SECTION 07613

SHEET STAINLESS STEEL ROOFING

PART GENERAL

SECTION INCLUDES

Flat-seam stainless steel roofing.

Standing-seam stainless steel roofing.

Batten-seam stainless steel roofing.

Horizontal-seam (Bermuda type) stainless steel roofing.

Preformed stainless steel roofing.

Custom-designed stainless steel roofing.

RELATED SECTIONS

Section 05120 - Structural Steel: Roof framing.

Section 05310 - Steel Deck.

Section 06100 - Rough Carpentry: Roof framing and sheathing.

Section 06150 - Wood Decking.

Section 07210 - Building Insulation.

Section 07623 - Sheet Stainless Steel Flashing: Stainless steel flashing and other trim not part of roofing.

Section 07713 - Manufactured Stainless Steel Roof Specialties: Accessories on roof other than mechanical and structural items.

Section 07900 - Joint Sealers.

Section 09900 - Paints and Coatings: Field painting.

REFERENCES

ASCE 7 - Minimum Design Loads for Buildings and Other Structures; American Society of Civil Engineers.

ASTM A 240/A 240M - Standard Specification for Heat Resisting Chromium and Chromium-Nickel Steel Plate, Sheet, and Strip for Pressure Vessels.

ASTM A 308 - Standard Specification for Sheet, Terne (Lead-Tin Alloy) Coated by the Hot-Dip Process.

ASTM E 907 - Standard Test Method for Field Testing Uplift Resistance of Roofing Systems Employing Steel Deck, Rigid Insulation and Bituminous Built-Up Roofing.

SSIUS - Designer Handbook Series; Specialty Steel Industry of the United States (SSIUS).
Stainless Steel for Roofing, Flashings, Copings.
Design Guidelines for the Selection and Use of Stainless Steel.
Specifications for Stainless Steel.
Stainless Steel Fabrication.
Stainless Steel Fasteners—A Systematic Approach to Their Selection.
Finishes for Stainless Steel.
Stainless Steel Architectural Facts.

SMACNA - Architectural Sheet Metal Manual; Sheet Metal and Air Conditioning Contractors National Association, Inc.; fifth edition, 1993.

PERFORMANCE REQUIREMENTS

Design roof assembly to conform to the requirements of ASCE 7, Minimum Design Loads for Buildings and Other Structures.

Wind Uplift: Provide roof assemblies meeting requirements of ASTM E 907 for UL Class 90 wind uplift resistance.

SUBMITTALS

Submit in accordance with Section 01300.

Product Data: Submit metal manufacturer's and fabricator's specifications, installation instructions, and general recommendations for roofing applications.

Samples: 12 inch square specimens of specified stainless steel roofing material.

Shop Drawings: Show manner of forming, joining, and securing stainless steel roofing, and pattern of seams. Show expansion joint details and waterproof connections to adjoining work and at obstructions and penetrations.

QUALITY ASSURANCE

Installer Qualifications: A firm with 5 years of successful experience with installation of stainless steel roofing of type and scope equivalent to project requirements.

Mock-Up: Before proceeding with installation, prepare a mock-up incorporating materials and methods of fabrication and installation identical with project requirements.
Locate mock-up where indicated on drawings.
Retain accepted mock-up as quality standard for acceptance of completed roofing.
If accepted, mock-up may be incorporated as part of the work.

PART PRODUCTS

MANUFACTURERS

Provide products manufactured by one of the following:
Allegheny Ludlum Corporation.
Armco, Inc.
Avesta Sheffield, Inc.
Atlas Stainless Steels.
J & L Specialty Steel, Inc.
Lukens, Inc.
North American Stainless.

Requests for substitutions will be considered in accordance with provisions of Section 01600.

Substitutions: Not permitted.

SHEET METAL MATERIALS

Stainless Steel Sheet for Roofing, Flashing, Accessories,

and Batten Caps: ASTM A 240/A 240M, Type 304, fully annealed, dead soft temper.
    Thickness: 0.015 inch, 28 gauge, unless otherwise indicated.
    Thickness: 0.018 inch, 26 gauge, unless otherwise indicated.
    Thickness: 0.021 inch, 25 gauge, unless otherwise indicated.
    Thickness: As indicated on drawings.
    Finish: No.2D (dull) mill rolled sheet finish.
    Finish: _____.
    Finish: As selected by Architect from roofing manufacturer's standards.

Stainless Steel Sheet for Roofing, Flashing, Accessories, and Batten Caps: Terne-coated stainless steel sheet, complying with ASTM A 308, Type 304, fully annealed, dead soft temper.
    Coating: Coat both sides of stainless steel sheet with terne alloy (80-20 lead/tin) in accordance with sheet metal manufacturer's standard nominal coating weight.
    Base Metal Thickness: 0.015 inch, 28 gauge, unless otherwise indicated.
    Base Metal Thickness: 0.018 inch, 26 gauge, unless otherwise indicated.
    Base Metal Thickness: 0.021 inch, 25 gauge, unless otherwise indicated.
    Base Metal Thickness: As indicated on drawings.
    Finish: Manufacturer's standard.

Batten Bars and Strips: If size is not indicated, provide battens of nominal 2 inch by 2 inch size (1-1/2 inch by 1-1/2 inch minimum).
    Batten Bars: Stainless steel, thickness same as sheet roofing material.
    Wood Batten Strips: Fabricated to size indicated from lumber complying with requirements of Section 06100 - Rough Carpentry and preservative treated by pressure process using a chemical solution that is non-hygroscopic and non-corrosive to type of stainless steel roofing.

