

# Guide Specifications

## Metl-Span<sup>®</sup> Architectural Wall Panel with Metl-Vision<sup>®</sup> Integrated Windows For Architectural Market

### PART 1 – GENERAL

#### 1.1 Work Included

- A. Pre-insulated architectural metal panel cladding where indicated on the drawings. Also included are all necessary trims, fasteners, sealants and gaskets as required for a weathertight installation. Panels shall be secured to the structure with concealed clips and fasteners in the sidejoints.
  - 1. Steel faced factory foamed-in-place flat panels with integral reveals with compatible joinery. Panels shall be designed for installation in a horizontal orientation.
  - 2. Integrated Window System for horizontally oriented panels.
  - 3. Extruded aluminum trim related to the walls and its intersection with adjacent materials.
  - 4. Sealants and gaskets between panels, windows and their intersections.

#### 1.2 Related Section

- A. Section 07 62 00 (previously 07620) – Sheet Metal Flashing and Trim
- B. Section 07 92 00 (previously 07920) – Joint Sealants
- C. Section 08 80 00 (previously 08800) – Glass and glazing related to the window system

#### 1.3 References

- A. AAMA 501.1 – Standard Test Method for Exterior Windows, Curtain Walls and Doors for Water Penetration Using Dynamic Pressure.
- B. ASTM A 653 – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.
- C. ASTM A 792 – Standard Specification for Steel Sheet, Aluminum-Zinc Alloy Coated Steel by the Hot-Dip Process.
- D. ASTM C 518 – Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
- E. ASTM E 72 – Standard Test Methods of Conducting Strength Tests of Panels for Building Construction
- F. ASTM E 84 – Standard Test Method for Surface Burning Characteristics of Building Materials.
- G. ASTM E 283 – Standard Method for Determining the Rate of Air Leakage Through Exterior Window, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

- H. ASTM E 330 – Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.
- I. ASTM E 331 – Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Wall by Uniform Static Air Pressure Difference.
- J. CAN/ULC S102 – Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

#### **1.4 Performance Requirements**

##### **A. Structural and Wind load Tests:**

1. The design load/deflection criteria shall be verified from tests per ASTM E 72 “Air Bag Method” using 20 psf (.96 kPa) simulated wind loads. A deflection limit of L/180 shall apply to wall panels.
2. The design load/deflection criteria for the multiple lite window system shall be verified from test per ASTM E 330-02. At 30 psf positive & negative air pressures, the window assembly deflection shall not exceed L/175. At 45 psf positive & negative air pressures, permanent set of the window assembly shall not exceed 2%.

##### **B. Thermal Performance:**

1. Testing in accordance with ASTM C 518, “measurement of steady state thermal transmission”, the panels shall provide a K-factor of .140 btu/sf/hr/deg. F at 75° F. (24° C) mean temperature (air films are not included).

##### **C. Vapor Barrier:**

1. Air Infiltration: Air infiltration shall not exceed .06 cfm per square foot of wall area when tested per ASTM E 283 at a static pressure of 12.0 psf (.576 kPa). Multiple lite windows shall not exceed 0.05 cfm/ft<sup>2</sup> when tested per ASTM E-283 at a static pressure of 6.24 psf.
2. Static Water Penetration: There shall be no uncontrolled water penetration through the panel joints at a static pressure of 20.0 psf (.96 kPa) when tested per ASTM E 331. There shall be no uncontrolled water penetration through the multiple lite windows at a static pressure of 12.0 psf when tested per ASTM E-331.
3. Dynamic Water Penetration: There shall be no uncontrolled water penetration through the panel joints when subjected to a 95 mph (153 kph) slipstream airflow and application of water for a 15 minute period in accordance with AAMA 501.1.

##### **D. Fire:**

1. Surface Burning Characteristics: The insulated core shall be tested in accordance with ASTM E 84 and CAN/ULC S102 for surface burning characteristics. The core shall have a maximum flame spread of 25 and a maximum smoke developed rating of 450.
2. Factory Mutual Research Corporation (FMRC) Standard 4880, 50’ (15.24 m) High Corner Test for Unlimited Height Structures: The panel assembly shall not support a self-propagating fire which reaches any of the limits of the 50’ (15.24 m) high corner test structure as evidenced by flaming or material damage of the ceiling of the assembly. Note: Approval is applicable to structures of unlimited height.

