

# HISTORIC AND DESIGN REVIEW COMMISSION

May 20, 2020

**HDRC CASE NO:** 2020-164  
**ADDRESS:** 207 ROOSEVELT AVE  
**LEGAL DESCRIPTION:** NCB A20 BLK LOT 6,7, 8 & PT OF A22 OR ARB P EXC S IRR 183.25 FT OF W 117 FT & 5 (.539 AC) & N HALF OF A20(LOT 13)  
**ZONING:** I-1, H, RIO-4  
**CITY COUNCIL DIST.:** 5  
**DISTRICT:** Mission Historic District  
**APPLICANT:** Bryan Verdecanna/Alamo Architects  
**OWNER:** Phillip Bakke/Bakke Development Corp  
**TYPE OF WORK:** Exterior modifications, fenestration modifications, installation of awnings  
**APPLICATION RECEIVED:** April 17, 2020  
**60-DAY REVIEW:** Not applicable due to City Council Emergency Orders  
**CASE MANAGER:** Edward Hall

## REQUEST:

The applicant is requesting conceptual approval to:

1. Install a new, standing seam metal roof.
2. Apply a stucco finish to the existing, concrete masonry unit facades.
3. Perform exterior modifications including the creation and removal of existing façade openings and fenestration. The applicant has proposed to install anodized aluminum storefront systems, windows and doors.
4. Install prefinished metal panels near the primary pedestrian entrance.
5. Install standing seam metal canopies on the west elevation.
6. Install a steel trellis at the northwest corner of the structure.
7. Install a metal fence around the proposed surface parking to feature seven (7) feet in height.
8. Install surface parking for approximately thirty (30) vehicles at the northern edge of the site.

## APPLICABLE CITATIONS:

*Historic Design Guidelines, Chapter 2, Guidelines for Exterior Maintenance and Alterations*

### 10 Commercial Facades

#### A. MAINTENANCE (PRESERVATION)

- i. Character-defining features—Preserve character defining features such as cornice molding, upper-story windows, transoms, display windows, kickplates, entryways, tiled paving at entryways, parapet walls, bulkheads, and other features that contribute to the character of the building.
- ii. Windows and doors—Use clear glass in display windows. See Guidelines for Architectural Features: Doors, Windows, and Screens for additional guidance.
- iii. Missing features—Replace missing features in-kind based on evidence such as photographs, or match the style of the building and the period in which it was designed.
- iv. Materials—Use in-kind materials or materials appropriate to the time period of the original commercial facade when making repairs.

#### B. ALTERATIONS (REHABILITATION, RESTORATION, AND RECONSTRUCTION)

*New features*—Do not introduce new facade elements that alter or destroy the historic building character, such as adding inappropriate materials; altering the size or shape of windows, doors, bulkheads, and transom openings; or altering the façade from commercial to residential. Alterations should not disrupt the rhythm of the commercial block.

*ii. Historical commercial facades*—Return non-historic facades to the original design based on photographic evidence. Keep in mind that some non-original facades may have gained historic importance and should be retained. When evidence is not available, ensure the scale, design, materials, color, and texture is compatible with the historic building. Consider the features of the design holistically so as to not include elements from multiple buildings and styles.

### *Historic Design Guidelines, Mission Historic District Design Manual*

## Section 2: Guidelines for Exterior Alterations and Additions

### E. Commercial and Non-Residential

*i. Color and painting* — The use of bright colors and lively paint schemes on masonry or stucco facades that are already painted is characteristic of the Mission Historic District and encouraged.

## Section 4: Guidelines for Landscape and Site Elements

### C. Off-Street Parking and Hardscapes

*i. Parking Areas* — In general, parking areas should be located beside and/or behind buildings within urban historic contexts and on primary corridors north of SE Military. Parking areas within the front yard are discouraged. Where permitted, they should be limited to a single drive and a single row of parking.

*ii Cooperative Parking Agreements* — Utilize cooperative parking agreements where possible to reduce the number of unused or seldom used parking spaces.

*iii Driveway Access-Driveway Reductions* — Wherever possible, establish a single driveway access point to a site for automobiles. The establishment of shared driveways serving adjacent sites is strongly encouraged and may be required. In addition, reduce the number of driveways and driveway widths on existing developed properties to minimize the conflicts between pedestrians, bicyclists, and vehicles. Individual driveways should be no wider than 24 feet, but shared driveways may be 30 feet wide and incorporate a pedestrian median.

*iv Parking Stalls and Pavement Areas* — The redesign of parking stalls and paving areas in a private development to provide defined entrances, access lanes, parking spaces, pedestrian walks, and landscape areas is strongly encouraged.

*v Pavement Area Reduction* — Reduce the amount of existing paving on a site to the minimum needed to accommodate circulation needs. Replace unnecessary paved areas with landscape areas that provide shade and enhance the character of the site, or permeable pavement surfaces for reduce ponding and facilitate stormwater drainage. Parking areas with ten (10) or more spaces located in the side and rear yards shall be interrupted with landscaped areas (pods) at a ratio of sixteen point two (16.2) square feet landscaped area for every one (1) vehicle parking spot. Pods may be used to meet the requirement for tree and understory preservation, parking lot canopy trees and/or pedestrian circulation system

*vi Tree Canopy* — Canopy trees shall be integrated into the design of surface parking lots to provide shade for a minimum of 25 percent of any individual parking lot.

*vii Pavement Treatments* — Where possible, reduce the extent of existing impervious cover on existing developed properties undergoing redevelopment. In high traffic areas replace impervious cover with crushed granite, pervious pavers, pervious asphalt or other pervious materials. Impervious areas with no or only occasional traffic are recommended to be replaced with drought tolerant and heat resistant vegetation.

*viii Screening for Parking Areas* — Where possible, screen parking areas from the sidewalk and street with landscaping that allows a filtered view of the parking area but reduces its overall visual impact. Notwithstanding the Metropolitan Corridor requirements, new masonry walls or earthen berms are discouraged in the Mission Historic District as a method for screening parking.

*ix Pedestrian Lighting* — Provide adequate onsite lighting for pedestrian walks and entrances that enhance the visual character of the streetscape experience. Like parking areas, lighting should pointed down on the sidewalk.

## **FINDINGS:**

- a. The structure located at 207 Roosevelt, at the corner of Roosevelt Avenue and Lone Star Boulevard was constructed circa 1950 and features concrete masonry unit walls and a standing seam metal roof. The structure features limited façade separation and limited fenestration. At this time, the applicant has proposed exterior modifications, roof replacement and site work.

- b. **CONCEPTUAL APPROVAL** – Conceptual approval is the review of general design ideas and principles (such as scale and setback). Specific design details reviewed at this stage are not binding and may only be approved through a Certificate of Appropriateness for final approval.
- c. **ROOFING** – The applicant has proposed to install a new standing seam metal roof. This is consistent with the Guidelines for Exterior Maintenance and Alterations. The applicant is to ensure that panels feature a width of 18 to 21 inches, that seams are 1 to 2 inches in height, that a crimped ridge seam is used, and that a standard galvalume finished is used.
- d. **STUCCO FAÇADE** – The applicant has proposed to install a stucco finish the existing walls to conceal a rigid installation system. Generally, staff finds the proposed stucco application to be appropriate. Additionally, the applicant has proposed expansion joints that are appropriate.
- e. **EXTERIOR & FENESTRATION MODIFICATIONS** – The applicant has proposed exterior modifications including the creation and removal of existing façade openings and fenestration. The applicant has proposed to install anodized aluminum storefront systems, windows and doors. As noted in finding a, the existing structure features little fenestration and façade separation. Generally, staff finds the proposed modifications to be appropriate. When returning for final approval, the applicant is to provide material and installation specifications for all windows, ensuring that windows are recessed within wall openings.
- f. **METAL FAÇADE PANELS** – The applicant has proposed to install prefinished metal façade panels on the north east corner of the structure, near the proposed primary entrance. Given the industrial nature of the structure, staff generally finds the installation of the prefinished façade panels to be appropriate.
- g. **CANOPY INSTALLATION** – On the west elevation, the applicant has proposed to install canopies with standing seam metal roofs. The applicant has noted that the canopies will feature blue roofing materials. Generally, staff finds the proposed canopies and materials to be appropriate. Staff finds the blue roofing panels to be appropriate as the proposed canopies are not replacing original materials, and face the interior of the site.
- h. **TRELLIS STRUCTURE** – At the northwest corner of the structure, the applicant has proposed to install a steel trellis structure. Staff finds the proposed structure to be appropriate.
- i. **FENCING** – The applicant has proposed to install a metal fence along the property lines on both Roosevelt and Lone Star Boulevard to feature an overall height of seven (7) feet. Generally, staff finds the installation of fencing to be appropriate; however, the proposed fence should not exceed more than six (6) feet in height, per the UDC Section 35-514, which limits fences on commercial properties to no more than six feet in height in the front and side yards.
- j. **SURFACE PARKING** – The applicant has proposed surface parking at the north of the lot to feature parking for approximately thirty (30) vehicles. Per the Mission Historic District Design Manual, parking areas should be located beside or behind buildings, should feature landscaped areas to separate hardscaping and should incorporate trees to provide a tree canopy. Generally, the applicant’s proposed parking is consistent with the Mission Design Manual.

## **RECOMMENDATION:**

Staff recommends approval of items #1 through #8 based on findings a through j with the following stipulations:

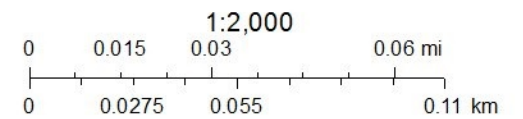
- i. That the applicant submit material specifications and product information for all windows, doors and storefront systems when returning to the Commission for final approval.
- ii. That the proposed standing seam metal roof features panels that feature a width of 18 to 21 inches, that seams are 1 to 2 inches in height, that a crimped ridge seam is used, and that a standard galvalume finished is used.
- iii. That the proposed perimeter fencing be reduced in height to feature an overall height of no more than six (6) feet, per the UDC section 35-514.



# City of San Antonio One Stop



May 11, 2020







#### HDRC SUBMISSION FOR CONCEPTUAL APPROVAL:

THIS IS THE PROPOSED RENOVATION OF AN EXISTING WAREHOUSE. THE DETERIORATED CONDITIONS OF THE BUILDING REQUIRE THE INSTALLATION OF NEW ROOF AND WALL FINISHES AND NEW STOREFRONT WINDOWS. THE NEW ROOF SYSTEM WILL INCLUDE RIGID INSULATION AND STANDING SEAM ROOF PANELS WHILE THE NEW EXTERIOR WALL FINISHES WILL ALSO INCLUDE RIGID INSULATION AND A STUCCO FINISH. THE NEW STOREFRONT SHALL BE ANODIZED ALUMINUM AND HAVE INSULATED LOW-E GLAZING. THE EXTERIOR ADDITIONS SHALL BRING THE BUILDING IN COMPLIANCE WITH THE CURRENT BUILDING AND ENERGY CODE REQUIREMENTS.

THE EXTERIOR FINISHES WILL BE ACCENTED BY LIMITED USE OF PREFINISHED METAL PANELS. THE NEW STOREFRONT WINDOW SYSTEM WILL BRING DAYLIGHT INTO THE OFFICE SPACES WITH PORTIONS SHADED BY PREFINISHED METAL CANOPIES.

THE SITE WILL RECEIVE A 6'-0" HIGH PRIVACY METAL FENCE ALONG THE PROPERTY LINE ALONG WITH NEW DRIVEWAYS AND PARKING LOT.





