

This document specifies Metal Roofing Systems prefinished factory formed metal roofing marketed as COOLR® steel and aluminum roofing systems and includes COOLR flashing and Trim. COOLR is a fluoropolymer (70% Kynar 500® or 70% Hylar 5000®) resin coating applied to aluminum or galvanized steel. (Kynar 500 is a registered trademark of Elf Atochem North American, Inc.; Hylar 5000 is a registered trademark of Ausimont USA.) This specification does not include other Metal Roofing Systems products, such as: coping systems and gravel stops.

**SECTION 07410
METAL ROOF PANELS**

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Factory-formed metal roofing or soffit, including flashing and accessories.

Metal roofing includes:

MRS Tee Panel

Specifier Note: Revise paragraph below to suit project requirements. Add section numbers per CSI *Masterformat* and specifier's practice.

- B. Related Sections: Section(s) related to this section include:
1. Metal Roof Deck: Division 5 Metal Deck Sections.
 2. Wood Framing and Decking: Division 6 Rough Carpentry Section.
 3. Flashing and Trim: Division 7 Flashing and Sheet Metal Section.
 4. Coping and Gravel Stops: Division 7 Roof Specialties and Accessories Section.
 5. Sealants: Division 7 Joint Sealers Sections.

Specifier Note: Paragraphs below list industry standards referenced in this section. Verify use of listed standards and add edition date of standards retained. *Conditions of the Contract* or Division 1 References Section may establish edition date of standards referenced. This article does not require compliance with standard, but is merely a listing of references used.

1:02 REFERENCES

- A. American Society for Testing and Materials (ASTM):
- ASTM E283/1680 - Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors Under Specified Pressure Differences Across the Specimen.
 - ASTM E331/1646 - Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Uniform Status Air Pressure Difference.
 - ASTM 1592-95 - Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference
- B. Underwriters Laboratories (UL Classified Tests):
- UL 580 - Test for Wind-Uplift Resistance of Roof Assemblies

- C. Sheet Metal and Air Conditioning Contractors National Association (SMACNA):
 - 1. SMACNA Architectural Sheet Metal Manual

1:03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide sheet metal roofing that has been manufactured, fabricated and installed to withstand structural and thermal movement, wind loading and weather exposure to maintain manufacturer's performance criteria without defects, damage, failure of infiltration of water.
 - 1. Wind-Uplift: Roof panel assembly shall comply with UL Classification 580 for UL Classified 90 rated assemblies and ASCE 7-05
- B. The contractor shall submit the manufacturer's sealed engineering calculations for clip attachment by an engineer registered to practice in the applicable state certifying the proposed standing seam roofing system meets or exceeds the designed wind uplift pressures per the current edition of ASCE 7

Specifier Note: Article below includes submittal of relevant data to be furnished by Contractor either; before, during, or after construction. Coordinate this article with Architect's and Contractor's duties and responsibilities in *Conditions of the Contract* and Division 1 Submittal Procedures Section.

1:04 SUBMITTALS

- A. General: Submit listed submittals in accordance with *Conditions of the Contract* and Division 1 Submittal Procedures Section.
 - 1. Product Data: Submit product data for each product indicated.
- B. Shop Drawings:
 - 1. Submit complete shop drawings, approved by the metal roofing manufacturer, to the architect (owner) for review. Do not proceed with manufacturer of roofing materials prior to review of shop drawings and field verification of all dimensions.
 - 2. Shop drawings show roof plans, fabrication and installation layouts of metal roof panels; details of edge conditions, side-seam and end lap joints, panel profiles, corners, anchorages, trim, flashings, closures, and accessories; and special details. Distinguish between factory and field-assembled work.
- C. Performance:
 - 1. Contractor shall provide calculation demonstrating compliance with the performance requirements of this specification and all applicable Codes. Calculation shall be signed and sealed by an engineer registered to practice in the applicable state.
- D. Samples: Submit selection and verification samples for finishes, colors and textures.
- E. Quality Assurance Submittals: Submit the following:
 - 1. Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and physical requirements.
- F. Closeout Submittals: Submit the following:
 - 1. Operation and Maintenance Date: Operation and maintenance date for installed products in accordance with Division 1 Closeout Submittals, Maintenance Data and Operation Data Section. Include methods for maintaining installed products and precautions against cleaning materials and methods detrimental to finishes and performance.
 - 2. Project Warranty: Warranty documents specified herein.
 - A: Manufactures warranty: Submit, for owner's acceptance, manufactures standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to and

not limited of, other rights the owner may have under the contract documents.