3. Factory Mutual Research Corporation (FMRC) Standard 4881, Standard for Class 1 Exterior Wall Systems.
- E. Bond Strength:
1. Fatigue Test: The panel shall withstand deflection cycling at L/180 to two (2) million alternate cycles with no evidence of delamination, core cracking or permanent bowing.
  2. Freeze/Heat Cycling: The panel shall exhibit no delamination, surface blistering or permanent bowing when subjected to cyclic temperature extremes of -20° F (-28° C) to +180° F (+82° C) for twenty-one (21) eight hour cycles.
  3. Humidity Test: The panel shall exhibit no delamination or metal corrosion at interface when subjected to a +140° F (+60° C) temperature and 100% relative humidity for a total of 1200 hours.
  4. Autoclave Test: The panel shall exhibit no delamination of the foam core from metal skins when exposed to 2 psi (.122 kg/sq. cm) pressure at a temperature of +212° F (+100° C) for a total of 2½ hours.

## 1.5 Quality Assurance

- A. **Installer Qualifications:** Installed by a contractor with a minimum of five (5) years' experience with this type of construction, and documentation indicating successful completion of contracts for projects of similar size, scope and materials.
- B. **Manufacturer's Qualifications:** The manufacturer shall have a minimum of ten (10) years' experience in production of factory foamed-in-place insulated metal panels.

## 1.6 Submittals

- A. Submit under provisions of Section 01 33 00 (previously 01300).
- B. Manufacturer's data sheets on each product to be used, including:
  1. Preparation instructions and recommendations.
  2. Storage and handling requirements and recommendations.
  3. Material type, metal thickness and finish.
  4. Installation methods.
- C. Shop Drawings: Including elevations, fastening patterns, sections of each condition and details as required.
- D. Selection Samples: For each finish product specified, two (2) complete sets of color chips representing manufacturer's full range of available colors and patterns.
- E. Panel Sample: Submit 1' (305 mm) high by full width sample panel for each profile specified indicating the metal, texture and finish.
- F. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

## 1.7 Substitutions

- A. Materials, accessories and testing specified shall establish the minimum level of quality, performance, dimension and appearance required of any substitution.
- B. No substitution will be considered unless a written request to the specifying architect is received for approval at least ten (10) days prior to the established bid date. Evidence

shall be submitted to demonstrate equivalency to the products and performance levels specified. Laminated panels shall not be considered acceptable substitutes for the specified foamed-in-place panels.

1. A complete description of the substitution including details referenced to the wall and windows shown on the contract drawings.
  2. Independent test reports verifying compliance with specified performance requirements.
  3. A detailed listing of each specification item with which the substitution does not fully comply.
- C. The manufacturer or wall panel contractor proposing the substitution shall pay the costs of any other subcontractor affected by the proposed substitution.

## **1.8 Warranty**

- A. Submit manufacturer's written two (2) year limited warranty providing panels to be free from defects in materials and workmanship, beginning from the date of substantial completion excluding coil coatings (paint finishes) that are covered under a separate warranty.
- B. The installation contractor shall issue a separate one (1) year warranty against defects in installed materials and workmanship, beginning from the date of substantial completion of the installation.

## **PART 2 – PRODUCTS**

### **2.1 Acceptable Manufacturer:**

- A. Metl-Vision<sup>®</sup> Integrated Windows as manufactured by Metl-Span of Lewisville, TX, 75057, USA, Phone: (972) 221-6656, Fax: (972) 420-9382, Email: [panel@metlspan.com](mailto:panel@metlspan.com)  
Website: [www.metlspan.com](http://www.metlspan.com).

