

SECTION 107119

FLOOD BARRIERS

****Note to Specifier**** This specification contains component and configuration options.
Where indicated, choose the appropriate choice for your specific project requirements.

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. **[Bottom Deploy]** Flexible Flood Barrier Assemblies.
2. Hardware.

B. Related Sections:

1. Division 03 – Cast-In-Place Concrete.
2. Division 04 – Concrete Unit Masonry
3. Division 05 – Structural Steel Framing.

1.2 SUBMITTALS

A. Product Data: Manufacturer's data sheets on each product to be used, including:

1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation instructions.

B. Shop Drawings: Provide shop drawings showing layout, profiles, and product components, including anchorage, hardware, and finishes. Include dimensional plans, applicable material specifications, elevations and sections detailing mounting and connections, and load diagrams.

1. Contractor to provide manufacturer with field measurements and mounting structure prior to commencement of shop drawings.

C. Calculations: Upon signed finalization and approval of dimensions, mounting location material and configuration, and load requirements;

****Note to Specifier**** Choose one (1) of the following statements.

1. Submit calculations approved by a qualified engineer, to verify the flood barrier's ability to withstand the design loading.

2. Submit stamped calculations by a registered professional engineer from within the state or territory where the project will be constructed or substantially improved, to verify the flood barrier's ability to withstand the design loading.

1.3 CLOSEOUT SUBMITTALS

- A. Provide Operation and Maintenance data to include methods for maintaining installed products, precautions against cleaning materials and methods detrimental to finishes and performance.

1.4 QUALITY ASSURANCE

- A. **Manufacturer Qualifications:** Manufacturer must be a FM approved Flexible Flood Barrier Manufacturer. Must demonstrate a minimum of five (5) years successful experience in design and manufacture of similar flood related closures. Upon request, provide supporting evidence including list of installations, descriptions, name, and method of contact.
- B. **Minimum Qualifications:** Manufacturer must demonstrate compliance and certification of a Quality Management System administered by the International Organization for Standardization (ISO). Documentation of current certification status to be provided upon request.
- C. **Welder Qualifications:** Welders Certified in accordance with American Welding Society Procedures for applicable material used in production of specified product.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging container with identification markings intact until ready for installation.
- B. Protect materials from exposure to moisture during storage.
- C. Store materials in a dry, dark, ventilated weathertight location. If outdoor storage is required, block materials to store at an incline, to prevent pooling of any moisture and promote runoff. Tarp materials in a tent-like arrangement, elevated above the product with open sides to allow airflow and prevent prolonged UV exposure on softgood materials. Store loose or high value components in a dry, controlled environment.
- D. Use caution when unloading and handling product to avoid bending, denting, crushing, or other damage to the product.
- E. When using forklifts, use forks of proper length to fully support product being moved. Consult "Approved for Construction" drawings or consult with factory for proper lift points.

1.6 PROJECT CONDITIONS

- A. Maintain environmental conditions (UV protection, temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's indicated limits.

1.7 COORDINATION

- A. Conduct site survey and provide to flood barrier manufacturer, prior to manufacturer's commencement of shop drawings, the actual site conditions of the mounting location, to include; material type, dimensions and configuration, interferences with mounting surface, or any other condition that may impact the ability of the flood barrier to be properly installed.
- B. Coordinate work with other operations and installation of adjacent materials to avoid damage.

1.8 WARRANTY

- A. Manufacturer's Standard Warranty: Product to be free from defects in material and workmanship for a period of one (1) year from date of shipment.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Design flood resistant barriers to withstand the types of short-term flood loads indicated on "Approved for Construction" drawings. Design loads may include hydrostatic, hydrodynamic, debris impact, wave, and wind loading. All flood related loadings are transferred from the flood resistant barriers to the adjacent mounting structure.
- B. Engineer Code Practices: Engineer flood resistant barriers to meet the requirements of the latest published edition of applicable design codes.
- C. Leakage: The flood barrier assemblies shall be substantially watertight under the design flood load. Leakage shall not exceed 0.1 gallon per minute per linear foot of wetted perimeter.
- D. The Flood barrier system shall be designed with a deployment time of less than (60 minutes) by two (2) persons.

2.2 FLEX-GATE

- A. Description: Flex-Gate®, Bottom Deploy; is deployed by removing the trench container cover, lifting the fabric wall onto hooks on the posts or plates.
 - 1. Approved Manufacturer: PS Flood Barriers™, which is located at: 1150 S. 48th Street, Grand Forks, ND 58201; Toll Free Tel: 877.446.1519; Email: 4psinfo@psindustries.com; Web: www.psfloodbarriers.com or www.psindustries.com

- a. Basis of Design Product: Model: FGBD - Flex-Gate®, Bottom Deploy.
- B. Substitutions: Not permitted.
- C. Single Source Responsibilities: Obtain all watertight doors and flood protection barriers from single manufacturer.

