

ML150

Guide Specification

This specification is a guide recommendation for many metal roofing projects. It is available for downloading in both Microsoft WORD and .pdf format for your ease of use. Revise Title and/or Section numbers to suit project requirements. Brackets [] indicate options to be selected by specifier. Refer to the ML150 Product Data Sheet and to the Union website for additional information regarding product use and limitations.

METAL ROOFING

(SECTION 07610 - CSI 16 Division Format) or

[SECTION 07 41 13 - CSI 50 Division MasterFormat™]

PART 1 GENERAL

1.01 DESCRIPTION

- A. Furnish all materials, labor, tools, equipment and services required to install the standing seam metal roofing system.
- B. Roofing Contractor shall coordinate roofing installation with related work required by other associated trades.
- C. Related work includes:
 - 1. Division 05: Metals - Structural Metal Framing, Metal Joists, Metal Decking, Cold-Formed Metal Framing
 - 2. Division 07: Thermal and Moisture Protection – Thermal Protection, Flashing and Sheet Metal, Roof and Wall Specialties and Accessories, Joint Protection

1.02 REFERENCES

- A. SMACNA – “Architectural Sheet Metal Manual”, Sheet Metal and Air Conditioning Contractors National Association, Inc.
- B. LGSI – “Light Gage Structural Institute”
- C. AISC – “Steel Construction Manual”, American Institute of Steel Construction
- D. AISI – “Cold Formed Steel Design Manual”, American Iron and Steel Institute
- E. ASTM – “American Society for Testing and Materials”:
 - 1. ASTM E-1592 - Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference
 - 2. ASTM E-331 – Standard Test Method for Water Penetration...
 - 3. ASTM E-283 – Standard Test Method for Determining Rate of Air Leakage...
 - 4. ASTM B117 - Standard Practice for Operating Salt Spray (Fog) Apparatus
 - 5. ASTM D2247 - 02 Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity
 - 6. ASTM D3361 - 01(2006) Standard Practice for Unfiltered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings
 - 7. ASTM D4145 - 83(2002) Standard Test Method for Coating Flexibility of Prepainted Sheet
- F. U.L. – “Underwriters Laboratory”:
 - 1. U.L. 580 Tests for Uplift Resistance of Roof Assemblies
 - 2. U.L. Class 4 Hail Resistance
 - 3. U.L. 263 Fire Tests of Building Construction and Materials
- G. Metro-Dade County – “Test Procedure of Wind and Wind Driven Rain Resistance of Discontinuous Roof Systems”

1. Florida Building Code, Building 2010 and Protocols TAS 100-95 and ASTM E8-01

1.03 SUBMITTALS

- A. General: Provide submittals in accordance with the Conditions of the Contract.
- B. Product Data: Submit product data sheet(s) for specified metal roofing panel products.
- C. Shop Drawings: Submit shop drawings showing roof panel profile(s), gauge(s), layout and system components, including anchorage, trim and accessories.
- D. Samples: Submit two sample color chips for final selection and verification of finishes, colors and textures.
- E. Quality Assurance: Submit the following:
 1. Manufacturer's Installation Manual
 2. Contractor Certification stating installer of products of this section meets specified qualifications.
 3. Manufacturer Certification stating metal roofing system materials comply with specified performance characteristics and physical requirements.
- F. Close Out: Submit the following close-out documentation:
 1. Maintenance Data for installed metal roofing system. Include methods for maintaining installed products and precautions against cleaning materials and methods detrimental to finishes and performance.
 2. Warranty documents as specified herein.

1.04 QUALITY ASSURANCE

- A. Applicable Standards:
 1. Comply with metal roofing manufacturer's Installation Guide applicable for the specified roofing system
 2. SMACNA: Comply with Sheet Metal and Air Conditioning Contractors National Association's "Architectural Sheet Metal Manual" unless specifically stated otherwise by roofing manufacturer's printed material
 3. AISC: Comply with American Institute of Steel Construction "Steel Construction Manual"
 4. Final Inspection: Upon completion of the roofing installation, provide a final inspection by a technical representative of the roofing manufacturer to confirm that the installation appears to be installed in accordance with manufacturer's requirements.
- B. Manufacturer Qualifications: Manufacturer shall have a minimum of five years experience manufacturing metal roofing systems.
- C. Installation Contractor Qualifications: Installation contractor shall be currently approved in writing by the manufacturer of the metal roofing system and meet the following minimum criteria:
 1. Maintain \$250,000 minimum general liability insurance coverage
 2. Maintain statutory limits of worker's compensation coverage as mandated by law
 3. Project Foreman shall have a minimum of three years experience installing this type of metal roofing system and shall be on-site to supervise the installation of the metal roofing system
- D. Field Measurements: Installation contractor is to verify actual field measurements/openings before fabrication. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.
- E. Pre-Construction Meeting: Conduct a pre-construction meeting prior to the start of the roofing installation to finalize any outstanding issues, questions or details regarding the installation of the roof. A representative for the building owner, architect, general contractor, roofing contractor and manufacturer shall be in attendance.

