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UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated October 2014

SECTION 03 55 16

GYPSUM CONCRETE FLOOR PLANKS

04/08

NOTE: This guide specification covers the requirements for gypsum plank systems for fire rated floor decks.

Adhere to [UFC 1-300-02](#) Unified Facilities Guide Specifications (UFGS) Format Standard when editing this guide specification or preparing new project specification sections. Edit this guide specification for project specific requirements by adding, deleting, or revising text. For bracketed items, choose applicable items(s) or insert appropriate information.

Remove information and requirements not required in respective project, whether or not brackets are present.

Comments, suggestions and recommended changes for this guide specification are welcome and should be submitted as a [Criteria Change Request \(CCR\)](#).

PART 1 GENERAL

1.1 REFERENCES

NOTE: This paragraph is used to list the publications cited in the text of the guide specification. The publications are referred to in the text by basic designation only and listed in this paragraph by organization, designation, date, and title.

Use the Reference Wizard's Check Reference feature when you add a RID outside of the Section's Reference Article to automatically place the reference in the Reference Article. Also use the Reference Wizard's Check Reference feature to update the issue dates.

References not used in the text will automatically be deleted from this section of the project specification when you choose to reconcile references in the publish print process.

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN WELDING SOCIETY (AWS)

AWS D1.1/D1.1M (2010; Errata 2011) Structural Welding Code - Steel

ASTM INTERNATIONAL (ASTM)

ASTM A1064/A1064M (2013) Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete

ASTM A36/A36M (2012) Standard Specification for Carbon Structural Steel

ASTM A499 (1989; R 2008) Standard Specification for Steel Bars and Shapes, Carbon Rolled from "T" Rails

ASTM A568/A568M (2013a) Standard Specifications for Steel, Sheet, Carbon, Structural, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for

ASTM A653/A653M (2013) Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

ASTM C1396/C1396M (2014) Standard Specification for Gypsum Board

ASTM C317/C317M (2000; R 2010) Gypsum Concrete

ASTM E119 (2012a) Standard Test Methods for Fire Tests of Building Construction and Materials

1.2 SYSTEM DESCRIPTION

NOTE: Gypsum plank deck systems may be used for service floors, located between main floors of hospitals or other buildings of similar construction, to access mechanical or electrical equipment. This type of decking will be specified ONLY as a Contractor's option to other types of decking since it is a proprietary product. Optional systems will be specified in other Sections and may

be cast-in-place gypsum, light weight concrete, expanded metal, or other competitive material suitable to the project.

Gypsum plank decking is suitable for moderate temperature and humidity conditions, as recommended by the manufacturer. This type of decking is intended only for walking and for light construction live loads. The maximum allowable superimposed load on the plank is 2.4 kPa (50 psf). Serviced equipment will be supported by structural framing members. Gypsum plank decking is not to be used for material storage. Ceiling suspended under plank decks will be hung from the steel frame or subpurlins, not from the plank itself.

Designer should require materials, products and innovative construction methods and techniques which are environmentally sensitive, take advantage of recycling and conserve natural resources.

The gypsum plank deck system specified in this Section is a Contractor's option to other systems specified in Sections [____]. Provide gypsum plank deck systems which are the products of one manufacturer. Perform the work specified through experienced, qualified installers. Design of the decking system shall be for the dead load conditions and spans indicated; and a maximum allowable superimposed load on the plank of 2.4 kPa 50 psf, to include live load and loads imposed by openings; work of other trades; and all loading and restraining conditions from fabrication, handling, and erection. Support equipment and ceiling by structural framing not from gypsum planks. Deflection shall not exceed L/240 of span. Provide floor decks that are 2 hour fire rating in accordance with ASTM E119 fire test conditions.

1.3 SUBMITTALS

NOTE: Review submittal description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list to reflect only the submittals required for the project.

The Guide Specification technical editors have designated those items that require Government approval, due to their complexity or criticality, with a "G." Generally, other submittal items can be reviewed by the Contractor's Quality Control System. Only add a "G" to an item, if the submittal is sufficiently important or complex in context of the project.

For submittals requiring Government approval on Army projects, a code of up to three characters within the submittal tags may be used following the "G" designation to indicate the approving authority. Codes for Army projects using the Resident Management System (RMS) are: "AE" for Architect-Engineer; "DO" for District Office

(Engineering Division or other organization in the District Office); "AO" for Area Office; "RO" for Resident Office; and "PO" for Project Office. Codes following the "G" typically are not used for Navy, Air Force, and NASA projects.

An "S" following a submittal item indicates that the submittal is required for the Sustainability Notebook to fulfill federally mandated sustainable requirements in accordance with Section 01 33 29 SUSTAINABILITY REQUIREMENTS.

Choose the first bracketed item for Navy, Air Force and NASA projects, or choose the second bracketed item for Army projects.

