UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated January 2021
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08/16, CHG 1: 08/18

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SECTION 09 64 00

PORTABLE (DEMOUNTABLE) WOOD FLOORING
08/16, CHG 1: 08/18

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NOTE: This guide specification covers the requirements for portable (demountable) wood flooring for use in enclosed multipurpose areas.

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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NOTE: On the drawings, show:

1. Elevation of top of concrete slab on which floor system is to be installed

2. Location of equipment around which flooring is to be installed

3. Locations of, and structural provisions for, anchor-plate assemblies for sports equipment

4. Plan of floor system showing overall dimension of portable panels, sizes and installation pattern of floor panels, and game line markings

5. Storage spaces for floor panels and flat bed, four-wheel storage trucks.

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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.

****

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 FOREST FOUNDATION (AFF)

ATFS STANDARDS	(2015) American Tree Farm System Standards of Sustainability 2015-2020

AMERICAN WOOD PROTECTION ASSOCIATION (AWPA)

AWPA C1	(2003) All Timber Products - Preservative Treatment by Pressure Processes
AWPA C2	(2003) Lumber, Timber, Bridge Ties and Mine Ties - Preservative Treatment by Pressure Processes

CALIFORNIA DEPARTMENT OF PUBLIC HEALTH (CDPH)

CDPH SECTION 01350	(2010; Version 1.1) Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources using Environmental Chambers

CSA GROUP (CSA)

CSA Z809-08	(R2013) Sustainable Forest Management

FOREST STEWARDSHIP COUNCIL (FSC)

FSC STD 01 001	(2015) Principles and Criteria for Forest

Stewardship

MAPLE FLOORING MANUFACTURERS ASSOCIATION (MFMA)

MFMA AFSFSCL	(2016) Athletic Floor Sealer and Finish Specifications and Conformance List #35
MFMA GRHM	(2000) Grading Rules for MFMA Northern Hardwood Maple

PROGRAMME FOR ENDORSEMENT OF FOREST CERTIFICATION (PEFC)

PEFC ST 2002:2013	(2015) PEFC International Standard Chain of Custody of Forest Based Products Requirements

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (SCAQMD)

SCAQMD Rule 1113	(2016) Architectural Coatings

SUSTAINABLE FOREST INITIATIVE (SFI)

SFI 2015-2019	(2015) Standards, Rules for Label Use, Procedures and Guidance

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.
****

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

Flooring System

Submit drawings indicating the overall layout, the panel numbers, and the complete details of the floor system. Include all assembly and disassembly instructions.

SD-03 Product Data

Finish Wood Flooring

Floor Finish Material

Coating for Flooring Panels

Indoor Air Quality for Floor Finish Material; S

Indoor Air Quality for Game Line Marking Materials; S

Indoor Air Quality for Coating for Flooring Panels; S

SD-04 Samples

Wood Floor Unit; G[, [_____]]

Accessories

Submit one wood floor unit, consisting of two completely finished, interlocked partial panels measuring 915 by 915 mm 36 by 36 inches.

SD-07 Certificates

[Certified Sustainably Harvested Wood Flooring; S

] SD-08 Manufacturer's Instructions

Wood Flooring Unit Assembly

Wood Flooring Unit Storage

Finishing

SD-10 Operation and Maintenance Data

Finish Maintenance, Data Package 1; G[, [_____]]

1.3 CERTIFICATIONS

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NOTE: Use certified sustainably harvested wood where suitable for application and cost effective. Sustainably Harvested Wood is a product which comes from a third-party Forestry Certification Program and thus carries certain characteristics: 1) Protection of biodiversity, species at risk and wildlife habitat, sustainable harvest levels, protection of water quality, and prompt regeneration (e.g., replanting and reforestation); 2) Third-party certification audits performed by accredited certification bodies; 3) Publicly available certification audit summaries; 4) Multi-stakeholder involvement in a standards development process; 5) Complaints and appeals process.

Verify suitability, availability within the region, cost effectiveness and adequate competition before specifying these sustainably harvested wood certifications - if these conditions are verified for the project locale, include the following section. For projects pursuing LEED, delete certifications other than FSC; for all other projects pursuing third-party certification allow the entire list of third party certifications.

