SECTION 07 42 00

**Custom Perforated Metal Panels – Double Return**

Go to <https://www.azahner.com/document-library/> to verify that this is the most current version of the specification.

Use in conjunction with the Perforated Metal Panels datasheet <https://www.azahner.com/document/perforated-metal-panels-datasheet/>

Contact Zahner for assistance with specifications and detail coordination: <https://www.azahner.com/contact/>

Optional items requiring selection by the specifier are in **[blue]**. Once selections are made and other options and brackets deleted, bold font and colored text should be reverted to match the balance of the document.

# GENERAL

## SECTION INCLUDES

### Custom Double Return Cross-Seam **[ImageWall] [ImageLines]** perforated **[aluminum] [stainless steel]** or **[weathering steel]** metal panels that incorporate project design images, fabricated to project-specific dimensions.

## RELATED SECTIONS

### Division 1 – General Requirements

#### Submittal Procedures

#### Quality Control

#### Closeout Submittals

### Division 5 – Miscellaneous Metal Flashing

#### Miscellaneous metal flashing is not included in the Zahner Double Return panel system. Flat Stock in matching material may be procured from Zahner if needed.

### Division 7 – Waterproofing

#### Waterproofing membrane is not included and needs to be installed prior to Double Return panel system installation.

## REFERENCE STANDARDS - Work shall comply with published recommendations of the following unless otherwise stated below:

### ZAHNER “Architectural Metals – A Guide to Selection, Specification and Performance”; John Wiley & Sons 1995: ISBN 0-471-04506-3.

### ZAHNER “Architectural Metal surfaces”; John Wiley and Sons 2005: ISBN 0-47126335-4.

### SMACNA “Architectural Sheet Metal Manual”.

### LEED – Leadership in Energy and Environmental Design.

### ASTM International

#### **[stainless steel]** ASTM A240: Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, And Strip for Pressure Vessels And For General Applications.

#### **[stainless steel]** ASTM A480: Standard Specification for General Requirements for Flat Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip.

#### **[weathering steel]** ASTM A588: Standard Specification for High-Strength Low-Alloy Structural Steel, up to 50 ksi Minimum Yield Point, With Atmospheric Corrosion Resistance.

#### **[weathering steel]** ASTM A606: Standard Specification for Steel, Sheet and Strip, High-Strength, Low-Alloy, Hot Rolled and Cold-Rolled, With Improved Atmospheric Corrosion Resistance.

#### **[aluminum]** ASTM B209: Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

#### **[aluminum]** ASTM D2244: Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates.

#### **[aluminum]** ASTM D4214: Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films.

### AAMA – American Architectural Manufacturers Association (www.aamanet.org).

#### **[aluminum]** AAMA 611: Voluntary Specification for Anodized Architectural Aluminum.

#### **[aluminum]** AAMA 2605: Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.

#### **[aluminum]** AAMA 609 & 610: Cleaning and Maintenance Guide for Architectural Finished Aluminum.

## SUBMITTALS

### Product Data: Submit manufacturer's Product Datasheet and installation instructions for custom perforated Double Return Metal Panels, including material, finishes, available thickness, dimension, grid size, and hole sizes..

### Samples:

#### Finish Selection Sample: If requested, provide up to 5 of each material finishes for Architect’s selection. Minimum Sample sizes:

#### **[Angel Hair® Stainless Steel] [Solanum™ Steel]: 8” x10”**

#### **Kynar paint chip Aluminum: 2” x 2”**

#### **Anodized Aluminum: 1” x 3”**

#### **[Optional Mock-up Panel]: If requested, provide a mock-up panel and any accessories, such as panel clips, to establish a quality standard for fabrication and installation. Subject to compliance with the requirement and approval, the mock-up panels [may or may not] become part of the completed Work.**

### Shop Drawings: Submit shop drawings detailing installation layouts, dimensions, connections, and anchorage placement. Architect to provide all electronic CAD files for the basis of shop drawings.

### Patterning Files: Submit perforation patterning files based on the image files provided by the Architect. Patterning files will demonstrate the Cross-Seam perforation imagery with the grid size and hole size defined.

