SECTION 08 39 19

WATERTIGHT CLOSURES

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\*\* NOTE TO SPECIFIER \*\* Walz & Krenzer, Inc.; watertight barriers and hatches.  
This section is based on the products of Walz & Krenzer, Inc., which is located at:91 Willenbrock Rd., Unit B4Oxford, CT 06478Tel: 203-267-5712Fax: 203-267-5716Email: [request info (sales@wkdoors.com)](https://arcat.com/rfi?action=email&company=Walz%252B%252526%252BKrenzer%252C%252BInc.&message=RE%253A%2520Spec%2520Question%2520(08392wkd)%253A%2520&coid=36439&spec=08392wkd&rep=&fax=203-267-5716)  
Web: <http://www.floodbarriers.com> | <http://www.wkdoors.com>   
 [ [Click Here](https://arcat.com/company/walz-krenzer-inc-36439) ] for additional information.  
Walz & Krenzer is a US owned small business specializing in the design and supply of custom watertight and airtight doors, hatches, and flood barriers. Since 1939, the company has offered a wide range of competitively priced manual and power operated closures designed to seal any size opening against water, chemical, air, and blast pressures. WK offers unparalleled experience in the design and supply of the most simple flood barrier to complex power operated doors and hatches.

1. GENERAL
   1. SECTION INCLUDES
      1. Provide watertight closure(s) factory assembled with frame and operating components in accordance with contract specifications and approved drawings.

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + - 1. Removable flood barriers.
      2. Hinged flood barriers.
      3. Sliding flood barriers
      4. Automatically deploying flood barriers.
      5. Watertight and airtight doors.
      6. Air pressure resistant doors (BSL3 & BSL-4)
      7. Automatically deploying watertight roller curtain doors.
      8. Watertight hatches.
  1. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + 1. Section 05 50 00 - Metal Fabrications.
  1. REFERENCES

\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required by the text of the edited section.

* + 1. AISC "Specifications for Design, Fabrication, and Erection of Structural Steel for Buildings".
    2. American Iron and Steel Institute (AISI) CL 304, 316, 316L.
    3. The Aluminum Assoc. "Aluminum Design Manual".
    4. ASME Structural Welding Code Section IX.
    5. ASTM A36, D2000.
    6. AWS Structural Welding Code D1, D1.2, D1.3, D1.6.
    7. FEMA Bulletin 3-93, #102 & #114.
  1. SUBMITTALS
     1. Submit under provisions of Section 01 30 00 - Administrative Requirements.
     2. Manufacturers Data: Submit installation and maintenance manuals for watertight closure.
     3. Shop Drawings: Submit shop drawings approved by licensed Professional Engineer for watertight closure including dimensional plans, elevations, sections, details for mountings/connections, and parts list.

\*\* NOTE TO SPECIFIER \*\* Optional for critical applications. Delete if not required.

* + 1. Calculations: Submit calculations approved by licensed Professional Engineer verifying the watertight closure's ability to withstand the design pressure loading.
    2. Quality Assurance Submittals: Submit test reports showing compliance with specified performance characteristics.
  1. QUALITY ASSURANCE
     1. Manufacturer Qualifications: Manufacturer shall present evidence attesting to at least five years successful experience in the design and manufacture of similar closures.
     2. Welding: Welding shall be performed in accordance with the requirements of the applicable AWS or ASME standards.
     3. Product Quality Assurance:
        1. Perform shop operational test.
        2. Perform shop chalk test.
        3. Perform shop hose

\*\* NOTE TO SPECIFIER \*\* Optional for critical applications. Delete if not required.

* + - 1. Liquid Penetrant Test: Welds in the "potential" leak path shall be liquid penetrant inspected in accordance with Appendix VIII of Section VIII of ASME Code Div. 1.

\*\* NOTE TO SPECIFIER \*\* Optional for critical applications. Delete if not required.

* + - 1. Hydrostatic Test: Provide hydrostatic test data certifying that the closure furnished, or a closure of similar design, has been satisfactorily tested to verify that it will withstand the designed hydrostatic pressure with no visible leakage.

\*\* NOTE TO SPECIFIER \*\* Inflatable gasket assemblies only. Delete if not required.

* + - 1. Air leakage Test: Inflate gaskets and confirm no loss of pressure over 4 hour time period.
  1. PRE-SUBMITTAL MEETINGS
     1. Convene minimum two weeks prior to starting work of this section for critical applications.
  2. DELIVERY, STORAGE, AND HANDLING
     1. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.
     2. Handling: Handle materials to avoid damage.
  3. PROJECT CONDITIONS
     1. 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 recommended limits.
  4. SEQUENCING
     1. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.
  5. WARRANTY
     1. Watertight closure shall operate satisfactorily and be free of defects in material and workmanship for a period of not less than one year from the date of delivery

1. PRODUCTS
   1. MANUFACTURERS
      1. Acceptable Manufacturer: Walz & Krenzer, Inc., which is located at:91 Willenbrock Rd., Unit B4Oxford, CT 06478Tel: 203-267-5712Fax: 203-267-5716Email: [request info (sales@wkdoors.com)](https://arcat.com/rfi?action=email&company=Walz%252B%252526%252BKrenzer%252C%252BInc.&message=RE%253A%2520Spec%2520Question%2520(08392wkd)%253A%2520&coid=36439&spec=08392wkd&rep=&fax=203-267-5716);Web: <http://www.floodbarriers.com> | <http://www.wkdoors.com>

\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

* + 1. Substitutions: Not permitted.
    2. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.
  1. REMOVABLE FLOOD BARRIERS

\*\* NOTE TO SPECIFIER \*\* Most popular and cost effective flood barrier. Designed to seal floodwaters from one direction. Supplied with frame which permanently mounts in the opening, resulting in a fully watertight seal. Flush bottom sill design. Delete if not required.

* + 1. Removable Lip Seal Gasket Flood Barriers:
       1. Model FP-LS as manufactured by Walz & Krenzer, Inc.
          1. Design:

Design Pressure: # (in feet of water).

\*\* NOTE TO SPECIFIER \*\* Delete operation not required.

Operation: Seating (pushing gate closed).

Operation: Unseating direction (pushing gate open).

Side frames shall be angles for mounting on the exterior face of the wall surface, or as flatbars for mounting inside door jambs. Refer to drawings.

Bottom frame is a 1/2 inch (13 mm) flatbar, which shall be recessed 1/2 inch (13 mm) into floor surface to achieve a flush bottom sill. Refer to drawings.

Corners of flood barriers shall have small 2 inches (51 mm) radius.

\*\* NOTE TO SPECIFIER \*\* Delete frame not required.

Frame: Mounting holes for expansion anchors

Frame: Masonry subframe with welded anchors for embedment in concrete.

Two storage brackets per panel shall be provided.

Flood barriers over 10 feet (3048 mm) in width and 6 feet (1829 mm) in height may require multiple panels, available in both side by side, and/or stacked configurations. Side by side multiple panel flood barriers are provided with removable braces (and without mullions). Refer to WK model FP-M and relevant drawings.

\*\* NOTE TO SPECIFIER \*\* Additional requirements such as hydrodynamic loads, impact loads and breaking wave loads shall be added as required by the specific application.

Additional Requirements:

* + - * 1. Material:

Panel: 5051-H32 aluminum plate with 6061-T6 aluminum stiffeners.

\*\* NOTE TO SPECIFIER \*\* Delete frame material not required.

Frame: ASTM A-36 steel.

Frame: Aluminum.

Frame: 304 stainless steel.

Frame: 316 stainless steel.

Latches: stainless steel sliding latch bolts.

Gasket: Walz & Krenzer EPDM lip seal gasket, 60 duro with fully molded corners.

Finish: Aluminum panel painted with INSL-X CheckRust acrylic paint. Mild steel frame shall be blast to near white metal per SSPC-SP- 7 and primed with one coat of inorganic zinc primer.

\*\* NOTE TO SPECIFIER \*\* Delete finish coat if not required.

Finish coat shall be epoxy paint.

Grab Handle and Panel Stops: 6061-T6 aluminum.

Storage brackets: ASTM A-36 steel.

\*\* NOTE TO SPECIFIER \*\* Offers a 100% watertight seal against floodwaters from one or both directions. Raised bottom sill design; removable ramp available. Delete if not required.

