Built on Tradition

Highland Tank®

Underground Cylindrical Passive Grease Interceptors

HT-2816

User Manual

Installation, Operation & Maintenance

Carefully read and follow the instructions in this manual.

Single Basin
Double Basin
Triple Basin

MADE IN U. S. A.

Warning and Disclaimer

This manual is intended for use only by persons knowledgeable and experienced in underground grease interceptor installation, operation and maintenance. This manual provides general guidance, and conditions at your site may render inapplicable some or all of the guidance. If you are uncertain, or require clarification or further instruction, please contact Highland Tank prior to commencing any installation, operation or maintenance procedure. You are solely responsible for compliance with all federal, state and local laws, regulations and ordinances applicable to your installation and operation. Highland Tank disclaims all liability related to any misuse of the tank or failure to follow all guidance and instruction provided by Highland Tank.

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Glossary of Terms

PGI - Passive Grease Interceptor
BMP - Best Management Practices
FOG - Fats, Oil & Grease
FSE - Food Service Establishment
AHJ - Authority Having Jurisdiction

Introduction

Thank you for purchasing a Highland Tank Grease Interceptor - the leading high-performance interceptor in the industry.

The purpose of this manual is to provide detailed information on the installation, venting, startup, operation, inspection, maintenance, trouble-shooting and best management practices for the Highland Tank Passive Grease Interceptor.

These instructions should be used in conjunction with any and all other applicable installation and corrosion protection system instructions, e.g.:

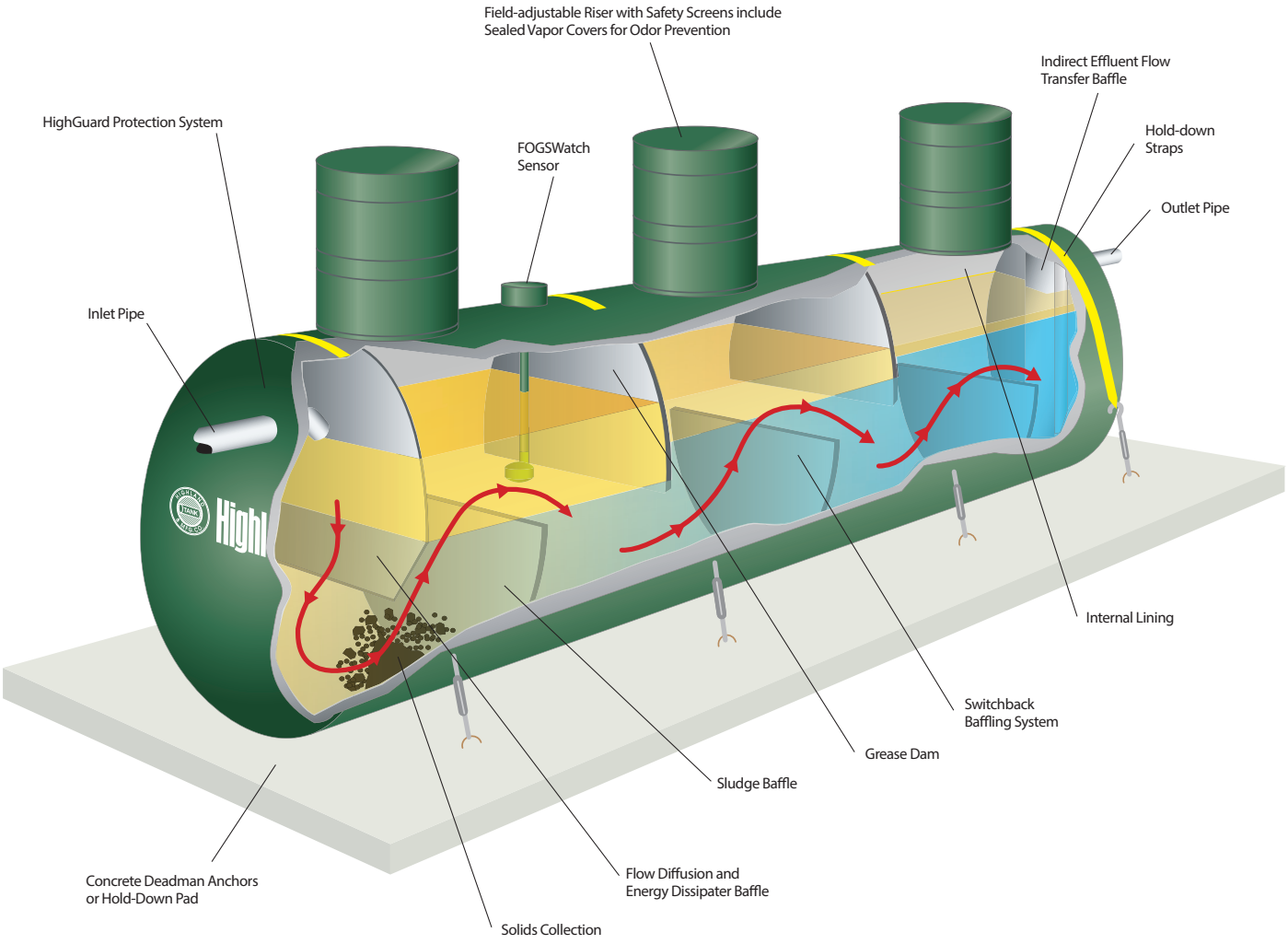
- Highland Tank's HighGuard Tank Installation Instructions, HT-7001,
- Steel Tank Institute ACT-100-U® Installation Instructions, R971.

Note: This manual is based on Highland Tank's standard grease interceptor configurations. Other custom configurations are available. Verify the supplied configuration prior to installation and testing.

Standard PGI Description

The Highland Tank PGI is designed specifically for the separation of fats, oils, grease and settleable solids from commercial and industrial food service facilities. The PGI intercepts and collects these pollutants from the facility's waste stream and prevents their discharge into the environment.

The PGI is a stationary, wastewater treatment tank filled with water. Internal baffles and weirs diffuse flow and create an extended path for FOG to contact static water in the tank. Initial solids separation and knockout occur in the first chamber and are retained by means of a sludge baffle. Sizing of a PGI is based on the AHJ requirements. PGIs retain waste stream influent long enough to allow FOG to separate from waste stream and rise to surface. Retained FOG cools, solidifies and remains in the PGI until removal.



Important points to consider prior to installation, operation and maintenance of the PGI:

Carefully read and follow instructions in this manual. Local codes and ordinances may apply. Check with local AHJ prior to installation of PGI.

- Ensure adequate site space - almost all products are delivered on a 75-foot-long tractor trailer. Allow space for unloading, positioning and temporary storage if applicable.

- Ensure the crane has adequate lifting capacity and clearance - have operator check site for clearances (overhead, turning, etc.). Spreader bars may be required for 10 foot diameter and larger PGIs.

- PGIs that are 0 foot diameter and larger are typically shipped rotated to minimize over-the-road height. They must be lifted from the hauling trailer by the supplied lifting lugs on the heads of the PGI. They must then be rotated before final lifting into the excavation. Spreader bars and/or adequate lifting straps must be available to maintain recommended safe lifting capacity. Please check approval drawing for overall length of the PGI and location of the head lifting lugs.

- Do NOT rotate the PGIs while they are still on the trailer - damage may result. PGIs must be lifted from the trailer, using the lifting lugs supplied on the heads, and lowered onto a flat area, free from anything that may cause damage to the exterior coating. Once the PGI is stable, the lifting device may need to be repositioned and then reattached to the lifting lugs on the top centerline of PGI. At this point, slowly roll the PGI to upright position on the ground before lifting to place in final resting position.

- Special permits may be required for weight, size, etc. by local code or ordinance.

- Confirm inlet/outlet piping elevations - coordinate with site plan - check/recheck approval drawing when PGI arrives.

- Make sure PGI hold-down method/system is predetermined and components are at the site prior to PGI installation.

- Never enter the PGI or any of its enclosed spaces without proper confined space entry training and approved equipment. See OSHA, Regulations for Permit-Required Confined Spaces - 29 C.F.R. § 1910.146.

- Barricade the PGI installation area until job is complete.

- The PGI will not remove chemical or physical emulsions, dissolved hydrocarbons, solvents or Volatile Organic Compounds. Avoid introducing such materials into the PGI.

Important points to consider (continued):

- Waste oils, such as frying oil, should not be intentionally drained into the PGI. Filling the PGI with waste oils adversely affects PGI performance. Waste oil should be properly disposed of by other means.

- The PGI needs to be maintained to remain as free of accumulated FOG and solids as possible. Suction removal of waste as needed, is the best and recommended method of maintenance.

- The location of your PGI should be as close as possible to the source of the FOG to minimize solidification in the piping system. PGI must also be placed in an area with sufficient truck access (top-side clearance) for waste removal.

- Piping should be designed to minimize turbulence and promote laminar flow.

- The PGI must be kept from freezing at all times. The PGI and piping should be installed below local frost levels. If necessary, a thermostatically controlled steam or electric heating device may be installed.

- Complete the HighGuard or ACT-100-U® Installer Information Card that was included with the delivery documents. This information is required to activate and maintain the Limited Warranty.

Installation

Care in Handling PGIs

PGIs must not be dropped, dragged or handled with sharp objects and, except as minimally necessary for inspection and testing, should not be rolled. Lifting equipment must be of adequate size to lift and lower the PGI without dragging, dropping or damaging the PGI or its coating.

