PATERSON GROUP

memorandum

re: **Geotechnical Review – Grading Plan Review**
Proposed Residential Development
3317 Navan Road - Ottawa, Ontario

to: Renfroe Land Management – **Mr. David Renfroe** –davidrenfroe@outlook.com

date: February 27, 2024

file: PG6582-MEMO.04

Further to your request and authorization, Paterson Group (Paterson) prepared the current memorandum to complete a grading plan review and light weight fill (LWF) design recommendations for the proposed multi-storey development at the aforementioned site. The following memorandum should be read in conjunction with the following reports:

- Paterson Group Report PG6582-1 Revision 1, dated January 29, 2024
- Project No. 118076 – 3317 Navan Road - Drawing No. 118076-GR Revision 3– Grading and Erosion & Sediment Control Plan, dated February 14, 2024, prepared by Novatech.
- Project No. 118076 – 3317 Navan Road - Drawing No. 118076-GP Revision 3– General Plan of Services, dated February 14, 2024, prepared by Novatech.

1.0 Background Information

Paterson completed a review of the above noted grading plan. The subsurface conditions on site consist of a layer of loose to compact layer of brown silty sand to sandy silt, underlain by a very stiff to stiff brown silty clay. A stiff to firm grey silty clay was observed underlying the brown silty clay deposit. Due to the presence of a silty clay deposit a permissible grade raise restriction was recommended for the site. Based on available information and the measured shear strength, consistency and Paterson's experience in the area, the permissible grade raise restriction can be taken at **0.5 m above the native ground surface**.

The following section will summarize our review of the proposed grading plan in conjunction with the permissible grade raise restrictions and LWF design provided in the current memorandum.

2.0 Grading Plan Review

Based on our review of the above noted drawing, the proposed grading for the residential unit exceeds the permissible grade raise recommendations. Our lightweight fill recommendations are presented in the grading plan attached to the end of this report.

The LWF material should consists of EPS 15 under pavement and other parking structures and EPS 12 under soft landscaped areas. The LWF should be placed against the foundation wall, above the footing and a minimum of 600 mm below the finish surface. The LWF EPS blocks should extend a minimum of 2.4 m from the foundation wall with the thicknesses recommended in the attached marked up grading plan.

It is not recommended to plant medium to large trees directly above the LWF EPS. The EPS should be covered with a polyethylene sheet and surrounded with a non-woven geotextile such as Terrafix 270R. Minimum of 300 mm of OPSS Granular A should be placed above the LWF under any pavement structures and minimum 500 mm of approved fill layer should be provided on top of the LWF can consist of fill soil covered with a minimum of 100 of topsoil where soft landscaping is proposed.

Lightweight fill material specifications and cover recommendations are provided in Figure 1 attached to the current report.

Where LWF is placed under an interlock pavement structures or concrete slabs, the fill on top of the EPS block should consist of a minimum layer of 300 mm of imported OPSS Granular A.

Paterson should review the LWF placement and complete compaction testing on imported fill during the construction activities.

2.1 Underground Service Pipes

Based on our review of the grading plan, it was found that the several deep services were observed. It is recommended to place LWF above the services where a grade raise exceedance has been observed. Our lightweight fill recommendations are presented in the grading plan attached to the end of this report. It is recommended to place EPS-15 LWF, surrounded by a non-woven geotextile such as Terrafix 270R above the service pipes.

Furthermore, based on the abovementioned site plans, it was noted that the proposed invert elevation of the sanitary service line from SANMH103 and SANMH 101 located along the eastern side building was observed to be located below the proposed USF elevation of the buildings. In order to avoid undermining the footings and to protect the service pipes from the footing loads, one of the following options can be followed:

Option 1 – Extend Footing and Foundation Wall

The depth of the footing and the foundation wall can be stepped down to extend below the invert elevation of the service lines – below geodetic elevation of 81.50 m along SANMH 103 and below geodetic elevation of 82.10 m along SANMH 101, such that, the service line inlets pass through the building foundation wall. This will require no additional protection around the service pipes entering the building.

Option 2: Lean Concrete Infilled Trenches

As an alternative, the depth of the footings can be increased to extend approximately 150 mm below the invert elevation of the service pipes (or thickness of the pipe bedding if different) through lean concrete infilled (minimum 15 MPa), near vertical trenches. The service pipes can then be extended under the footings through the lean concrete.

Where the service pipes pass through the lean concrete, they should be surrounded by minimum 150 mm of geospan fill.

Note that the attached recommended LWF thickness for these areas have been adjusted to take in consideration the extra fill required to backfill the services trench near the footings.

Furthermore, all other service lines were observed to be above the USF elevation of the buildings.

2.2 Pavement and Parking Areas

Based on our review of the grading plan, it was found that the north access lane and parking areas have exceeded the permissible grade raise. To protect proposed services and retaining wall LFW is recommended under the pavement structure.

Where LWF is required in the parking and access lanes, as indicated in attached mark ups, minimum 100 mm of HI-60 rigid insulation should be placed on the level native soil surface prior to the installation of the granular pavement base and subbase. The rigid insulation should be covered with a non-woven geotextile such as Terrafix 270 R.

2.3 Bearing Resistance Value

Based on our review of the abovementioned grading plan, it was noted that the underside of footings of the proposed buildings will be founded will be at a geodetic elevation of 82.75 m. Based on the proposed USF elevation it is anticipated that the footings will be placed over a firm grey silty clay to loose to compact brown silty sand bearing medium surface.

Strip footings up to 2 m wide and pad footings up to 4 m wide, placed over an undisturbed firm silty clay or on engineered fill placed directly over the undisturbed firm silty clay can be designed using a bearing resistance value at Serviceability Limit States (SLS) of **60 kPa** and a factored bearing resistance value at Ultimate Limit States (ULS) of **100 kPa**, incorporating a geotechnical factor of 0.5 at ULS.

Conventional footings placed over a compact silty sand bearing surface can be designed using a bearing resistance value at Serviceability Limit States (SLS) of **100 kPa** and a factored bearing resistance value at Ultimate Limit States (ULS) of **150 kPa**, incorporating a geotechnical factor of 0.5 at ULS. Where the silty sand is found in a loose state of compactness, it is recommended to proof roll the sand using a suitable vibratory equipment, making several passes, under dry conditions and above freezing temperatures. The proof roll should be reviewed and approved by Paterson.

3.0 Frost Protection – Service Pipes

Based on our review of the abovementioned site servicing plan, it was observed that some portions of the proposed storm service lines will have less than 2 m of soil cover. Where

insufficient soil cover (i.e.- less than 2.0 m) is available, the following frost protection criteria outlined in Table 1 below.

