

SECTION 05 31 01

ER3.5A METAL ROOF DECK

PART 1: GENERAL

1.1 SUMMARY

- A. The requirements of this specification section include all materials, equipment, and labor necessary to furnish and install an ER3.5A-20 gage acoustical roof deck.
- B. ER3.5A-20 gage acoustical roof deck shall serve as a structural roof deck and a finished ceiling as indicated on the contract drawings.
- C. ER3.5A-20 gage acoustical roof deck shall provide an exposed bottom surface that is substantially flat. The narrow rib openings of the ER3.5A-20 gage acoustical roof deck shall provide the appearance of a linear ceiling. Fasteners for sidelaps and overlying roofing materials shall be concealed within the depth of the dovetail shaped ribs.
- D. Ankore™ hanging devices that are specially configured to fit into the dovetail shaped ribs of the ER3.5A-20 gage acoustical roof deck shall be available. These hanging devices shall be utilized whenever any related work is suspended from ER3.5A-20 gage acoustical roof deck. Ankore™ hanging devices shall be furnished by the installer of the related work unless otherwise indicated.

1.2 RELATED WORK

The following related work is not part of this specification section:

- A. Structural Steel: Supplementary framing.
- B. Roofing: Other than structural roof deck and accessories.
- C. Painting: Preparation for and application of field painting.
- D. Mechanical: Attachments to ER3.5A-20 gage acoustical roof deck.
- E. Electrical: Attachments to ER3.5A-20 gage acoustical roof deck.

1.3 SUBMITTALS

Submit the following items with the conditions of the contract and appropriate specification sections:

- A. The manufacturer's specifications, section properties, load tables, diaphragm shear tables, dimensions, finishes, and noise reduction coefficients shall be submitted.
- B. Shop drawings shall be submitted showing panel placement, profiles, material thicknesses, finishes, layout, anchorage and openings as dimensioned on the structural drawings.

- C. A full width sample shall be submitted as requested to verify compliance with the specifications and the level of quality.

1.4 REFERENCE STANDARDS

- A. Section properties shall be computed in accordance with the American Iron and Steel Institute (AISI) Specification for Design of Cold-Formed Steel Structural Members.
- B. Welding shall comply with the applicable provisions of the American Welding Society (AWS) D1.3 Structural Welding Code-Sheet Steel.
- C. Superimposed load and diaphragm shear capacities shall be computed in accordance with the requirements of the Steel Deck Institute (SDI).
- D. The manufacturer shall have been regularly engaged in the production of a deck section with dovetail shaped ribs for a period of at least ten years.
- E. Noise reduction coefficients shall be verified by the result of sound absorption tests conducted in accordance with ASTM C423 and E795.
- F. ER3.5A-20 gage acoustical roof deck shall have been tested and approved by Factory Mutual Research Corp. for use in Class I insulated steel deck roof construction. ER3.5A-20 gage acoustical roof deck shall be listed in the FM Approval Guide. All panels shall bear the appropriate FM approved label.
- G. ER3.5A-20 gage acoustical roof deck shall be approved by the International Conference of Building Officials (ICBO) for use as a structural roof deck and shear diaphragm and have a valid ICBO evaluation report.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. The ER3.5A-20 gage acoustical roof deck shall be protected from damage during delivery, storage, and handling.
- B. If storage at the jobsite is required, ER3.5A-20 gage acoustical roof deck shall be elevated above the ground, sloped to provide drainage, and protected from the weather with a ventilated covering.

1.6 SUBSTITUTION

- A. Reference in the specification to any product, material, type or form of construction shall establish the minimum standard of quality and performance. These standards shall not be abridged or modified for any reason for the purpose of substitution.
- B. The contractor shall submit any proposed substitution in writing to the Architect of Record for consideration prior to the original bid date. The substitution proposal package shall include, at the architect's option, a sample product, structural and performance data, and finish description.
- C. This data will be coordinated and reviewed by the project design professionals.

PART 2: PRODUCTS

2.1 MANUFACTURER

- A. In accordance with the requirements of this specification section, provide products manufactured by EPIC METALS CORPORATION, Rankin, PA.
- B. The type ER3.5A-20 gage acoustical roof deck, design thickness, section properties, and NRC shall be shown on the structural design drawings. Minimum Section Properties shall be: $I_p=1.72 \text{ in}^4$, $S_p=0.68 \text{ in}^3$, $S_n=0.76 \text{ in}^3$.

2.2 MATERIAL

- A. The ER3.5A-20 gage acoustical roof deck shall be cold-formed from steel coils conforming to ASTM A653, structural quality, with a minimum yield strength of 40 ksi.
- B. Before forming, the steel coils shall have received a hot-dip protective coating of zinc conforming to ASTM A924, Class G60, as defined in ASTM A653.
- C. The minimum uncoated thickness of the steel furnished shall not be less than 95% of the design thickness.

2.3 FABRICATION

- A. ER3.5A-20 gage acoustical roof deck shall have continuous dovetail shaped ribs.
- B. ER3.5A-20 gage acoustical roof deck shall have full depth positive registering sidelaps that can be fastened by welds or screws.
- C. The ER3.5A acoustical roof deck shall have one shallow(shadow) stiffening rib no greater than 0.075 inches in depth and 2.5 inches in width roll formed in the center of the exposed surface of the deck to provide additional stiffness and to minimize the possibility of oil canning. "V" grooves will not be acceptable..
- C. ER3.5A-20 gage acoustical roof deck shall be fabricated with perforations. The perforated areas shall be located in the bottom flat areas between the dovetail shaped ribs. A minimum NRC value of 1.00 shall be provided. This value shall be established by sound absorption tests without the use of fiberglass insulation above the panels.
- D. The top and bottom surfaces of the ER3.5A-20 gage acoustical roof deck shall be prime painted at the factory. Before painting, the galvanized steel shall be chemically cleaned, pretreated and coated with an epoxy primer, oven baked, then followed by a second coat of a polyester paint and then oven baked. After the prime painted galvanized coil has been roll formed into the ER3.5A profile, the factory prime painted deck profile shall receive an additional coat of EPICLAD Finish Paint applied to the exposed(bottom) surface of the deck and a protective peel coat shall be factory applied to the bottom surface of the ER3.5A-20 gage acoustical roof deck. This protective peel coat must be removed in the field and shall be the responsibility of the contractor.

2.4 ACCESSORIES

- A. Ankore™ hanging devices shall be installable and relocatable along the length of the interior ribs of the ER3.5A-20 gage acoustical roof deck. The manufacturer's product data shall be consulted for minimum spacing, load capacities, and proper installation procedure of the Ankore™ hanging devices.
- B. The manufacturer's standard ridge plates, valley plates, transition plates, and closures shall be provided as indicated on the structural drawings.
- C. Openings and reinforcement for openings noted specifically by the deck manufacturer on the structural drawings shall be provided.
- D. Acoustic elements shall be provided for installation above the perforations in the bottom flat area between the dovetail shaped ribs. To facilitate field painting of the perforated surfaces, the sound absorbing elements shall be supported above the surface by spacers. Sound absorbing elements and spacers shall be furnished under this specification section for installation by the roofing contractor.

PART 3: EXECUTION

3.1 GENERAL

- A. The ER3.5A-20 gage acoustical roof deck shall be installed in strict accordance with the manufacturer's instructions, approved erection drawings, and all applicable safety regulations.

3.2 BEFORE INSTALLATION

- A. The supporting frame and other work relating to the ER3.5A-20 gage acoustical roof deck shall be examined to determine if this work has been properly completed.
- B. Bundles of material shall be located on the supporting frame in such a manner that overloading of any individual framing members does not occur.
- C. All components of the ER3.5A-20 gage acoustical roof deck shall be protected from significant damage during shipment and handling. If storage at the jobsite is required, bundles or packages of these materials shall be elevated above the ground, sloped to provide drainage, and protected from the elements with a ventilated, waterproof covering.

3.3 INSTALLATION

- A. Before being permanently fastened, ER3.5A-20 gage acoustical roof deck shall be placed on the supporting frame and adjusted to final position with ends accurately aligned and adequately bearing on the supporting frame. Consistent coverage shall be maintained so that panels located in adjacent bays will be properly aligned.
- B. Cutting of ER3.5A-20 gage acoustical roof deck to suit jobsite conditions shall be performed in a neat and professional manner. Only those openings indicated on the structural drawings shall be cut. Other openings shall be cut and reinforced by those requiring the openings as approved by the structural engineer.

- C. The ER3.5A-20 gage acoustical roof deck shall be fastened to all supporting members with 3/4" diameter puddle welds at a nominal spacing of 8" on center or less or as indicated on the manufacturer's erection drawings.
 - 1. The sides of ER3.5A-20 gage acoustical roof deck located at the perimeter of the building shall be fastened to supporting members with 3/4" diameter puddle welds at a maximum spacing of 36" on center or less as indicated on the manufacturer's erection drawings.
- D. The sidelaps of ER3.5A-20 gage acoustical roof deck shall be fastened together with 1 1/2" long fillet welds or #12 screws as indicated on the manufacturer's erection drawings.
- E. Construction loads shall not be applied to ER3.5A-20 gage acoustical roof deck until after the panels are permanently fastened to supporting members, and sidelaps are attached. The construction loads shall not exceed the capacity of the panels.
- F. Items such as ceilings, light fixtures, conduit, pipe and ductwork shall not be suspended from ER3.5A-20 gage acoustical roof deck without specific approval of the structural engineer.
- G. Sump pans, ridge plates, valley plates, transition plates, eave plates, and supplied reinforcement for small openings shall be fastened as indicated on the manufacturer's erection drawings.

3.4 AFTER INSTALLATION

- A. Construction loads that could damage the ER3.5A-20 gage acoustical roof deck such as heavy concentrated loads and impact loads shall be avoided. Planking shall be used in all high traffic areas.
- B. Galvanizing and other coatings that are damaged must be field repaired using appropriate methods and shall be the responsibility of the contractor.
- C. Cleaning the bottom surface of the ER3.5A-20 gage acoustical roof deck for field painting shall be the responsibility of the contractor.

END OF SECTION 05 31 01