CONSTRUCTION & DESIGN NOTES

1) ESTIMATE OF DAILY SEWAGE FLOW (Q)

Building No.	Unit No.	Floor Area (m²)				Estimated Daily Sewage Flow (L)		
		Office Space	Warehouse Space	Warehouse L. Docks	Total GFA	Office	Warehouse	Total
1	1	92	827	3	929	742	450	1192
	2	92	827	5	929	742	750	1492
Total	2	184	1654	8	1858	1484	1200	2684
							PHASE 1 - TDDSSF	**2700**
2	1	92	827	3	929	742	450	1192
	2	92	827	3	929	742	450	1192
Total	2	184	1654	6	1858	1484	900	2384
							PHASE 2 - TDDSSF	**2400**
3	1	92	827	3	929	742	450	1192
	2	92	827	3	929	742	450	1192
Total	2	184	1654	6	1858	1484	900	2384
							PHASE 3 - TDDSSF	**2400**
4	1	92	827	3	929	742	450	1192
	2	92	827	3	929	742	450	1192
Total	2	184	1654	6	1858	1484	900	2384
							PHASE 4 - TDDSSF	**2400**

ESTIMATED DAILY SEWAGE FLOW FOR PHASE 1 = 2684 L
DESIGN DAILY SEWAGE FLOW FOR PHASE 1 = 2,700 L

THE PROPOSED DEVELOPMENT WILL BE CONSTRUCTED IN 4 PHASES.
ESTIMATED SEWAGE FLOW FOR THE BUILT OUT DEVELOPMENT = 9,836 L
DESIGN DAILY SEWAGE FLOW FOR BUILT OUT DEVELOPMENT = 9,900 L

THE DESIGN NOTES AND GUIDELINES BELOW HAVE BEEN PROVIDED FOR THE PHASE 1 SEWAGE SYSTEM ONLY. A SEWAGE SYSTEM PERMIT WILL BE REQUIRED FOR EACH OF THE SUBSEQUENT PHASES.

2) SOIL CONDITIONS

SOILS INFORMATION GATHERED BY PATERSON GROUP INC. ON NOVEMBER 14, 2016

BH 4, ELEV. 114.93m

0-0.30	TOPSOIL
0.30-0.69	GLACIAL TILL: RED-BROWN SILTY FINE SAND, SOME GRAVEL & COBBLES
0.69-4.82	GLACIAL TILL: BROWN SILTY FINE SAND, SOME GRAVEL, COBBLES & BOULDERS, TRACE CLAY

- GWL @ 2.64 m DEPTH

BH 5, ELEV. = 114.10m

0-0.08	TOPSOIL
0.08-0.69	GLACIAL TILL: RED-BROWN SILTY FINE SAND, SOME GRAVEL & COBBLES
0.69-5.31	GLACIAL TILL: BROWN SILTY FINE SAND, SOME GRAVEL, COBBLES & BOULDERS, TRACE CLAY
5.31	PRACTICAL REFUSAL

GWL @ 1.07 m DEPTH

3) TANKAGE

GENERAL REQUIREMENTS

- ALL TANKS SHALL CONSIST OF PRECAST CONCRETE TANKS CONFORMING TO CSA-B66-10.
- THE ACTUAL TANK CONFIGURATION MAY DIFFER FROM THAT SHOWN PROVIDED THE MINIMUM SPECIFIED WORKING CAPACITY OF THE TANK MEET THE DESIGN REQUIREMENTS.
- ALL SEPTIC TANKS MUST BE CPA OR CSA CERTIFIED AND SHALL BE DESIGNED TO WITHSTAND ALL APPLICABLE LOADS.
- TANKS SHALL BE BEDDED ON A LAYER OF OPSS GRANULAR A COMPACTED TO AT LEAST 95% OF ITS SPMDD.
- TANKS SHALL BE CONNECTED USING 100 mmØ SCH 40 PVC SEWER PIPE WITH WATERTIGHT CONNECTIONS.
- BACKFILL TANKS USING OPSS GRANULAR B TYPE 1 BACKFILL OR CLEAN SAND FILL. PLACE BACKFILL IN UNIFORM LAYERS NOT EXCEEDING 300 mm THICKNESS AND COMPACT TO AT LEAST 90% OF SPMDD.
- FINAL GRADING SHALL BE SHAPED TO ENSURE THAT SURFACE WATER IS DIRECTED AWAY FROM ALL TANKS.
- WORK AREA SHALL BE COVERED WITH A LAYER OF TOPSOIL OF AT LEAST 100mm IN THICKNESS.