Soil Cover Provided D (mm)	Insulation Dimensions (mm)	
	Thickness (mm)	Length (mm)
1,100 to 1,400	75	Extend 900 mm horizontally beyond the edge face of the pipe
1,400 to 1,700	50	Extend 600 mm horizontally beyond the edge face of the pipe
1,700 to 2,000	50	Extend 300 mm horizontally beyond the edge face of the pipe

The rigid insulation should be placed 150 mm above the pipe on top of a compacted Granular A backfill and should have a minimum of 150 mm of Granular A backfill above the rigid insulation.

Rigid insulation placed underneath roadways less than 1.2 m from the surface should consist of high density extruded polystyrene HI-60 or better. At larger depth HI-40 or better can be used.

Any portion of the storm service pipe installed at a depth of 2.0 m below finished grade or deeper is considered acceptable from a geotechnical perspective.

3.0 Preloading / Surcharge Program

It is possible to surcharge the subject site in localized areas provided sufficient time is available to achieve the desired settlements based on theoretical values from the settlement analysis. If this option is considered, a monitoring program using settlement plates and electronic piezometers will have to be implemented. This program will determine the amount of settlement in the preloaded or surcharged areas. Preloading to proposed finished grades will allow for consolidation of the underlying clays over a longer time period. Surcharging the site with additional fill above the proposed finished grade will add additional load to the underlying clays accelerating the consolidation process and allowing for accelerated settlements. Once the desired settlements are achieved, the site can be unloaded, and the fill can be used elsewhere on site.

Surcharge programs can completely remove the requirement for LWF on the project, while preloading will most likely diminish the total amount required.

With both the preloading and surcharging methods, the loading period can be reduced by installing vertical wick drains or sand drains in the silty clay layer to promote the movement of groundwater towards the ground surface. However, vertical drains are expensive for this type of residential project.

4.0 Ground Improvement

As an alternative to a surcharge program, ground improvement techniques can be implemented in localized aeras, to help reduce the LWF requirements. Ground improvement techniques such as control modulus columns (CMC) could be installed under the main structure and foundation system to increase the bearing capacity of the underlying soils.

The design and drawings for these should be completed by the specialized geotechnical contractor. It should be noted that ground improvement is not considered as structural elements.

If ground improvement is completed under the extent of the proposed building, the LWF requirements can be reduced or lifted for the proposed building. It should be noted that the extent of the proposed ground improvement is limited to the building. Settlement is expected in the areas of soft landscaping. Those areas may require slight maintenance with additional topsoil to infill slightly settled vegetated areas.

Recommendations for pavement and parking areas are still applicable following the implementation of the ground improvement program.

If ground improvement is selected for the project, the bearing capacity under the proposed foundation will be significantly increased.

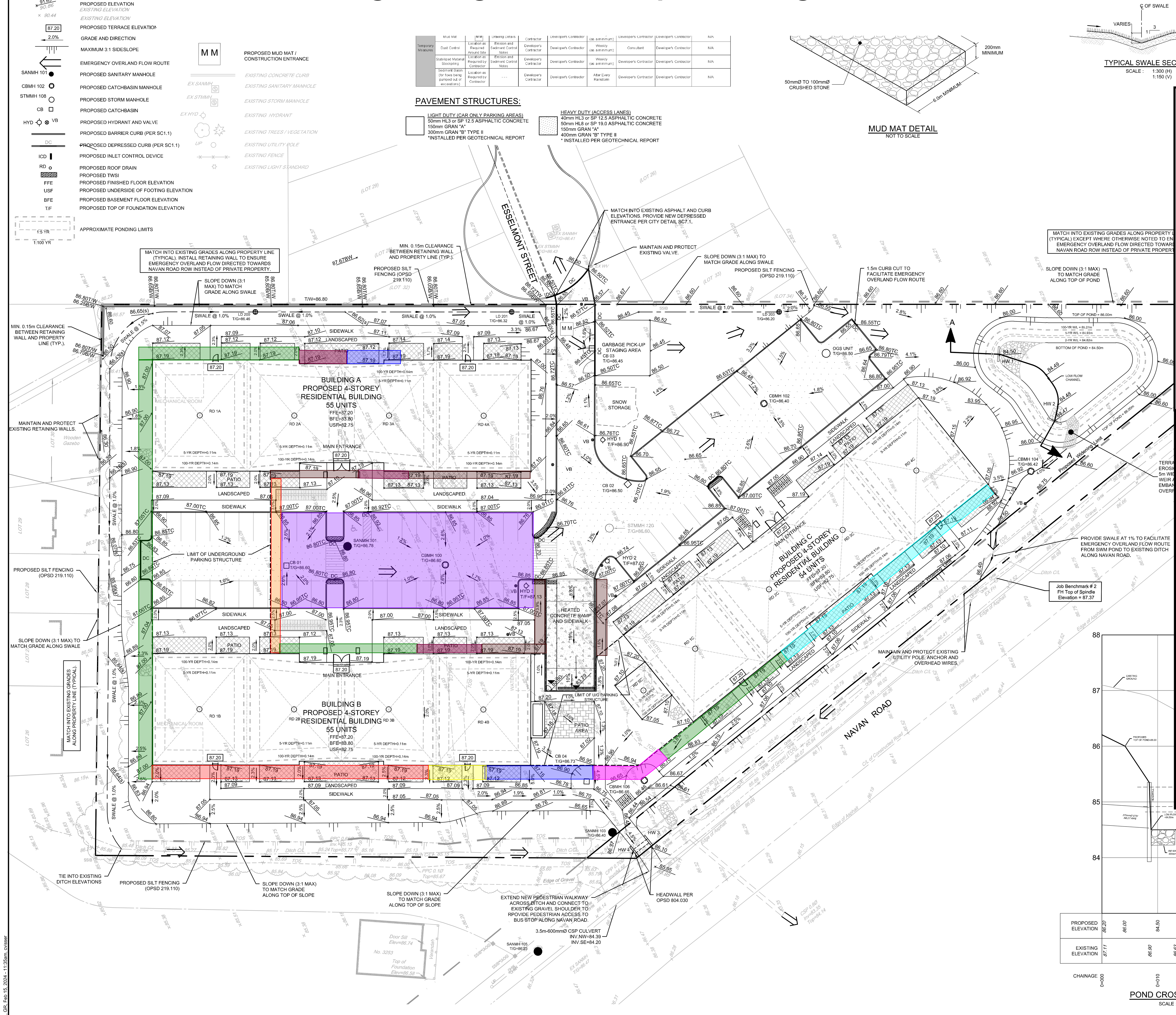
We trust that the current submission meets your immediate requirements.