Specifier Note: Coordinate paragraph below with manufacturer's warranty requirements. Metal Roofing Systems offers a 30-year non-prorated warranty covering a COOLR finish, including color, fade, chalking and film integrity. Consult with manufacturer for specific project warranty requirements

1. Warranty Period: (30) years commencing on Date of Substantial Completion.

Specifier Note: Retain article below for proprietary method specification. Add product attributes, performance characteristics, material standards and descriptions as applicable. Use of such phrases as "or equal" or "or approved equal" may cause ambiguity in the specifications. Such phrases require verification - procedural, legal, regulatory and responsibility - for determining equivalence of products.

3. Record Documents: Project record documents for installed materials in accordance with Division 1 Closeout Submittals,, Project Record Documents Section.

Specifier Note: Article below should include prerequisites, standards, limitations and criteria which establish an overall level of quality for products and workmanship for this section. Coordinate below article with Division 1 Quality Assurance Section.

1:05 QUALITY ASSURANCE

- A. Installer Qualifications: Installer experienced in performing work of this section who has specialized in the installation of work similar to that required for this project and approved by manufacturer.

Specifier Note: Retain paragraph below for erected assemblies, either onsite or offsite, required for review of Construction, coordination of work of several sections, testing or observation of operation. Mock-ups establish Standards by which work will be judged. Coordinate below with Division 1 Quality Control, Mock-up Requirements Section.

- B. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, Manufacturer's installation instructions and manufacturer's warranty requirements. Comply with Division 1 Managements and Coordination, Project Meetings Section.

1:06 DELIVERY, STORAGE AND HANDLING

- A. General: Comply with Division 1 Product Requirements Sections.
 1. Ordering: Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.
- B. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Storage and Protection: Store materials protected from exposure to harmful conditions. Materials must be stored in a dry above ground location.
 1. Stack prefinished material to prevent twisting, bending, abrasion, scratching and denting. Elevate one end of each skid to allow for moisture to run off.
 2. Prevent contact with material that may cause corrosion, discoloration or staining.
 3. Do not expose to direct sunlight or extreme heat trim material with factory applied strippable film.

1:07 PROJECT CONDITIONS

A. Field Measurements: Verify actual measurements/openings by field measurements before fabrication. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.

Specifier Note: Coordinate article below with *Conditions of the Contract* and with Division 1 Closeout Submittals, Warranty Section.

1:08 **WARRANTY**

A. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal roof panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Finish Warranty Period: 30 years from date of Substantial Completion

Specifier Note: Coordinate paragraph below with manufacturer's warranty requirements. Metal Roofing Systems offers a 30-year nonprorated warranty covering COOLR finish, including color, fade, chalking and Film integrity. Consult with manufacturer for specific project warranty requirements.

PART 2 PRODUCTS

Specifier Note: Retain article below for proprietary method specification. Add product attributes, performance characteristics, material standards and descriptions as applicable. Use of such phrases as "or equal" or "or approved equal" may cause ambiguity in the specifications. Such phrases require verification - procedural, legal, regulatory and responsibility - for determining equivalence of products.

2:01 **Manufacturer**

A. Manufacturer: Provide standing seam metal roof system meeting the requirements specified herein as manufactured by:

1. Metal Roofing Systems, Inc.
7687 Mikron Drive, Stanley, NC 28614
P: 704-820-3110
F: 704-820-0113

Specifier Note: Paragraph below is a supplement to *CSI Masterformat* and an addition to MANU-SPEC. Retain or delete paragraph below to suit project requirements and specifier's practice.

Specifier Note: Paragraphs below list proprietary roof panels offered by Metal Roofing Systems, Inc. . Select roof panels appropriate to project. Manufacturer's roll-forming equipment produces panels that have been Herr-Voss corrective leveled. Panels are factory formed. Matching flashing and trim may be factory formed or field formed from COOLR material. Consult with manufacturer regarding product options. Selection product characteristics required; delete characteristics not required. Refer to manufacturer's SPEC-DATA product sheet.

- B. MRS Tee Panel:
 1. Type: Tee Panel
 2. Seam Height: 1in (25mm) [Standing Seam only]

Specifier Note: Below curved profile available on 1"(25 mm) high standing seam panels.

3. Profile: Radius (not available in .040 aluminum)
4. Materials: (22 ga.), (24 ga) Galvalume Steel; AZ50 Aluminum-Zinc Alloy-Coated Steel with ©Kynar 500 finish.
Materials: (.032 ga) , (.040 ga) Aluminum with © Kynar 500 finish.
5. Panel Dimension: 12", 14", 16", 18", 20"
6. Texture: Smooth or Striated
7. Joint Type: Batten Cap

Specifier Note: Below UL Classification Rating available on standing seam panels; not available on batten panels.