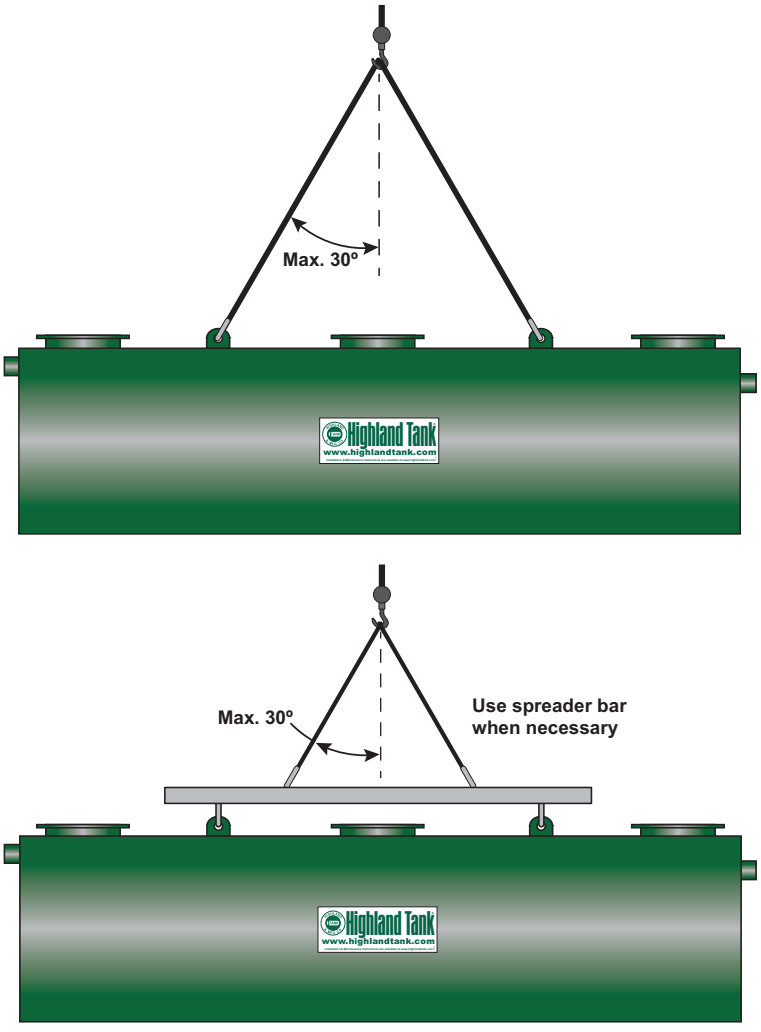
PGI Unloading

The PGI must be mechanically unloaded. Use extreme care when unloading as weight distribution of PGI may be uneven.

Lifting and Moving

Lifting and moving the PGI must only to be done using the lifting lugs welded to the PGI. PGIs should be carefully lifted, moved and lowered using cables, chains or straps of adequate size. When two lifting lugs are used, the angle between the lifting cable and vertical shall be no more than 30 degrees. See Fig.1. Use a spreader bar where necessary. Maneuver PGIs with guidelines attached to each end of the PGI. If PGIs must be relocated on a job site during installation, they must be lifted and not rolled.

Fig. 1



WARNING:

Under no circumstance should chains or slings be used around the PGI shell.

Pre-Installation Inspection & Testing

Upon delivery, visually inspect the PGI for exterior damage that may have occurred during shipping or job site handling. Any damage that could result in leakage or corrosion must be repaired in a manner approved by Highland Tank. Please refer to coating repair instructions below. If a PGI is not buried within 90 days, the PGI should be covered to protect the exterior coating from the effects of ultraviolet light damage.

If the PGI is of double-wall construction and has shipped with a vacuum drawn on the interstice, inspect the vacuum gauge. If the gauge indicates less than 5 inches, reinstitute the vacuum to 7-inches. Maintain 5 inches of vacuum for 2 hours before installing the PGI. Do not relieve pressure until PGI is secured in its final resting position.

Coating Repair

Before placing the PGI in the excavation, all dirt clods and foreign matter shall be cleaned from the surface of the PGI. Damage to coating surface must be repaired using the supplied touch-up kit.

Visually inspect the PGI for damage. Pay particular attention to areas where coating may have been gouged or abraded. Mark all areas which appear damaged for repair.

Clean damaged PGI coating areas of rust, contaminants or disbonded coating prior to application of touch-up coating.

Areas of coating damage shall be roughened up with coarse grit sandpaper or grinder (see Society of Protective Coatings (SSPC) SP-2 "Hand Tool Cleaning" or SP-3 "Power Tool Cleaning" for additional guidance) to remove all glossiness from the surface surrounding the repair area approximately 6 inches around the damaged area. Re-coat the area with touch-up coating provided. See Fig. 2. Allow the repaired coating areas to cure completely.

Damaged polyurethane coatings must be repaired with the polyurethane repair kit that was delivered with the PGI.

Internal Piping Inspection

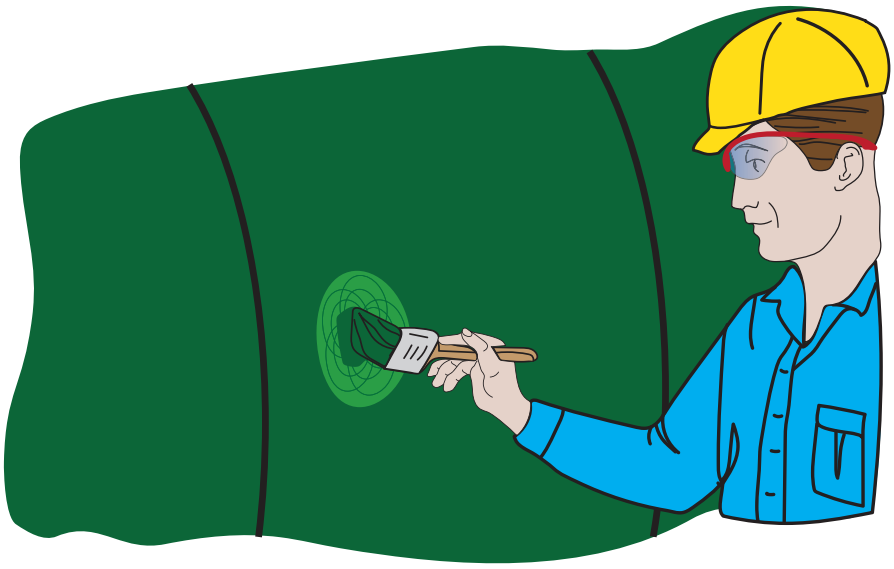
Carefully remove manway covers so as not to damage the gaskets. Inspect the interior of the PGI from above (without entry) to ensure that internal piping is secure and has not been damaged during transport. Do not allow anyone to enter the PGI unless it has been properly prepared for entry and the person entering the PGI has been properly trained for confined-space entry per OSHA, Regulations for Permit-Required Confined Spaces - 29 C.F.R. § 1910.146.

WARNING:

DO NOT ENTER the PGI without following proper confined space entry procedures.

Coating Repair (continued):

Fig. 2



After repairs have been completed, all repaired areas of the HighGuard and ACT-100-U® protection system coatings shall be re-tested with a holiday detector set at 15,000 volts.

Excavation and Bedding

The excavation should provide adequate space for the PGI(s) piping and associated equipment. It must also be free of any hard or sharp material that could cause damage to PGI coating.

Be certain that foreign matter is not introduced into the excavation or backfill.

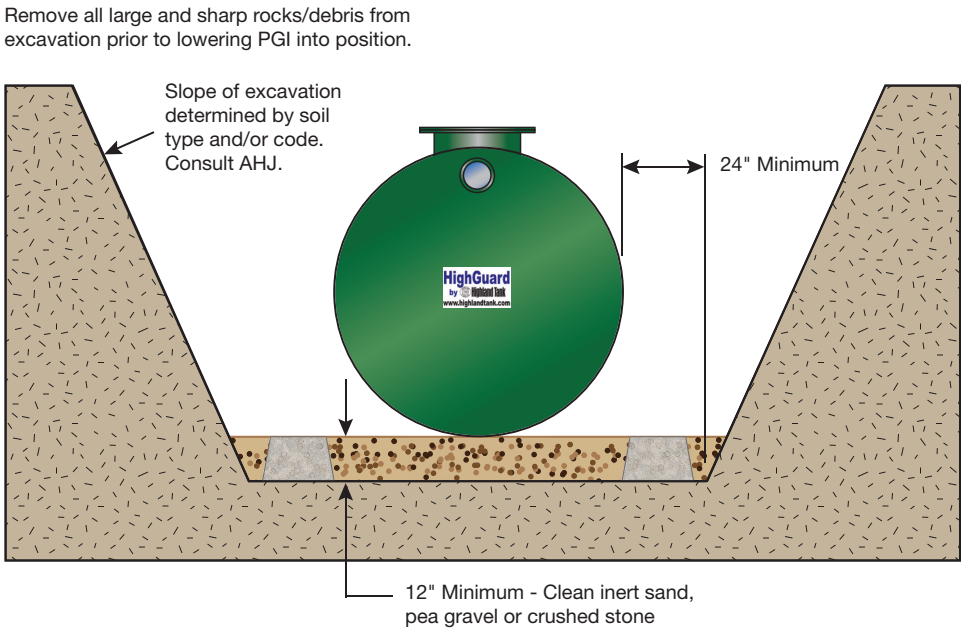
The total depth of the excavation is determined by the PGIs diameter, bedding thickness, hold-down pad (if required) depth of cover (including any effects of vehicular traffic) and slope and length of piping. Consult AHJ for additional requirements related to existing structures.

CAUTION:

DO NOT exceed maximum burial depth as predetermined by manufacturer.

Bedding and backfill must be a homogenous material consisting of compacted clean sand, pea gravel, No. 8 crushed stone (American Society of Testing and Materials - ASTM-448) or equivalent. (100% through a 1/2 inch (13 mm) sieve and no more than 12% by dry weight through a #200 sieve (0.0029 Inch (0.0754 mm)). Pea gravel shall be no larger than 3/4-inch (19 mm). See Fig. 3.

