

Repulse Bay RCMP Detachment

Lot L94-95, PO Box 31, Repulse Bay. Nunavut

Introduction

Requirement is replacement of sewage tank at detachment, installation of hydronic heat trace, installation of high-level shutoff switch for full sewage tank and installation/& or validation of water tank fill lights.

Other maintenance work (boiler and tanks) as identified below.

Replacement of replacement of sewage tank and general maintenance and repairs will require services of an electrician & qualified HVAC technician to perform boiler/plumbing PM's

Proposal Costs

Bidders are to quote total costs broken down as:

1. Materials, supplies and miscellaneous items, (filters, glues, piping, fluids, etc.)
2. Labour, accommodation, per-diems and personnel transport (flights, baggage, taxis, etc.)
3. Air transport (freight, cargo/charter) & road transport, including any load & off-loading & delivery costs

Repulse Detachment

Repulse Bay RCMP detachment constructed 2004, 237 m². Detachment is located on Lot 95 Repulse Bay.

Detachment has three cells, garage/secure bay, office and open plan administration area with transient quarters on one side of building. Mechanical room is located behind secure bay.

Detachment has one staff bathroom (WC & hand sink) with janitor sink within same room, kitchenette with sink, laundry, prisoner shower and three cell toilets. Living quarters/transient quarters has shower, WC, hand sink and kitchen sink.

Detachment does not have crawlspace, water tanks are inside mechanical room and sewage tank is fitted between Triodetic (space-frame) foundation. Sanitary/grey water lines from detachment to sewage tank are boxed in insulated plywood boxes.

Mechanical drawing of detachment may be requested.

Current Situation

Existing sewage tank is damaged and leaking on three corners. Sewer pipes are freezing, as hydronic heat trace does not extend through piping chase from boiler to sewage tank. There is no light/signal/alarm to indicate heat trace is on.

There is evidence all sanitary lines are damaged from previous freeze-ups.

Project Scope:

- Remove and replace existing sewage/sanitary tank. Replace with insulated fiberglass glycol/hydronic heat-traced sewer holding tank system. New Sewage tank is to be a double-wall, insulated tank e.g. Equinox G1000 EHT. Tank must be close-to existing sewage tank volume (1000 gals/4500 L) and must be sized 1.5x total capacity of water holding tanks estimated 325-360 gals/ea., 1500-1600 L = 3000 L/total.
- Remove demolition & construction debris to local dump.
- Installation of new tank & hydronic heat-trace, as per Appendix A, excerpt from GNWT Good Building Practices for Northern Facilities 2011, Oct 18 2012 update.
- Supply and install new pipe (sanitary lines) from source to sewage tank, including all lines under the building.
- Supply & install hydronic heat-trace to/from boiler room on all sanitary drain lines & P-traps from source to tank and include heat-trace as noted in Appendix A, within sewage tank.
- Supply and install new plywood soffit which has to be removed to install/replace heat trace. Supply & install new plywood soffit space insulation & vapour barrier on all lines/boxes.

- Supply and install new hydronic heat-trace pump, temperature controller, manifold header system and any/all related electrical & connections for new sewage tank/hydronic tank to operate correctly.
- Supply and install high-level float type switch to turn off domestic water supply when sewage tank is full.
- Supply & install new high-level alarm/controls and new hydronic heat-trace light with on/off switch located in bullpen area.
- Supply and install a Lamicoid label with following information “*Sewage tank hydronic (boiler) heat trace. Turn on winter, off late spring*”.
- Pump out suction line to be complete with a Kamlock fitting/termination to match the community sewage tank connection. Connection to be firmly anchored, and sewage line to be graded back to sewage holding tank.
- If contractor determines new sewage tank is to be installed outside of Triodetic foundation, it must be partially buried, not sitting on grade. If outside of Triodetic foundation area, then installation must be as per GNWT Good Building Practice for Northern Facilities 2011, Oct 18 2012 update. (See Appendix A for excerpt.)
 - If tank is partially buried, location must be authorized by Asset Management.
 - If tank is partially buried, vehicular protection bollards or large rocks are required to prevent damage/access from vehicles.
 - If tank is partially buried, sanitary lines from exterior side of building to tank must be insulated and covered with additional protection to prevent birds from picking at pipe insulation wrap.
- Recommendation is for replacement tank to be located where existing sewage tank is but new tank must be installed with additional protection in an insulated box/containment. The existing winds & extreme cold weather are over-taxing the ability for fluids inside tank to remain thawed, even with heat trace.
- Additional maintenance work for site
 - Expansion tank in boiler room requires replacement. Size new tank to old tank.
 - Spiro vent to be relocated to supply side. Alternately, install new spirovent air eliminator.
 - Clean water tanks in detachment and houses
 - Perform PM on boiler and hot water tank in detachment and houses, this includes all checks from tank to heating device, supply & replacement of fuel and glycol filters.
 - Perform PM on cell toilets to remove any sand/dirt. Cell toilets are Acorn 1440.
 - Validation of water tank fill lights. If not operating, replace.
- Supply & install Dow Frost propylene 50/50 premix glycol for heating system at detachment and duplex. One drum (55 gal. (US)/44 gal. (IMP)) or 10 x 5 gal. (US) pails. Top up glycol levels in detachment and duplex.

