

SECTION 07610

STANDING SEAM METAL ROOFING

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Furnish and install a weather and watertight prefabricated standing seam roof system complete, in place, as shown on the drawings and as specified herein.

1.02 RELATED SECTIONS

- A. Section 02050 - Roof Demolition
- B. Section 07513 – Modified Bitumen Cap Sheet Roofing
- C. Section 07620 - Roof Related Sheet Metal
- D. Section 07720 - Roof Specialties and Accessories
- E. Section 07920 – Sealants and Caulking

1.03 REFERENCES

- A. Sheet Metal and Air Conditioning Contractors National Association (SMACNA) *Architectural Sheet Metal Manual* - Fourth Edition, 1987
- B. FM - Roof Assembly Classifications.
- C. UL - Fire Hazard Classifications.

1.04 SYSTEM DESCRIPTION

- A. U.L. Class A Fire Rated System.
- B. Furnish and install, complete, a new 10-year (minimum) manufacturer warranted standing seam metal roof and self-adhering underlayment over the existing wood plank and plywood decks. The new roof system shall be engineered by metal roofing manufacturer for this particular project. All costs for any required engineering and additional components (not specified herein) of that design shall be incorporated into the contractor's base bid.

1.05 SUBMITTALS

- A. As provided in Section 01330 and 01340.
- B. Product Data: For each type of roofing product specified. Include data substantiating that materials comply with requirements.
- C. Shop Drawings: Include plans, sections, details, and attachments to other work, for the following:
 - 1. Base flashings, cants, ridges, risewalls, parapets, seams, endlaps and terminations.
 - 2. The new roof system shall be engineered by metal roofing manufacturer for this particular project. All costs for any required engineering and additional components (not specified herein) of that design shall be incorporated into the contractor's base bid. Contractor shall provide the manufacturers engineered design of the system for review.
- D. Samples for Verification: Of the following products.
 - 1. **12-inch by-12-inch** square of sheet metal products.
- E. Installer Certificates: Signed by roofing system manufacturer certifying that Installer is approved, authorized, or licensed by manufacturer to install specified roofing system and is eligible to receive the standard roofing manufacturer's warranty.
- F. Manufacturer Certificates: Signed by roofing system manufacturer certifying that the roofing system complies with warranty requirements. 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.
- G. Product Test Reports: Based on evaluation of tests performed by manufacturer and witnessed by a qualified independent testing agency, indicate compliance of components of roofing system with requirements based on comprehensive testing of current product compositions.
 - 1. Include quantity and statistical and descriptive data for each product. Submit certificate with each load before it is used.
- H. Research/Evaluation Reports: Evidence of roofing system's compliance with building code in effect for Project from a model code organization acceptable to authorities having jurisdiction.
- I. Warranty: Sample copy of standard roofing manufacturer's warranty stating obligations, remedies, limitations, and exclusions of warranty.

- J. Inspection Report: Copy of roofing system manufacturer's inspection report of completed roof installation.

1.06 QUALITY ASSURANCE

- A. As provided Section 01450.

- B. Qualifications of Manufacturer

- 1. Products used in the work included in this section shall be produced by manufacturers regularly engaged in the manufacturing of similar items and with a history of successful production and product installations.

- C. Qualifications of Contractor

- 1. The Contractor shall be previously and currently approved by the manufacturer of the products to be installed under this section of the specification. Verification of approved Contractor status shall be by written manufacturer certification, as stated elsewhere.

- D. Qualifications of Installers

- 1. Installers shall be thoroughly trained and experienced in the necessary crafts. Installers shall be made familiar with any unique requirements specified for proper performance of the work in this section. Installers shall have been an approved installer by the manufacturer for at least 5 years.

- E. Rejection

- 1. In the acceptance or rejection of work under this section, no allowance will be made for lack of skill or specification understanding on the part of the workmen. It shall be incumbent upon the contractor to use adequate numbers of skilled installers and to instruct them in the requirements of the project specifications as well as maintaining a set of the project specifications and drawings on the roof at all times.

- F. Replacement

- 1. In the event inadequate or improper installation is determined, contractor shall make all repairs and replacements required to render the installation compliant with the project specifications. Replacements, due to improper performance, shall be at the sole cost of the contractor.

