SECTION 07460 - INSULATED STRUCTURAL DECK PANEL SYSTEM

PART 1 GENERAL

1.01 WORK INCLUDED

A. Provide labor, materials, and equipment necessary to complete the work of this Section including but not limited to the following:

1. Fibrous wood deck with integral insulation and nailable roof deck surface.

2. Clips, fasteners and other accessories required for complete installation.

1.02 RELATED SECTIONS

A. Section 06180 – Glue-Laminated Timber.

B. Section 07610 – Metal Roofing.

1.03 REFERENCE STANDARDS

A. Except as otherwise specified herein or shown on the Drawings, comply with the latest editions of all applicable codes and regulations including the applicable requirements of the following Reference Standards and Codes which are hereby made a part of this Section, as they relate to the Fibrous Wood Cementitious Decking:

1. American Society for Testing and Materials (ASTM):

a. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot–Plate Apparatus.
b. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
c. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.
d. ASTM D1621- Standard Test Method for Compressive Properties of Rigid Cellular Plastics.
e. ASTM D2842- Standard Test Method for Water Absorption of Rigid Cellular Plastics.
f. ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials.

2. Underwriter Laboratories Inc. (UL):

a. UL Fire Resistance Directory.
b. UL 580 Standard for Safety for Tests for Uplift Resistance of Roof Assemblies.

1.04 SYSTEM DESCRIPTION

A. Design Requirements: Provide roof deck assembly designed and tested according to the following:

1. Underwriters Laboratories Fire Resistance Directory (Time-Rated Designs): 1 hour Restrained/Unrestrained.
2. Underwriters Laboratories UL 580 (UL Class 90 Design)

B. Performance Requirements:

1. Provide a roof deck system which has been manufactured, fabricated and installed to provide deflection of less than L/240 at design load.
2. Comply with requirements of Factory Mutual Class I Roof Deck.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Utilize an installer having demonstrated experience on projects of similar size and complexity.

B. Comply with the following Regulatory Requirements and Approvals:

1. Building Officials and Code Administrators International, Inc. (BOCA):

a. BOCA Research Report No. 86-39.

2. Southern Building Code Congress International (SBCCI).

a. SBCCI Report 9506A.

3. International Conference of Building Officials (ICBO).

a. ICBO Research Report No. 1116.

1.06 SUBMITTALS

A. Product Data: Submit manufacturer's specifications and instructions for manufacturers and products. Only pre-qualified products may be used in the Work of the Project.

B. Certificate of Compliance: Submit certified statement, signed by officer of deck manufacturing firm, indicating compliance with all requirements of Contract Documents,

including specifically with requirements noted on Structural Drawings.

1. Provide manufacturer's complete design calculations prepared by a Registered Professional Engineer, licensed in the State of Maine.

C. Shop Drawings: Submit shop drawings showing complete information for fabrication and installation of deck units. Indicate member dimensions and cross section; location, size and type of reinforcement, including special reinforcement and lifting devices necessary for handling and erection.

1. Provide layout, dimensions, and identification of each unit corresponding to sequence and procedure of installation.

2. Include erection procedure for precast units and sequence of erection.

3. Provide manufacturer's complete design calculations prepared by a licensed Professional Engineer in the State of Maine.

1.07 DELIVERY, STORAGE AND HANDLING

A. Provide careful job coordination for simultaneous application of roofing to insure that deck is not exposed to precipitation or condensation which may cause water staining or reduce the structural strength of the deck with extended exposure.

B. If job conditions do not permit prompt application of the roofing, protect deck from the weather. Comply with deck manufacturer's recommendations.

C. Store roof deck material in adequate level blocking 6" minimum raised platform. Protect deck from the weather with waterproof coverings. Protect edges and surfaces of decking against marring, soil or damage during storage and erection. Cover the bottom of stacks with moisture proof material and allow for air circulation under cover to prevent condensation.

D. When heavy materials must be placed or transported over the deck, place planking to distribute the weight and to support such materials.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Fibrous wood cementitious decking shall be as manufactured by: Tectum Inc., 105 South 6th Street, Newark, OH 43055.

B. Equivalent products of other manufacturers which meet the requirements of the Drawings and this Section may be provided if approved by the RESIDENT.

2.02 MATERIALS

A. Product: Tectum III Roof Deck Panels

B. Description: 1-1/2" thick fibrous wood structural decking with rigid plastic insulation and nailable top deck surface, all integrally bonded together during manufacturing process.

1. Structural Decking: 1-1/2" thick fibrous wood material, tongue and groove long edges, sufficient length for two span condition except end fillers to accommodate staggered joint installation.

a. Provide silicone treatment to decking material to resist water penetration and migration.

2. Insulation: Extruded (only) polystyrene insulation, Styrofoam by Dow Chemical Company, complying with physical properties of Fed. Spec. HH-I-524, Type C.

a. Expanded polystyrene or foamed polyurethane insulating materials are not acceptable.

3. Nailable Deck: Waferboard type sheathing, 7/16" thick, bonded under heat and pressure with waterproof phenolic resin material, meeting following requirements:

a. Internal Bond: 50 psi.
b. Average Roofing Nail Withdrawal: 50 pounds.
c. Average Roofing Staple Withdrawal: 137 pounds.
d. Average screw withdrawal: 180 pounds.
e. Maximum Linear Expansion, 50-90% R.H.: 0.20%

4. Overall Thickness: Nominal 7 inches, or as required to meet insulating requirements of R-30.

C. Design Conditions:

1. Code Listing: BOCA
2. Structural Loadings: Refer to Structural Drawings.
3. Insulating Efficiency: Total R-Value, composite decking materials only, R-29 minimum.

4. Flame Spread: Flame spread of 25 or less when tested in accordance with ASTM

E-84 for the exposed interior surface.

5. Acoustical: NRC 60 minimum.

D. Fasteners: Not lighter than 18 gauge galvanized steel clips or other approved devices, of types recommended by manufacturer for type of deck and support steel specified.

E. ALTERNATE 15 – Wood Ceiling Finish -The base bid calls for an insulated structural deck panel system as the ceiling finish in the Receiving Station and Terminal Building. This alternate adds a finished 1x6 T&G (solid oak, cherry, or composite board) ceiling, screwed directly to underside of said decking, running lengthwise and fitting snugly between Glulam members. Submit material and finish samples to Resident.

PART 3 EXECUTION

3.01 INSPECTION

A. Verify that supports and openings are ready to receive fibrous wood cementitious decking.

D. Rood deck erector to inspect structural supports; structural erector to rectify discrepancies in placement, spacing, or alignment from shop drawings before the roof deck is installed.

C. Beginning of installation means acceptance of existing conditions.

3.02 GENERAL:

A. Cut panels to fit neatly at walls, parapets, curbs or other openings. Provide additional structural frame support for all openings greater than 8” in either direction.

B. Continuously support all ends and edges of decking along the outside perimeter by the outside walls directly or by supplemental framing.

3.03 PLANK INSTALLATION:

A. Lay roof planks directly on joists with square cut ends butted tightly together. Stagger end joints in alternate rows and center on supporting members. Use driving block to insure tight joints and prevent damage to plank. Support plank on ends, with minimum bearing on joists of 1”.

B. Fasten all plank to steel joists by means of galvanized clips, Tek screws or nailed to nailable members. Provide one clip at every joist bearing.

C. Install plank with tongue leading.

D. Install fasteners as soon as plank is laid, before anyone is allowed to walk over decking.

3.04 TEMPORARY PROTECTION:

A. Cover completed decking with 6-mil polyethylene film, secured with wood battens at 24" on centers.

B. Lay poly shingle style, working from low point up, with all edges lapped 6" minimum and occurring under battens.

C. Secure battens with fasteners as recommended by deck manufacturer. Set at slight angle with 2" separations at ends to facilitate drainage of rain water.

D. Leave temporary protection in place until roof covering material is installed.

END OF SECTION