SEPTIC TANK

- MINIMUM WORKING CAPACITY OF TANK REQUIRED = 3Q = 8,100 L. A 9,000 L PRECAST TWO-COMPARTMENT CONCRETE SEPTIC TANK SHALL BE INSTALLED.
- A POLYLOK PL-625 EFFLUENT FILTER WITH A PIPE SUPPORT SHALL BE INSTALLED IN THE SEPTIC TANK.
- THE EFFLUENT FILTER SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S GUIDELINES AND CENTRED OVER THE ACCESS OPENING.
- THE ACCESS LIDS OVER THE TANK OPENINGS (2) SHALL EXTEND TO THE GROUND SURFACE. INSTALL POLY RISERS AND COVERS TO SUIT.
- RISER SHALL EXTEND TO AT LEAST 50mm ABOVE FINISHED GRADE.

PUMP STATION

- THE PUMP STATION SHALL CONSIST OF A 1,350 L MIN. SINGLE COMPARTMENT TANK.
- THE PUMP STATION SHALL BE LOCATED IN SERIES AND DOWNSTREAM FROM THE SEPTIC TANK.
- TANKS SHALL BE CONNECTED USING 100 mm Ø SCH 40 PVC SEWER PIPE WITH WATERTIGHT CONNECTIONS.
- THE ACCESS OPENING OVER THE PUMP SYSTEM SHALL EXTEND TO THE GROUND SURFACE. INSTALL POLY RISERS AND COVER TO SUIT.
- RISER SHALL EXTEND TO AT LEAST 50mm ABOVE FINISHED GRADE.
- THE PUMP CHAMBER SHALL BE EQUIPPED WITH A FLOAT OPERATED EFFLUENT PUMP (MYERS ME3F OR EQUIVALENT) OPERATED BY AN ON DEMAND CONTROL PANEL AND A HIGH WATER ALARM WITH AUDIBLE AND VISUAL WARNING CAPABILITIES.
- CONTROL PANEL TO BE MOUNTED ON SIDE OF BUILDING.
- THE RECOMMENDED PUMP DUTY CYCLE IS 350L.
- INSTALL REQUIRED FITTINGS AND PIPING FROM NEW PUMP AND CONNECT TO 38 mm Ø SCH40 PVC FORCEMAIN.
- PUMP DISCHARGE ASSEMBLY SHALL BE CONFIGURED SUCH THAT THE PUMP CAN BE EASILY REMOVED FROM THE GROUND SURFACE.
- FORCEMAIN TO BE PROVIDED WITH AT LEAST 1.5 m OF SOIL COVER AND OVERLAIN WITH 50mm THICK BY 600mm WIDE INSULATION BOARDS.
- THE FORCEMAIN SHALL BE BEDDED ON 150mm THICK LAYER OF OPSS GRANULAR 'A', FOLLOWED BY 300mm MIN. SAND COVER (REFER TO FORCEMAIN DETAIL).
- ALL PIPING CONNECTIONS TO BE GLUED.
- 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.

4) LEACHING BED SIZING

- LENGTH OF PIPE REQUIRED = QT/200 = 2700(8)/200 = 108m
- USE 8 RUNS OF 13.5m EACH RUN.
- TOTAL LENGTH OF DISTRIBUTION PIPES PROVIDED =108m
- TOTAL BED AND MANTLE AREA = 531m²
- HYDRAULIC LOADING RATE = 5.1 L/d/m²