Best Regards,

Paterson Group Inc.

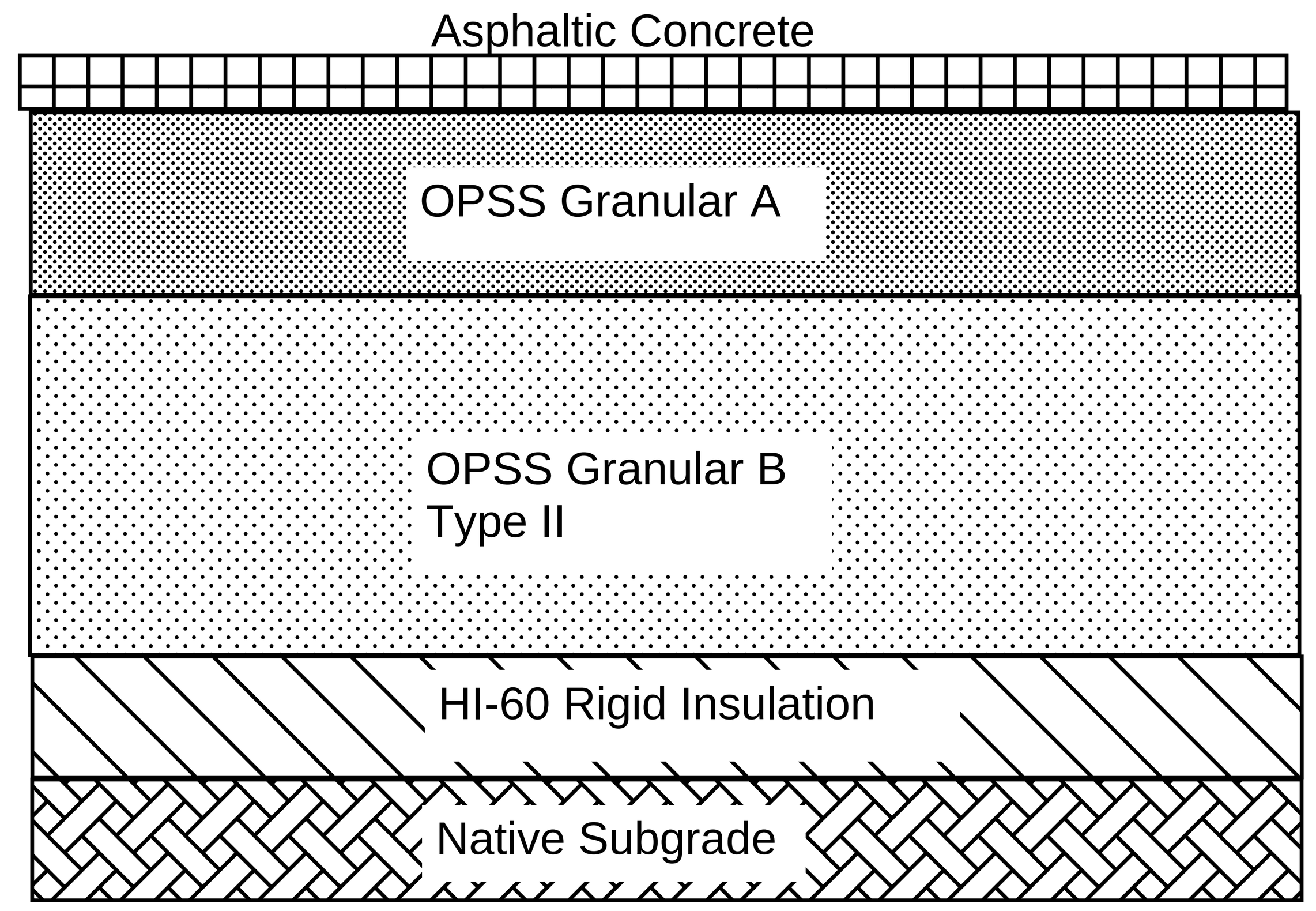
Pratheep Thirumoolan, M.Eng. Joey R. Villeneuve, M.A.Sc., P.Eng.

PG6582 - Light Weight Fill markup - Buildings and Pavement



Recommended Light Weight Fill	Volume (m^3)
Minimum 0.3 m thick EPS LWF	$114.5\ m^2 \times 0.3\ m = 15.9\ m^3$
Minimum 0.5 m thick EPS LWF	$77\ m^2 \times 0.5\ m = 38.5\ m^3$
Minimum 0.8 m thick EPS LWF	$380\ m^2 \times 0.8\ m = 304\ m^3$
Minimum 1.0 m thick EPS LWF	$183\ m^2 \times 1.0\ m = 183\ m^3$
Minimum 1.2 m thick EPS LWF	$119\ m^2 \times 1.2\ m = 142.8\ m^3$
Minimum 1.5 m thick EPS LWF	$67.2\ m^2 \times 1.5\ m = 100.8\ m^3$
Minimum 1.7 m thick EPS LWF	$24.5\ m^2 \times 1.7\ m = 41.7\ m^3$
Minimum 1.9 m thick EPS LWF	$68.2\ m^2 \times 1.9\ m = 129.6\ m^3$
Minimum 2.2 m thick EPS LWF	$35\ m^2 \times 2.2\ m = 77\ m^3$
Minimum 0.1 m thick HI-40 RI	$765\ m^2 \times 0.1\ m = 76.5\ m^3$

Note: Parking Area between Building A and B should have HI-60 Rigid Insulation as shown in the typical car parking profile



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.

OWNER INFORMATION
2628576 ONTARIO INC.
231 BRITTANY DRIVE, SUITE D
OTTAWA, ONTARIO, K1K 0R8
LALIT AGGARWAL
PHONE: (613)-746-1647
lsa@manorparkcap.com

No.	REVISION	DATE	BY
3.	REVISED PER CITY COMMENTS	FEB 14/24	FST
2.	REVISED PER CITY COMMENTS	NOV 13/23	FST
1.	ISSUED FOR SITE PLAN CONTROL APPROVAL	JUNE 8/23	FST

SCALE 1:300

DESIGN ZA/CV · CHECKED FST · DRAWN ZA/CV · CHECKED FST · APPROVED FST

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER F.S. THAUVETTE 100041399 February 14, 2024 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
3317 NAVAN ROAD

