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## SECTION 096400 - WOOD FLOORING

This Section uses the term "Architect." Change this term to match that used to identify the design professional as defined in the General and Supplementary Conditions.

Verify that Section titles referenced in this Section are correct for this Project's Specifications; Section titles may have changed.

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section includes [**factory-**] [**and**] [**field-**]finished wood flooring.
- B. Related Sections include the following:

List below only products and construction that the reader might expect to find in this Section but are specified elsewhere.

1. Division 06 Section "Wood Decking" for wood decking.
2. Division 07 Sections for waterproofing membranes.
3. Division 09 Section "Wood Athletic Flooring" for resilient systems used in sports-activity areas.

#### 1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Show installation details including location and layout of each type of wood flooring and accessory.
- C. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors and finishes available for wood flooring.

Delete paragraph above if finishes are preselected and specified or scheduled. Retain paragraph below with or without above.

- D. Samples for Verification: For each type of wood flooring and accessory, with stain color and finish required, approximately 12 inches (300 mm) long and of same thickness and material indicated for the Work and showing the full range of normal color and texture variations expected.
- E. LEED Submittals:

For wood flooring installed using adhesive, retain subparagraph below if low-emitting materials are required for LEED-NC or LEED-CI Credit EQ 4.1; coordinate with requirements selected in Part 2.

1. Product Data for Credit EQ 4.1: For wood flooring installation adhesives, including printed statement of VOC content.

For field-finished wood flooring, retain subparagraph below if VOC content is restricted for LEED-NC or LEED-CI Credit EQ 4.2, which limits VOC content of field-applied finishes. Factory finishing can be used to help comply with Credit EQ 4.2.

2. Product Data for Credit EQ 4.2: For field-applied finishes for wood flooring, including printed statement of VOC content.

For engineered-wood flooring, retain subparagraph below if low-emitting materials are required for LEED-NC or LEED-CI Credit EQ 4.4; coordinate with requirements selected in Part 2.

3. Product Data for Credit EQ 4.4: For composite wood products, documentation indicating that the bonding agent contains no urea formaldehyde.

Retain subparagraph below and "Forest Certification" Paragraph in "Quality Assurance" Article if wood products are required to be certified for LEED-NC or LEED-CI Credit MR 7, which requires that a minimum of 50 percent of wood-based materials be certified.

4. Certificates for Credit MR 7: Chain-of-custody certificates certifying that wood flooring complies with forest certification requirements. Include evidence that manufacturer is certified for chain of custody by an FSC-accredited certification body.
  - a. Include statement indicating costs for each certified wood product.

#### 1.4 QUALITY ASSURANCE

Retain paragraph below if required for LEED-NC or LEED-CI Credit MR 7. Before retaining, verify that manufacturers selected comply.

- A. Manufacturer Qualifications: A qualified manufacturer that is certified for chain of custody by an FSC-accredited certification body.

Delete paragraph below if no field-finished wood flooring.

- B. Source Limitations: For field-finished wood flooring, obtain each species, grade, and cut of wood from one source with resources to provide materials and products of consistent quality in appearance and physical properties.

Retain first paragraph below to specify wood flooring products made from certified wood for LEED-NC or LEED-CI Credit MR 7, which requires that a minimum of 50 percent of wood-based materials be

certified. An alternative method of meeting Credit MR 7 requirement is to retain requirement in Division 01 Section "Sustainable Design Requirements" that gives Contractor option and responsibility for determining how Credit MR 7 requirement will be met.

- C. Forest Certification: Provide wood flooring produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship."
- D. Hardwood Flooring: Comply with NOFMA's "Official Flooring Grading Rules" for species, grade, and cut.

Delete subparagraph below if certification is not required. Only NOFMA members can use grade stamp; however, nonmembers may comply with grading rules.

- 1. Certification: Provide flooring that carries NOFMA grade stamp on each bundle or piece.

- E. Maple Flooring: Comply with applicable MFMA grading rules for species, grade, and cut.

Delete subparagraph below if certification is not required. Only MFMA members can use mark; however, nonmembers may comply with grading rules.