8. Rating UL Classified 90 rated (wind uplift) panel assembly.
9. Flashing and Trim: To match roofing material.
10. Fasteners: Non-penetrating clip, manufacturer's standard.
11. Clips: Fixed Clip: 26 gauge galvanized steel

Specifier Note: Coordinate paragraph below with project requirements for selected sheet metal roofing system.

D. Flashing and Trim: Manufacturer's standard flashing and trim profiles, factory formed, gauge as recommended by manufacturer, color and finish to match metal roofing panels.

Specifier Note: Edit paragraph below to suit project requirements, if substitutions are permitted, edit text below. Add text to refer to Division 1 Product Requirements, Product Substitution Procedures Section.

E. Substitutions: all substitution requests must be submitted 10 days prior to bid.

2:02 RELATED MATERIALS

- A. General: Coordinate use of related materials:
1. Sealants: Elastomeric joint sealants. Refer to Division 7 Joint Sealers Sections.
 2. Bituminous Coating: Cold-applied asphaltic mastic. Provide compound free of asbestos fibers, sulfur components and other harmful impurities. Refer to Division 7 Damp proofing Section.

2:03 FABRICATION

- A. General:
1. Continuous Length: Fabricate panels in one continuous length. Undeliverable lengths must be fabricated on-site.
 2. Trim and Flashings: Fabricate trim and flashings from same material as roof system material.
 3. Portable Roll Former: Panels fabricated by portable roll former shall not be approved unless panel lengths are undeliverable.

Specifier Note: Coordinate article below with finishes specified in sheet metal roofing article above.

2:04 FINISHES

- A. Factory Applied Finish:
1. Topside: Full-strength fluoropolymer (70% Kynar® 500 or Hylar® resin) system of 1.0 mil (.025 mm) total dry film thickness.
 2. Underside: Wash coat of .5 mil dry film thickness.
 3. Texture: Smooth or Stucco Emboss
 4. Protective film: Strippable vinyl film applied during panel fabrication and finishing.

PART 3 EXECUTION

Specifier Note: Article below is an addition to the CSI SectionFormat and a supplement to MANU-SPEC. Revise Article below to suit project requirements and specifier's practice.

3:01 MANUFACTURER'S INSTRUCTIONS

A. Compliance: Comply with manufacturer's product data, recommendations and installations instructions for substrate verification, preparation requirements and installation.

1. Strippable Film: Remove manufacturer's protective film, if any, from surfaces of roofing panels.

3:02 EXAMINATION

A. Site Verification of Conditions: Verify substrate conditions, which have been previously installed under other sections, are acceptable for project installation in accordance with manufacturer's instructions.

3:03 PREPARATION

A. Coordination: Coordinate metal roofing with other Work (drainage, flashing and trim, deck substrates, parapets, copings, walls) and other adjoining work to provide a non-corrosive and leak-proof installation.

B. Dissimilar Metals: Prevent galvanic action of dissimilar metals.

Specifier Note: Coordinate article below with manufacturer's recommended installation details.

3:04 INSTALLATION

A. General: Install metal roofing panels to profiles, patterns and drainage indicated and required for leak-proof installation. Provide for structural and thermal movement at work. Seal joints for leak-proof installation.

1. Seams: Provide uniform, neat seams.
2. Fasteners: Conceal fasteners where possible in exposed work. Cover and seal fasteners and anchors for watertight and leak-proof installation.
3. Sealant-Type Joints: Provide sealant-type joint where indicated. Form joints to conceal sealant. Comply with Division 7 Joint Sealants Section for Sealant installation.

3:05 FIELD QUALITY REQUIREMENTS

A. Site Tests (Post Installation Testing): Owner reserves right to perform post installation testing of installed sheet metal roofing.

Specifier Note: Edit paragraph below. Establish number and duration of periodic site visits with owner and Manufacturer and specify below. Consult with manufacturer for services required. Coordinate paragraph below with Division 1 Quality Assurance Section. Delete paragraph if manufacturer field services not required.

B. Manufacturer's Field Services: Upon Owner's request, provide manufacturer's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with manufacturer's instructions

3:06 CLEANING

A. Cleaning: Remove temporary coverings and protection of adjacent work areas. Repair or replace

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damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project site and legally dispose of debris.

3:07 PROTECTION

- A. Protection: Protect installed product from damage during construction.

END OF SECTION