DRAWING NAME
GRADING AND EROSION & SEDIMENT CONTROL PLAN

PROJECT No. 118076
REV REV # 3
DRAWING No. 118076-GR

D07-12-23-0085

Plan #19008

PG6582 - Light Weight Fill markup - Serices

LEGEND

- PROPERTY LINE
- SANMH 101 — PROPOSED SANITARY MH & SEWER
- CBMH 102 — PROPOSED CATCHBASIN MANHOLE & SEWER
- STMMH 108 — PROPOSED STORM MANHOLE & SEWER
- CB 01 — PROPOSED CATCHBASIN AND LEAD
- HYD / VB — PROPOSED HYDRANT AND VALVE
- PROPOSED BARRIER CURB
- DC — PROPOSED DEPRESSED CURB
- 200mmØ — PROPOSED WATERMAIN AND DIAMETER
- VB — PROPOSED VALVE BOX
- BEND — PROPOSED BEND AND THRUSTBLOCK 11.25°, 22.5°, 45° or TEE
- PROPOSED CAP
- ICD — PROPOSED INLET CONTROL DEVICE
- PROPOSED TWSI
- THERMAL INSULATION FOR SHALLOW SEWERS
- PROPOSED BUILDING ENTRANCE
- PROPOSED RETAINING WALL
- M / RM — PR... AN...
- FFE — PR...
- USF — PR...
- BFE — PROPOSED BASEMENT FLOOR ELEVATION
- T/F — PROPOSED TOP OF FOUNDATION ELEVATION
- EXISTING CONCRETE CURB
- EX SANMH — EXISTING SANITARY MH & SEWER
- EX STMMH — EXISTING STORM MH & SEWER
- EX HYD — EXISTING HYDRANT
- UP — EXISTING UTILITY POLE
- EX 300mmØ WM — EXISTING WATERMAIN
- LS — EXISTING LIGHT STANDARD
- EXISTING FENCE
- OHW — EXISTING OVERHEAD UTILITY WIRES

1+003.8	86.65	84.25	150mmØ VALVE AND VALVE BOX
1+006.6	87.00	84.30	CAP 1.0m FROM BUILDING

PROPOSED 200mmØ-150mmØ BLDG B WATER SERVICE TABLE

STATION	SURFACE ELEVATION	T/WM ELEVATION	COMMENTS
2+000.0	86.73	84.22	TEE
2+005.3	86.95	84.30	45° HORIZONTAL BEND
2+014.6	86.70	84.30	45° HORIZONTAL BEND
2+016.4	86.67	84.27	CROSS BELOW 375mmØ STM (±0.70m CLEARANCE)
2+022.6	86.80	84.40	HYDRANT TEE
2+023.9	86.82	84.40	200mmx150mm REDUCER
2+032.8	87.10	84.60	150mmØ VALVE AND VALVE BOX
2+035.2	87.19	84.60	CAP 1.0m FROM BUILDING

0+001.3	86.58±	83.90	45° HORIZONTAL BEND
0+007.1	86.57	83.92	VALVE AND VALVE BOX AT PROPERTY LINE
0+010.6	86.53	83.95	22.5° HORIZONTAL BEND
0+031.7	86.62	84.22	HYDRANT TEE
0+036.2	86.62	84.22	250mmØ CROSS
0+050.4	86.60	84.20	45° HORIZONTAL BEND
0+086.3	86.60	84.20	CROSS BELOW 375mmØ STM (±0.61m CLEARANCE)
0+091.2	86.72	84.20	45° HORIZONTAL BEND
0+101.0	86.69	84.20	45° HORIZONTAL BEND
0+107.0	86.60	84.10	CROSS BELOW 375mmØ STM (±0.54m CLEARANCE)
0+0137.6	86.85	83.90	CROSS BELOW 375mmØ STM (±0.53m CLEARANCE)
0+0141.5	86.69	83.99	VALVE AND VALVE BOX AT PROPERTY LINE
0+0154.6	86.88±	84.35± ✱	CONNECTION TO EX. 300mmØ WM IN NAVAN RD

✱ CONNECTION TO EXISTING 300mmØ WATERMAIN BY CITY FORCES. EXACT ELEVATION TO BE FIELD DETERMINED.

...CE TABLE

3+008.1	86.72	84.25	250mmx200mm REDUCER
3+012.8	86.67	84.27	CROSS BELOW 375mmØ STM (±0.67m CLEARANCE)
3+014.3	86.65	84.25	45° HORIZONTAL BEND
3+020.5	86.85	84.45	HYDRANT TEE
3+022.1	87.03	84.45	200mmx150mm REDUCER
3+026.3	87.05	84.50	150mmØ VALVE AND VALVE BOX
3+031.6	87.19	84.50	CAP 1.0m FROM BUILDING

AREA A-2: ICD TABLE - CBMH 104

DESIGN EVENT	TYPE OF ICD	DIAMETER OF OUTLET PIPE (mm)	DESIGN FLOW (L/s)	DESIGN HEAD (m)	WATER DEPTH (m)	VOLUME (m^3)
1:2 YR	118mm DIA. ORIFICE PLUG TYPE ICD	375	13.5	0.20	84.82	84.8
1:5 YR			16.8	0.31	84.93	116.4
1:100 YR			24.3	0.65	85.27	242.9

ROOF DRAIN TABLE

AREA ID *	ROOF DRAIN No. (WATTS MODEL)	ROOF DRAIN OPENING SETTING	2 YEAR RELEASE RATE	APPROX. 2-YR PONDING DEPTH	5-YEAR RELEASE RATE	APPROX. 5-YEAR PONDING DEPTH	100-YEAR RELEASE RATE	APPROX. 100-YR PONDING DEPTH
R-1	RD 1A (RD-100-A-ADJ)	1/4 EXPOSED	0.72 L/s	10 cm	0.82 L/s	11 cm	0.91 L/s	14 cm
	RD 2A (RD-100-A-ADJ)	1/4 EXPOSED	0.72 L/s	10 cm	0.82 L/s	11 cm	0.91 L/s	14 cm
	RD 3A (RD-100-A-ADJ)	1/4 EXPOSED	0.72 L/s	10 cm	0.82 L/s	11 cm	0.91 L/s	14 cm
	RD 4A (RD-100-A-ADJ)	1/4 EXPOSED	0.72 L/s	10 cm	0.82 L/s	11 cm	0.91 L/s	14 cm
R-2	RD 1B (RD-100-A-ADJ)	1/4 EXPOSED	0.72 L/s	10 cm	0.82 L/s	11 cm	0.91 L/s	14 cm
	RD 2B (RD-100-A-ADJ)	1/4 EXPOSED	0.72 L/s	10 cm	0.82 L/s	11 cm	0.91 L/s	14 cm
	RD 3B (RD-100-A-ADJ)	1/4 EXPOSED	0.72 L/s	10 cm	0.82 L/s	11 cm	0.91 L/s	14 cm
	RD 4B (RD-100-A-ADJ)	1/4 EXPOSED	0.72 L/s	10 cm	0.82 L/s	11 cm	0.91 L/s	14 cm
R-3	RD 1C (RD-100-A-ADJ)	1/4 EXPOSED	0.72 L/s	10 cm	0.82 L/s	11 cm	0.91 L/s	14 cm
	RD 2C (RD-100-A-ADJ)	1/4 EXPOSED	0.72 L/s	10 cm	0.82 L/s	11 cm	0.91 L/s	14 cm
	RD 3C (RD-100-A-ADJ)	1/4 EXPOSED	0.72 L/s	10 cm	0.82 L/s	11 cm	0.91 L/s	14 cm
	RD 4C (RD-100-A-ADJ)	1/4 EXPOSED	0.72 L/s	10 cm	0.82 L/s	11 cm	0.91 L/s	14 cm
	RD 5C (RD-100-A-ADJ)	1/4 EXPOSED	0.66 L/s	6 cm	0.69 L/s	7 cm	0.82 L/s	11 cm

