

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 work (boiler and tanks) as identified below.

Proposal Costs

This project has two parts – Part A replacement of sewage tank and Part B, HVAC repairs and tank installations. Bidders are to quote Part A and Part B separately. Part A is mandatory work and Part B is optional work. Part B will be awarded based on available funding.

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 triodetics. Sanitary/grey water lines to sewage tank are within insulated plywood boxes.

Mechanical drawing of detachment similar to Repulse Bay attached.

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 sanitary lines are damaged from previous freeze-ups.

Project Scope – PART A

- Remove and replace existing sewage/sanitary tank.
- Remove demolition & construction debris to local dump.
- Supply and install new pipe (sanitary lines) and insulate from source to sewage tank.
- Supply & install hydronic heat-trace on sanitary drain lines under building from source to tank.
- Supply and install new insulation & vapour barrier (within flooring), as required.
- Re-use any plywood boxes/protection soffits that cover existing sanitary lines but where covers are missing or material cannot be re-used, supply and install new. Replace insulation within boxes/soffits as required.
- Supply and install new hydronic heat-trace pump, temperature controller and any electrical 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.

- 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.
- Sewage tank replacement is to be a double-wall, insulated tank e.g. Equinox G1000 EHT. Tank must be near-to existing sewage tank volume and near-to 1.5x total capacity of water holding tanks.
- New alarm/controls may be required, with on/off switch for heat-trace located in bullpen area. Supply and install a Lamicoid label "Sewage tank hydronic (boiler) heat trace. Turn on winter, off late spring".
- 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.

If contractor determines new tank is required, installed outside of Triodetic foundation and partially buried, then installation must be as per GNWT Good Building Practice for Northern Facilities 2011, Oct 18 2012 update. (See Appendix A for document 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.

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

Project Scope – PART B

Other work in addition to sewage tank replacement.

Appendix B is a summary document from a RCMP/SNC Tank inspection report completed late 2014. Minor upgrades may have been implemented since inspection. Site inspections are recommended as scope for tank upgrades and replacement is based on report. If further maintenance & repair work is identified from site inspection, list this work in proposal.

Requirements for tank upgrades are summarized in section, "*Fuel Tank Upgrades/Replacements*". Appendix B provides more detailed information on code violations that require resolution.

Mechanical Upgrades/Replacements

- Supply & install Dow Frost propylene 50/50 premix glycol for heating system at detachment and duplex. Suggest one drum (55 gal. (US)/44 gal. (IMP)) or 10 x 5 gal. (US) pails.

Fuel Tank Upgrades/Replacements

- Fuel tank (interior) requires fuel gauge.
- The vacuum on interior fuel tank has been lost. This could be an indication of tank failure. The vacuum should be redrawn, and if it does not hold, replace tank. Replacement tank to be Vilco d/w fiberglass. Alternative d/w tank may be considered based on available room within mechanical room.
- Replace fuel oil filter
- Fuel tank (exterior) provide liquid and vapour tight seal over tank opening.
- Exterior fuel 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.

- Install new base either a concrete pad, or pressure treated wood flush with grade or tank support should be fastened to it.
- Recommendation is concrete pad.
- Gravel base under concrete pad to be higher than existing grade to eliminate snowmelt/water accumulation at base.
- Exterior Fuel tank - replace existing overflow pipe with correctly sized pipe, with no sags.
- Exterior Fuel tank piping (tank to building) - any pipe greater than 1 meter is to be supported by hangers (attached to building) or supported from underneath.