It is recommended Bidders/contractors responding to RFQ verify scope of replacement/materials & repairs on site. Photos, schematics and drawings are included as a guide only.

Appendix A – GNWT Good Building Practices

Appendix A is a summary from Mechanical Section of GNWT Good Building Practice for Northern Facilities 2011, Oct 18 2012 update. Complete document can be downloaded from GNWT website. <http://www.pws.gov.nt.ca>

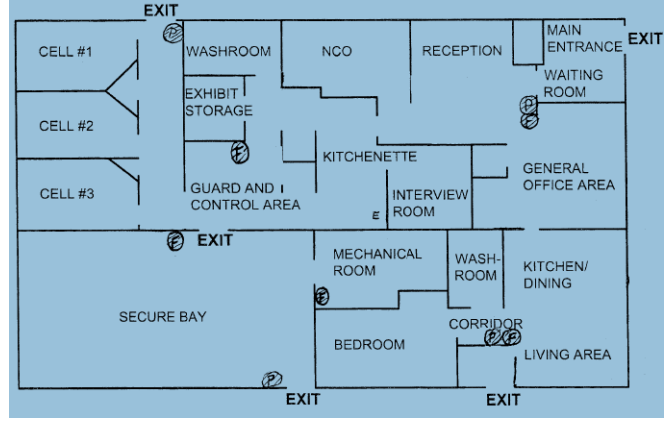
Appendix B – RCMP/SNC Concentric Tank Inspection (2014)

Appendix B is a summary document from a RCMP/SNC Tank inspection report completed late 2014. Minor upgrades may have been implemented since inspection. This is detail on heating devices and fuel tanks. It is included as reference.

Site Details & Photos



Repulse Bay Detachment (V013)



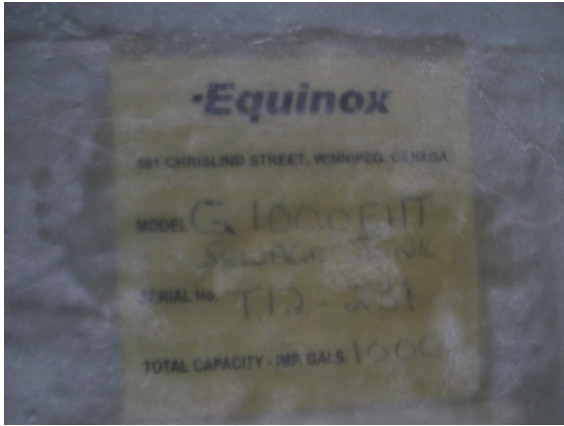
Repulse Bay Detachment – floor plan



Water tanks at detachment (2 x 325 gal)