* REFER TO THE 'DEVELOPMENT SERVICING STUDY AND STORMWATER MANAGEMENT REPORT' (R-2023-024) PREPARED BY NOVATECH FOR DRAINAGE AREA IDENTIFIERS AND STORMWATER MANAGEMENT DETAILS.

**ALL CONTROLLED FLOW ROOF DRAINS TO BE WATTS 'ADJUSTABLE ACCUTROL' ROOF DRAINS.

CRITICAL SEWER PIPE CROSSING TABLE

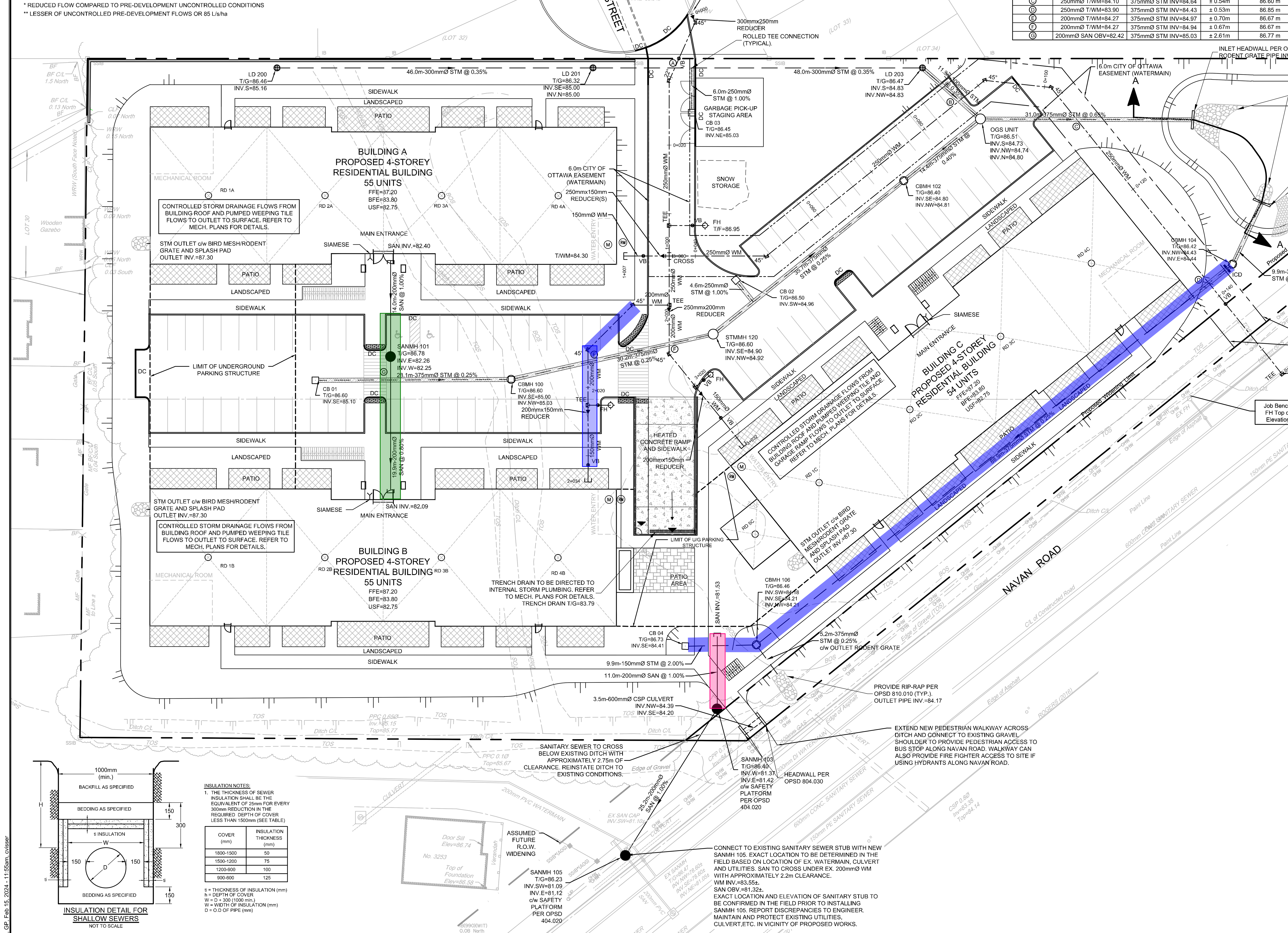
CROSSING	LOWER PIPE	HIGHER PIPE	CLEARANCE	SURFACE ELEVATION
A	250mmØ T/WM=83.95	300mmØ STM INV=84.94	± 1.01m	86.55 m
B	250mmØ T/WM=84.20	375mmØ STM INV=84.81	± 0.61m	86.60 m
C	250mmØ T/WM=84.10	375mmØ STM INV=84.64	± 0.54m	86.60 m
D	250mmØ T/WM=83.90	375mmØ STM INV=84.43	± 0.53m	86.85 m
E	200mmØ T/WM=84.27	375mmØ STM INV=84.97	± 0.70m	86.67 m
F	200mmØ T/WM=84.27	375mmØ STM INV=84.94	± 0.67m	86.67 m
G	200mmØ SAN OBV=82.42	375mmØ STM INV=85.03	± 2.61m	86.77 m