- 1. Certification: Provide flooring that carries MFMA mark on each bundle or piece.

Retain paragraph below for Douglas fir.

- F. Softwood Flooring: Comply with WCLIB No. 17 grading rules for species, grade, and cut.

Delete paragraph and subparagraphs below if not required. If retaining, indicate location, size, and other details of mockups on Drawings or by inserts. Revise wording if only one mockup is required.

- G. Mockups: Install mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
  - 1. To set quality standards for installation, install mockup of floor area as shown on Drawings.

Retain subparagraph below for field-finished wood flooring.

- 2. To set quality standards for sanding and application of field finishes, prepare finish mockup of floor area as shown on Drawings.

Retain subparagraph below if mockups are erected as part of building rather than separately and the intention is to make an exception to the default requirement in Division 01 Section "Quality Requirements" for demolishing and removing mockups when directed, unless otherwise indicated.

- 3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

## 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver wood flooring materials in unopened cartons or bundles.
- B. Protect wood flooring from exposure to moisture. Do not deliver wood flooring until after concrete, masonry, plaster, ceramic tile, and similar wet work is complete and dry.
- C. Store wood flooring materials in a dry, warm, ventilated, weathertight location.

## 1.6 PROJECT CONDITIONS

- A. Conditioning period begins not less than seven days before wood flooring installation, is continuous through installation, and continues not less than seven days after wood flooring installation.
  - 1. Environmental Conditioning: Maintain an ambient temperature between 65 and 75 deg F (18 and 24 deg C) and relative humidity planned for building occupants in spaces to receive wood flooring during the conditioning period.
  - 2. Wood Flooring Conditioning: Move wood flooring into spaces where it will be installed, no later than the beginning of the conditioning period.
    - a. Do not install flooring until it adjusts to relative humidity of, and is at same temperature as, space where it is to be installed.
    - b. Open sealed packages to allow wood flooring to acclimatize immediately on moving flooring into spaces in which it will be installed.
- B. After conditioning period, maintain relative humidity and ambient temperature planned for building occupants.
- C. Install factory-finished wood flooring after other finishing operations, including painting, have been completed.

If warranty is required for engineered-wood flooring, selecting acceptable products establishes warranty requirements. Manufacturers' warranties vary. For a descriptive specification, consider inserting a "Warranty" Article here.

## 1.7 EXTRA MATERIALS

Extra materials may not be allowed for publicly funded projects.

- A. Furnish extra materials described below, before installation begins, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

Revise subparagraph below to suit Project. Replace percentage with a specific number of units.

- 1. Wood Flooring: Equal to [1] <Insert number> percent of amount installed for each type of wood flooring indicated.

## PART 2 - PRODUCTS

## 2.1 FIELD-FINISHED WOOD FLOORING

See Editing Instruction No. 1 in the Evaluations for cautions about naming manufacturers and products.

Strip flooring is 1-1/2 to 2-1/4 inches (38 to 57 mm) wide. Plank flooring is 3 to 8 inches (76 to 203 mm) wide. Coordinate title of first paragraph below with width of flooring specified.

- A. Solid-Wood, [**Strip**] [**and**] [**Plank**] Flooring: Kiln dried to 6 to 9 percent maximum moisture content, tongue and groove and end matched, and with backs channeled (kerfed) for stress relief.
1. Available Manufacturers: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

Retain subparagraph above for nonproprietary or subparagraph below for semiproprietary specification. Refer to Division 01 Section "Product Requirements."

2. Manufacturers: Subject to compliance with requirements, provide products of one of the following:
  - a. Aged Woods; Yesteryear Floorworks Company.
  - b. Bruce; Division of Armstrong.
  - c. Carlisle Restoration Lumber.
  - d. Heartpine Lumber and Millwork.
  - e. International Hardwood Flooring, Inc.
  - f. Kentucky Wood Floors.
  - g. Memphis Hardwood Flooring Co.; Chicksaw Hardwood Flooring.
  - h. Miller and Company, Inc.; Cahaba Brand Hardwood Flooring.
  - i. Oregon Lumber Company.
  - j. Sandy Pond Hardwoods, Inc.
  - k. World Flooring International.
  - l. <Insert manufacturer's name.>

Coordinate species and grade in first subparagraph below with manufacturers selected above. Not every species, grade, cut, thickness, and face width is available from all listed manufacturers.