### Technical Datasheet: Submit technical data, including but not limited to pre-engineered structural calculation, system weight, and design pressure. **[Project Specific engineering certification can be provided by the manufacturer at additional cost.]**

### Closeout Submittals:

#### Warranty: Warranty documents specified herein.

#### Operation and Maintenance Instructions: Submit manufacturer's recommended cleaning and care instructions to properly maintain and prolong the service life of the metal panels.

### Sustainable Design Submittals (LEED Reports):

#### Submit documentation from manufacturer for amount of pre-consumer and post-consumer recycled content for products specified.

#### Submit documentation providing location of manufacturing.

## QUALITY ASSURANCE

### Electronic Files:

#### Licensing: Licensing of image file shall be provided by the Architect to the manufacturer prior to acceptance of the bid, unless otherwise agreed upon in writing.

#### Imaging Files: Electronic files in .jpg, .png, .ai files format, with minimum resolution of 72 pixel/inch will be provided by the Architect to the manufacturer.

### Field Measurements: Contractor is responsible for providing final overall dimensions of the work surface area(s) prior to shop drawing submittal. At the Contractor discretion, this may be field verified dimensions. Information must be supplied in a format acceptable to the manufacturer.

### Manufacturer Qualifications: Company specializing in manufacturing the quality products specified in this section with at least 15 years of documented experience and sufficient capacity to produce the required units within the Project Schedule.

### Installer Qualifications:

#### Company specializing in installing the work of this section with at least 5 years of documented experience with comparable size project.

#### Familiar with the Products and the manufacturer’s installation methods.

### Source Limitation:

#### When possible, ensure all raw material came from the same producing mill, the same master slab, and the same chemical composition.

#### All panels in this section shall be produced by the same manufacturer and finished by the same finish applicator to protect against variations.

## DELIVERY, STORAGE, AND HANDLING

### Delivery and Receipt:

#### Deliver products in factory sealed and labeled packages.

#### All crates and packaging should be inspected upon delivery for damage. Contact the manufacturer immediately at the time of receipt if any damage is identified. Photographs of any damaged product, including concealed damages, must be supplied to the manufacturer with any claims. Photos of damaged crates and packaging must also be provided to manufacturer. Freight damage must be filed with freight company within the freight carrier’s terms.

### Storage and Transportation:

#### Keep packaging units dry while in secure and locked storage and transport.

#### Keep panels dry prior to installation.

#### Crated products that are stored under tarps should be frequently opened and ventilated to reduce humidity and condensation accumulation.

#### Do not lay any protective mats or covers directly on top of panels.

#### Do not store panels in contact with other materials that might cause staining, denting, or other surface damage.

#### Crates and packaging: Do not stack crates unless otherwise approved and noted by manufacturer.

#### **[Solanum Steel] Do not lay any exposed and finished face against another surface or another panel for any length of time. Water will accumulate between the surfaces and cause an accelerated oxidation on the patina.**

### Handling and Installation:

#### Keep film-protected products dry and out of direct sunlight until installation.

#### Remove the protective film immediately after installation.

#### Require all personnel to wear clean white cotton gloves when handling and installing architectural metal panels.

#### Keep product free of oil, grease, mortar, paint, acid, bitumen, drilling dust, dirty water, and other impurities.

#### Do not use adhesive tape on products in areas visible after installation.

#### Do not scribe or mark on products.

### Protection: The Contractor is responsible to use all means necessary to protect the materials of this Section before, during and after installation and to protect the installed work and materials of all other trades.

### Site Conditions: Adjoining substrate and structure for attachment to be complete. Installation subject to state of increment weather.

### Replacements: In the event of damage, immediately make all repairs and replacements necessary at the sole cost of the responsible party.

## WARRANTY

### Manufacturer’s Warranty: Manufacturer will warrant its products to be in good quality, free from defects, in conformance with the specification, and when installed in accordance with manufacturer’s published installation procedures. Any defaults or defects in material or workmanship resulting solely from the manufacturer shall constitute a warranty claim. Manufacturer’s warranty coverage and failure types includes, but not limited to, the following:

#### 2-years limited warranty for all structural failures including, but not limited to, permanent deflection beyond design limit.