5) DISPOSAL FIELD CONSTRUCTION GUIDELINES

- A FILL BASED ABSORPTION TRENCH STYLE LEACHING BED SHALL BE INSTALLED.
- THE SUBGRADE SURFACE FOR THE BED AND MANTLE AREAS SHOULD BE PREPARED BY REMOVING ALL EXISTING TOPSOIL AND SUBEXCAVATING TO AT LEAST ELEVATION 113.80m.
- WHERE REQUIRED, THE SPECIFIED CONTACT LEVEL SHALL BE ESTABLISHED WITH SELECT SAND FILL.
- THE SUBGRADE SHALL BE SCARIFIED UNDER DRY CONDITIONS.
- A MINIMUM THICKNESS OF 0.9m OF IMPORTED SAND FILL, HAVING A PERCOLATION RATE OF NOT GREATER THAN 8 min/cm, SHALL BE PROVIDED BELOW THE BASE OF THE TRENCHES.
- LEACHING BED SAND FILL SHALL BE 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 8 min/cm. LEACHING BED FILL SHALL BE PRE-APPROVED BY THE CONSULTANT.
- THE DISTRIBUTION PIPES SHOULD CONSIST OF 100mmØ PERFORATED SEPTIC PIPE WHICH SHOULD BE EMBEDDED IN A 300mm THICK x 500mm (MIN.) WIDE LAYER OF WASHED SEPTIC STONE.
- THE DISTRIBUTION PIPES SHOULD BE INSTALLED WITH A UNIFORM DOWNWARD SLOPE FROM ELEVATION 114.90m AT THE HEADER AND ELEVATION 114.85m AT THE FOOTER.
- THE ENDS OF EACH RUN SHALL BE INTERCONNECTED WITH A SOLID FOOTER PIPE.
- THE CLEAR STONE LAYER SHOULD BE COVERED WITH A NON-WOVEN GEOTEXTILE FABRIC.
- THE CLEAR STONE LAYER SHOULD BE BACKFILLED WITH PERMEABLE SAND FOLLOWED BY APPROXIMATELY 100mm OF SANDY TOPSOIL.
- THE TOTAL THICKNESS OF THE COVER OVER THE BASE OF THE TRENCHES SHOULD BE WITHIN THE RANGE OF 0.6m TO 0.9m.
- THE SIDES OF THE BED SHOULD BE SLOPED IN THE RANGE OF 4H:1V OR SHALLOWER.
- THE SAND AREA OUTSIDE OF LIMITS OF THE DISTRIBUTION PIPES SHALL CONSIST OF A MINIMUM THICKNESS OF 300mm OF UNIFORM SAND HAVING A PERCOLATION RATE OF NOT GREATER THAN 8 min/cm.
- THE BED AREA SHOULD BE VEGETATED AS SOON AS POSSIBLE.

6) MINIMUM CLEARANCE DISTANCES FROM DISTRIBUTION PIPES

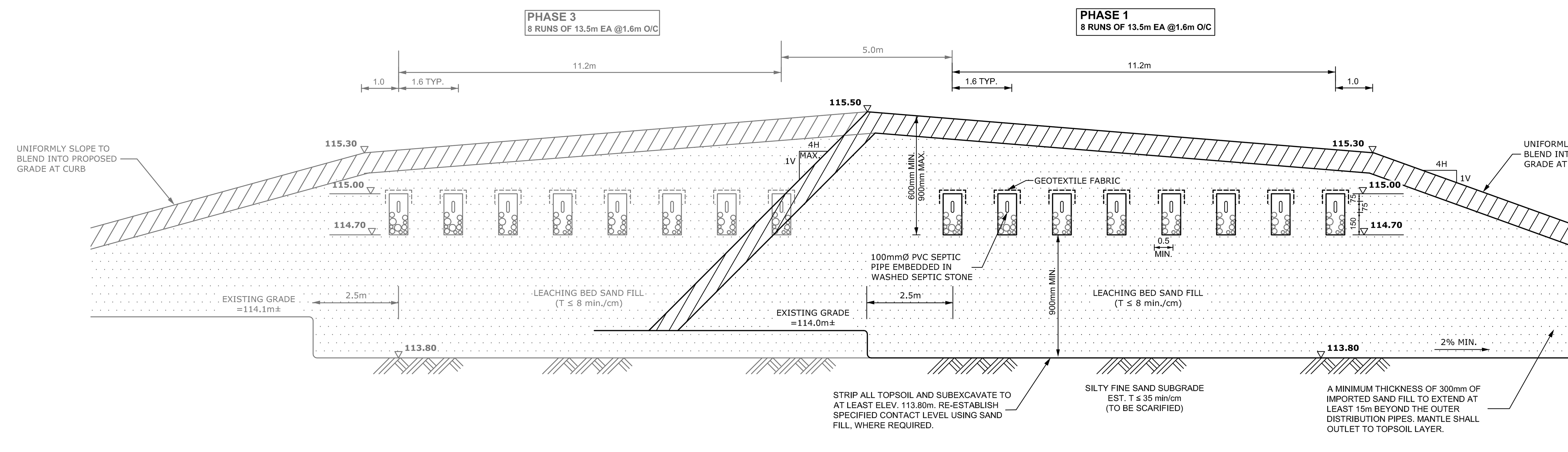
- 6.0 m FROM ANY PROPERTY LINE
- 8.0 m FROM ANY STRUCTURE
- 18.0 m FROM ANY DRILLED WELL