**PROPERTY SUMMARY:**  
Zoning: I-1  
H RIO-4 MC-1  
Historic District: Mission  
Rio District: RIO-4  
Parcel Key: 156





AA



AB



AC



AD









BA - ROOSEVELT PARK \_ VISITOR CENTER



BB - PRIVATE RESIDENCE ACCROSS THE STREET FROM SITE, COMPOSED OF METAL WALL PANELS



BC - OFFICE WITHIN 200' OF SITE



BD. ROOSEVELT LIBRARY



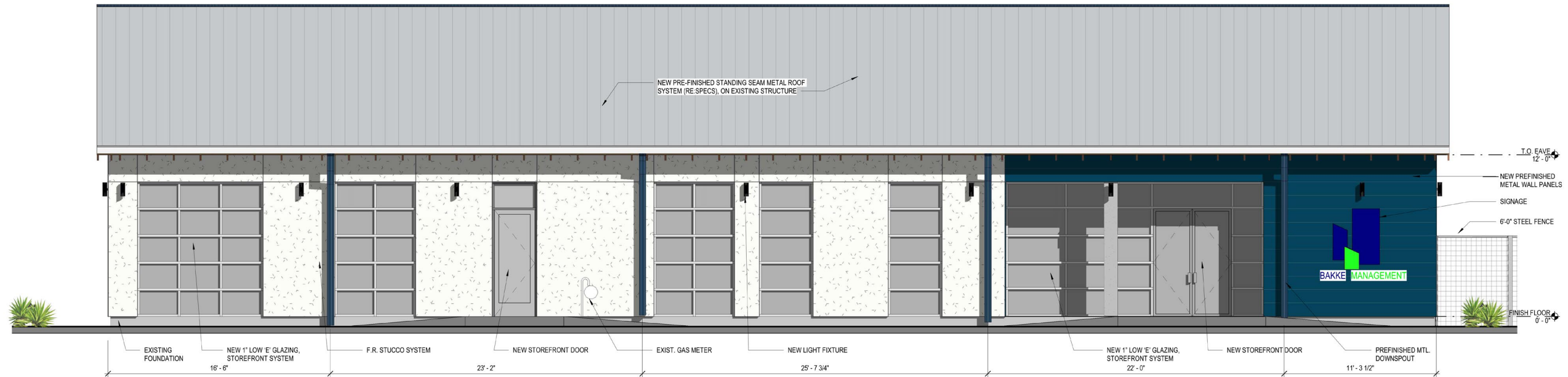
APARTMENTS IN RIO DISTRICT, STUCCO FINISH









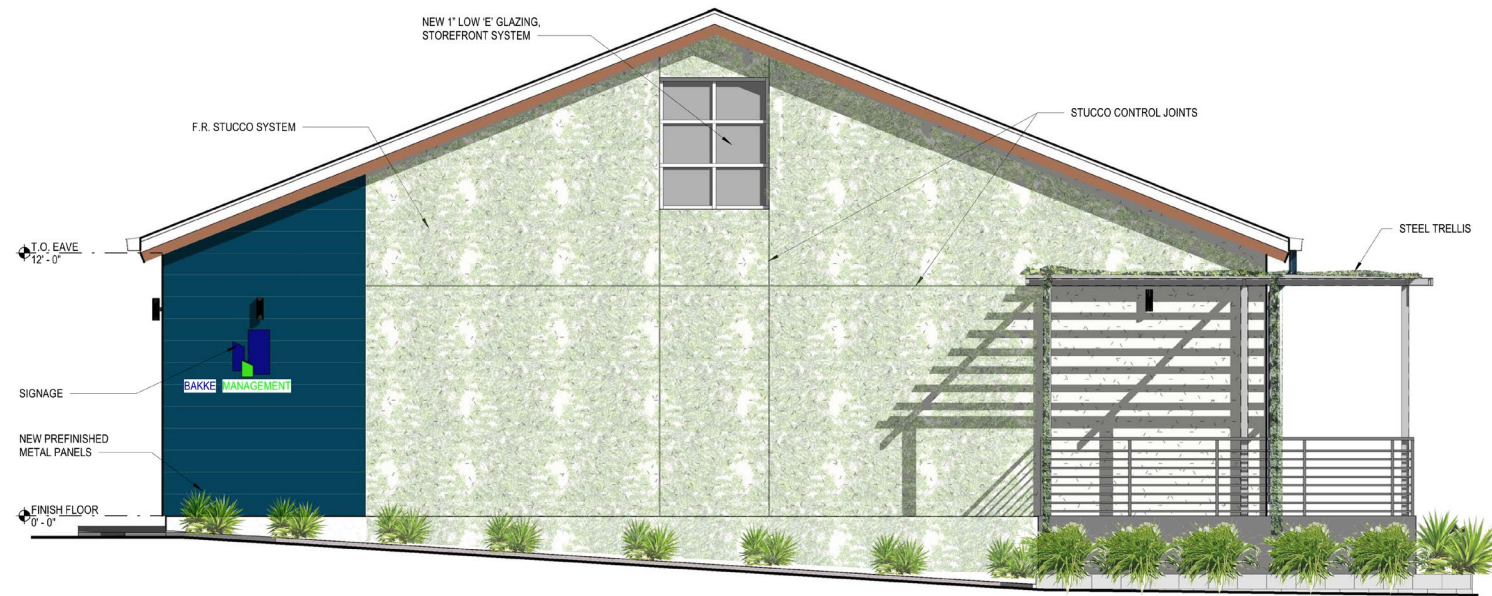


1 EAST ELEVATION  
1/4" = 1'-0"

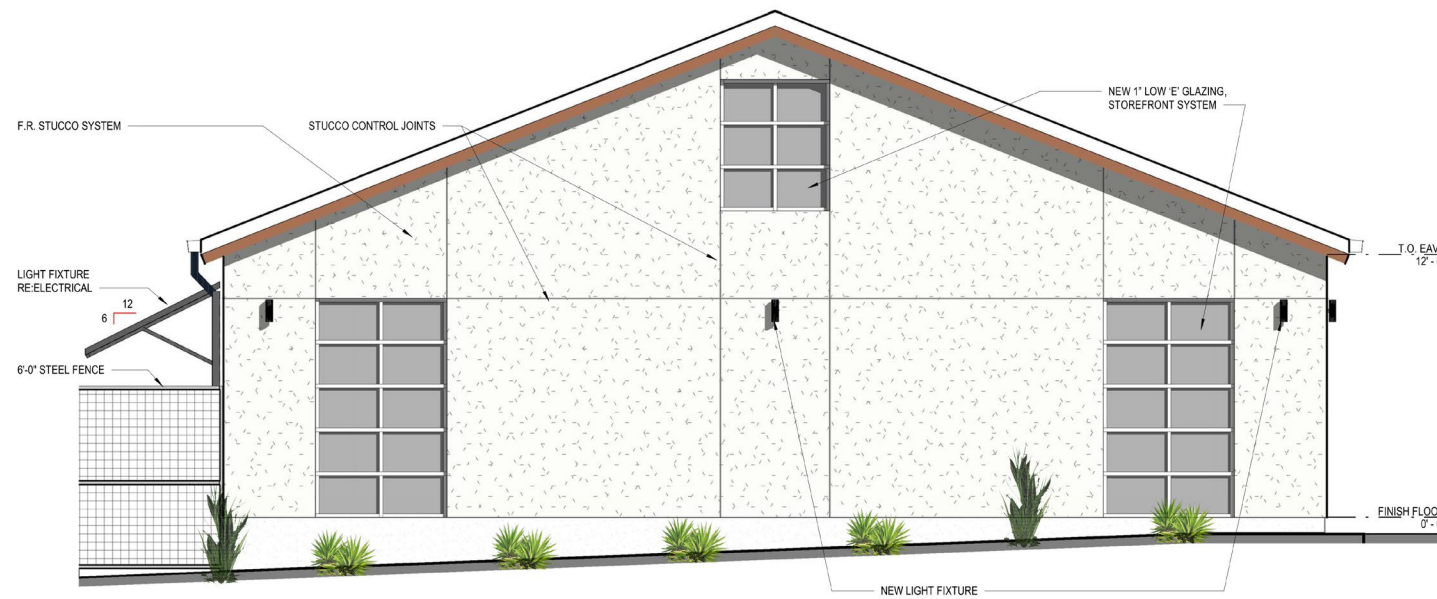


2 WEST ELEVATION  
1/4" = 1'-0"





3 NORTH ELEVATION  
1/4" = 1'-0"



4 SOUTH ELEVATION  
1/4" = 1'-0"





NEW PREFINISHED STANDING SEAM METAL ROOF SYSTEM

NEW 1" LOW 'E' GLAZING, STOREFRONT SYSTEM



CREEPPING FIG ON WALLS & TRELLIS



XERISCAPE PLANTING



6'-0"STEEL FENCE & GATE W/ WIRE MESH



F.R. STUCCO SYSTEM



PREFINISHED METAL PANELS







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# **BAKKE OFFICE**

**207 ROOSEVELT AVE.  
SAN ANTONIO, TX 78201**

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## **SAN ANTONIO HDRDC**

**MATERIAL SPECS  
MAY 11, 2020**



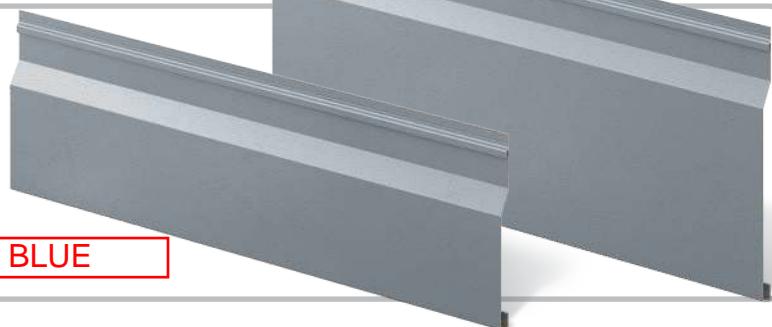
# Berridge HS-8

## WALL, SOFFIT, CEILING AND FASCIA PANEL SYSTEM



The Berridge HS-8 and HS-12 metal wall panels are designed for horizontal and vertical wall applications. Both panels interlock with each other and with the Berridge HR-16 wall panels to provide endless design opportunities. The panels provide a wide rib appearance and can be used on open framing or solid sheathing applications.

**ROYAL BLUE**



### Materials

24 and 22 Gauge Steel  
0.032 and 0.040 Aluminum

### Specifications

Uses: Wall, Soffit, Ceiling, Fascia, Screen Wall, Berridge Fencing System

Coverage: **HS-8 • 8"**  
HS-12 • 12"

Finishes: Standard stucco embossing, optional smooth\*

Fasteners: Concealed

Applications: Vertical on Fencing; horizontal or vertical over open framing or solid sheathing for other uses

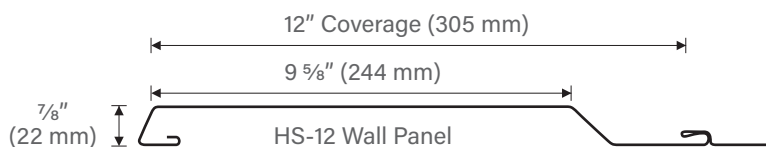
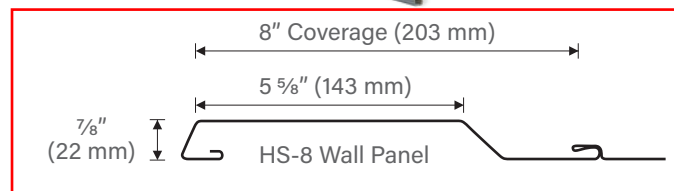
Pattern: **HS-8 •  $\frac{7}{8}$ " height and  $5\frac{5}{8}$ " rib with 2" reveal**  
HS-12 •  $\frac{7}{8}$ " height and  $9\frac{5}{8}$ " rib with 2" reveal

### Installation

- Panel is available from the factory in continuous lengths to a maximum of 30' for embossed panels
- Interlocks with each other or HR-16
- Use siding starter strip to start panel at bottom of soffit or sill
- Use channel closure at inside and outside corners with or without rubber closures
- Use standard channel at jambs without rubber closures
- Use special channel at jambs without rubber closures
- Use HS rubber closures against air infiltration

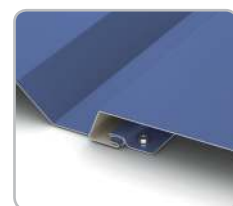
All information subject to change without notice. See website for details, specifications and Watertightness Warranty requirements.