* + 1. Removable Compression Gasket Flood Barrier:
       1. Model FP-C as manufactured by Walz & Krenzer, Inc.
          1. Design:

Design Pressure: # (in feet of water).

\*\* NOTE TO SPECIFIER \*\* Delete operation not required.

Operation: Seating (pushing gate closed).

Operation: Unseating direction (pushing gate open).

Side frames shall be angles for mounting on the exterior face of the wall surface.

Standard bottom sill is raised 1.5 inches (38 mm) from floor surface.

\*\* NOTE TO SPECIFIER \*\* Delete recessed sill options if not required.

Provide recessed sill option when flush sill is required.

Provide recessed removable flush bottom sill when flush sill is required.

\*\* NOTE TO SPECIFIER \*\* Delete frame not required.

Frame: Mounting holes for expansion anchors

Frame: Masonry subframe with welded anchors for embedment in Frame knife-edge shall be rounded and smooth to maximize sealing.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

Removable Ramp: Ramp shall be provided to be placed over the raised bottom sill for vehicular traffic or to prevent tripping hazard.

\*\* NOTE TO SPECIFIER \*\* Delete material not required.

Material: Aluminum

Material: Stainless steel.

Two storage brackets per panel shall be provided.

Dogs shall be designed to adjust gasket compression in the field. Gate size and design pressure direction shall determine the quantity and type of dog.

\*\* NOTE TO SPECIFIER \*\* Additional requirements such as hydrodynamic loads, impact loads and breaking wave loads shall be added as required by the specific application.

Additional Requirements:

* + - * 1. Material:

\*\* NOTE TO SPECIFIER \*\* Delete panel material not required.

Panel: 5051-H32 aluminum plate with 6061-T6 aluminum stiffeners.

Panel: Mild steel plate and stiffeners.

Panel: Stainless steel plate and stiffeners.

\*\* NOTE TO SPECIFIER \*\* Delete frame material not required.

Frame: ASTM A-36 steel.

Frame: Aluminum.

Frame: 304 stainless steel.

Frame: 316 stainless steel.

Gasket: ASTM D2000 GR DE neoprene gasket, 25 duro with fully molded corners.

Dogs/Drop bolts: stainless steel/bronze dogs or drop bolts. Utilize drop bolts for reduced maintenance and lower cost when operation is from outside only.

Finish: aluminum panel painted with INSL-X CheckRust acrylic paint. Mild steel frame to be blast to near white metal per SSPC-SP- 7 and primed with one coat of inorganic zinc primer.

\*\* NOTE TO SPECIFIER \*\* Delete finish coat if not required.

Finish coat shall be epoxy paint.

\*\* NOTE TO SPECIFIER \*\* These flood barriers use the same type of bottom & side frame as our lip seal gasket flood barriers. These barriers require an air source for inflation of the gaskets. Delete if not required.

* + 1. Removable Inflatable Gasket Flood Barrier:
       1. Model FP-I as manufactured by Walz & Krenzer, Inc.
          1. Design:

Design Pressure: # (in feet of water).

\*\* NOTE TO SPECIFIER \*\* Delete operation not required.

Operation: Seating (pushing gate closed).

Operation: Unseating direction (pushing gate open).

Side frames are available as angles for mounting on the exterior face of the wall surface, or as flatbars for mounting inside door jambs. Refer to drawings.

Bottom frame is a 1/2 inch (13 mm) flatbar, which can be recessed 1/2 inch (13 mm) into floor surface to achieve a flush bottom sill. Refer to drawings.

Corners of flood barrier shall have a minimum 2 inches (52 mm) radius at frame.

\*\* NOTE TO SPECIFIER \*\* Delete air source not required.

Air Source: Compressed air tank.

Air Source: Portable hand pump.

Air Source: Portable foot pump.

Air Source: Shop air

Air source & controls can be pre-piped onto barrier panel

Push-button controls for activation of air source available

Security cover on panel available to protect air source and controls when they are pre-piped and pre-installed on barrier panel.

\*\* NOTE TO SPECIFIER \*\* Delete frame not required.

Frame: Mounting holes for expansion anchors

Frame: Masonry subframe with welded anchors for embedment in concrete.

Multiple panel flood barriers with a center mullion. Refer to drawings.

Sealing surfaces shall be finished to 63 micro inches to maximize sealing, uninterrupted by steps greater than 0.015 inch (0.38 mm), free of cracks, with finish lay parallel to seal.

Two storage brackets per panel shall be provided.

\*\* NOTE TO SPECIFIER \*\* Additional requirements such as hydrodynamic loads, impact loads and breaking wave loads shall be added as required by the specific application.

Additional Requirements:

* + - * 1. Material:

\*\* NOTE TO SPECIFIER \*\* Delete panel material not required.

Panel: 5051-H32 aluminum plate with 6061-T6 aluminum stiffeners.

Panel: Mild steel plate and stiffeners.

Panel: Stainless steel plate and stiffeners.

\*\* NOTE TO SPECIFIER \*\* Delete frame material not required.

Frame: ASTM A-36 steel.

Frame: Aluminum.

Frame: 304 stainless steel.

Frame: 316 stainless steel.

Latches: stainless steel sliding latch bolts.

Gasket: Single or dual EPDM inflatable gasket supplied with standard automotive style valve stem and 0-60 psi pressure gauge. Fabric reinforced inflatable gasket used for his pressure applications or large size barriers.

Finish: aluminum panel painted with INSL-X CheckRust acrylic paint. Mild steel frame to be blast to near white metal per SSPC-SP- 7 and primed with one coat of inorganic zinc primer.

\*\* NOTE TO SPECIFIER \*\* Delete finish coat if not required.

Finish coat shall be epoxy paint.

Grab Handle and Panel Stops: 6061-T6 aluminum (mild steel and stainless options are available).

Storage brackets: ASTM A-36 steel.

\*\* NOTE TO SPECIFIER \*\* Used for openings wider than 10 feet or higher than 6 feet, they are available in both side by side or stacked configurations. Delete if not required.

* + 1. Removable Multi-Panel Lip Seal Flood Barrier:
       1. Model FP-M as manufactured by Walz & Krenzer, Inc.
          1. Design:

Design Pressure: # (in feet of water).

\*\* NOTE TO SPECIFIER \*\* Delete operation not required.

Operation: Seating (pushing gate closed).

Operation: Unseating direction (pushing gate open).

Side frames are available as angles for mounting on the exterior face of the wall surface, or as flatbars for mounting inside door jambs. Refer to drawings.

Bottom frame is a 1/2 inch (13 mm) flatbar, which can be recessed 1/2 inch (13 mm) into floor surface to achieve a flush bottom sill. Refer to drawings.

Corners of flood barriers have small 2 inches (51 mm) radius.

\*\* NOTE TO SPECIFIER \*\* Delete frame not required.

Frame: Mounting holes for expansion anchors

Frame: Masonry subframe with welded anchors for embedment in concrete.

Two storage brackets per panel included.

Flood barriers over 10 feet (3048 mm) in width and 6 feet (1829 mm) in height may require multiple panels, available in both side by side, and/or stacked configurations. Side by side multiple panel flood barriers are provided with removable braces (and without mullions). Stacked flood barriers (stacked on top of each other) may not require bracing.

Square gasket corners are used at the junction of the center panels. Very slight leakage may occur at the square gasket corner. However, the leakage rate is well under the allowable FEMA leakage rate for the protected area.

Removable braces are typically diagonal braces mounted from a flush embedded sub plate, located in front of the flood barriers and at the seam between the panels. Other bracing options are available if standard diagonal bracing is not compatible with site conditions.

\*\* NOTE TO SPECIFIER \*\* Additional requirements such as hydrodynamic loads, impact loads and breaking wave loads shall be added as required by the specific application.

Additional Requirements:

* + - * 1. Material:

Panel: 5051-H32 aluminum plate with 6061-T6 aluminum stiffeners.

Frame: ASTM A-36 steel (options include aluminum and 304 or 316 stainless steel).

Latches: stainless steel sliding latch bolts.

Gasket: Walz & Krenzer EPDM lip seal gasket, 60 duro with fully molded corners.

Finish: aluminum panel painted with INSL-X CheckRust acrylic paint. Mild steel frame to be blast to near white metal per SSPC-SP- 7 and primed with one coat of inorganic zinc primer.