3. Species and Grade: [**Select red oak**] [**No. 1 Common red oak**] [**No. 2 Common red oak**] [**MFMA-RL First Grade hard maple**] [**MFMA-RL Second and Better Grade hard maple**] [**C & BTR - Flooring Douglas fir**] [**D - Flooring Douglas fir**] <Insert species and grade>.
4. Cut: [**Plain sawn**] [**Quarter/rift sawn**] [**Edge grain**] [**Vertical grain**] <Insert description>.
5. Thickness: [**3/4 inch (19 mm)**] [**25/32 inch (20 mm)**] <Insert dimension>.

Select from options in subparagraph above and first subparagraph below, or insert other sizes. Hardwood strip flooring is usually 25/32 by 2-1/4 inches (20 by 57 mm); softwood flooring is usually 3/4 by 3-1/8 or 5-1/8 inches (19 by 79 or 130 mm).

6. Face Width: [**2-1/4 inches (57 mm)**] [**3-1/8 inches (79 mm)**] [**5-1/8 inches (130 mm)**] **<Insert dimension>**.
7. Lengths: [**Random-length strips complying with applicable grading rules**] [**Lengths required to form pattern indicated**] **<Insert requirements>**.

Delete subparagraph below if preservative treatment is not required. Consider retaining below for maple flooring. MFMA names "Woodlife F" or its equivalent for preservative treatment. "Woodlife" is a registered trademark of Kop-Coat. It is a clear, penetrating, water-repellent wood preservative in which the active ingredient is 0.5 percent 3-iodo-2-propynyl butyl carbamate.

8. Preservative Treatment: Clear, penetrating, water-repellent wood preservative that protects against mold, mildew, staining, and decay fungi; complying with MFMA's written recommendations and applied by immersion.

Delete subparagraph below if not required.

9. Simulated Wood Pegs: Contrasting wood pegs at ends of plank flooring pieces.
- B. Solid-Wood Parquet Flooring: Kiln dried to 6 to 9 percent maximum moisture content.
1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

Retain subparagraph above for nonproprietary or subparagraph below for semiproprietary specification. Refer to Division 01 Section "Product Requirements."

2. Products: Subject to compliance with requirements, provide one of the following:
  - a. Harris Tarkett Wood Floors; **<Insert product>**.
  - b. Kentucky Wood Floors; **<Insert product>**.
  - c. **<Insert manufacturer's name; product name or designation.>**

For proprietary or semiproprietary specification, delete descriptive requirements in subparagraphs below that are determined by product designations inserted above. If retaining below, coordinate species and grade with manufacturers selected. Not every species, grade, thickness, pattern, and size is available from all listed manufacturers.

3. Species: [**Red oak**] [**White oak**] [**Ash**] [**Maple**] [**Black cherry**] **<Insert species>**.
4. Grade: **<Insert grade.>**
5. Thickness: [**5/16 inch (8 mm)**] [**11/16 inch (17 mm)**] [**1/4 inch (6 mm)**] **<Insert dimension>**.
6. Pattern: **<Insert description.>**
7. Size: **<Insert dimensions.>**

Strip flooring is 1-1/2 to 2-1/4 inches (38 to 57 mm) wide. Plank flooring is 3 to 8 inches (76 to 203 mm) wide. Coordinate title of first paragraph below with width of flooring specified.

Retain last option in paragraph if low-emitting materials are required for LEED-NC or LEED-CI Credit EQ 4.4, which prohibits composite wood products containing urea formaldehyde. Verify availability with manufacturers selected.

- C. Engineered-Wood, [**Strip**] [**and**] [**Plank**] Flooring: HPVA EF[, **except bonding agent contains no urea formaldehyde**].

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

Retain subparagraph above for nonproprietary or subparagraph below for semiproprietary specification. Refer to Division 01 Section "Product Requirements."

