

SEWAGE SYSTEM CONSTRUCTION / MAINTENANCE NOTES

- SEWAGE DISPOSAL SYSTEM HAS BEEN DESIGNED TO ACCEPT CBOD <10 mg/L, AND TSS <10 mg/L.
- SEWAGE SYSTEM DESIGNED FOR A DAILY FLOW OF 8890 L/DAY.
- ALL PVC FITTINGS AND PIPES ARE SCHEDULE 40.
- PRESSURE PIPES SHALL BE HIGH DENSITY POLYETHYLENE.
- ALL WORK SHALL BE IN ACCORDANCE WITH RELEVANT CODES AND GUIDELINES.
- PRIOR TO COMMENCEMENT OF EXCAVATIONS, UNDERGROUND SERVICES SHALL BE LOCATED.
- CONTRACTOR MUST REPORT ANY DISCREPANCIES TO THE PROJECT ENGINEER TO DETERMINE THE IMPACT.
- ANY CHANGES MUST BE APPROVED BY THE PROJECT ENGINEER.
- ALL RISERS SHALL EXTEND TO SURFACE, COMPLETE WITH CHILD PROOF, TAMPER PROOF, UDS.
- ALL GRAVITY CONNECTIONS SHALL HAVE A MINIMUM 2 % GRADE, UNLESS OTHERWISE SPECIFIED.
- ALL SANITARY PIPES / FORCEMAINS SHALL BE INSULATED UNDER ROADWAYS AND WALKWAYS AT A DEPTH GREAT ENOUGH TO ENSURE PROTECTION FROM FROST AND CRUSHING.
- WSP MUST BE PRESENT DURING CONSTRUCTION ACTIVITIES TO VERIFY DESIGN ASSUMPTIONS AND TO DOCUMENT THE CONSTRUCTION OF THE SYSTEM. THIS DESIGN CANNOT BE RELIED UPON WITHOUT THIS SUPERVISION.
- CONSTRUCTION OF THE SYSTEM SHALL BE COMPLETED BY A LICENSED CONTRACTOR (BY THE MINISTRY OF MUNICIPAL AFFAIRS AND HOUSING).
- BASE EXCAVATION IS TO BE SCARIFIED PRIOR TO PLACING FILL MATERIAL. NO EQUIPMENT (RUBBER TIRE OR TRACK) IS TO COME INTO CONTACT WITH THE SOIL AFTER SCARIFICATION. SCARIFIED SOILS CANNOT BE LEFT EXPOSED TO RAIN. IMPORTED MATERIAL IS TO BE BLADED ONTO THE SCARIFIED AREA IN 0.20 TO 0.25 m LIFTS AND TRACK COMPACTED.
- SAND FILL MUST MEET THE SPECIFICATIONS OF: T = 6 TO 8 min/cm OR LESS WITH ≤ 5 % PASSING THE 200 SIEVE.
- LEACHING BED SHALL BE IMMEDIATELY SODDED OR SEEDED UPON COMPLETION, SLOPED AREAS (4:1 OF STEEPER) MUST BE SODDED.
- NO LANDSCAPING OR BUILDINGS ARE PERMITTED ON THE LEACHING BED AREA UNLESS SPECIFICALLY APPROVED BY WSP.
- NO IRRIGATION SYSTEMS ARE PERMITTED ON THE LEACHING BED AREA.
- PUMP CHAMBERS AND PUMPS SHALL HAVE ALL ELECTRICAL COMPONENTS AND CONNECTIONS INSTALLED IN ACCORDANCE WITH THE CURRENT SPECIFICATIONS OF HYDRO.