7) MINIMUM CLEARANCE DISTANCES FROM TANKS

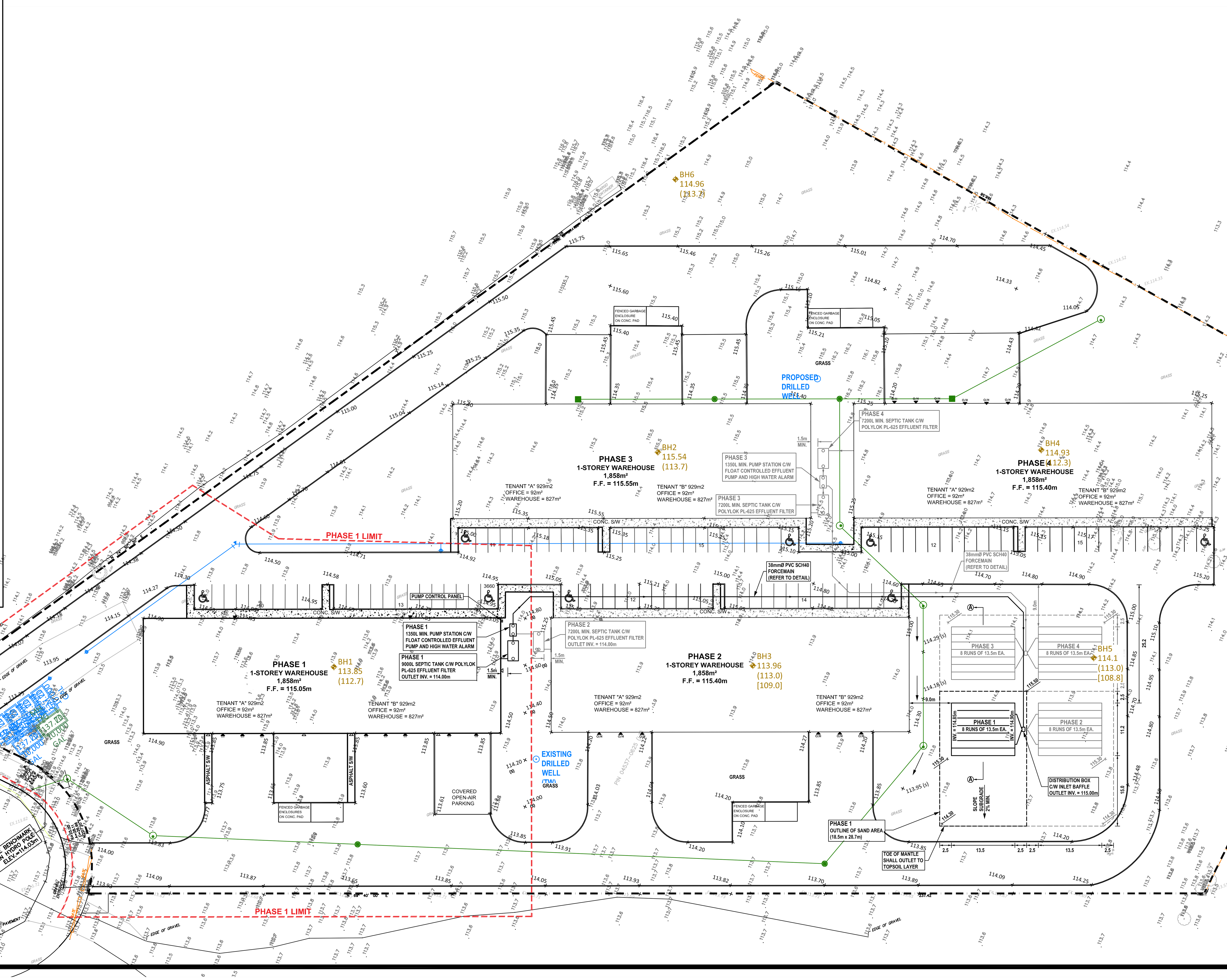
- 3.0m FROM ANY PROPERTY LINE
- 1.5m FROM ANY STRUCTURE
- 15.0m FROM ANY DRILLED WELL