### **2.2 Panel Design**

- A. Panel – General Requirements: Metl-Span CF Architectural with Metl-Vision Integrated Windows – Roll-formed exterior and interior steel sheet faces chemically bonded to continuously foamed-in-place polyurethane core; laminated panels are not acceptable.
  1. Exterior Faces: G-90 galvanized stucco embossed painted steel, minimum Grade 33 and/or AZ-50 Aluminum-Zinc stucco embossed painted steel, minimum Grade 33 in 22ga (0.0312").
  2. Interior Faces: G-90 galvanized unembossed painted steel, minimum Grade 33 and/or AZ-50 Aluminum-Zinc unembossed painted steel, minimum Grade 33 in 26ga (0.0187"), 24ga (0.0250"), 22ga (0.0312"), unless otherwise indicated.
  3. Longitudinal Joint Sealants: Field applied.
  4. Foam Core: Non-CFC, Class I, polyurethane.
  5. Exterior Finish: Exterior face sheet shall be treated with a nominal 0.2 mil (5 microns) base primer, followed by a nominal 0.7 mil (17.5 microns) finish coat of full strength PVF2 fluoropolymer in manufacturer's standard colors.

Note: Thick mil coatings for aggressive environments are available at extra cost. Siliconized Polyester is also available. Consult the factory for complete information.

6. Interior Finish: The interior face sheet shall be a nominal 0.2 mil (5 microns) primer followed by a nominal 0.7 (17.5 microns) polyester coating in USDA compliant Igloo White.
- B. Metl-Span CF Architectural Wall Panel: Concealed fastener wall panels with offset double tongue and groove joinery and an extended metal shelf allowing fasteners to penetrate both metal faces with clips concealed in the sidejoint.
1. Exterior Face Profile: Flat, stucco embossed.
  2. Interior Face Profile: Light Mesa Wave Pattern, 1/16" deep
  3. Module Width: 24" (CF24A), 30" (CF30A), or 36" (CF36A) in horizontal application.
  4. Thickness: 2" & 3".
  5. Joint Reveal: 1/2" horizontal joint reveal.
  6. Trimless ends shall be provided at panel ends.
- C. Foam core shall be continuously foamed-in-place, Non-CFC polyurethane.
- D. Flashing and trim shall be brake-formed sheet metal in the same thickness and finish to match the panels.
- E. Manufacturer's standard extruded aluminum trim painted to match the panel is available.

## 2.3 Integrated Window Design

- A. Window Frame
1. Each window unit consists of a perimeter frame made of extruded aluminum head, sill and jamb members. For multiple lite windows, the individual lites are divided by extruded aluminum mutins.
  2. Joined by flush butting and concealed shear blocks to assure the rigidity of the window frame.
  3. Designed with glazing pockets, gasket keepers and snap covers for the installation of standard 1" thick glazing material. The window frame is designed for the glazing to be installed from the interior.
  4. Designed with integral elastomeric thermal breaks to minimize thermal conductance.
  5. Designed with fully sealed joints, head and sill end dams and weep drainage provisions to assure weathertight performance.
- B. Frame Finish
1. Anodized – clear, dark bronze or black color
  2. (2) two Coat Painted – custom color (primer & Kynar color coat)
  3. (3) three Coat Painted – custom color (primer, Kynar color coat & clear coat)
  4. Mill Finish – bare aluminum
- C. Window Size Limitations
1. Window height is of increments of the wall panel widths. Standard CF Architectural Wall Panel widths are 24", 30" & 36".
  2. Recommended that window jambs are located a minimum of 12" from the vertical wall joints and a minimum of 6" from intermediate support member because of

wall support member interference. Do not extend across a wall panel vertical joint or an intermediate vertical wall support.

3. Maximum window height, width and mutin spacing are determined by the load/span capability of the window support framing. Reference the Design Data section of the technical bulletin for specific window frame design requirements.
4. Maximum lite height and width is determined by the load/span and deflection capability of the glazing material. Refer to the glazing material manufacturer's specifications and instructions for the specific glazing design requirements.

#### D. Window to Wall Assembly

1. Window frame is 4" deep, and is designed to fit flush with the exterior face of the wall panels.
2. Window frame is designed to interlock into the edges of the wall panels above and below the window at the head and sill.
3. The frame is designed for the application of the wall panel's vertical joint gasket between the window's jamb member and the end fold on the adjacent wall panel (side panel).
4. The window assembly is designed to be supported by interior mounted support framing (not by Metl-Span) and is designed to be installed in sequence with the wall panel installation.