SITE FLOWS & STORMWATER MANAGEMENT TABLE

DESIGN EVENT	PRE-DEVELOPMENT CONDITIONS: UNCONTROLLED FLOW (L/s)	PRE-DEVELOPMENT CONDITIONS: ALLOWABLE RELEASE RATE (L/s)**	POST-DEVELOPMENT CONDITIONS: A-1 DIRECT RUNOFF (L/s)	A-2 FLOW (L/s)	A-3 FLOW (L/s)	R-1 FLOW (L/s)	R-2 FLOW (L/s)	R-3 FLOW (L/s)	TOTAL FLOW (L/s)	REDUCTION IN FLOW (L/s or %)*
1:2 YR	63.3	63.3	26.5	13.5	3.7	2.9	2.9	3.5	52.9	10.4 or 16%
1:5 YR	85.9	85.9	35.9	16.8	5.0	3.3	3.3	4.0	68.2	17.7 or 12%
1:100 YR	184.0	184.0	71.9	24.3	9.4	3.6	3.6	4.5	117.3	66.7or 36%

* REDUCED FLOW COMPARED TO PRE-DEVELOPMENT UNCONTROLLED CONDITIONS

** LESSER OF UNCONTROLLED PRE-DEVELOPMENT FLOWS OR 85 L/s/ha



NOTE:
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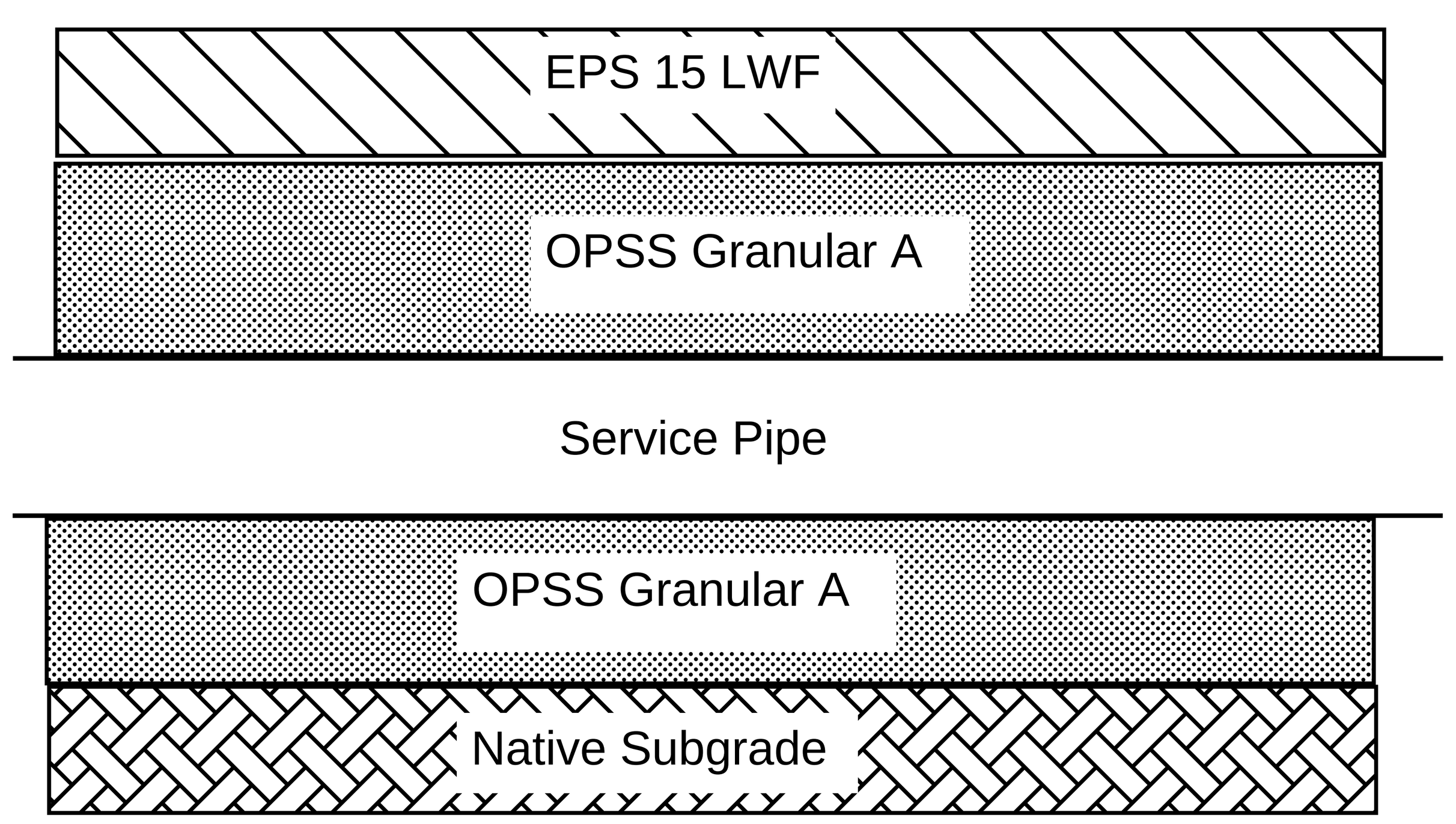
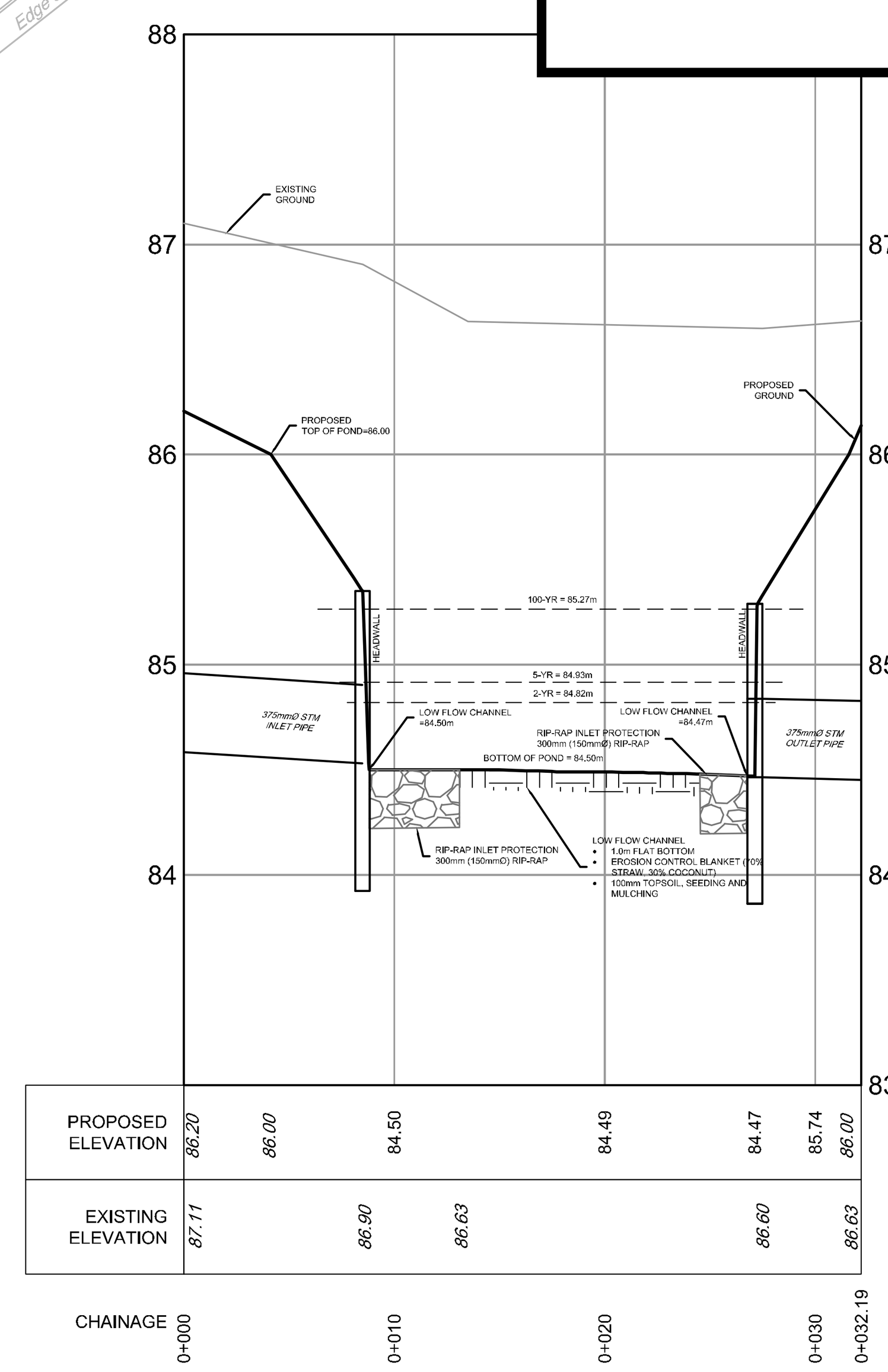
Recommended Light Weight Fill