\*\* NOTE TO SPECIFIER \*\* Delete finish coat if not required.

Finish coat shall be epoxy paint.

Grab Handle and Panel Stops: 6061-T6 aluminum.

Storage brackets: ASTM A-36 steel.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

Removable Support Brace: For side-by-side panels, diagonal brace(s) are mounted to the front of the panels, with one brace located at every seam between the panels. The diagonal brace attaches to a flush sub plate, embedded in the ground in front of the flood barrier. Other bracing options are available. Refer to drawings.

\*\* NOTE TO SPECIFIER \*\* The WK QuickWall Flood Barrier system is a removable, modular flood barrier consisting of multiple stop-log type panels. This barrier system is especially suited for long or high openings.

* + - 1. Model FP-QW as manufactured by Walz & Krenzer, Inc.
         1. Design:

Design Pressure: # (in feet of water).

\*\* NOTE TO SPECIFIER \*\* Delete operation not required.

Operation: Seating (pushing gate closed).

Operation: Unseating direction (pushing gate open).

Side frames are custom fabricated to attach to existing wall geometry.

Floor shall be flat within 1/16 inch (1.5 mm) between the posts with a typical spacing of 10 feet (3048 mm) between posts.

Depending on floor surface, a bottom frame may not be required. Bottom gasket designed to seal against floor surface. Refer to drawings.

\*\* NOTE TO SPECIFIER \*\* Delete if no bottom frame required.

Bottom post frame shall be recessed into floor surface to achieve a flush sill. Depth of frame depends on the flood elevation. Refer to drawings.

\*\* NOTE TO SPECIFIER \*\* Slight leakage may occur in quick-wall design. Leakage rate is low, meets or exceeds the FEMA requirements, and is comparable or superior with other stop log type designs.

Corners of flood barriers have small 2 inches (51 mm) radius.

\*\* NOTE TO SPECIFIER \*\* Delete frame not required.

Frame: Mounting holes for expansion anchors

Frame: Masonry subframe with welded anchors for embedment in concrete.

\*\* NOTE TO SPECIFIER \*\* Additional requirements such as hydrodynamic loads, impact loads and breaking wave loads shall be added as required by the specific application.

Additional Requirements:

* + - * 1. Material:

Panel: custom extruded 6061-T6 aluminum shape.

\*\* NOTE TO SPECIFIER \*\* Delete frame material not required.

Frame: ASTM A-36 steel.

Frame: Aluminum.

Frame: 304 stainless steel.

Frame: 316 stainless steel.

Posts: custom extruded 6061-T6 aluminum shape.

Latches: stainless steel sliding latch bolts.

Gasket: Walz & Krenzer EPDM gaskets. Custom shapes for posts, logs and frames.

\*\* NOTE TO SPECIFIER \*\* Delete storage rack material not required.

Storage Rack: Aluminum pallet.

Storage Rack: Mild steel pallet.

* 1. FLOOD BARRIERS

\*\* NOTE TO SPECIFIER \*\* A permanently mounted panel designed to withstand water pressure from one side only utilizes our custom designed lip seal gasket and offers a lower cost option to inflatable and compression gasket floodgates. Delete if not required.

* + 1. Hinged Lip Seal Gasket Flood Gate:
       1. Model FG-LS Hinged Lip Seal as manufactured by Walz & Krenzer, Inc.
          1. Design:

Design Pressure: # (in feet of water).

\*\* NOTE TO SPECIFIER \*\* Delete operation not required.

Operation: Seating (pushing gate closed).

Operation: Unseating direction (pushing gate open).

Side frames are available as angles for mounting on the exterior face of the wall surface, or as flatbars for mounting inside door jambs. Refer to drawings.

Bottom frame is a 1/2 inch (13 mm) flatbar, which can be recessed 1/2 inch (13 mm) into floor surface to achieve a flush bottom sill. Refer to drawings.

Corners of flood gates have small 2 inches (51 mm) radius.

Roller assembly shall be provided on gates wider than 4 feet (1219 mm), or for gates with flush bottom sills.

Opening device for latching gate shall be provided.

\*\* NOTE TO SPECIFIER \*\* Delete frame not required.

Frame: Mounting holes for expansion anchors

Frame: Masonry subframe with welded anchors for embedment in concrete.

Dual panel hinged flood gates available with diagonal brace for support at center seam. Alternative bracing configurations are available. Refer to drawings.

\*\* NOTE TO SPECIFIER \*\* In cases where the radius corner creates and interference problem, or at the junction of panels in multi-panel flood gates, square corners can be utilized. Very slight leakage may occur at the square corners. However, this leakage rate is typically well under the allowable FEMA leakage rate for the protected area.

Additional requirements such as hydrodynamic loads, impact loads and breaking wave loads shall be added as required by the specific application.

* + - * 1. Material:

Panel: 5051-H32 aluminum plate with 6061-T6 aluminum stiffeners.

\*\* NOTE TO SPECIFIER \*\* Delete frame material not required.

Frame: ASTM A-36 steel.

Frame: Aluminum.

Frame: 304 stainless steel.

Frame: 316 stainless steel.

Latches: stainless steel sliding latch bolts.

Gasket: Walz & Krenzer EPDM lip seal gasket, 60 duro with fully molded corners.

Finish: aluminum panel painted with INSL-X CheckRust acrylic paint. Mild steel frame to be blast to near white metal per SSPC-SP- 7 and primed with one coat of inorganic zinc primer.

\*\* NOTE TO SPECIFIER \*\* Delete finish coat if not required.

Finish coat shall be epoxy paint.

Grab Handle and Panel Stops: 6061-T6 aluminum.

Hinges: to include bronze oil-impregnated thrust bearing and stainless steel hinge pins.

\*\* NOTE TO SPECIFIER \*\* A permanently mounted panel, that when closed creates a fully watertight seal capable of withstanding water pressure from one or both sides. Available for any size opening, and can be designed with single or double panels. Wide floodgates are provided with wheel assemblies to assist in opening and closing. Delete if not required.

* + 1. Hinged Compression Gasket Flood Gate:
       1. Model FG-C Compression as manufactured by Walz & Krenzer, Inc.
          1. Design:

Design Pressure: # (in feet of water).

\*\* NOTE TO SPECIFIER \*\* Delete operation not required.

Operation: Seating (pushing gate closed).

Operation: Unseating direction (pushing gate open).

Side frames angles for mounting on the exterior face of the wall surface.

Standard bottom sill is raised 1-1/2 inches (38 mm) from floor surface.

Roller assembly shall be provided on gates wider than 6 feet (1829 mm).

\*\* NOTE TO SPECIFIER \*\* Delete frame not required.

Frame: Mounting holes for expansion anchors

Frame: Masonry subframe with welded anchors for embedment in concrete.

Dual panel hinged flood gates available for wider openings. Refer to drawings.

Frame knife-edge shall be rounded and smooth to maximize sealing.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

Removable Ramp: Ramp shall be provided to be placed over the raised bottom sill for vehicular traffic or to prevent tripping hazard.

\*\* NOTE TO SPECIFIER \*\* Delete material not required.

Material: Aluminum

Material: Stainless steel.

Dogs shall be designed to adjust gasket compression in the field. Gate size and design pressure direction shall determine the quantity and type of dog.

\*\* NOTE TO SPECIFIER \*\* Additional requirements such as hydrodynamic loads, impact loads and breaking wave loads shall be added as required by the specific application.

Additional Requirements:

* + - * 1. Material:

Panel: 5051-H32 aluminum plate with 6061-T6 aluminum stiffeners.

Panel: ASTM A-36 steel.

Panel: 304 stainless steel.

Panel: 316 stainless steel.

\*\* NOTE TO SPECIFIER \*\* Delete frame material not required.

Frame: ASTM A-36 steel.

Frame: Aluminum.

Frame: 304 stainless steel.

Frame: 316 stainless steel.

Gasket: ASTM D2000 GR DE neoprene gasket, 25 duro with fully molded corners.

Dogs/Drop Bolts: Stainless steel/bronze dogs or drop bolts. Provide drop bolts for reduced maintenance and lower cost where operation is from outside only.

Finish: aluminum panel painted with INSL-X CheckRust acrylic paint. Mild steel frame to be blast to near white metal per SSPC-SP- 7 and primed with one coat of inorganic zinc primer. Stainless steel abrasive cleaned.

