SECTION 03 41 13
PRECAST CONCRETE ROOF PLANKS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Section specifies precast concrete roof planks.

B. Designs: channel.

1.2 MANUFACTURER'S QUALIFICATIONS

Products of one manufacturer regularly engaged in making precast concrete planks of type specified.

1.3 SUBMITTALS

A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES .

B. Shop Drawings: Roofing plank framing layout, anchorage, and installation details.

C. Manufacturers Certificates: Stating plank conforms to specification requirements.

1.4 APPLICABLE PUBLICATIONS

A. Publications listed below form a part of specification to extent referenced. Publications are referred to in text by basic designation only.

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

A36-04.....Structural Steel

A185-02.....Steel Welded Wire, Fabric, Plain, for Concrete Reinforcement

A653/A653M-04.....Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process

A615/A615M-04.....Deformed and Plain Billet-Steel Bars for Concrete Reinforcement

A996/A996M-04.....Rail-Steel and Axle-Steel Deformed Bars for Concrete Reinforcement

C144-04.....Aggregates for Masonry Mortar

C150-04.....Portland Cement

C494-04.....Chemical Admixtures for Concrete

C881-02.....Epoxy-Resin-Base Bonding Systems for Concrete

PART 2 - PRODUCTS

2.1 MATERIALS

A. The slabs shall be MidCon lightweight precast concrete channel slabs manufacturered by MidCon Products, Inc., Hortonville, Wisconsin, or

equal as approved by the Structural Engineer of Record, with 20 year manufacturer's warranty. Slabs shall be composed of an approved brand of Portland cement and the highest grade lightweight aggregate, accurately graded and thoroughly mixed and vibrated to obtain the greatest possible density. All lightweight concrete shall have minimum compressive strength of 5000 psi in 28 days. Each leg shall be reinforced with one deformed bar accurately centered so as to have at least one-half inch of impervious concrete on all sides. The web of the slab is to be reinforced with a sheet of galvanized welded wire mesh accurately placed.

B. Reinforcing:
   1. Welded wire Fabric: ASTM A185, galvanized size as required by plank manufacturers.
   2. Bars: ASTM A615 or A996, deformed. Grade as required by plank manufacturer.
C. Chemical Admixtures: ASTM C494, Type as required by plank manufacturer.
D. Bonding Adhesive: ASTM C881.
E. Steel Clips:
   1. ASTM A653.
   2. Designed to anchor planks to steel framing.
F. Grout:
   1. Cement Grout: One part portland cement and two parts fine sand.
   2. Epoxy Grout: ASTM C881.

2.2 FABRICATION

A. Planks:
   1. Shapes: channel to match existing.
   2. Manufacture: Reinforced concrete, composed of lightweight mineral aggregate, portland cement and water, resulting in a unit having a minimum compressive strength of 5000 psi for structural slabs.
B. Allowable Tolerances:
   1. Thickness and depth 3 mm, (1/8 inch).
   2. Length and width 6 mm (1/4 inch).
   3. Camber or Sweep:
      a. Plus or minus 6 mm (1/4-inch).
      b. Variation in camber between adjacent and abutting members, 3 mm (1/8 inch).
   4. Inserts, bolts and pipe sleeves: Deviation from location shown - not more than 10 mm (3/8 inch).
C. Exposed concrete surfaces natural cement color free of honeycomb, pit holes, or other defects.

D. Not acceptable: Warped, cracked or broken units.

E. Channel Plank:

1. Fabricate to thickness shown.
2. Provide plank with square edges and closed ends and sides at roof edges except where concealed in finished work.
3. Reinforce channel plank with wire fabric in the web section, and steel reinforcement bars in flanges.

F. Steel Clips:

1. Provide zinc-coated steel clips for plank to secure plank to framing.
2. For inclines exceeding 1 in 6 (2-inches per foot), provide an angle clip to support planks at lower purlin.

PART 3 - EXECUTION

3.1 INSTALLATION

A. The installation of the slabs shall be performed in a workmanlike manner and in accordance with the manufacturer’s recommendations. Panels should be unloaded, stored, hoisted and handled on edge. Bundles should be handled with nylon slings. Lifting should be done by the method of cradling, not choking. All joints between the slabs shall be cemented on the upper side with an approved brand of asphaltic cement and the finished deck shall present a smooth finish ready for the application of roofing material. Slabs shall be anchored on alternate corners to the supports with galvanized clips furnished by the manufacturer.

B. Before erection of slabs, clean bearing surfaces.

C. Erect slabs to prevent chipping and cracking and to provide a level deck surface.

1. Locate end joints on centerline of support.
2. After erection, fill joints on upper side of channel slabs with epoxy grout cement.
3. Finish grout joint flush.

D. Do not make cutouts without approval of Resident Engineer.

1. Form openings or carefully saw cut; do not punch openings.
2. Locate openings less than 150 mm (6-inches) wide in sections of plank between reinforcing bars.
3. Frame openings larger than 150 mm (6-inches) wide with structural steel headers.

3.2 RELATED WORK OF OTHER SECTIONS:

A. Bearing of slabs on supporting members shall be at least 2”. Cants, curbs, and saddles shall be provided by others. Any and all bearing steel shall be provided by others (i.e. roof deck, opening framing, etc.). Protection of joint against damage until roofing is applied shall

be provided by others. Bearing surfaces of supporting members shall be kept free and clear of bolts, rivets, welds bridging and any other obstructions that would interfere with proper seating of precast slabs. Built-up roofing may be applied using an asphalt primer as per roofing specifications for precast concrete deck.

3.3 REPLACEMENT AND REPAIR

A. Replace broken, cracked, and warped plank, and planks exceeding allowable tolerances.

B. Plank having defects, not affecting serviceability of deck, may be repaired with epoxy grout if approved by Resident Engineer.

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