2. Products: Subject to compliance with requirements, provide one of the following:
  - a. Kentucky Wood Floors; <Insert product>.
  - b. Mannington Mills, Inc.; <Insert product>.
  - c. Oregon Lumber Company; <Insert product>.
  - d. Robbins, Division of Armstrong; <Insert product>.
  - e. <Insert manufacturer's name; product name or designation.>

For proprietary or semiproprietary specification, delete descriptive requirements in subparagraphs below that are determined by product designations inserted above. If retaining below, coordinate species and grade with manufacturers selected. Not every species, grade, thickness, construction, and width is available from all listed manufacturers.

3. Species: [Red oak] [White oak] [Ash] [Beech] [Maple] [Black cherry] <Insert species>.
4. Grade: <Insert grade.>
5. Thickness: [1/2 inch (13 mm)] [3/8 inch (9.5 mm)] <Insert dimension>.
6. Construction: [Five] [Three] ply.
7. Width: [2-1/4 inches (57 mm)] [3 inches (76 mm)] <Insert dimension>.
8. Length: Manufacturer's standard.

- D. Urethane Finish System: Complete [solvent-based, oil-modified] [water-based] system of compatible components that is recommended by finish manufacturer for application indicated.

Retain first subparagraph and associated subparagraphs below if VOC content of finish materials is restricted for LEED-NC or LEED-CI Credit EQ 4.2. Verify availability with manufacturers selected.

1. VOC Content: When calculated according to 40 CFR 59, Subpart D (EPA Method 24), as follows:
  - a. Finish Coats and Floor Sealers: Not more than 350 g/L.
  - b. Stains: Not more than 250 g/L.
2. Finish Coats: Formulated for multicoat application on wood flooring.
  - a. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

Retain subparagraph above for nonproprietary or subparagraph below for semiproprietary specification. Refer to Division 01 Section "Product Requirements."

- b. Products: Subject to compliance with requirements, provide one of the following:
  - 1) Basic Coatings, Inc.; <Insert product>.
  - 2) BonaKemi USA Inc.; <Insert product>.
  - 3) Dura Seal, Sherwin-Williams Company (The); <Insert product>.

Manufacturers in first three subparagraphs below specialize in sports-floor finishes.

- 4) Ecolab Inc., Huntington Brand; <Insert product>.
  - 5) Hillyard, Inc.; <Insert product>.
  - 6) Polo-Plaz Coatings, National Coatings Company; <Insert product>.
  - 7) <Insert manufacturer's name; product name or designation.>
3. Stain: Penetrating and nonfading type.
    - a. Color: [Match sample] [As selected by Architect from manufacturer's full range] <Insert color>.
  4. Floor Sealer: Pliable, penetrating type.

If applicable, insert requirements for game-line paint.

Wood filler is formulated to fill and repair seams and defects and to fill open-grain hardwood floors.

- E. Wood Filler: Compatible with finish system components and recommended by filler and finish manufacturers for use indicated. If required to match approved Samples, provide pigmented filler.

## 2.2 FACTORY-FINISHED WOOD FLOORING

Strip flooring is 1-1/2 to 2-1/4 inches (38 to 57 mm) wide. Plank flooring is 3 to 8 inches (76 to 203 mm) wide. Coordinate title of first paragraph below with width of flooring specified.

- A. Solid-Wood, [Strip] [and] [Plank] Flooring: Kiln dried to 6 to 9 percent maximum moisture content; tongue and groove and end matched; and with backs channeled (kerfed) for stress relief.
  1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

Retain subparagraph above for nonproprietary or subparagraph below for semiproprietary specification. Refer to Division 01 Section "Product Requirements."