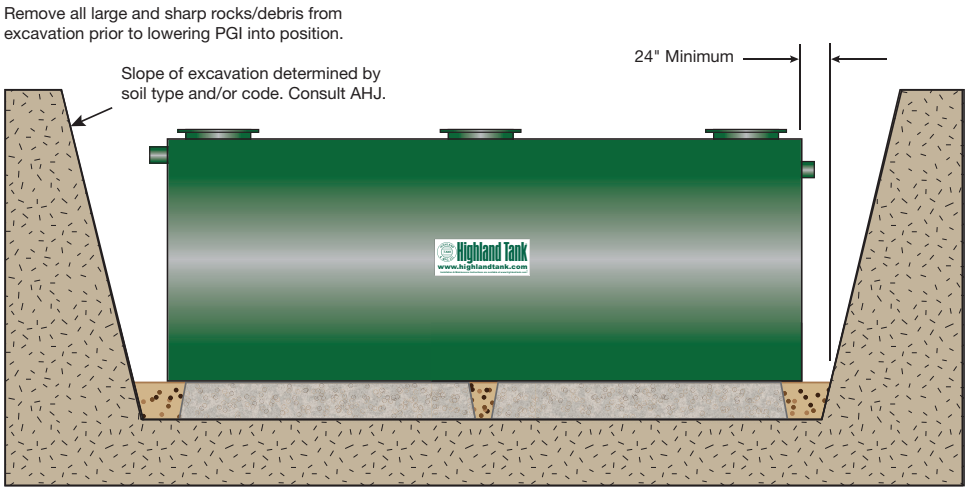
Fig. 3



Excavation and Bedding (continued):

The bottom of the excavation must be covered with bedding material to a minimum depth of one foot, suitably graded and leveled and extend at least two feet around the perimeter of the PGI for backfill operations. Place at least 24 inches of backfill between any adjacent PGIs, tanks and excavation walls. See Fig. 4.

Fig. 4



Placement of the PGI

The PGI must be installed in a level and plumb position.

Check elevations at each end of the PGI with a transit and adjust as necessary to 1/2 inch in 20 feet. Check elevations across the diameter of the PGI and adjust to 1/4 inch in 10 feet.

Anchoring

High water tables or partially flooded excavation sites exert significant buoyant forces on PGI. Buoyant forces are partially resisted by the weight of the PGI, the backfill and any pavement atop the PGI. Additional buoyant restraint, when required, is obtained by using properly designed hold-down straps in conjunction with concrete hold-down pads or deadman anchors.

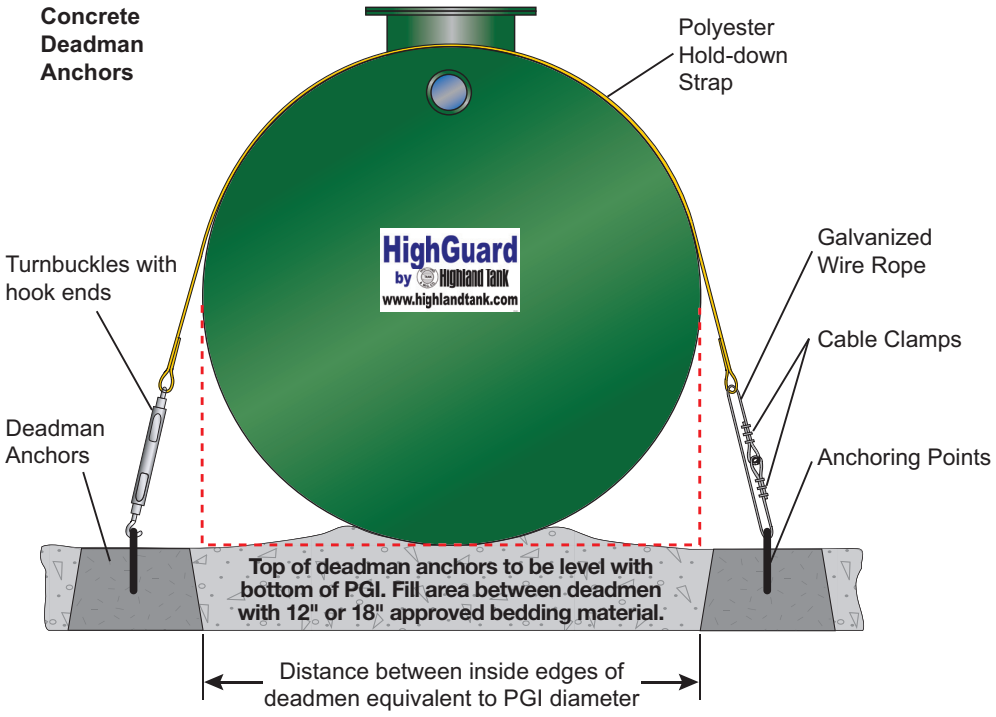
The use of steel cable and/or round bar as buoyant restraints is prohibited.

Steel hold-down straps must always be kept from contacting the PGI shell by an oversized separating pad made of inert insulating dielectric material.

Several hold-down methods are available for anchoring the PGI in the excavation. Consult AHJ and choose the method that completely satisfies all requirements for the installation location. Highland Tank's Deadman Anchoring System employs concrete deadman anchors and polyester hold-down straps.

When using deadman anchors, the bottom of the excavation (native earth) shall be covered with a minimum of 12 inches of bedding material suitably graded and leveled. Bedding and backfill shall surround the PGI to a width and depth of 12 inches minimum all around the PGI. Position deadmen as shown in Fig. 5, filling the space between them with approved backfill material.

Fig. 5

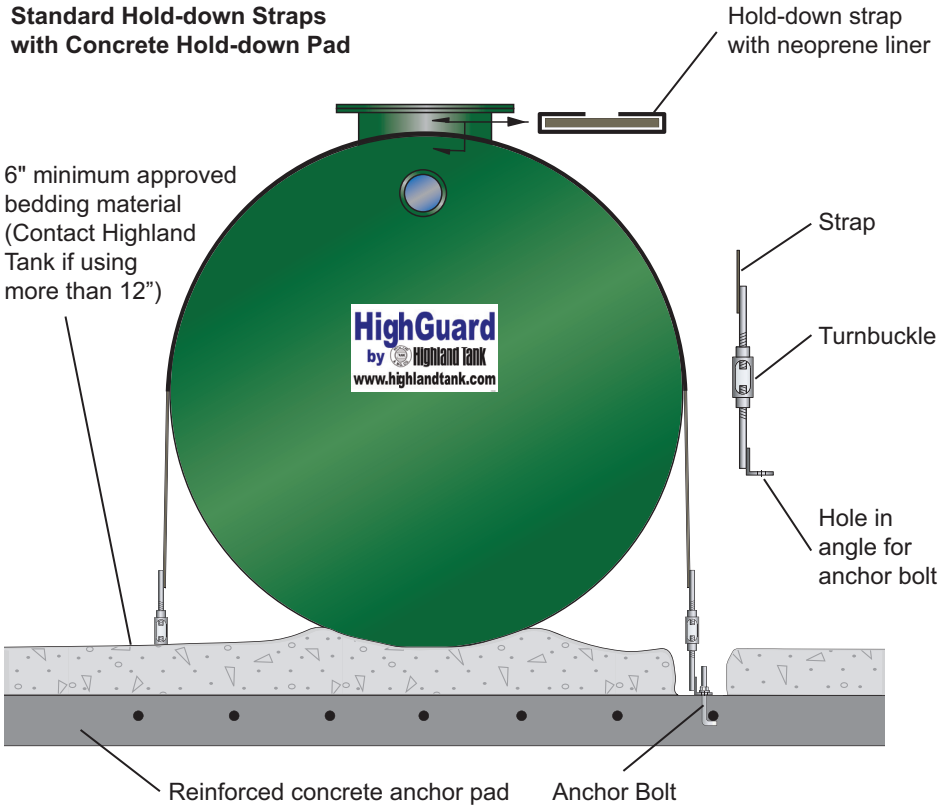


Anchoring (continued):

When anchoring by means of a concrete pad is required, the PGI must not be placed directly on the pad. See Fig. 6.

A layer of bedding material, 6 inches deep must be spread evenly over the dimensions of pad to separate the PGI from the pad. Bedding deeper than 12 inches may interfere with the fit of the hold-down straps. The PGI must not be placed on any other hard or sharp material, which might cause deformation of the PGI or damage to the coating.

Fig. 6



In tidal areas, backfill or bedding materials composed of small particles, such as sand, can migrate into native soils where larger aggregate, such as pea gravel or crushed stone, exists. Resultant voids can create an uneven support for the PGI. The use of filter fabric is recommended.

Backfilling

Approved backfill similar to bedding material must be placed around the entire PGI to create a uniform homogeneous environment. Be certain that foreign matter is not introduced into the excavation or backfill. Special care shall be taken when backfilling to ensure that the PGI is fully and evenly supported around the bottom quadrant and that no damage to the coating occurs. See Fig. 7 and 8.

Fig. 7

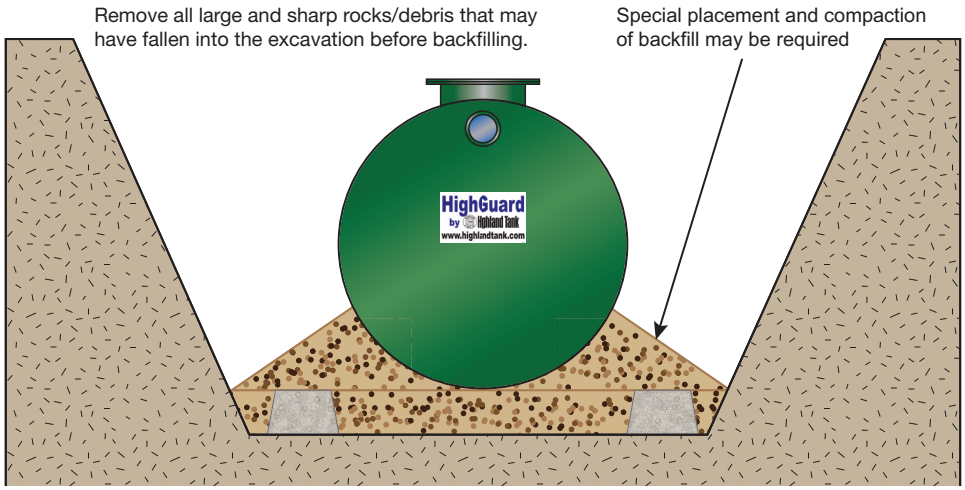
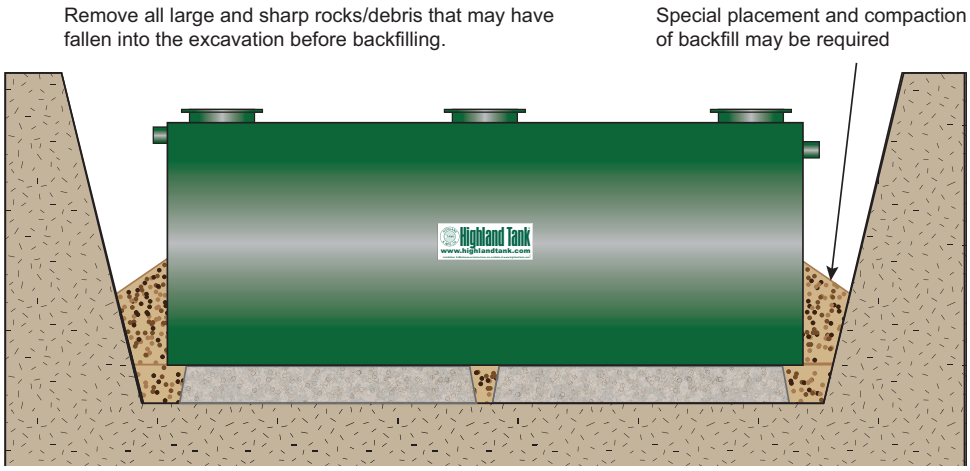


Fig. 8



The backfill should be placed carefully around the PGI to the top of the PGI.