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\* Contact BMC for limited material availability.  
Smooth finish is not available for all applications.

*Pictured Above*  
Project: Lone Star College Creekside Center  
Architect: PBK Architecture  
General Contractor: Durotech  
Installing Contractor: Pyramid Waterproofing Co.  
Color: Zinc Grey



Detail of HS-12 & HS-8 panel interlock

## BERRIDGE HS-8 AND HS-12 PANEL TESTING AND CERTIFICATION SUMMARY CHART

CATEGORY	CHARACTERISTIC	TEST METHOD	PURPOSE	RESULT
PERFORMANCE	<input type="checkbox"/> Uplift Resistance	ASTM E-1592	Test method to determine uplift resistance of open framing systems	See Load Chart on Berridge website
AIR AND MOISTURE	<input type="checkbox"/> Water Penetration	ASTM E-331**	Test method for water penetration of metal roofs by uniform static air pressure difference	No Leakage at 15.0 PSF Pressure Differential
	<input type="checkbox"/> Air Leakage	ASTM E-283**	Test method for rate of air leakage through exterior metal roofs	Less than 0.01 CFM at 6.24 PSF Pressure Differential
ROOF LISTINGS	<input type="checkbox"/> Florida Product Approval	TAS 125	Local and state approval of products and systems for compliance with the structural requirements of the Florida Building Code	HS-8: FL# 14669.2 (24 or 22 GA-Girts) FL# 172174 (0.032 or 0.040 AL-Girts) FL# 174374 (0.032 or 0.040 AL-Girts) HS-12: FL# 14669.3 (24 or 22 GA-Girts) FL# 172175 (0.032 or 0.040 AL-Girts) FL# 174373 (0.032 or 0.040 AL-Girts)
	<input type="checkbox"/> TDI Listed	ASTM E-1592	Texas Department of Insurance Listing for wind capacities	HS-8: EC-85 (0.032 or 0.040 AL-Girts) HS-12: EC-86 (0.032 or 0.040 AL-Girts) HS-12: EC-87 (24 or 22 GA-Girts)

■ - Steel only    □ - Steel and Aluminum

For further details please visit [www.berridge.com](http://www.berridge.com)

\*\* See HR-16 Panel for test results on ASTM E-331 and ASTM E-283 with similar panel seams



**CORPORATE HEADQUARTERS**  
 2610 Harry Wurzbach Road  
 San Antonio, TX 78209  
 (800) 669-0009  
[www.Berridge.com](http://www.Berridge.com)

## SECTION 074213.13 - FORMED METAL WALL PANELS

### PART 1 - GENERAL

#### 1.1 SUMMARY

A. Section Includes:

1. Concealed-fastener, lap-seam metal wall panels

B. Related Sections:

1. Section 074213.16 "Metal Plate Wall Panels" for solid metal plate wall panels.
2. Section 074213.19 "Insulated Metal Wall Panels" for foamed-in-place, laminated and honeycomb insulated metal wall panels.
3. Section 074213.23 "Metal Composite Material Wall Panels" for metal-faced composite wall panels.
4. Section 074293 "Soffit Panels" for metal panels used in horizontal soffit applications.

#### 1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at

1. Meet with Owner, Architect, Owner's insurer if applicable, metal panel Installer, metal panel manufacturer's representative, structural-support Installer, and installers whose work interfaces with or affects metal panels, including installers of doors, windows, and louvers.
2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review methods and procedures related to metal panel installation, including manufacturer's written instructions.
4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
5. Review flashings, special siding details, wall penetrations, openings, and condition of other construction that affect metal panels.
6. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.
7. Review temporary protection requirements for metal panel assembly during and after installation.
8. Review of procedures for repair of metal panels damaged after installation.
9. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

#### 1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.



1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.
  - B. Sustainable Design Submittals:
    1. Product Data: For recycled content, indicating postconsumer and preconsumer recycled content and cost.
  - C. Shop Drawings:
    1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
    2. Accessories: Include details of the flashing, trim, and anchorage systems, at a scale of not less than 3" = 1'-0" (1:5).
  - D. Calculations:
    1. Include calculations with registered engineer seal, verifying wall panel and attachment method resist wind pressures imposed on it pursuant to applicable building codes.
  - E. Samples for Initial Selection: For each type of metal panel indicated with factory-applied finishes.
    1. Include Samples of trim and accessories involving color selection.
  - F. Samples for Verification: For each type of exposed finish, prepared on Samples of size indicated below:
    1. Metal Panels: 12 inches (305 mm) long by actual panel width. Include fasteners, closures, and other metal panel accessories.
- 1.4 INFORMATIONAL SUBMITTALS
- A. Qualification Data: For Installer and Manufacturer.
  - B. Product Test Reports: For each product, for tests performed by a qualified testing agency.
  - C. Field quality-control reports.
  - D. Sample Warranties: For special warranties.
- 1.5 CLOSEOUT SUBMITTALS
- A. Maintenance Data: For metal panels to include in maintenance manuals.



1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
- B. Manufacturer Qualifications: Company specializing in Architectural Sheet Metal Products.
- C. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.
  - 1. Build mockup of typical metal panel assembly [**as shown on Drawings**] <Insert size>, including [**corner,**] [**soffits,**] supports, attachments, and accessories.
  - 2. Water-Spray Test: Conduct water-spray test of metal panel assembly mockup, testing for water penetration according to AAMA 501.2.
  - 3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
  - 4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.
- B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.
- C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.
- D. Remove strippable protective covering on metal panels as panels are being installed. Do not leave the film on installed panels.

1.8 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

1.9 COORDINATION

- A. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.



1.10 WARRANTY

- A. Galvalume Substrate Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Structural failures including rupturing or perforating.
    - b. Deterioration of metals and other materials beyond normal weathering.
  - 2. Warranty Period: 20 years and 6 months from date of Substantial Completion.
- B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
  - 1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
    - a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
    - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
    - c. Cracking, chipping, peeling, or failure of paint to adhere to bare metal.
  - 2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Recycled Content: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 29 percent.
- B. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E 1592:
  - 1. Wind Loads: As indicated on Drawings.
  - 2. Deflection Limits: For wind loads, no greater than [1/180] [1/240] **<Insert deflection>** of the span.

2.2 CONCEALED-FASTENER, LAP-SEAM METAL WALL PANELS

- A. General: Provide factory-formed metal panels designed to be field assembled by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners in side laps. Include accessories required for weathertight installation.
- B. Wide-Reveal-Joint, Concealed-Fastener Metal Wall Panels **<Insert drawing designation>**: Formed with [vertical] [horizontal] panel edges and a stepped profile between panel edges, resulting in a wide reveal joint between panels.



1. Basis-of-Design Product: Subject to compliance with requirements, provide Berridge Manufacturing Company; **[HS-8] [HS-12]** or comparable product by one of the following:
  - a. **<Insert manufacturer's name>.**
2. Metallic-Coated Steel Sheet: Aluminum-zinc alloy-coated steel sheet complying with ASTM A 792/A 792M, Class AZ50 (Class AZM150) coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A 755/A 755M.
  - a. Nominal Thickness: **[0.024 inch (0.61 mm)] [0.029 inch (0.74 mm)]**.
  - b. Surface: **[Smooth, flat] [Embossed]** finish.
  - c. Exterior Finish: **[Two-coat fluoropolymer] [Mica fluoropolymer] [Metallic fluoropolymer]**
  - d. Color: **[As indicated by manufacturer's designations] [Match Architect's samples] [As selected by Architect from manufacturer's full range] <Insert color>.**
3. Aluminum Sheet: Coil-coated sheet, ASTM B 209 (ASTM B 209M), 3105 alloy as standard with manufacturer, with H-14 temper as required to suit forming operations and structural performance required.
  - a. Thickness: **[0.032 inch (0.81 mm)] [0.040 inch (1.02 mm)]**.
  - b. Surface: **[Smooth, flat] [Embossed]** finish.
  - c. Exterior Finish: **[Two-coat fluoropolymer] [Mica fluoropolymer] [Metallic fluoropolymer]**
  - d. Color: **[As indicated by manufacturer's designations] [Match Architect's samples] [As selected by Architect from manufacturer's full range] <Insert color>.**
4. Panel Coverage: **[8 inches (203 mm)] [12 inches (305 mm)]**
5. Panel Height: 0.875 inches (22 mm).

## 2.3 UNDERLAYMENT MATERIALS

- A. Self-Adhering, High-Temperature Underlayment: Provide self-adhering, cold-applied, sheet underlayment, a minimum of 40 mils (1.02 mm) thick, consisting of slip-resistant, polyethylene-film top surface laminated to a layer of butyl or SBS-modified asphalt adhesive, with release-paper backing. Provide primer when recommended by underlayment manufacturer.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Grace Ultra
    - b. Mid-States Asphalt Quick Stick HT Pro
    - c. Polyglass Polystick MTS
    - d. Soprema Lastobond Shield HT
    - e. Tamko TW Underlayment or TW Metal & Tile Underlayment
    - f. **<Insert manufacturer's name>.**



2. Thermal Stability: Stable after testing at 240 deg F (116 deg C); ASTM D 1970.
3. Low-Temperature Flexibility: Passes after testing at minus 20 deg F (29 deg C); ASTM D 1970.

- B. Felt Underlayment: ASTM D 226/D 22M, Type II (No. 30), asphalt-saturated organic felts.

## 2.4 MISCELLANEOUS MATERIALS

- A. Miscellaneous Metal Subframing and Furring: ASTM C 645, cold-formed, metallic-coated steel sheet, ASTM A 653/A 653M, G90 (Z275) hot-dip galvanized coating designation or ASTM A 792/A 792M, Class AZ50 (Class AZM150) aluminum-zinc-alloy coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.
- B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.
1. Closures: Provide closures at eaves and rakes, fabricated of same metal as metal panels.
  2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
  3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- (25-mm-) thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
- C. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, bases, drips, sills, jambs, corners, endwalls, framed openings, rakes, fasciae, parapet caps, soffits, reveals, and fillers. Finish flashing and trim with same finish system as adjacent metal panels.
- D. Panel Fasteners: Self-tapping screws designed to withstand design loads. Provide exposed fasteners with heads matching color of metal panels by means of factory-applied coating. Provide EPDM or PVC sealing washers for exposed fasteners.
- E. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.
1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.
  2. Joint Sealant: ASTM C 920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.
  3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C 1311.



## 2.5 FABRICATION

- A. General: Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.
- B. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.
- C. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.
  - 1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
  - 2. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
  - 3. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
  - 4. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
  - 5. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
  - 6. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.
    - a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal wall panel manufacturer for application but not less than thickness of metal being secured.

## 2.6 FINISHES

- A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- C. Steel Panels and Accessories:
  - 1. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat applied by panel manufacturer on a continuous coil coating line, with a top side dry film thickness of  $0.75 \pm 0.05$  mil ( $0.019 \pm 0.0013$  mm) over  $0.2 \pm 0.05$  mil ( $0.05 \pm 0.0013$  mm) primer coat, to provide a total dry



film thickness of  $0.95 \pm 0.10$  mil ( $0.024 \pm 0.0025$  mm). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

2. Mica Fluoropolymer: AAMA 621. Two-coat fluoropolymer finish with suspended mica flakes containing not less than 70 percent PVDF resin by weight in color coat applied by panel manufacturer on a continuous coil coating line, with a top side dry film thickness of  $0.75 \pm 0.05$  mil ( $0.019 \pm 0.0013$  mm) over  $0.2 \pm 0.05$  mil ( $0.05 \pm 0.0013$  mm) primer coat, to provide a total dry film thickness of  $0.95 \pm 0.10$  mil ( $0.024 \pm 0.0025$  mm). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
3. Metallic Fluoropolymer: AAMA 621. Two-coat fluoropolymer finish with suspended metallic flakes containing not less than 70 percent PVDF resin by weight in color coat applied by panel manufacturer on a continuous coil coating line, with a top side dry film thickness of  $0.75 \pm 0.05$  mil ( $0.019 \pm 0.0013$  mm) over  $0.2 \pm 0.05$  mil ( $0.05 \pm 0.0013$  mm) primer coat, to provide a total dry film thickness of  $0.95 \pm 0.10$  mil ( $0.024 \pm 0.0025$  mm). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
4. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish consisting of prime coat and wash coat with a minimum total dry film thickness of 0.35 mil (0.009 mm).