\*\* NOTE TO SPECIFIER \*\* Delete finish coat if not required.

Finish coat shall be epoxy paint.

Grab Handle and Panel Stops: 6061-T6 aluminum.

Hinges: to include bronze oil-impregnated thrust bearing and stainless steel hinge pins.

\*\* NOTE TO SPECIFIER \*\* A permanently mounted panel, that when closed creates a fully watertight seal capable of withstanding water pressure from one or both sides. Available for any size opening, and can be designed with single or double panels. Wide floodgates are provided with wheel assemblies to assist in opening and closing. Air source required to inflate gasket. Delete if not required.

* + 1. Hinged Inflatable Gasket Flood Gate:
       1. Model FG-I Side Hinged as manufactured by Walz & Krenzer, Inc.
          1. Design:

Design Pressure: # (in feet of water).

\*\* NOTE TO SPECIFIER \*\* Delete operation not required.

Operation: Seating (pushing gate closed).

Operation: Unseating direction (pushing gate open).

Side frames are available as angles for mounting on the exterior face of the wall surface, or as flatbars for mounting inside door jambs. Refer to drawings.

Bottom frame is a 1/2 inch (13 mm) flatbar, which can be recessed 1/2 inch (13 mm) into floor surface to achieve a flush bottom sill. Refer to drawings.

Corners of flood gate to have a minimum 2 inches (52 mm) radius at frame.

Roller assembly is provided on gates wider than 6 feet (1829 mm).

\*\* NOTE TO SPECIFIER \*\* Delete air source not required.

Air Source: Compressed air tank.

Air Source: Hand pump.

Air Source: Foot pump.

Air Source: Shop air

Air source & controls can be pre-piped and installed on barrier panel

Push-button controls for activation of air source available

Security cover on panel available to protect air source and controls when they are pre-piped and pre-installed on barrier panel

\*\* NOTE TO SPECIFIER \*\* Delete frame not required.

Frame: Mounting holes for expansion anchors

Frame: Masonry subframe with welded anchors for embedment in concrete.

Dual panel hinged flood gates available with a center mullion. Refer to drawings.

Sealing surfaces shall be finished to 63 micro inches to maximize sealing, uninterrupted by steps greater than 0.015 inch (0.38 mm), free of cracks, with finish lay parallel to seal.

Gate size and design pressure direction shall determine the quantity and type of latches.

\*\* NOTE TO SPECIFIER \*\* Additional requirements such as hydrodynamic loads, impact loads and breaking wave loads shall be added as required by the specific application.

Additional Requirements:

* + - * 1. Material:

\*\* NOTE TO SPECIFIER \*\* Delete panel material not required.

Panel: 5051-H32 aluminum plate with 6061-T6 aluminum stiffeners.

Panel: Mild steel plate and stiffeners.

Panel: Stainless steel plate and stiffeners.

\*\* NOTE TO SPECIFIER \*\* Delete frame material not required.

Frame: ASTM A-36 steel.

Frame: Aluminum.

Frame: 304 stainless steel.

Frame: 316 stainless steel.

Latches: Stainless steel sliding latch bolts.

Gasket: Single or dual EPDM inflatable gasket supplied with standard automotive style valve stem and 0-60 psi pressure gauge. Fabric reinforced inflatable gasket used for this pressure applications or large size gates.

Finish: aluminum panel painted with INSL-X CheckRust acrylic paint. Mild steel frame to be blast to near white metal per SSPC-SP- 7 and primed with one coat of inorganic zinc primer. Stainless steel abrasive cleaned.

\*\* NOTE TO SPECIFIER \*\* Delete finish coat if not required.

Finish coat shall be epoxy paint.

\*\* NOTE TO SPECIFIER \*\* Delete grab handle material not required.

Grab Handle and Panel Stops: 6061-T6 aluminum.

Grab Handle and Panel Stops: Mild steel.

Grab Handle and Panel Stops: Stainless steel.

Hinges: Provide bronze oil-impregnated thrust bearing and stainless steel hinge pins.

\*\* NOTE TO SPECIFIER \*\* Permanently mounted floodgates, hinged along the bottom surface, recess into the ground/floor surface in front of the opening to be protected. Available with compression, inflatable, or lip seal gaskets depending on the application. Mechanical assist required for larger gates. Delete if not required.

* + 1. Flip Up Flood Gate:
       1. Model FG-BH Bottom Hinged (Flip-Up) as manufactured by Walz & Krenzer, Inc.
          1. Design:

Design Pressure: # (in feet of water).

\*\* NOTE TO SPECIFIER \*\* Delete operation not required.

Operation: Seating (pushing gate closed).

Operation: Unseating direction (pushing gate open).

When flood gate is in the lowered position, it becomes part of the ground or road surface. Refer to drawings.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

Diamond tread plates or non-skid grooves shall be cut for top facing plate.

Side frames are angles for mounting to existing exterior face of the wall surface or flatbars for mounting inside door jambs. Refer to drawings.

\*\* NOTE TO SPECIFIER \*\* Delete frame not required.

Frame: Mounting holes for expansion anchors

Frame: Masonry subframe with welded anchors for embedment in Frame knife-edge shall be rounded and smooth to maximize sealing.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

Bottom trough in which flood gate rests in shall be supplied in the form of a pan with drain connections supplied.

For flood gates located in roadways, live loads per AASHTO shall be scheduled on the drawings.

Flood gate shall be designed to withstand flood waters up to its full height with allowable stresses in accordance with the Aluminum Association "Aluminum Design Manual" and AISC.

For large and/or heavy floodgates: mechanical assist shall be required.

\*\* NOTE TO SPECIFIER \*\* Delete mechanical assist not required.

Mechanical Assist: Manual winch.

Mechanical Assist: Power winch.

Mechanical Assist: Counterweight.

Mechanical Assist: Hydraulic lift.

For inflatable gasket gate, sealing surfaced shall be finished to 63 micro inches to maximize sealing, uninterrupted by steps greater than .015 inch (0.38 mm), free of cracks, with finish lay parallel to seal.

\*\* NOTE TO SPECIFIER \*\* Delete air source not required.

Air Source: Compressed air tank.

Air Source: Hand pump.

Air Source: Foot pump.

Gate size and design pressure direction shall determine the quantity and type of dogs.

\*\* NOTE TO SPECIFIER \*\* Additional requirements such as hydrodynamic loads, impact loads and breaking wave loads shall be added as required by the specific application.

Additional Requirements:

* + - * 1. Material:

\*\* NOTE TO SPECIFIER \*\* Delete panel material not required.

Panel: 6061-T6 aluminum diamond plate

Panel: Mild steel plate and stiffeners.

Panel: Stainless steel plate and stiffeners.

\*\* NOTE TO SPECIFIER \*\* Delete frame material not required.

Frame: ASTM A-36 steel.

Frame: Aluminum.

Frame: 304 stainless steel.

Frame: 316 stainless steel.

\*\* NOTE TO SPECIFIER \*\* Gasket material depends on size and application. Delete material not required.

Gasket: WK neoprene lip seal gasket.

Gasket: WK star gasket.

Gasket: EPDM inflatable gasket

Gasket: ASTM D2000 GR DE 25 duro neoprene gasket.

Dogs: stainless steel or bronze dogs are used depending on loads.

Finish: aluminum panel painted with INSL-X CheckRust acrylic paint. Mild steel frame to be blast to near white metal per SSPC-SP- 7 and primed with one coat of inorganic zinc primer.

\*\* NOTE TO SPECIFIER \*\* Delete finish coat if not required.

Finish coat shall be epoxy paint.

Hinges: Bronze oil-impregnated thrust bearing and stainless steel hinge pins.

\*\* NOTE TO SPECIFIER \*\* Available for locations where side-hinged or flip-up gates will not fit and removable barriers are not desired. Delete if not required.

* + 1. Sliding Flood Barriers:
       1. Model FG-HS Horizontal Sliding as manufactured by Walz & Krenzer, Inc.
          1. Design:

Design Pressure: # (in feet of water).

\*\* NOTE TO SPECIFIER \*\* Delete operation not required.

Operation: Seating (pushing gate closed).

Operation: Unseating direction (pushing gate open).

Side frames shall be provided as angles for mounting on the exterior face of the wall surface. Refer to drawings.