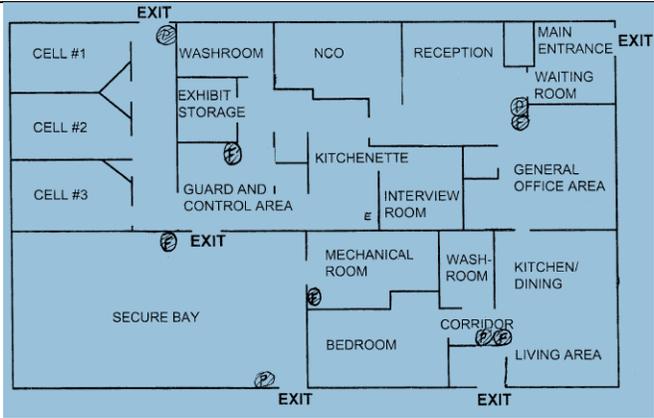
Residential Fuel Tank

- Supply and install two d/w Vilco 1135 L fuel tank at residential duplex. Supply & install poured concrete pad for twinned tanks. Supply new tank stand. Supply and install piping from tank to house to boiler in mechanical room, pre-paint pipe before transport to site. Isolation shut-offs are required on exterior and interior. Installation as per CSA B139.
- Install bollards or large rocks to provide protection from vehicle access.
- Replace fuel oil filter.

Site Details & Photos



Repulse Bay Detachment (V013)



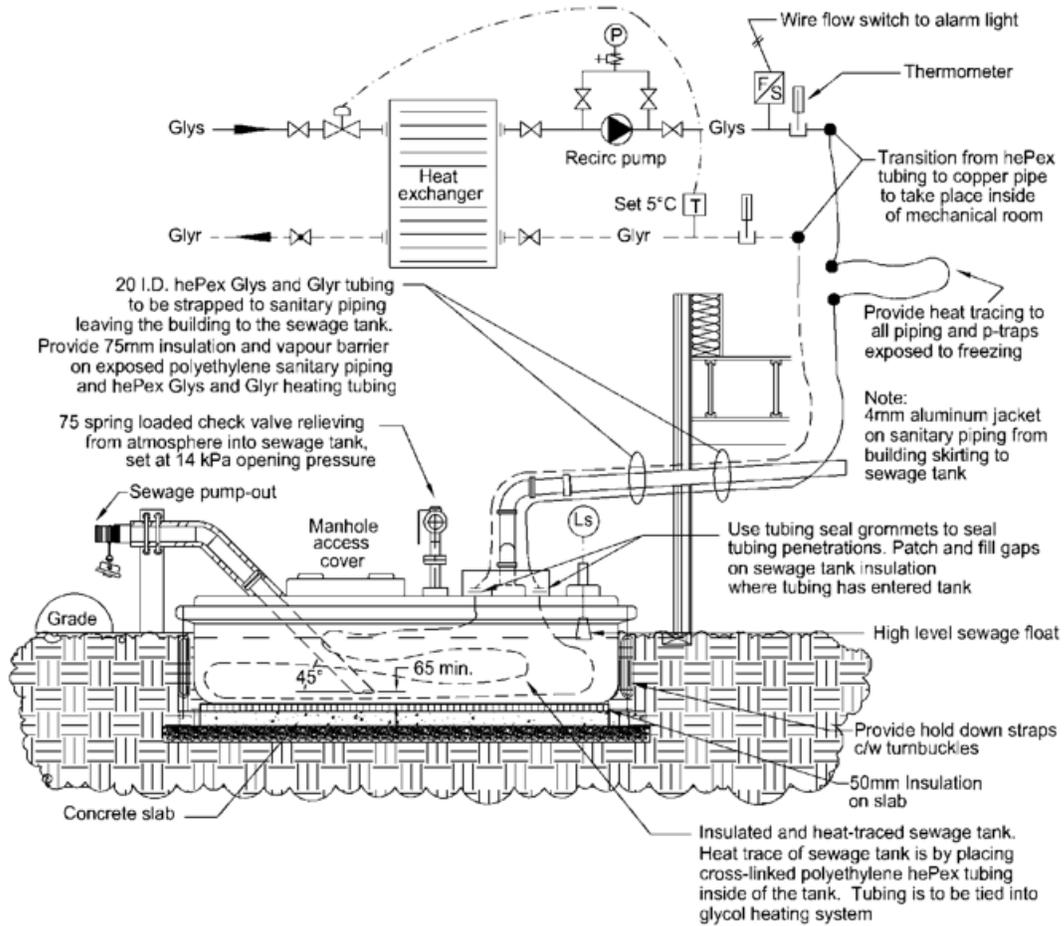
Repulse Bay – floor plan



Repulse Bay – Duplex (V014)

Appendix A – GNWT Good Building Practices.

