

# Architectural Roof and Wall Products Guide Specifications

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## FORMED METAL ROOF AND WALL PANELS

This Guide Specification is to be used to develop an office master specification for a project. In either case, this Guide Specification must be edited to fit the conditions of use. Particular attention should be given to the deletion of inapplicable provisions. Include necessary items related to a particular project. Include appropriate requirements where blank spaces have been provided.

### PART 1 – GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and other contract documents, listed in the agreement between the Owner and Contractor, apply to this section.

#### 1.2 SUMMARY

- A. Section includes:

- 1. Preformed metal wall panels.
- 2. Preformed metal roof panels.

#### 1.3 ADMINISTRATIVE REQUIREMENTS

- A. Pre-installation Conference: Conduct conference at project site.
- B. Coordination:
  - 1. Coordinate sizes and locations of roof curbs, equipment supports, and roof penetrations with actual equipment provided.
  - 2. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leak proof, secure, and noncorrosive installation.

#### 1.4 SUBMITTALS

A. Product Data:

1. Include construction details, material descriptions, dimensions of individual components and profiles and finishes for each type of panel and accessory.

B. 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, accessories and special details.
2. Accessories: Include details of the flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches.

C. Samples:

1. Metal Panels: 12 inches long by actual panel width. Include fasteners, closures, and other metal panel accessories.

D. Qualification Data: For Installer.

E. Product Test Reports: For each product, for tests performed by a qualified testing agency.

F. Filed quality – control reports.

G. Sample Warranties: For special warranties.

#### 1.5 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who have a minimum of 3 years' experience in the installation of metal roof / wall panels.

B. Mockups: Build mockup; to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.

#### 1.6 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. Store 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 weather tight 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. Retain strippable protective covering on metal panels during installation.

## 1.7 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.

## 1.8 WARRANTY

### A. MANUFACTURER'S PRODUCT WARRANTY

- 1. Manufacturer's standard coating performance warranty, as available for specified installation and environmental conditions. (Contact a WSMR Representative to determine actual warranty criteria)

### B. CONTRACTORS WARRANTY

- 1. Warrant panels, flashings, sealants, fasteners, and accessories against defective materials and/ or workmanship, to remain watertight and weatherproof with normal usage for two (2) years following Project Substantial Completion date.

## PART 2 – PRODUCTS

### 2.1 MANUFACTURER

- A. Western States Decking, Inc., DBA - Western States Metal Roofing, 901 W. Watkins St., Phoenix, AZ 85007; Phone: (877) 787-5467; Fax: (602) 261-7726

Email: [sales@varicoolroofing.com](mailto:sales@varicoolroofing.com)

Website: [www.varicoolroofing.com](http://www.varicoolroofing.com)

- B. Substitutions: In accordance with contract documents.

### 2.2 METAL ROOF PANELS

- A. PBR Panel; Exposed Fastener Metal Panels: metal panel consisting of formed metal sheet with trapezoidal major ribs with intermediate stiffening ribs symmetrically placed between major ribs, installed by lapping edges of adjacent panels.

- 1. Metal Panel Designation: PBR Panel
- 2. Metallic- Coated Steel Sheet: Aluminum- zinc alloy- coated steel sheet minimum (Zincalume® or Galvalume®) complying with ASTM A 792/ A 792M, Class AZ50 coating designation; structural quality.

- a. Nominal Thickness: [24 Gauge]
- b. Exterior Finish Available In: Cool Tech ® 500 PVDF Paint System

