**Highland Tank\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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# Highland Tank - Model DB-OSI - Double Basin Oil/Sand Interceptor

Double-wall with the HighGuard Corrosion Protection System

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### PROJECT DESCRIPTION:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

### SECTION - UNDERGROUND PROTECTED STEEL GRAVITY BASED OIL/SAND INTERCEPTOR

PART 1 – GENERAL

1. SCOPE
	1. This section describes requirements for providing a single walled, protected steel underground gravity based Oil/Sand Interceptor.
	2. The Oil/Sand Interceptor shall be designed to intercept and collect sand, grit, and free oil and grease (hydrocarbons and other petroleum products) and prevent their entry into the sanitary sewer system.
	3. All parts, not specifically mentioned herein which are necessary in order to furnish a complete unit, shall be provided and shall conform to the best practices known to the trade.
2. GENERAL REQUIREMENTS
	1. Unless otherwise specified, equipment furnished under this section shall be fabricated and installed in compliance with the instructions of the manufacturer.
	2. The Contractor shall ensure that all equipment, accessories, and installation materials comply with the specification and that adequate provision is made in the interceptor design and fabrication for mounting the specified system equipment and accessories.
	3. The Contractor is solely responsible for construction means, methods, techniques, sequences and procedures and for safety precautions and programs.
3. STANDARDS
	1. Work shall be performed in accordance with applicable federal, state and local fire protection, environmental, building, plumbing, and safety codes and regulations and the latest version of the following industry standards:
		1. Material and Property Standard for Grease Interceptors and Clarifiers IAPMO PS 80-2006, International Association for Plumbing and Mechanical Officials, 5001 E. Philadelphia St., Ontario, CA 91761.
		2. 2006 International Plumbing Code, Chapter 10 Traps, Interceptors, and Separators, International Code Council, 500 New Jersey Avenue, NW, 6th Floor, Washington, DC 20001.
		3. Recommended Practices for Installation of Underground Liquid Storage Systems, PEI/RP100-(2005); Petroleum Equipment Institute, P.O. Box 2380, Tulsa, OK 74101.
		4. Installation of Underground Petroleum Storage Systems, API/1615, Cathodic Protection of Underground Petroleum Storage Tank and Piping Systems, API 1632, American Petroleum Institute, 1220 L Street, Washington, D.C. 20005.
		5. Flammable and Combustible Liquid Code, NFPA/30, 2003 Edition, Automotive and Marine Service Station Code, NFPA/30A, National Electrical Code, NFPA/70, and Underground Leakage of Flammable and Combustible Liquids, NFPA/329, National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9904.
		6. Hazardous Waste Operations and Emergency Response and Excavating, OSHA/29 CFR 1910.120 & 29 CFR 1926 Subpart P., Occupational Safety and Health Administration, U.S. Department of Labor, Region V, 230 S. Dearborn Street, Room 3244, Chicago, IL 60604.
		7. Occupational Safety and Health Standards, Flammable and Combustible Liquids, 29CFR 1910.106, Personal Protective Equipment 29CFR 1910 Subpart I, Excavations 29CFR 1926.650 Subpart P, U. S. Department of Labor, Occupational Safety and Health Administration (OSHA), Washington, D.C.
		8. Control of External Corrosion of Metallic Buried, Partially Buried, and Submerged Liquid Storage Systems, NACE Recommended Practice RP0285-95; National Association of Corrosion Engineers, P.O. Box 218340, Houston, TX 77213.
		9. UL-58, Standard for Safety, "Steel Underground Tanks for Flammable and Combustible Liquids", 1997, UL-1746, Standard for "Corrosion Protection for Underground Storage Tanks" Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062.
		10. Underground Storage Tanks; Technical Requirements and State Program Approval; Final Rules, 40 CFR Parts 280 and 281, Part II, Federal Register, Friday, September 23, 1988, Musts for USTs: A Summary of the New Regulations for Underground Storage Tank Systems, and Hazardous Waste Management Standards, Federal Register July 14, 1986. U.S. Environmental Protection Agency, Office of Underground Storage Tanks, 401 M. Street, S.W., Washington, D.C. 20460.
		11. The codes and standards listed are the latest as of this publication. Codes and standards are continuously updated. The Contractor shall confirm the construction standard edition enforced by the authority having jurisdiction.
4. SUBMITTALS AND DOCUMENTATION
	1. Provide three (3) sets of manufacturer’s shop drawings and installation instructions of the interceptors(s) for approval before commencing construction.
		1. Shop Drawings: shop drawings for interceptors shall show principal dimensions and location of all fittings.
		2. Instructions: provide three complete sets of installation, operation, and maintenance instructions with interceptor.
		3. Quality Control: Quality control and inspection procedures and reports shall be considered in the submittal package.
	2. Provide manufacturer’s published product data sheets and descriptive material for major components to be provided.
		1. Interceptor (s).
		2. Electronic leak detection, gauging, and monitoring system.
		3. Anchoring system.
		4. Manway grade level covers.
		5. Other system accessories [List]
	3. Submittals shall be delivered to the Engineer within [\_\_\_ days] of notice to proceed. The Engineer shall review the drawings and return them to the Contractor approved, or with appropriate comments, within [\_\_\_ days] of receipt.
	4. The Contractor shall furnish the labor, materials, equipment, appliances, services and hauling, and perform operations in connection with the construction and installation of the work. Work shall be as herein specified and as denoted on the accompanying drawings but not limited to the following general terms of work:
5. GUARANTEES AND WARRANTIES
	1. The manufacturer shall provide the following guarantees/warranties:
		1. The manufacturer shall warrant its products to be free from defects in material and workmanship for a period of one year from the date of shipment. The warranty shall be limited to repair or replacement of the defective part(s).
		2. HighGuard™ Limited Warranty.