**D. Aluminum Panels and Accessories:**

1. Two-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat applied by panel manufacturer on a continuous coil coating line, with a top side dry film thickness of  $0.75 \pm 0.05$  mil ( $0.019 \pm 0.0013$  mm) over  $0.2 \pm 0.05$  mil ( $0.05 \pm 0.0013$  mm) primer coat, to provide a total dry film thickness of  $0.95 \pm 0.10$  mil ( $0.024 \pm 0.0025$  mm). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
2. Mica Fluoropolymer: AAMA 2605. Two-coat fluoropolymer finish with suspended mica flakes containing not less than 70 percent PVDF resin by weight in color coat applied by panel manufacturer on a continuous coil coating line, with a top side dry film thickness of  $0.75 \pm 0.05$  mil ( $0.019 \pm 0.0013$  mm) over  $0.2 \pm 0.05$  mil ( $0.05 \pm 0.0013$  mm) primer coat, to provide a total dry film thickness of  $0.95 \pm 0.10$  mil ( $0.024 \pm 0.0025$  mm). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
3. Metallic Fluoropolymer: AAMA 2605. Two-coat fluoropolymer finish with suspended metallic flakes containing not less than 70 percent PVDF resin by weight in color coat applied by panel manufacturer on a continuous coil coating line, with a top side dry film thickness of  $0.75 \pm 0.05$  mil ( $0.019 \pm 0.0013$  mm) over  $0.2 \pm 0.05$  mil ( $0.05 \pm 0.0013$  mm) primer coat, to provide a total dry film thickness of  $0.95 \pm 0.10$  mil ( $0.024 \pm 0.0025$  mm). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.



## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.
  - 1. Examine wall framing to verify that girts, angles, channels, studs, and other structural panel support members and anchorage have been installed within alignment tolerances required by metal wall panel manufacturer.
  - 2. Examine wall sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal wall panel manufacturer.
    - a. Verify that air- or water-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.
- B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C 754 and metal panel manufacturer's written recommendations.

### 3.3 METAL PANEL INSTALLATION

- A. General: Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.
  - 1. Shim or otherwise plumb substrates receiving metal panels.
  - 2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
  - 3. Install screw fasteners in predrilled holes.
  - 4. Locate and space fastenings in uniform vertical and horizontal alignment.
  - 5. Install flashing and trim as metal panel work proceeds.
  - 6. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
  - 7. Align bottoms of metal panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
  - 8. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.



- B. Fasteners:
1. Steel Panels: Use stainless-steel fasteners for surfaces exposed to the exterior; use galvanized-steel fasteners for surfaces exposed to the interior.
  2. Aluminum Panels: Use stainless-steel fasteners for surfaces exposed to the exterior; use stainless-steel fasteners for surfaces exposed to the interior.
- C. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.
- D. Lap-Seam Metal Panels: Fasten metal panels to supports with fasteners at each lapped joint at location and spacing recommended by manufacturer.
1. Lap ribbed or fluted sheets one full rib. Apply panels and associated items true to line for neat and weathertight enclosure.
  2. Provide metal-backed washers under heads of exposed fasteners bearing on weather side of metal panels.
  3. Locate and space exposed fasteners in uniform vertical and horizontal alignment. Use proper tools to obtain controlled uniform compression for positive seal without rupture of washer.
  4. Install screw fasteners with power tools having controlled torque adjusted to compress washer tightly without damage to washer, screw threads, or panels. Install screws in predrilled holes.
  5. Flash and seal panels with weather closures at perimeter of all openings.
- E. Watertight Installation:
1. Apply a continuous ribbon of sealant or tape to seal lapped joints of metal panels, using sealant or tape as recommend by manufacturer on side laps of nesting-type panels; and elsewhere as needed to make panels watertight.
  2. Provide sealant or tape between panels and protruding equipment, vents, and accessories.
  3. At panel splices, nest panels with minimum 6-inch (152-mm) end lap, sealed with sealant and fastened together by interlocking clamping plates.
- F. Metal Liner Panels: Install panels on **[exterior side of girts, with girts exposed to the interior]** **[interior side of girts with flush appearance on the inside]**.
- G. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.
1. Install components required for a complete metal panel system including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal wall panel manufacturer; or, if not indicated, provide types recommended by metal panel manufacturer.
- H. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that are permanently watertight.

1. Install exposed flashing and trim that is without buckling and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and achieve waterproof performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (610 mm) of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).

### 3.4 FIELD QUALITY CONTROL

- A. Testing Agency: **[Owner will engage]** **[Engage]** a qualified testing agency to perform tests and inspections.
- B. Water-Spray Test: After installation, test area of assembly **[shown on Drawings]** **[as directed by Architect]** **<Insert area>** for water penetration according to AAMA 501.2.
- C. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect completed metal wall panel installation, including accessories.
- D. Remove and replace metal wall panels where tests and inspections indicate that they do not comply with specified requirements.
- E. Additional tests and inspections, at Contractor's expense, are performed to determine compliance of replaced or additional work with specified requirements.
- F. Prepare test and inspection reports.

### 3.5 CLEANING AND PROTECTION

- A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.
- B. After metal panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.
- C. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 074213.13



# Berridge Cee-Lock Panel

## STANDING SEAM SYSTEM



The Berridge Cee-Lock architectural metal standing seam panel is designed for residential or commercial construction over solid sheathing. This 1½" high panel incorporates an integral snap-lock seam and an optional extruded vinyl weatherseal. The standard coverage option is 16 ½" and its optional 11 ½" coverage adds versatility.



### Materials

24 and 22 Gauge Steel  
0.032 Aluminum

### Specifications

Uses: Roof, Fascia  
Coverage: 16 ½" or 11 ½"\*\*\*  
Finishes: Smooth, optional striations  
Fasteners: Concealed  
Applications: Solid sheathing  
Seam: 1 ½" snap-lock seam  
Optional: Extruded vinyl weatherseal\*

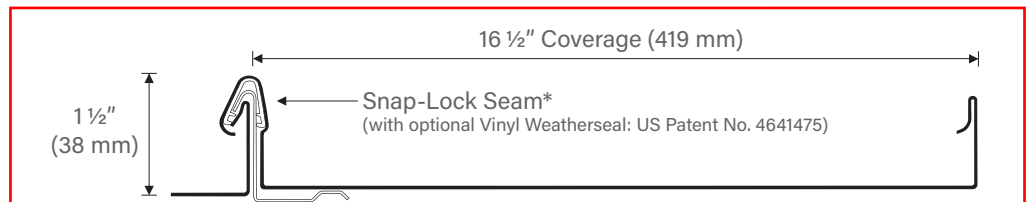
### Installation

- Panel is available from the factory in continuous lengths to a maximum of 40'
- 16 ½" profile may be site formed in continuous lengths with the Berridge CL-21 Roll Former
- 11 ½" profile may be site formed in continuous lengths with the Berridge CL-16 Roll Former
- Continuous Cee-Rib available with steel for higher uplift resistance
- Use Stainless Steel Cee-Lock Clip with Aluminum panels

Note:

\* Vinyl weatherseal required for watertight warranties

\*\* Contact BMC for material availability. Not available with striations.



*Pictured Above*

Project: Pond View Office Park

Developer: H & I Construction/Remodeling Inc.

General Contractor: H & I Construction













Installing Contractor: Roofs over Texas



Color: Aged Bronze

All information subject to change without notice. See website for details, specifications and Watertightness Warranty requirements.

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# BERRIDGE CEE-LOCK PANEL TESTING AND CERTIFICATION SUMMARY CHART

CATEGORY	CHARACTERISTIC	TEST METHOD	PURPOSE	RESULT
PERFORMANCE	 Underwriters Laboratories	UL 580/UL 1897	Test method to determine uplift resistance of roof assemblies	See Load Chart on Berridge website
	 Uplift Resistance	ASTM E-1592	Test method to determine uplift resistance of open framing systems	See Load Chart on Berridge website
FIRE	 Room Fire Performance	UL 790	Test methods for fire tests of roof coverings	Class A Rating
	 Room Fire Performance	UL 263	Fire tests of building construction and materials	Design Numbers: P225, P227, P230, P237, P250, P259, P508, P510, P512, P514, P518, P701, P711, P713, P717, P719, P720, P722, P723, P726, P731, P732, P734, P801, P815, P819, & P824
ENVIRONMENTAL	 Impact Resistance	UL 2218	Impact resistance of prepared roof coverings	Class 4 Rating
AIR AND MOISTURE	 Water Penetration	ASTM E-1646 ASTM E-331	Test method for water penetration of metal roofs by uniform static air pressure difference	No Leakage at 6.24 PSF Pressure Differential
	 Air Leakage	ASTM E-1680 ASTM E-283	Test method for rate of air leakage through exterior metal roofs	Less than 0.01 CFM at 6.24 PSF Pressure Differential
ROOF LISTINGS	 Florida Product Approval	TAS 125	Local and state approval of products and systems for compliance with the structural requirements of the Florida Building Code	FL# 14210.1 (24 GA-Purlins) FL# 14210.2 (22 GA-Purlins) FL# 11269.2 (24 or 22 GA-Steel Deck) FL# 11269.4 (0.032 AL-Steel Deck) FL# 11269.1 (24 GA-Plywood) FL# 11269.3 (0.032 AL-Plywood) FL# 11241.1 (HVHZ 24 GA-Plywood) FL# 11241.2 (HVHZ 22 GA Steel Deck)
	 Underwriters Laboratories	UL 580 Uplift Class 90	Standard for Tests for Uplift Resistance of Roof Assemblies	Construction No. 334 (24 GA-Open Framing) Construction No. 381 (24 GA-Steel Deck) Construction No. 404 (24 GA-Plywood) Construction No. 474 (24 GA-OSB) Construction No. 689 (0.032 AL-Steel Deck) Construction No. 690 (0.032 AL-Plywood)
	 Miami Dade	TAS 125 FMG 4471	Miami Dade County approval of building products directly related to the structural wind resistance	NOA #17-0808.04 NOA # 16-1205.03 (22 GA Steel)
	 TDI Listed	UL 580 ASTM E-1592	Texas Department of Insurance Listing for wind capacities	RC-203 (22 GA-Purlins) RC-210 (24 or 22 GA-Steel Deck) RC-209 (24 GA-Plywood) RC-482 (0.032 AL-Steel Deck or Plywood)
	 ICC-ES	UL 580	Capacity report by the International Code Counsel	ESR-3486

 - Steel only     - Steel and Aluminum  
 For further details please visit [www.berridge.com](http://www.berridge.com)



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 San Antonio, TX 78209  
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[www.Berridge.com](http://www.Berridge.com)



**SECTION 07 41 13 - STANDING SEAM METAL ROOF SYSTEM**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. Work Included: The contractor shall provide all material, labor, and administration and other items to provide a complete standing seam metal roof system complying with performance requirements indicated and capable of withstanding structural movement, thermally induced movement and exposure to weather without failure or infiltration of water into the building interior.
- B. Coordinate standing seam metal roof system with roofing substructure work.
- C. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions and Supplementary General Conditions.

