

SECTION 013080
ROOFTOP ACOUSTICAL SCREENS

PART 1 - GENERAL

1.01 PROVISIONS INCLUDED

- A. The general provisions of the Contract, including General and Supplementary Conditions and Division 1 - General Requirements, apply to work specified in this Section.

1.02 SUMMARY

- A. This Section specifies roof screens, mounted on existing roof, including the following types of work:
 - 1. Sound absorbing panels.
 - 2. Non-acoustical screen panels.
 - 3. Supporting structure and bracing tied to building structure.
 - 4. Subgirts for attachment of panels.
- B. Alternates: Work of this Section is Alternate No. 8. Refer to Section 01230 for description of Alternates and administrative requirements applicable to Alternates.
- C. Related Work Specified in Other Sections:
 - 1. Cutting and patching roofing; flashing around supports: Section 07530.
 - 2. Field painting of supports and braces: Section 09900

1.03 DESIGN REQUIREMENTS

- A. Structural Design: Design, engineer, and fabricate the roof screen system to withstand structural loads in accordance with provisions of Maine Building Code/BOCA "National Building Code" 1999 edition, and as follows:
 - 1. Dead Loads: Weights of materials and construction.
 - 2. Wind Loads on Vertical Elements (Acting Normal to the Surface): 25 psf minimum, and 38 psf at salient corners, per Section 1609.8.
- B. Acoustical Requirements: Design and fabricate acoustical panels with the following properties:
 - 1. Sound Transmission Coefficient (STC): STC = 25 or higher. (Roof perimeter acoustical screen panels only.)
 - 2. Noise Reduction Coefficient: NRC 0.90 or higher. (Both roof perimeter and wall-mounted screens.)

1.04 SUBMITTALS

- A. **Product Data:** Submit product data for products used in fabrication of the metal roof screen system fabrications. Submit manufacturer's specifications and installation instructions for all components of the roof screen system, complete with the manufacturer's printed installation instructions. Indicate by copy of transmittal letter that the installer(s) of the item(s) have been provided a copy of the instructions.
- B. **Submit shop and erection drawings for metal roof screen system fabrications. Drawings shall include:**
 - 1. Location of roof screens.
 - 2. **Field Measurements:** Before starting work, verify measurements, lines, grades, elevations, locations and details of existing roof conditions and be responsible for correctness, conformity, accuracy, and execution of metal roof screen system work to conform to actual conditions.
 - 3. Drawings detailing fabrication and erection of each metal roof screen system required or inferred.
 - 4. Include plans, elevations, sections, and details of metal roof screen system and their connections.
 - 5. Show anchorage and accessory items.
 - 6. Clearly identify deviations, if any, from the Contract Documents. Such deviations are subject to the Architect's approval.
- C. **Calculations:** Submit structural computations, material properties, and other information needed for structural analysis that has been signed and sealed by a Professional Engineer registered in the State of Maine and experienced in providing structural engineering design for roof screen systems similar to the system required for this project.
- D. **Acoustical Test Reports:** Submit test reports from acoustical testing laboratory showing that the assemblies provide the specified STC and NRC values.

1.05 QUALITY ASSURANCE

- A. **Installer Qualifications:** Arrange for installation of metal roof screen system by firm experienced in the installation of roof screen systems similar in material, design, and extent to that indicated for this Project.
- B. **Engineer Qualifications:** Professional engineer licensed to practice in the state of Massachusetts, and experienced in providing engineering services of the kind indicated that have resulted in the successful installation of metal roof screen system fabrications similar in material, design, and extent to that indicated for this Project.
- C. **Coordinate Work of this Section with roofing work specified in Section 07530, so that base supports are properly flashed.**

