

DMI R-PANEL (WPRP) WALL PANEL AND ROOF PANEL SPECIFICATION

PART 1: GENERAL

1.01 SUMMARY

- A. Section includes: Prefinished, prefabricated, structural exposed fastener wall system and accessories.
- B. Related Sections
 - 1. Metal decking
 - 2. Rough carpentry, plywood, and underlayment
 - 3. Insulation
 - 4. Membrane roofing
 - 5. Flashing and sheet metal
 - 6. Joint sealers: sealants and caulk
 - 7. Structural framing.

1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM)
 - 1. ASTM A 653: Steel Sheet, Zinc-Coated by the Hot Dip Process
 - 2. ASTM A 792: Steel Sheet, Aluminum-Zinc Alloy Coated by the Hot Dip Process.
 - 3. ASTM B 209: Aluminum and Aluminum Alloy Sheet and Plate.
- B. Underwriters Laboratory
 - 1. UL Building Materials Directory
 - 2. Underwriters Laboratories Construction No. 169 for Uplift Test 580 Class 90 (steel panels).
- C. Sheet Metal and Air Condition Contractors National Association, Inc. (SMACNA)
 - 1. SMACNA Architectural Sheet Metal Manual, 2003 Edition.
- D. American Iron and Steel Institute (AISI)
 - 1. AISI Cold Formed Steel Design Manual
- E. Aluminum Association
 - 1. Aluminum Design Manual
- F. Metal Construction Association (MCA)
 - 1. Preformed Metal Wall Guidelines
- G. Code references
 - 1. ASCE-7, Minimum Loads for Buildings and Other Structures
 - 2. IBC International Building Code

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide factory formed, prefinished, lappable, exposed fastener, structural, ribbed wall system, that has been pretested and certified by manufacturer to comply with specified requirements under installed conditions.
 - 1. The metal siding system including required trim members shall meet the specified requirements for wind loads.
 - 2. The panel will have 1¼" high ribs at 12" o.c. The width of the crest shall be 1". The width of the valleys shall be 8 11/16". The panel will have two trapezoidal stiffening beads between the main ribs.
- B. Structural Requirements: Engineer panels for structural properties in accordance with latest edition of American Iron and Steel Institute's *Cold Formed Steel Design Manual* using "effective width" concept and Aluminum Association's *Aluminum Design Manual*.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's specifications, standard profile sheet, product data brochure and finish warranty.
- B. Shop Drawings: Shop drawings showing roof plan and wall elevations with layout of panels, screws, underlayment and sections of each flashing/trim condition shall be submitted for approval prior to fabrication. Drawings shall contain material type, metal thickness and finish. Drawings shall distinguish between factory and field fabrication.
- C. Samples:
 - 1. Submit sample 12" long x full width panel, showing proposed metal gauge, seam profile and specified finish.
 - 2. Submit manufacturers standard colors for Architect's selection.
- D. Certification: Submit manufacturer's certification that materials and finishes meet specification requirements.
- E. Test Reports: DMI Air and Water Infiltration Testing.
 - 1. ASTM-E283 Air Test
 - 2. ASTM-E331 Water Test

1.05 QUALITY ASSURANCE

- A. Panel manufacturer shall have a minimum of ten (10) years of experience in manufacturing exposed fastener roofing and siding panels in a permanent stationary indoor facility.
- B. Panel installer shall have a minimum of two (2) years experience in the installation of exposed fastener roofing and siding and show evidence of successful completion of at least three (3) projects of similar size, scope, and complexity.

1.06 DELIVERY, STORAGE, and HANDLING

- A. Panels and flashings shall be protected and properly packaged to protect against transportation damage in transit to the jobsite.
- B. Upon delivery, exercise care in unloading, stacking, moving, storing, and erecting panels and flashings to prevent twisting, bending, scratching, or denting.
- C. Store panels and flashings in a safe, dry environment under a waterproof covering to prevent water damage. Allow for adequate ventilation to prevent condensation. Panels and flashings with strippable film shall not be stored in direct sunlight.
- D. Upon installation immediately remove strippable film from panels and flashings. Protect panels and flashings from foot traffic and from all other trades.

1.07 PROJECT CONDITIONS

- A. Field dimensions shall be taken prior to fabrication to verify jobsite conditions.
- B. Maximum panel length is 45' (contact the factory for longer panels).

1.08 WARRANTIES

- A. Panel manufacturer shall provide a twenty (20) year warranty on the paint finish covering chalking, cracking, checking, chipping, blistering, peeling, flaking, and fading.
- B. Applicator shall furnish written warranty for a two (2) year period from date of substantial completion of building covering repairs required to maintain walls and flashings in watertight conditions.

Part 2 PRODUCTS

2.01 PRODUCT DESCRIPTION

- A. DMI R PANEL (WPRP) structural exposed fastener roof and wall system as manufactured by Dimensional Metals, Inc.
- B. The panel shall have a coverage of 36".
- C. Panels shall be directly fastened to the substrate.
- D. The panel shall have an overlapping sidelap feature utilizing a purlin bearing leg.

2.02 PRODUCT SUBSTITUTIONS

- A. Requests to use alternate systems shall be submitted in writing to the project designer at least ten (10) days prior to bid date. Request shall demonstrate proposed substitution meets or exceeds specified performance requirements. Certified statements, samples and descriptive data shall be included in this submittal request.
- B. Manufacturers listed in this section are prequalified manufacturers. Substitution of manufacturer's products for those specified shall not be allowed at anytime during construction.