- TANKS SHALL BE INSTALLED ON 50 mm OF LOOSE SAND SPREAD EVENLY OVER MINIMUM 200 mm OF COMPACTED GRAVEL OR CRUSHED STONE.
- ALARMS SHALL BE A 120 VOLT AUDIBLE ALARM LOCATED IN A CONVENIENT, ACCESSIBLE AREA, AND CLEARLY AND PERMANENTLY LABELED AS "SEWAGE PUMP TANK-HIGH LEVEL ALARM".
- THE BUILDING SUMP, WATER SOFTENER, WATER TREATMENT SYSTEM, FURNACE CONDENSATE DISCHARGE AND EAVES TROUGH DOWN SPOUTS SHALL NOT BE CONNECTED TO THE SEWAGE SYSTEM. DIRECT ALL SUCH FLOWS TO APPROVED OUTLETS LOCATED AWAY FROM LEACHING BED AND TANK AREAS.
- TANKS SHALL BE INSTALLED AT AN APPROPRIATE DEPTH TO ACCOMMODATE GRAVITY FLOW BETWEEN TANKS (WHERE APPLICABLE) BASED ON FINISHED GRADE.
- ALL JOINT SEALS TO BE DONE WITH PRIMER AND MASTIC BAND, OR AS PER THE MANUFACTURER'S REQUIREMENTS.
- ALL HOLES AROUND PIPES GOING THROUGH CONCRETE STRUCTURE SHALL BE SEALED WITH NON-SHRINKING GROUT FROM INSIDE AND OUTSIDE.
- IF HIGH GROUNDWATER CONDITIONS ARE ENCOUNTERED, TANKS WITH DYNAMIC WATER LEVELS MUST BE ANCHORED.
- ALL CONCRETE TANKS ARE TO HAVE A MAXIMUM BURIAL DEPTH OF 1.0 m IN NON TRAFFIC AREAS. EXTRA REINFORCEMENT IS REQUIRED FOR TRAFFIC AREAS AND/OR DEEP BURIAL.
- TANK SEAMS AFFECTED BY HIGH GROUNDWATER ELEVATIONS MUST BE WATERPROOFED WITH AN EXTERIOR MEMBRANE.
- ANY FILL ENCOUNTERED DURING THE LEACHING BED CONSTRUCTION MUST NOT BE USED IN THE LEACHING BED AREA UNLESS IT MEETS OBC SPECIFICATIONS OR SPECIFICATIONS OF THIS DESIGN.
- THE STONE, PIPE AND SAND FILL OF EXISTING LEACHING MUST BE REMOVED FROM THE PROPOSED LEACHING BED AREA PRIOR TO CONSTRUCTION.
- A 14 GAUGE TW-SOLID COPPER LIGHT COLOURED PLASTIC COATED TRACER WIRE, OR OTHER MEANS AS DEEMED ACCEPTABLE BY THE TOWN, SHALL BE INSTALLED FOR DETECTION PURPOSES ON THE HEADER LINE AND DISTRIBUTION PIPES.
- THE SLUDGE STORAGE / PRIMARY CLARIFIERS, FLOW EQUALIZATION, INTERMEDIATE CLARIFIER AND BIOREACTORS TANKS SHALL BE INSULATED ON THE SIDES (TO BELOW THE FROST LINE) AND TOP.