2. Products: Subject to compliance with requirements, provide one of the following:
  - a. Bellawood; <Insert product>.
  - b. Bruce, Division of Armstrong; <Insert product>.
  - c. Harris Tarkett Wood Floors; <Insert product>.
  - d. Hartco, Division of Armstrong; <Insert product>.
  - e. International Hardwood Flooring, Inc.; <Insert product>.
  - f. Kentucky Wood Floors; <Insert product>.
  - g. Memphis Hardwood Flooring Co., Chickasaw Hardwood Flooring; <Insert product>.
  - h. Oregon Lumber Company; <Insert product>.
  - i. Robbins, Division of Armstrong; <Insert product>.
  - j. World Flooring International; <Insert product>.
  - k. <Insert manufacturer's name; product name or designation.>

For proprietary or semiproprietary specification, delete descriptive requirements in subparagraphs below that are determined by product designations inserted above. If retaining below, coordinate options selected with products and manufacturers selected.

3. Species: **[Red oak]** **[White oak]** **[Ash]** **[Birch]** **[Maple]** **[Black cherry]** **[Hickory]** **[Walnut]** **<Insert species>**.
4. Grade: **<Insert grade>**.
5. Cut: **[Plain sawn]** **[Quarter/rift sawn]** **[Edge grain]** **[Vertical grain]** **<Insert description>**.
6. Thickness: **[3/4 inch (19 mm)]** **[25/32 inch (20 mm)]** **<Insert dimension>**.

Select from options in subparagraph above and first subparagraph below, or insert other sizes. Hardwood strip flooring is usually 25/32 by 2-1/4 inches (20 by 57 mm); softwood flooring is usually 3/4 by 3-1/8 or 5-1/8 inches (19 by 79 or 130 mm).

7. Face Width: **[2-1/4 inches (57 mm)]** **[3-1/8 inches (79 mm)]** **[5-1/8 inches (130 mm)]** **<Insert dimension>**.
8. Lengths: **[Random-length strips complying with applicable grading rules]** **[Lengths required to form pattern indicated]** **<Insert requirements>**.
9. Edge Style: **[Square]** **[Beveled (eased)]**.
10. Finish: UV urethane system.
  - a. Color: **[As selected by Architect from manufacturer's full range]** **<Insert color>**.

**B. Solid-Wood Parquet Flooring:** Kiln dried to 6 to 9 percent maximum moisture content.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

Retain subparagraph above for nonproprietary or subparagraph below for semiproprietary specification. Refer to Division 01 Section "Product Requirements."

2. Products: Subject to compliance with requirements, provide one of the following:
  - a. Boen Hardwood Flooring Inc.; **<Insert product>**.
  - b. Bruce, Division of Armstrong; **<Insert product>**.
  - c. Hartco, Division of Armstrong; **<Insert product>**.
  - d. Kentucky Wood Floors; **<Insert product>**.
  - e. **<Insert manufacturer's name; product name or designation>**.

For proprietary or semiproprietary specification, delete descriptive requirements in subparagraphs below that are determined by product designations inserted above. If retaining below, coordinate options selected with products and manufacturers selected. Of the listed manufacturers, only Kentucky offers species other than red oak.

3. Species: **[Red oak]** **<Insert species>**.
4. Grade: **<Insert grade>**.
5. Thickness: **[5/16 inch (8 mm)]** **[11/16 inch (17 mm)]** **[1/4 inch (6 mm)]** **<Insert dimension>**.
6. Edge Style: **<Insert description>**.
7. Pattern: **<Insert description>**.

8. Size: **<Insert dimension.>**

Coordinate option retained in first subparagraph below with products and manufacturers selected.

9. Finish: **[UV urethane] [Acrylic impregnated].**
- a. Color: **[As selected by Architect from manufacturer's full range] <Insert color>.**

Strip flooring is 1-1/2 to 2-1/4 inches (38 to 57 mm) wide. Plank flooring is 3 to 8 inches (76 to 203 mm) wide. Coordinate title of paragraph below with width of flooring specified.

Retain last option in paragraph if low-emitting materials are required for LEED-NC or LEED-CI Credit EQ 4.4, which prohibits composite wood products containing urea formaldehyde. Verify availability with manufacturers selected.

- C. Engineered-Wood, **[Strip] [and] [Plank] Flooring: HPVA EF[, except bonding agent contains no urea formaldehyde].**
1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

Retain subparagraph above for nonproprietary or subparagraph below for semiproprietary specification. Refer to Division 01 Section "Product Requirements."