Sewer tank at detachment, between triodetic foundations



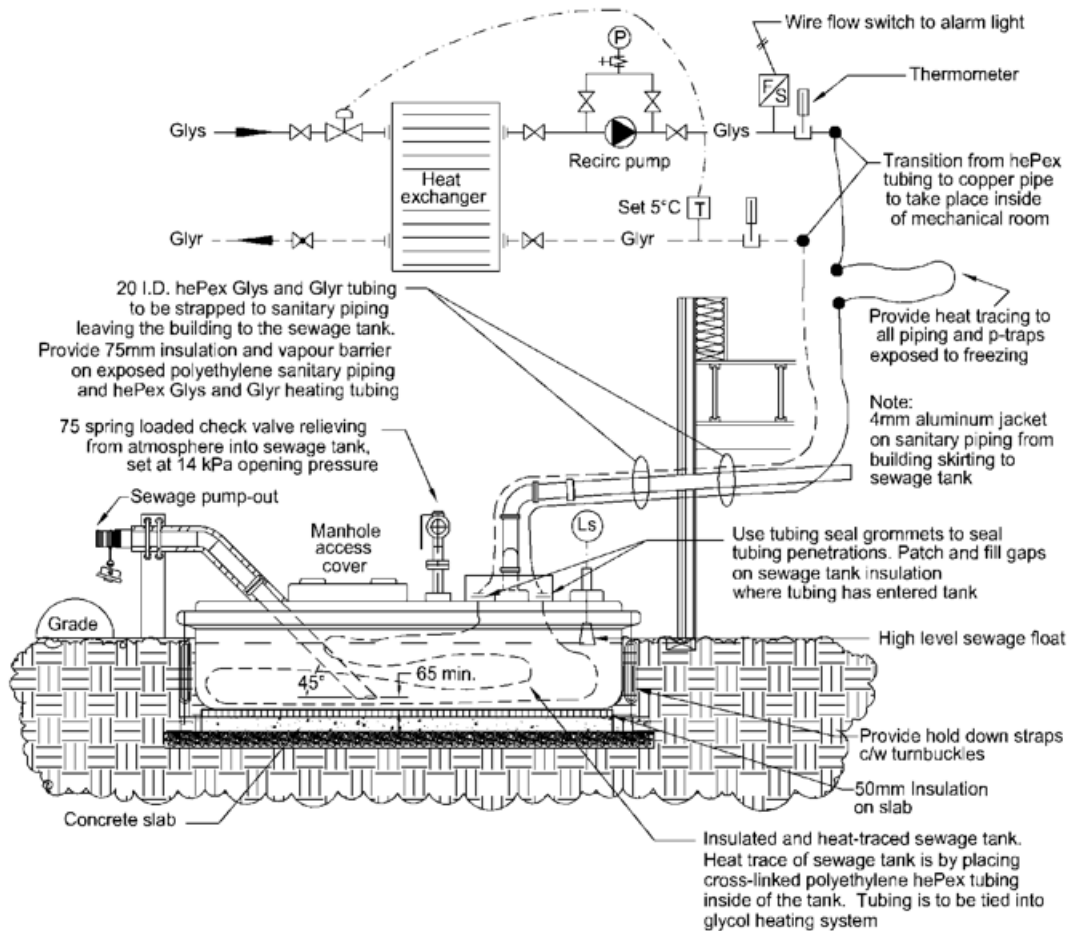
Repulse Bay Detachment, Sewage Tank label



Repulse Bay Duplex (V104)

Appendix A – GNWT Good Building Practices.

Figure 4-5: Sewage Tank Outside



Appendix B: Concentric RCMP/SNC Tank Inspection Report.

Site Information	
RCMP Number	V013 Detachment
Address	Repulse Bay, NU
Building Type	Single storey, RCMP detachment office.

Exterior Assessment	
Tank Type	Westeel, Fuel vault vacuum monitored, 2272L capacity, Serial No. 63030535., Model B – 520034, Manufactured 2003.
Tank Condition	Good; no signs of corrosion or leaking.
Tank Location	Outdoors; East side of building. Co-ordinates: 66.522862, -86.23186.
Clearance	8" to exterior wall.
Stand Type	Integral steel stand with gravel underneath.
Stand Condition	Good/Fair;
Exterior Piping	2" and 1" steel piping with flexible connection. Good/Fair condition; surface corrosion developing.
Exterior Valves & Accessories	Anti-siphon valve on supply.
Tank Venting	2" steel pipe with vented cap. Terminates approximately 6" above fill connection.
Spare Tanks	None.