FLOW CALCULATIONS

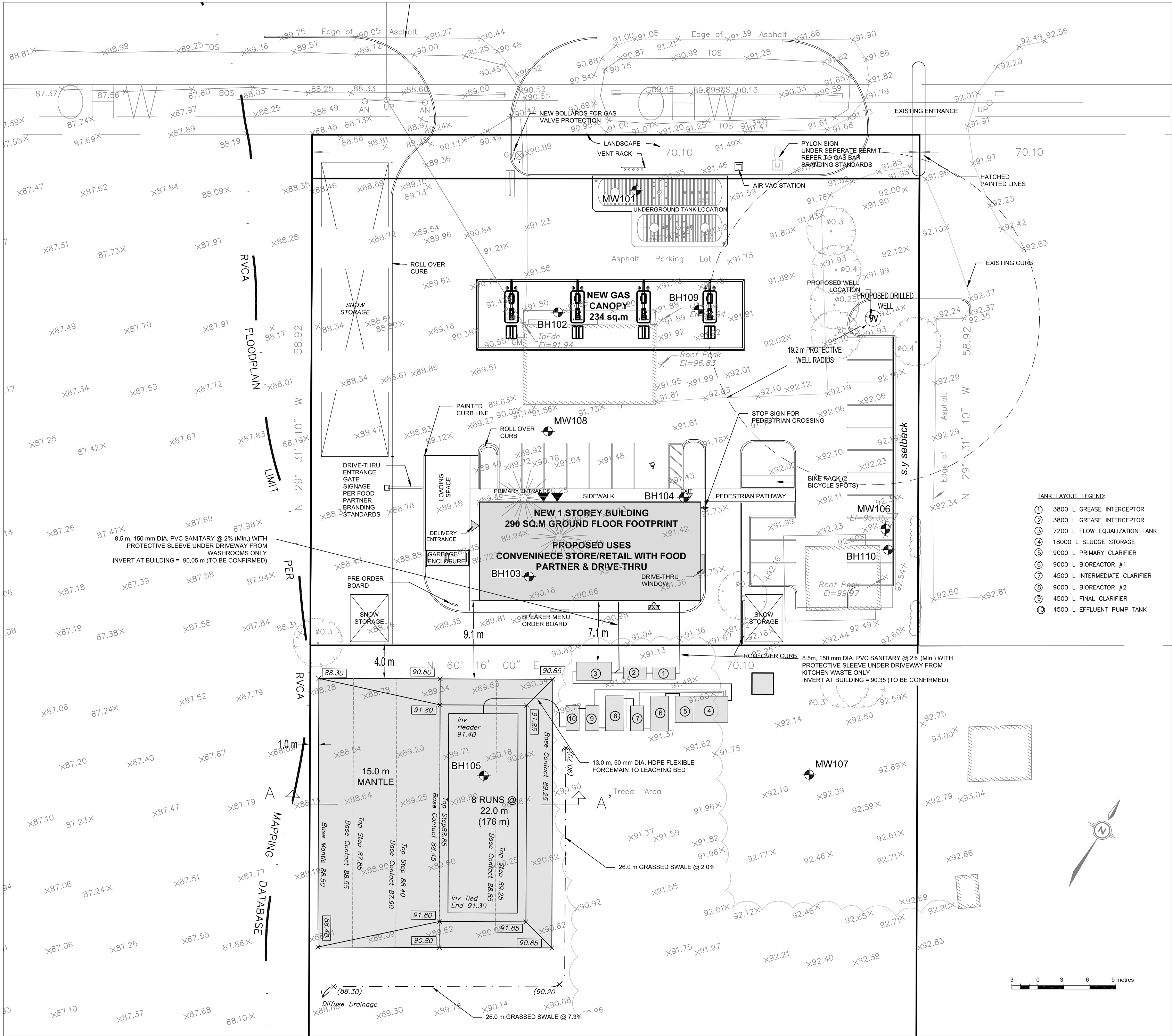
PROPOSED GAS BAR:  
PROPOSED NUMBER OF NOZZLES = 8  
FLOW PER NOZZLE = 560 L/DAY  
NUMBER OF WASHROOMS FOR GAS BAR = 2  
FLOW PER GAS BAR WASHROOM = 950 L/DAY  
DAILY DESIGN FLOW FOR GAS BAR = (8)(560) + (1)(950) = 6380 L/DAY = Q1

PROPOSED TAKE-OUT RESTAURANT (24 HOURS) :  
FLOOR AREA = 93.0 m²  
FLOW PER 9.25 m² OF FLOOR AREA = 190 L/DAY  
NUMBER OF EMPLOYEES = 8  
FLOW PER EMPLOYEE = 75 L/DAY  
DAILY DESIGN FLOW FOR TAKE-OUT RESTAURANT = (93.0/9.25)(190) + (8)(75) = 2510 L/DAY = Q2

DAILY DESIGN SEWAGE FLOW = Q1 + Q2 = 8890 L/DAY = Q

PERCOLATION RATE OF NATIVE SOILS = 20 min/cm (SANDY SILT, TRACE GRAVEL) BASED ON ALSTON ASSOCIATES GEOTECHNICAL, DATED MARCH 15, 2018 = T  
LEACHING BED TYPE = RAISED TYPE A DISPOSAL SYSTEM