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[1.3.1 Certified Sustainably Harvested Wood

Provide wood certified as sustainably harvested by FSC STD 01 001[, ATFS STANDARDS, CSA Z809-08, SFI 2015-2019, or other third party program certified by PEFC ST 2002:2013]. Provide a letter of Certification of Sustainably Harvested Wood signed by the wood supplier. Identify certifying organization and their third party program name and indicate compliance with chain-of-custody program requirements. Submit sustainable wood certification data; identify each certified product on a line item basis. Submit copies of invoices bearing certification numbers.

]1.4 DELIVERY AND STORAGE

Deliver floor materials to the building site in original containers, properly assembled and thoroughly protected by providing flat-strapped wire, fiberboard protectors, blocking, and bulkheading, as necessary. Before the initial assembly and erection, store the floor materials under cover in a well-ventilated, enclosed area so that the floor materials are not exposed to extreme changes in temperature and humidity. Do not store the floor materials in an enclosed area under construction until the concrete, masonry, ceramic tile work, terrazzo, and plaster are dry.

1.5 STANDARD PRODUCT

Provide portable (demountable) wood flooring system product of a manufacturer regularly engaged in the production of such wood flooring systems. Provide all accessories required for a finished installation.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Wood Framing Members

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NOTE: Modify the pressure-preservative treatment specified herein in accordance with the recommendations made by the special assistant for entomology and wood preservation assigned by NAVFAC directives.
****

Use kiln-dried, 50 by 75 mm 2 by 3 inch (nominal size), S4S, No. 1 common and better Douglas fir or No. 2 dimension southern pine lumber. The moisture content of the lumber must not exceed 15 percent. Provide pressure-preservative treatment of the lumber in accordance with AWPA C1 and AWPA C2.

2.1.2 Finish Wood Flooring

****
NOTE: Select the appropriate flooring as follows: First Grade--where fine appearance is desired, e.g., churches, offices, hospitals; Second and Better Grade--stores, schools, factories, and other similar locations; Third and Better Grade--recreation rooms, factories, warehouses, grain storage bins, farm buildings, and other similar locations.
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****
NOTE: Use certified sustainably harvested wood where suitable for application and cost effective. Verify suitability, availability within the region, cost effectiveness, and adequate competition before specifying this certification.
****

Provide flooring of hard maple (acer saccharum), graded in accordance with the MFMA GRHM "Grading Rules for Hard Maple." Provide flooring of [26.2 mm 33/32 inch] [19.8 mm25/32 inch] thickness with a 57 mm 2 1/4 inch face, kiln dried, continuous tongue-and groove, and end-matched. Clearly stamp the flooring: [First Grade] [Second and Better Grade] [Third and Better Grade]. Provide wood products with no added urea-formaldehyde resins. The moisture content of the flooring must not exceed 8 percent at the time of arrival and must not be greater than [8 to 10] [8 to 9] percent when installed.[Provide certified sustainably harvested wood flooring.]

2.1.3 Portable Flooring Subfloor

Provide subfloor of 12.7 mm 1/2 inch thick fir or pine plywood, C-D grade with exterior grade glue, Exposure 1.

2.1.4 Floor Finish Material

The floor finish material must be selected by the flooring manufacturer from the latest MFMA AFSFSCL "Floor Finish List." The finish material

must be suitable for the service requirements imposed on the type of portable flooring specified herein. Provide products meeting either emissions requirements of CDPH SECTION 01350 (limit requirements for either office or classroom spaces regardless of space type) or VOC content requirements of SCAQMD Rule 1113. Provide validation of indoor air quality for floor finish material.

2.1.5 Kiln Drying

Only flooring which has been kiln dried will be considered to be standard grade.

2.1.6 Edge Grain Flooring

Use edge grain hardwood flooring consisting of pieces with annual rings that range from 30 degrees horizontal to 90 degrees vertical.

