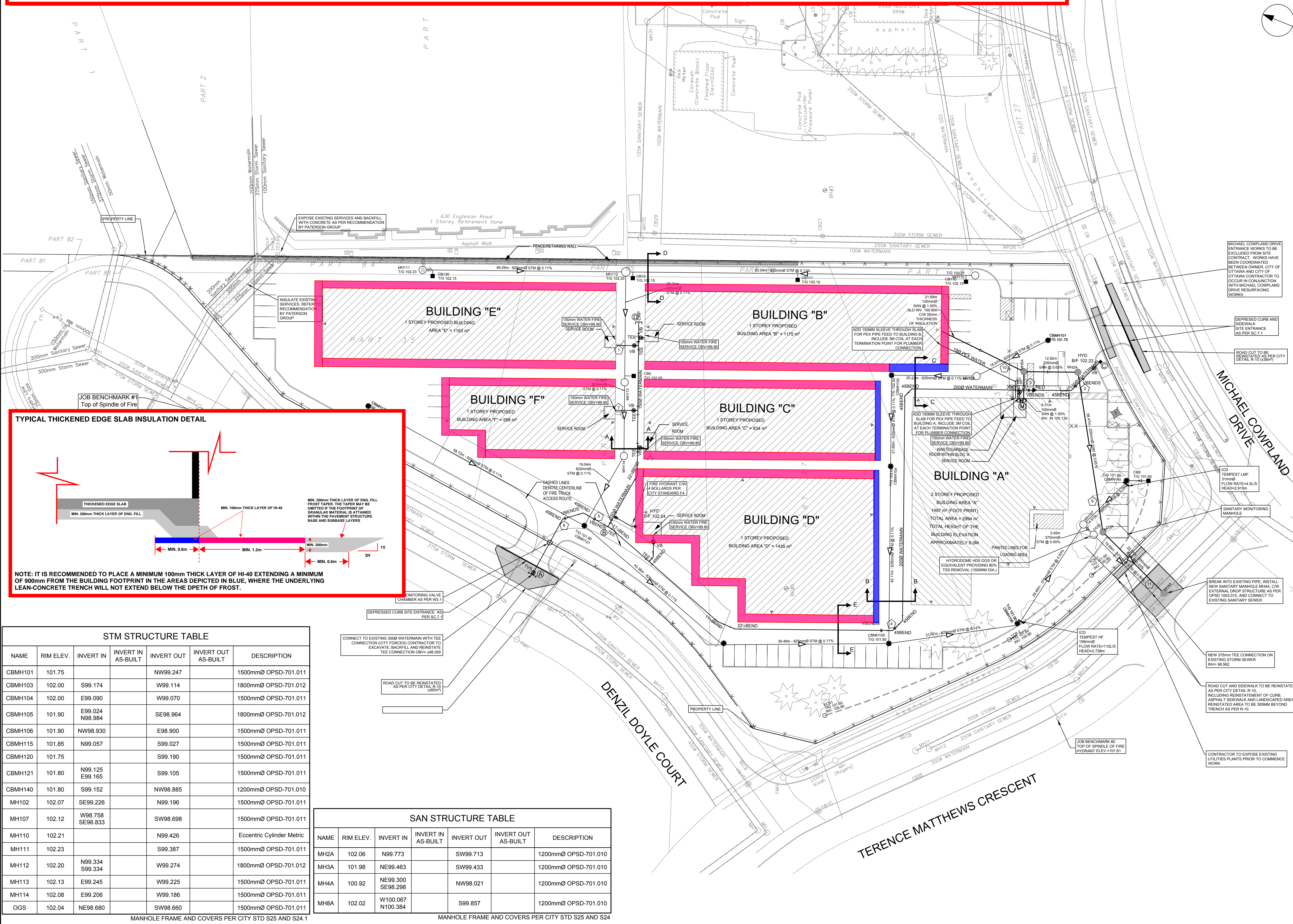
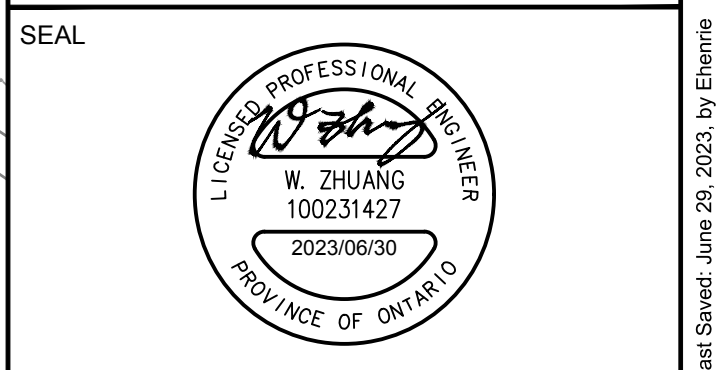
No.	DESCRIPTION	DATE
1	ISSUED FOR CITY REVIEW	2022-12-09
2	REVISED PER CITY COMMENTS	2023-03-09
3	REVISED PER CITY COMMENTS	2023-06-30