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for [Contractor Quality Control approval.] [information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government.] Submittals with an "S" are for inclusion in the Sustainability Notebook, in conformance to Section 01 33 29 SUSTAINABILITY REQUIREMENTS. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Installation[; G][; G, [_____]]

SD-03 Product Data

Structural Steel Tee Subpurlins

SD-07 Certificates

Fire Rated Decks

1.4 DELIVERY, STORAGE, AND HANDLING

Deliver materials in original packages, containers, or bundles with the brand name and name of the manufacturer shown on accompanying bills of lading. Store materials in a manner that prevents damage before use. When stored under tarpaulins, provide adequate ventilation to prevent condensation. Handle and stack gypsum plank avoiding damage to face, ends and edges; and store off the ground and keep dry until used. Store gypsum concrete off the ground and keep dry until used.

PART 2 PRODUCTS

2.1 DECK UNITS

2.1.1 Gypsum Deck Plank

Provide gypsum deck plank [50] [65] mm [2] [2-5/8] inch nominal thickness by 610 mm 24 inches by required length, enough to span two main purlin spans where possible, with offset edges encased in water resistant paper in accordance with ASTM C1396/C1396M.

2.1.2 Gypsum Deck Panels

**NOTE: Gypsum deck panels are required for all
 interstitial decks.**

ASTM C1396/C1396M, Type X, 15 by 610 mm 5/8 by 24 inches by required length.

2.1.3 Gypsum Concrete

ASTM C317/C317M, Class A, 3.5 MPa 500 psi compressive strength.

2.1.4 Cross-Tees

When required, provide Cross-Tees cold formed, fabricated from sheet steel conforming to ASTM A653/A653M or ASTM A568/A568M, size 32 by 13 by 0.584 mm 1-1/4 by 1/2 by 0.023 inch thick by 610 mm 24 inch long. Galvanize or factory coat tees with manufacturer's standard primer.

2.1.5 Miscellaneous Materials

Adhesives, mastics, cements, tapes and primers shall be as recommended by the gypsum plank manufacturer and be compatible with the material to which they are to be bonded.

2.2 STRUCTURAL STEEL TEE SUBPURLINS

**NOTE: Select structural support required by deck
 type, design loads, spans, and fire rating. Delete
 other subparagraphs.**

Flanges shall provide 15 mm 5/8 inch minimum bearing for gypsum deck panels. Galvanize or factory coat tees with manufacturer's standard primer. Submit load tables for subpurlins; fire tests results; manufacturer's literature on each item specified and current printed installation instructions.

2.2.1 Open Web Truss

ASTM A1064/A1064M cold formed steel wire.

2.2.2 Hot-rolled Bulb

Rail shaped hot-rolled steel conforming to ASTM A36/A36M or ASTM A499.

2.2.3 Folded Sheet Metal Tees

Sheet metal conforming to ASTM A568/A568M.

PART 3 EXECUTION

3.1 INSTALLATION

Perform installation in accordance with the approved drawings. Make field-cut openings for utilities penetrations in accordance with the manufacturer's recommendations. Perform welding in accordance with

AWS D1.1/D1.1M. Submit detail drawings showing decking installation, including framing at all openings for support of the units. Accompany the detail drawings by setting details and design calculations showing that the decking installation meets material and design requirements.

3.1.1 Subpurlins

Align subpurlins to the required spacing, bearing evenly on structural framing members. End bearings shall be a minimum of **25 mm 1 inch**. Subpurlin ends shall have at least **3 mm 1/8 inch** clearance to allow for expansion. Provide **19 mm 3/4 inch** fillet welds on both sides of subpurlins at each support. Touch up welds with same type of rust-inhibitive paint used for primer.

3.1.2 Fire Rated Decks

For fire rated decks gypsum deck, place panels on bottom flanges of subpurlins. Place gypsum deck planks over gypsum deck panels in accordance with manufacturer's directions for fire rated system. Place planks with offset edges "up" to form a "T" receptacle for gypsum concrete. Submit certification, based on fire test results, substantiating that the decking furnished complies with fire rating requirements.

3.1.3 Gypsum Concrete

Thoroughly mix gypsum concrete using a minimum amount of water to form a thick, pourable mixture. Fill edge joints to slight excess with single pour at subpurlins. Grout end joints on single span system steel framing. After initial set, strike off excess grout to form smooth, flush joint. Patch any surface damage to gypsum plank with grout and smooth. Remove and replace planks damaged beyond repair.

3.2 CLEANING AND PROTECTION

Protect the installed decking units from damage by weather and construction operations. Keep the complete decking clean and free of damaged or defaced units, and left ready to receive painting. Surfaces to be painted shall be dry and free of grease and oil. Place a paint sealer on the top surface; traffic areas shall receive a second coat of floor paint.

-- End of Section --