[2.1.7 Game Line Marking Materials

Use game line marking materials recommended by the wood floor finish manufacturer. Provide products meeting either emissions requirements of CDPH SECTION 01350 (limit requirements for either office or classroom spaces regardless of space type) or VOC content requirements of SCAQMD Rule 1113. Provide validation of indoor air quality for game line marking materials.

]2.1.8 Nails

Use coated casing nails, screw nails, staples, or nailing cleats recommended by the flooring manufacturer.

[2.1.9 Storage Trucks

****

NOTE: If trucks are to be used for storage of floor panels, one truck will be required for each row of floor panels. An 18 by 34 meter A 60 by 112 foot floor will have 15 rows of floor panels, will require 15 storage trucks and 48 square meters 480 square feet of floor space for storage with each row approximately 1065 mm 42 inches high.

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Use manufacturer-recommended flatbed, four-wheel roller-bearing trucks of approximately 1200 by 2400 mm 4 by 8 feet on which to stack the panels.

]2.1.10 Coating for Flooring Panels

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NOTE: Use Group II finish for multipurpose, high-wear areas; use Group III for floors to be utilized solely for sports.

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The coating must conform to MFMA AFSFSCL "Heavy-Duty and Gymnasium Finishes for Maple, Beech, and Birch Floors"; Group [II] [III] finish. Provide products meeting either emissions requirements of CDPH SECTION 01350 (limit requirements for either office or classroom spaces regardless of space type) or VOC content requirements of

SCAQMD Rule 1113. Provide validation of indoor air quality for coating for flooring panels.

2.1.11 Moisture, Insect, and Fungi Protection

Structural wood members must be treated for moisture and termite protection.

Prior to shipment, apply to the underside portion of the floor system, including subflooring, a heavy coating of pigmented, moisture-repellent resin paint with additives to control moisture absorption and to prevent attack by termites and fungi.

2.2 FLOORING SYSTEM

2.2.1 Design

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NOTE: The overall dimensions specified cover the optimum floor size for an official basketball court as required by the National Collegiate Athletic Association (NCAA).
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NOTE: The section of the project specification pertaining to the subfloor should include the requirement that the subfloor must not vary more than 6 mm 1/4 inch within an area 3 by 3 meters 10 by 10 feet. If the intent is to install the portable floor over an existing floor, specify the 6 mm 1/4 inch tolerance in paragraph INSPECTION OF THE SUBFLOORS.
****

Design and construct the system for use over [a concrete floor slab as specified in Section 03 30 00 CAST-IN-PLACE CONCRETE.] [a wood subfloor as specified in Section 06 10 00 ROUGH CARPENTRY.] [an ice rink surface.] [a synthetic floor surface.] Provide flooring system consisting primarily of 1200 by 2400 mm and 1200 by 1200 mm 4 by 8 foot and 4 by 4 foot self-aligning and interlocking panels. Each panel must consist of hardwood strip flooring nailed to subflooring which is nailed to rigid lumber frames.

2.2.2 Assembly and Construction

Provide an assembled floor that is properly aligned, smooth, level and with the overall appearance of being a permanent floor. Bolts, screws or other fastening or locking devices must not be visible on the floor surface. Design and construct the flooring panels in a manner affording simple and recurrent assembling, interlocking, disassembling, and storing without the use of special tools or equipment. Ensure that all like panels are interchangeable and replaceable. The method of panel assembling and locking must preclude inadvertent disassembling under all types of playing conditions. Where they are used, the projecting tongues interlocking the flooring sections must be wood, metal, metal-clad, or another material approved by the Contracting Officer.

2.3 SHOP FABRICATION AND PREASSEMBLY

2.3.1 Framing

Use jigs for each fabrication operation to provide for maximum accuracy. Space the framing members at a maximum of 300 mm 12 inches on center. Fasten the framing members and blocking from the top. The bottom surfaces of the framing and blocking must be free of protrusions or sharp edges that could prevent proper seating of the finished panel or could prevent stacking of the panels for storage or shipment. Provide frames rigid, square, level, and true.

2.3.2 Finished Flooring

Lay the finished flooring over [the subflooring and] the framing members, running the flooring parallel with the long dimensions of the panels. Stagger the adjacent ends of the flooring strips so that there will be at least two strips of flooring between the joints.

