

# Special Specification 4146

## StormTrooper SWAQ-BYPASS



### 1. DESCRIPTION

Furnish StormTrooper SWAQ storm water treatment unit as indicated on plans. Select Park Environmental Equipment Company system (model as indicated on plans) or approved equal. Install the system in strict accordance with the manufacturer's recommendations. Provide system from a manufacturer that has been in business for 10 years in the design and manufacturing of wastewater products, provides a one-year limited warranty, and provides proof of third party testing by an independent applied engineering and physical sciences testing organization.

Provide the StormTrooper SWAQ unit with installation, operation & maintenance manuals that contain clear and concise descriptions.

Submit required copies of manufacturer's equipment specification for engineer's review. Furnish shop drawings that include the following:

- Detailed manufacturer's data including installation plan/elevation drawings, rebar layout drawings, buoyancy calculations, and site specific coalescing plate performance analysis for TSS & TPH, all certified by a registered professional engineer.
- Manhole frame/cover specifications.
- Joint Sealant specifications.
- Coatings and/or concrete additives specifications.

Design the Stormwater SWAQ to conform to criteria set forth by the International Association of Plumbing and Mechanical Officials (IAPMO), the American Petroleum Institute, and all other governing state and local code requirements.

Field verify all dimensions for piping inverts and unit excavation depth.

Provide a unit capable of containing and treating a wide variety of concentration and loads of floatable and non-floatable constituents such sand, sediments, oil, grease, grit and trash debris to the acceptable loadings of EPA and local authorities.

The manufacturer must provide recommended maintenance and operations instructions that comply with EPA, county and local monitoring requirements.

### 2. MATERIALS

Furnish materials in accordance with the following:

- Item 421, "Hydraulic Cement Concrete,"
- Item 440, "Reinforcement for Concrete," and
- Item 471, "Frames, Grates, Rings, and Covers."

- 2.1. **Concrete.** Construct the StormTrooper SWAQ tank using precast concrete having a 28 day minimum compressive strength of 4500 PSI. Furnish concrete per [DMS-7310](#), "Reinforced Concrete Pipe and Machine-Made Precast Concrete Box Culvert Fabrication and Plant Qualification," for machine-made precast unit.

- 2.2. **Mortar.** Furnish mortar conforming to [DMS-4675](#), "Cementitious Grouts and Mortars for Miscellaneous Applications."
- 2.3. **Steel Reinforcement.** Design the StormTrooper SWAQ for H-20-44 traffic loading as defined by AASHTO 14th ED. 1989 using a 30% impact factor. Place structural reinforcement placement in accordance to ACI. Provide reinforcement steel complying with ASTM A615 grade 60 or ASTM A706 Grade 60. Bend bars in accordance with the latest ACI standards. Install lifting inserts for handling per manufacturer's requirements.
- 2.4. **Manhole Access.** Provide adequate manhole access covers and frames in the StormTrooper SWAQ to permit access for cleaning all areas of the interceptor. Provide 24" diameter clear opening manholes. Furnish materials in accordance with Item 471, "Frames, Grates, Rings, and Covers".
- 2.5. **Pipe Material.** All pipe and fittings materials must be approved by engineer.
- 2.6. **Coalescing Media.** Fabricate the oil coalescing media pak with an oleophillic polypropylene plastic material and assembled into modules with 304 stainless steel materials. Provide a self-cleaning and removable media assembly.
- 2.7. **By-Pass.** Equip the StormTrooper SWAQ-BYPASS with a system to control by-pass manhole to control unusually high rainfall. Provide a control manhole system that prevents resuspension and scouring of the storm water interceptor. Equip the control by-pass system with an adjustable weir and stainless steel debris screen as shown on plans.
- 2.8. **Other Materials.** Use commercial-type hardware as approved.