**1.2 SECTION INCLUDES**

- A. Preformed and prefinished standing seam metal roof system with continuous mechanically seamed ribs, concealed clips and fastening devices.
- B. Color coordinated ridge, hip, valley, gable, eave, corner, rake, headwall, counterflashings and miscellaneous flashings and attaching devices.
- C. Provide concealed clips, fasteners, closures and factory and field applied sealants as necessary to meet design criteria and ensure a weathertight installation.
- D. High Temperature Bituthane membrane roofing underlayment.

**1.3 SYSTEM DESCRIPTION**

- A. Design Requirements:
  - 1. The standing seam metal roof system, including: panels, flashings, attachment clips and attachment screws shall be designed by the metal roof system manufacturer per to meet the following design criteria:
    - a. 2015 version of the International Building Code, (IBC-2015).
    - b. A basic wind speed of 100 mph.
    - c. Listing of applicable loads by roof zones (interior, edges and corners).
    - d. The building importance factor is one - Essential Facilities.
    - e. Roof snow load is per local requirements as determined by Panel Manufacturer.
    - f. The building exposure factor is "C", open terrain.

2. The standing seam metal roof system manufacturer shall provide an engineered analysis of the roofing system, sealed by a registered Structural Engineer employed by the manufacturer and licensed in the State of Texas, verifying that the product and attachment methods will resist wind pressures imposed upon it pursuant to the design criteria and that the roofing system fully complies with all specified requirements.
  3. The panel system shall bear fully documented proof that it has been independent laboratory evaluated using the U.S. Army Corps of Engineers Guide Specification (CEGS) 07416.
    - a. Testing shall include establishment of ultimate and allowable system uplift capacities for both the "field" and "areas of discontinuity".
    - b. "Proof" shall be defined as both the manufacturer and the product being included in the document entitled: "List of Approved Standing Seam Metal Roof Systems" as published by the U.S. Army Corps of Engineers.
  4. Provide factory preformed panel system that has been pretested and certified by manufacturer to comply with specified requirements under installed conditions.
  5. Provide factory engineered and tested end lap (splice) details at roof third points, per ASTM 2140 water immersion testing.
  6. Provide continuous mechanically seamed ribs that inherently increase load span capability, stiffness and flexural stress handling capacity.
  7. Provide continuous butyl sealant within the confines of the female flange.
  8. Provide factory-preformed panel that has been tested and approved for a Class 4 Impact (Hail) resistance rating per UL 2218. Listing shall be present on the UL website (Refer to Underwriters Laboratories website at [www.ul.com](http://www.ul.com)).
- B. Structural Requirements:
1. Panel structural properties determined in accordance with latest edition of American Iron and Steel Institute's "Cold Formed Steel Design Manual," using "effective width" concepts.
  2. Wind uplift design for roof assemblies shall be calculated by the standing seam metal roofing system manufacturer per ASTM E 1592. Calculations shall include establishment of ultimate and allowable roof system uplift capacities for both the "field" and "areas of discontinuity".
  3. Provide confirmation of positive and negative buckling moments and uplift capacity determined by full-scale tests.
  4. Panel must be capable of spanning three feet six (3'6") inches between purlins
- C. Substrate Criteria:
1. Standing Seam Metal Roofing System: Engineer standing seam metal roof system installed over structural purlins on thermal blocks over thermal batt insulation capable of withstanding the design loads when applied at 90° to the surface and spaced as shown on the approved shop drawings.
- D. Environmental Requirements: Actual independent laboratory certified test results must be submitted.
1. Resistance to air infiltration: .002 cfm per linear foot of joint when tested in accordance with ASTM E 1680 at static test pressure differential of 12.00 psf.



2. Resistance to water infiltration: No leakage through panel joints when tested in accordance with ASTM E 1648 at static test pressure differential of 20.00 psf.

#### 1.4 SUBMITTALS

- A. Product Data: Submit manufacturer's specifications, engineered detail drawings, and installation instructions.
- B. Shop Drawings:
  1. Submit three (3) sets of design drawings produced by the standing seam metal roof system manufacturer indicating thickness and dimensions of parts, fastenings and anchoring methods, details and locations of seams, transitions and other provisions necessary for thermal expansion and contraction.
  2. Indicate roof terminations, clearly showing flashings and change of direction caps.
  3. Clearly indicate locations of field and factory applied sealant.
  4. Show locations, spacing patterns and types of hold-down clips and fasteners.
  5. Provide (24"x36") blue line or Auto CAD produced drawings provided by the standing seam metal roof system manufacturer showing a complete roof plan, roof panel layout, and cross section details for every individual condition of the entire roof system.
- C. Samples:
  1. Submit two (2) samples, twelve inch (12") long by full width of panel, showing proposed metal gauge and seam profile.
  2. Submit color samples on metal for Architect's selection from manufacturer's full range of color offerings including custom (metallic colors) colors.
- D. Test Reports: Submit verification the panel system meets the Environmental Conditions for the indicated test pressures and performance listed for Air and Water Infiltration.
- E. Engineered Design Calculations:
  1. Submit panel system manufacturer's design calculations verifying the panel system meets the specified building code as defined in Section 1.03 System Description, A. Design Requirements listed above.
  2. Design calculations shall be sealed by a registered Texas licensed Structural Engineer employed by the standing seam metal roof system manufacturer and licensed in the State of Texas.
- F. Certification:
  1. Submit manufacturer's certification that materials and finishes meet specified requirements.
  2. Submit written verification of panel Applicator's factory installation training performed by the standing seam metal roof system manufacturer and a copy of the Panel Applicator's "Authorized Applicator" certificate.

**1.5 QUALITY ASSURANCE**

**A. Manufacturer's Qualifications:**

1. Minimum twenty (20) years experience in the fabrication of standing seam metal roof systems on projects of similar size and scope. Upon request, submit a minimum of five (5) project references for Architect's review. List project address, date of installation, Architects and Owner's name and telephone numbers.
2. No other manufacturer of standing seam metal roof systems will be accepted without prior written approval of the Architect and based upon the manufacturer verifying the product can meet or exceed all performance criteria listed in these specifications.
3. No substitutions will be permitted after the bid date.
4. Must have local Representatives to provide onsite inspections.

**B. Applicator Qualifications:**

1. Panel Applicator must have a minimum of five (5) years experience in the application of standing seam metal roof systems.
2. Panel Applicator must be factory trained by the standing seam metal roof system manufacturer prior to the bid date in order to obtain a contract for installation.
3. Use adequate members of skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work in this Section.
4. Use equipment of adequate size, capacity and numbers to accomplish the work of this Section in a timely manner.
5. Upon request, submit a minimum of five (5) successfully completed projects of similar size and scope. List project address, date of installation, Architect and Owner's name and telephone numbers.
6. Single Source Responsibility: Provide all items of the standing seam metal roof system work specified herein by a single roofing contractor to provide undivided responsibility.

**C. Regulatory Requirements:** Comply with all requirements of applicable building codes and other agencies having jurisdiction for positive and negative design loads of standing seam metal roof systems.

**D. Factory Technical Representative:** Roofing Contractor is to arrange and schedule the manufacturer's technical representative to be on site the first day of the installation of manufacturer's roofing system. The manufacturer's technical representative shall inspect the work of the contractor at least one time each week during the course of the installation of the Standing Seam metal roofing system. The manufacturer's technical representative shall perform with the owner's representative and the roofing contractor a final inspection of the roofing system. At the completion of the final inspection, provide to the roofing contractor a list of punch list items (if any) to be correct before technical acceptance of the roofing project and prior to issuance of manufacturer's Twenty (20) Year Full System Warranty. Field reports shall be provided after each inspection within five (5) days of site visit.

**E. All roof details of metal roof construction are for basis of design for metal roof systems. Final details shall be submitted by the metal roof system manufacturer and coordinated with architectural through the submittal process prior to construction to activate and provide a single**



source 20 year ndl NO LEAK warranty with weathertightness protection as specified for metal roof system.

#### 1.6 DELIVERY, STORAGE AND HANDLING

A. Delivery:

1. Delivery of material shall be made only after suitable facilities for its storage and protection area available on the site.
2. Protect products and accessories from damage and discoloration during transit and at project site.
3. Upon receipt of prefinished preformed metal panels, flat sheets, flashings and panel accessories, Panel Applicator shall examine each container for damage and for completeness of the consignment.

B. Storage:

1. Store materials out of the weather in a clean, dry place. One end of each container should be slightly elevated and covered with a loose weatherproof covering to prevent condensation.
2. Panels and/or flashings with strippable film must not be stored in areas exposed to direct sunlight.
3. Care should be taken to prevent contact with any substance that may cause discoloration.
4. Store materials to provide ventilation and prevent bending, abrasion or twisting.
5. Do not overload roof structure with stored materials. Do not permit material storage or traffic on completed roof surfaces.

C. Handling:

1. Care should be taken to avoid gouging, scratching or denting.
2. Do not allow traffic on completed roof. If required, provide cushioned walk boards.
3. Protect installed products from damage caused by foreign objects and construction until completion of project.
4. Comply with pertinent provisions of Supplementary General Conditions.

#### 1.7 WARRANTY

A. Furnish manufacturer's standard 20 year written finish warranty stating that architectural fluorocarbon finish will be:

1. Free from fading or color change in excess of five (5) NBS units as measured per ASTM 2244-68.
2. Will not chalk in excess of a numerical rating of seven (7) when measured in accordance with standard procedures specified in ASTM D 659-74.
3. Will not peel, crack, chip or delaminate.

B. Furnish a written warranty signed by the Panel Applicator for a two (2) year period from the date of substantial completion of the building guaranteeing materials and workmanship for weathertightness of the roofing system, flashings, penetrations and against all leaks.

## **Alamo Architects**

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- C. Single Source Manufacturer's Warranty: Furnish manufacturer's 20 year, full system, non-prorated, no dollar limit weathertight warranty to be jointly signed by the manufacturer and the Panel Applicator.
- D. Protect products and accessories from damage and discoloration during transit and at project site. Store sheets and components in dry storage area to prevent condensation.
- E. Do not overload roof structure with stored materials. Do not permit material storage or traffic on completed roof surfaces.

### **1.8 PRE-INSTALLATION CONFERENCE**

- A. Convene prior to commencing work of this Section.
- B. Attendants: Panel Applicator, installer of each component of associated work, installers of deck or substrate construction to receive roofing work, Architect, Owner or Owner's Representative, Roofing system manufacturer's technical representative and General Contractor.
- C. Record discussion, decisions and agreements reached and furnish a copy to each attendant.
- D. Review installation procedures and coordination required with related Work.
- E. Tour representative areas of roofing substrates, inspect and discuss condition of substrates, roof drains, curbs, penetrations, wood nailers and other preparatory work performed by other trades.
- F. Review structural loading limitations of steel deck and inspect deck for loss of flatness and as required for mechanical fastening.
- G. Review roofing system requirements (approved manufacturer's shop drawings, specifications and other contract documents.
- H. Review required submittals.
- I. Review and finalize construction schedule related to roofing work and verify availability of materials, installer's personnel, equipment and facilities needed to avoid delays.
- J. Review weather and forecasted weather conditions and procedures for coping with unfavorable conditions, including possibility of temporary roofing.
- K. General Contractor to document the meeting with written minutes and copy all in attendance.



**PART 2 – PRODUCTS**

**2.1 ACCEPTABLE MANUFACTURERS**

- A. Standing Seam Metal Roof System:
  - 1. Petersen Aluminum Corporation:
  - 2. McElroy Metals
  - 3. Berridge
  - 4. Or prior approved equal
- B. Substitutions:
  - 1. Approved manufacturers will only be set forth in a written and issued addendum.
  - 2. Alternate manufacturers must fully comply with all specified requirements.