2.3 EQUIPMENT

A. Products Details:

1. Sealing Requirements: Flood Gate membrane and compression gasket design shall provide an effective barrier against short-term high-water situations, to the protection level indicated on drawings.
2. Operation:
 - a. Flexible flood barrier; bottom-deployed from in-ground storage trench. Clamping bars at each end of flood barrier attach to pre-located anchor locations. Intermediate support posts (if required) install vertically to support flood barrier.
3. Mounting/Load Transfer: Anchor to existing structure. Flood Barrier designed for specified hydrostatic pressure (and other loads as specified) and will transfer loads to adjacent structure.
4. Frames to be anchored utilizing mechanical, chemical or other framing methods as designed. Manufacturer to include all anchors, water-stop, and sealants, as designed.
5. Mounting Location Types:
 - a. Wall Face Mount:
 - 1) Flood barrier jambs mount to face of wall.
 - b. Between wall mounting, (mounted within hallways or entrances):
 - 1) Flood barrier jambs mount between walls.
6. Provide compression gasket which does not require air inflation.

2.4 MATERIALS

A. Flexible membrane and debris impact net:

1. PS Flood Barriers™ proprietary material, at appropriate size and thickness required to meet the design performance criteria.

- B. All gate-guides, clamping bars, dams, and exterior exposed plate shall be of corrosion resistant materials:
 - 1. Stainless Steel: Type 304 or 316
 - 2. Aluminum: 6000 and 5000 series alloy
- C. Posts: All metallic components to be corrosion resistant materials, at appropriate size and thickness required to meet the design performance criteria.
 - 1. Stainless Steel: Type 304 or 316
 - 2. Aluminum: 6000 and 5000 series alloy
- D. Gaskets: Factory mounted, continuous, compressible rubber type, field replaceable. Gasket does not require air inflation.
- E. Frame Mounting Hardware: Provide anchors, as required.
- F. Operating Hardware:
 - 1. Provide hardware appropriate for the size and weight of the flood barrier and loads. Hardware to be factory located on clamping bars and flexible membrane, as practical. Hardware to be as indicated on drawings.
- G. Finish:
 - 1. Stainless Steel products to be mill finish, interfering welds are ground smooth, not polished.
 - a. Optional Finish for Storage Cabinets: Color matched with paint color specified and in accordance with manufacturer recommendations and instructions.
 - 2. Aluminum products to be mill finish, interfering welds are ground smooth, not polished.
 - a. Top traffic surface coated with non-skid, textured, rubberized coating. Tested to ASTM-F-609 for friction coefficient and ASTM-F-510 for Wear Testing. Field maintainable surface.

2.5 FABRICATION

- A. Fit and factory assemble items in largest practical sections, for shipment to site.
- B. Fabricate items with joints tightly fitted and secured.
- C. Supply components required for anchorage of fabrications, unless otherwise noted.
- D. Conduct shop operational test with factory installed gaskets to verify flood barrier assembly components operate as designed and flood protective gasket alignment and contact surfaces interact as intended.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until mounting substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another subcontractor, notify Architect of uncompleted preparation before proceeding.
- C. Inspect opening for compliance with flood barrier manufacturer requirements. Verify opening conditions are within required tolerances.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's installation instructions, "Approved for Construction" drawings, shipping, handling, and storage instructions, and product carton instructions for installation.
- B. Frames must be installed level, square, plumb, and rigid.
- C. Sealants, water-stop, and grouting to be applied per product application directions and in accordance with manufacturer's instructions, and "Approved for Construction" drawings.
- D. Tolerances: All dimensional requirements must be in accordance with manufacturer's installation instructions and "Approved for Construction" drawings.
- E. Products to be operated and field verified that sealing surfaces maintain contact at the correct sealing points.
- F. Inspect gaskets for damage, wear, and adhesion. Replace compromised gaskets immediately.
- G. Verify that latching assemblies operate freely and correctly.
- H. Verify all anchorage is in accordance with anchor manufacturer's (not PS Industries) installation instructions and applicable data sheets.
- I. Inspect installation sealants to ensure a watertight juncture.
- J. Ensure in-ground storage trough has proper drainage and protects the barrier from UV exposure and pest damage.

3.4 FIELD QUALITY CONTROL

A. Field Testing:

****Note to Specifier** Choose testing method(s) required.**

1. Installer to deploy flood barrier and perform an inspection of all critical parts, dimensional tolerances, and all gasket sealing surfaces.
2. Installer to construct temporary water barrier and test installed flood barrier under hydrostatic conditions.

3.5 CLEANING

- A. Touch-up, repair or replace damaged products or components before Substantial Completion.
- B. Clean all sealing surfaces.

3.6 PROTECTION

- A. Protect installed products until completion of project.

END OF SECTION