Ballasting

In areas where there is the presence of ground water or a high water table, ballasting may be necessary for additional downward force on the PGI. If required, fill PGI with clean water. After ballasting is complete, check elevations for proper tolerances.

Manway Extensions

PGI installations may include manway extensions to provide access to the PGI from grade level. Highland Tank supplies two types of extensions; a field-adjustable, high-density polyethylene riser or an exact-size, coated-steel one-piece manway riser. Both risers bolt onto the PGI manway collars and employ gaskets to provide a seal between components. Install risers based on the type supplied with your PGI using diagrams below for guidance. See Fig. 9 and 10.

Fig. 9
Field-Adjustable
Manway Extension

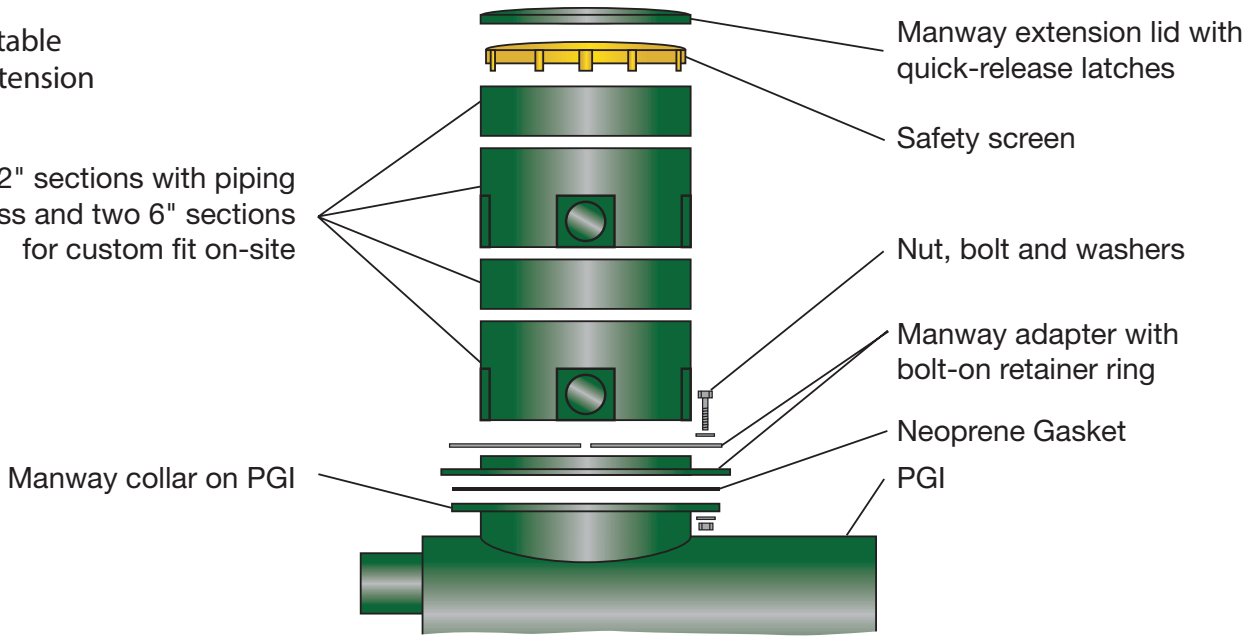
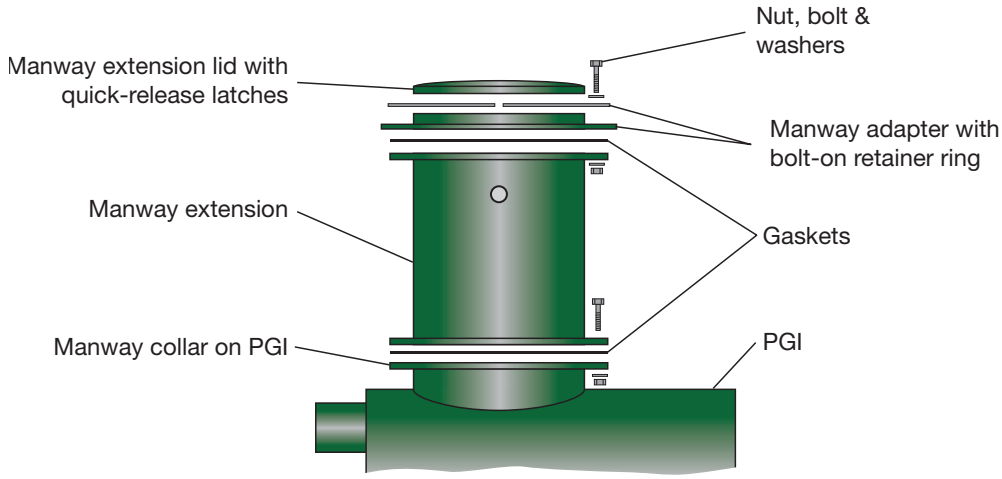


Fig. 10
Coated-Steel
Manway Extension



Piping & Venting

PGI is supplied with plain end connections for simple and easy transition to inlet/outlet pipe system. Plain end connections must be free of dirt and oils that may affect the proper and positive seal of couplings to piping system.

Piping

Inlet piping installation should be straight and true with as few turns as possible to limit turbulence. (When dielectric isolation is required, consult Steel Tank Institute ACT-100-U® Installation Instructions, R971 and Petroleum Equipment Institute PEI/RP100 for further instructions.)

Attach inlet/outlet piping (contractor supplied) to inlet/outlet pipes on the PGI. Inlet and outlet inverts were established during manufacturing. Do not modify without first consulting Highland Tank.

The PGI inlet and outlet piping must be sloped from 1/4 inch per foot to maintain gravity flow. A greater slope, or a free fall of wastewater in the PGI, will cause turbulence, adversely affecting PGI performance. Piping must also be designed to limit flow into the PGI to the flow rate specified. Use of a flow control device may be necessary.

PGI outlet piping must be designed to flow at a rate equal to or greater than the inlet piping to avoid any potential backup.

Attach manway extensions, riser and sensor pipes and any other contractor supplied piping to the PGI. Take special care to prevent damage to any gaskets or pipe threads.

Piping & Venting (continued):

Venting

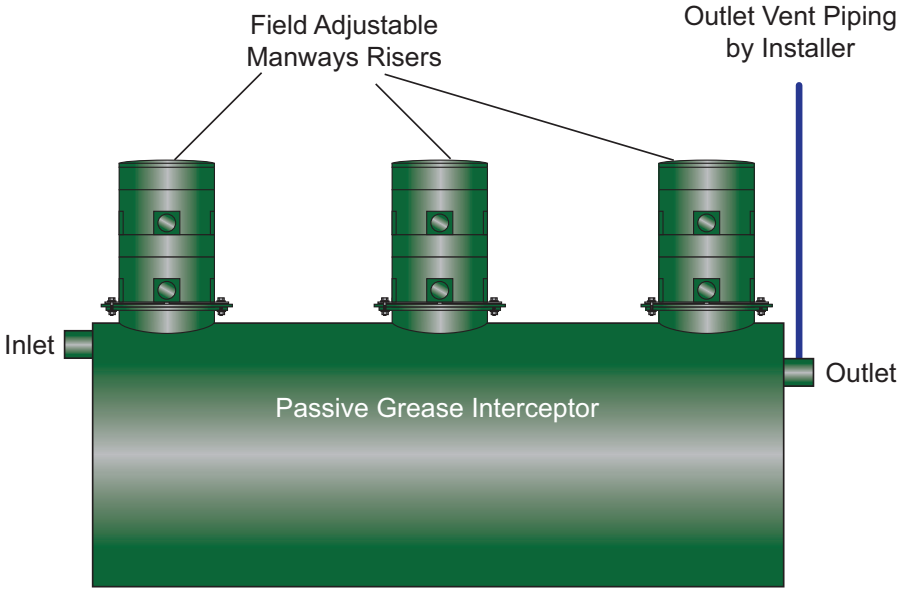
PGI is designed for operation at atmospheric pressure ONLY. Most codes require the outlet to be vented to atmosphere. Confirm requirements with AHJ.

Vent piping requirements vary by code. Check with AHJ. Terminate all vent piping per local code and AHJ.

Consult AHJ for inlet and manway venting requirements. If required, inlet and outlet must be vented to atmosphere separately. Manways may be manifolded together. See Fig. 11.

If PGI is equipped with a Highland Tank FOGSWatch probe, care must be taken to provide proper access for periodic maintenance. The FOGSWatch is installed either through an NPT fitting or a manway in the PGI. See Fig. 12 (NPT installation) or 13 (steel manway riser installation) if applicable.