Interior Assessment	
Tank	
Tank Type	Westeel, double wall vacuum monitored, nameplate damaged. Approximately 1110L capacity. Serial number 67033497, no visible model number, manufactured 1998.
Tank Condition	Good; no signs of corrosion.
Tank Location	Indoors; in mechanical room.
Clearance	2" to interior wall.
Stand Type	Integrated steel stand.
Stand Condition	Good; no signs of corrosion
Interior Piping	2" steel pipe from main AST to pump, 1" steel pipe to interior tank and overflow and vent to exterior tank. All piping in good condition.
Interior Valves & Accessories	Shutoff valve at discharge of pump
Tank Venting	1" vent from day tank connected back to main tank vent
Equipment #1	Boiler: Weil-McLain, Model WTGO-3, Serial No. 2003300, Capacity 100 MBH, Firing rate 0.95 GPH, Manufactured date 2003. Burner: Beckett, Model AFG50, Serial No. 031216-44698, Firing rate 0.5-1.1 GPH.
Interior Piping	½" soft copper tubing. Good condition except slight kink in water heater piping.
Interior Valves & Accessories	Boiler 1: Shutoff valve, oil filter, fire valve, tiger loop.
Fuel Pumps	Pump #1: Viking Pump Inc., GG90M nameplate. Motor: Baldor Reliance, Model CL5607A, 3/4 HP.






Interior Assessment	
Spill Trays	Spill trays under equipment piping accessories.
Spill Kits	Yes; In garage.
Fire Extinguisher	Fire Extinguisher: 3A:40B: C type extinguisher room on wall located in mechanical adjacent to door.
Precision Leak Test	No records on site.




Above Ground Storage Tank Piping Checklist

Code Issues	
<p>CSA B139 (09) 7.2.1.4</p>	<p>Issue: Any unused openings in a tank shall be sealed vapour and liquid tight. Recommendation: Provide liquid and vapour tight seal over tank opening.</p>
<p>CSA B139 (09) 7.3.8</p>	<p>Issue: A tank shall be installed on rigid, non-combustible supports constructed of materials having a fire-resistance rating of not less than 2h. There is no base existing; just the metal support stands integral to the tank. Recommendation: A new base should be installed, either a concrete pad, or pressure treated wood flush with grade and tank support should be fastened to it.</p> 



Code Issues	
<p>CSA B139 (09) 7.9.2.3</p>	<p>Issue: The overflow pipe should be at least twice the cross-sectional area of the supply line and not less than 2", and should be installed without sags or traps. Recommendation: Replace existing overflow pipe with properly sized pipe with no sags present.</p> 
<p>CSA B139 (09) 7.10.2</p>	<p>Issue: Tanks installed inside must be provided with a gauge to determine liquid level. Recommendation: Install code approved gauge on tank.</p> 
<p>Observation</p>	<p>The vacuum on the tank has been lost. This could be an indication of tank failure. The vacuum should be redrawn, and if it does not hold, the tank should be replaced.</p> 



Code Issues	
<p>CSA B139 (09) 9.3.1.5</p>	<p>Issue: Piping shall be supported and protected against physical damage such as foot traffic, vehicles, and snow and ice damage. Recommendation: Protective covering over piping is recommended to prevent falling ice and snow from damaging piping.</p>
<p>CSA B139 (09) 9.4.1</p>	
<p>CCME and Storage tank systems for petroleum products</p>	<p>Issue: See non-compliant issues in checklists above. Recommendation: This fuel oil system is registered (EC-00003654) and requires regular visual inspections of piping and precision leak detection tests. No documentation was found on site for these inspections and tests. It is recommended that an inspection and detection program be put in place and documents kept in the mechanical room with the interior tank.</p>