\*\* NOTE TO SPECIFIER \*\* Delete if horizontal barriers not required.

For horizontal sliding barriers: bottom frame supplied as a trough with a track system. On top of trough is a hinged cover plate. When lowered, the cover plate provides a flush surface with ground level.

For large gates, winch assemblies with wire rope shall be supplied to aid in watertight barrier operation.

\*\* NOTE TO SPECIFIER \*\* Delete if vertical barriers not required.

For vertical sliding barriers: bottom frame is a flatbar that shall be mounted flush with the ground level. Winch with wire top shall be supplied for operating vertical sliding barriers.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

Inflatable gaskets shall be used in lieu of compression gaskets.

\*\* NOTE TO SPECIFIER \*\* Delete frame not required.

Frame: Mounting holes for expansion anchors

Frame: Masonry subframe with welded anchors for embedment in concrete.

\*\* NOTE TO SPECIFIER \*\* Additional requirements such as hydrodynamic loads, impact loads and breaking wave loads shall be added as required by the specific application.

Additional Requirements:

* + - * 1. Material:

Panel: 5051-H32 aluminum plate with 6061-T6 aluminum stiffeners.

Panel: ASTM A-36 steel.

Panel: 304 stainless steel.

Panel: 316 stainless steel.

\*\* NOTE TO SPECIFIER \*\* Delete frame material not required.

Frame: ASTM A-36 steel.

Frame: Aluminum.

Frame: 304 stainless steel.

Frame: 316 stainless steel.

Latches: Stainless steel sliding latch bolts.

\*\* NOTE TO SPECIFIER \*\* Optional gasket material for unusual environmental conditions include viton, silicone, hypalon and others.

Gasket: ASTM D2000 GR DE neoprene gasket, 25 duro with fully molded corners. In pressure exceeding 20 feet (6096 mm) design pressure, 40 duro gasket shall be used.

\*\* NOTE TO SPECIFIER \*\* Delete guide rail material not required.

Guide Rails: ASTM A-36 steel.

Guide Rails: Aluminum.

Guide Rails: 304 stainless steel.

Guide Rails: 316 stainless steel.

Finish: aluminum panel painted with INSL-X CheckRust acrylic paint. Mild steel frame to be blast to near white metal per SSPC-SP- 7 and primed with one coat of inorganic zinc primer.

\*\* NOTE TO SPECIFIER \*\* Delete finish coat if not required.

Finish coat shall be epoxy paint.

Grab Handle and Panel Stops: 6061-T6 aluminum.

* + - 1. Model FG-VS Vertical Sliding as manufactured by Walz & Krenzer, Inc.
         1. Design:

Design Pressure: # (in feet of water).

\*\* NOTE TO SPECIFIER \*\* Delete operation not required.

Operation: Seating (pushing gate closed).

Operation: Unseating direction (pushing gate open).

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

Side frames shall be provided as angles for mounting on the exterior face of the wall surface.

Bottom frame is a 1/2 inch (13 mm) flatbar, which can be recessed 1/2 inch (13 mm) into floor surface to achieve a flush bottom sill. Refer to drawings.

Corners of flood barrier have small 2 inches (51 mm) radius.

Guide rails extend the full height of the barrier travel.

Cable assembly: minimum 5:1 factor of safety on breaking strength.

Manual winch: self-locking, worm gear drive.

Barrier secured in raised position (fail safe) by secondary latch.

\*\* NOTE TO SPECIFIER \*\* Delete frame not required.

Frame: Mounting holes for expansion anchors

Frame: Masonry subframe with welded anchors for embedment in concrete.

\*\* NOTE TO SPECIFIER \*\* Additional requirements such as hydrodynamic loads, impact loads and breaking wave loads shall be added as required by the specific application.

Additional Requirements:

* + - * 1. Material:

Panel: 5051-H32 aluminum plate with 6061-T6 aluminum stiffeners.

\*\* NOTE TO SPECIFIER \*\* Delete frame material not required.

Frame: ASTM A-36 steel.

Frame: Aluminum.

Frame: 304 stainless steel.

Frame: 316 stainless steel.

Latches: Stainless steel sliding latch bolts.

Gasket: Walz & Krenzer EPDM lip seal gasket, 60 duro with fully molded corners.

\*\* NOTE TO SPECIFIER \*\* Delete guide rail material not required.

Guide Rails: ASTM A-36 steel.

Guide Rails: Aluminum.

Guide Rails: 304 stainless steel.

Guide Rails: 316 stainless steel.

Finish: aluminum panel painted with INSL-X CheckRust acrylic paint. Mild steel frame to be blast to near white metal per SSPC-SP- 7 and primed with one coat of inorganic zinc primer.

\*\* NOTE TO SPECIFIER \*\* Delete finish coat if not required.

Finish coat shall be epoxy paint.

Winch - manual hand winch with split drum for two cables

Winch - electric winch with split drum for two cables

Cable assembly: stainless steel wire rope.

Grab Handle and Panel Stops: 6061-T6 aluminum.

\*\* NOTE TO SPECIFIER \*\* Flood barriers that automatically deploy at pre-set water levels provide 24/7 protection without human intervention. Delete if not required.

* + 1. Auto Rising Flood Barriers:
       1. Model FG-AR as manufactured by Walz & Krenzer, Inc.
          1. Design:

Design Pressure: Gate designed to take a seating pressure to the full height of the gate.

Sealing: provide lip seal gaskets for watertight seal on bottom and sides.

When flood gate is in the lowered position, it shall become part of the ground or road surface.

Non-skid coatings shall be used for top facing plate.

Gate shall automatically close and seal by flood water filling the trough. The gate shall fully close before water level in trough reaches grade.

Automatic gate actuation by flood water shall be provided with buoyant closed cell foam and stainless steel gas springs.

Side frames shall be angles for mounting to existing exterior face of the wall surface or flatbars for mounting inside door jambs.

\*\* NOTE TO SPECIFIER \*\* Delete frame not required.

Frame: Mounting holes for expansion anchors

Frame: Masonry subframe with welded anchors for embedment in concrete.

Bottom trough in which flood gate rests shall have perimeter edge anchors and cross beams to support vehicle and pedestrian loads.

For flood gates located in roadways, live loads per AASHTO classifications shall be scheduled. Refer to drawings..

Flood gate shall be designed to withstand flood waters up to its full height with allowable stresses in accordance with the Aluminum Association "Aluminum Design Manual" and AISC.

\*\* NOTE TO SPECIFIER \*\* Options include manual or powered winches. Delete if not required.

For large and/or heavy floodgates: mechanical assist is required.

Provide manual winches where scheduled.

Provide powered winches where scheduled.

\*\* NOTE TO SPECIFIER \*\* Additional requirements such as hydrodynamic loads, impact loads and breaking wave loads shall be added as required by the specific application.

Additional Requirements:

* + - * 1. Material:

Panel: 6061-T6 aluminum plate (diamond tread can be provided as an option for some size barriers).

\*\* NOTE TO SPECIFIER \*\* Delete frame material not required.

Frame: ASTM A-36 steel.

Frame: Aluminum.

Frame: 304 stainless steel.

Frame: 316 stainless steel.

Gasket: WK EPDM lip seal gasket.

Finish: aluminum panel painted with INSL-X CheckRust acrylic paint. Mild steel frame to be blast to near white metal per SSPC-SP- 7 and primed with one coat of inorganic zinc primer.

\*\* NOTE TO SPECIFIER \*\* Delete finish coat if not required.

Finish coat shall be epoxy paint.

Hinges: Bronze oil-impregnated thrust bearing and stainless steel hinge pins.

Gas Springs shall be stainless steel.

Buoyant foam shall be rigid, extruded, closed cell polystyrene foam.

* 1. WATERTIGHT AND AIRTIGHT DOORS

\*\* NOTE TO SPECIFIER \*\* Available in either single or double panel configurations for any size opening. Watertight doors can be designed for any pressure requirements. Airtight doors, including BSL-3 & BSL-4 doors available with lightweight frames for easy installation. Options include power operation, insulation, view windows, interlocking, and more. Delete if not required.

* + 1. Compression Gasket Watertight Door:

\*\* NOTE TO SPECIFIER \*\* Model WT-FD-C has a flush panel for ease of cleaning. This type of door is often used in labs, clean rooms, or tanks. Delete if not required.