- Minimum 0.2 m thick EPS LWF (blue)
- Minimum 0.4 m thick EPS LWF (green)
- Minimum 0.5 m thick EPS LWF (pink)

Note: EPS 15 LWF should be placed above the service pipes and surrounded by non-woven geotextile.





POND CROSS-SECTION A-A

SCALE : 1:300 (H) 1:30 (V)

6. ALL STORM MANHOLES AND CATCHBASIN MANHOLES ARE TO HAVE 300mm SUMPS UNLESS OTHERWISE INDICATED. ALL CATCHBASINS ARE TO HAVE 600mm SUMPS UNLESS OTHERWISE INDICATED.
7. ALL CATCHBASINS, MANHOLES AND/OR CATCHBASIN MANHOLES THAT ARE TO HAVE ICD'S INSTALLED WITHIN THEM ARE TO HAVE 600mm SUMPS.
8. ALL WEEPING TILE CONNECTIONS TO BE MADE TO THE PROPOSED STORM SEWER SYSTEM DOWNSTREAM OF ANY INLET CONTROL DEVICES.
9. CONTRACTOR TO TELEVISE (CCTV) ALL PROPOSED SEWERS, 200mmØ OR GREATER PRIOR TO BASE COURSE ASPHALT. UPON COMPLETION OF CONTRACT, THE CONTRACTOR IS RESPONSIBLE TO FLUSH AND CLEAN ALL SEWERS & APPURTENANCES.

WATERMAIN NOTES:

1. SUPPLY AND CONSTRUCT ALL WATERMAINS AND APPURTENANCES IN ACCORDANCE WITH THE CITY OF OTTAWA STANDARDS AND SPECIFICATIONS. EXCAVATION, INSTALLATION, BACKFILL AND RESTORATION OF ALL WATERMAINS BY THE CONTRACTOR. CONNECTIONS, SHUT-OFFS AT THE MAIN AND CHLORINATION OF THE WATER SYSTEM SHALL BE PERFORMED BY CITY OF OTTAWA FORCES.
2. SPECIFICATIONS:

ITEM	SPEC. No.	REFERENCE
WATERMAIN TRENCHING	W17	CITY OF OTTAWA
FIRE HYDRANT INSTALLATION	W19	CITY OF OTTAWA
THERMAL INSULATION IN SHALLOW TRENCHES	W22	CITY OF OTTAWA
INSULATION ADJACENT TO OPEN STRUCTURES	W23	CITY OF OTTAWA
VALVE BOX ASSEMBLY	W24	CITY OF OTTAWA
WATERMAIN	PVC DR 18	
WATERMAIN CROSSING BELOW SEWER	W25	CITY OF OTTAWA
WATERMAIN CROSSING ABOVE SEWER	W25.2	CITY OF OTTAWA

3. WATERMAIN SHALL BE MINIMUM 2.4m DEPTH BELOW GRADE UNLESS OTHERWISE INDICATED.
4. PROVIDE MINIMUM 0.5m CLEARANCE BETWEEN OUTSIDE OF PIPES AT ALL CROSSINGS, IF SEWER IS ABOVE WATERMAIN.
5. PROPOSED WATER SERVICES ARE TO BE CONSTRUCTED TO WITHIN 1.0m OF FOUNDATION WALL AND CAPPED, UNLESS OTHERWISE INDICATED.

BENCHMARK NOTES:

1. ELEVATIONS SHOWN ARE GEODETIC AND ARE REFERRED TO THE CGVD28 GEODETIC DATUM, DERIVED FROM CONTROL MONUMENT NO. 001196530227 HAVING AN ELEVATION OF 86.707 METRES.
2. IT IS THE RESPONSIBILITY OF THE USER OF THIS INFORMATION TO VERIFY THAT THE JOB BENCHMARK HAS NOT BEEN ALTERED OR DISTURBED AND THAT IT'S RELATIVE ELEVATION AND DESCRIPTION AGREES WITH THE INFORMATION SHOWN ON THIS DRAWING.
3. BENCHMARK WAS PROVIDED ON TOPOGRAPHIC PLAN OF SURVEY OF PART OF LOT 4, CONCESSION 4 (OTTAWA FRONT) GEOGRAPHIC TOWNSHIP OF GLOUCESTER, CITY OF OTTAWA, SURVEYED BY ANNIS, O'SULLIVAN AND VOLEBEKK LTD.

