UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated January 2021
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05/16

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SECTION 03 51 13

CEMENTITIOUS WOOD FIBER DECKS
05/16

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NOTE: This guide specification covers the requirements for cementitious wood fiber 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 item(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).
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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 Reference Identifier (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	(2020) Structural Welding Code - Steel

APA - THE ENGINEERED WOOD ASSOCIATION (APA)

APA PS 2	(2010; R 2014) Performance Standard for Wood-Based Structural Use Panels

ASTM INTERNATIONAL (ASTM)

ASTM C423	(2009a) Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
ASTM C578	(2019) Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation
ASTM E84	(2020) Standard Test Method for Surface Burning Characteristics of Building Materials
ASTM E1349	(2006; R 2013) Standard Test Method for Reflectance Factor and Color by Spectrophotometry Using Bidirectional (45°:0° or 0°:45°) Geometry

1.2 SUBMITTALS

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NOTE: Review submittal description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list, and corresponding submittal items in the text, to reflect only the submittals required for the project. The Guide Specification technical editors have classified 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 Army projects, fill in the empty brackets following the "G" classification, with a code of up to three characters 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.

The "S" classification indicates submittals required as proof of compliance for sustainability Guiding Principles Validation or Third Party Certification and as described in Section 01 33 00 SUBMITTAL PROCEDURES.

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" or "S" classification. Submittals not having a "G" or "S" classification are [for Contractor Quality Control approval.][for information only. When used, a code following the "G" classification identifies the office that will review the submittal for the Government.] Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Roof Decking Installation; G[, [_____]]

1.3 DELIVERY, STORAGE, AND, HANDLING

Store roof decking units off the ground and protect from weather, marring, damage, or overload. Provide adequate ventilation to prevent condensation. Provide temporary plank walkways or platforms for distributing the weight of materials that are required to be placed upon or transported over the roof decking.

PART 2 PRODUCTS

2.1 SYSTEM REQUIREMENTS

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NOTE: Because there is a limited number of manufacturers of these units, there are no national standards governing the design or manufacture of these units. Designer should consult manufacturers' literature for additional information.

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Roof decking units must be factory-produced items of a firm specializing in cementitious wood fiber decking. Design of the roof decking must be for the load conditions and spans indicated and any additional load imposed by openings; work of other trades; and all loading and restraining conditions from fabrication, handling, and erection. Deflection must not exceed L/240 of span. Submit detail drawings showing roof decking installation, including framing at all openings for support of roof units. The detail drawings must be accompanied by setting details, design calculations showing that the roof decking installation meets material and design requirements, a descriptive list of materials, and the manufacturer's current printed installation instructions.

2.2 DECK UNITS

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NOTE: Type of units specified will be limited by design requirements. Thickness and other dimensions, if essential to the design, will be indicated. Cement-fiber deck units are available with foam insulation attached. If roof is to be insulated, the use of these units should be investigated.

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Fabrication of roof deck units must be under plant controlled conditions. Provide openings for mechanical and utility systems and for architectural purposes as indicated. Special shapes must be fabricated as indicated or required. Surfaces to receive subsequent application must be suitable for the purpose intended and free of any coatings that would interfere with adhesion or bond. Surfaces showing as exposed ceilings must have a light reflection of 60 percent in accordance with ASTM E1349.

2.2.1 Structural Cementitious Wood Fiber Roof Decking

Structural cementitious wood fiber roof decking must be shaped under pressure to required dimensions from a mixture of wood fibers and cementitious materials in proportions to produce deck units meeting the loading conditions specified. Exterior surfaces must be suitable for applying roof. Metal edge members, if furnished with units, must be galvanized. Flame spread must not exceed 25 and smoke developed rating must not exceed 50 when tested in accordance with ASTM E84. [Roof decking must achieve a noise reduction coefficient (NRC) of [NRC 0.55][NRC 0.60][NRC 0.65][NRC 0.70][NRC 0.75][NRC 0.80] in accordance with ASTM C423.]

2.2.1.1 Monolithic Cementitious Wood Fiber Plank Units

Manufacturer's standard, tongue-and-groove-edged, cementitious wood fiber units with a plank thickness of[51 mm 2 inches][63 mm 2-1/2 inches][76 mm 3 inches]. Planks to have the manufacturer's standard [natural][or][prime-painted] finish. [Provide channel reinforced planks with factory-installed, cold formed, 1.5 mm 0.060 inch thick, galvanized steel channel set in grooved edge.][Provide planks with edges kerfed, back rabbeted, and beveled for a concealed tee system.]