- i. Vari-Cool ® - Kaleidoscope ®

3. Grade of Steel:
  - a. 24 Gauge – Grade 50

4. Major- Rib Spacing: 12 inches on center
5. Panel Coverage: 36 inches
6. Panel Height: 1.25 inches

## 2.3 ACCESSORIES

- A. Self-Adhering, High- Temperature Underlayment: Provide self-adhering, cold applied, sheet underlayment, a minimum of 30 mils thick, specifically designed to withstand high metal temperatures beneath metal roofing. Provide primer when recommended by underlayment manufacturer.
  1. Thermal Stability: Stable after testing at 220 deg F; ASTM D 1970.
  2. Low- Temperature Flexibility: Passes after testing at minus 20 deg F; ASTM D 1970.
- B. Miscellaneous Metal Sub framing and Furring: ASTM C 645; cold formed, metallic- coated steel sheet, ASTM A 653/ A 653M, G90 coating designation or ASTM A 792/ A 792M, Class AZ55 aluminum- zinc alloy coating designation unless otherwise indicated. Provide manufacture's standard sections as required for support and alignment of metal panel system.
- C. Panel accessories: Provide components required for a complete, weather tight panel system including trim, 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 ridges, 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 cross linked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1 -inch-thick, flexible closure strips; cut or pre-molded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weather tight construction.
- D. 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. Finish flashing and trim with same finish systems adjacent metal panels.
- E. Panel Fasteners: Self-tapping screws designed to withstand design loads. Provide EPDM or PVC sealing washers for exposed fasteners.
- F. Panel Sealants: Provide sealant type recommended by manufacturers that are compatible with panel materials, are non-staining and do not damage panel finish.
- G. Metal Protection: When dissimilar metals contact each other or corrosive substrates, protect against galvanic.

## 2.4 FABRICATION

- A. General: Fabricate and finish metal panels and accessories at the factory, by manufacturers 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 recommendation in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.

## 2.5 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 unacceptable. 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 Finish:
  - 1. Exterior Finish: "PPG Industries" Duranar ® Vari-Cool ® Coating: Premium Fluoropolymer (PVDF) Pearlescent coating system, consisting of a baked- on 0.2 mil Urethane primer, and a baked on 0.70 – 0.80 mil Duranar ® Vari-Cool ® topcoat. Total dry film thickness .09 – 1.0 mils.
  - 2. Interior Finish: Standard Polyester backer finish consisting of 0.15 – 0.25 primer coat and a 0.30 – 0.40 mil wash coat with a minimum total dryfilm thickness of 0.45 – 0.65 mil.

## PART 3- EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, area, 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 primary and secondary roof framing to verify that rafters, purlins, angles, channels, and other structural panel support members and anchorages have been installed within alignment tolerances required by metal roof panel manufacturer.
  - 2. Examine solid roof sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal roof panel manufacture.

- 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 sub framing, furring and other miscellaneous panel support members and anchorage according to ASTM C 754 and metal panel manufacturer's written recommendations.

### 3.3 UNDERLAYMENT INSTALLATION

- A. Self- Adhering Sheet Underlayment: Apply primer if required by manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation. Apply at locations indicated on Drawings, wrinkle free, in shingle fashion to shed water, and with end laps of not less than 6 inches staggered 24 inches between courses. Overlap side edges not less than 3- ½ inches. Roll laps with roller. Cover underlayment within 14 days.
- B. Felt Underlayment: Apply at locations indicated [below] [on drawings], in shingle fashion to shed water. And with lapped joints of not less than 2 inches.
  1. Apply over the entire roof surface.
  2. Apply on roof not covered by self- adhering sheet underlayment. Lap over edges of self- adhering sheet underlayment not less than 3 inches, in shingle fashion to shed water.
- C. Slip Sheet: Apply slip sheet over underlayment before installing metal roof panels.
- D. Flashings: Install flashings to cover underlayment to comply with requirements specified in Section 076200 “Sheet Metal Flashing and Trim.”

### 3.4 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 are 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 weather tight escutcheons for pipe—and conduit- penetrating panels.
- B. Fasteners:
1. Steel Panels: Use galvanized steel fasteners.
- C. Metal Protection: When dissimilar metals contact each other or corrosive substrates, protect against galvanic action.
- 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 weather tight 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 pans with weather closures at perimeter of all openings.
- E. Accessory Installation: install accessories with positive anchorage to building and weather tight 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.
- F. 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. 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 joint at a maximum of 10 feet with no joints allowed within 24 inches 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 deep, filled with mastic sealant (concealed within joints).

### 3.5 ERECTION TOLERANCES

- A. Installation Tolerances: Shim and align metal panel units within installed tolerance of ¼ inch in 20 feet on slope and location lines and within 1/8- inch offset of adjoining faces and of alignment of matching profiles.

### 3.6 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. Replace metal panels that have been damaged.

END OF SECTION