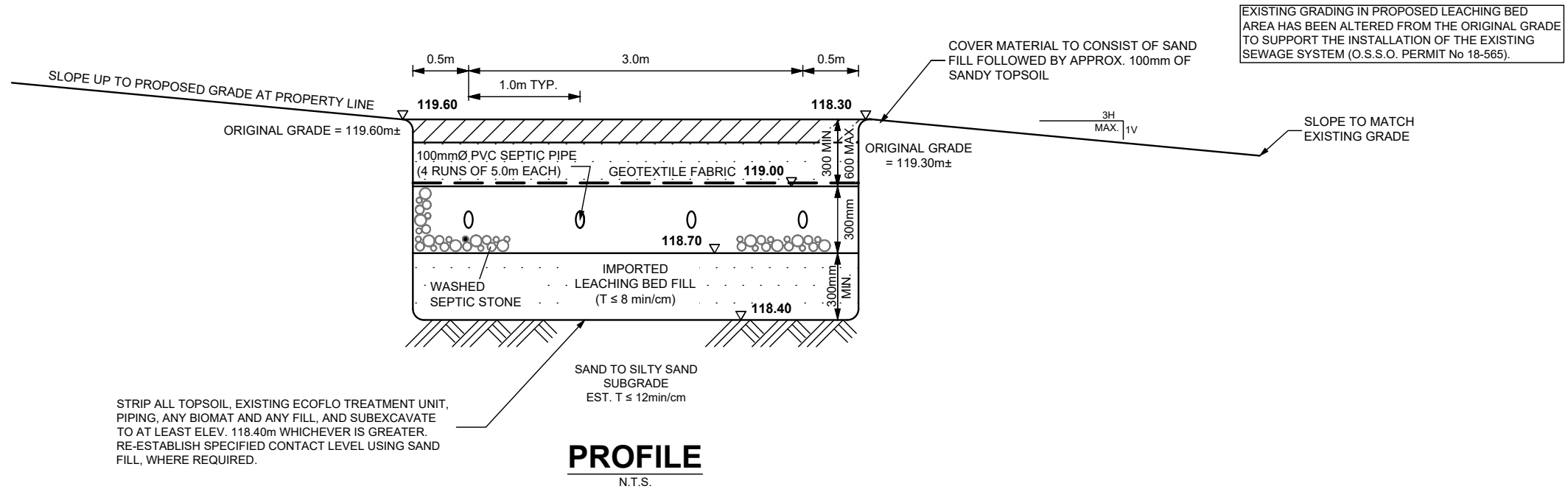


SUBJECT DRAWING SHALL BE READ IN CONJUNCTION WITH PATERSON GROUP DRAWING PH4600-1(rev.1)

PROPOSED GRADING SHALL SUPPORT LOT GRADING AND DRAINAGE PLAN BY OTHERS.



STRIP ALL TOPSOIL, EXISTING ECOFLO TREATMENT UNIT, PIPING, ANY BIOMAT AND ANY FILL, AND SUBEXCAVATE TO AT LEAST ELEV. 118.40m WHICHEVER IS GREATER. RE-ESTABLISH SPECIFIED CONTACT LEVEL USING SAND FILL, WHERE REQUIRED.

PROFILE
N.T.S.

NOTES:

1) ESTIMATE OF DAILY SEWAGE FLOW (Q)

THE PROPOSED SEWAGE SYSTEM REPLACEMENT, HAS BEEN DESIGNED TO SUIT THE NITRATE REDUCTION REQUIREMENTS OF PROPOSED ADDITION/RENOVATION WORKS OF THE BUILDING. THE DESIGN FLOW RATE HAS NOT BEEN INCREASED FROM THE EXISTING SEWAGE SYSTEM AS PER O.S.S.O. PERMIT No. 18-565. THE BUILDING CONSISTS OF A STORAGE/OFFICE TYPE USAGE. THE SEWAGE FLOW FOR THE EXISTING OCCUPANCY HAS BEEN CALCULATED AS FOLLOWS.