2. Products: Subject to compliance with requirements, provide one of the following:
- a. Anderson Floors; **<Insert product>.**
- b. Bellawood; **<Insert product>.**
- c. Boen Hardwood Flooring Inc.; **<Insert product>.**
- d. Bruce, Division of Armstrong; **<Insert product>.**

Gammapar offers plastic impregnated products only.

- e. Gammapar; **<Insert product>.**
- f. Harris Tarkett Wood Floors; **<Insert product>.**
- g. Hartco, Division of Armstrong; **<Insert product>.**
- h. Kentucky Wood Floors; **<Insert product>.**
- i. Mannington Mills, Inc.; **<Insert product>.**
- j. Oregon Lumber Company; **<Insert product>.**
- k. Robbins, Division of Armstrong; **<Insert product>.**
- l. World Flooring International; **<Insert product>.**
- m. **<Insert manufacturer's name; product name or designation.>**

For proprietary or semiproprietary specification, delete descriptive requirements in subparagraphs below that are determined by product designations inserted above. If retaining below, coordinate options selected with products and manufacturers selected.

3. Species: **[Red oak] [White oak] [Ash] [Beech] [Birch] [Maple] [Black cherry] [Hickory] [Walnut] <Insert species>.**
4. Grade: **<Insert grade.>**
5. Thickness: **[1/2 inch (13 mm)] [3/8 inch (9.5 mm)] <Insert dimension>.**
6. Construction: **[Five] [Three] ply.**

7. Width: [2-1/4 inches (57 mm)] [3 inches (76 mm)] <Insert dimension>.
8. Length: Manufacturer's standard.
9. Edge Style: [Square] [Beveled (eased)].

Coordinate option retained in first subparagraph below with products and manufacturers selected.

10. Finish: [UV urethane] [Acrylic impregnated].
  - a. Color: [As selected by Architect in manufacturer's full range] <Insert color>.

Retain option in paragraph below if low-emitting materials are required for LEED-NC or LEED-CI Credit EQ 4.4, which prohibits composite wood products containing urea formaldehyde. Verify availability with manufacturers selected.

D. Engineered-Wood Parquet Flooring: HPVA EF[, **except bonding agent contains no urea formaldehyde**].

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

Retain subparagraph above for nonproprietary or subparagraph below for semiproprietary specification. Refer to Division 01 Section "Product Requirements."

2. Products: Subject to compliance with requirements, provide one of the following:
  - a. Boen Hardwood Flooring Inc.; <Insert product>.
  - b. Bruce, Division of Armstrong; <Insert product>.
  - c. Gammapar; <Insert product>.
  - d. Hartco, Division of Armstrong; <Insert product>.
  - e. Kentucky Wood Floors; <Insert product>.
  - f. <Insert manufacturer's name; product name or designation.>

For proprietary or semiproprietary specification, delete descriptive requirements in subparagraphs below that are determined by product designations inserted above. If retaining below, coordinate options selected with products and manufacturers selected.

3. Species: [Red oak] [Ash] [Beech] [Maple] [Walnut] <Insert species>.
4. Grade: <Insert grade.>
5. Thickness: [3/8 inch (9.5 mm)] [1/2 inch (13 mm)] <Insert dimension>.
6. Construction: [Five] [Three] ply.
7. Edge Style: <Insert description.>
8. Pattern: <Insert description.>
9. Size: <Insert dimensions.>
10. Finish: UV urethane.
  - a. Color: [As selected by Architect from manufacturer's full range] <Insert color>.

### 2.3 ACCESSORY MATERIALS

Delete two paragraphs below if not required.

- A. Wood Sleepers and Subfloor: [As specified in Division 06 Section "Rough Carpentry."] <Insert requirements.>
- B. Wood Underlayment: [As specified in Division 06 Section "Rough Carpentry."] <Insert requirements.>

Insert requirements for other types of underlayments, including those with sound-control properties, here. See NWFA's "Installation Guidelines: Wood Flooring" for recommendations on sound-control products.