#### 1-year limited warranty on deterioration of metals, defined as perforation due to corrosion resulting from manufacturer’s defects, and loss of adhesion as a result from manufacturer’s finish application. Damage to or failure of the product caused by the improper handling or cleaning will not be covered. This warranty does not cover natural weathering and fading of the surface that will occur as the surface is exposed to ambient conditions. Nor does it cover minor oxidation or oxidation products that transfer to other surfaces.

#### Warranty commences upon shipment of material by manufacturer.

#### During the warranty period, and upon approval of the claim, the manufacturer will repair, or at its option, replace the products that are proven to be defective. The labor and all associated costs (i.e., Scaffolding, lifts, etc.) to remove and reinstall repaired or replacement product is not included.

### Finish Applicator’s Warranty:

#### **[Angel Hair Stainless Steel] [Solanum Steel]** See manufacturer applied finish. See 1.7 A 2. above.

#### **[aluminum]** AAMA 2605 2-coat solid color 70 percent PVDF fluoropolymer coating:

##### Finish Period: Standard 1-year warranty from Finish Applicator’s Warranty Effective Date **[Also available in 5, 10, or 20 years, but require advanced application and at additional cost].**

##### Warranty Coverage:

###### Coating will not chalk in excess of numerical rating eight (8) for colors and six (6) for whites, when measured in accordance with ASTM D4214 procedures.

###### Coating will not fade or change in color in excess of 5 units (Hunter color difference) if calculated from measurements on any spectrophotometer or colorimeter designed to adequately measure color by reflectance readings in accordance with ASTM D2244 test method 6.3.

###### Coating will not crack, check or peel (lose adhesion). This does not include minute fracturing, which may occur during fabrication, installation, or use of the metal.

#### AAMA 611 Class I anodized aluminum:

##### Finish Period: Standard 1-year warranty from Finish Applicator’s Warranty Effective Date **[Also available in 5 or 10 years, but require advanced application and at additional cost]**

##### Warranty Coverage:

###### No chalking. This only applies to any powdery residue formed by the breakdown of the anodized finish. It does not apply to any foreign residue deposited on the surface of the anodized finish by the surrounding atmosphere (soot, dust, etc.).

###### No significantly visible fading or change in color in excess of 5 units (Hunter color difference), measured by the same test method referenced in B the section above.

###### No visible peeling or cracking. This excludes any crazing microfracture due to brake bends or other forming operations.

# PRODUCT

## MANUFACTURERS

### Basis of Design: A. Zahner Company Double Return Panels

#### Product Website: <https://www.azahner.com/products/imagewall> or <https://www.azahner.com/products/imagelines/>

#### Address: 1400 E. 9th Street, Kansas City, MO 64106

#### Phone: +1 (816) 423-8354

### Request for substitutions will be considered in accordance with provisions in Section 01 60 00

## PERFORMANCE CRITERIA

### System Capabilities

#### **[ImageWall or ImageLines only] Panels shall have Cross-Seam Perf™ pattern to create seamless and continuous imagery by enabling perforations to continue across a folded seam or joint.**

#### **[ImageWall or ImageLines only] Panels shall use Zira™, a Zahner patented (U.S. 7,212,688) system, enable designers to automatically translate an image, graphic, or design to metal.**

#### Tolerance:

##### Panels and Components: Panels shall be fabricated to a tolerance not to exceed 1/8” deviation in any dimension from dimensions shown on the shop drawings.

##### Bent Radius at panel bend should be no more than 4 times the thickness of the metal panel.

##### Panel Flatness: Panels shall be fabricated to a flatness that is not to exceed L/180 for horizontal panels and L/100 for vertical panels.

##### Installation Tolerances: Adjust hardware to ensure that panels after installation maintain the tolerance of 1/8” in 10’ that is not cumulative for level, plumb and line. Offset between panel edges shall be less than 1/16” in plane with the surface.