- OFFICE SPACE = 90m² @ 75 L/DAY PER 9.3m² = 726 L/DAY OR
- NO. OF LOADING BAYS = 2 X 150 L/DAY = 300 L/DAY
- ESTIMATED SEWAGE FLOW = 1,026 L/DAY

DESIGN SEWAGE FLOW RATE = 1,500 L/DAY

2) SOIL CONDITIONS

SOILS INFORMATION GATHERED BY PATERSON GROUP INC. ON SEPTEMBER 12, 2017 & NOVEMBER 12, 2021

TH 1-18, ELEV. 119.09m		TP 2-21, ELEV. 118.67m		TP 3-21, ELEV. 118.55m	
0-0.29	GRAVEL	0-0.10	TOPSOIL	0-0.12	TOPSOIL
0.29-1.20	SAND, TRACE GRAVEL	0.10-0.60	FILL: SISA, GRAVEL	0.12-0.60	FILL: SISA CRUSHED STONE
		0.60-0.70	RIGID INSULATION	0.60-0.70	RIGID INSULATION
		0.70-1.00	FILL: CRUSHED STONE	0.70-1.60	BROWN SILTY SAND
		1.00-2.10	BROWN SILTY SAND		

- TH DRY UPON COMPLETION - TP DRY UPON COMPLETION - TP DRY UPON COMPLETION

3) ANAEROBIC DIGESTER

- PUMP AND REMOVE EXISTING SEPTIC TANK.
- IT IS RECOMMENDED THAT A SINGLE-COMPARTMENT 6,000L WATERLOO ANAEROBIC DIGESTER MODEL ADIPC 6,000 BE INSTALLED.
- THE TANK SHALL BE BEDDED ON A LAYER OF OPSS GRANULAR 'A' OF AT LEAST 150mm IN THICKNESS AND COMPACTED TO AT LEAST 95% OF SPMD.
- INLET PIPE OF DIGESTER SHALL BE EQUIPPED WITH A WATERLOO INNER TUBE.
- ANAEROBIC DIGESTER SHALL BE EQUIPPED WITH AN INTERNAL PUMP CHAMBER.
- TANKS SHALL BE CONNECTED USING SCH 40 PVC SEWER PIPE WITH WATERTIGHT CONNECTIONS (i.e. STAINLESS STEEL LINK SEALS OR APPROVED EQUAL).
- THE PUMP TANK SHALL BE EQUIPPED WITH A SIMPLEX TIME OPERATED PUMP SYSTEM. THE PUMPS (i.e. LITTLE GIANT 12E EFFLUENT PUMP)
- FORCEMAIN TO CONSIST OF 50mmØ PVC SCH 40 PIPE.
- FORCEMAIN TO BE INSTALLED TO GRAVITY DRAIN TO THE TANK AND SHALL BE OVERLAIN WITH 50mm THICK BY 600mm WIDE INSULATION BOARDS.
- ALL PIPING TO BE GLUED.
- THE PUMP SHALL BE OPERATED BY A SIMPLEX CONTROL PANEL WITH TIMER CONTROL.
- A CONTROL SWITCH SHALL OVERRIDE THE TIMER TO MAINTAIN THE LIQUID LEVEL WITHIN THE WORKING CAPACITY OF THE TANK.
- ALL ELECTRICAL WORKS MUST BE CARRIED OUT BY A QUALIFIED ELECTRICAL CONTRACTOR IN ACCORDANCE TO THE LATEST CODES, BYLAWS AND REGULATIONS.
- CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN ALL NECESSARY ELECTRICAL PERMITS AND COORDINATE ALL ELECTRICAL INSPECTIONS.
- THE DIGESTER TANK SHALL BE COVERED WITH 50mm (2") DOW HI-40 INSULATION BOARDS.
- FINAL GRADING SHALL BE SHAPED TO ENSURE THAT SURFACE WATER IS DIRECTED AWAY FROM ALL TANKS.
- A POLYLOK RISER AND INSULATED COVER ASSEMBLY, WHICH EXTENDS TO THE GROUND SURFACE, SHALL BE INSTALLED OVER THE EACH OF THE TANK OPENINGS.
- ACCESS LIDS SHALL INCLUDE SAFETY DEVICES AS PER CSA 866-21.