2.03 MATERIALS AND FINISHES

- A. Panel materials.
 - 1. 24 or 22 gauge, Grade 50 (50 ksi yield strength) or 26 gauge, Grade 80 (80 ksi yield strength) structural steel with G90 (0.90 oz./ft.²) hot dipped galvanized coating, both conforming to ASTM A 653.
 - 2. 24 or 22 gauge, Grade 50 (50 ksi yield strength) or 26 ga., Grade 80 (80 ksi yield strength) structural steel with AZ50 (0.50 oz./ft.²) aluminum-zinc alloy coating, both conforming to ASTM A 792.
 - 3. 0.032, 3003-H14 or equivalent (17 ksi yield strength) aluminum alloy conforming to ASTM B 209.
- B. Texture: panels shall be smooth.
- C. Finish: Refer to manufacturer's standard color card to determine appropriate finish and color. All panels shall receive a factory-applied siliconized polyester or a Kynar[®] 500/Hylar[®] 5000* conforming to the following:
 - 1. Metal preparation: All metal shall have the surfaces carefully prepared for painting on a continuous process coil coating line by alkali cleaning, hot water rinsing, application of chemical conversion coating, cold water rinsing, sealing with an acid rinse, and thorough drying.
 - 2. Prime coating: A base coat of epoxy paint, specifically formulated to interact with the top-coat, shall be applied to the prepared surfaces by roll coating to a dry film thickness of 0.20 ± 0.05 mils. This prime coat shall be oven cured prior to application of finish coat.
 - 3. Exterior coating: A finish coating (see above) shall be applied over the primer by roll coating to a dry film thickness of 0.80 ± 0.05 mils for a total dry film thickness of 1.00 ± 0.10 mils. This finish coating shall be oven-cured.
 - 4. Interior coating: A washcoat shall be applied on the reverse side over the primer by roll coating to a dry film thickness of 0.30 ± 0.05 mils for a total dry film thickness of 0.50 ± 0.10 mils. The washcoat shall be oven-cured.
 - 5. Color: The color of the exterior finish shall be _____ as chosen from the manufacturer's standard color chart.
 - 6. Physical properties: The coating shall conform to the manufacturer's standard performance criteria as listed by certified test reports for fade, chalk, abrasion, humidity, adhesion, pollution resistance, and others as required and standard within the industry.

2.04 ACCESSORIES

A. Flashing and Trim

1. All flashing and trim shall be of the same material, gauge, finish, and color as the wall panels and fabricated in accordance with standard SMACNA procedure and details.
2. Fabricate gutters and downspouts in the same gauge, material, finish, and color as the wall panels.

B. Fasteners

1. All screws shall be aluminum, plated steel, or stainless steel. They shall have a combination steel and EPDM washer.
2. Screws for panel to girt/purlins shall be of the type and size #12-14 HWH and of sufficient length to penetrate the supporting member by 1". All fasteners shall be applied in accordance with the fastening schedule by manufacturer.
3. Screws for flashings and sidelaps shall be 1/4-14X7/8" HWH sheet metal stitch screws.

C. Caulking shall be a silicone where it is exposed and there is no thermal movement. All caulking or sealing shall be done in a neat manner with excess caulking or sealant removed from exposed surfaces.

D. Caulking shall be non-skinning, non-hardening gun grade butyl sealant or butyl sealant tape with a minimum thickness of " where it is concealed and where thermal movement must be accommodated. All caulking or sealing shall be done in a neat manner with excess caulking or sealant removed from exposed surfaces.

E. Closures shall be pre-molded polyethylene to match the profile of the DMI R Panel and shall be in lengths as supplied by the panel manufacturer.

F. Vapor Retarder:

1. Retarder with a permeance of 0.05 or less as determined by ASTM E 98.

2.05 RELATED MATERIALS

A. Refer to other sections listed in Related Sections paragraph for related materials.

2.06 FABRICATION

A. Panels are lappable. It is recommended that individual aluminum roof panels not exceed 16' in length and steel roof panels not exceed 32' in length for thermal movement reasons.

B. Panels shall be roll formed on a stationary industrial type rolling mill to gradually shape the sheet metal. Portable rollformers, rented or owned by the installer, are not acceptable.

C. Fabricate flashings from the same material as the wall system.

2.07 SOURCE QUALITY

A. Source Quality: obtain metal panels and accessories from a single manufacturer.

B. Fabrication tolerances

1. Rib height: $1\frac{1}{4}'' \pm 1/32''$.
2. Panel shearing length: $\pm 1/4''$ maximum.
3. Follow tolerances in MCA's Preformed Metal Wall Guidelines.

C. Tests and inspections

D. Verification of performance

PART 3 EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Compliance: Comply with manufacturer's product data, including product technical bulletins, product catalog installation instructions, and product cartons for installation.

3.02 EXAMINATION

- A. Installer shall:
 - 1. Inspect roof and wall substrate to verify that the layout complies with shop drawings and is smooth, even, sound, and free of depressions.
 - 2. Report variations and potential problems in writing to the architect.

3.03 INSTALLATION

- A. Conform to the standard set forth in the SMACNA architectural sheet metal manuals and the approved shop drawings detailed for the project.
- B. Install panels plumb, level, and straight with the ribs parallel, conforming to the design as indicated.
- C. Install panel system so it is watertight, without waves, warps, buckles or distortions, and allow for thermal movement considerations.
- D. Abrasive devices shall not be used to cut on or near roof or wall panel system.
- E. Apply sealant tape or caulking as necessary at flashing and panel joints to prevent water penetration.
- F. Remove any strippable film immediately upon exposure to direct sunlight.
- G. Vapor retarder: The joints, perimeter, and all openings shall be sealed per the manufacturer's instructions to provide a continuous vapor retarder.

3.04 CLEANING

- A. Dispose of excess materials and debris from jobsite.
- B. Remove filings, grease, stains, marks, or excess sealants from wall panel system to prevent staining.
- C. Protect work from damage from other trades until final acceptance.

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