- D. Mock-Ups: Provide the following mock-ups, in accordance with Section 01400 requirements for mock-ups, and with the following requirements, using the actual materials proposed for use on this Project.
1. Visual appearance Mock-Up of screen panels: Provide a full size mock-up of roof screen panel assembly for Architect's. Make mock-up full height of screen assembly and five feet wide, incorporating a vertical reveal joint. Place the mock-up on the roof at a location designated by the Architect, so that it can be viewed from the ground. This mock-up does not need to include the specified support system except for sub-girts.
 2. Installation Mock-Up: Install two adjacent braces and the subgirts and panels between them, including base flashing, coping and reveals, for Architect's review of details of the installation and workmanship. Leave one tube support exposed and patch and flash roofing around the other. Adjust details of materials and workmanship until the mock-up is accepted by the Architect. This mock-up, when accepted, may be left in place as part of the finished work.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Package components for protection during transportation and handling. Handle to prevent deformation and damage. Unload, store, and erect metal wall panels in a manner to prevent bending, warping, twisting, and surface damage.
- B. If materials are going to be stored on site for any period of time, store the steel base supports on raised pallets and cover with breathable plastic or tarps to prevent surface rust. The remaining fittings, bundles of tubing, hat sections and other miscellaneous items can also be uncovered, but make sure the load is raised at one end to allow water to run off if it gets wet.
- C. Panels: Stack metal wall panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal wall panels to ensure dryness, with positive slope for drainage of water. Do not store metal wall panels in contact with other materials that might cause staining, denting, or other surface damage.
1. Protect strippable protective covering on metal wall panels from exposure to sunlight and high humidity, except to extent necessary for period of metal wall panel installation.
- D. Support System: Deliver and store tubing and hat sections in bundles held together with metal bands; pack and ship fittings and hardware in wood crates. Use either a fork lift or crane to unload. Do not lift the bundles by the metal bands. Comply with system manufacturer's recommendations for hoisting.
1. When setting the load on the roof, spread the bundles and crates out as much as possible to avoid overloading the roof structure. Place the material directly over major supports such as beams or trusses. After tubing is unbundled, take care to prevent it from rolling down the roof slope.

PART 2 - PRODUCTS

2.01 METAL PANELS

- A. Manufacturer and Product: Centria "IW-10A" and "IW-40A" are the Basis of Specification and Drawings; products by other manufacturers meeting specifications will be acceptable.
- B. Steel Face Panels: Flat-face, unperforated steel panels 12" wide by 1-1/2" deep, formed with interlocking edges for installation with concealed fasteners. Face may be lightly embossed, but vee-grooves or ribs will not be acceptable.
 - 1. Material: 0.0428 inch thick (18 gauge) G90 zinc-coated (galvanized steel).
- C. Aluminum Liner Panels: Flat face, perforated aluminum panels, 24" wide by 1-3/8" deep, formed with interlocking edges for installation with concealed fasteners. Panels may be formed with intermediate ribs or vee-grooves for stiffening.
 - 1. Material: 0.040 inch thick aluminum.
 - 2. Perforations: 10% free area.
- D. Accessories:
 - 1. Subgirts: For attaching face panels to liner panels, provide hat-shaped steel subgirts, 1/2 inch deep, fabricated from 0.052 inch thick (16 gauge) hot-dip G90 galvanized steel.
 - 2. Base Flashing: 0.0428 inch thick G90 galvanized steel.
 - 3. Coping: 0.0428 inch thick G90 galvanized steel.
- E. Fasteners (for securing panels to subgirts): Non-corroding material compatible with the panels; type as recommended by panel manufacturer to suit project conditions, metal thickness, support materials and thickness, and wind loads.
- F. Metal Finishes:
 - 1. Finish exposed-to-view faces of panels (including face exposed toward the building exterior and face visible to a person standing on the roof) and trim with polyvinylidene coating system containing at least 70% "Kynar 500" or "Hylar 5000" resin; Centria "Fluorofinish" or equal.
 - a. Color: Match Centria's #971, "Chromium Gray."
 - 2. Finish concealed faces of panels with panel manufacturer's standard concealed side finish.

2.02 ACOUSTICAL INSULATION

- A. Sound Insulation: Glass fiber batt or blanket insulation, 1.65 pcf density, 1-1/2" thick, encapsulated in polyethylene film, suitable for exterior exposure under conditions indicated for this Project, and meeting the NRC performance requirements specified in Part 1 of this section.