**2.2 MATERIALS**

- A. Panels:
  - 1. Prefinished Galvalume® sheet, ASTM AZ50 made of 55% aluminum, 1.6% silicon and the balance zinc as described in ASTM specification A792.
  - 2. Panels shall be 22-gauge with a Polyvinylidene (Kynar 500) Finish.
  - 3. Factory fabricated panel with integral continuous overlapping seams suitable for continuous locking or crimping by mechanical means during installation. Onsite or field manufactured panel profiles are not acceptable.
  - 4. Seam Size:
    - a. Male leg: 2" high
    - b. Female leg: 2" high
  - 5. Provide butyl sealant within the confines of female seam flange, on the bottom edge of female seam flange, designed to seal against adjacent male panel leg.
- B. Clip/Fastener Assemblies:
  - 1. Typical clip, UL-90 requirements:
    - a. Wind Rated Fasteners: As per approved manufacturer's engineered shop drawings.
    - b. Wind Rated Clip: Sliding 22-gauge galvanized steel hook in combination with a double fastened 16-gauge galvanized steel base, both at  $F_y$  (MIN) = 33 ksi. Clip hook shall have a shop installed hot-melt butyl sealant for continuity of seal at clip locations.
  - 2. Typical Low Clip Requirements:
    - a. UL-90 Fasteners: As per approved manufacturer's engineered shop drawings.
    - b. Sliding 26-gauge at  $F_y=40$ ksi (MIN) galvanized steel hook in combination with a double fastener 18-gauge at  $F_y = 50$  ksi (MIN) galvanized steel base. Clip hook shall have a shop installed hot-melt butyl sealant for continuity of seal at clip locations.
  - 3. Standard Flashing Fasteners: Same as Wind Rated Fasteners specified above.
- C. Accessories:

1. Provide manufacturer's standard accessories and other items essential to completeness of the standing seam metal roof installation.
2. Roof Jacks: Manufacturer's standard EPDM with an aluminum sealing base ring; for openings twelve inches (12") or smaller, centered in panel; do not interrupt seam.
3. Gutters and downspouts will be fabricated to the same gauge and specification as panel.

D. Field Sealants:

1. Color coordinated primerless silicone, urethane, or high grade, non-curing butyl as recommended and engineered by panel manufacturer.
2. Do not use sealants containing asphalt.

2.3 ACCESSORIES:

- A. Provide manufacturer's standard accessories and other items essential to completeness of the standing seam metal roof installation.
- B. Roof Jacks: Manufacturer's standard EPDM with an aluminum sealing base ring; for openings twelve inches (12") or smaller, centered in panel; do not interrupt seam.
- C. Gutters and downspouts will be fabricated to the same gauge and specification as panel.

2.4 FABRICATION

A. Panels:

1. Provide factory formed panel widths of sixteen inch (16"), with a two inch (2") high standing seam.
2. Provide panels with no end laps (splices).
3. Roof panels shall have flush horizontal and vertical surfaces to facilitate sealing at terminations.

B. Seams:

1. Panel seams shall interlock entire length of seam, by means of a mechanically driven rib seamer.
2. Design standing seam to lock up and resist joint disengagement during design wind uplift conditions as calculated to comply with local building codes and design uplift criteria.
3. Provide factory sealant within confines on trailing edge of female seam leg to aid in resistance of leaks and provide panel-to-panel seal while allowing expansion and contraction movement, and the seams shall be continuously locked or crimped together by mechanical means during installation.

C. Clips:

1. Provide Wind Rated Clips designed to allow panels to thermally expand and contract and provide a minimum of  $\pm$  one inch (1") of thermal movement. Clips shall incorporate a self-centering feature to allow a minimum of one inch (1") of movement in both directions along panel length.



2. Clips shall be designed to meet positive and negative pressures as calculated and engineered by the standing seam metal roofing system manufacturer.
- D. Engineer panels to use concealed anchors that permit expansion and contraction.
- E. Trim/Flashings:
  1. Prefinished sheet metal designed by the manufacturer in the same gauge, material and finish as the standing seam metal roofing system.
  2. Locations, design, sealing and fastening methods as per the manufacturer's approved engineered shop drawings.

## 2.5 FINISH

- A. Fluorocarbon Coating:
  1. Full strength 70% Kynar 500® coating baked on for fifteen (15) minutes at 450°F to dry-film thickness of 1.0 mil.
  2. 15% reflective gloss (ASTM D 523). (Low Gloss).
  3. 0.3 mil baked on epoxy primer.
  4. Backer side of panels to be painted with an off-white polyester coating.
  5. Top Side Color: As selected by Architect from manufacturer's full range of color offerings, including metallic and custom colors

## PART 3 - EXECUTION

### 3.1 CONNECTING WORK

- A. General: Provide metal roofing panels of full length from eave to ridge.
  1. Field cutting by torch is not permitted.
  2. Do not apply roofing during inclement weather.
  3. Do not apply roofing to damp or frozen deck surface.
  4. Do not expose materials vulnerable to water, wind or sun damage in quantities greater than can be weatherproofed during the same day.
  5. Rigidly fasten point of fixity (high center) of metal roof panels and allow free eave movement due to thermal expansion and contraction per the approved shop drawings.
  6. Install screws fasteners with power tools having controlled torque.
  7. Locate and space fasteners per the approved shop drawings in true vertical and horizontal alignment.
  8. Install all flashings per the approved shop drawings as work progresses. Position roof jacks only in the flat of the panel; do not alter standing seam ribs.
- B. The Panel Applicator shall examine all surfaces on which their work is to be applied, and shall notify the Architect in writing if not suitable to receive their work. Work on any surface shall constitute acceptance of this surface by the Panel Applicator. After beginning installation, install approximately 500 square feet of panels for Architect's approval, before proceeding with substantial work.

- C. Wood Members, Units: Comply with requirements of Section 06114 Wood Blocking of these specifications for nailers and other wood members indicated as roofing system work. Provide wood pressure treated with water-borne preservatives for above ground use. All nailers shall be anchored sufficiently to resist a force of 75 pounds  $\pm$  per linear foot in any direction. Provide nailers at all locations required by the roofing manufacturer (whether shown or not) – verify conditions prior to commencement of roofing installation.

### 3.2 FIELD MEASUREMENTS

- A. Panel Applicator must take field measurements to verify or supplement dimensions indicated prior to fabrication of any materials. Where field measurements cannot be made without delaying the work, either establish opening dimensions and proceed with fabricating panels without field measurements or allow for trimming panel units.

### 3.3 METAL ROOFING INSTALLATION

- A. Workmanship shall conform to standards set forth in the architectural sheet metal manual as published by SMACNA.
- B. Comply with manufacturer's instructions for assembly, installation, and erection in order to achieve a weathertight installation. Install in accordance with approved shop drawings.
  - 1. Anchor securely in place using clips and fasteners spaced in accordance with manufacturer's recommendations for design wind load criteria.
  - 2. Panels should be installed in such a manner that horizontal lines are true and level and vertical lines are plumb.
  - 3. Field apply sealant to penetrations, transitions, and other locations as necessary for an airtight, waterproof installation.
  - 4. Remove all protective film, if any, before installation of materials.
- C. Contractor shall follow the manufacturer's specifications for installation of the new metal roof system. Provide additional framing members as required to meet the current uplift requirements for the perimeter of the existing structure.
- D. Install factory supplied seamless panels as specified in the maximum length available from the approved manufacturer. Attachment of the new metal panel roof system shall be with exposed, specified fasteners. Fastening attachment shall meet Underwriters Laboratory and Factory 1-90 wind uplift requirements.
- E. All roof panels shall be installed straight and watertight without waves, warps, buckles or fastening distortion. Any warped, buckled or distorted panels or portions thereof are not acceptable and shall be promptly replaced.
- F. All panels shall be installed plumb, level and straight with all seams, ribs and fasteners parallel and shall conform to the design intended. Panel fastening shall provide proper allowance for expansion and contraction requirements.



- G. Panel ends shall extend evenly over the eaves of the roof plane, to sufficiently drain into the new gutter assembly. All protection of the roof edge under the eave panels shall receive proper closures as required by the manufacturer for watertightness.
- H. All gutters and downspouts shall be installed in accordance with the manufacturers requirements so as to comply with the system warranty and allow for complete drainage of the system. Refer to Specification 07 62 13 for additional information.
- I. Dissimilar Metals: Do not allow panels or flashings to come into contact with dissimilar metals.

#### **3.4 FLASHING AT EAVES, RAKES AND RIDGE**

- A. Install manufacturer's prefabricated components for all eave and ridge flashing and as designated by the detail drawings. All flashing components shall be installed in strict accordance with the manufacturer's specific instructions, and in conformance with SMACNA recommendations. Any deviation from the manufacturer's recommendations or those of this specification must have approval in writing prior to the installation thereof.
- B. All flashing components shall be minimum 22-gauge metal, color to match the new roof system and mechanically fastened in conformance with the manufacturer's recommendations.
- C. All eave and rake profile flashing elements shall be high side eave trim to match the existing in profile and design for the R Panel roof system and shall be as detailed for the alternate standing seam roof panel system, and installed with the manufacturer's specifications. All eave flashing shall include all additional components required for the installation of the flashing system, to include, but not be limited to, high eave side to rake corner, and to gutter boxes, etc.
- D. All ridge cap flashing shall be prefabricated ridge flashing installed in accordance with the manufacturer's details and recommendations.

#### **3.5 CLEAN UP**

- A. Clean exposed surfaces of work promptly after completion of installation.
- B. Only minor scratches and abrasions will be allowed to be touched up. Any other damaged material shall be replaced.
- C. Leave work areas clean, free from grease, dirt, finger marks, stains and stains.
- D. Remove scrap and debris from surrounding grounds and work areas daily.

3.6 PROTECTION

- A. Metal Roofing: Protect work as required to ensure that the standing seam metal roof system will be without damage at time of final completion.

END OF SECTION 07 41 13



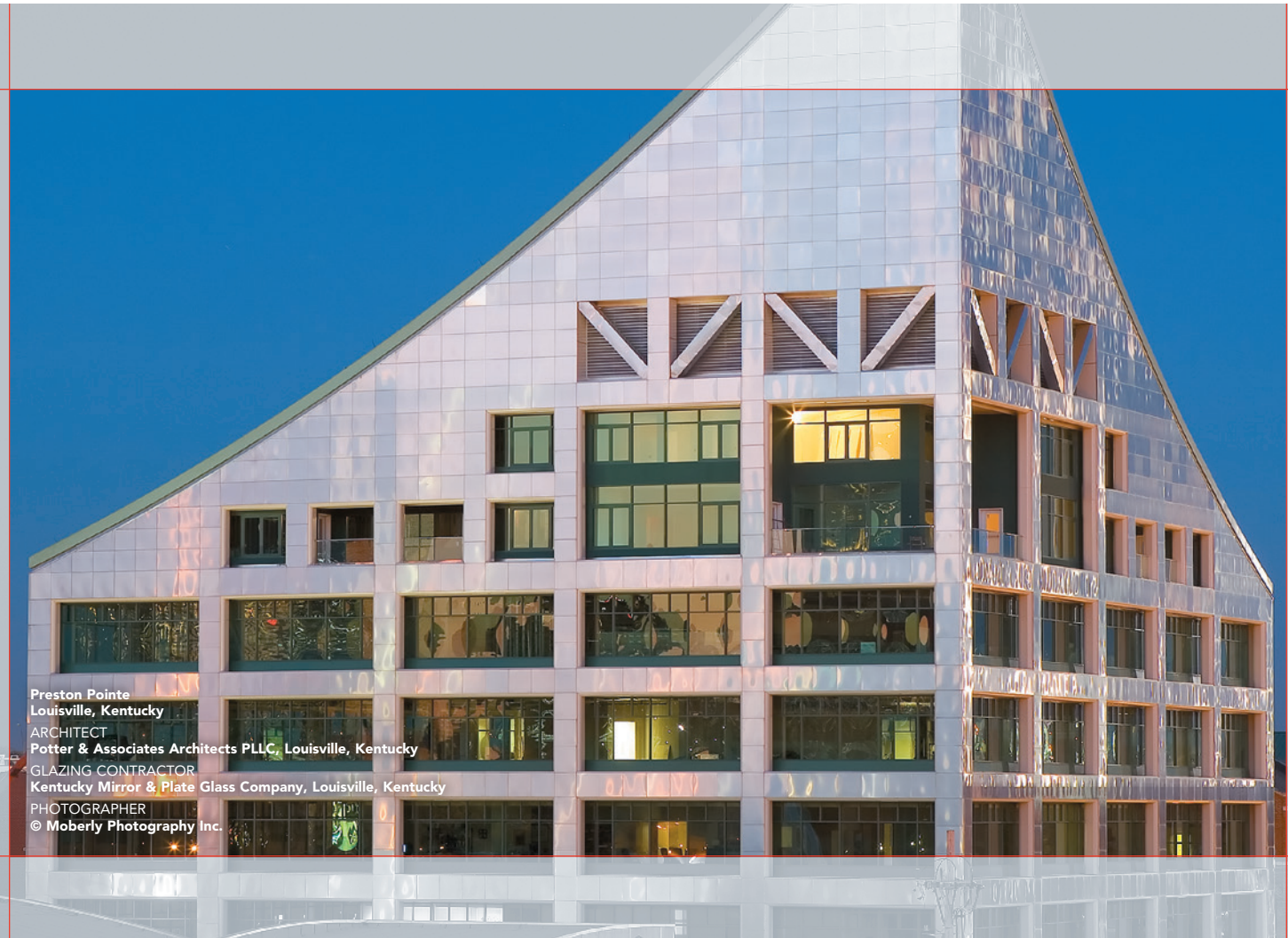
TRIFAB™ VG (VERSAGLAZE™)