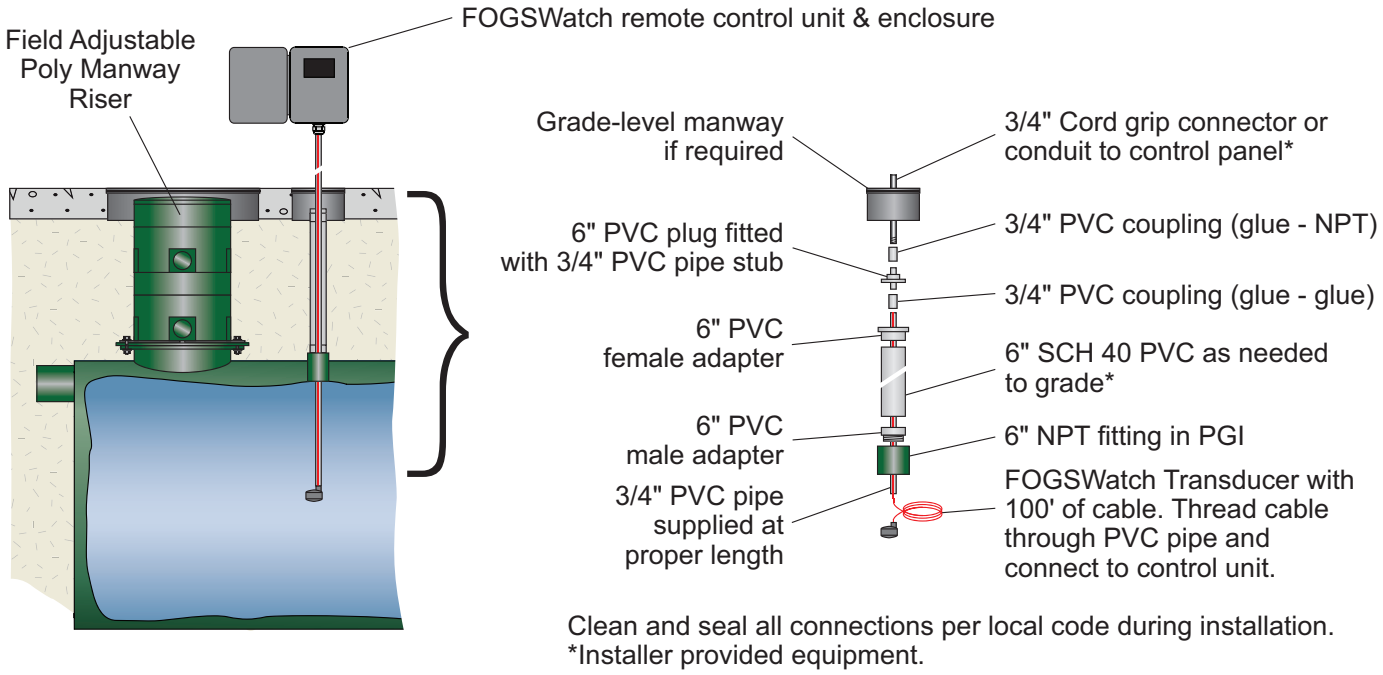
Fig. 11



FOGSWatch Probe Installation

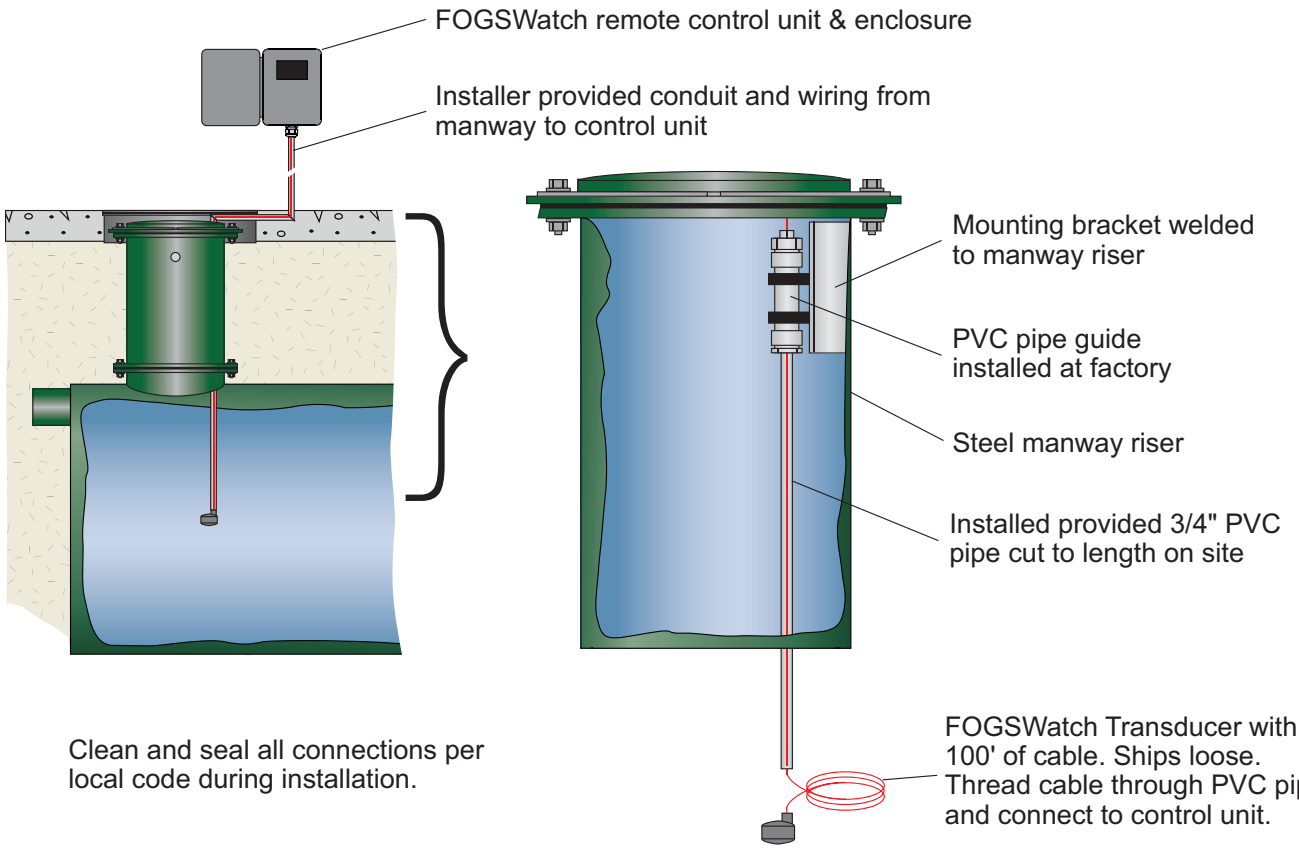
For PGIs with FOGSWatch sensor, pump-out pipes or other piping, install riser pipes using compatible non-hardening sealant, taking care not to cross thread or damage the nonmetallic bushings. Torque of 400 to 1,000 foot-pounds may be required to fully insert pipe. Contact Highland Tank for specific wiring instructions.

Fig. 12



Clean and seal all connections per local code during installation.
*Installer provided equipment.

Fig. 13



Clean and seal all connections per local code during installation.

Sealing of Lifting Lugs and Pipe Connections

During the installation process, steel can become exposed at the lifting lug due to the handling of the PGI. These areas, along with all other exposed steel surfaces, must be covered using the coating kit supplied by the manufacturer.

Apply supplied coating touch-up to all exposed steel surfaces of the PGI and allow to cure completely. Cure time will vary depending on temperature and conditions.

After an air test has established tightness, apply coating to the PGI fittings and allow to cure prior to backfill. Coating must include the entire plug on unused fittings.

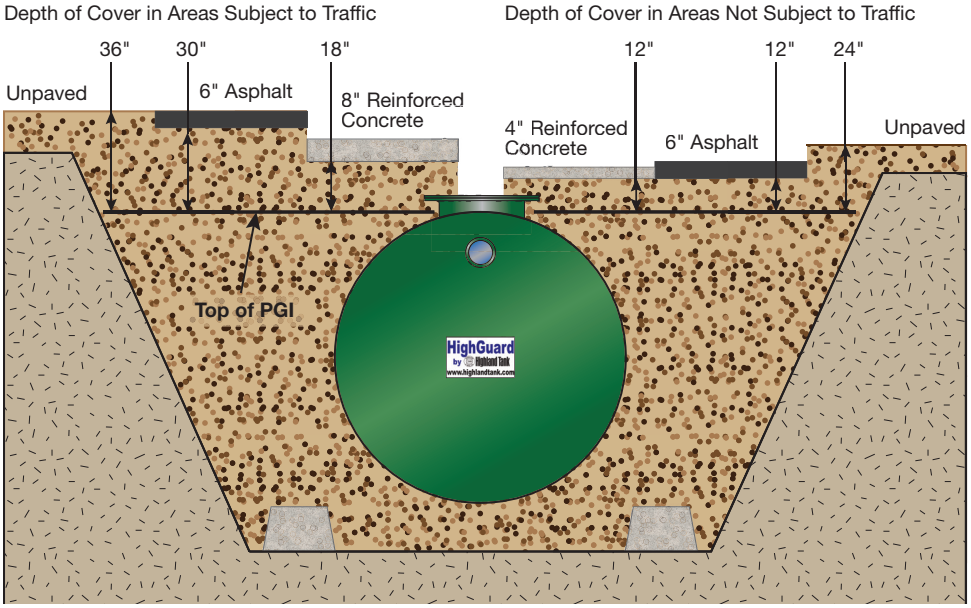
After all coating touch-up applications, the installer must verify that all of the coating has cured (adequate material hardness and solidification) prior to final backfill that will completely cover the PGI.

Final Backfilling

Deposit homogeneous backfill carefully around PGI to a depth of at least one foot over PGI to avoid damage to coating especially where tamping is required. Refer to the National Fire Protection Association's Regulation NFPA 30 and state or local codes for minimum depth of cover required.