##### Panel Joints: Panel shall be installed so that panel joints are 1/8” +/-16”.

### Performance Requirements

#### Design Pressure: In accordance with ASCE 7 and loads indicated on Structural Drawings.

#### Design and size components to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to the plane of installation.

### Tolerances

#### Fabrication: Panels shall be fabricated to a tolerance not to exceed 1/8” deviation in any dimension from dimensions shown on the shop drawings.

#### Panel Flatness: Mockup to determine flatness tolerance and confirm other system tolerances.

## PANELS

### Panel Type: Double Return **[Short Span] [Long Span]** Panel

### Panel Material, Finish and Thickness:

#### **Angel Hair Stainless Steel [304] [316L] 0.075” (14 ga)**

#### **Solanum Steel 0.075” (14 ga)**

#### **5052-H32 Aluminum AAMA 2605 70% Fluoropolymer PVDF coating.**

##### **[Standard 2-coat solid Fluropon] or [Premium [2-coat Fluropon metallic] [3-coat] [4-coat] [Specialty Fluoropolymer] coating also available (additional charges apply)].**

#### **5052-H32 Aluminum AAMA 611 Architectural Class I Anodizing, color or clear anodized coating of 0.7mil minimum thickness**

##### **Standard Color: [Clear, Nickel, Champagne, Golden Bronze, Light Bronze, Medium Bronze, Dark Bronze, Deep Bronze, or Electrolytic Black]**

##### **Premium Color: [Dyed coating] (additional charges apply).**

### Penl Depth: **[Short Span: 2.5”] [Long Span: 4”]**

### Panel Width (installed visible dimension): **[Short Span: 40” maximum] [Long Span: 30” maximum]**

### Panel Length (installed visible dimension): **[Short Span: 120” maximum] [Long Span: 90” maximum]**

## ACCESSORIES

### Accessories shall be fabricated from corrosion-resistant metals compatible with Double Return panels.

### Not included by the Double Return panel fabricator:

#### Fasteners connecting Double Return system components to other building components, including substrate.

#### Flashing or fascia components to be fabricated by installer from flat sheet stock in Double Return panel materials and finishes. See 2.3 Panels above.

#### Engineered or shop-cut penetrations and escutcheon plates. Flat sheet stock in Double Return panel material and finish to fabricate as needed. See 2.3 Panels above.

# EXECUTION

## SITE CONDITION VERIFICATION

### Verify substructure’s location and condition are suitable for installation of the custom Double Return panels in accordance with the manufacturer’s specification.

### Complete visual inspection of substructure surface to ensure a smooth and continuous surface that can withstand the required loads without deflection or deformation and that is capable of receiving the required fasteners for the Double Return panel system. Correct any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions are corrected to permit proper installation of the work.

## FABRICATION

### Fabricate Double Return Panels in compliance with the drawing details which include design, dimensions, geometry, metal thickness and other characteristics.

### Allow sufficient room for expansion in the material to prevent buckling, damage, and deterioration of the Work.

## SITE PREPARATION

### Examine substrate and ensure surfaces are clean and clear of all obstacles and debris.

## INSTALLATION

### Comply with panel manufacturer's instructions for assembly, installation, and erection of custom Double Return panels.

### Ensure the appropriate underlayment is used for the material selected.

## TOLERANCE

### Localized substructure offset - 1/4” maximum

### Installation Tolerances: See 2.2 A3 above.

## CLEANING AND PROTECTION

### Remove protective film from exposed surfaces of metal panels promptly upon installation and in accordance with manufacturer’s recommendations and with care to avoid damage to finish.

### Clean exposed surfaces of custom metal panel work promptly after completion of installation. Comply with the recommendations of the panel manufacturer.

### Maintain installed custom panels in a clean condition throughout construction and ensure that cleaning by other trades in proximity to the custom panels does not impart dust or debris on panels. Avoid spilling, dripping, or splattering cleaning solutions onto custom panels.

**End of Section**