Additional Photographs from Site Visit



Photo 1: Outdoor above ground fuel tank



Photo 2: Exterior piping



Photo 3: Exterior Piping along Wall



Photo 4: Supply and Return Lines at Exterior Tank

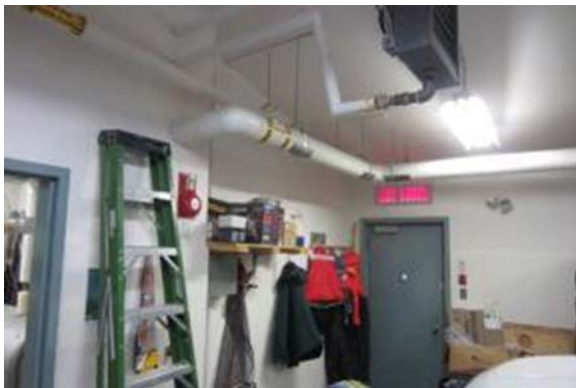


Photo 5: Interior Supply and Return Piping



Photo 6: Fuel Pump



Photo 7: Interior Tank



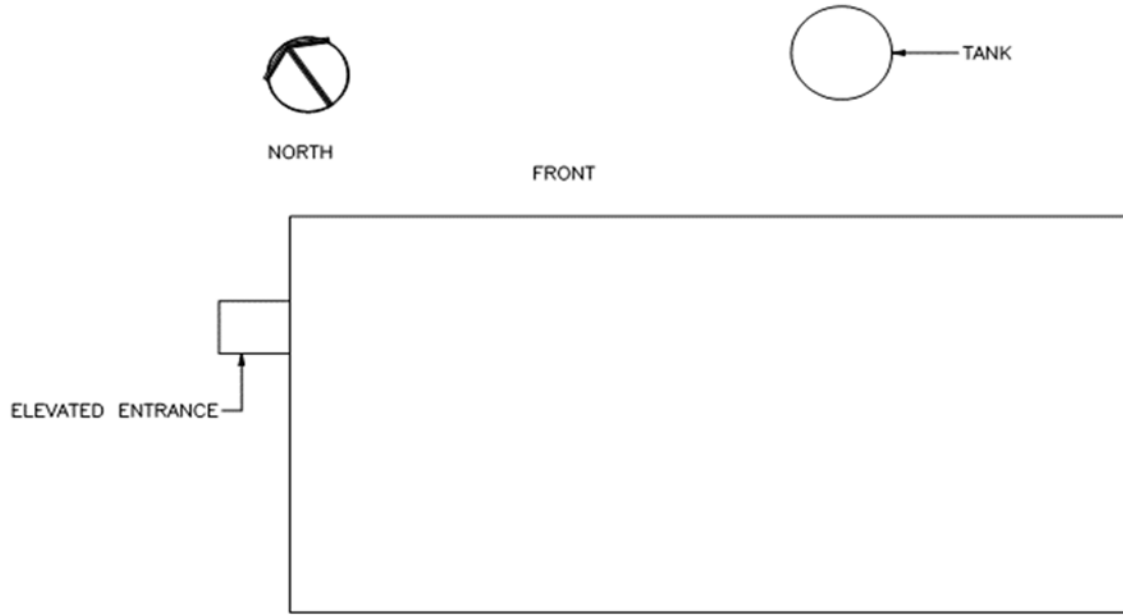
Photo 8: Level Controller



Photo 9: Fuel Filter



Photo 10: Boiler



V013 Detachment Site Plan






Site Information	
RCMP Number	V014 Residence
Address	Repulse Bay, NU
Building Type	Double storey, single family residential duplex.

Exterior Assessment	
Tank Type	Granby, Single wall tank, 1135 L capacity. Model 11901, SerialNo. 17126-C. Manufactured 2002.
Tank Condition	Fair/poor; only minor surface corrosion. Paint peeling away. Received rating due to the tank being single wall.
Tank Location	Outdoors; North side of building. Co-ordinates: 66.523251, - 86.232119
Clearance	16" to exterior wall.
Stand Type	Steel stand with gravel underneath.
Stand Condition	Good/Fair; Some corrosion developing.
Exterior Piping	2" steel piping with flexible connection. Good/Fair condition; painted, surface corrosion developing.
Exterior Valves & Accessories	Shutoff valve at tank.
Tank Venting	1 1/2" PVC pipe with two 90° elbows. Terminates level with fill connection.
Spare Tanks	None.

Interior Assessment	
Equipment #1	Boiler #1: Weil-McLain, Model P-WTGO-4, Serial No. CP4158478, Capacity 115 MBH, Firing rate 1.25 GPH, Manufactured 2001. Burner: Beckett, Model AFG, Serial No. 050922-82567, Firing rate 0.5 – 3.0 GPH.
Interior Piping	2" steel to 1/2" steel to 3/8" soft copper tubing. Good condition.
Interior Valves & Accessories	Boiler 1: Shutoff valve, five valve, oil filter, tiger loop.
Fuel Pumps	None.
Spill Trays	Spill trays under equipment piping accessories.
Spill Kits	None.
Fire Extinguisher	Fire Extinguisher #1: 6A:80B: C type extinguisher located on wall.
Precision Leak Test	No records on site.



