SECTION 13080
ROOFTOP ACOUSTICAL SCREEN

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 the acoustical roof screen, mounted on the existing roof, including the following types of work:
   1. Acoustical screen panels.
   2. Supporting structure and bracing tied to building structure.
   3. Subgirts or other secondary framing for attachment of panels to structural posts.

B Related Work Specified in Other Sections:
   1. Cutting and patching roofing; flashing around supports: Section 07590.
   2. Field painting of supports and braces: Section 09900

1.03 DESIGN REQUIREMENTS

A. General: Intent is that the acoustical roof screen assembly will be designed and built by the Contractor, who shall bear responsibility for the engineering design of the system. All components of the acoustical roof screen system which are not shown in these Drawings or specified in this Section shall be the responsibility of the Contractor, subject to acceptance by the Owner.

B. Structural Design: Design, engineer, and fabricate the roof screen system to withstand structural loads in accordance with provisions of Maine Building Code/IBC "International Building Code" 2003 edition, and as follows:

   1. Dead Loads: Weights of materials and construction.

   2. Wind Loads: As calculated from the Building Code, Section 1609, for Exposure C, 100 mph design wind velocity, and Importance Factor 1.15.

   3. Seismic Loads: As calculated from the Building Code, Section 1613 through 1621 for Seismic Use Group I, Seismic Design Category B, and Site Class D.

C. Acoustical Requirements: Design and fabricate acoustical panels with the following properties:

   1. Sound Transmission Coefficient (STC): STC = 25 or higher.

   2. Noise Reduction Coefficient: NRC 0.90 or higher.

D. Size, Quantity: Height and length/extend of the assembly as shown on Drawings.

1.04 SUBMITTALS

A. Product Data: For all products used in fabrication of the metal roof screen assembly. Submit manufacturer's specifications and installation instructions for all components of the roof screen system, complete with the manufacturer’s printed installation instructions.

B. Submit shop and erection drawings for metal roof screen system. Drawings shall include:

1. Plans showing location of screens, supports, and points of anchorage. Show locations of roof edge, and of adjacent construction and equipment on the roof.

2. Elevations and sections.

3. Details of fabrication and erection. Show adjacent construction and equipment, with clearances. Show methods of anchorage and accessory items.

4. Field Measurements: Before fabricating screens, verify measurements, lines, grades, elevations, locations and details of existing roof conditions. Verify clearances required for access to existing equipment on the roof. Be responsible for correctness, conformity, accuracy, and execution of acoustical roof screen system work to conform to actual conditions.

5. 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 Maine, 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. Fabrication Standard:

D. Coordinate Work of this Section with roofing work specified in Section 07590, so that base supports which penetrate roofing are properly flashed.

E. 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. Mock-Up for Evaluation of Appearance: Provide a full size mock-up of roof screen panel assembly for review by the Owner and the Architect. Locate this mock-up on the roof, in same relationship to the roof edge as the actual screen, at a location designated by the Architect, so that it can be viewed from the ground. Make mock-up full height of screen assembly and wide enough to incorporate one repeat of any pattern elements such as reveal joints; but no less than five feet wide.
   a. Make modifications to the mock-up until the appearance is accepted by the Owner.

2. Installation Mock-Up: Install two adjacent primary support elements (posts and/or braces) and the secondary framing (subgirts) and panels between them, including flashing and trim, for Architect's review of details of the installation and workmanship. If screen supports penetrate the roofing, leave one post support exposed and patch and flash roofing around the other.
   a. Adjust details of materials and workmanship until the mock-up is accepted by the Architect.
   b. This mock-up, when accepted, may be left in place as part of the finished work. Complete the flashing of the other support.

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 metal 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 SUPPORT STRUCTURE AND BRACING

A. General: Provide a roof screen support system designed for bolted attachment to concrete roof deck, with the ability to withstand the structural and seismic loads specified in Article 1.03 with the screen panels attached.

B. Material: Fabricate the support structure, including uprights, bases, secondary supports such as subgirts or furring, and connector fittings, from hot-dip galvanized steel.

C. Hardware: Provide all miscellaneous fittings, connectors and fasteners, required to complete the assembly. Fasteners shall be stainless steel or other non-corroding material compatible with the materials being fastened.

2.02 METAL PANELS AND TRIM

A. Steel Face Panels: Panels may be either galvanized steel or aluminum.

1. Steel Panel Material: G90 zinc-coated steel sheet (galvanized steel); thickness as required by the engineering design, but not less than 0.0428 inch thick.

2. Aluminum Panel Material: Alloy and temper as recommended by manufacturer to suit structural, forming and finishing requirements; thickness as required by the engineering design, but not less than 0.063 inch thick.

3. Appearance: Flat-face, unperforated; formed with interlocking edges for installation with concealed fasteners. Face may be lightly embossed, but vee-grooves or ribs will not be acceptable.

B. Liner Panels: Liner panels may be either galvanized steel or aluminum. Flat face, perforated panels, formed with interlocking edges for installation with concealed fasteners. Liner panels may be formed with intermediate ribs or vee-grooves for stiffening.

1. Perforations: As required to meet the acoustical performance requirements.

C. Top Caps (Coping) and End Caps: Same material and finish as the face panels.

2.03 ACOUSTICAL INSULATION

A. Sound Insulation: Panel manufacturer's standard, weather-resistant insulation which imparts the specified acoustical performance; but not less than 1.65 pcf density glass fiber batt or blanket insulation encapsulated in polyethylene film.

2.04 METAL FINISHES

A. General: Finish panels and supports in the factory so that no field painting is necessary.

B. Exposed Panel Finishes: Finish face-panels on face exposed to the facade exterior as follows:

1. Steel Panels: Manufacturer's standard polyurethane finish system.

2. Aluminum Panels: High-performance organic resin coating; polyvinylidene coating system conforming to ASTM 2605 and containing at least 70% "Kynar 500" or "Hylar 5000" resin; Centria "Fluorofinish" or equal.

3. Finish Color: To be selected by the Architect.

C. Finish concealed faces of panels with panel manufacturer's standard concealed side finish.

D. Structural Supports: Finish supports which are visible from the street side of the building with powder-coat finish to match color the panels; supports which will not be visible by the public may be left galvanized and unpainted.

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 and the locations of supports. Do not begin the installation until the layout has been accepted by the Architect.

B. Install supports in correct location, plumb and level, in accordance with approved shop drawings. Fasten securely to roof structure as required to resist project wind and seismic loads.

C. Coordinate installation of structural supports with roofing and flashing work, so that at the completion of the installation, any penetrations of the roofing are flashed watertight.

1. Do not leave penetrations exposed to the weather overnight or when there is rain or snow. If necessary, provide temporary watertight flashing where screen supports penetrate roofing.

3.03 PANELS

A. General: Install acoustical panels, including face and liner panels and acoustical insulation, 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. Orient the perforated face toward the chillers.

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

3.04 CLEANING

A. Clean surfaces of roof screen system. Touch up damaged finishes to the satisfaction of the Owner.

B. Remove metal scraps, screws, and other items which might damage the roofing membrane daily; do not leave them on the roof. At completion of the work, remove packing material and other debris resulting from the Work of this Section from the roof and from the jobsite.

END OF SECTION 13080