



REMOVABLE FLOOD BARRIERS

PART 1-GENERAL

1.1 SUMMARY

- A. Design, fabricate and manufacture a removable (demountable) flood wall system. The flood wall system shall include the following components: planks (stop logs), parting support posts, intermediate support posts, struts and tension rods (if necessary), hold down clamps and rods, gaskets, hardware or any other appurtenance necessary to provide a complete flood wall system.

1.2 REFERENCES

- A. U.S. Army Corps of Engineers Engineering Design Manuals
- B. American Welding Society (AWS): Structural Welding Code D1.1
- C. American Society for Testing and Materials (ASTM)
- D. American Society of Civil Engineers (ASCE): SEI/ASCE 7-16 'Minimum Design Loads for Buildings and Other Structures'.
- E. American Society of Civil Engineers (ASCE): SEI/ASCE 24-14
- F. AISC Manual of Steel Construction, 16th Edition
- G. The Aluminum Association, Aluminum Design Manual (2020)
- H. FEMA TB 3-2021 Requirements for the Design and Certification of Dry Floodproofed Non-Residential and Mixed-Use Buildings

1.3 DESCRIPTION

- A. The removable flood wall system is a temporary flood defense system, which is to be deployed prior to an expected flood event and removed afterward leaving the site in its demounted state.
- B. The use of the flood barrier in a flood event is the responsibility of the Owner. In preparation for use, the Owner is responsible for the following:
 - 1. Providing a secure location for storage of the panels, posts, and hardware.
 - 2. Assembling the barriers in accordance with manufacturer's instruction.
 - 3. Training personnel to be ready to erect the system as specified.
 - 4. Performing a mockup of the system on an annual basis, at minimum, or whenever a turnover in personnel makes this necessary.

1.4 SYSTEM DESIGN REQUIREMENTS

- A. Design, fabricate, and construct a removable flood wall system to the extent shown, complying with the following design requirements.
- B. Hydrostatic Pressure: As determined by USACE and ASCE design manuals.
- C. Seepage/Leakage; Minimal leakage (0.05 gph/square foot) when subjected to hydrostatic and hydrodynamic pressure determined above.
- D. Wind Loads: As determined by ASCE 7 Design loads.
- E. All joints will have gaskets.



- F. Removable floodwall system shall establish watertight infill at areas shown by means of a modular system requiring minimal labor force. After foundation, sidewalls, base plates, and other permanent features are installed, system shall be designed to permit complete installation of demountable components by hand labor, to the extent possible.
- G. System component modular design shall permit use of each similar component at every similar location (accept as specifically noted on drawings).
- H. Each section of removable floodwall, closures barrier, and dike system shall be independent of adjacent sections, allowing erectors to install demountable system components either continuously or in sections.
- I. System shall use 20' stop logs supported by parting support posts and intermediate support posts to the extent possible.
- J. System shall be designed to work properly with a dry-side gasket installation, allowing the stop log planks to fill with water for additional strength and capacity.

1.5 SUBMITTALS

- A. Samples: Samples of the following materials which the Contractor proposes for use shall be submitted to the Engineer for approval:
 - 1. 12" Sample of Aluminum Panel with installed gaskets
- B. Shop Drawings: Submit complete shop drawings demonstrating compliance of floodwall system with Contract Documents. Drawings shall include shop and erection details, wall details, bulkheads, base, and end conditions, including system components.
- C. Operation and Maintenance Manual: Submit operation and maintenance manuals for flood control system.
- D. Optional: PE Stamped Engineering Calculations

1.6 QUALIFICATIONS

- A. The work shall be performed by a U.S. based manufacturer, specializing in the specified flood control system, having experience designing and supplying the specified system under similar conditions for a minimum of ten (10) years in the United States.
- B. Fabrication shop(s) shall be AISC Certified.
- C. All components must be made in America of American-sourced materials.

1.7 QUALITY ASSURANCE

- A. Test Reports: Certified test reports may be submitted in lieu of performing project-specific tests.
- B. The Contractor shall demonstrate installation procedure to interested parties upon completion.