SEE 010, 011, 012 FOR NOTES, LEGEND, CB TABLE, STREET SECTIONS AND DETAILS



CONSULTANTS

Project Coordinator:
 Huntington Properties
 Architect:
 A49 Architecture
 Landscape:
 Fobem
 Mechanical & Electrical:
 Goodkey & Woodmark & Associates Limited
 Surveyor:
 Annis O'Sullivan Vollebek Ltd.
 Geotech:
 Paterson Group



STM STRUCTURE TABLE

NAME	RIM ELEV.	INVERT IN	INVERT IN AS-BUILT	INVERT OUT	INVERT OUT AS-BUILT	DESCRIPTION
CBMH101	101.75			NW99.247		1500mmØ OPSD-701.011
CBMH103	102.00	S99.174		W99.114		1800mmØ OPSD-701.012
CBMH104	102.00	E99.090		W99.070		1500mmØ OPSD-701.011
CBMH105	101.90	E99.024 N98.984		SE98.964		1800mmØ OPSD-701.012
CBMH106	101.90	NW98.930		E98.900		1500mmØ OPSD-701.011
CBMH115	101.85	N99.057		S99.027		1500mmØ OPSD-701.011
CBMH120	101.75			S99.190		1500mmØ OPSD-701.011
CBMH121	101.80	N99.125 E99.165		S99.105		1500mmØ OPSD-701.011
CBMH140	101.80	S99.152		NW98.885		1200mmØ OPSD-701.010
MH102	102.07	SE99.226		N99.196		1500mmØ OPSD-701.011
MH107	102.12	W98.758 SE98.833		SW98.698		1500mmØ OPSD-701.011
MH110	102.21			N99.426		Eccentric Cylinder Metric
MH111	102.23			S99.387		1500mmØ OPSD-701.011
MH112	102.20	N99.334 S99.334		W99.274		1800mmØ OPSD-701.012
MH113	102.13	E99.245		W99.225		1500mmØ OPSD-701.011
MH114	102.08	E99.206		W99.186		1500mmØ OPSD-701.011
OGS	102.04	NE98.680		SW98.680		1500mmØ OPSD-701.011

MANHOLE FRAME AND COVERS PER CITY STD S25 AND S24.1

SAN STRUCTURE TABLE

NAME	RIM ELEV.	INVERT IN	INVERT IN AS-BUILT	INVERT OUT	INVERT OUT AS-BUILT	DESCRIPTION
MH2A	102.06	N99.773		SW99.713		1200mmØ OPSD-701.010
MH3A	101.98	NE99.463		SW99.433		1200mmØ OPSD-701.010
MH4A	100.92	NE99.300 SE98.298		NW98.021		1200mmØ OPSD-701.010
MH8A	102.02	W100.067 N100.384		S99.857		1200mmØ OPSD-701.010

MANHOLE FRAME AND COVERS PER CITY STD S25 AND S24

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 CITY PLAN NO. 18885
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