TRIFAB™ VG 450, 451 & 451T (THERMAL) FRAMING SYSTEMS &  
TRIFAB™ 451UT (ULTRA THERMAL) FRAMING SYSTEM



# Design + Performance

## Versatility with Unmatched Fabrication Flexibility



Preston Pointe  
Louisville, Kentucky  
ARCHITECT  
Potter & Associates Architects PLLC, Louisville, Kentucky  
GLAZING CONTRACTOR  
Kentucky Mirror & Plate Glass Company, Louisville, Kentucky  
PHOTOGRAPHER  
© Moberly Photography Inc.

Trifab™ VersaGlaze™ is built on the proven and successful Trifab™ platform – with all the versatility its name implies. There are enough framing system choices, fabrication methods, design options and performance levels to please the most discerning building owner, architect and installer. The Trifab™ VersaGlaze™ family's newest addition, the Trifab™ 451UT (Ultra Thermal) Framing System, is designed for the most demanding thermal performance and employs a dual Isolock™ thermal break.

### AESTHETICS

Trifab™ VersaGlaze™ Framing Systems offer designers a choice of front-, center-, back- or multi-plane glass applications. Structural silicone

glazing (SSG) and weatherseal glazing options further expand designers' choices, allowing for a greater range of design possibilities for specific project requirements and architectural styles. All systems have a 4-1/2" frame depth; Trifab™ VersaGlaze™ 450 has 1-3/4" sightlines, while Trifab™ VersaGlaze™ 451/451T and Trifab™ 451UT have 2" sightlines.

With seamless incorporation of Kawneer entrances or windows, including GLASSvent™ visually frameless ventilators, Trifab™ VersaGlaze™ can be used on almost any project. These framing systems can also be packaged with Kawneer curtain walls and overhead glazing, thereby providing a full range of proven, and tested, quality products for the owner, architect and installer from a single-source supplier.

## ECONOMY

Trifab™ VersaGlaze™ 450/451/451T Framing Systems offer four fabrication choices to suit your project (Trifab™ 451UT is available as screw spline fabrication only):

- **Screw Spline** – for economical continuous runs utilizing two-piece vertical members that provide the option to pre-assemble units with controlled shop labor costs and smaller field crews for handling and installation.
- **Shear Block** – for punched openings or continuous runs using tubular moldings with shear block clips that provide tight joints for transporting large pre-assembled multi-lite units.
- **Stick** – for fast, easy field fabrication. Field measurements and material cuts can be done when metal is on the jobsite.
- **Type B** – Same fabrication benefits as shear block except the head and sill run through.



**Brighton Landing**  
Cambridge, Massachusetts  
ARCHITECT  
**ADD Inc., Cambridge, Massachusetts**  
GLAZING CONTRACTOR  
**Ipswich Bay Glass Company, Inc., Rowley, Massachusetts**  
PHOTOGRAPHER  
© Gordon Schenck, Jr.

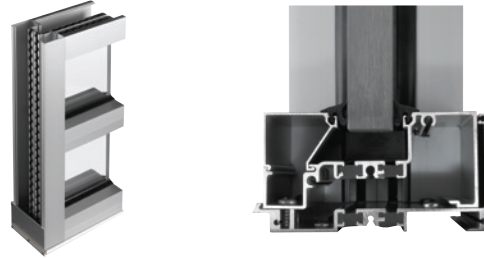
All systems can be flush glazed from either the inside or outside. The weatherseal option provides an alternative to SSG vertical mullions for Trifab™ VersaGlaze™ 450/451/451T. This ABS/ASA rigid polymer extrusion allows complete inside glazing and creates a flush glass appearance on the building exterior without the added labor of scaffolding or swing stages. Additionally, high-performance flashing options are engineered to eliminate perimeter sill fasteners and associated blind seals.

## FOR THE FINISHING TOUCH

Architectural Class I anodized aluminum and painted finishes in fluoropolymer (AAMA 2605) and solvent-free powder coatings (AAMA 2604) offer a variety of color choices.

## PERFORMANCE

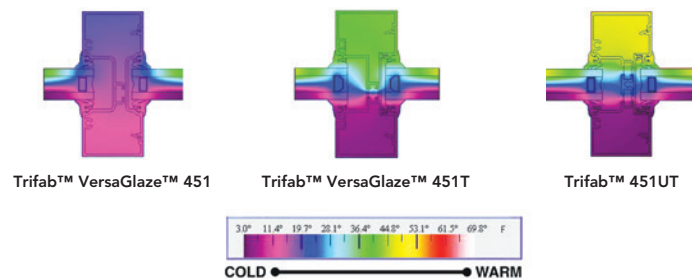
Kawneer's Isolock™ thermal break technology creates a composite section, prevents dry shrinkage and is available on Trifab™ VersaGlaze™ 451T. For even greater thermal performance, a dual Isolock™ thermal break is used on Trifab™ 451UT.



Trifab™ 451UT uses a dual Isolock™ thermal break (right) and features a new high-performance sill design, which incorporates a screw-applied end dam (left), ensuring positive engagement and tight joints between the sill flashing and end dam.

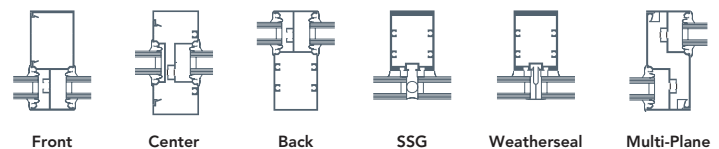
U-factor, CRF values and STC ratings for Trifab™ VersaGlaze™ vary depending upon the glass plane application. Project-specific U-factors can be determined for each individual project. (See the Kawneer Architectural Manual or Kawneer.com for additional information.)

Thermal simulations showing temperature variations from exterior/cold side to interior/warm side.



## PERFORMANCE TEST STANDARDS

Air Infiltration	ASTM E283
Water	AAMA 501, ASTM E331
Structural	ASTM E330
Thermal	AAMA 1503
Thermal Break	AAMA 505, AAMA TIR-A8
Acoustical	AAMA 1801, ASTM E1425



SECTION 084113 - ALUMINUM ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
  - 1. Exterior entrance systems.
  - 2. Interior entrance systems.
- B. Related sections include the following:
  - 1. Division 7 Section "Joint Sealants" for joint sealants installed as part of aluminum entrance and storefront systems.
  - 2. Division 8 Section "Glazing."

1.3 SYSTEM DESCRIPTION

- A. General: Provide aluminum entrance systems capable of withstanding loads and thermal and structural movement requirements indicated without failure, based on testing manufacturer's standard units in assemblies similar to those indicated for this Project. Failure includes the following:
  - 1. Air infiltration and water penetration exceeding specified limits.
  - 2. Framing members transferring stresses, including those caused by thermal and structural movement, to glazing units.
- B. Glazing: Physically and thermally isolate glazing from framing members.
- C. Wind Loads: Provide entrance systems, including anchorage, capable of withstanding wind-load design pressures calculated according to requirements of authorities having jurisdiction or the American Society of Civil Engineers' ASCE 7, "Minimum Design Loads for Buildings and Other Structures," 6.4.2, "Analytical Procedure," whichever are more stringent.
  - 1. Deflection of framing members in a direction normal to wall plane is limited to 1/175 of clear span or 3/4 inch, whichever is smaller, unless otherwise indicated.
  - 2. Static-Pressure Test Performance: Provide entrance and storefront systems that do not evidence material failures, structural distress, failure of operating components to function normally, or permanent deformation of main framing members exceeding 0.2 percent of clear span when tested according to ASTM E 330.
    - a. Test Pressure: 150 percent of inward and outward wind-load design pressures.
    - b. Duration: As required by design wind velocity; fastest 1 mile of wind for relevant exposure category.
- D. Dead Loads: Provide entrance system members that do not deflect an amount which will reduce glazing bite below 75 percent of design dimension when carrying full dead load.



1. Provide a minimum 1/8-inch clearance between members and top of glazing or other fixed part immediately below.
  - E. Live Loads: Provide entrance systems, including anchorage, that accommodate the supporting structures' deflection from uniformly distributed and concentrated live loads indicated without failure of materials or permanent deformation.
  - F. Air Infiltration: Provide entrance systems with permanent resistance to air leakage through fixed glazing and frame areas of not more than 0.06 cfm/sq. ft. of fixed wall area when tested according to ASTM E 283 at a static-air-pressure difference of 1.57 lbf/sq. ft. .
  - G. Water Penetration: Provide entrance systems that do not evidence water leakage through fixed glazing and frame areas when tested according to ASTM E 331 at minimum differential pressure of 20 percent of inward-acting wind-load design pressure as defined by ASCE 7, "Minimum Design Loads for Buildings and Other Structures," but not less than 12.0 lbf/sq. ft. . Water leakage is defined as follows:
    1. Uncontrolled water infiltrating systems or appearing on systems' normally exposed interior surfaces from sources other than condensation. Water controlled by flashing and gutters that is drained back to the exterior and cannot damage adjacent materials or finishes is not water leakage.
    2. Provide field test of water penetration as follows:
  - H. Water Penetration under Dynamic Pressure: Provide aluminum-framed systems that do not evidence water leakage through fixed glazing and framing areas when tested according to AAMA 501.1 under dynamic pressure equal to 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft..
    1. Maximum Water Leakage: According to AAMA 501.1. Water leakage does not include water controlled by flashing and gutters that is drained to exterior and water that cannot damage adjacent materials or finishes.
  - I. Thermal Movements: Provide entrance systems, including anchorage, that accommodate thermal movements of systems and supporting elements resulting from the following maximum change (range) in ambient and surface temperatures without buckling, damaging stresses on glazing, failure of joint sealants, damaging loads on fasteners, failure of doors or other operating units to function properly, and other detrimental effects.
    1. Temperature Change (Range): 120 deg F , ambient; 180 deg F , material surfaces.
  - J. Structural-Support Movement: Provide entrance systems that accommodate structural movements including, but not limited to, sway and deflection.
  - M. Dimensional Tolerances: Provide entrance and storefront systems that accommodate dimensional tolerances of building frame and other adjacent construction.
- 1.4 SUBMITTALS
- A. Product Data: For each product specified. Include details of construction relative to materials, dimensions of individual components, profiles, and finishes.
  - B. Shop Drawings: For entrance systems. Show details of fabrication and installation, including plans, elevations, sections, details of components, provisions for expansion and contraction, and

attachments to other work.