1.8 DELIVERY, STORAGE AND HANDLING

- A. Components shall be undamaged when delivered to site and shall be handled and stored so as to prevent damage, including attention to gaskets.
- B. Protect from exposure to damaging liquids, oils and greases, and unnecessary exposure to weather.



1.9 WARRANTY

- A. Furnish the manufacturer's warranty for system and for component repair or replacement. The warranty shall be issued directly to the Owners. The warranty period shall be for one (1) year from the date of Owners acceptance of work.

1.10 SPARE PARTS

- A. Furnish spare gaskets for maintenance and replacement in the amount of ten percent of each type of gasket.

1.11 FABRICATION

- A. The metals used in fabrication shall be free from kinks, sharp bends and other conditions which would be detrimental to the finished product. Manufacturing processes shall be done neatly and accurately, make bends by control means to insure uniformity of size and shape. All manufacturing shall be done in the United States using only domestic materials.
- B. Vertical hold down clamps and all fabricated steel shall be galvanized.
- C. Anchor Assembly: Typical manufactured concrete anchor to include bolts for erection and "headless" bolts for protecting hole during period when wall is not in use.

1.12 MANUFACTURERS

- A. Basis of Design: Drawings and details are based on Flood Control America's "Invisible Flood Control Wall" removable flood wall system.
- B. The removable floodwall system shall be designed and manufactured by:
 - 1. Flood Control America, 3497 W Clyde Pl, Denver, CO 80211, www.floodcontrolam.com. Contact: Bryan Fryklund, 970-946-6679, bfryklund@floodcontrolam.com
- C. No substitutions allowed.
 - 1. Or Approved Equal: all substitute suppliers must apply in writing 30 days prior to bid. Requirements include all Qualification as per paragraph 1.6 as well as similar assembly processes, similar hold down mechanisms, similar posts, channels and planks (stop logs).
- D. All floodwall system components used shall meet the Buy American Act per FAR Subpart 25.2 Buy American-Construction Materials.

PART 2-PRODUCTS

2.1 MATERIALS

- A. Aluminum Extrusions: Extruded aluminum tubes with profiles for receiving and locking replaceable gaskets. Tube profiles shall establish nesting of tubes for vertical interlocking. Alloy 6063-T6. ASTM B-221.
- B. Aluminum Finish: Mill Finish: AA-M10 or AA-M12.
- C. Baseplate Embeds: Reinforced, hot-dip galvanized, steel sheet baseplate with threaded stainless steel anchor bolts and removable stainless steel threaded "headless" storage bolts. Plate ASTM A-569. Bolts and Nuts: ASTM A-325.



- D. Vertical Support Posts: Hot-dip galvanized; wide-flange steel columns welded to baseplates drilled for bolted embed connection. Angle Brace, plate and bar: ASTM A-36. Hot dip galvanize: ASTM A-123.
- E. Anchors: Meadow - Burke (or equivalent) CX - 8, 1" diameter, stainless steel.
- F. Gaskets: EPDM, compressible rubber, easily field replaceable for plank extrusions, support posts and end channels. Free from cracks, burns, warp, checks, chipped or blistered surfaces, and shall have a smooth surface.

PART 3-EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions with installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
 - 1. Finished Concrete: Smooth, without cracks or construction joints, and variations (bumps and dips) within 1/4 inch in 10 ft.
 - 2. Embedded baseplates flush with adjacent surfaces.
- B. Examine components before installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Adhere to manufacturer's instructions in Operations and Maintenance Manual and follow approved shop drawings.
- B. Do not modify manufacturer's standard components.

3.3 FIELD QUALITY CONTROL

- A. Tests and Inspections:
 - 1. Leak Test: After installation, test for gaps by trying to slip a thin plastic card under base planks at 5 ft. intervals.
 - (a) If plastic card slips all the way under a base plank, tighten clamps down and retest point of failure until no gap exists.