1.07 REGULATORY REQUIREMENTS

- A. As provided in the General Conditions.

B. This Section, Article 1.04.

1.08 PRECONSTRUCTION CONFERENCE

A. As provided in Section 01312.

1.09 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery: Material shall be delivered in the manufacturers original sealed and labeled containers or wrappings and in sufficient quantities to provide for continuous installation progress without disruption or delay due to lack of materials on site.

B. Storage: Materials shall be stored out of direct exposure to the elements and shall be stored on pallets or other storage supports, a minimum of 6 inches above the roof or ground surface. All materials shall be covered with canvas tarps or fitted synthetic tarp like covers.

1. If materials are to be stored on the roof, they shall be sufficiently distributed around the perimeter or over load bearing supports to prevent over stressing of the roof deck.

2. Polyethylene roll stock material is not an acceptable tarp material.

3. Prior to leaving the job site, daily, tarps are to be secured at all edges to immovable objects and anchored sufficiently to prevent blow off or dislocation.

C. Handling: Material shall be handled in such a manner as to preclude damage or contamination with moisture or foreign matter.

D. In the event of damage from delivery, storage, or handling of materials under this section, immediately replace deficient materials. Any installation of damaged materials shall be immediately removed and replaced. Replacement of damaged or improperly installed materials shall be at the sole cost of the contractor.

E. Coordinate delivery with the City.

F. Prevent wrappers and packaging materials from inclusion in the roofing system.

G. Material containers, mixing, and dilution:

1. Containers shall be closed and sealed except when materials are being removed.

2. Follow Manufacturers' instructions for mixing and stirring.

3. Cements, adhesives, primers, coatings, and sealants which have been diluted or

cut-back, after their manufacture shall not be incorporated into the Work.

1.10 ENVIRONMENTAL REQUIREMENTS

- A. Work shall not commence during inclement weather.
- B. Work shall not commence on a day when precipitation is imminent or probable.
- C. Work shall not proceed over damp substrates.
- D. Cold weather application procedures shall be employed when sustained ambient temperature is less than 40 degrees Fahrenheit:

1.11 SEQUENCING AND SCHEDULING

- A. Coordinate and schedule all phases of the Work of the Contract Documents with the City, Subcontractors, Material Suppliers and other parties as necessary to ensure the smooth and orderly transition of separate phases, or portions, of the Work, the timely placement of components and materials, including the complete cooperation between parties and proper execution of the Work.
- B. Work shall not be performed outside of normal business hours without the prior approval of the City.
- C. Work is to be performed on a daily basis, with each section completed before progressing to the next days work.
- D. Completion of work shall be defined as all specified existing roof preparation and the complete installation of all insulation, metal panels, flashings, counterflashings, sheet metal work, sheet metal fasteners and caulking.
- E. Contractor shall complete roofing work on a daily basis unless specifically directed otherwise by the City.
- F. In no case shall the contractor install the new roof system when it cannot be finished weathertight due to weather, temperature, rain or other factors as defined by the manufacturer.
- G. Removal of the existing roof and installation of the new roofing is to be sequenced so as to minimize foot and equipment traffic over new roof system.

1.12 GUARANTEE AND WARRANTIES

- A. The Contractor shall provide the City with the roof membrane system manufacturers 20 year NDL guarantee against defects in materials and workmanship. A specimen of this guarantee shall be presented to the City at Contract execution. The completed and

approved guarantee agreement shall be delivered to the City before final payment will be made. The guarantee shall provide for repair and replacement of defective Work at no cost to the City.