* + - 1. Model WT-FD-C Quick-Acting Clean Room Door as manufactured by Walz & Krenzer, Inc.
         1. Design:

One side of door panel to be flush for ease of cleaning.

Design Pressure: # (in feet of water).

\*\* NOTE TO SPECIFIER \*\* Delete operation not required.

Operation: Seating (pushing gate closed).

Operation: Unseating direction (pushing gate open).

Standard bottom sill is raised 1-1/2 inches (38 mm) from floor surface.

\*\* NOTE TO SPECIFIER \*\* Delete frame not required.

Frame: Mounting holes for expansion anchors

Frame: Masonry subframe with welded anchors for embedment in concrete.

Frame knife-edge shall be rounded and smooth to maximize sealing.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

Removable Ramp: Ramp shall be provided to be placed over the raised bottom sill for vehicular traffic or to prevent tripping hazard.

\*\* NOTE TO SPECIFIER \*\* Delete options not required.

Provide power operation.

Provide viewing window.

Provide lock.

Provide remote indication/control/monitoring.

Door size and design pressure direction shall determine the quantity and type of dog. Dogs shall be designed to adjust gasket compression in the field.

* + - * 1. Material:

\*\* NOTE TO SPECIFIER \*\* Delete panel material not required.

Panel: 5051-H32 aluminum plate with 6061-T6 aluminum stiffeners.

Panel: Mild steel plate and stiffeners.

Panel: 304 Stainless steel plate and stiffeners.

Panel: 316 Stainless steel plate and stiffeners.

\*\* NOTE TO SPECIFIER \*\* Delete frame material not required.

Frame: ASTM A-36 steel.

Frame: Aluminum.

Frame: 304 stainless steel.

Frame: 316 stainless steel.

\*\* NOTE TO SPECIFIER \*\* Optional gasket material for unusual environmental conditions including viton, silicone, hypalon and others.

Gasket: ASTM D2000 GR DE neoprene gasket, 25 duro with fully molded corners. In pressure exceeding 20 feet (6096 mm) design pressure, 40 duro gasket shall be provided.

Gasket: Custom o-ring for high pressure applications

Operating Mechanism: bronze or stainless steel dogs and toggles, stainless steel link bars, stainless steel gears.

Bushings and bearings for dogs: bronze oil impregnated thrust bearings.

\*\* NOTE TO SPECIFIER \*\* Other finishes, including powder coating and anodizing available.

Finish: Aluminum panel painted with INSL-X CheckRust acrylic paint. Frame blast clean per SSPC-SP7 and primed with inorganic zinc primer.

Hinges: Bronze oil-impregnated thrust bearing and stainless steel hinge pins.

\*\* NOTE TO SPECIFIER \*\* Model WT-FD-QA is for frequently opened/closed doors. Delete if not required.

* + - 1. Model WT-FD-QA Quick-Acting Door as manufactured by Walz & Krenzer, Inc.
         1. Design:

Quick-acting handwheel or lever provided for frequent access.

Design Pressure: # (in feet of water).

\*\* NOTE TO SPECIFIER \*\* Delete operation not required.

Operation: Seating (pushing door closed).

Operation: Unseating direction (pushing door open).

Side frames shall be angles for mounting on the exterior face of the wall surface.

Standard bottom sill is raised 1-1/2 inches (38 mm) from floor surface.

\*\* NOTE TO SPECIFIER \*\* Delete frame not required.

Frame: Mounting holes for expansion anchors

Frame: Masonry subframe with welded anchors for embedment in concrete.

Frame: Angle for welding to existing embedded steel frame

Frame knife-edge shall be rounded and smooth to maximize sealing.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

Removable Ramp: Ramp shall be provided to be placed over the raised bottom sill for vehicular traffic or to prevent tripping hazard.

\*\* NOTE TO SPECIFIER \*\* Delete options not required.

Provide power operation.

Provide viewing window.

Provide lock.

Provide remote indication/control/monitoring.

Door size and design pressure direction shall determine the quantity and type of dog. Dogs are designed to adjust gasket compression in the field.

* + - * 1. Material:

\*\* NOTE TO SPECIFIER \*\* Delete panel material not required.

Panel: 5051-H32 aluminum plate with 6061-T6 aluminum stiffeners.

Panel: Mild steel plate and stiffeners.

Panel: 304 Stainless steel plate and stiffeners.

Panel: 316 Stainless steel plate and stiffeners.

\*\* NOTE TO SPECIFIER \*\* Delete frame material not required.

Frame: ASTM A-36 steel.

Frame: Aluminum.

Frame: 304 stainless steel.

Frame: 316 stainless steel.

\*\* NOTE TO SPECIFIER \*\* Optional gasket material for unusual environmental conditions including viton, silicone, hypalon and others.

Gasket: ASTM D2000 GR DE neoprene gasket, 25 duro with fully molded corners. In pressure exceeding 20 feet (6096 mm) design pressure, 40 duro gasket shall be provided.

Gasket: WK custom O-ring available for high pressure applications

Operating Mechanism: bronze or stainless steel dogs and toggles, stainless steel link bars, stainless steel gears.

Bushings and bearings for dogs: bronze oil impregnated thrust bearings.

\*\* NOTE TO SPECIFIER \*\* Other finishes, including powder coating and anodizing available.

Finish: Aluminum panel painted with INSL-X CheckRust acrylic paint. Frame blast clean per SSPC-SP7 and primed with inorganic zinc primer.

Hinges: to include bronze oil-impregnated thrust bearing and stainless steel hinge pins.

\*\* NOTE TO SPECIFIER \*\* Model WT-FD-I is for infrequently opened/closed doors. Delete if not required.

* + - 1. Model WT-FD-I Individually Dogged Door as manufactured by Walz & Krenzer, Inc.
         1. Design:

Design Pressure: # (in feet of water).

\*\* NOTE TO SPECIFIER \*\* Delete operation not required.

Operation: Seating (pushing door closed).

Operation: Unseating direction (pushing door open).

Side frames shall be angles for mounting on the exterior face of the wall surface

Standard bottom sill is raised 1-1/2 inches (38 mm) from floor surface.

\*\* NOTE TO SPECIFIER \*\* Delete frame not required.

Frame: Mounting holes for expansion anchors

Frame: Masonry subframe with welded anchors for embedment in concrete.

Frame: Angle frame for welding to existing embedded steel frame.

Frame knife-edge shall be rounded and smooth to maximize sealing.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

Removable Ramp: Ramp shall be provided to be placed over the raised bottom sill for vehicular traffic or to prevent tripping hazard.

Door size and design pressure direction shall determine the quantity and type of dog. Dogs are designed to adjust gasket compression in the field.

* + - * 1. Material:

\*\* NOTE TO SPECIFIER \*\* Delete panel material not required.

Panel: 5051-H32 aluminum plate with 6061-T6 aluminum stiffeners.

Panel: Mild steel plate and stiffeners.

Panel: 304 Stainless steel plate and stiffeners.

Panel: 316 Stainless steel plate and stiffeners.

\*\* NOTE TO SPECIFIER \*\* Delete frame material not required.

Frame: ASTM A-36 steel.

Frame: Aluminum.

Frame: 304 stainless steel.

Frame: 316 stainless steel.

\*\* NOTE TO SPECIFIER \*\* Optional gasket material for unusual environmental conditions including viton, silicone, hypalon and others.

Gasket: ASTM D2000 GR DE neoprene gasket, 25 duro with fully molded corners. In pressure exceeding 20 feet (6096 mm) design pressure, 40 duro gasket shall be provided.

Gasket: custom O-ring for high pressure applications

Dogs: Stainless steel dog assemblies with bronze wedges.

Dog Bearings And Bushings: Oil-impregnated bronze.

\*\* NOTE TO SPECIFIER \*\* Other finishes, including powder coating and anodizing available.

Finish: Aluminum panel painted with INSL-X CheckRust acrylic paint. Frame blast clean per SSPC-SP7 and primed with inorganic zinc primer.

Grab Handle and Panel Stops: 6061-T6 aluminum.

Hinges: Bronze oil-impregnated thrust bearing and stainless steel hinge pins.

\*\* NOTE TO SPECIFIER \*\* Recommended when a watertight or airtight seal and a flush bottom sill are required and often used for inside locations such as labs and clean rooms. We recommend only using dual gaskets for critical applications. Delete if not required.