2.03 SUPPORT STRUCTURE AND BRACING

- A. General: Provide a manufactured roof screen support system designed for bolted attachment to concrete roof deck and coordinated installation with roofing system in a manner which prevents water leaks around the base supports.
- B. Basis of Specification: "RoofScreen" System as produced by the RoofScreen Manufacturing Co., 347 Coral Street, Santa Cruz, CA., 95060, (866) 766-3727.
- C. Base Supports: Hot-rolled steel. Fabricate base supports by fully-welding tubular steel upright to flat base plate.
- D. Base Caps: Hot-rolled steel. Fabricate base cap components with precision smooth, laser-cut edges and fully welded, watertight joints.
- E. Connector Fittings: Fabricated from ASTM A-366, cold rolled steel.
- F. Tubing: 2-1/2" outer diameter round, galvanized steel tubing having a minimum wall thickness of 0.060 (16 ga.), and of the length indicated on the Drawings. Provide larger diameter or thicker wall tubing if required by the structural design.
- G. Girts (Hat Sections): In accordance with the Cold Formed Steel Design Manual Published by the American Iron and Steel Institute (AISI).
- H. Hardware: Provide all miscellaneous fittings, connectors and fasteners, including, but not limited to: Base caps, base connectors, field connectors, end connectors, hat sections, hat splices, corner splices, friction rings, stop rings, gate catch weldments, gate latch weldments, and miscellaneous fasteners.
 - 1. Miscellaneous Fasteners: Stainless steel.
- I. Exposed Metal Finishes:
 - 1. Tubing and Hat Sections: Zinc plate; material shall conform to ASTM-B633, FE-ZN5, type 1 clear.
 - 2. All Exposed Steel fittings: Powder Coat Finish; Dupont Bike Black T6IC Polyester #PFB603S9.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. In the company of the installer, inspect the substrates to which the roof screen is to be anchored, adjacent work, and conditions under which the roof screen is to be installed. Do not proceed with the installation until conditions detrimental to the performance or appearance of the roof screens have been corrected.
- B. Prior to beginning work, thoroughly review the manufacturer's printed instructions.

3.02 INSTALLATION OF SUPPORTS AND BRACING

- A. Measure and layout the extent of the roof screen system on the roof surface. Locate features such as gate openings and where base supports are to be installed.
- B. Where possible, based upon the field measured dimensions, shop cut the tubing to the required lengths prior to delivery to the jobsite.
- C. Begin installation of base supports. Install using attachment method as indicated on the approved Shop Drawings in straight and consistent lines. After completion of installation of all base supports, complete with lead flashing boot and base cap, notify the Contractor and the Roofer. After the completion of roofing work, resume and complete the work of this Section.
- D. Install framing members (tubes, horizontal, vertical and diagonal), base connectors, field connectors, end connectors, etc.) in accordance with the manufacturer's printed instructions. At gate openings, pay particular attention to the special requirements specified by the manufacturer.
- E. Install the upper hat section in place and attach it to the vertical tube frame with Tek screws. Use two Tek screws per frame. Make sure to keep the frames plumb before installing the screws. Install remaining rows of hat sections using the same methods.

3.03 PANELS

- A. General: Install metal panels in accordance with panel manufacturer's printed instructions and with the approved Shop Drawings. Install panels plumb, parallel to the roof edge, and with top edge straight and true to the (sloped) line shown on Drawings.
 - 1. Installation Tolerances: Shim and align metal wall panel units within installed tolerance of 1/4 inch in 20 feet, nonaccumulative, on level, plumb, and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.
- B. Install base flashing to provide support and complete secondary drainage system, draining to the exterior at horizontal joints. Attach the base flashing to the lower hat section, and level it to establish the elevation of the bottom of the screens.
- C. Acoustical Screens: Where liner panels or acoustical screen installation is indicated, install screen system as follows:
 - 1. Attach the aluminum liner panels to the hat sections using concealed fasteners.
 - 2. Place encapsulated insulation inside the liner panels and hold in place in accordance with panel manufacturer's recommended details and with the approved shop drawings.
 - 3. Attach the subgirts to the outer face of the liner panels.
 - 4. Attach the steel face panels to the subgirts.
- D. Non-Acoustical Screens: Attach the face panels directly to the hat sections using concealed fasteners.

- E. Trim: Install corner angles, coping, reveal trim and other accessories for a complete and continuous screen installation, without gaps.

3.05 CLEANING AND PROTECTION

- A. Remove metal scraps, screws, and other debris resulting from the Work of this Section from the roof and from the jobsite.
- B. Clean surfaces of roof screen system as required to prevent deterioration and uneven weathering.

END OF SECTION 13080