4) TREATMENT UNIT

- THE TREATMENT UNIT SHALL CONSIST OF A 6,000L WATERLOO BIOFILTER MODEL BFCN6000 WASTEWATER TREATMENT UNIT. THE TREATMENT UNIT SHALL BE INSTALLED IN SERIES AND DOWNSTREAM FROM THE DIGESTER TANK.
- A 50mmØ SCH 40 PVC FORCEMAIN SHALL BE USED TO CARRY THE EFFLUENT FROM THE PUMP TANK IN THE ANAEROBIC DIGESTER TO THE BULK FILLED BIOFILTER IN THE FIRST COMPARTMENT OF THE TREATMENT UNIT.
- FORCEMAIN SHALL BE INSTALLED TO GRAVITY DRAIN TO PUMP VAULT.
- THE FIRST COMPARTMENT OF THE BIOFILTER TANK SHALL BE BULK FILLED WITH THE BIOFILTER MEDIUM.
- THE WASTEWATER FROM THE PUMP VAULT SHALL BE DOSED USING SPRAY NOZZLES OVER EACH OF THE BASKETS IN BIOFILTER TANK.
- THE SECOND COMPARTMENT OF THE TREATMENT UNIT SHALL BE EQUIPPED WITH A SIMPLEX EFFLUENT PUMP. THE FINAL TREATED EFFLUENT COLLECTS ON THE FLOOR OF THE SECOND COMPARTMENT AND THE EFFLUENT PUMP (LITTLE GIANT 12E), DOSES THE NITRATE REDUCTION UNIT AS WELL AS THE RECIRCULATION RECIRCULATION.
- THE TREATMENT UNIT SHALL BE PROVIDED WITH A MINIMUM OF 510 mm SOIL COVER AND OVERLAIN WITH 50mm THICK HI INSULATION BOARDS.
- A POLYLOK RISER AND CHARCOAL VENTED INSULATED COVER ASSEMBLY, WHICH EXTENDS TO THE GROUND SURFACE, SHALL BE INSTALLED OVER EACH OF THE TANK OPENINGS.

5) WATER NOx-LS TANK

- INSTALL A NEW 3,600L CONCRETE, TWO-COMPARTMENT WATER NOx-LS TANK
- FIRST COMPARTMENT TO CONTAIN LIME-SULPHUR AGGREGATE MEDIA
- SECOND COMPARTMENT TO BE EQUIPPED WITH ONE (1) LITTLE GIANT 12E (OR EQUIVALENT) EFFLUENT PUMP AND OPERATIONAL AND HIGH-LEVEL ALARM FLOATS SET TO MANUFACTURER SPECIFICATIONS
- ACCESS LID TO TANK OPENING SHALL BE EXTENDED TO THE GROUND SURFACE. INSTALL RISER AND COVER TO SUIT

6) FORCEMAIN (TO TYPE 'A' DISPERSAL BED)

- A 50mmØ SCH 40 FORCEMAIN SHALL BE USED TO CARRY THE EFFLUENT FROM THE WATER NOx-LS TANK TO THE SECONDARY HEADER OF THE TYPE 'A' DISPERSAL BED.
- FORCEMAIN SHALL BE INSTALLED TO EITHER GRAVITY DRAIN BACK TO THE PUMP CHAMBER OR BURIED MIN. 1.8m BELOW GROUND SURFACE TO PROVIDE FROST PROTECT OF THE CHARGED LINE.
- THE FORCEMAIN SHALL BE INSTALLED ON A 150mm THICK LAYER OF COMPACTED SAND OVERLAIN WITH 50mm T x 600mm W RIGID INSULATION BOARD IF NOT INSTALLED 1.8m B/G.
- OPERATIONAL FLOAT TETHER LENGTH SHALL BE SET TO MANUFACTURER SPECIFICATIONS.
- PUMP CHAMBER SHALL BE EQUIPPED WITH A HIGH-LEVEL ALARM FLOAT SET TO ALLOW RESPONSE TIME IN THE EVENT OF PUMP FAILURE.

7) TYPE 'A' DISPERSAL BED SIZING REQUIREMENTS

- STONE AREA REQUIRED = $Q/50 = 1,500/75 = 20.0m^2$
- USE 4 RUNS OF 5.0m EACH @ 1.0m o/c
- STONE AREA PROVIDED = $4.0m \times 6.0 = 24.0m^2$
- SAND AREA REQUIRED = $1,900(12)/850 = 21.2m^2$
- SAND AREA PROVIDED = $4.0m \times 6.0m = 24.0m^2$

8) TYPE 'A' DISPERSAL BED CONSTRUCTION GUIDELINES

- REMOVE ALL TOPSOIL/ ECOFLO TREATMENT UNIT/ PIPE/ STONE/ BIOMAT/ CONTAMINATED MATERIAL ASSOCIATED WITH EXISTING DISPOSAL FIELD AND SUBEXCAVATE TO AT LEAST ELEVATION 118.40m
- A MINIMUM THICKNESS OF 0.30m OF LEACHING BED SAND FILL, HAVING A PERCOLATION RATE OF NOT GREATER THAN 8 min/cm, SHALL BE INSTALLED BELOW OVER THE EXTENDED BASE AREA.
- LEACHING BED SAND FILL SHALL CONSIST OF UNIFORM SAND WITH GRADING LIMITS SIMILAR TO 100% PASSING 13.2mm SIEVE, LESS THAN 5% PASSING 0.075mm SIEVE AND HAVING A PERCOLATION RATE OF 6 TO 8 min/cm.