- B. The Contractor shall warrant all Work performed under this Contract for a period of 5 years from the date of Substantial Completion. The Contractor shall accept responsibility for the correction of defects in materials and workmanship and shall repair leaks promptly upon notice by the City or his Representative and at no cost to the City. The Contractor shall reimburse the City for repairs performed by others should the Contractor not remedy leaks within five (5) working days after written notice of said defects by the City.
- C. The Contractor shall provide and install a minimum of two (2) Guarantee/Warranty signs. Signs shall be a minimum of 8½” x 11” and be constructed of no less than 18 gauge metal. Background color shall be white with black lettering. Signs shall be professionally fabricated and printed by a supplier with experience in such work. Signs shall be mounted at the project site in locations selected by the City. Signs shall contain the following information:
1. Facility Name and Locations.
 2. Project W.B.S. Number.
 3. City of Houston named as Owner.
 4. Date of substantial completion.
 5. Roofing Contractor’s information:
 - a. Company name.
 - b. Company address.
 - c. Company contact person.
 - d. Company telephone number.
 - e. Contractor’s Warranty expiration date.
 - f. Contractor’s Warranty identification number.
 6. Manufacturer’s Warranty information:
 - a. Manufacturers name.
 - b. Manufacturers address.
 - c. Manufacturers contact person/department.
 - d. Manufacturers telephone number.
 - e. Manufacturers Warranty expiration date.
 - f. Manufacturers Warranty identification number.
 7. The following general information shall be posted on the sign:

“The roof system of this facility is under warranty and access is restricted except with the written permission of the facility manager. Work on or changes to the roof shall not be performed unless the prior written notification has been provided to the contractor and manufacturer(s) as identified herein.

PART 2 - MATERIALS

2.01 GENERAL

- A. Minimum product requirements have been listed. All of these components must be used and bid.

2.02 PREFABRICATED METAL STANDING SEAM ROOFING

- A. Panel Type and Profile:
 - 1. The new roof system shall consist of 24" wide panels manufactured from Galvalume Plus roll sheet metal and be formed with two corrugations per panel 3-inch high rib.
- B. Metal Roof System Style:
 - 1. Trapezoidal rib standing seam, utilizing male and female rib configurations with factory applied hot melt mastic in the seam.
- C. Metal Panel Gauge and Approvals:
 - 1. 24 gauge, UL-2218 Class 4, UL-264 Class A. UL-580 Class 90 and FM 4471.
- D. Clip:
 - 1. Two-piece floating clip providing thermal expansion and contraction.
- E. Finish:
 - 1. Smooth finish premium fluorocarbon coating produced with a Kynar 500 resin. Color to be selected by the Owner
- F. Approved Manufacturers
 - 1. Ultra-Dek by MBCI, Houston, Texas, or approved equal.
- G. Panels shall be of maximum length of minimize end laps.
- H. Panels shall be fastened to hat channels secured to existing structural members perpendicular to the direction of roof slope. Size and spacing of hat channels shall be determined by system engineering.
- I. In no case shall fasteners be left exposed to the elements.

J. All ridges caps, eave closures, and gutters shall be formed to allow for Expansion/contraction in all directions and shall be completely watertight.

K. All accessory items not specifically addressed herein shall be considered as implied in order to provide and maintain a watertight installation for the duration of the warranty period.

2.04 UNDERLAYMENT

A. A self-adhering and sealing, .60 mil thick bituminous leak barrier with a smooth polyethylene film such as StormGuard by GAFMC or approved equal. Underlayment must be approved by the metal roofing manufacturer.

2.05 PREFABRICATED ROOF JACKS

A. Pipe flashings shall be a one piece EPDM molded rubber boot having a serviceable temperature range of -65°F to 212°F or silicone molded rubber boot having a serviceable temperature range of -100° to 437°F and shall be resistant to ozone and UV rays. Units shall have an aluminum flanged base ring. Do not install pipe flashings through any panel seams. Install only in the flat portion of the panel.

2.06 MISCELLANEOUS MATERIALS

A. All self-tapping/self-drilling fasteners, bolts, nuts, self-locking rivets and other suitable fasteners shall be provided by the metal panel manufacturer or as recommended and approved by the metal panel manufacturer.

1. Use long life fasteners for all exposed fastener applications.
2. Provide fasteners with a factory applied coating in a color to match metal roof panel system.
3. Provide neoprene washers under heads of exposed fasteners.
4. Locate and space all exposed fasteners in a true vertical and horizontal alignment. Use proper torque settings to obtain controlled uniform compression for a positive seal without rupturing the neoprene washer.

B. Metal Roof Panel Accessories:

1. Provide all components required per the metal roof system manufacture's approved shop drawings for a complete metal roof system to included panels, panel clips, trim, flashings , fascias, ridge, closures, sealants, fillers and any other required items.

2.07 FABRICATION

A. Material shall be in-line tension leveled prior to roll forming panel profile.

- B. Where possible, roll form panels in continuous lengths, full length of detailed runs.
- C. Standard panel length shall be not more than 45 feet long unless approved by the manufacturer.
- D. Fabricate trim, flashing and accessories from the same material as the metal roof panel.

PART 3 - EXECUTION

3.01 GENERAL

- A. The latest manufacturer specifications and installation techniques are to be followed.

3.02 PRE-CONSTRUCTION SITE INSPECTION

- A. As provided in Section 01312.
- B. Examine site and determine satisfactory conditions for Work.
- C. Provide in writing to the City to notify of defects and conditions which may adversely influence performance or completion of Work.
- D. Absence of written notice will constitute the Contractors acceptance of site.
- E. Verify:
 - 1. Deck support, attachment, and integrity.
 - 2. Deck weight limits before loading materials.
 - 3. Existence and locations of above ground utility lines, underground utilities, water and gas lines, fire sprinkler systems, pavement heating devices, above and below deck conduit and tubing, ceiling suspension systems and lawn sprinkling systems.

3.03 WORKMANSHIP

- A. Form all sheet metal accurately and to the required dimensions and shapes.
- B. All exposed edges of cut sheet metal shall be folded back on concealed surfaces.
- C. Form, fabricate, and install all sheet metal so as to adequately provide for expansion and contraction in the finished work.
- D. Whenever possible, secure metal by means of clips or cleats without fastening

through exposed metal.

3.04 DAILY INSPECTION

- A. Examine the areas and conditions under which work in this section will be installed. Correct conditions detrimental to the proper and timely completion of the work. Do not proceed until such conditions have been corrected.

3.05 SURFACE CONDITIONS

- A. Surfaces scheduled to receive roofing are to be free of any moisture, frost, or loose debris.
- B. Substrate is to be smooth, free of sharp projections, and free of obvious depressions.
- C. All metal fittings specified or shown on drawings are to be in place before roofing.
- D. All nailers shall be securely installed prior to roofing.

3.06 UNDERLAYMENT APPLICATION

- A. Lay one layer of self adhering underlayment horizontally over the entire roof, lapping each course over lower course 2-inches minimum at horizontal laps and 4-inches minimum at the end laps.
- B. Lap underlayment from both sides over hips, ridges and valleys as indicated on the detail drawings.
- C. Underlayment shall be installed free of wrinkles or loose areas prior to installing new metal roof panels.
- D. Install metal drip edging and miscellaneous sheet metal components as shown in the detail drawings and in accordance with Section 07620 - Roof Related Sheet Metal.

3.07 WEATHERPROOFING

- A. Finish all sheet metal watertight and weathertight where so required.
- B. Where lap seams do not have a joint cover, lap according to pitch, but in no case less than 3".
- C. Make all lap seams in the direction of the water flow.

3.08 JOINTS

- A. Join parts with rivets or sheet metal screws where necessary for strength or stiffness.

- B. Provide suitable watertight expansion joints for all sheet metal as required for proper installation.
- C. Caulking of sheet metal shall be neatly and thoroughly performed for a watertight seal. All caulking shall be a smooth tooled finish.

3.09 FASTENING

- A. Secure metal as per manufacturer's latest printed literature and per FM recommendations.
- B. All clips and cleats are to be fastened a maximum of 12" on center with self-tapping screws.
- C. On the roof side, copings are to be fastened a maximum of 12" on center with washers and screws.
- D. All fasteners to be corrosion resistant coated.

3.10 SOLDERING

- A. General: Thoroughly clean and tin all joint materials prior to soldering.

3.11 CLEAN UP

- A. The contractor shall clear the construction areas and shall provide for the removal from the building site of all his construction debris.
- B. All debris shall be removed from the premises promptly and the construction area left clean daily.
- C. The contractor is responsible to assure that his subcontractors have properly removed and disposed of all debris relating to their Contract.
- D. At the completion of the Contract, contractor is to remove and dispose of all equipment related to his Contract.

3.12 MANUFACTURER'S FIELD SERVICES

- A. Provide manufacturer's field services.
- B. Request progress inspections by manufacturer's representative where required under guarantee provisions. A mid-term and final inspection are required by the manufacturer at a minimum.

END OF SECTION