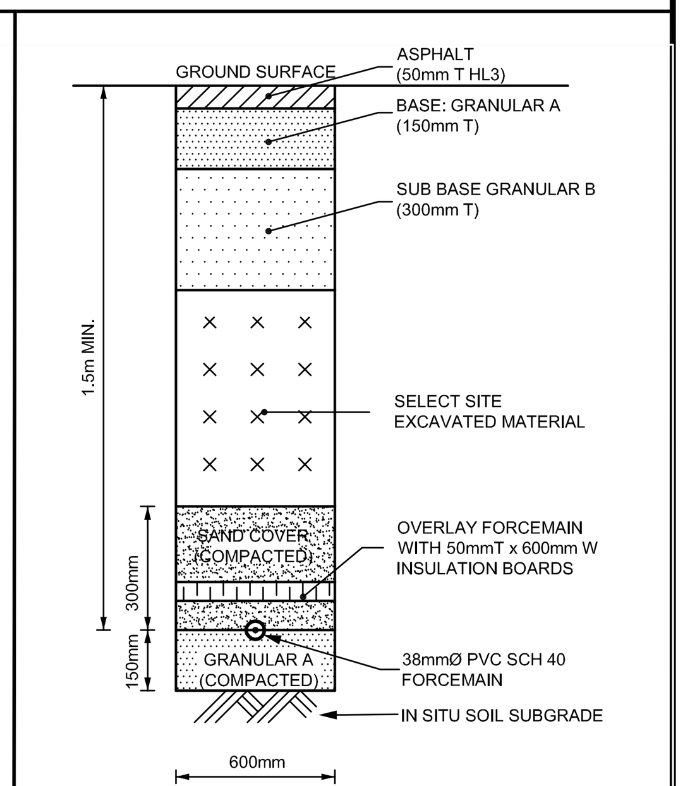
GENERAL NOTES FOR SEWAGE SYSTEMS:

1) SEWAGE SYSTEM CONTRACTOR SHALL BE QUALIFIED AND REGISTERED UNDER PART 8 OF THE ONTARIO BUILDING CODE.
2) ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH THE LATEST BY-LAWS, CODES AND REGULATIONS.
3) CONTRACTOR SHALL REVIEW DRAWINGS IN DETAIL AND SHALL INFORM THE CONSULTANT OF ANY ERRORS AND/OR OMISSION ON DESIGN DRAWINGS IMMEDIATELY.
4) CONTRACTOR SHALL VISIT THE SITE AND REVIEW ALL DOCUMENTATION TO BECOME FAMILIAR WITH THE SITE AREA AND SUBSURFACE SOIL CONDITIONS TO DETERMINE SUITABLE METHODS OF CONSTRUCTION.
5) CONTRACTOR SHALL BE RESPONSIBLE FOR LAYOUT AND GRADING FOR SEWAGE SYSTEMS AS DETAILED ON THE DESIGN DRAWINGS.
6) THE CONTRACTOR IS RESPONSIBLE TO LOCATE AND PROTECT ALL EXISTING UNDERGROUND SERVICES.
7) THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE PROJECT MANAGER.
8) THE WORK AREAS SHALL BE PROTECTED DURING CONSTRUCTION WORK.
9) THE CONTRACTOR IS RESPONSIBLE FOR DAMAGE TO PROPERTY AND STRUCTURES AND SHALL REPAIR AT OWN EXPENSE.
10 ALL MATERIALS AND CONSTRUCTION METHODS SHALL CONFORM TO OBC, OPSS AND CITY OF OTTAWA STANDARDS AND SPECIFICATIONS.
11) THE CONTRACTOR SHALL CONTROL WATER RUN OFF FROM THE SITE IN ACCORDANCE WITH STANDARD SEDIMENT CONTROL MEASURES.
12) EXCESS AND/OR UNSUITABLE SITE EXCAVATED SOIL SHALL BE REMOVED FROM THE SEWAGE SYSTEM AREA AND DISPOSE OF, AS DIRECTED BY THE CONSULTANT, AT NO ADDITIONAL COST TO THE OWNER.
13) THE CONTRACTOR IS RESPONSIBLE TO SUPPLY ALL MATERIALS AND LABOUR NECESSARY TO MAKE THE SEWAGE SYSTEM FULLY FUNCTIONAL AS INTENDED BY DESIGN.
14) THE CONTRACTOR SHALL SUPPLY, AND HAVE INSTALLED BY A QUALIFIED PERSON ALL ELECTRICAL COMPONENTS NECESSARY TO MAKE THE PUMPING SYSTEM FUNCTIONAL AND CONFORM TO THE PERTINENT REGULATIONS.



PHASE 1&3 - LEACHING BED CROSS-SECTION A-A
SCALE - 1:100H, 1:25 V





TYPICAL FORCEMAIN TRENCH DETAIL
SCALE - N.T.S.

paterson group
consulting engineers
154 Colonnade Road South, Ottawa, Ontario K2E 7J5
Tel: (613) 226-7381 Fax: (613) 226-6344

LEGEND:

(symbol)	BOREHOLE LOCATION, PREVIOUS INVESTIGATION PATERSON GROUP REPORT PG3905-1, DEC. 2016
114.10	GROUND SURFACE ELEVATION (m)
x 114.80	PROPOSED SITE GRADING (m) (REFER TO SITE GRADING AND SERVICING PLAN)
x 115.80	PROPOSED GROUND SURFACE ELEV. OVER SEWAGE SYSTEM COMPONENTS (m)
(113.7)	GROUNDWATER ELEV. (m) - NOV. 14, 2016
[108.9]	PRACTICAL REFUSAL TO DCPT ELEVATION (m)
(symbol)	DRILLED WELL LOCATION
F.F.	FINISHED FLOOR LEVEL
(line)	STORM SEWER LINE
(dashed line)	LIMIT OF PHASE 1 WORK AREA

REFERENCES:

BASE PLAN AND EXISTING TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS

THIS PLAN PROVIDES DETAILS OF THE PROPOSED SEWAGE SYSTEM. REFER TO DRAWINGS C101 AND C102 BY MCINTOSH PERRY FOR DETAILS OF THE PROPOSED SITE GRADING AND SERVICING.

NO.	DESCRIPTION	DATE
0	ISSUED FOR SITE PLAN CONTROL	01/18/17

DESIGNED BY: AVS
DRAWN BY: JB
CHECKED BY: AVS
SCALE: 1:500
DATE: 01/2017

LICENSED PROFESSIONAL ENGINEER
13/09/17
M. S. KILLAM
100221103
PROVINCE OF ONTARIO

CLIENT
2434894 ONTARIO INC.
C/O BBS CONSTRUCTION (ONTARIO) LTD.

PROJECT/LOCATION
PROPOSED WAREHOUSE DEVELOPMENT
210 & 220 MAPLE CREEK COURT
OTTAWA, ONTARIO

DRAWING
SEWAGE SYSTEM LAYOUT PLAN & DETAILS

PROJECT NO.	DRAWING NO.	REVISION NO.
PH3158	SS1	0