Finally, carefully deposit backfill over the PGI up to the elevation needed to complete grade level finishing. See Fig. 14 for minimum burial depth. Consult approval drawing for maximum burial depth. Use grade level covers and street boxes to access the manways, sensors, or pump-out pipes. The grade level covers above the access manways must be of a greater diameter (i.e. 36 inch grade level cover over a 24 inch access manway).

Fig. 14



PGI Start-Up

The PGI must be full of water to operate.

IMPORTANT:

Separated FOG and vapors may be flammable and/or combustible.

CAUTION:

Service personnel must comply with all established OSHA regulations governing the facility and services. These include, but are not limited to, the use of approved breathing equipment, protective clothing, safety equipment, etc.

When applicable, the final state of all wiring must comply with all electrical and fire code standards.

This system must be properly vented by installer in accordance with applicable plumbing and safety codes for venting of combustible gases.

When applicable, all electrical equipment, connections and wiring must be protected from submergence and infiltration of water.

Filling the PGI

Open the PGI inlet and outlet pipe valves.

If the PGI has not yet been filled with water, as may have been required for balasting, (see page 13) fill with clean, fresh water at this time. The PGI must be full of water before any wastewater can be treated. The PGI can be filled through the facility's drain leading to the PGI inlet or through a manway.

If filling by manway, remove the manway lid and place the hose through manway so that hose outlet rests inside the PGI.

The PGI is full when water drains out of the Outlet. Check the water level using a gauge stick. The level on the gauge stick must equal the invert of the Outlet Pipe as measured from the PGI bottom.

To ensure that no blockage exists, allow water to flow through the facility drain which leads to the PGI Inlet. Check the Outlet Pipe to make sure that water is flowing through the PGI. Check the Inlet Pipe and facility's drain for water backup.

Operation

The efficiency of the PGI can be maintained by following the proper cleaning schedule and adhering to basic Best Management Practices (BMP). See Appendix A.

Highland Tank manufactures a wide variety of models and design for underground, underground vaulted and aboveground installation. PGIs may be customized with options and accessories to meet specific site needs. Contact Highland Tank should you have any questions about a particular design or option.

IMPORTANT:

The Highland Tank PGI will not remove FOG with a specific gravity greater than .95, chemical or physical emulsions, dissolved fats, cleaning solvents and surfactants.

Any and all FOG recovered and removed from the PGI should be recycled or disposed of in accordance with federal, state and local regulations.

Designed to accept gravity flow, the PGI's volume and retention time permit these contaminants to separate from the water due to their differences in specific gravity. The PGI contains one to three chambers (basins) where FOG separates and floats to the surface, while solids settle to the bottom.

FOG accumulates in the PGI until being removed. The clearer water beneath the separated wastes flows downward to the downcomer pipe where it is discharged from the final PGI chamber.

PGI sizing and construction conforms to recognized plumbing codes and the effluent discharge meets or exceeds many municipal industrial sewer pretreatment regulations.

During operation, the wastewater flows into the PGI through the inlet pipe and is directed over the Influent Flow Diffusion Baffle, a reinforced steel plate inclined at a 45 degree angle.

The Influent Flow Diffusion Baffle
- dissipates the velocity and turbulence of the incoming water,
- redirects the flow downward and toward the PGI head to start serpentine flow process,
- reduces and distributes the flow evenly over the PGI's cross-sectional area, and
- isolates the inlet turbulence from the rest of the PGI.

Operation
continued

In the first chamber, heavier solids settle out and are collected behind the Sludge Baffle. Concentrated FOG rises immediately to the surface. Free floating oils and grease in the wastewater gradually separate from the water due to their differences in specific gravity and will rise to the top of each chamber.

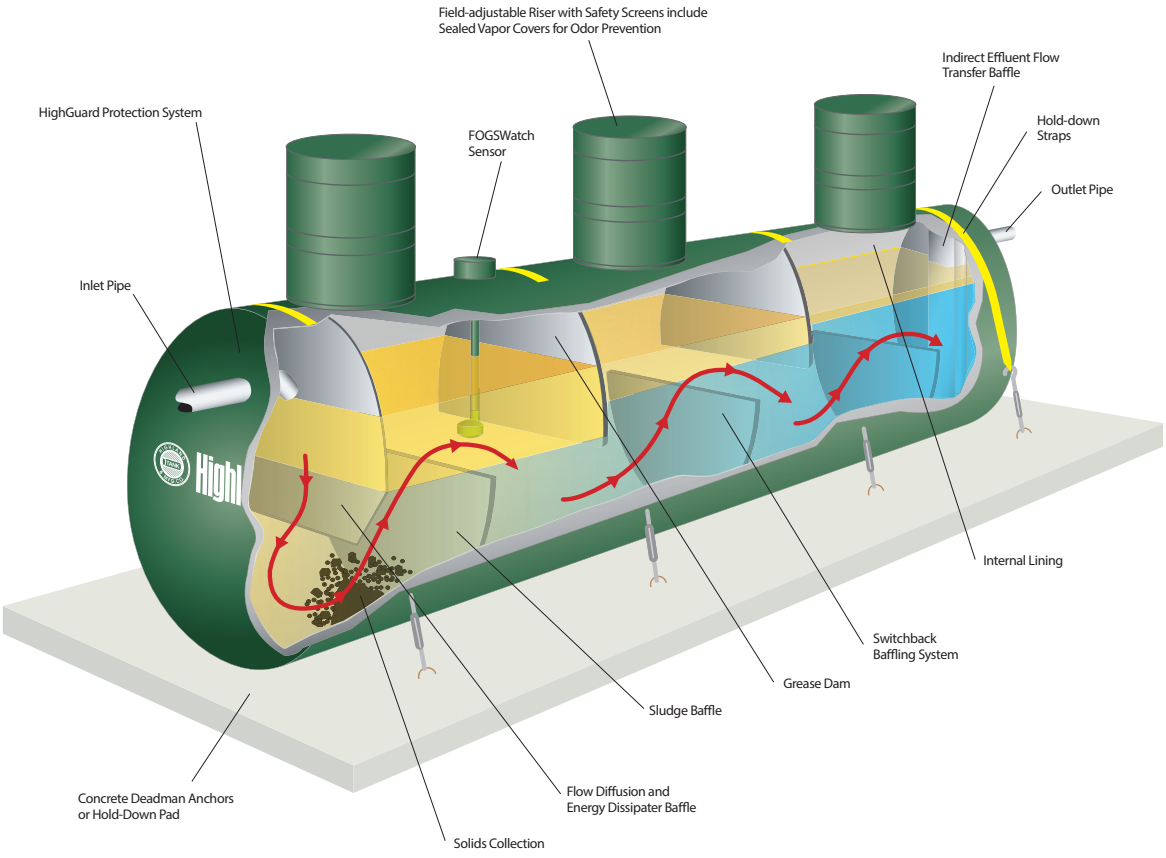
Flow from one chamber to the next is by gravity displacement over and under the baffles. When wastewater enters the PGI, the cleaner water from the bottom of each chamber is moved into the next chamber while trapping the floating and sinking contaminants.

In each subsequent chamber, additional FOG and solids are removed due to the specific gravity differences. During periods of operation and wastewater flow, FOG continues to accumulate in the PGI chambers.

Treated water is only discharged from the bottom of the final PGI chamber via the outlet pipe during periods when wastewater flows into the PGI. Wastewater flows from the PGI to a sanitary sewer or is pumped to be recycled for reuse.

See Fig. 15 - Operation Simulation for a better understanding of the PGI operation.

Fig. 15
Operation Simulation - Triple Basin PGI shown for illustration purposes only.
Refer to design drawing for a more accurate representation of specific model.



Maintenance

Maintenance is critical to the PGI's performance. Routine maintenance includes but is not limited to:

- Checking for and removing obstructions from inlet, outlet and vent pipes
- Removal of FOG and/or solids from all chambers of the PGI
- Complete pump-out and cleaning of the PGI

Warning:

Never enter a PGI or enclosed space, under any condition, without proper training and OSHA approved equipment. (Consult OSHA, Regulations for Permit-Required Confined Spaces, 29 C.F.R. § 1910.146.)

All enclosed spaces must be properly vented prior to entry to avoid ignition of flammable materials or vapors.

Atmosphere must be properly tested for combustible vapors and oxygen prior to entry.

CAUTION:

Entering the PGI without using a self-contained breathing apparatus may result in inhalation of hazardous fumes, causing headache, dizziness, nausea, loss of consciousness and death. Required entry equipment includes, but is not limited to:

- Lifelines
- Safety harnesses (safety belts are unacceptable)
- Self-contained breathing apparatus
- Respirators (canister type)
- Rescue harness and ropes
- Horns, whistles, radios, etc. (for communication purposes)
- Explosion-proof lighting

IMPORTANT:

Be sure to inspect and replace manway gaskets as necessary when the PGI is shut down for maintenance.

Inlet and effluent pipe valves should be closed prior to PGI entry.

All liquid must be removed from the PGI prior to entry. Any and all FOG recovered and removed from the PGI should be recycled or disposed of in accordance with federal, state and local laws, regulations and codes.

PGI are designed for long-term operation. The following maintenance should be performed as needed and on a regular maintenance schedule. This procedure outlines the method to inspect a PGI and document the results.

Maintenance continued

Inspection

The purpose of this section is to ensure that inspection of the PGI is completed on a regular schedule and documented as required by local, state and federal laws, regulation and codes. All food service facilities must regularly inspect and maintain the PGI.

Highland recommends that an inspection and maintenance log be created and maintained. See Appendix B. Documenting FOG and solids levels over a period of time will help a facility determine service intervals for the PGI.

For optimum performance, inspections should be performed regularly. Failure to do so may cause system back-up.
Perform maintenance as required.

Inspect PGI after an unusually heavy flow event to check for signs of malfunction due to an excessive flow rate.

Food Service Facility must follow local, state and federal codes for proper interval of grease collection and removal.

Applicable law may require the FSE to manifest the FOG removed from the facility. This helps in tracking and recording the grease volume pumped from the facility and to ensure the grease is hauled to a proper location for disposal.

Determine FOG & Solids Layer Thickness

Stop wastewater flow to the PGI by closing the inlet valve or other site-specific means. Remove grade-level and PGI manway covers to access the PGI.
- Check inlet manway and baffle to ensure clear passage.
- Check outlet baffle for clear passage.

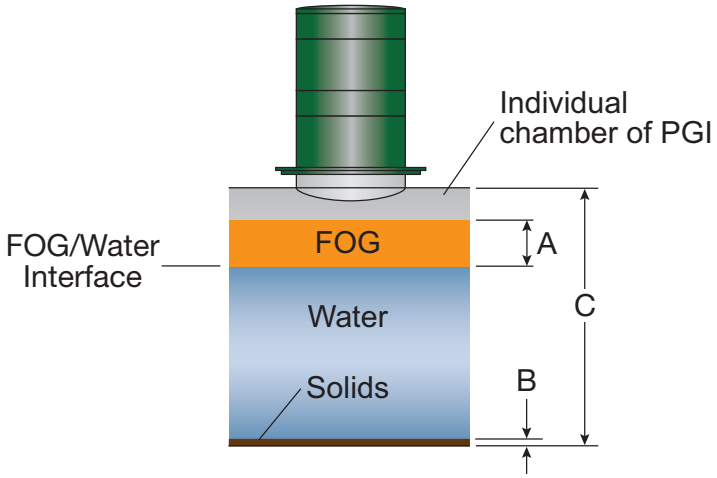
Tools and equipment needed:
- Safety equipment if necessary to redirect traffic
- Facility-specific equipment to lift and remove grade-level manway covers
- Measuring device
- Cleaning materials

Check the thickness of FOG and solids layers as required. If either layer individually or combined are more than 25% of the PGI's total volume, the PGI needs to be cleaned out.

Maintenance continued

To check thickness of FOG, use an appropriate sludge measuring device. Slowly lower measuring device until it comes in contact with the bottom of the PGI. Remove the measuring device to reveal the thicknesses of the both top/FOG (A) and bottom/solids (B) layers. See Fig 16.

Fig. 16



The PGI needs to be pumped out if A + B > 25% of C

PGI Pump-out Procedure

Close inlet and outlet valves, Remove manway covers and any internal monitoring equipment (e.g. FOGSWatch). Be careful when removing manway covers to prevent damage to gaskets. Contact Highland Tank should you need replacement gaskets or other parts.

Using suction, completely remove all contents of PGI.

Using hot water and detergent, loosen and remove any caked or hardened FOG. It may be necessary to use a non-metallic scraping device to assist in the removal process. Using suction, completely remove all contents of PGI.

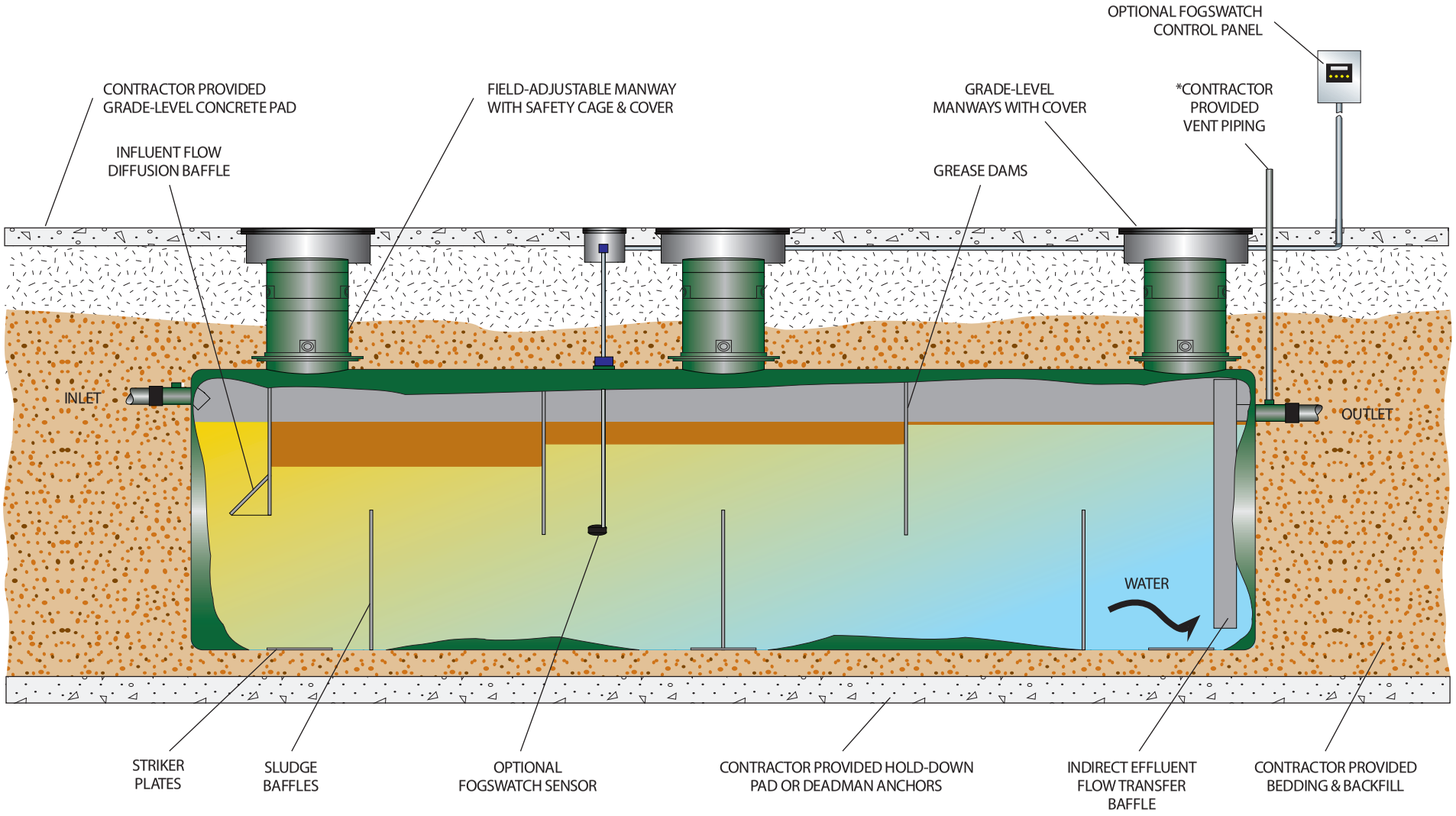
IMPORTANT:

Dispose of FOG and wastewater as required by applicable law and AHJ requirements.

Restart the PGI

Reattach manway covers and any monitoring equipment. Ensure gaskets are damage free. Use appropriate pipe sealant where required. Refer to PGI Start-up Instructions on page 20 for refilling the PGI and putting it back into service.

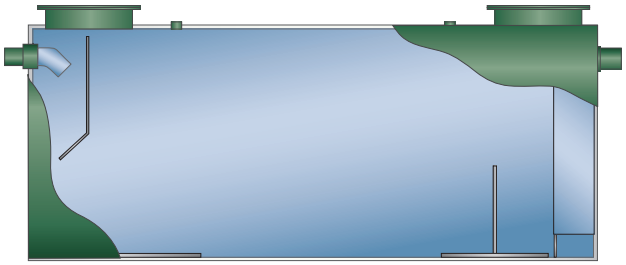
For illustration purposes only
HT-TB - Triple Basin, Single-wall Passive Grease Interceptor Reference Drawing



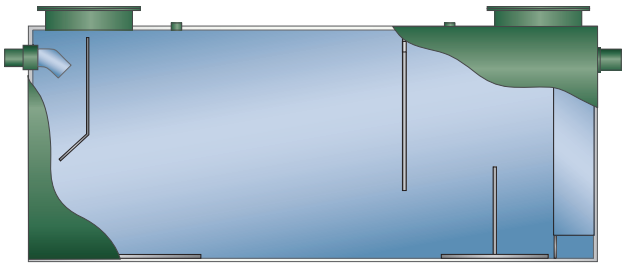
*VENTING OF THE INLET AND MANWAY RISERS IS OPTIONAL DEPENDING ON LOCAL CODE.
CONSULT WITH AHJ FOR SPECIFIC SITE REQUIREMENTS.

Other PGI Configurations

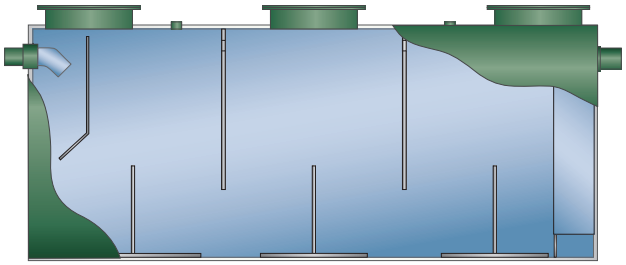
Single-basin interceptors have a single collection chamber and a sludge baffle to remove FOG and solids. This simple design is sometimes referred to as a "knock-out" interceptor.



Double-basin interceptors have two collection chambers and a sludge baffle.



Triple-basin interceptors have three collection chambers and a sludge baffle. FOG and solids are trapped in the first compartment and any remaining grease is trapped in the second compartment. The third chamber can be modified and equipped with an effluent pump system when gravity flow to the sewer is not an option.



Several special design models are available to satisfy specific code requirements such as - Washington Suburban Sanitary Commission (WSSC), IAPMO/ANSI Z1001 - 2007 and the Florida Grease Trap Code. Contact Highland Tank for information about products to satisfy particular code requirements.

Options & Accessories

Some PGIs come equipped with special heating devices, insulation, remote pump-out devices, sampling ports, integral lift stations, ladders, platforms, walkways, stairs, monitors and control panels. These items are project-specific. Please contact Highland Tank for assistance.

Best Management Practices

FOG control BMPs are practices that will reduce the amount of FOG, that enters the sewer system or on-site septic system from your food service facility.

The examples on the next page of this Manual set forth certain BMPs that will reduce the amount of grease entering the waste collection system from your FSE. It also gives examples of harmful practices to avoid because such practices increase the amount of grease entering the waste collection system.

High oil and grease concentrations can be lowered by minimizing the amount of food being discharged down all drains (including those attached to two or three compartment sinks and automatic dishwashers). The least expensive alternative that can be used in reducing grease in the sewer system is improved kitchen management practices.

The following two pages should be copied and posted near food preparation and other areas as a reminder to employees about BMPs for FOG.

Best Management Practices

- Do not pour, scrape, or otherwise dispose of fats, oils and grease into sinks or drains.
- Scrape pots and pans prior to washing them.
- Collect fryer oil and store in barrels for recycling.
- Dump mop water only into drains connected to your grease abatement system.
- Use absorbents to soak up spills containing fats, oils and grease.
- Do not put food (including liquid food) including milk shake syrups, batters, and gravy down the drain.
- Use strainers on sinks and floor drains to prevent solid material from entering the sewer.
- Post "NO GREASE" signs near sinks and drains.
- Empty the collection pan on automatic grease recovery devices before it becomes full.
- Use the proper equipment for cleaning your grease trap or grease recovery device.
- Direct wastewater generated from duct/range filter cleaning through the grease abatement system.
- Inspect grease abatement devices/interceptors after pumping to ensure adequate cleaning
- All kitchen staff must follow these best-management practices for grease disposal to avoid grease accumulation in the sewer.
- All kitchen, management and maintenance staff must receive refresher training for proper disposal of fats, oils, and grease.

DON'T KNOW?

STOP!

ASK A MANAGER

Installation for Aboveground PGI - Cylindrical & Rectangular

Aboveground PGI installations vary by site. The general guidelines provided here are to aid in the correct installation of a Highland Tank PGI. Always consult with the AHJ for site and municipal-specific code requirements.

Prior to beginning, please review the Important Points to Consider on pages 4 and 5.

Placement of the PGI

The PGI must be installed in a level and plumb position. Highland Tank recommends placing the PGI on a concrete pad of suitable thickness and size to completely support the PGI and provide enough clearances to perform required maintenance. Consult the AHJ and engineer of record for site-specific requirements.

Piping & Venting

Follow guidelines as described on pages 15 and 16. Consult AHJ for inlet and manway venting requirements.

The optional FOGSWatch probe is installed in the PGI similar to that of an underground unit, either through one of the manways or an NPT fitting located on the top center of the PGI. Refer to page 17 for installation guidelines.

Sealing of Lifting Lugs & Pipe Connections

During the installation process, steel can become exposed at the lifting lug due to the handling of the PGI. These areas, along with all other exposed steel surfaces, must be covered using the coating kit supplied by the manufacturer.

Apply supplied coating touch-up to all exposed steel surfaces of the PGI and allow to cure completely. Coating must include the entire plug on unused fittings.

After all coating touch-up applications, the installer must verify that all of the coating has cured (adequate material hardness and solidification) prior to final backfill that will completely cover the PGI.

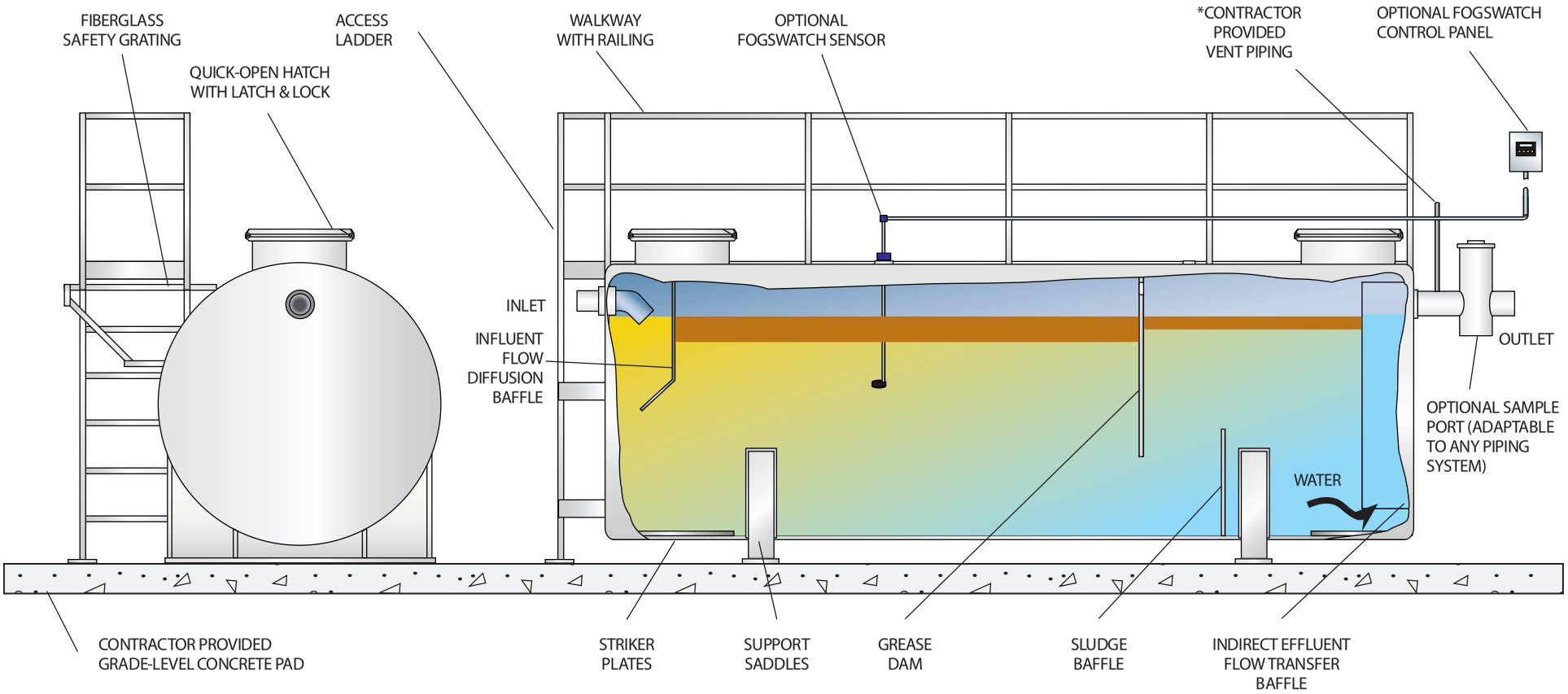
Cure time will vary depending on temperature and conditions.

Start-up Instructions

Continue with Start-Up Instructions on page 23.

For illustration purposes only

HT-DB - Double Basin, Single-wall Passive Grease Interceptor Reference Drawing



*VENTING OF THE INLET AND MANWAY RISERS MAY BE REQUIRED BY LOCAL CODE.
CONSULT WITH AHJ FOR SPECIFIC SITE REQUIREMENTS.

Highland Tank - Passive Grease Interceptor Inspection and Maintenance Log - Serial # _____

Use a separate log sheet for each unit

Facility Name: _____

Address: _____ City: _____ State: _____ ZIP: _____

Contact Name: (Please print) _____ Phone: ( ) _____-_____

PGI Unit Details

Model No.: PGI - _____ Flow rate: _____ (GPM) Operating grease volume: _____ (GAL) _____ (LBS)

Location of grease interceptor: _____

(e.g.: Building 1 basement, 1st St. parking garage, etc.)

Service/Maintenance Provider

Company Name: _____ License No.: _____

Address: _____ City: _____ State: _____ ZIP: _____

Contact Name: (Please print) _____ Phone: ( ) _____-_____

The Highland Tank PGI grease interceptor should be inspected on a regular schedule as determined by facility needs. Renderings from the grease interceptor must be recycled or disposed of properly by a licensed waste hauler. Documentation of cleaning and disposal shall remain up-to-date and available at all times.

PGI Maintenance Log

WEEK - MONTH - YEAR

Date ___/___/_____ Work performed by: _____

Action taken:_____

Volume removed: _____ (gal./lb. Disposal method: _____

Observations/comments: _____

Date ___/___/_____ Work performed by: _____

Action taken:_____

Volume removed: _____ (gal./lb. Disposal method: _____

Observations/comments: _____

Date ___/___/_____ Work performed by: _____

Action taken:_____

Volume removed: _____ (gal./lb. Disposal method: _____

Observations/comments: _____

Date ___/___/_____ Work performed by: _____

Action taken:_____

Volume removed: _____ (gal./lb. Disposal method: _____

Observations/comments: _____

Grease Hauler Manifest

Food Service Establishment

Must be completed by qualified FSE Representative

Business Name: _____ Telephone: ( ) _____-_____

Address: _____ City: _____ State: _____ Zip: _____

Waste removed from: Grease Trap: Yes / No, Grit Trap: Yes / No, Septic Tank Yes / No

Other (Specify): _____

Waste tank or trap capacity: _____ gallons

I certify that the waste material removed from the above premises contains no hazardous materials.

FSE Representative Signature: _____

Print name: _____

Date and time serviced: _____

Transporter Information

Must be completed by transporter

Business Name: _____ Telephone: ( ) _____-_____

Address: _____ City: _____ State: _____ Zip: _____

Waste removed from: Grease Trap: Yes / No, Grit Trap: Yes / No, Septic Tank Yes / No

Other (Specify): _____

Vehicle tag number: _____ Vehicle capacity: _____ gallons Gallons removed: _____

I certify that the information provided above is correct. I am aware that falsification of this trip ticket may result in enforcement action by the appropriate jurisdiction.

Driver's Signature: _____

Print name: _____

Driver's license No.: _____ Date and time waste accepted: _____

Disposal Information

Must be completed by disposer

Business Name: _____ Telephone: ( ) _____-_____

Address: _____ City: _____ State: _____ Zip: _____

Waste disposal site: _____

Waste disposal method (describe): _____

_____

Facility permit No.: _____ Date and time waste accepted: _____

I certify that the disposal facility used is authorized to accept the above specified waste and that I have disposed of the waste in accordance with the requirements outlined in that authorization and in accordance with all applicable federal, state and local laws and regulations.

Site Operator's Signature: _____

Print name: _____

NO GREASE

Underground Cylindrical Passive Grease Interceptors

HT-2816

User Manual

Installation, Operation & Maintenance

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