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### 3. CONSTRUCTION

- 3.1. **Installation.** Install the StormTrooper SWAQ in strict accordance with the manufacturer's recommendations and according to plans and specifications. The manufacturer must have representation during the setting procedure to insure proper installation.
- Install the StormTrooper SWAQ on level, undisturbed soil or an approved compact fill with a load bearing capacity of minimum 2000 PSF.
- 3.1.1. **Lifting Holes.** Provide no more than 4 lifting holes in each section for precast units. Lifting holes may be cast, cut into fresh concrete after form removal, or drilled. Provide lifting holes large enough for adequate lifting devices based on the size and weight of the section. The maximum hole diameter is 3 in. at the inside surface of the wall and 4 in. at the outside surface. Cut no more than 5 in. in any direction of reinforcement per layer for lifting holes. Repair spalled areas around lifting holes.
- 3.1.2. **Marking.** Clearly mark each precast unit with the following information:
- name or trademark of fabricator and plant location;
  - product designation;
  - ASTM designation (if applicable);
  - date of manufacture;
  - designated fabricator's approval stamp; and
  - designation "SR" for product meeting sulfate-resistant concrete plan requirements (when applicable).
- 3.1.3. **Storage and Shipment.** Store precast units on a level surface. Do not ship units until design strength requirements have been met.
- 3.2. **Excavation, Shaping, Bedding, and Backfill.** Excavate, shape, bed, and backfill in accordance with Item 400, "Excavation and Backfill for Structures." Immediate backfilling is permitted where joints consist of rubber boots, rubber gaskets, or bulk or preformed joint sealant. Take precautions in placing and compacting

the backfill to avoid any movement of the unit. Remove and replace units damaged by the Contractor at no expense to the Department.

- 3.3. **Precast Concrete Pipe Storm Drains.** Construct BY-PASS unit for precast concrete pipe storm drains before completion of storm drain lines into or through the BY\_PASS unit. Neatly cut all storm drains at the inside face of the walls of the junction box, manhole, or inlet.
- 3.4. **Inverts.** Shape and route floor inverts passing out or through the junction box, manhole, or inlet as shown on the plans. Shape by adding and shaping mortar or concrete after the base is placed or by placing the required additional material with the base.
- 3.5. **Joints.** Provide watertight joints. Manufacturer must seal joints with a plastic flexible gasket conforming to AASHTO M-198-75 for bitumen gasket.
- 3.6. **Inlet/Outlet/Vent Piping.** Install all interceptor inlet/outlet/vent piping in accordance to manufacturer's recommendations and project specifications.
- 3.7. **Finishing.** Complete units in accordance with the plans. Backfill to original ground elevation in accordance with Item 400, "Excavation and Backfill for Structures."
- 3.8. **Clean Up.** Fill StormTrooper SWAQ with clean water prior to start-up of system. Follow manufacturer's recommendations for testing and start-up.

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#### 4. MEASUREMENT

All Storm Trooper SWAQ BY-PASS units satisfactorily completed in accordance with the plans and specifications will be measured by each, of the type specified, complete in place.

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#### 5. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for as follows:

- 5.1. **Complete StormTrooper SWAQ-25-BYPASS.** Payment for complete StormTrooper SWAQ-25-BYPASS storm water treatment unit will be made at the unit price bid for "Complete StormTrooper SWAQ-25-BYPASS".
- 5.2. **Complete StormTrooper SWAQ-40-BYPASS.** Payment for complete StormTrooper SWAQ-40-BYPASS storm water treatment unit will be made at the unit price bid for "Complete StormTrooper SWAQ-40-BYPASS".
- 5.3. **Complete StormTrooper SWAQ-70-BYPASS.** Payment for complete StormTrooper SWAQ-70-BYPASS storm water treatment unit will be made at the unit price bid for "Complete StormTrooper SWAQ-70-BYPASS".

This price is full compensation for furnishing concrete, reinforcing steel, grout, aluminum and castings, frames, grates, rings and covers, treatment units, connection pipes, excavation, and backfill and for all other materials, tools, equipment, labor, incidentals, cleaning, and maintenance as necessary to install StormTrooper SWAQ BY-PASS, complete in place, in accordance with the plans and specifications.