1. For entrance systems, include hardware schedule and indicate operating hardware types, quantities, and locations.
- C. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors available for units with factory-applied color finishes.
- D. Samples for Verification: Of each type of exposed finish required in manufacturer's standard sizes. Where finishes involve normal color and texture variations, include Sample sets showing the full range of variations expected.
- E. Cutaway Sample: Of each vertical-to-horizontal framing intersection of systems, made from minimum 6-inch lengths of full-size components and showing details of the following:
  1. Joinery.
  2. Anchorage.
  4. Glazing.
- F. Installer Certificates: Signed by manufacturer certifying that installers comply with specified requirements.
- G. Product Test Reports: Based on evaluation of tests performed by manufacturer and witnessed by a qualified independent testing agency, indicate compliance of entrance and storefront systems with requirements based on comprehensive testing of current systems.

## 1.5 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of entrance and storefront system through one source from a single manufacturer.

## 1.6 WARRANTY

- A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.
- B. Special Warranty: Submit a written warranty executed by the manufacturer agreeing to repair or replace components of entrance systems that fail in materials or workmanship within the specified warranty period. Failures include, but are not limited to, the following:
  1. Structural failures including, but not limited to, excessive deflection.
  2. Adhesive sealant failures.
  3. Cohesive sealant failures.
  4. Failure of system to meet performance requirements.
  5. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
  6. Failure of operating components to function normally.
  7. Water leakage through fixed glazing and frame areas.
- C. Warranty Period: 2 years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
  - a. EFCO Corporation.
  - b. Kawneer North America, an Arconic company.
  - c. Tubelite Inc.
  - d. U.S. Aluminum; a brand of C.R. Laurence.
  - e. YKK AP America Inc
  - f. Oldcastle Architectural Products
- B. BOD: Basis of design- Kawneer.
  - a. Storefront Systems: 2 by 4 1/2 inch; can accommodate 1inch glazing thickness.
  - b. TRIFAB VersaGlaze 451 Screw Spline (Center Glazed)
    - i. Provide expansion mullions as required
    - ii. Provide corner mullions as required
    - iii. Provide head receptor 451VG570/572
    - iv. Provide high performance sill 452-HP-126 (at all exterior wall conditions).
    - v. Provide Heavy Wall 500-Wide Stile doors with 10" Bottom Rails, Typical.

## 2.2 MATERIALS

- A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated, complying with the requirements of standards indicated below.
  - 1. Sheet and Plate: ASTM B 209.
  - 2. Extruded Bars, Rods, Shapes, and Tubes: ASTM B 221.
  - 3. Extruded Structural Pipe and Tubes: ASTM B 429.
  - 4. Bars, Rods, and Wire: ASTM B 211.
  - 5. Welding Rods and Bare Electrodes: AWS A5.10.
- B. Steel Reinforcement: Complying with ASTM A 36 for structural shapes, plates, and bars; ASTM A 611 for cold-rolled sheet and strip; or ASTM A 570 for hot-rolled sheet and strip.
- C. Glazing as specified in Division 8 Section "Glazing."
- D. Glazing Gaskets: Manufacturer's standard pressure-glazing system of black, resilient glazing gaskets, setting blocks, and shims or spacers, fabricated from an elastomer of type and in hardness recommended by system and gasket manufacturer to comply with system performance requirements. Provide gasket assemblies that have corners sealed with sealant recommended by gasket manufacturer.
- E. Spacers, Setting Blocks, Gaskets, and Bond Breakers: Manufacturer's standard permanent, nonmigrating types in hardness recommended by manufacturer, compatible with sealants, and suitable for system performance requirements.
- G. Framing system gaskets, sealants, and joint fillers as recommended by manufacturer for joint type.

## 2.3 COMPONENTS

- A. Doors: Provide manufacturer's extra heavy duty 2-inch- thick glazed doors with minimum 3/16-inch-thick, extruded tubular rail and stile members. Mechanically fasten corners with



reinforcing brackets that are deep penetration and fillet welded or that incorporate concealed tie-rods. Kawneer Heavy Wall 500 (Wide Stile).

1. Glazing Stops and Gaskets: Provide manufacturer's standard snap-on extruded-aluminum glazing stops and preformed gaskets.
  2. Stile Design: 5"-inch minimum width, vertical stiles and top and intermediate rail
  3. Bottom Rail: **10** inch minimum width.
  4. Exterior entrances shall have 1" insulating glazing units. Provide manufacturer's standard snap-on extruded-aluminum glazing stops for use with 1" glazing units for exterior entrances.
  5. Interior entrances shall have ¼" single glazing. Provide manufacturer's standard snap-on extruded-aluminum glazing stops for use with ¼" glazing units for interior entrances.
- B. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, Stainless steel fasteners and accessories compatible with adjacent materials.
1. Reinforce members as required to retain fastener threads.
  2. Do not use exposed fasteners, except for hardware application. For hardware application, use countersunk Phillips flat-head machine screws finished to match framing members or hardware being fastened, unless otherwise indicated.
- C. Concealed Flashing: Refer to project details. Provide products complying with drawings that meet requirements of Sections specified herein.
- D. Weather Stripping: Manufacturer's standard replaceable weather stripping as follows:
1. Compression Weather Stripping: Molded neoprene complying with ASTM D 2000 requirements or molded PVC complying with ASTM D 2287 requirements.
  2. Sliding Weather Stripping: Wool, polypropylene, or nylon woven pile with nylon-fabric or aluminum-strip backing complying with AAMA 701 requirements.

## 2.4 HARDWARE

- A. General: Provide heavy-duty hardware units indicated in sizes, number, and type recommended by manufacturer for entrances indicated. Finish exposed parts to match door finish, unless otherwise indicated.
- a. Refer to the hardware schedule for door hardware
  - b. If none is indicated provide:
    - i. Continuous Gear Hinges: Manufacturer's standard, continuous, aluminum gear hinges.
    - ii. Closers, General: Refer to Division 8 "Door Hardware".
    - iii. Door Stops: ANSI/BHMA A156.16, Grade 1, floor- or wall-mounted door stop, as appropriate for door location indicated, with integral rubber bumper.
    - iv. Cylinders: As specified in Division 8 Section "Door Hardware."
    - v. Thumb Turns: Manufacturer's standard cast-aluminum-alloy, inside thumb-turn cylinders.
    - vi. Cylinder Guard: Manufacturer's standard hardened-steel security ring with retainer plate for inside stile wall that protects lock cylinder from removal by wrenches, prying, or sawing.
    - vii. Pull Handles: As selected by Architect from manufacturer's full range of pull handles and plates.
    - viii. Push Bars: As selected by Architect from manufacturer's full range of full-door-

width, single-bar push bars.

- ix. Thresholds: At exterior doors, provide manufacturer's standard bumper type threshold with cutouts coordinated for operating hardware, with anchors and jamb clips, and not more than 1/2-inch-high, with beveled edges providing a floor level change with a slope complying with TAS accessibility requirements, and in the following material:
  - 1. Material: Aluminum, mill finish.
- x. Weather Sweeps: Manufacturer's rubber weather sweep for application to exterior door bottoms and with concealed fasteners on mounting strips.
- xi. Provide Panic Devices with removable cylinder keyed dogging.
- xii. Provide center removable astragal mullion at pairs.

## 2.5 FABRICATION

- A. Forming: Form shapes with sharp profiles, straight and free of defects or deformations, before finishing.
- B. Prepare components to receive concealed fasteners and anchor and connection devices.
- C. Fabricate components to drain water passing joints and condensation and moisture occurring or migrating within the system to the exterior.
- D. Include setting blocks, water diverters, anti-walk blocks as required by manufacturer's installation instructions.
- E. Welding: Weld components to comply with referenced AWS standard. Weld before finishing components to greatest extent possible. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.
- F. Glazing Channels: Provide minimum clearances for thickness and type of glass indicated according to FGMA's "Glazing Manual."
- G. Metal Protection: Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.
- H. Entrances: Fabricate door framing in profiles indicated. Reinforce as required to support imposed loads. Factory assemble door and frame units and factory install hardware to greatest extent possible. Reinforce door and frame units as required for installing hardware indicated. Cut, drill, and tap for factory-installed hardware before finishing components.
  - 1. Exterior Doors: Provide compression weather stripping at fixed stops. At other locations, provide sliding weather stripping retained in adjustable strip mortised into door edge.

## 2.6 ALUMINUM FINISHES

- A. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations relative to applying and designating finishes.
- B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are

acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

- C. Finish designations prefixed by AA conform to the system established by the Aluminum Association for designating aluminum finishes.
- D. High-Performance Organic Finish: Two-coat fluoropolymer finish complying with AAMA 2604 and containing not less than 50 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
  - 1. Color and Gloss: As selected by Architect from manufacturer's full range to include metallic finishes.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of entrance and storefront systems. Do not proceed with installation until unsatisfactory conditions have been corrected.

#### 3.2 INSTALLATION

- A. General: Comply with manufacturer's written instructions for protecting, handling, and installing entrance systems. Do not install damaged components. Fit frame joints to produce hairline joints free of burrs and distortion. Rigidly secure nonmovement joints. Seal joints watertight.
- B. Metal Protection: Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.
- C. Install components to drain water passing joints and condensation and moisture occurring or migrating within the system to the exterior.
- D. Install framing components plumb and true in alignment with established lines and grades without warp or rack of framing members.
- E. Install entrances plumb and true in alignment with established lines and grades without warp or rack. Lubricate operating hardware and other moving parts according to hardware manufacturers' written instructions.
  - 1. Install surface-mounted hardware according to manufacturer's written instructions using concealed fasteners to greatest extent possible.
- F. Install glazing to comply with requirements of Division 8 Section "Glazing," unless otherwise indicated.



- J. Erection Tolerances: Install entrance and storefront systems to comply with the following maximum tolerances:
  - 1. Variation from Plane: Limit variation from plane or location shown to 1/8 inch in 12 feet ; 1/4 inch over total length.
  - 2. Alignment: Where surfaces abut in line, limit offset from true alignment to 1/16 inch . Where surfaces meet at corners, limit offset from true alignment to 1/32 inch .
  - 3. Diagonal Measurements: Limit difference between diagonal measurements to 1/8 inch .

### 3.3 FIELD QUALITY CONTROL

- E. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- F. Test Area: Perform tests on representative areas of Aluminum Entrances and Storefronts.
- G. Field Quality-Control Testing: Perform the following test on representative areas of Aluminum Entrances and Storefronts.
  - 1. Water-Spray Test: Before installation of interior finishes has begun, areas designated by Architect shall be tested according to AAMA 501.2 and shall not evidence water penetration.
    - a. Perform a minimum of two tests in areas as directed by Architect.
  - 2. Air Infiltration: ASTM E 783 at 1.5 times the rate specified for laboratory testing in "Performance Requirements" Article but not more than 0.09 cfm/sq. ft. at a static-air-pressure differential of 1.57 lbf/sq. ft.
    - a. Perform tests in each test area as directed by Architect. Perform at least three tests, prior to 10, 35, and 70 percent completion.
  - 3. Water Penetration: ASTM E 1105 at a minimum uniform static-air-pressure differential of 0.67 times the static-air-pressure differential specified for laboratory testing in "Performance Requirements" Article, but not less than 6.24 lbf/sq. ft., and shall not evidence water penetration.
- H. Prepare test and inspection reports.

### 3.4 ADJUSTING AND CLEANING

- A. Adjust doors and hardware to provide tight fit at contact points and weather stripping, smooth operation, and weather tight closure.
- B. Remove excess sealant and glazing compounds, and dirt from surfaces.

### 3.5 PROTECTION

- A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and installer that ensure entrance and storefront systems are without damage or deterioration at the time of Substantial Completion.

END OF SECTION 08410