COVER MATERIAL TO CONSIST OF SAND FILL FOLLOWED BY APPROX. 100mm OF SANDY TOPSOIL

EXISTING GRADING IN PROPOSED LEACHING BED AREA HAS BEEN ALTERED FROM THE ORIGINAL GRADE TO SUPPORT THE INSTALLATION OF THE EXISTING SEWAGE SYSTEM (O.S.S.O. PERMIT No 18-565).

SLOPE TO MATCH EXISTING GRADE

ORIGINAL GRADE = 119.30m±

3H MAX. 1V

118.70

118.40

300mm MIN.

600mm MAX.

300mm

SAND TO SILTY SAND SUBGRADE

EST. T ≤ 12min/cm

119.60

119.00

118.30

0.5m

1.0m TYP.

3.0m

0.5m

SLOPE UP TO PROPOSED GRADE AT PROPERTY LINE

ORIGINAL GRADE = 119.60m±

100mmØ PVC SEPTIC PIPE (4 RUNS OF 5.0m EACH)

GEOTEXTILE FABRIC

WASHED SEPTIC STONE

IMPORTED LEACHING BED FILL (T ≤ 8 min/cm)

SAND TO SILTY SAND SUBGRADE

EST. T ≤ 12min/cm

300mm MIN.

600mm MAX.

300mm

SAND TO SILTY SAND SUBGRADE

EST. T ≤ 12min/cm

119.60

119.00

118.30

0.5m

1.0m TYP.

3.0m

0.5m

SLOPE UP TO PROPOSED GRADE AT PROPERTY LINE

ORIGINAL GRADE = 119.60m±

100mmØ PVC SEPTIC PIPE (4 RUNS OF 5.0m EACH)

GEOTEXTILE FABRIC

WASHED SEPTIC STONE

IMPORTED LEACHING BED FILL (T ≤ 8 min/cm)

SAND TO SILTY SAND SUBGRADE

EST. T ≤ 12min/cm

- THE LEACHING BED FILL SHALL CONFORM TO THE REQUIREMENTS OF 8.7.7.1.(4).(a) OF THE OBC.
- THE DISTRIBUTION PIPES (4 RUNS OF 5.0m EACH) SHALL CONSIST OF 100mmØ PERFORATED PVC SEPTIC PIPE WHICH SHALL BE EMBEDDED IN A CONTINUOUS 300mm THICK LAYER OF WASHED SEPTIC STONE.
- THE INVERT LEVEL OF THE DISTRIBUTION PIPES SHALL BE SET AT ELEVATION 118.87m AT THE HEADER AND ELEVATION 118.85m AT THE FOOTER.
- THE ENDS OF EACH RUN SHALL BE INTERCONNECTED WITH A SOLID PVC FOOTER PIPE.
- THE CLEAR STONE LAYER SHOULD BE COVERED WITH A NON-WOVEN GEOTEXTILE FABRIC.
- THE SURFACE OF THE BED SHOULD BE COVERED WITH PERMEABLE SAND FOLLOWED BY APPROXIMATELY 100mm OF SANDY TOPSOIL. THE BED AREA SHOULD BE VEGETATED.
- THE TOTAL THICKNESS OF THE COVER OVER THE CLEAR STONE SHOULD BE WITHIN A RANGE OF 0.3m TO 0.6m.
- THE SIDES OF THE BED SHOULD BE SLOPED IN THE RANGE OF 3H:1V OR SHALLOWER.

9) MINIMUM CLEARANCE DISTANCE FROM LEACHING BED

- 3.0m FROM ANY PROPERTY LINE
- 5.0m FROM ANY STRUCTURE; 5.0m TO ANY STRUCTURE WITHOUT PERIMETER DRAINAGE
- 15.0m FROM ANY DRILLED WELL; 31.1m TO ANY DUG OR SANDPOINT WELL

10) MINIMUM CLEARANCE DISTANCE FROM TANK(S)

- 1.5m FROM ANY STRUCTURE
- 13.3m FROM SUBJECT DRILLED WELL AND 15.0m FROM ANY OTHER DRILLED WELL (AS PER EXISTING)
- 3.0m FROM ANY PROPERTY LINE

11) GENERAL

- ELECTRICAL PANEL FOR TANKAGE SHALL BE LOCATED OUTSIDE OF SUBJECT BUILDING NEAREST THE TANKAGE AS RECOMMENDED BY WATERLOO.
- SNOW STORAGE SHALL NOT BE PLACED OVER THE SEWAGE SYSTEM COMPONENTS.
- THE SEWAGE SYSTEM HAS NOT BEEN DESIGNED TO SUPPORT TRAFFIC LOADING, AND AS SUCH, THE RISK OF ANY VEHICULAR TRAFFIC SHOULD BE MINIMIZED WITH THE INSTALLATION OF PROTECTIVE BOLLARDS.
- THE BACKFILLING OF THE SEWAGE SYSTEM SHOULD MINIMIZE THE RISK OF OVER COMPACTION WITH THE USE RUBBER TRACKED EQUIPMENT AND BY AVOIDING THE CREATION OF ANY CONSTRUCTION ROUTES OR PATHWAYS OVER THE SYSTEM.
- THE BACKWASH WATERS FROM ANY WATER TREATMENT UNIT, SUCH AS WATER SOFTENER, SHOULD NOT DISCHARGE INTO THE SEWAGE SYSTEM.
- THE SEWAGE SYSTEM HAS BEEN DESIGNED TO ACCEPT ONLY WATER FROM DOMESTIC TYPE FIXTURES - NO FLOOR DRAINS, WASHWATER, ETC ARE TO BE DIRECTED TO SYSTEM.
- CONTRACTOR SHALL BE QUALIFIED AND REGISTERED UNDER PART 8 OF THE ONTARIO BUILDING CODE.
- ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH THE LATEST BY-LAWS, CODES AND REGULATIONS.
- CONTRACTOR SHALL REVIEW DRAWINGS IN DETAIL AND SHALL INFORM THE CONSULTANT OF ANY ERRORS AND/OR OMISSIONS ON DESIGN DRAWINGS IMMEDIATELY.
- CONTRACTOR SHALL BE RESPONSIBLE TO LOCATE AND PROTECT ALL EXISTING UNDERGROUND SERVICES.
- CONTRACTOR SHALL VISIT THE SITE AND REVIEW ALL DOCUMENTATION TO BECOME FAMILIAR WITH THE SITE AND SUBSURFACE SOIL CONDITIONS TO DETERMINE SUITABLE METHODS OF CONSTRUCTION.
- THE FIRM OF PATERSON GROUP INC. HAS PROVIDED DESIGN SERVICES ONLY FOR THE SUBJECT SEWAGE SYSTEM. THE DESIGN HAS BEEN CARRIED OUT IN ACCORDANCE WITH THE MANUFACTURER'S GUIDELINES AND OUR INTERPRETATION OF PART 8 OF THE ONTARIO BUILDING CODE.
- IF THIS FIRM IS TO COMPLETE ANY CONSTRUCTION INSPECTION(S), ADDITIONAL FEES MAY BE APPLIED. CONFIRMATION OF PAYMENT WILL BE REQUIRED PRIOR TO THE INSPECTION.
- THE TEST HOLE INFORMATION PROVIDED, IS INTENDED TO BE USED FOR DESIGN PURPOSES ONLY, AND SHOULD NOT BE RELIED UPON FOR CONSTRUCTION PURPOSES. IF DISCREPANCIES ARE FOUND DURING THE CONSTRUCTION PROCESS, IT IS THE CLIENT'S RESPONSIBILITY TO CONTACT THIS FIRM TO MAKE ANY NECESSARY COMMENTS OR REVISIONS. ADDITIONAL REVISIONS ARE NOT CONSIDERED PART OF THE DESIGN WORKS AND WILL BE CONSIDERED AS AN ADDITIONAL COST.
- REFER TO PATERSON GROUP DRAWING No. PH4600-1(rev.1) FOR THE SEWAGE SYSTEM LAYOUT.

DD/MM/YY	DESCRIPTION	REV.
14/10/22	Issued for Septic Permit	1
26/09/22	Issued for Preliminary Review	0

Consultant:

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7S8
TEL: (613) 226-7381

Client:

PREMIER BUS LINES INC.

Project:

PROPOSED ADDITION TO COMMERCIAL BUILDING

**135 CARDEVCO ROAD
OTTAWA (CARP), ONTARIO**

Drawing:

**SEWAGE SYSTEM
DETAIL & NOTES**

Scale:	N.T.S.	Drawn by:	HV
Date:	10/2022	Checked by:	MK

Drawing No.:
PH4600-2(rev.1)

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