Figure 4-5: Sewage Tank Outside



Appendix B: Concentric RCMP/SNC Tank Inspection Report.

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| Site Information | |
|----------------------|--|
| PWGSC 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., ModelB – 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 located in mechanical room on wall adjacent to door. |
| Precision Leak Test | No records on site. |

| Above Ground Storage Tank Checklist | | |
|--|---|--|
| ✓ | EC Identification number (Sec. 28) before first fill. | EC-0003654 visible on exterior tank at fill location. |
| ✓ | Spill containment at transfer area (15 (1)) | |
| * | Emergency Plan (up to date) (30) | Emergency plan was not found on site |
| * | Spill Reporting (41) | No documentation for report spills was found |
| * | Design according to CCME (14 (1)), CCME Sec. 3 | As built drawings were not available on site, no precision leak tests were present. |
| ✓ | ULC # | (double containment, ULC Listed – ULC/ORD-C142.22) |
| * | Design Stamped by P. Eng (34 (1)) | No drawings for tank on sight. |
| * | Provincially Approved Installer (33 (1)) | No record on site of installing contractor. |
| ✓ | Spill containment (14 (2)) | Present – spill containment bin containing absorbent material |
| * | As-built drawings – stamped by P. Eng (34 (2)) | No as built drawings of tank or building since 1974. |
| ✓ | Corrosion control (14 (1)), CCME Sec. 3 | Protective coating for AST was applied by manufacturer |
| ✓ | 110% Secondary containment (14 (1)), CCME Sec. 3 | The AST is double wall vacuum monitored |
| ✓ | Overfill protection (14 (1)), CCME Sec. 3 | Automatic overfull shut off valve present |
| ✓ | Horizontal tanks supported above grade (14 (1)), CCME Sec. 3 | The tank is supported above grade by metal supports, but is not located on a concrete pad. |
| ✓ | Record (46): O & M 5 years | Inspection/Service/Maintenance reports available on site. It appears that monthly inspections are completed. |
| * | Record (46): ID & plans; life of tanks systems | Not present on site. |
| * | Record (46): Copies of Emergency Plan on-site and with emergency responders | Present |



| Above Ground Storage Tank Piping Checklist | | |
|---|--|--|
| * | Fill pipe and vent line installed, all other openings sealed or connected to piping (12) | All fill and vent piping installed as per code, there is a single pipe in spill containment box crimped. |
| ✓ | Approved Piping Material | - Black iron - flexible copper piping to equipment. |
| N/A | In accordance with NFCC – protection from impact, etc. (CCME 5.2.2) | Piping and tank is not protected from impact. No vehicles access the area where the tank is installed. |
| N/A | Secondary containment (underground) (CCME 5.4) | No underground piping |
| N/A | Thermal relief valve (CCME 5.2.7) | No thermal relief valve installed in piping |
| ✓ | Anti-siphon if piping located below the maximum product level in the tank (CCME 5.2.8) | Anti-siphon valve installed on supply at main AST |
| ✓ | Lockable manual shut-off valve (unless attached to heating appliance) (CCME 5.2.8) | Shut off valves were present, not lockable. |
| ✓ | Liquid/vapour tight connection at fill point if over 5000 L (CCME 5.3.1)) | Appeared liquid and vapour tight – no test performed to assess this |
| ✓ | No buried or concealed mechanical joints (14 (5)) | No buried piping |

| Code Issues | |
|----------------------------------|--|
| CSA B139 (09) 7.2.1.4 | Issue: Any unused openings in a tank shall be sealed vapour and liquid tight. Recommendation: Provide liquid and vapour tight seal over tank opening. |
| CSA B139 (09) 7.3.8 | 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. |





| 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 recommend 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