MINIMUM BASAL LOADING AREA = QT/400 = 445 m²  
PROPOSED BASAL LOADING AREA = 837 m² (27.0 x 31.0 m)  
MINIMUM STONE AND PIPE AREA = Q/50 = 178 m²  
PROPOSED STONE AND PIPE AREA = 184 m² (8.0 m x 23.0 m)  
PROPOSED LENGTH OF DISTRIBUTION PIPE = 176 m (8 RUNS @ 22.0 m LENGTH)  
PROPOSED FLOW EQUALIZATION PUMPS = DUPLEX VORTEX SEWAGE PUMPS (BJM MODEL SV400) OR EQUAL  
PROPOSED EQUALIZATION PUMP SETTINGS = 185 L/DOSE, TIMED, ONCE EVERY 30 MIN, ALTERNATING BETWEEN PUMPS  
PROPOSED FINAL PUMP TANK PUMPS = DUPLEX EFFLUENT PUMPS (LIBERTY MODEL 280) OR EQUAL  
PROPOSED FINAL PUMP TANK SETTINGS = 700 L/CYCLE, ON DEMAND, ALTERNATING BETWEEN PUMPS



- TANK LAYOUT LEGEND:
- 1 3800 L GREASE INTERCEPTOR
  - 2 3800 L GREASE INTERCEPTOR
  - 3 7200 L FLOW EQUALIZATION TANK
  - 4 18000 L SLUDGE STORAGE
  - 5 9000 L PRIMARY CLARIFIER
  - 6 9000 L BIOREACTOR #1
  - 7 4500 L INTERMEDIATE CLARIFIER
  - 8 9000 L BIOREACTOR #2
  - 9 4500 L FINAL CLARIFIER
  - 10 4500 L EFFLUENT PUMP TANK

- LEGEND
- (97.07) DRAINAGE SWALE WITH SWALE INVERT
  - x 87.25 EXISTING GRADE
  - x 88.00 PROPOSED FINISHED SEPTIC GRADE AT SPECIFIC LOCATION
  - CROSS SECTION LINE
  - BH105 BOREHOLE / MONITOR LOCATION AND DESIGNATION

BOREHOLES/MONITORS FROM ALSTON ASSOCIATES GEOTECHNICAL, DATED MARCH 15, 2018

BOREHOLE BH105

0.00 - 0.75 m TOPSOIL  
0.75 - 1.25 m SILTY SAND, BROWN, TRACE ORGANICS, COMPACT, MOIST  
1.25 - 3.70 m SILTY SAND, BROWN, SOME GRAVEL, COMPACT, MOIST

BOREHOLE BH107

0.00 - 0.75 m TOPSOIL  
0.75 - 3.70 m SILTY SAND, BROWN, SOME GRAVEL, DENSE, MOIST

KEY PLAN	DESIGNER: THIS DRAWING AND DESIGN IS COPYRIGHT PROTECTED WHICH SHALL NOT BE USED, REPRODUCED OR REVISED WITHOUT WRITTEN PERMISSION BY WSP. THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND UTILITY LOCATIONS AND REPORT ALL ERRORS AND OMISSIONS PRIOR TO COMMENCING WORK. THIS DRAWING IS NOT TO BE SCALED.	COPYRIGHT: ISSUED FOR REVISION:	SEAL: 	CLIENT: INVECTA DEVELOPMENT (OTTAWA) CORPORATION	PROJECT: PROPOSED QUICK SERVICE RESTAURANT AND SERVICE STATION 1618/1622 ROGER STEVENS DRIVE KARS, ONTARIO	ORIGINAL SCALE: 1:300 IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE: 	TITLE: PLAN VIEW ON-SITE SEWAGE TREATMENT AND DISPOSAL SYSTEM DESIGN	DESIGNED BY: CAL DRAWN BY: PLB CHECKED BY: CAL DISCIPLINE: ENVIRONMENT
		IS RE DATE DESCRIPTION		CLIENT REF. R:	PROJECT NO: 181-05280-00 DATE: JUNE 2018		DRAWING NUMBER: 1 SHEET #: 1 OF 2	ISSUE: SUBMISSION DATE OF: REV #: 0