* + 1. Inflatable Gasket Watertight Door:
       1. Model WT-FD-ID as manufactured by Walz & Krenzer, Inc.
          1. Design:

Design Pressure: # (in feet of water).

\*\* NOTE TO SPECIFIER \*\* Delete operation not required.

Operation: Seating (pushing door closed).

Operation: Unseating direction (pushing door open).

Side frames shall be available as angles for mounting on the exterior face of the wall surface, or as flatbars for mounting inside door jambs. Refer to drawings.

Bottom frame shall be 1/2 inch (13 mm) flatbar, which can be recessed 1/2 inch (13 mm) into floor surface to achieve a flush bottom sill. Refer to drawings.

Corners of watertight/airtight door to have a minimum 2 inches (51 mm) radius at frame.

\*\* NOTE TO SPECIFIER \*\* Delete air source not required.

Air Source: Compressed air tank.

Air Source: Hand pump.

Air Source: Foot pump.

\*\* NOTE TO SPECIFIER \*\* Delete frame not required.

Frame: Mounting holes for expansion anchors

Frame: Masonry subframe with welded anchors for embedment in concrete

Frame: Angle for welding to existing embedded frame

Sealing surfaces shall be finished to 63 micro inches to maximize sealing, uninterrupted by steps greater than 0.015 inch (0.38 mm), free of cracks, with finish lay parallel to seal.

\*\* NOTE TO SPECIFIER \*\* Delete options not required.

Provide power operation.

Provide viewing window.

Provide lock.

Provide remote indication/control/monitoring.

Door size and design pressure direction shall determine the quantity and type of latches.

* + - * 1. Material:

\*\* NOTE TO SPECIFIER \*\* Delete panel material not required.

Panel: 5051-H32 aluminum plate with 6061-T6 aluminum stiffeners.

Panel: Mild steel plate and stiffeners.

Panel: 304 Stainless steel plate and stiffeners.

Panel: 316 Stainless steel plate and stiffeners.

\*\* NOTE TO SPECIFIER \*\* Delete frame material not required.

Frame: ASTM A-36 steel.

Frame: Aluminum.

Frame: 304 stainless steel.

Frame: 316 stainless steel.

Latches: Stainless steel sliding latch bolts

Gasket: Single or dual EPDM or neoprene inflatable gasket supplied with standard automotive style valve stem and 0-60 psi pressure gauge. Fabric reinforced inflatable gasket used for higher pressure applications or large size doors.

\*\* NOTE TO SPECIFIER \*\* Other finishes, including powder coating and anodizing available.

Finish: Aluminum panel painted with INSL-X CheckRust acrylic paint. Frame blast clean per SSPC-SP7 and primed with inorganic zinc primer.

Grab Handle and Panel Stops: 6061-T6 aluminum.

Hinges: Bronze oil-impregnated thrust bearing and stainless steel hinge pins.

* + - 1. Model AT-BIO as manufactured by Walz & Krenzer, Inc.

\*\* NOTE TO SPECIFIER \*\* These critical airtight containment APR (Air Pressure Resistant) doors are designated as BSL-3 & BSL-4 doors. These doors are suited for research laboratories, clean rooms, and hospitals.

* + - * 1. Design:

Design Pressure: # (in inches of water).

\*\* NOTE TO SPECIFIER \*\* Delete operation not required.

Operation: Seating (pushing door closed).

Operation: Unseating direction (pushing door open).

Frames custom designed for specific mounting situation to blend with surrounding structure. Typically mounted inside jamb to minimize visual impact.

Bottom frame shall be 1/2 inch (13 mm) flatbar, which can be recessed 1/2 inch (13 mm) into floor surface to achieve a flush bottom sill. Refer to drawings.

Corners of watertight/airtight door to have a minimum 2 inches (51 mm) radius at frame.

\*\* NOTE TO SPECIFIER \*\* Delete air source not required.

Air Source: Compressed air tank.

Air Source: Hand pump.

Air Source: Foot pump.

Air Source: Shop air

\*\* NOTE TO SPECIFIER \*\* Delete frame not required.

Frame: Mounting holes for expansion anchors

Frame: Masonry subframe with welded anchors for embedment in concrete

Frame: Angle for welding to existing embedded frame

Sealing surfaces shall be finished to 63 micro inches to maximize sealing, uninterrupted by steps greater than 0.015 inch (0.38 mm), free of cracks, with finish lay parallel to seal.

\*\* NOTE TO SPECIFIER \*\* Delete options not required.

Provide power operation.

Provide viewing window.

Provide electric lock to hold door in closed position.

Provide integrated control lights and access switches mounted within frame.

Provide remote indication/control/monitoring.

Door size and design pressure direction shall determine the quantity and type of latches.

* + - * 1. Material:

\*\* NOTE TO SPECIFIER \*\* Delete panel material not required.

Panel: 316 stainless steel (mild steel & 304 stainless available)

\*\* NOTE TO SPECIFIER \*\* Delete frame material not required.

Frame: 316 stainless steel (mild steel & 304 stainless steel available)

Gasket: Dual EPDM inflatable gasket supplied with standard automotive style valve stem and 0-60 psi pressure gauge. Fabric reinforced inflatable gasket used for higher pressure applications or large size doors.

\*\* NOTE TO SPECIFIER \*\* Other finishes, including powder coating and anodizing available.

Finish: No. 4 polished finish is standard. Options include painting and powder coating.

Hinges: WK custom 316 stainless steel

\*\* NOTE TO SPECIFIER \*\* Used where space constraints preclude hinged doors. Sliding watertight doors are available with either compression or inflatable gaskets, and can be designed for almost any pressure requirement. Delete if not required.

* + 1. Sliding Watertight Door:
       1. Model WT-S as manufactured by Walz & Krenzer, Inc.
          1. Design:

Design Pressure: # (in feet of water).

\*\* NOTE TO SPECIFIER \*\* Delete operation not required.

Operation: Seating (pushing gate closed).

Operation: Unseating direction (pushing gate open).

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

Side frames shall be angles for mounting on the exterior face of the wall surface.

Bottom frame supplied as a trough with a track system. On top of trough is a hinged cover plate. When lowered, the cover plate provides a flush surface with ground level.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

For large doors, provide winch assemblies with wire rope to aid in watertight door operation.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

Provide Inflatable gaskets in lieu of compression gaskets.

\*\* NOTE TO SPECIFIER \*\* Delete frame not required.

Frame: Mounting holes for expansion anchors

Frame: Masonry subframe with welded anchors for embedment in concrete.

* + - * 1. Material:

Panel: 5051-H32 aluminum plate with 6061-T6 aluminum stiffeners.

Panel: ASTM A-36 steel.

Panel: 304 stainless steel.

Panel: 316 stainless steel.

\*\* NOTE TO SPECIFIER \*\* Delete frame material not required.

Frame: ASTM A-36 steel.

Frame: Aluminum.

Frame: 304 stainless steel.

Frame: 316 stainless steel.

Latches: Stainless steel sliding latch bolts.

\*\* NOTE TO SPECIFIER \*\* Optional gasket material for unusual environmental conditions including viton, silicone, hypalon and others.

Gasket: ASTM D2000 GR DE neoprene gasket, 25 duro. In pressure exceeding 20 feet (6096 mm) design pressure, 40 duro gasket shall be provided.

Gasket: Gasket: Single or dual EPDM or neoprene inflatable gasket supplied with standard automotive style valve stem and 0-60 psi pressure gauge. Fabric reinforced inflatable gasket used for higher pressure applications or large size doors.

\*\* NOTE TO SPECIFIER \*\* Delete Guide Rail material not required.

Guide Rails: ASTM A-36 steel.

Guide Rails: Aluminum.

Guide Rails: 304 stainless steel.

Guide Rails: 316 stainless steel.

Finish: aluminum panel painted with INSL-X CheckRust acrylic paint. Mild steel frame to be blast to near white metal per SSPC-SP- 7 and primed with one coat of inorganic zinc primer.

\*\* NOTE TO SPECIFIER \*\* Delete finish coat if not required.

Finish coat shall be epoxy paint.

Grab Handle and Panel Stops: 6061-T6 aluminum.

* + 1. Auto-Seal Roller Curtain Door:

NOTE TO SPECIFIER \*\* These watertight roller curtain doors automatically deploy when water is sensed at a pre-set level. They function as an overhead roller curtain door with power open & close, and become watertight at the press of a button or when they detect water. Battery back-up is provided in case power is lost.