END OF SECTION

PART 2 – PRODUCTS

1. UNDERGROUND PROTECTED STEEL GRAVITY BASED OIL/SAND INTERCEPTOR (S)
	1. Provide and install \_\_\_\_\_\_ Highland Tank 350 gallon capacity Model DB OSI - 350 Double Basin Oil/Sand Interceptor (s).
	2. Gravity-based oil/sand interceptor shall be constructed of high-strength, mild carbon steel to ASTM specifications and coated inside and outside with high-solids polyurethane.
	3. Interceptor shall be 3’ – 6” in diameter and 6’ – 0” long; having a total volume of 350 gallons. The sizing and construction of this interceptor is consistent with industry protocols for complying with the sewer pretreatment regulations, therefore an interceptor of smaller volume or multiple, interconnecting vessel construction is not permissible.
	4. Interceptor shall have two (2) compartments to minimize turbulence and promote separation.
	5. Flow to the interceptor shall be by gravity. Interceptor shall retain wastewater long enough to allow sand, grit, and free oil and grease to separate from the water due to their differences in specific gravity. The wastewater will then flow to a sanitary sewer.
	6. Interceptor shall be installed underground with top access at or above grade level (as specified on drawings).
2. DESIGN CRITERIA
	1. The Interceptor shall meet the requirements of the International Association of Plumbing and Mechanical Officials (IAPMO) Material and Property Standard for Grease Interceptors and Clarifiers IAPMO PS 80-2006.
	2. The Interceptor shall be constructed of high-strength, mild carbon steel, meeting ASTM specifications, with capacities, dimensions, construction, and thickness in strict accordance with Underwriters Laboratories, Subject UL-58 Standard for Safety, Steel Underground Tanks for Flammable and Combustible Liquids, September 30, 1997, Single Wall construction.
	3. The Interceptor's Corrosion Control System shall be in strict accordance with Underwriters Laboratories Inc. Subject UL-1746 Standard for External Corrosion Protection Systems for Steel Underground Storage Tanks and Highland Tank’s HighGuard External Corrosion Protection Specifications.
	4. The Interceptor shall be the standard product of a steel tank manufacturer regularly engaged in the production of such equipment. No subcontracting of Interceptor fabrication shall be permitted.
	5. The Interceptor shall be fabricated, inspected and pressure tested for leakage before shipment from the factory by manufacturer as a completely assembled, single vessel ready for installation.
	6. The Interceptor shall be cylindrical, horizontal, atmospheric-type steel vessel.
	7. The Interceptor shall have the structural strength to withstand static and dynamic hydraulic loading while empty and during operating conditions.
		1. The Interceptor’s dimensions and thickness shall be in strict compliance with Roark’s Formulas for Stress and Strain as presented in UL 58, September 30, 1997.
		2. Calculations, signed and stamped by a Registered Professional Engineer shall be submitted to document structural strength under specified overbearing or external pressure. An interceptor with a reduced shell thickness is not permissible.
	8. The Interceptor shall consist of inlet and outlet connections, internal influent nozzle, fore-basin with heavy duty sludge baffle, fore-basin downcomer positioned to prevent discharge of free oil that has been separated from the water, large sediment and oil pump-out access, after-basin, after-basin effluent downcomer, wastewater pump mount/access, fittings for vent, sampling, gauging, and lifting lugs.
3. GENERAL DESCRIPTION
	1. The Interceptor shall be cylindrical with construction and thickness in strict accordance with Underwriters Laboratories Subject 58, using flat-flanged heads.
	2. The Interceptor shall be a pre-packaged, pre-engineered, ready to install unit consisting of:
		1. An influent connection \_\_\_\_\_\_ inch, (NPT/Flanged). A factory welded internal influent nozzle at the inlet end of the interceptor. Nozzle discharge to be located at the furthest diagonal point from the effluent discharge opening.
		2. A large internal fore-basin to disperse flow and collect separated sand, grit, and oil.
		3. A heavy duty sludge baffle to retain sand and grit and prevent them from entering the downcomer.
		4. An internal fore-basin downcomer to allow for discharge from the bottom of the fore-basin only.
		5. One 24" diameter manhole, UL approved, complete with \_\_\_\_\_\_ extension, cover, gasket, and bolts. Manhole shall be placed to facilitate access into fore-basin for solids and oil removal. Heavy duty striker plates shall be placed under the manhole to protect the Interceptor shell during pump-out operations.
		6. A large internal after-basin to collect wastewater for discharge by gravity means.
		7. An internal effluent downcomer to allow for discharge from the bottom of the after-basin only.
		8. One 24" diameter manhole, UL approved, complete with \_\_\_\_\_\_ extension, cover, gasket, and bolts. Manhole shall be placed to facilitate access into after-basin for inspection, pumping, cleaning, and access. Heavy duty striker plates shall be placed under the manhole to protect the Interceptor shell during pump-out operations.
		9. A factory welded effluent connection \_\_\_\_\_\_ inch, (NPT/Flanged).
		10. Fittings for cleanout, vent, sampling, and gauge.
		11. Lifting lugs at balancing points for handling and installation.
	3. Testing Requirements
		1. Interceptor tightness testing to UL-58 requirements shall be performed by the manufacturer at the factory.
		2. The Interceptor shall be pressure tested at 3-5 psig and all surfaces soaped and carefully inspected for leaks.
	4. Electrically Isolating Exterior Protective Coating
		1. After testing, all interior and exterior surfaces shall be grit blasted per Steel Structures Painting Council Surface Preparation Specification SSPC-SP-6 Commercial Grit Blast Cleaning with an angular profile of 2.0 mils.
		2. Exterior surfaces: Apply HighGuard Corrosion Protection System consisting of:
			1. Application of 75 mils DFT self-reinforcing, high-solids polyurethane material complying with the following specifications:
				1. Property/Value

Hardness (ASTM D 2240): 70 Shore D

Temperature Range: 35-120°F (1-49°C)

Impact Strength: >40 in. lbs

Flexibility: 15 mils bent 180 over 1/8” (3 mm) mandrel

Abrasion Resistance: 110 mg (C17, 1 kg, 100 cycles)

* + - 1. A 15,000-volt spark test shall be performed in the factory to ensure coating integrity.
		1. Internal surfaces: Apply 15 mils DFT Polyurethane Lining.
			1. Lining shall be of a light color to aid in visual inspection of the interior.
	1. Interceptor Hold Down Anchoring
		1. Interceptor shall be provided with polyester hold down straps and turnbuckles. Number and size as recommended by manufacturer.
		2. Provide float out and anchorage calculations, signed and stamped by a registered professional engineer, to document proper burial depth and anchoring to counteract the Interceptor's buoyant forces.
		3. Provide 2 concrete deadmen anchors as required. Number and size are as recommended by manufacturer.
		4. If a reinforced concrete pad is required for anchoring purposes, the pad dimensions are shown on the drawings.

Note: An 8” minimum reinforced concrete pad is required on for all interceptors 10’0’” diameter and larger.

* 1. Labeling
		1. Identification plates: Plates to be affixed in prominent location and be durable and legible throughout equipment life.
		2. Each Interceptor shall be permanently labeled on the Interceptor head with pertinent handling, safety, and installation instructions.
	2. Grade Level Manways
		1. Provide \_\_\_\_\_\_ 36” / \_\_\_\_\_\_ 42” diameter manway ring and (pedestrian) or (H-20) rated steel cover for access to Interceptor manways.

END OF SECTION

1. OPTIONS/ACCESSORIES
	1. Interceptor shall be furnished with (select all that apply):
	2. An audible and visual alarm system that indicates hi oil level (visual only) and hi hi oil level (audible and visual) of oil storage in the Interceptor will be provided. A silence control shall be provided for the audible alarms. Level sensor(s) to be intrinsically safe. Level sensor floats to be made of stainless steel. The control panel shall be NEMA 4. Power to the control panel is to be [ ] volt, [ ] phase.
	3. Additional Interceptor Accessories: Refer to Highland Tank Product Catalog

END OF SECTION

PART 3 - EXECUTION

1. TRANSPORTATION TO SITE
	1. Manufacturer shall take extreme care in protecting the Interceptor coating when transporting the Interceptor to the delivery site. Padding between the truck and Interceptors, and padding on the chains should be utilized.
2. INTERCEPTOR OFF-LOADING, HANDLING, AND STORAGE
	1. Interceptor shall be handled, lifted, stored, and secured in accordance with the manufacturer's instructions.
	2. Unload with equipment having sufficient lifting capacity to avoid damage to the Interceptor.
3. INTERCEPTOR INSTALLATION
	1. Refer to manufacturer’s label on the Interceptor head and submitted User’s Manual for pertinent handling, safety, and installation instructions.
	2. The Interceptor excavation shall be free from material that may cause damage to the Interceptor coating. Care shall be taken during installation that foreign matter is not introduced into excavation or backfill. The bottom of the excavation shall be covered with clean sand or gravel to depth shown on the drawings suitably graded and leveled. NOTE: If Interceptor is to be placed on a concrete pad for anchoring purposes, the Interceptor must not be placed directly on the pad. A layer of fine or pea gravel, sand or #8 crushed stone (#8 coarse aggregate ASTM D-448) at least 6" deep must be spread evenly over the dimensions of the pad to separate the Interceptor from the pad. If installation area is in a tidal area, the Interceptor "bedding" material should be fine gravel or pea gravel rather than sand.
	3. If an air test of the Interceptor above ground is required. Pressure should not exceed 5 psi while a bubble solution is applied to welded seams. Refer to instructions on side of Interceptor or per PEI/RP100-(2005).
	4. Before placing the Interceptor in the excavation, all dirt clods and similar foreign matter shall be cleaned from the Interceptor, and areas of coating damage shall be repaired with a compatible coating supplied by the manufacturer.
	5. Equipment to lift the Interceptor shall be of adequate size to lift and lower the Interceptor without dragging and dropping to ensure no damage to the Interceptor or the coating. Interceptor shall be carefully lifted and lowered by use of cables or chains of adequate length (not less than 45 including angle) attached to the lifting lugs provided. A spreader bar should be used where necessary. Under no circumstances use chains or slings around the Interceptor shell.
	6. Backfill consisting of sand, #8 crushed stone (#8 crushed aggregate ASTM D-448) or fine gravel, shall be placed along bottom side of Interceptor by shoveling and tamping to ensure the Interceptor is fully and evenly supported around bottom quadrant. The backfill shall be deposited carefully around Interceptor and to a depth over Interceptor to avoid damage to coating.
	7. The shipping plugs at unused Interceptor openings shall be removed, a pipe compound shall be added, and permanent plugs shall be reinstalled in the unused openings. The dielectric bushings or flange isolation devices shall not be removed from openings. The plugs in Interceptor openings, which are to be used, should not be over tightened as this may cause the bushing to unscrew with the plug. Care should be taken not to cross-thread or damage the non-metallic bushings when replacing plugs or installing required Interceptor piping.
4. ON SITE SUPERVISION/TRAINING
	1. Manufacturer will provide classroom training on a "per day" bid basis on recommended Interceptor installation procedures. This training will include the manufacturer's recommended installation procedures.
	2. Manufacturer shall provide a qualified representative for on site supervision assistance of Interceptor installation or any other assistance that may be required by the facility personnel at the site. Manufacturer will bid on this supervision on a "per day" basis in a separate bid item.

END OF SECTION

PART 4 - PREAPPROVED MANUFACTURERS

1. CERTIFICATION: Manufacturer must certify in writing that the Interceptor is designed and approved for the interception and collection of sand, grit, and free oil and grease (hydrocarbons and other petroleum products).
	1. Interceptor shall be the standard product of a steel tank manufacturer regularly engaged in the production of identical equipment.
	2. Manufacturer must document history of completion of prior contracts with the identical product.
2. QUALITY ASSURANCE: The Double Basin Sand Oil Interceptor shall be manufactured by Highland Tank:

FACTORY LOCATION

Highland Tank & Mfg. Co.

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