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USACE / NAVFAC / AFCEA / NASA UFGS-03 51 16 (April 2006)  
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Preparing Activity: USACE Replacing without change  
UFGS-03511 (August 2004)

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UML dated 1 April 2006

Latest change indicated by CHG tags

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### SECTION 03 51 16

#### GYPSUM PLANK DECKING (CONTRACTOR'S OPTION) 04/06

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

Comments and suggestions on this guide specification are welcome and should be directed to the technical proponent of the specification. A listing of technical proponents, including their organization designation and telephone number, is on the Internet.

Recommended changes to a UFGS should be submitted as a Criteria Change Request (CCR).

Use of electronic communication is encouraged.

Brackets are used in the text to indicate designer choices or locations where text must be supplied by the designer.

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## PART 1 GENERAL

### 1.1 REFERENCES

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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.

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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 (2006) Structural Welding Code - Steel

ASTM INTERNATIONAL (ASTM)

ASTM A 36/A 36M (2005) Carbon Structural Steel

ASTM A 499 (1989; R 2002) Steel Bars and Shapes, Carbon Rolled from "T" Rails

ASTM A 568/A 568M (2005) Steel, Sheet, Carbon, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for

ASTM A 653/A 653M (2004a) Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

ASTM A 82 (2005) Steel Wire, Plain, for Concrete Reinforcement

ASTM C 317/C 317M (2000) Gypsum Concrete

ASTM C 36/C 36M (2003e1) Gypsum Wallboard

ASTM C 442/C 442M (2004e1) Gypsum Backing Board, Gypsum Coreboard, and Gypsum Shaftliner Board

ASTM E 119 (2000a) Fire Tests of Building Construction and Materials

1.2 GENERAL REQUIREMENTS

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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.

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The gypsum plank deck system specified in this Section is a Contractor's option to other systems specified in Sections [\_\_\_\_]. Gypsum plank deck systems shall be the products of one manufacturer. The work specified shall be performed by 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. Equipment and ceiling shall be supported by structural framing not from gypsum planks. Deflection shall not exceed L/240 of span. Floor decks shall provide 2 hour fire rating in accordance with ASTM E 119 fire test conditions.

### 1.3 SUBMITTALS

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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. Submittals should be kept to the minimum required for adequate quality control.

A "G" following a submittal item indicates that the submittal requires Government approval. Some submittals are already marked with a "G". Only delete an existing "G" if the submittal item is not complex and can be reviewed through the Contractor's Quality Control system. Only add a "G" 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.

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

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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.] The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

#### SD-02 Shop Drawings

Installation[; G][; G, [\_\_\_\_\_]]

Detail drawings showing decking installation, including framing at all openings for support of the units. The detail drawings shall be accompanied by setting details and design calculations showing that the decking installation meets material and design requirements.

#### SD-03 Product Data

##### Structural Steel Tee Subpurlins

Load tables for subpurlins. Fire tests results. Manufacturer's literature on each item specified and current printed installation instructions.

#### SD-07 Certificates

##### Fire Rated Decks

Certification, based on fire test results, substantiating that the decking furnished complies with fire rating requirements.

### 1.4 DELIVERY AND STORAGE

Materials shall be delivered in original packages, containers, or bundles with the brand name and name of the manufacturer shown on accompanying bills of lading. Materials shall be stored in a manner that prevents damage before use. When stored under tarpaulins, adequate ventilation shall be provided to prevent condensation. Gypsum plank shall be handled and stacked avoiding damage to face, ends and edges and shall be stored flat and off the ground and kept dry until used. Gypsum concrete shall be stored off the ground and kept dry until used.

## PART 2 PRODUCTS

### 2.1 DECK UNITS

#### 2.1.1 Gypsum Deck Plank

Gypsum deck plank shall be [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 C 442/C 442M.

#### 2.1.2 Gypsum Deck Panels

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NOTE: Gypsum deck panels are required for all  
interstitial decks.  
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ASTM C 36/C 36M, Type X, 15 by 610 mm 5/8 by 24 inches by required length.

#### 2.1.3 Gypsum Concrete

ASTM C 317/C 317M, Class A, 3.5 MPa 500 psi compressive strength.

#### 2.1.4 Cross-Tees

Cross-Tees, when required, shall be cold formed, fabricated from sheet steel conforming to ASTM A 653/A 653M or ASTM A 568/A 568M, 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. Tees shall be galvanized or factory coated 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 shall be compatible with the material to which they are to be bonded.

### 2.2 STRUCTURAL STEEL TEE SUBPURLINS

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NOTE: Select structural support required by deck  
type, design loads, spans, and fire rating. Delete  
other subparagraphs.  
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Flanges shall provide 15 mm 5/8 inch minimum bearing for gypsum deck panels. Tees shall be galvanized or factory coated with manufacturer's standard primer.

#### 2.2.1 Open Web Truss

ASTM A 82 cold formed steel wire.

#### 2.2.2 Hot-rolled Bulb

Rail shaped hot-rolled steel conforming to ASTM A 36/A 36M or ASTM A 499.

#### 2.2.3 Folded Sheet Metal Tees

Sheet metal conforming to ASTM A 568/A 568M.

## PART 3 EXECUTION

### 3.1 INSTALLATION

Installation shall be in accordance with the approved drawings. Field-cut openings for utilities penetrations shall be accomplished in accordance with the manufacturer's recommendations. Welding shall be in accordance

with AWS D1.1/D1.1M.

#### 3.1.1 Subpurlins

Subpurlins shall be aligned to the required spacing and shall bear 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. Welds shall be 19 mm 3/4 inch fillet welds on both sides of subpurlins at each support. Welds shall be touched up with same type of rust-inhibitive paint used for primer.

#### 3.1.2 Fire Rated Decks

For fire rated decks gypsum deck panels shall be placed on bottom flanges of subpurlins. Gypsum deck planks shall be placed over gypsum deck panels in accordance with manufacturer's directions for fire rated system. Planks shall be placed with offset edges "up" to form a "T" receptacle for gypsum concrete.

#### 3.1.3 Gypsum Concrete

Gypsum concrete shall be thoroughly mixed using a minimum amount of water to form a thick, pourable mixture. Edge joints shall be filled to slight excess with single pour at subpurlins. End joints on single span system shall be grouted against steel framing. After initial set, excess grout shall be stricken off to form smooth, flush joint. Any surface damage to gypsum plank shall be patched with grout and smoothed. Planks damaged beyond repair shall be removed and replaced.

### 3.2 CLEANING AND PROTECTION

The installed decking units shall be protected from damage by weather and construction operations. The complete decking shall be kept 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. The top surface shall receive a paint sealer; traffic areas shall receive a second coat of floor paint.

-- End of Section --