PART 1 GENERAL

1.1 SECTION INCLUDES
   A. Flood Gates.

1.2 RELATED SECTIONS
   A. N/A.

1.3 REFERENCES
   B. ASTM A 240 / 240M - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
   C. AWS - American Welding Society.

1.4 DEFINITIONS
   A. Mitigation Height: The height of flood waters based on the local FEMA five-hundred (500) year flood plain plus one (1) inch.

1.5 SUBMITTALS
   A. Submit under provisions of Section ________.
   B. 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 methods.
   C. Shop Drawings: Submit plan, section, elevation and perspective drawings as necessary to depict proper placement, installation and operation methods for each
gate to be installed.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: The product will be manufactured in the United States of America. All primary products specified in this section will be supplied by a single manufacturer with 1) a minimum of 5 years experience 2) in-ground installation and operation on a minimum of 100 gates 3) confirmed and verifiable successful performance of multiple gates under flood condition and 4) recognition by US Federal Emergency Management Agency as components of recognized Best Practices.

B. Installer Qualifications: All Work listed in this section is to be installed under direct supervision of a Floodbreak representative. Floodbreak representative must be on-site during gate installation.

C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
   1. Finish areas designated by Architect.
   2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
   3. Refinish mock-up area as required to produce acceptable work.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store and dispose of hazardous materials, and materials contaminated by hazardous materials, in accordance with requirements of local authorities having jurisdiction.

1.8 PROJECT CONDITIONS

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

1.9 WARRANTY

A. At project closeout, provide to Owner or Owners Representative an executed copy of the manufacturer's standard limited warranty against manufacturing defect, outlining its terms, conditions, and exclusions from coverage.
PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: FloodBreak Automatic Floodgates, which is located at: 2800 Post Oak Blvd. Suite 5850; Houston, TX 77056; Tel: 713-980-6610; Fax: 713-629-9936; Email: info@floodbreak.com; Web: www.floodbreak.com

B. Substitutions: Must be Approved by UNLV Planning and Construction

C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 APPLICATIONS/SCOPE

A. Provide a means of passively protecting human and property assets subject to damage during a flood caused by external forces. Passive shall mean that the gate functions without human intervention or power to make the gate deploy and drain.

2.3 DESIGN REQUIREMENTS

A. Design gate height based on the Mitigation Height at the location of the gate as determined by the Federal Emergency Management Agency (FEMA) or equivalent entity.

B. Design the gate to allow safe passage of vehicular and human traffic while in its dry or "Closed" position.

C. Design the gate to hinder the passage of floodwater and resist hydrostatic pressures while in its operating or "Open" position.

D. Design that there shall exclude the use of electric pumps or other ancillary powered support equipment in any aspect of the operation of the gate.

E. Design that the actual gate installation “set-down” below surface grade is a maximum of 12 inches. Gate shall anchor into structural foundation.

2.4 COMPONENT

A. Concrete: ASTM C 39 concrete; Compressive strength as recommended by project engineer.

B. Pan Inlet Grate:
   1. Vehicular Grates: 3/8 by 1 inch (10mm x 25mm) flat aluminum bar spaced 3/8 inch (10mm).
   2. Pedestrian Grates: 1/8 by 1 inch (3mm x 25mm) flat aluminum bar spaced 1/8 inch (3mm)

C. Gaskets: 3/16 inch (4.8mm) EPDM rubber.

D. Gate Support Tubing:
   1. Material: 3/16 inch (4.8mm) structural 2 inch by 2 inch (51mm x 51mm) square extrusions - Grade 6063 aluminum.
   2. Minimum Yield (Fy): 40 KSI.

E. Hardware:
   1. Concrete Anchor Bolts:
a. Material: 1/2 inch (13mm) diameter ASTM A 240/240M Grade 304 Stainless Steel.
b. Minimum Yield (Fy): 90 KSI.

2. Hinge Pins:
   a. Material: 1/2 inch (13mm) diameter ASTM A 240/240M Grade 304 Stainless Steel.
b. Minimum Yield (Fy): 90 KSI.

3. Bolts:
b. Minimum Yield (Fy): 90 KSI.

4. Retention Arm Anchors:
   a. Material: 3/8 inch (13mm) ASTM A 240/240M Grade 304 Stainless Steel.
b. Minimum Yield (Fy): 90 KSI.

5. Welding Wire: Aluminum Wire - ER 4043 AWS A5.10 3/32

F. Pan Support Tubing:
   1. Material: 1/4 inch (6mm) structural 2 inch by 2 inch (51mm x 51mm) square extrusions - Grade 6063 Aluminum.
   2. Minimum Yield (Fy): 40 KSI.

G. Pan:
   1. Material: 1/4 inch (6mm) smooth plate - Grade 5052 Aluminum.
   2. Minimum Yield (Fy): 30 KSI.

H. Gasket Flanges:
   1. Material: 1/4 inch (6mm) 6061-T6 aluminum.
   2. Minimum Yield (Fy): 40 KSI.

I. Retention Arm:
   1. Material: 1/2 inch by 1/2 inch (13mm x 13mm) 6061-T6 Aluminum flat stock.
   2. Minimum Yield (Fy): 40 KSI.

J. Structural Angles:
   1. Material: 1/4 inch (6mm) structural 2 inch by 2 inch (51mm x 51mm) angles - 6061-T6 aluminum.
   2. Minimum Yield (Fy): 40 KSI.

2.5 FABRICATION

A. General Requirements:
   1. Fabricate all components and elements following the standards, tolerances and guidelines noted in the contract drawings.
   2. All welding to be performed by a certified welder in accordance with AWS standards and guidelines.
   3. Tighten all bolts to torque specifications determined by the manufacturer and Engineer of record.

B. Concrete: Encapsulate pan and extending bars in a monolithic concrete pour with a depth of no less than 11 inches (280mm) and extending a lateral distance from the pan no less than 12 inches (305mm) in any direction.

C. Pan:
   1. Fabricate pan to include a drainage trough running parallel to and for the entire length of the gate at the approximate centerline of the pan. Trough will have a depth of 2 inches (51mm) and a width of 6 inches (152mm).
D. Drainage: Connect 4 inch (102mm) diameter drain to the drainage trough centered within the pan in all directions.

E. Gate:
   1. At panel joints, stitch weld every 5 inches (127mm) on center with a 3/16 inch fillet weld 3 inches (76mm) long.
   2. At panel splices, place splice flanges within 12 inches (305mm) of adjacent retention arms.

F. Hinges and Anchors:
   1. Seam-weld retention arm brackets to gate and pan. Include stiffener plates on each side.
   2. Attach retention arm anchors through pan and into concrete with 1/2 inch (13mm) diameter anchor bolts.

G. Wiper Wall: Manufacturer to provide 3/8 inch (10mm) aluminum wiper wall to maintain contact with gate seal and protective gaskets at all points of operation.

2.6 DRAWING
PART 3 EXECUTION

3.1 EXAMINATION
   A. Do not begin installation until substrates have been properly prepared.
   B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

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 instructions.

3.4 PROTECTION
   A. Protect installed products until completion of project.
   B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION
Lisa,

I don’t know if you have ever seen this sample drawing before (sample is 10’1” wide). It shows the opening and the barrier component dimensions. The opening dimension is the very important starting point for barrier fabrication.