- C. Vapor Retarder: ASTM D 4397, polyethylene sheet not less than [6.0 mils (0.15 mm)] [8.0 mils (0.2 mm)] thick.
- D. Asphalt-Saturated Felt: ASTM D 4869, Type II.
- E. Wood Flooring Adhesive: Mastic recommended by flooring and adhesive manufacturers for application indicated.

Retain subparagraph below if low-emitting materials are required for LEED-NC or LEED-CI Credit EQ 4.1. VOC limit is that for wood flooring adhesives.

- 1. Use adhesives that have a VOC content of not more than [100 g/L] <Insert requirement> when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- F. Trowelable Leveling and Patching Compound: Latex-modified, hydraulic-cement-based formulation approved by wood flooring manufacturer.
- G. Fasteners: As recommended by manufacturer, but not less than that recommended in [NWFA's "Installation Guidelines: Wood Flooring."] <Insert standard or publication.>
- H. Cork Expansion Strip: Composition cork strip.
- I. Feature Strips: [2-inch- (51-mm-) wide, square-edged walnut strips] <Insert description> furnished in lengths as long as practical and in thickness to match wood flooring.
- J. Metal Feature Strips: [1/8-by-1/8-inch (3-by-3-mm) solid-brass strip] <Insert description>, designed for inlaying into routed reveal in wood flooring surface.
- K. Trim: In same species and grade as wood flooring, unless otherwise indicated.
  - 1. Base: [5/8 inch (16 mm) thick by 4 inches (100 mm) high] <Insert dimensions>.
  - 2. Base Shoe Molding: [1/2 by 3/4 inch (13 by 19 mm)] <Insert dimensions>.
  - 3. Threshold: Tapered on each side and routed at bottom of one side to accommodate wood flooring.
  - 4. Reducer Strip: [2 inches (51 mm)] <Insert dimension> wide, tapered on 1 side, and in thickness matching wood flooring.

Insert other types of trim required for Project.

- L. Wood air vents and grilles of same species and grade as wood flooring and in sizes indicated on Drawings.

## PART 3 - EXECUTION

## 3.1 EXAMINATION

- A. Examine substrates, areas and conditions, with Installer present, for compliance with requirements for maximum moisture content, installation tolerances, and other conditions affecting performance of wood flooring.
1. Verify that substrates comply with tolerances and other requirements specified in other Sections.

Delete first subparagraph below if no adhesively applied wood flooring.

2. For adhesively applied wood flooring, verify that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.
  3. Proceed with installation only after unsatisfactory conditions have been corrected.
- B. Substrate Moisture Testing, General: Perform tests recommended by manufacturer or, if none, comply with applicable recommendations in [NWFA's "**Installation Guidelines: Wood Flooring.**"] <Insert standard or publication.>
1. Proceed with installation only after substrates pass testing.
- C. Concrete Moisture Testing: Perform anhydrous calcium chloride test per ASTM F 1869, as follows:
1. Perform tests so that each test area does not exceed [200 sq. ft. (18.6 sq. m)] <Insert area> and perform not less than 2 tests in each installation area with test areas evenly spaced in installation area.

First option in subparagraph below is based on NWFA recommendations and on industry practices for adhered floor coverings to avoid adhesive failures; second option is based on recommendations of MFMA. To be safe, select the more conservative value.

2. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of [3 lb of water/1000 sq. ft. (1.36 kg of water/92.9 sq. m)] [4.5 lb of water/1000 sq. ft. (2.04 kg of water/92.9 sq. m)] in 24 hours.

Delete subparagraph below if wood flooring is not adhesively applied.

3. Perform alkalinity and adhesion tests recommended in writing by manufacturer or, if none, according to [NWFA's "**Installation Guidelines: Wood Flooring.**"] <Insert standard or publication.> Proceed with installation only after substrates pass testing.

If products are installed on other substrates, including existing concrete, insert examination requirements in this Article and revise "Preparation" Article.