1.05 SYSTEM PERFORMANCE REQUIREMENTS

- A. System performance varies according to panel widths and substrates. Use the following requirements where applicable.
- B. Wind uplift resistance shall meet the following requirements:
 1. Metal roof panel system tested in accordance with ASTM E-1592 test procedures with load span tables being provided for the design of the roof.
 2. U.L. 90 wind uplift classification tested in accordance with U.L. 580 test procedures
- C. Metro-Dade County: Meets requirements of the Test Procedure of Wind and Wind Driven Rain Resistance of Discontinuous Roof Systems.

- D. Hail resistance: Meets the requirements of U.L. Class 4
Fire resistance: Class A fire resistance tested in accordance with U.L. 263 test procedures
- E. Air infiltration: Maximum 0.006 cfm / ft² at a static pressure of 6.24 psf (3.0 kPa) when tested per ASTM E-283.
- F. Water penetration: No uncontrolled water penetration through joints when tested in accordance with with ASTM E-331
- G. Roof Panel Finish Performance Qualifications:
 1. Salt Spray: 1000 hrs, maximum of 1/16" creep from scribe, no field blisters when testing according to ASTM B117
 2. Humidity resistance: No blistering after 2000 hours testing, in accordance with ASTM D2247
 3. Color change and Chalk resistance: Color change, after removal of surface deposits such as dirt or chalk, maximum 5ΔE Hunter Units. Chalk rating no less than 8 when testing according to ASTM D3361
 4. Flexibility: OT to 3T; no loss of adhesion when testing according to ASTM D4145

1.06 DELIVERY, STORAGE & HANDLING

- A. Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.
- B. Delivery, Packing, Shipping: Materials are to be delivered in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Unloading: Contractor shall provide suitable equipment to unload materials without damage. Crates are to remain intact during handling and storage until such time materials are to be installed.
- D. Handling: Follow manufacturer recommendations regarding the proper handling of crates. Spreader bars and nylon slings may be used with proper design and precautions.
- E. Storage: Materials are to be stored in a dry, well-ventilated, above-ground location if they are not to be used immediately. Any moisture formed on the panels is to be wiped dry and allowed to dry completely.
- F. Protection: Stack prefinished material to prevent twisting, bending, abrasion, scratching and denting. Elevate one end of each pallet or skid to allow for moisture runoff.

1.07 WARRANTY

- A. The following metal roofing manufacturer's warranties shall be furnished [select] and shall commence on the Date of Substantial Completion.
 1. Galvalume Warranty – Covering the base metal against rupture, structural failure and perforation due to normal atmospheric corrosion exposure for a period of 30 years as stated in the warranty.
 2. Paint Warranty – Covering the metal panel finish against cracking, checking, blistering, peeling, flaking, chipping, chalking and fading for a period of 30 years as stated in the warranty.
 3. Weathertight Warranty – Covering the weathertightness performance of the metal roof for a period of [5, 10, 15, or 20] years [choose one] as provided by Union Corrugating Company.
- B. Manufacturer's Standard Warranty is to be executed by an authorized company official and submitted for Owner's acceptance. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under the Contract Documents.