OWNER INFORMATION
2628576 ONTARIO INC.
231 BRITTANY DRIVE, SUITE D
OTTAWA, ONTARIO, K1K 0R8
LALIT AGGARWAL
PHONE: (613)-746-1647
lsa@manorparkcap.com

No.	REVISION	DATE	BY
3.	REVISED PER CITY COMMENTS	FEB 14/24	FST
2.	REVISED PER CITY COMMENTS	NOV 13/23	FST
1.	ISSUED FOR SITE PLAN CONTROL APPROVAL	JUNE 8/23	FST

SCALE 1:300

DESIGN ZA/CV — CHECKED FST — DRAWN ZA/CV — CHECKED FST — APPROVED FST

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER F.S. THAUVETTE 100041399 February 14, 2024 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
3317 NAVAN ROAD

DRAWING NAME
GENERAL PLAN OF SERVICES

PROJECT No. 118076
REV # 3
DRAWING No. 118076-GP

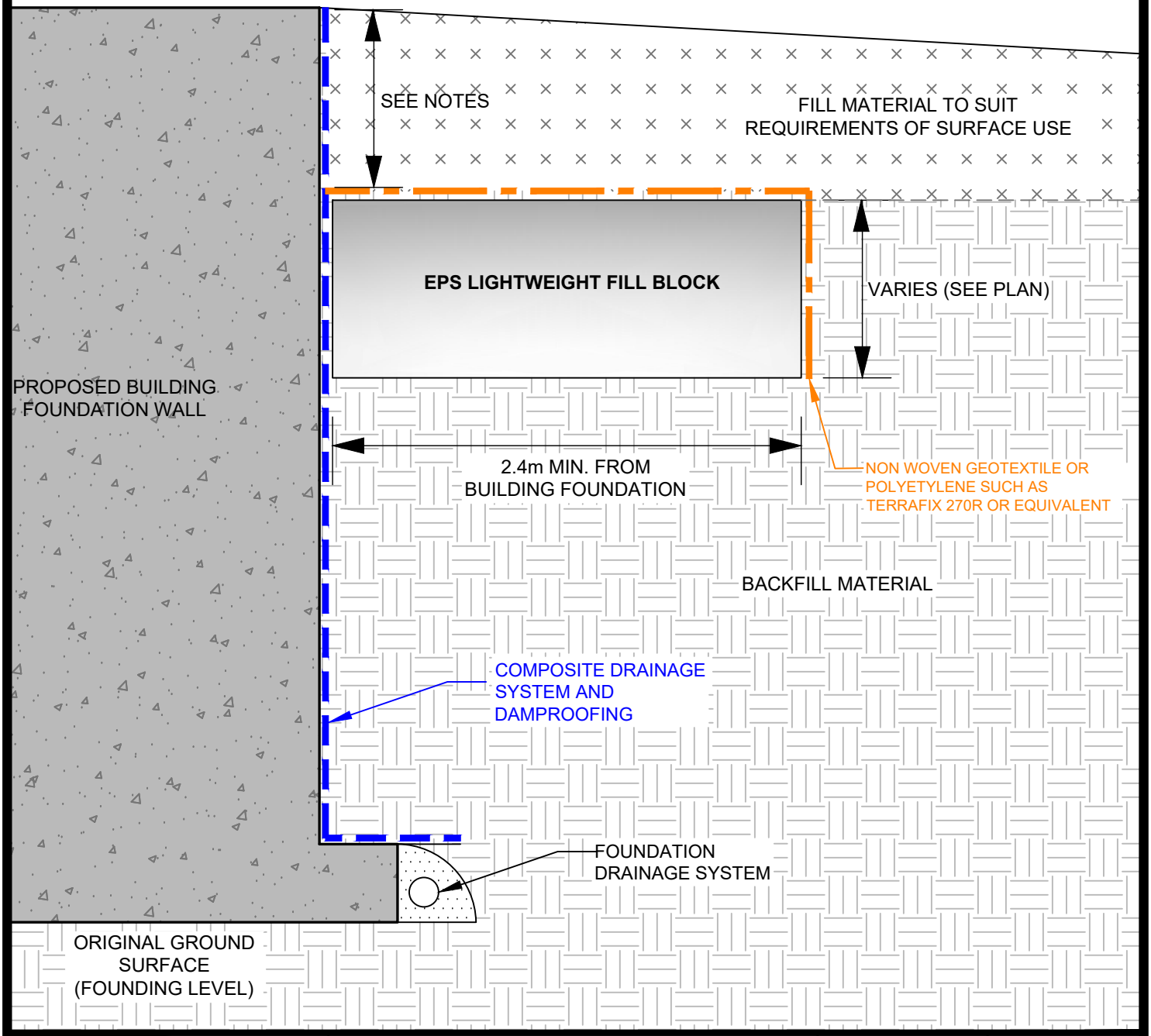
PLANB1.DWG - 1000mmx707mm

D07-12-23-0085

Plan #19008

NOTES:

1. USE EPS 15 AROUND THE BUILDING AND UNDER PAVEMENT STRUCTURES
2. USE EPS 12 BELOW SOFT LANDSCAPED AREAS AND MINIMUM 500 MM OF APPROVED BACKFILL TOPPED WITH A MINIMUM OF 150 MM OF TOPSOIL SHOULD BE PLACED OVER THE LWF UNDER SOFT LANDSCPAED AREAS.
3. MINIMUM 300mm OF OPSS GRANULAR A SHOULD BE PLACED OVER THE LIGHTWEIGHT FILL UNDER PAVEMENT STRUCTURES AND OTHER PARKING STRUCTURES.
4. PLACEMENT OF LIGHTWEIGHT FILL SHOULD BE A ON A LEVELED SURFACE.(SAND OR STONE DUST CAN BE USED TO PROVIDE AND ADEQUATE LEVELING SURFACE)



PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7T9
TEL: (613) 226-7381

RENFROE LAND MANAGEMENT
PROPOSED RESIDENTIAL DEVELOPMENT
3317 NAVAN ROAD, OTTAWA ONTARIO

Title:

EPS BLOCK INSTALLATION AROUND RESIDENTIAL BUILDINGS

Date:	Report No.:
02/2024	PG6582-MEMO.04
Scale:	Drawing No.:
1:30	FIGURE-1
Drawn by: PT	Checked by: JV

c:\users\robertg\documents\lightweight fill detial around faoundation.dwg