## 3.2 PREPARATION

- A. Grind high spots and fill low spots on concrete substrates to produce a maximum 1/8-inch (3-mm) deviation in any direction when checked with a 10-foot (3-m) straight edge.

1. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, and depressions in substrates.

Delete first paragraph below if products are not adhered to concrete substrates.

- B. Remove coatings, including curing compounds, and other substances on substrates that are incompatible with installation adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
- C. Broom or vacuum clean substrates to be covered immediately before product installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.3 INSTALLATION

- A. Comply with flooring manufacturer's written installation instructions, but not less than applicable recommendations in [NWFA's "**Installation Guidelines: Wood Flooring.**"] <Insert standard or publication.>

Delete first two paragraphs below if not required.

- B. Wood Sleepers and Subfloor: [**Install according to requirements in Division 06 Section "Rough Carpentry."**] <Insert requirements.>
- C. Wood Underlayment: [**Install according to requirements in Division 06 Section "Rough Carpentry."**] <Insert requirements.>
- D. Provide expansion space at walls and other obstructions and terminations of flooring [**as indicated on Drawings**] [**of not less than 3/4 inch (19 mm)**] <Insert requirements.>
- E. Asphalt-Saturated Felt: Where strip or plank flooring is nailed to solid-wood subfloor, install flooring over a layer of asphalt-saturated felt.
- F. Vapor Retarder:
  1. Wood Flooring Nailed to Sleepers over Concrete: Install flooring over a layer of polyethylene sheet with edges overlapped over sleepers and turned up behind baseboards.
  2. Wood Flooring Installed Directly on Concrete: Install a layer of polyethylene sheet according to flooring manufacturer's written instructions.
- G. Solid-Wood, [**Strip**] [**and**] [**Plank**] Flooring: Blind nail or staple flooring to substrate.

Retain applicable subparagraphs below for plank flooring.

1. For flooring of face width more than 3 inches (75 mm), do the following:
  - a. Install countersunk screws at each end of each piece in addition to blind nailing. Cover screw heads with wood plugs glued flush with flooring.

Retain subparagraph above or below. Method above is commonly used for hardwood; method below, for softwood.

- b. Install no fewer than 2 countersunk nails at each end of each piece, spaced not more than 16 inches (406 mm) along length of each piece, in addition to blind nailing. Fill holes with matching wood filler.

H. Solid-Wood Parquet Flooring: Set in adhesive.

Select installation method in first paragraph below to coordinate with products selected. Floating floors are not attached to other construction; therefore, they "float."

- I. Engineered-Wood Flooring: **[Set in adhesive] [Nail or staple] [Install floating floor]**.
- J. Wood Trim: Nail baseboard to wall and nail shoe molding or other trim to baseboard; do not nail to flooring.

### 3.4 FIELD FINISHING

Delete this Article if wood flooring is not finished on-site.

- A. Machine-sand flooring to remove offsets, ridges, cups, and sanding-machine marks that would be noticeable after finishing. Vacuum and tack with a clean cloth immediately before applying finish.
  1. Comply with applicable recommendations in [NWFA's "Installation Guidelines: Wood Flooring."] <Insert standard or publication.>
- B. Fill [**open-grained hardwood**] <Insert description of wood to be filled>.
- C. Fill and repair wood flooring seams and defects.
- D. Apply floor-finish materials in number of coats recommended by finish manufacturer for application indicated, but not less than one coat of floor sealer and [**three**] <Insert number> finish coats.
  1. Apply stains to achieve an even color distribution matching approved Samples.
  2. For water-based finishes, use finishing methods recommended by finish manufacturer to minimize grain raise.
- E. Cover wood flooring before finishing.
- F. Do not cover wood flooring after finishing until finish reaches full cure, and not before seven days after applying last finish coat.

### 3.5 PROTECTION

- A. Protect installed wood flooring during remainder of construction period with covering of heavy kraft paper or other suitable material. Do not use plastic sheet or film that might cause condensation.

1. Do not move heavy and sharp objects directly over kraft-paper-covered wood flooring. Protect flooring with plywood or hardboard panels to prevent damage from storing or moving objects over flooring.

END OF SECTION 096400