#### E. Wall Panel Requirements

1. The window frame is designed for installation with 2" & 3" CF horizontal wall panels.
2. Side panels shall be factory cut and end folded. The minimum length of wall panels with end folds is 12".
3. The window frame is designed for installation with wall panels that have a horizontal joint reveal of 1/2".

#### F. Window Assembly Options

1. "Factory Assembled" – The window frame components are factory fabricated and factory assembled for field installation.
2. "Component Order" – The window frame components are shipped in stock length for field fabrication and field assembly prior to installation.
3. "Factory Engineered" – The window frame components are factory fabricated and shipped to the job site for field assembly prior to installation into the wall assembly.
4. Submittal drawings and installation drawings will be available for the "Factory Assembled" and "Factory Engineered" window options.
5. A window assembly manual will be provided for the "Factory Engineered" and "Components Order" window options.

#### G. Support Framing

1. The window's perimeter frame members (head, sill and jambs) and the perimeter of the wall panel opening is supported by the window's support framing. The support framing design and material is not by Metl-Span.
2. The window's support framing must be capable of supporting the window assembly without exceeding a deflection of  $L/175$  or  $3/4$ ", whichever is less. Refer to the project's specifications and code requirements for the applicable safety factor.

#### H. Window Mutins

1. The horizontal and vertical mutins (meeting rails) are not directly supported by the window's support framing on multiple lite windows. When subjected to the project's design load, deflection of the window mutins must not exceed  $L/175$  or  $\frac{3}{4}$ ", whichever is less.

Note: For specific window applications, a structural analysis will be required to determine the maximum allowable mutin spans.

### **PART 3 – EXECUTION**

#### **3.1 Examination**

- A. Panel installer shall examine all structural steel before beginning installation to insure that all supporting members are straight, level, plumb and satisfactory for panel installation.
  1. 0 to 1/4" outward of the actual wall framing plane for members at 10' or greater spacing.
  2. 0 to 1/8" outward of the actual wall framing plane for members at 5' to 10' spacing.
  3. 0 to 1/16" outward of the actual wall framing plane for members at less than 5' spacing.
- B. Do not begin installation until unsatisfactory conditions are corrected.
- C. Beginning of installation shall signify the structure and adjacent conditions as being proper and acceptable.
- D. Intermediate framing member (secondary structural supports) alignment tolerances required, as specified below:

#### **3.2 Delivery, Storage and Handling**

- A. Protect products of metal roof panel system during shipping, handling, and storage to prevent staining, denting, deterioration of components or other damage.
- B. Deliver, unload, store, and erect insulated metal wall panels and accessory items without misshaping panels or exposing panels to surface damage from weather or construction operations.
- C. Store in accordance with Manufacturer's written instruction.
- D. Shield foam insulated metal wall panels from direct sunlight until installation.
- E. Store products off the ground, with panels sloped for drainage and covered to protect factory finishes from damage. Stack bundles no more than two (2) high.

#### **3.3 Installation**

- A. Installation of panels shall be made in accordance with manufacturer's recommended procedures, approved shop drawings, installation guide book and manufacturer's handbook of construction details.

- B. Flashing and trim shall be installed true and in proper alignment. Sealant shall be installed where indicated, without skips and voids, to insure weather tightness and integrity of the vapor barrier.

**Note to Specifier:** The use of touch-up paint is not recommended for minor surface scratches. However, it is recommended to always use touch-up paint if the scratch goes to bare metal. When using touch-up paint, it should be limited to small areas. Touch-up paint will never match coil-coated finishes' longevity, color and gloss.

### **3.4 Damaged Material**

- A. Replace damaged panels and other components of work that cannot be repaired by finish touch-up or similar minor repair.
- B. The panel installer shall inspect and approve each completed wall area and shall be responsible for protection of completed work from damage by other trades.

### **3.5 Cleaning**

- A. Replace damaged panels and other components of work, which cannot be repaired by finish touch-up or similar minor repair.
- B. Wipe finished surfaces clean of any filings caused by drilling or cutting to prevent rust staining.
- C. Protective film on trim should be removed before exposure to sunlight.

*All specifications and designs are subject to change without notice.*