PART 2 PRODUCTS

2.01 METAL ROOF PANELS

- A. Manufacturer shall be Union Corrugating Company - Fayetteville, NC. No substitutions permitted.
- B. Metal roofing panels shall be Union Corrugating's "ML150" further described:
 1. Sidelap seam height shall be 1-1/2"
 2. Panel width shall be a nominal 16-1/2". [12", 16", 18" and 20" optional]
 3. Panel pan shall be striated [flat or 2 pencil ribs optional]
 4. Sidelap seams shall be field locked with an electric seamer as required by the manufacturer
 5. Sidelap seams shall be 180 degrees (double lock)
 6. Panels shall be rollformed from 24 gauge Galvalume® steel

7. Finish shall be a minimum 70 percent polyvinylidene fluoride (PVDF) commonly known as Kynar® resin color coat, applied to the sight-exposed face of sheet after pretreatment and priming in accordance with coating manufacturer's recommendations.
8. Color to be selected from roofing manufacturer's standard colors [custom colors optional]

2.02 METAL ROOF TRIM

- A. Manufacturer shall be Union Corrugating Company - Fayetteville, NC. No substitutions permitted.
- B. Metal roofing flashings and trim shall be formed from 24 gauge Galvalume steel
- C. Finish shall be a minimum 70 percent polyvinylidene fluoride (PVDF commonly known as Kynar®) resin color coat, applied to sight-exposed face of sheet after pretreatment and priming in accordance with coating manufacturer's recommendations.
- D. Color to be selected from roofing manufacturer's standard colors [custom colors optional]

2.03 METAL ROOF SYSTEM ACCESSORIES

- A. Roof panel clips shall be provided by Union Corrugating to meet project requirements.
 1. Floating clips to allow for expansion/contraction
 2. Fixed clips
- B. Roof panel system accessories including panel closures, sealants, venting material and other materials integral to the roofing manufacturer's weathertight details shall be provided by Union Corrugating Company.
- C. All fasteners shall be selected to meet the specified design loads required to secure the applicable components. Long-life fasteners shall be selected from Union Corrugating Company's published list of approved fasteners.
- D. Prefabricated curbs, equipment supports and vents shall be provided by Union Corrugating or selected from a list of Union Corrugating Company approved manufacturers.

PART 3 EXECUTION

3.01 MANUFACTURER INSTRUCTIONS

- A. Comply with manufacturer's product data, installation manual and recommendations for substrate verification, preparation requirements and installation.
- B. Do not use or install any materials that have been damaged.
- C. Remove manufacturer's protective film, if any, from surfaces of roofing panels.

3.02 EXISTING CONDITIONS

- A. Roofing contractor shall verify substrate conditions are acceptable for product installation in accordance with manufacturer's instructions.
- B. Roofing contractor shall verify all metal roofing support systems are ready for construction activities of this section, matching those indicated on shop drawings and confirming specified tolerances.
- C. Roofing contractor shall verify rough-in utility locations.
- D. Roofing contractor shall immediately notify general contractor, architect and/or owner if any such conditions relating to the existing substrate condition or utility locations are unacceptable and shall delay proceeding until corrections are made.

3.03 PREPARATION

- A. Roofing contractor shall insure that all surfaces to which metal roofing system components will be attached are clean and dry.
- B. Roofing contractor shall coordinate metal roofing with other work that may not be supplied by the contractor such as drainage, flashings and trim, substrates, parapets, copings, walls, and other adjoining work to provide a noncorrosive and weathertight installation.

3.04 INSTALLATION

- A. Install metal roof in accordance with manufacturer's installation manual, recommendations and shop drawings.
- B. Install metal roofing system so that it is without waves, warps, buckling, fastener stress, or distortion.
- C. Install metal roof to allow for expansion and contraction.

- D. Align metal roofing panels plumb and straight with parallel seams as indicated on shop drawings
- E. Verify that all joints are sealed with appropriate type sealant in accordance with manufacturer recommendations.
- F. Provide concealed fasteners in all sidelap joints and in other locations where possible.
- G. Install trim using concealed fasteners where possible.
- H. Roofing contractor shall coordinate installation details and attachment of roof curbs, equipment supports or other such ancillary items such that they meet all metal roofing manufacturer requirements.

3.05 FIELD QUALITY CONTROL

- A. Upon Owner's request, provide periodic manufacturer's field service representation consisting of product use recommendations in accordance with manufacturer's instructions.

3.06 CLEANING

- A. After the roof has been installed, clean the site by disposing or removing excess debris and materials.
- B. Repair or replace any installed products that have been damaged other than minor finish damage.

3.07 PROTECTION

- A. Protect installed product's finish surfaces from damage during construction.
- B. Clean installed products in accordance with manufacturer's instructions prior to Owner's acceptance

END OF SECTION