Code Issues	
Code violations are listed below. The overall recommendation for this site since the tank is single wall is to replace the system with new.	
CSA B139 (09) 7.3.8	<p>Issue: A tank shall be installed on rigid, non-combustible supports constructed of materials having a fire-resistance rating of not less than 2h. New tank should be installed with concrete pad, or pressure treated wood flush with grade.</p> 
CSA B139 (09) 7.5.5	<p>Issue: Outdoor tanks need secondary containment, or need to be double walled/bottom with interstitial monitoring. Existing tank is single wall and needs to be replaced.</p>
CSA B139 (09) 7.5.6	<p>Issue: Tanks installed in an area not separated by vehicles needs to be protected by good engineering practices. Protective bollards to be installed for new tank to prevent accidental vehicle collision.</p> 
CSA B139 (09) 7.8.2	<p>Issue: Each fill opening and each entry to a fill pipe shall be provided with a weather tight cover designed to prevent tampering. New tank to be provided with code approved, weather tight cover.</p> 



<p>CSA B139 (09) 7.8.4</p>	<p>Issue: A fill opening shall be designed to avoid spillage. (see photo above) New tank should be installed with certified spill containment box.</p>
<p>CSA B139 (09) 7.9.1.7</p>	<p>Issue: Vent must terminate a minimum of 6" above fill. (see photo above) New vent to extend a minimum of 6" above fill.</p>
<p>CSA B139 (09) 7.9.1.7</p>	<p>Issue: Vent must be c/w a weatherproof hood. The vent hood or cap shall prevent ingress of objects. (see photo above) New tank vent to terminate in code approved hood.</p>
<p>CSA B139 (09) 9.3.1.5</p>	<p>Issue: Piping shall be supported and protected against physical damage such as foot traffic, vehicles, and snow and ice damage. Protective covering over new piping recommended to prevent falling ice and snow from damaging piping.</p>

Additional Photographs from Site Visit



Photo 1: Outdoor above ground fuel tank



Photo 2: Outdoor above ground fuel tank



Photo 3: Exterior Piping and Valves



Photo 4: Exterior piping below building



Photo 5: Fill and Vent Terminations



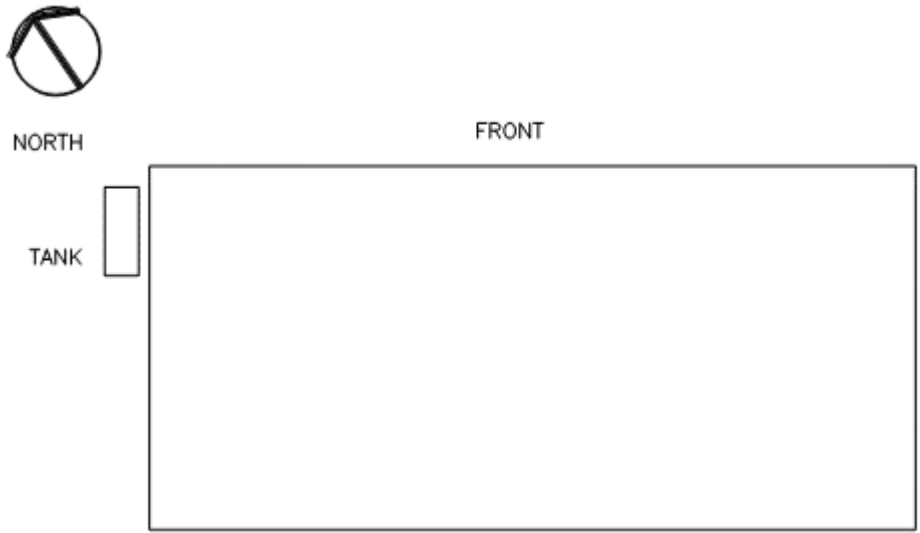
Photo 6: Boiler in Mechanical Room



Photo 7: Fuel Piping At Boiler



Photo 8: Fuel Main and Filter



V014 Residence Duplex Site Plan