

# SENTRIGARD ML 100 METAL ROOFING SYSTEMS

## SECTION 076100 - SHEET METAL ROOFING

### PART 1 - GENERAL

#### 1.1 SECTION INCLUDES

- A. Preformed, Pre-finished Metal Roofing and Flashings
- B. Miscellaneous Trim, Flashing, Closures, Sealants and Accessories
- C. Fastening Devices

#### 1.2 RELATED SECTIONS

- A. Section 072000: Thermal Protection
- B. Section 073000: Steep Slope Roofing
- C. Section 074000: Roofing and Siding Panels
- D. Section 076000: Flashing and Sheet Metal
- E. Section 077000: Roof and Wall Specialties and Accessories

#### 1.3 REFERENCES

- A. State of Florida Building Code Test Application Standard (TAS) 125-03 – Standard Requirements for Metal Roofing Systems; Per UL 580-94 w/Revisions Through 1998 UL 1897-98
- B. Underwriters Laboratories, Inc. – UL 580 – Tests for Uplift Resistance of Roof Assemblies
- C. Underwriters Laboratories, Inc. – UL 1897 – Standard for Roof Covering Systems Annual Roofing Materials and Systems Directory
- D. State of Florida Building Code Test Application Standard (TAS) 100-95 – Test Procedure for Wind and Wind Driven Rain Resistance of Discontinuous Roof Systems
- E. ASTM Standard D1079 – Standard Definitions and Terms Relating to Roofing, Waterproofing and Bituminous Materials
- F. ASTM Standard E-380 – Excerpts from the Standard Practice for Use of the International System of Units (SI)
- G. International Conference of Building Officials – Acceptance Criteria for Special Roofing Systems

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- H. The Florida Building Code, Building
- I. The American Plywood Association – Performance Standards and Policies for Structural-Use Panels
- J. The Roof Consultants Institute – Glossary of Terms

## 1.4 ASSEMBLY DESCRIPTION

- A. The Roofing Assembly includes roll-formed Sentrigard ML 100 sheet metal panel profile, related accessories, valleys, hips, ridges, eaves, corners, rakes, miscellaneous flashing and attaching devices.

## 1.5 SUBMITTALS

- A. Technical Product Data, including metal substrate and finish data.
- B. **[ Shop Drawings, Submit detailed drawings showing panel layout, anchoring devices, Details of all perimeter and penetration flashing conditions, including accessories]**
- C. Color Samples **Manufacturer's Color Selection Chart (Color chips)**.
- D. Two each 24" long pre-finished panel samples, complete with appropriate clips and fasteners.
- E. Weathertight Warranty Sample
- F. Substrate Warranty Sample
- G. Finish Warranty Sample
- H. Furnish Full Systems Warranty Sample
- I. Manufacturer's recommended Specification and Installation Instructions
- J. Provide documentation of compliance with State of Florida Building Code Test Application Standard (TAS) 125-03 – Standard Requirements for Metal Roofing Systems; Per UL 580-94 w/Revisions Through 1998 UL 1897-98; AND State of Florida Building Code Test Application Standard (TAS) 100-95 – Test Procedure for Wind and Wind Driven Rain Resistance of Discontinuous Roof Systems
- K. **[Submit Calculations with Registered Engineers Seal, verifying Roof Panel and attachment method resists wind pressures imposed on it pursuant to applicable Building Codes]**
- L. Manufacturer's Technical Data Bulletins pertinent to the specifics of the Project and Roofing Assembly.

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## 1.6 QUALITY ASSURANCE

- A. Contractor/Manufacturer specializing in Architectural Sheet Metal Products and Application with five (5) years minimum experience.
- B. Product Substitutions will be considered only if the proposed substitution exceeds the Technical Standards and Testing of the Sentrigard Metal Roofing System and only if the substitution request is submitted in writing to the Design Professional, with appropriate documentation of data, no later than ten days prior to the Bid Date. No Substitutions will be considered after the Bid Date.

## 1.7 FABRICATION, STORAGE AND HANDLING

- A. Roll Form Sentrigard ML 100 Metal Roofing System Panel Profiles on the Schleich Quadro in sizes and configurations required by specific project limitations. Comply with Sentrigard Metal Roofing Systems published Sheet Metal Flashing Details, as well as, The Sheet Metal and Air Conditioning Contractor's National Association's (SMACNA's) "Architectural Sheet Metal Manual" unless otherwise indicated.
- B. Upon Fabrication of Sentrigard ML 100 panels and sheet metal flashing components, examine all panels, components and accessories for damage prior to installation.
- C. Store Panels in a clean, dry location.
- D. Do not store any sheet metal material containing strippable vinyl film in direct exposure to the sun and ultraviolet radiation.
- E. Protect all stored material to prevent damage and allow for adequate ventilation.

## 1.8 WARRANTY

- A. Provide Sentriclad Standard Thirty (30) Year Protective Coating (Finish) Warranty on all pre-finished metal components.
- B. Provide Sentriclad Standard Twenty (20) Year Substrate Warranty on all metal component substrate material.
- C. Provide a Two Year Material and Labor Roofing System Guarantee, Issued by the Contractor/Manufacturer on the Carolina's Roofing And Sheet Metal Contractor's Standard Guarantee Form (Or Equivalent).

## PART 2 - PRODUCTS

### 2.1 MANUFACTURER

- A. Sentrigard Metal Roofing Systems; 4625 Alexander Drive, Suite 135; Alpharetta, GA 30022; Office – 770/667-0453; Fax – 770/667-0493; <http://www.sentrigard.com/>

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## 2.2 ROOFING SHEET METALS

- A. Sentriclad Kynar 500/Hylar 5000 coated Aluminum-Zinc Alloy (Galvalume): aluminum-zinc alloy-coated structural-steel sheet, ASTM A 792/A 792M, **Class AZ50 coating designation, Grade 50 (Class AZM150 coating designation, Grade 275)**; [**26 Gauge**] [**24 Gauge**] [**22 Gauge**] **<Insert thickness>** thick.
1. Finish: Manufacturer's standard [**epoxy primer and silicone-modified, polyester-enamel topcoat**] [**fluoropolymer 2-coat system with topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight; complying with AAMA 2604**].
- B. Sentriclad Kynar 500/Hylar 5000 coated Aluminum Sheet: Fabricated from aluminum sheet, **ASTM B 209** for alclad Alloy 3003, 3004, or 3105; [**0.032 inch**] [**0.040 inch**] thick.
1. Finish: Manufacturer's standard [**epoxy primer and silicone-modified, polyester-enamel topcoat**] [**fluoropolymer 2-coat system with topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight; complying with AAMA 2604**].
- C. Copper Sheet: ASTM B 370, cold-rolled copper sheet, H00 temper, [**16 oz./sq. ft.**] [**20 oz./sq. ft.**].
- D. Stainless-Steel Sheet: ASTM A 666, Type 304, dead soft, fully annealed, [**0.016 inch**] [**0.019 inch**] thick, with [**No. 2D (dull)**] [**No. 2B (bright)**] [**No. 4 (polished directional satin)**] finish.
- E. Product in paragraph below is replacement for terne-coated stainless-steel sheet. Terne, a lead-tin alloy, is no longer manufactured.
- F. Zinc-Tin Alloy-Coated Stainless Steel: ASTM A 240/A 240M, Type 304, dead-soft, fully annealed stainless-steel sheet, coated on both sides with a zinc-tin alloy (50 percent zinc, 50 percent tin); [**0.016 inch**] [**0.019 inch**] thick.

## 2.3 ACCESSORIES

- A. Underlayment: [**Polyethylene sheeting complying with ASTM D 4397, 6 mils thick**] [**Self-adhesive, polymer-modified, bituminous sheet ASTM D 1970; 40 mils thick**] [**Synthetic Roofing Underlayment, ASTM D226**] [**Asphalt-saturated organic felt ASTM D 226, Type II (No. 30)**]
- A.1. Self-Adhesive, Polymer-Modified Bituminous Underlayments
- A.1.1. Polystick TU Plus as manufactured by Polyglass USA, Inc. [www.polyglass.com](http://www.polyglass.com)
  - A.1.2. Polystick MU as manufactured by Polyglass USA, Inc. [www.polyglass.com](http://www.polyglass.com)
  - A.1.3. Polystick Basik as manufactured by Polyglass USA, Inc. [www.polyglass.com](http://www.polyglass.com)
  - A.1.4. TAMKO TW Metal and Tile Underlayment as manufactured by TAMKO Building Products [www.tamko.com](http://www.tamko.com)
  - A.1.5. Grace Ice and Water Shield as manufactured by Grace Construction Products [www.na.graceconstruction.com](http://www.na.graceconstruction.com)

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- A.1.6. Grace Ultra as manufactured by Grace Construction Products  
[www.na.graceconstruction.com](http://www.na.graceconstruction.com)
- A.1.7. Grace Select as manufactured by Grace Construction Products  
[www.na.graceconstruction.com](http://www.na.graceconstruction.com)
- A.2. Synthetic Roofing Underlayment
  - A.2.1. Polyprotector UDL as manufactured by Polyglass USA, Inc. [www.polyglass.com](http://www.polyglass.com)
  - A.2.2. Pro-Master Roof Shield UDL as manufactured by Berger Building Products, Inc.  
[www.bergerbros.com](http://www.bergerbros.com)
- B. Slip Sheet: Rosin-sized building paper, **5 lb/100 sq. ft.**
- C. Sentriclad Metal Accessories for the Sentriclad ML 100 Metal Roofing System: Matching sheet metal roofing in finish and material required for a complete weather-tight roofing system, flashings, ridge closure strips, trim, copings, fasciae, gutters, and louvers.
  - C.1. Sentriclad Touch-up Paint by NB Handy Company [www.nbhandy.com](http://www.nbhandy.com)
  - C.2. Sentriclad Rivets by NB Handy Company [www.nbhandy.com](http://www.nbhandy.com)
- D. Sentriclad Clips and Fasteners, compatible with Sentriclad ML 100 Metal Roofing Systems panel profile and substrate, by NB Handy Company [www.nbhandy.com](http://www.nbhandy.com)
- E. Solder for Copper: ASTM B 32, Grade Sn50.
- F. Solder for Stainless Steel: ASTM B 32, Grade Sn60, with acid flux of type recommended by stainless-steel sheet manufacturer.
- G. Solder for Zinc-Tin Alloy-Coated Stainless Steel: ASTM B 32, 100 percent tin.
- H. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for **15-mil (0.4-mm)** dry film thickness per coat. Provide inert-type non-corrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.
- I. Snow Guards: Prefabricated, non-corrosive units designed to use with sheet metal roofing and complete with predrilled holes or hooks for anchoring.
  - I.1. Snow Brakes as manufactured by Berger Building Products, Inc. [www.bergerbros.com](http://www.bergerbros.com)
- J. Battens: Fabricate from [**pressure-treated wood**] [**0.051-inch-** thick, aluminum Alloy 6063, Temper T-5] [**20-oz./sq. ft. cold-rolled copper**].
- K. Drainage Components: [**Sheet metal drainage components shop-fabricated from Sentriclad Sheet Metal in sizes and configurations as detailed in the Sentriclad Metal Roofing Systems standard specifications and details. Size, fabricate install and secure drainage components in accordance with Sheet Metal and Air Conditioning Contractor's National Association (SMACNA) "Architectural Sheet Metal Manual" ] [Prefabricated gutter, downspout and accessory drainage components as manufactured by Berger Building Products [www.bergerbros.com](http://www.bergerbros.com)]**

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- L. Polyisocyanurate Roof Insulation: ASTM C1289-06, Type II, Class 1, Grade 2 (20 PSI), Grade 3 (25 PSI); H-Shield Polyisocyanurate Roof Insulation as manufactured by Hunter Panels [www.hpanels.com](http://www.hpanels.com); Carlisle SynTec, Inc., [www.carlisle-syntec.com](http://www.carlisle-syntec.com); Johns Manville, [www.jm.com](http://www.jm.com).
  - M. Extruded Polystyrene Insulation: ASTM C-578, Type IV, 25 PSI, 20 Year, 90% R-Value Retention, Thermal Warranty Minimum 15%, Third Party Certification, Thermapink, as manufactured by Owens-Corning, [www.owenscorning.com/comminsul/products.asp?product=33&system=80](http://www.owenscorning.com/comminsul/products.asp?product=33&system=80)
  - N. Cover Board: UL 1256, ULC S-126, UL Class A (UL 790), ULC S-107; ½” Dens Deck Prime as manufactured by Georgia Pacific [www.gp.com](http://www.gp.com)
  - O. High Grade Polyurethane Sealant: ASTM C 920 Type S, Grade NS, Class 25; TT-S-00230 C (Type II) Class A; Non Sag, One Component; Commercial Item Specification A-A-1556A; AAMA 808.3 (Exterior Sealing Compound)
    - N.1. Permthane SM 7108 Polyurethane Sealant/Adhesive as manufactured by Schnee-Morehead, Inc. [www.schneemorehead.com](http://www.schneemorehead.com)
    - N.2. NP-1 as manufactured by Sonneborn/BASF [www.buildingsystems.basf.com](http://www.buildingsystems.basf.com)
  - P. Clear Acrylic Sealant: ASTM C 920; TT-S-001543 (Silicone Building Sealant); TT-S-00230C; One Component Building Sealant; Polyglaze SM 5732 Silicone Construction Sealant as manufactured by Schnee-Morehead, Inc. [www.schneemorehead.com](http://www.schneemorehead.com)
  - Q. Butyl Sealant Tape: AAMA 804.3; AAMA 807.3; Federal Specification TT-C-1796A, Type II, Class B; USDA Acceptable; 3/32” x 1” Tacky Tape SM 5277 Metal Building Sealant as manufactured by Schnee-Morehead, Inc. [www.schneemorehead.com](http://www.schneemorehead.com)
  - R. Non-Shrinking Butyl Sealant (Gun Grade): One-Component, Low Viscosity, Self-Wetting, Butyl Blend Mastic;
    - Q.1. Carlisle Sure Seal Water Cut-Off Mastic as manufactured by Carlisle SynTec, Inc. [www.carlisle-syntec.com](http://www.carlisle-syntec.com)
    - Q.2. JM Sealing Mastic as manufactured by Johns Manville Roofing Systems [www.jm.com](http://www.jm.com)
  - S. Penetration Flashings and Prefabricated Roof Top Accessories; Deck-Mate Flashings as manufactured by Portals Plus [www.portalsplus.com](http://www.portalsplus.com)
  - T. Ridge and Peak Ventilation Component; V600T & V600TE as manufactured by COR-A-Vent, Inc., PO Box 428, Mishawaka, IN 46546-0428 [www.cor-a-vent.com](http://www.cor-a-vent.com)
- 2.4 FABRICATION
- A. Fabricate sheet metal roofing to comply with details shown and recommendations in the Sheet Metal and Air Conditioning Contractor’s National Association (SMACNA) "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of installation indicated.

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1. Standing-Seam Roofing: Form standing-seam pans with finished seam height of 1 inch.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Visually observe roof deck substrate and verify deck is clean, smooth, free of depressions, waves or projections, level and properly secured to structural framing.
- B. Verify roof openings, curbs, pipes, sleeves, ducts or vents through roof are solidly set and secured.
- C. Verify deck is dry and free of snow or ice. Verify [**flutes in steel deck are clean and dry**] or [**joints in wood sheathing are solidly supported and secured**].
- D. Install underlayment on roof sheathing under sheet metal roofing in accordance with the manufacturer's installation instructions and as recommended by metal roofing manufacturer.
- E. Lay out panel positioning before installation of sheet metal roofing. Properly position panels to prevent roof penetrations from intersecting with standing seams. Space clips and fasteners as required to resist project design uplift, and in accordance with minimum Building Code and Local Regulatory Agency requirements.
- F. Roll form Sentrigard ML 100 Metal Roof Panels on the Schleich Quadro metal panel roll forming machine. Provide continuous panel lengths from eave to ridge, peak or head wall with no transverse seams. Panels may be jobsite roll formed or roll formed in the Contractor-Manufacturer's facility and transported to the jobsite.
- G. Anchor roofing securely in place, with provisions for thermal and structural movement. Install with concealed fasteners unless otherwise indicated.
- H. Separate dissimilar metals with a bituminous coating or polymer-modified, bituminous sheet underlayment.
- I. Coat unpainted back side of [**metallic-coated steel**] [**aluminum**] [**stainless-steel**] [**zinc-tin alloy-coated stainless-steel**] roofing with bituminous coating where it will contact treated wood.
- J. Coat unpainted back side of [**aluminum**] [**stainless-steel**] roofing with bituminous coating where it will contact wood, ferrous metal, or cementitious construction.
- K. Install work with lines and corners of exposed units true and accurate. Form exposed faces flat and free of buckles, excessive waves, and avoidable tool marks, considering temper and reflectivity of metal. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant. Fold back sheet metal to form a hem on concealed side of exposed edges unless otherwise indicated.
  1. Install cleats to hold sheet metal panels in position. Attach each cleat with two fasteners to prevent rotation.

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2. Nail cleats not more than 12 inches O. C. Bend tabs over nails.
- L. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets to be soldered to a width of 1-1/2 inches, except where pre-tinned surface would show in finished Work.
1. Do not solder [metallic-coated steel] [and] [aluminum] sheet.
  2. Do not use torches for soldering. Heat surfaces to receive solder and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.
- M. Seal joints as shown and as required for leak proof construction. Provide low-slope transverse seams using cleats where backup of moisture may occur.
- N. Upon completion of metal roofing assembly, clean metal roof panels, flashings and trim of all debris, metal filings or shavings, grease, finger marks or stains from metal surfaces. Touch-up any scarred or scratched finishes with Sentrigrad Touch-up Paint.

END OF SECTION 076100