2.3.2.1 Fastening the Finished Flooring

Fasten the finished flooring to [the subflooring and] the framing members with coated nails, screw nails, staples, or nailing cleats. Fasten each strip of flooring at each bearing. Provide for any normal expansion, contraction, or aeration in each panel.

2.3.3 Preassembly

Prior to shipment, preassemble the entire floor at the factory with all panels interlocked, and prepare for the sanding and finishing operations specified herein. Maintain proper temperatures and humidity conditions necessary to retain the quality of the flooring. During the preassembling of the flooring, note any inaccuracies, misalignments, or other defects, and make the necessary corrections before shipping the panels. Letter or number each panel on its the ends to indicate its position in the assembling of the floor.

2.4 [SHOP] [FIELD] SANDING, FINISHING, AND MARKING

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NOTE: If it is preferred to have the sanding, finishing, and marking performed at the jobsite, the specification should be modified accordingly.

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2.4.1 Sanding

Machine sand the surface of the wood floor and edging using coarse, medium, and fine grades of sandpaper, respectively, to provide for smooth and level surfaces. Following this perform a final disc sanding of the wood floor.

2.4.2 Finishing

Within 24 hours after the final sanding, sweep the floor clean using a tacky rag with a solvent recommended by the manufacturer of the floor finish material. Apply a liberal coat of sealer to the floor, and thoroughly dry and burnish the floor with No. 2 steel wool using an industrial-type power machine. Repeat this procedure with each coat, as

specified in MFMA AFSFSCL specifications. [After the final burnishing but prior to the application of the final two finish coats, lay out and mark the game lines as specified herein. After the game lines are thoroughly dry, apply the final two finish coats.]

[2.4.3 Game Line Marking

[Striping and patterns must be completed in the manufacturing plant.]Lay out the game lines [,] [and the fields,][and the patterns,] as indicated, masking the edges to provide for sharp, clean edges. Provide straight edges and uniform widths. Apply the markings of colors as indicated, providing a minimum dry film thickness of one mil.

]PART 3 EXECUTION

3.1 INSPECTION OF THE SUBFLOORS

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NOTE: The section of the project specification pertaining to the subfloor should include the requirement that the subfloor must not vary more than 6 mm 1/4 inch within an area 3 by 3 meters 10 by 10 feet. If the intent is to install the portable floor over an existing floor, specify the 6 mm 1/4 inch tolerance in paragraph INSPECTION OF THE SUBFLOORS.
****

Do not install portable floor systems on subfloors having defects that could prevent proper installation. Before the initial installation of the floor, correct all defects in the subfloor.

3.2 FIELD ASSEMBLY, INSTALLATION, DISASSEMBLY, AND STORAGE

Do not install the floor in an enclosed area under construction until the concrete, masonry, ceramic tile work, terrazzo, and plaster are dry. Do not install building construction materials that show visual evidence of biological growth.

3.2.1 Assembly and Installation

Assemble and install the entire floor system at the designated location. Unless directed otherwise, leave the floor system in place for a minimum of one week to permit inspection by the Contracting Officer.

3.2.2 Disassembly

After the floor system has been inspected and accepted, disassemble the floor system in the manner prescribed by the floor system manufacturer. Correct all deficiencies prior to the storage of the floor system.

3.2.3 Storage

Following the disassembling of the floor system, store the panels within the enclosed area at the location(s) [indicated] [designated by the Contracting Officer] and in accordance with the floor system

manufacturer's printed instructions.

3.3 SCHEDULE

Metric measurements in this section are based on mathematical conversion of English unit measurement, and not on metric measurement commonly agreed to by the manufacturers or other parties. The English and metric units for the measurements shown are as follows:

Products	English Units	Metric Units
Framing members	2 by 3 inches nominal	50 by 75 mm
Flooring	33/32 inch	26.2 mm
	25/32 inch	19.8 mm
	2-1/4 inches	57 mm
Plywood	1/2 inch	12.7 mm

-- End of Section --