2.2.1.2 Composite Cementitious Wood Fiber Plank Units

2.2.1.2.1 Insulated Composite Plank

Manufacturer's standard factory laminated composite deck units consisting of a standard tongue-and-groove-edged, cementitious wood fiber plank base with a thickness of[38 mm 1-1/2 inches][51 mm 2 inches][63 mm 2-1/2 inches][76 mm 3 inches], ASTM C578, [Type IV extruded-polystyrene insulation][Type I expanded-polystyrene insulation] with a thickness of[38 mm 1-1/2 inch][51 mm 2 inches][76 mm 3 inches][102 mm 4 inches][127 mm 5 inches][152 mm 6 inches][177 mm 7 inches][202 mm 8 inches], and a top layer of APA-rated oriented-strand-board sheathing, Exposure 1 complying with APA PS 2, 11 mm 7/16 inch thick.

2.2.1.2.2 Composite Nailable Surface Plank

Manufacturer's standard factory laminated composite deck units consisting of a standard tongue-and-groove-edged, cementitious wood fiber plank base with a thickness of[63 mm 2-1/2 inches][76 mm 3 inches][89 mm 3-1/2 inches][102 mm 4 inches], insulation, and a top layer of APA-rated oriented-strand-board sheathing, Exposure 1 complying with APA PS 2, 11 mm 7/16 inch thick.

2.2.1.3 Composite Wood Fiber Tile Units

2.2.1.3.1 Monolithic Tile

Manufacturer's standard, rabbet-edged, cementitious wood fiber units with a thickness of[38 mm 1-1/2 inches][51 mm 2 inches][63 mm 2-1/2 inches][76 mm 3 inches][89 mm 3-1/2 inches][102 mm 4 inches][127 mm 5 inches]and a nominal width of[610 mm 24 inches][813 mm 32 inches][1219 mm 48 inches] and length indicated. Tiles to have the manufacturer's standard [natural][or][prime-painted] finish.

2.2.1.3.2 Insulated Composite Tile

Manufacturer's standard factory laminated composite deck units consisting of a rabbet edged, cementitious wood fiber tile base with a thickness of[38 mm 1-1/2 inches][51 mm 2 inches][63 mm 2-1/2 inches][76 mm 3 inches], ASTM C578, Type IV extruded-polystyrene insulation with a thickness of[38 mm 1-1/2 inch][51 mm 2 inches][76 mm 3 inches][102 mm 4 inches][127 mm 5 inches][152 mm 6 inches][177 mm 7 inches][202 mm 8 inches], and a top layer of APA-rated oriented-strand-board sheathing, Exposure 1 complying with APA PS 2, 11 mm 7/16 inch thick. Tiles must have a nominal width of[610 mm 24 inches][813 mm 32 inches][1219 mm 48 inches] and length indicated. Tiles to have the manufacturer's standard [natural][or][prime-painted] finish.

2.3 STRUCTURAL STEEL SUBPURLINS

Steel for structural subpurlin members, if required, must conform to [the manufacturer's standard] [_____]. Subpurlins must span over at least three supports.

2.4 ANCHORAGE

Fasteners must be of steel, zinc-coated or equivalent protective metallic coatings.

2.5 JOINT MATERIAL

Joint material must be a gypsum concrete grout that is factory-packaged and of a formulation recommended by the cementitious wood fiber unit manufacturer with a minimum compressive strength of 3.45 MPa 500 psi.

PART 3 EXECUTION

3.1 INSTALLATION

Installation must be in accordance with the submitted and approved detail drawings. Installation of equipment required by other trades must be accomplished as the work progresses if required by the design. Field-cut openings for utilities penetrations must be accomplished in accordance

with the manufacturer's recommendations. Roof deck must be straight and true, and when laid in place must present a flat, level surface suitable for application of roofing. All roof decking units must bear on at least two structural framing members with a 25 mm 1 inch minimum bearing. Any cantilever plank must not exceed the design span. Installation must require a minimum of cutting. Cutting, where required, must be at a true angle to the top of the unit. All units must be made to fit around openings and projections, valleys, walls, and curbs, so that cut ends occur on supports and in a manner that will not damage the units. Mechanically fasten the roof decking to the support structure. No attachment for carrying loads must be made directly to the roof decking or subpurlins.

3.1.1 Subpurlins

Align subpurlins to the required spacing and bear evenly on structural framing members. End bearings must be a minimum of 25 mm 1 inch. Subpurlin ends must have at least 3 mm 1/8 inch clearance to allow for expansion. Weld subpurlins to each structural framing member at every point of crossing, over supporting member with a 19 mm 3/4 inch long fillet weld on alternate sides of the flange except at ends, where both sides must be welded. Conform to AWS D1.1/D1.1M for welding subpurlins.

3.1.2 Joint Treatment

Job-mixed materials must be screeded to true, even surfaces and protected until sufficiently hardened to withstand traffic and freezing temperatures. Fill joints at hips and ridges with the specified joint material finished in true planes with tops of units and with surfaces to receive roofing.

3.2 CLEANING AND PROTECTION

The complete decking must be kept clean and free of damaged or defaced units, and left ready to receive roofing. The installed roof decking units must be protected from damage by weather and construction operations by a temporary cover until application of roofing.

-- End of Section --