Nails: Stainless steel, AISI Type 300 series, 0.109 inch minimum not less than 7/8 inch long ring or annular type.

Screws and Bolts: Stainless steel, AISI Type 300 series.

Cleats: Stainless steel, ____ inch thick, type ____; 2 inches wide x 3 inches long.

Solder: Minimum 50-50 tin/lead solder for unexposed joints; minimum 80-20 tin/lead solder for color match at exposed joints. Use only phosphoric acid based flux for soldering stainless steel.

Metal Accessories: Except as indicated as work of another specification section, provide all other components required for a complete roof system, including trim, copings, fascias, ridge closures, clips, seam covers, battens, flashings, gutters, louvers, and closure strips. Match materials and finishes of roof.

Mastic Sealant: Polyisobutylene; non-hardening, non-migrating, heavy-bodied mastic sealant.

Elastomeric Sealant: One-part elastomeric polyurethane, polysulfide, butyl, or silicone rubber sealant as recommended by the roofing manufacturer.

Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15 mil dry film thickness per coat, except as otherwise indicated; inert-type non-corrosive compound, nominally free of sulfur components and other deleterious impurities.

ACCESSORY MATERIALS

Miscellaneous Materials: Provide protective coatings, separators, sealants and other accessory items as recommended by stainless steel sheet manufacturer and fabricator for stainless steel roofing work, except as otherwise indicated.

Roofing Felt: Asphalt or coal tar saturated felt weighing not less than 30 lb per 100 square feet.

Fabric Underlayment: Manufacturer's standard non-woven polyester fabric marketed for use in roofing systems weighing 6.0 oz per sq yd, white, non-swelling, rot and mildew resistant; type as recommended by roofing manufacturer.

Slip Sheet: Minimum 4-lb rosin-sized building paper.

Sealing Tape: Pressure-sensitive 100 percent solids

polyisobutylene compound sealing tape with release paper backing. Provide permanently elastic, non-sag, non-toxic, non-staining tape.

METAL FABRICATION

Shop-fabricate work to greatest extent possible.

Conform to dimensions and profiles indicated. Comply with details shown and with applicable requirements of SMACNA Architectural Sheet Metal Manual and other recognized industry practices.

Fabricate for waterproof and weather-resistant performance with expansion provisions for running work sufficient to permanently prevent leakage, damage, or deterioration of the work.

Form work to fit substrate. Comply with material manufacturer's instructions and recommendations for forming material. Form exposed stainless steel work without excessive oil-canning, buckling, and avoidable tool marks, true to line and levels indicated, with exposed edges folded back to form hems.

Form and fabricate sheets, seams, strips, cleats, valleys, ridges, edge treatments, integral flashings and other components of stainless steel roofing to profiles, patterns and drainage arrangements shown and as required for permanently leakproof construction. Provide for thermal expansion and contraction of the work, as indicated.

Seams: Fabricate non-moving joints in stainless steel sheet with flat-lock seams. Tin edges to be seamed, form seams, and solder. Rivet joints for additional strength where indicated.

Hooked-Type Joints: Where lapped or bayonet-type expansion provisions in work cannot be used, or would not be sufficiently water- or weatherproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant concealed within joint.

Sealant Joints: Where movable, non-expansion-type joints are indicated or required for proper performance of work, form stainless steel to provide for proper installation

of elastomeric sealant, in compliance with SMACNA standard details.

Separations: Provide for separation of stainless steel from different metal types and corrosive substrates by coating concealed surfaces at locations of contact with bituminous coating or other permanent separation as recommended by manufacturer or fabricator.

PART EXECUTION

PREPARATION

Coordinate stainless steel roofing with rain drainage work, flashing, trim and construction of decks, parapets, walls, and other adjoining work to provide a permanently leakproof, secure, and non-corrosive installation.

Clean surfaces to receive stainless steel roofing. Substrate to be smooth and free of defects. Drive projecting nails or other fasteners flush with substrate.

INSTALLATION

Except as otherwise shown or specified, comply with recommendations and instructions of manufacturer of stainless steel roofing being fabricated and installed and with SMACNA Architectural Sheet Metal Manual.

Galvanic Action Protection: Isolate different metal types from each other to prevent galvanic action.

Install underlayment of slip sheet over a course of roofing felt under stainless steel roofing unless otherwise recommended by manufacturer of sheet metal. Use adhesive for temporary anchorage, where possible, to minimize use of mechanical fasteners under stainless steel roofing. Lap joints 2 inches minimum.

Seal joints as shown and as required for leakproof construction.

Hooked-Type Joints:

When ambient temperature is moderate at time of installation, 40 degrees to 70 degrees F (4 degrees to 21 degrees C), set joint members for 50 percent movement either way.

Adjust setting proportionately for installation at higher ambient temperatures.
Do not install at temperatures below 40 degrees F (4 degrees C).
Comply with requirements of Section 07900 for handling and installing sealants.

Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.

In exposed work, conceal fasteners and expansion provisions where possible and locate so as to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.

Soldering: Tin uncoated stainless steel surfaces for a width of 1-1/2 inches at edges, using solder recommended for stainless steel work. Exception: Where surfaces are terne-coated stainless steel, do not tin edges, but wire brush terne coating before soldering.

CLEANING

Remove protective film (if any) from exposed surfaces of stainless steel roofing promptly upon installation. Strip with care to avoid damage to finishes.

Clean exposed metal surfaces of substances that might cause staining, corrosion, or deterioration of finish or that would interfere with uniform oxidation and weathering.

PROTECTION

Protect stainless steel roofing in a manner that ensures that the work is without damage or deterioration other than natural weathering at time of Substantial Completion.

END OF SECTION