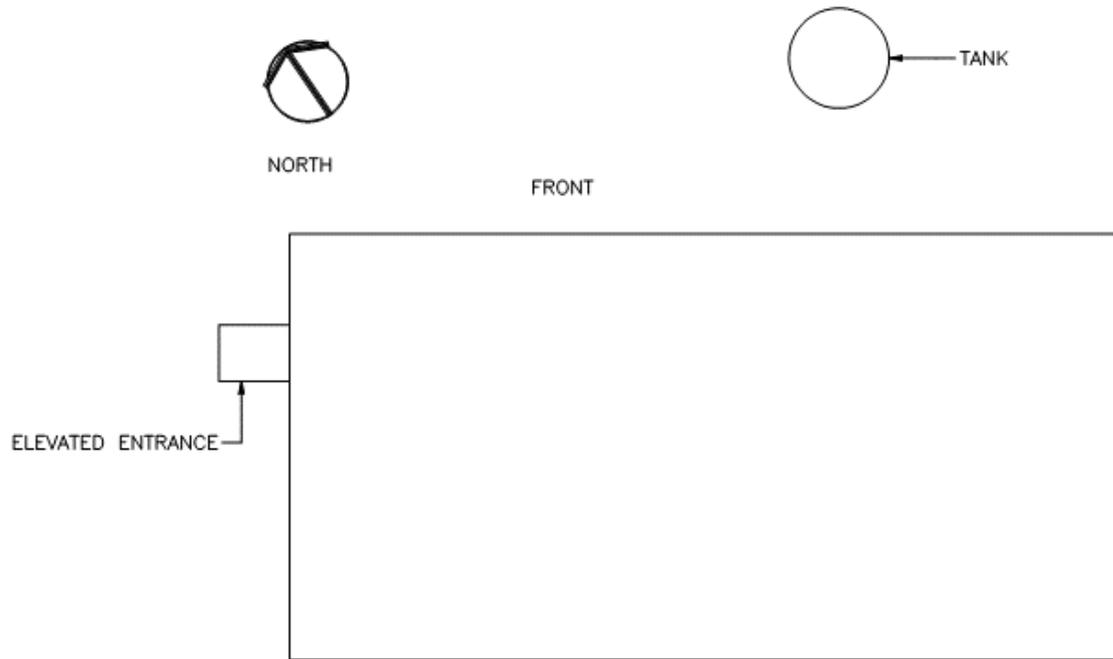
Photo 9: Fuel Filter



Photo 10: Boiler



Photo 11: Spill Kit



V013 Detachment Site Plan



| Site Information | |
|----------------------|--|
| PWGSC 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, Serial No. 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 | |
|--|---|
| <p>Code violations are listed below. The overall recommendation for this site since the tank is single wall is to replace the system with new.</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. New tank should be installed with concrete pad, or pressure treated wood flush with grade.</p>  |
| <p>CSA B139 (09) 7.5.5</p> | <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> |
| <p>CSA B139 (09) 7.5.6</p> | <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>  |
| <p>CSA B139 (09) 7.8.2</p> | <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

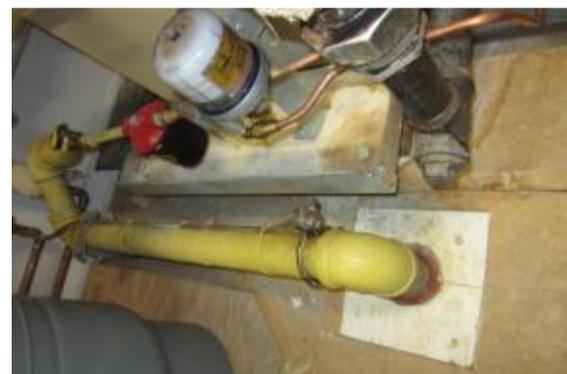


Photo 8: Fuel Main and Filter



Photo 9: Fire Extinguisher



NORTH

FRONT

TANK



V014 Residence Duplex Site Plan