

SECTION 076223 - SHEET METAL SIDING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Zinc flat lock tile wall cladding system.
2. Zinc reveal flat panels wall cladding system.
3. Zinc coping, soffits and wall trim
4. Zinc wall cladding accessories including closures, fasteners and clips, corners, flashings, and other components of wall panel system; include all required accessories for a weatherproof installation.
5. Weather membrane and metal deck directly behind zinc cladding.
6. Wall panel stub framing system and panel stiffeners with foam tape.
 - a. Subframing required to support the composite core wall panel profiles indicated on the Drawings shall be part of the system designed under this Section.

B. Related Sections include the following:

1. Division 07 Section "Sheet Metal Flashing and Trim" for flashing, rain drainage units, copings and fascia.

1.2 PERFORMANCE REQUIREMENTS

A. General: Sheet metal flashing and trim assemblies as indicated shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.

B. Low-slope membrane roof system metal edge securement, except gutters, shall be designed and installed for wind loads in accordance with Building Code of NY, Chapter 16 and tested for resistance in accordance with ANSI/SPRI ES-1.

1. Fabricate and install roof edge flashing, metal edge securement, facae and copings capable of resisting the following forces:
 - a. Wind Zone 2 (roof edge perimeter, vertical load direction): As indicated on Structural Drawings.
 - b. Wind Zone 3 (roof edge corners, vertical load direction): As indicated on Structural Drawings.
 - c. Wind Zone 4 (wall edge perimeter, horizontal load direction): As indicated on Structural Drawings.

- d. Wind Zone 5 (wall edge corners, horizontal load direction): As indicated on Structural Drawings.
 2. Dimension of perimeter and corner zones shall be as indicated on Structural Drawings.
 - C. Vertical and Lateral Fire Propagation Test Characteristics: The exterior wall assembly of the School Building is required to comply with NFPA 285 "Standard Method of Test for the Evaluation of Flammability Characteristics of Exterior Nonload-bearing Wall Assemblies Containing Combustible Components." The base wall, stud cavity insulation, wall sheathing, air barrier, continuous wall rigid insulation and exterior cladding are components that are required to be to be evaluated as part of this specific assembly test. Metal wall and soffit panels shall be part of an assembly that has passed NFPA 285 testing.
 - D. Thermal Movements: Provide sheet metal flashing and trim that allows for thermal movements from ambient and surface temperature changes.
 1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces
 - E. Structural Performance: Metal wall panel assemblies shall withstand the effects the following loads and stresses within limits and under conditions indicated, based on testing according to ASTM E 330:
 1. Wind Loads: Determine loads based on the following minimum design wind pressures:
 - a. Uniform pressure as indicated on Structural Drawings.
 2. Secondary Framing: Design secondary framing system according to AISI "Standard for Cold-Formed Steel Framing - General Provisions."
- 1.3 ACTION SUBMITTALS
- A. Product Data: For each product indicated. Include details of construction relative to materials, dimensions of individual components, profiles, and finishes.
 - B. Shop Drawings: Show fabrication and installation layouts of metal panels and tiles; details of edge conditions, joints, panel and tile profiles, corners, anchorages, attachment systems, trim, flashings, closures, and accessories; and special details. Distinguish between factory- and field-assembled work.
 1. Include structural data indicating compliance with performance requirements, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
 2. Indicate coordination dimensions related to structural support system elements provided by others.
 3. Show details for forming, joining, and securing sheet metal siding, and for pattern of seams.

4. Show expansion-joint details and waterproof connections to adjoining work and at obstructions and penetrations.

C. Samples for Verification: 12-inch- (300-mm-) square specimens of each type of sheet metal siding material with specified finishes applied. Where finishes involve normal color and texture variations, include Sample sets of 2 or more units showing the full range of variations expected.

1.4 INFORMATIONAL SUBMITTALS

A. Product Certificates: Signed by sheet metal siding manufacturers certifying that the products furnished comply with requirements.

B. Qualification Data: For firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

C. Warranty: Sample of special warranty

1.5 QUALITY ASSURANCE

A. Fabricator/Installer Qualifications: Engage an experienced sheet metal fabricator/installer with 10 years experience, who has completed sheet metal siding similar in material, design, forming method, and extent to that indicated for this Project and with a record of successful in-service performance.

1. The fabricator and installer of the wall panel system shall be trained by the zinc material manufacturer. Installer shall submit list of three (3) successful "natural metal" project installations of similar complexity and scope.

B. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in the jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of metal wall panel systems including secondary framing that are similar to those indicated for this Project in material, design, and extent.

C. Sheet Metal Standard: Comply with SMACNA's "Architectural Sheet Metal Manual." Conform to dimensions and profiles shown unless more stringent requirements are indicated.

D. Single Source Responsibility: Provide panels and tiles which are the product of one manufacturer. Provide secondary materials, which are acceptable to the metal siding manufacturer.

E. Field Measurements: Verify locations of framing dimensions by field measurements before metal panel fabrication and indicate measurements on Shop Drawings.

- F. Mockups: Before installing sheet metal siding, construct mockups for each form of construction and finish required to verify selections made under Sample submittals and to demonstrate aesthetic effects and qualities of materials and execution. Build mockups to comply with the following requirements, using exposed and concealed materials and forming methods indicated for completed Work.
1. Locate mockups on-site in the locations and of the sizes as directed by Architect.
 2. Notify Architect 7 days in advance of the dates and times when mockups will be constructed.
 3. Demonstrate the proposed range of aesthetic effects and workmanship.
 4. Reprepare mock-ups as required to obtain Architect's approval.
 5. Obtain Architect's approval of mockups before starting sheet metal siding Work.
 6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 7. When directed, remove mockups from Project site.
- G. Pre-Installation Conference: Prior to commencement of work, convene an installation conference to include the Architect, General Contractor and Zinc Panel Installer in order to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.
1. Review methods and procedures for installation including, but not limited to: substrates, sub framing, penetrations and other preparatory work.
 2. Review drawings, specifications, submittals and other contract documents
 3. Review construction schedule verifying availability of all materials, personnel and equipment needed to proceed and avoid delays
 4. Review weather and forecasted weather conditions and procedures for coping with unfavorable conditions, including cold temperatures.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver sheet metal coils, panels, and other siding materials so they will not be damaged or deformed. Package siding materials for protection against transportation damage.
- B. Handling: Exercise care in unloading, storing, and erecting siding materials to prevent bending, warping, twisting, and surface damage.
1. Require all personnel to wear clean white cotton gloves when handling and installing zinc panels and accessories when no strippable film is present.
- C. Stack materials on platforms or pallets, covered with tarpaulins or other suitable weathertight and ventilated covering. Store sheet metal coils and panels to ensure dryness. Do not store coils or panels in contact with other materials that might cause staining, denting, or other surface damage.

1.7 PROJECT CONDITIONS

- A. Coordinate Work of this Section with interfacing and adjoining Work for proper sequencing of each installation. Ensure best possible weather resistance, durability of Work, and protection of materials and finishes.
- B. Corrosion Control: Avoid direct contact of incompatible materials including but not limited to copper, red rosin paper and masonry cleaning solutions.
 - 1. Do not start installation of zinc siding until masonry has received its final washdown.
- C. 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. General Warranty: Special warranties specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.
- B. Material Only Warranty: provide 20-year limited warranty for Titanium-Zinc alloy from original rolling mill manufacturer. Warranty to cover the material quality of the sheet/ coil material used to fabricate sheet metal flashing & trim profiles appropriate for zinc installation.
- C. Fabrication Warranty: provide 5-year fabrication warranty against sharp bends that fracture the metal, tears, and equipment induced damage to the Architectural Zinc sheet or coil.
- D. Installation Warranty: provide 2-year guarantee covering the proper material or product application preventing failure due to hot-water corrosion, damage due to inappropriate slip sheet, absorptive separation material, or other installer induced failure.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Sheet Metal Manufacturers: Provide Basis of Design Products by RHEINZINK America Inc., or equal products by VM Zinc.

2.2 METALS

- A. Zinc Alloy Sheet/Coils: Titanium Zinc Alloy whose base is electrolytic high grade with a 99.995 % Zn degree of purity and alloying additives of 0.08% - 1.0% copper and 0.07% - .12% titanium, .001% - .015% aluminum in accordance with ASTM B69-20 (or latest edition) - Architectural Rolled Zinc - Type 1

1. Basis of Design Product: RHEINZINK-GRANUM phosphating process, "Sky-Grey" color and finish; or equal.
2. Minimum Panel Thickness: 0.8 mm (22 ga.) for flat lock tiles and trim, and 1.0 mm (20 ga.) for reveal panels and trim.

2.3 MISCELLANEOUS METAL FRAMING

- A. Steel Sheet Components, General: Complying with ASTM C 645 requirements for metal and with ASTM A 653/A 653M, G60 (Z180), hot-dip galvanized zinc coating.
- B. Subgirts: C- or Z-shaped sections fabricated from 0.0598-inch (1.5-mm) bare steel thickness, shop-painted, cold-formed, metallic-coated steel sheet.
- C. Base or Sill Angles and Channels: 0.079-inch (2.0-mm) bare steel thickness, cold-formed, galvanized steel sheet.
- D. Hat-Shaped, Rigid Furring Channels: ASTM C 645.
 1. Minimum Base Metal Thickness: 0.0179 inch (0.45 mm)
 2. Depth: 7/8 inch (22 mm) unless otherwise indicated.
- E. Cold-Rolled Furring Channels: 0.0538-inch (1.37-mm) bare steel thickness, with minimum 1/2-inch- (13-mm-) wide flange.
 1. Depth: As indicated.
- F. Furring Brackets: Adjustable, corrugated-edge type of steel sheet with minimum bare steel thickness of 0.0312 inch (0.79 mm).
- G. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.0625-inch- (1.59-mm-) diameter wire, or double strand of 0.0475-inch- (1.21-mm-) diameter wire.
- H. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

2.4 ACCESSORIES

- A. General: Provide components matching sheet metal siding in finish and material that are required for a complete siding system. Comply with Division 07 Section "Sheet Metal Flashing and Trim" for requirements.
- B. Provide all components necessary for a complete, functional, weatherproof assembly including, but not limited to, trims, copings, fascias, sills, flashings, counter flashings, door frame trim, corner units, soldering, clips, wall caps, copings, sealants, closures, fillers, foam tapes, and gaskets. All accessories shall be zinc compatible.
- C. Clips and Fasteners: Provide stainless steel concealed clips and stainless steel fasteners; of types and sizes as required in accordance with manufacturer's recommendations and per the engineering calculations. Attachment clips shall permit expansion and contraction

of the panel system throughout the specified temperature range. Provide fasteners with watertight washer gaskets (such as self-adhered membrane) for permeable air barrier sheets.

- D. Solder: Lead solder containing 50% tin and 50% lead in accordance with ASTM B32 - 08 (or latest edition) or lead-free solder.
- E. Flux: Felder ZD-Pro or equal.
- F. Air Barrier Underlayment: Provide vapor permeable sheet underlayment; Tyvek Commercial Wrap or equal (note taped joints and fastener gasket requirement).
- G. Sealants:
 - 1. Seam Sealing Tape: pressure-sensitive 100 per cent solid polyisobutylene compound sealing tape with release paper backing. Provide permanently elastic, non-sag, non-toxic non-staining tape.
 - 2. Joint Sealant: DOW 795 or other documented pH neutral sealant.
 - 3. Backer rod shall be extruded polyethylene foam as DOW ETHAFOAM SB or equal.
 - 4. Foam tapes at stiffeners shall be compressible open cell breathable type.

2.5 FABRICATION

- A. General: Custom fabricate sheet metal panels to comply with details shown and recommendations in SMACNA's "Architectural Sheet Metal Manual" and RHEINZINK Division 7 Binder; Latest Edition that apply to the design, dimensions (pan width and depth), geometry, metal thickness, and other characteristics of installation indicated. Shop fabricates sheet metal wall panels and accessories at the shop to the greatest extent possible.
- B. Flat-Lock Tile Wall Panels: Form flat-lock tile panels from continuous metal sheets, with two hooks (hems) turned under and two hooks (hems) turned over. A minimum of a $\frac{3}{4}$ " hook (hem) is required; relief cuts are recommended for ease of installation (contact RHEINZINK for proper notching pattern).
- C. Fabricate sheet metal wall panels to allow for expansion in running work sufficient to prevent leakage, damage, and deterioration of the Work. Form exposed sheet metal work to fit substrates without excessive oil canning, buckling, and tool marks, true to line and levels indicated, and with exposed edges folded back to form hems.
- D. Form and fabricate sheets, seams, strips, cleats, edge treatments, integral flashing, and other components of metal wall to profiles, patterns, and drainage arrangements shown and as required to resist Water infiltration without excessive use of sealants (dry joints) while also allowing any water infiltration behind the wall panels to weep out.
- E. Sealant Joints: Where movable, non-expansion type joints are indicated or required to produce weather tight seams such as at window and door penetrations, form metal to provide for proper installation of elastomeric sealant in compliance with SMACNA standards.