* + - 1. Model: WT-R as manufactured by Walz & Krenzer, Inc.
         1. Design:

Design Pressure: # (in feet of water).

\*\* NOTE TO SPECIFIER \*\* Delete operation not required.

Operation: Seating (pushing gate closed).

Operation: Unseating direction (pushing gate open).

Roller curtain door shall be designed to be used as an everyday roller curtain door.

Mounting Configurations: On outside face of building, inside the jambs and on the inside face of building. Refer to drawings.

Bottom frame shall be stiffened sheet metal shape, designed to be recessed into floor surface to achieve a flush bottom sill.

Roller curtain door shall be fully motorized and actuated by pressing a button on a wired control station.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

Provide remote control actuation.

Gate will automatically close when the float switch detects water (can be disabled).

Infrared sensor provided to detect movement through door opening during lowering of door. If triggered, door will fully open and automatically close after a pre-determined period.

UPS shall be provided for operation during power loss.

Power requirements: 120 VAC, 30 A circuit.

Frame(s) shall have mounting holes for expansion.

* + - * 1. Materials:

Panel: Custom extruded aluminum shape.

Frame: Stainless steel.

Support Chassis: ASTM A-36 steel.

Gasket: EPDM foam gasket.

Finish: Extruded aluminum mill finish.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. WATERTIGHT HATCHES

\*\* NOTE TO SPECIFIER \*\* Flush Watertight Hatches are available in any size, for any pressure requirement and are used to eliminate tripping hazards or where vehicular traffic may be present. Options include spring balancing, counter-weights, or gas springs and hold open braces. The frames and coamings can be bolted to the existing surface, welded to an existing metal frame or embedded in newly poured concrete. Delete if not required.

* + 1. Flush Watertight Hatch:
       1. Model WTH-F as manufactured by Walz & Krenzer, Inc.
          1. Design:

Design Pressure: # (in feet of water).

Design Loading: H-20 or HS-20 vehicular loading

\*\* NOTE TO SPECIFIER \*\* Delete operation not required.

Operation: Seating (pushing hatch closed).

Operation: Unseating direction (pushing hatch open).

Flush hatches shall be operable from one or both sides via individual dogs or from bottom side using a quick-acting handwheel. Refer to drawings.

\*\* NOTE TO SPECIFIER \*\* Round, rectangular, square, and other custom shapes available.

Shape: Refer to drawings.

Frame: Provided for bolt-on or weld-on installation for existing openings, or with masonry subframes for embedding in new pour concrete. Refer to drawings

Hatch size and design pressure direction shall determine the quantity and type of dog. Dogs shall be designed to adjust gasket compression in the field.

* + - * 1. Materials:

\*\* NOTE TO SPECIFIER \*\* Delete frame material not required.

Panel and Frame: ASTM A-36 steel.

Panel and Frame: Aluminum.

Panel and Frame: 304 stainless steel.

Panel and Frame: 316 stainless steel.

\*\* NOTE TO SPECIFIER \*\* 40-duro gasket used for hatches designed to seal against a pressure exceeding 10-psi. Optional gasket material for unusual environmental conditions includes viton, silicon, hypalon, and others. O-rings used for high pressure hatches.

Gasket: ASTM D2000 GR DE neoprene gasket, 25 duro with fully molded corners.

Gasket: ASTM D2000 GR DE neoprene gasket, 40 duro with fully molded corners for pressures exceeding 10 psi.

Gasket: O-rings for high pressure applications

Securing Dogs: Stainless steel dog assemblies with bronze wedges. Dogs on flush side of hatch shall be recessed, and operable via T- wrench. For higher pressure applications, high strength bronze dogs shall be used.

Hinges: Bronze oil-impregnated thrust bearing and stainless steel hinge pins.

Recessed grab handles shall be provided for lifting hatch.

T-wrench provided to operate flush dogs on top side of hatch

Finish: mild steel blasted to near white metal per SSPC-SP-10 and primed with one coat of inorganic zinc primer.

\*\* NOTE TO SPECIFIER \*\* Delete finish coat if not required.

Finish coat shall be epoxy paint.

Knife-edge on frame to be ground to a 3/32 inches (2.4 mm) radius with surface roughness not to exceed 125 micro inches.

\*\* NOTE TO SPECIFIER \*\* Delete options not required.

Provide spring balancing.

Provide counter-balancing.

Provide panic bar operation from bottom side.

Provide hold-open braces.

Provide remote operation/indication.

\*\* NOTE TO SPECIFIER \*\* Raised Watertight Hatch - The panel is raised above the ground surface, which eliminates ice and water build up in the frame recess and can be used in locations where tripping hazards are not present, and where vehicular traffic is not a concern. Delete if not required.

* + 1. Raised Watertight Hatch:
       1. Model WTH-R as manufactured by Walz & Krenzer, Inc.
          1. Design:

Design Pressure: # (in feet of water).

\*\* NOTE TO SPECIFIER \*\* Delete operation not required.

Operation: Seating (pushing hatch closed).

Operation: Unseating direction (pushing hatch open).

Raised hatches can be operable from one or both sides via individual dogs or drop bolts for infrequent use. Provide Quick-acting handwheels for hatches that are used frequently. Refer to drawings.

\*\* NOTE TO SPECIFIER \*\* Round, rectangular, square, and other custom shapes available.

Shape: Refer to drawings.

Frame: provided for bolt-on or weld-on installation for existing openings, or with masonry subframes for embedding in new pour concrete. Refer to drawings.

Knife-edge on frame to be ground to a 3/32 inches (2.4 mm) radius with surface roughness not to exceed 125 micro inches.

Hatch size and design pressure direction shall determine the quantity and type of dog. Dogs shall be designed to adjust gasket compression in the field.

* + - * 1. Material:

\*\* NOTE TO SPECIFIER \*\* Delete frame material not required.

Panel and Frame: ASTM A-36 steel.

Panel and Frame: Aluminum.

Panel and Frame: 304 stainless steel.

Panel and Frame: 316 stainless steel.

\*\* NOTE TO SPECIFIER \*\* 40-duro gasket used for hatches designed to seal against a pressure exceeding 10-psi. Optional gasket material for unusual environmental conditions includes viton, silicon, hypalon, and others. O-rings used for high pressure hatches.

Gasket: ASTM D2000 GR DE neoprene gasket, 25 duro with fully molded corners.

Gasket: ASTM D2000 GR DE neoprene gasket, 40 duro with fully molded corners for pressures exceeding 10 psi

Gasket: Custom WK O-ring for high pressure applications

Securing Dogs: Stainless steel dog assemblies with bronze wedges. Dogs on flush side of hatch shall be recessed, and operable via T- wrench. For higher pressure applications, high strength bronze dogs shall be used.

Hinges: Bronze oil-impregnated thrust bearing and stainless steel hinge pins.

Recessed grab handles shall be included for lifting hatch.

Finish: Mild steel blasted to near white metal per SSPC-SP-10 and primed with one coat of inorganic zinc primer.

\*\* NOTE TO SPECIFIER \*\* Delete finish coat if not required.

Finish coat shall be epoxy paint.

Options include spring balancing, panic bar operation from below, hold-open braces, and remote operation/indication

* 1. FABRICATION
     1. The finished product shall be rigid, neat in appearance, and free from all defects, warps, and buckles. All exposed joints and corners shall be well rounded.
     2. The panel and frame shall be flat within 1/8 inch (3 mm) with a maximum deviation of 1/16 inch (1.5 mm) in any 6 feet (1829 mm) length.
     3. Welding shall be performed in accordance with the requirements of the applicable AWS or ASME standards.
     4. Butt welds in frame to be full penetration welds.

1. EXECUTION
   1. EXAMINATION
      1. Do not begin installation until substrates have been properly prepared.
      2. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
   2. PREPARATION
      1. Clean surfaces thoroughly prior to installation.
      2. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
   3. INSTALLATION
      1. Install watertight closure in accordance with manufacturer's instructions and approved shop drawings.
      2. After installation, perform field operational and chalk test per manufacturer's instructions to verify seal.
      3. Finish paint (if applicable) after installation.
   4. PROTECTION
      1. Protect installed products until completion of project.
      2. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION