

**SECTION 03 55 11  
GYPSUM CONCRETE FLOOR DECKS**

SPEC WRITER NOTE:

1. Delete between // // if not applicable to project. Also delete any other item or paragraph in the section and renumber the paragraphs.
2. This is a sole source system. Prior approval for its use is required.
3. Insure details show system.

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. Section specifies gypsum plank systems for fire rated interstitial decks //.
- B. Optional system for interstitial decks. //

**1.2 RELATED WORK**

- A. Section 05 12 00, STRUCTURAL STEEL FRAMING: Steel Framing.
- B. Section 09 91 00, PAINTING: Sealer for interstitial floor and floor paint for traffic area in interstitial space.

**1.3 QUALITY CONTROL**

- A. Work performed by experienced, qualified installers approved by manufacturer of gypsum plank.
- B. Gypsum materials products of one manufacturer.

**1.4 SUBMITTALS**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES. All items indicated below are required submittals requiring Contracting Officer's Representative (COR) review and approval.
- B. Fire Tests: Fire tests, data and certifications substantiating that Gypsum Plank Decking complies with fire rating requirements.
- C. Shop Drawings: Show typical plank layouts, perimeter and framed opening supports and details of construction, installation, fastenings and grouting.
- D. Manufacturer's Literature and Data: Each item specified.
- E. Load tables for sub-purlins.
- F. Sustainable Construction Submittals.

SPEC WRITER NOTE: Retain sustainable construction submittals appropriate to product.

G. Recycled Content: Identify post-consumer and pre-consumer recycled content percentage by weight.

**1.5 DELIVERY AND STORAGE**

- A. Deliver materials in original packages, containers, or bundles bearing brand name and name of manufacturer.
- B. Store materials in a manner that prevents damage before use. When stored under tarpaulins, provide ventilation to prevent moisture accumulation under tarpaulin.
- C. Store gypsum planks flat and off ground. Handle and stack in a manner to prevent damage to face, ends, and edges and keep dry until used.
- D. Store gypsum concrete off ground and keep dry until used.

**1.6 APPLICABLE PUBLICATIONS**

A. The publications listed below form a part of this specification to the extent referenced. Publications are referenced in the text by basic designations only.

B. ASTM International (ASTM):

A36/A36M-19.....Standard Specification for Carbon Structural Steel

A499-15 (2020).....Standard Specification for Steel Bars and Shapes, Carbon Rolled from "T" Rails

A568/A568M-19a.....Standard Specification for Steel, Sheet, Carbon, Structural, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for

A653/A653M-20.....Standard Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc Iron Alloy Coated (Galvannealed) by the Hot Dip Process

C317/C317M-00 (2019).....Standard Specification for Gypsum Concrete

C1396/C1396M-17.....Standard Specification for Gypsum Board

E119-20.....Standard Test Methods for Fire Tests of Building Construction and Materials

C. American Welding Society Publication (AWS):

D1.1/D1.1M-20.....Structural Welding Code - Steel

**PART 2 - PRODUCTS**

**2.1 MATERIALS**

A. Sub-purlins:

- 1. Open web truss-tees, hot-rolled bulb-tees or folded sheet metal tees as required by design loads, spans and fire ratings.

2. Flanges: Provide 16 mm (5/8-inch) minimum bearing for gypsum planks.
  3. Galvanize or factory coat sub-purlins with manufacturer's standard primer.
  4. Open web truss-tees: Fabricate from cold-formed steel wire conforming to ASTM A1064.
  5. Hot-rolled bulb-tees: Rail-shaped, fabricated from hot-rolled steel conforming to ASTM A36 or ASTM A499.
  6. Folded sheet metal tees: Fabricate from sheet steel conforming to ASTM A653 and ASTM A568.
- B. Cross-Tees:
1. Cold-Formed, Fabrication from sheet steel conforming to ASTM A525 or ASTM A568.
  2. Size: 30 mm (1-1/4-inches) by 13 mm (1/2-inch) by 0.6 mm (0.023-inch) thick by 600 mm (24-inches) long.
- C. Gypsum Deck Plank:
1. Fabricated of gypsum board: ASTM C1396.
  2. Nominal Size: 50 mm (2-inches) thick by 600 mm (24-inches) wide by main purlin span. Where possible, length should span two main purlin spans.
  3. Factory laminate from two 25 mm (1-inch) thick gypsum panels with top panel edge set back along sub-purlin edge not more than 13 mm (1/2-inch).
  4. Edge encased in water-resistant paper.
- D. Gypsum Deck Panels: ASTM C1396, Type "X", 16 mm (5/8-inch) thick by 600 mm (24-inches) wide by main purlin span.
- E. Grout: Gypsum Concrete: ASTM C317, Class A, 3.5 MPa (500 psi) minimum compressive strength.

## 2.2 DECK SYSTEM

- A. Interstitial deck: Provide two-hour fire rating as tested by Gypsum plank manufacturer under ASTM E119 fire test conditions modified to simulate the Department of Veterans Affairs Building System test described in National Institute of Standards and Technology Report NBSIR 85-3158, "Fire Performance of Interstitial Space Construction System".

**PART 3 - EXECUTION****3.1 INSPECTION**

- A. Examine substrates, framing and conditions under which gypsum plank is to be installed and notify COR in writing of conditions detrimental to proper and timely completion.
- B. Do not proceed until unsatisfactory conditions have been corrected.

**3.2 INSTALLATION**

- A. Weld per AWS D1.1.
- B. Sub-purlins:
  - 1. Space at approximately 650 mm (24-5/8-inches) on center to provide minimum 16 mm (5/8-inch) continuous bearing for gypsum plank or deck.
  - 2. Install framing of openings.
  - 3. Touch up welds with same type of rust-inhibitive paint used for primer.

## SPEC WRITER NOTE:

- 1. When sub-purlins are used to carry superimposed loads, such as ceilings, lighting fixtures or other building components, consult load tables for sub-purlin size selection.
  - 2. Select and detail appropriate attachment methods.
- 4. // Interstitial Decks: Use 19 mm (3/4-inch) fillet welds on both sides of sub-purlins at math purlin. //
- C. For Two Hour fire rated interstitial decks //.
    - 1. Place gypsum deck panels on bottom flanges of sub-purlins with 16 mm (5/8-inch) minimum continuous bearing.
    - 2. Place gypsum deck plank over gypsum deck panels, with off-set edges "up" to form a "T" receptacle for gypsum grout.
    - 3. Cut to fit around openings shown.
    - 4. Install plank to conform to fire test assembly.
  - D. Provide continuous 16 mm (5/8-inch) minimum bearing for plank support at deck perimeter, plank ends and openings exceeding 200 mm (8-inches).
  - E. Grout:
    - 1. Mix gypsum concrete thoroughly using a minimum amount of water to form a thick, pourable consistency.
    - 2. Fill edge joints to slight excess with single pour at sub-purlins.
      - a. Grout end joints on single span system against steel framing.
      - b. After initial set, strike of excess to form smooth, flush joint.

- c. //Form cant strips and curbs where shown. //
  - 3. //Fill joints at roof ridges, hips and valleys. //
- F. Patching:
- 1. Fill with grout and smooth any surface damage to gypsum plank.
  - 2. Remove and replace cracked, broken, and plank damaged beyond repair.
- G. Cleaning and Protection:
- 1. Upon completion of gypsum plank decking, remove, debris and sweep surface clean. Leave ready for subsequent work.
  - 2. Protect finished deck from weather and subsequent construction operations.
  - 3. Provide hardboard or plywood temporary protection over decking subject to repetitive impact or wheeled loads.

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