

SECTION 09642 – WOOD GYMNASIUM FLOORING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Related work specified under other sections.

1. CONCRETE SUBFLOORS - SECTION 03_ _ _

- a. Slab depression is:

<u>PermaFlex</u>	<u>PermaFlex II</u>
15/32" plywood	
3" for 25/32" flooring	2-1/2" for 25/32" flooring
3-1/4" for 33/32" flooring	2-3/4" for 33/32" flooring
23/32" plywood	
3-1/4" for 25/32" flooring	2-3/4" for 25/32" flooring
3-1/2" for 33/32" flooring	3" for 33/32" flooring
- b. The general contractor shall furnish and install the concrete subfloor depressing the slab sufficiently to accommodate the floor system. The slab shall be steel troweled and finished smooth to a tolerance of 1/8" in any 10' radius by the general contractor. High spots shall be ground level, and low spots filled in with approved leveling compound by the general contractor to the full approval of the installer (Flooring Contractor).
- c. Exiting Retro-Fit concrete (specify or delete). The general contractor shall provide a sound substrate surface free from loose aggregate or soft unsound material remaining from previous floor installation. Holes created by removal of previous anchorage pins or other causes shall be filled soundly and flush with surrounding concrete surface.
- d. Anchoring: For PermaFlex when including optional anchor clips and for installing standard PermaFlex II, the concrete slab aggregate shall be 3/4" screen crushed limestone or similar type material (no river gravel or pea gravel), free of curing agents. Concrete shall develop an average of 3,500-PSI compression after 28 days.

2. MEMBRANE WATERPROOFING - SECTION 07_ _ _

- a. Concrete subfloors on or below grade shall be adequately waterproofed beneath the slab and at the perimeter walls and on earth side of below grade walls by general contractor using suitable type membrane.

3. THRESHOLDS - SECTION 08_ _ _

4. GAME STANDARD INSERTS - SECTION 11_ _ _

1.2 REFERENCES

- A. MFMA - Maple Flooring Manufacturers Association
- B. DIN - Performance Standard DIN 18032, Part 2.

1.3 QUALITY ASSURANCE

A. Manufacturer

- 1. Manufacturer of resilient flooring shall be a firm specializing in manufacturing products specified in this section.
- 2. Manufacturer of flooring and subfloor components must be ISO 9001:2000 Certified to assure quality control of materials provided.
- 3. Basis of design shall be "PermaFlex" sports floor system as provided by **Connor Sports Flooring, www.connorfloor.com, (800-833-7144)**.
- 4. Manufacturer of gymnasium floor system and hardwood flooring surface shall be verified as a "Zero Waste" company confirmed through SWCA third-party auditing.
- 5. Materials other than those listed must be approved 10 days prior by written addendum. Materials from non-approved manufacturers will not be accepted.

B. Installer (Flooring Contractor)

1. The complete installation of the flooring system, as described in the scope of these specifications, shall be carried out by an MFMA Mill Accredited Installation Company, and the work shall be performed in accordance with most recent installation instructions of the manufacturer.
2. The MFMA Mill Accredited Installation Company shall be liable for all matters related to installation for a period of one year after the floor has been substantially installed and completed.

C. Performance Testing

1. PermaFlex
 - a. Floor system shall have been independently tested and meets or exceeds all Athletic Performance requirements according to the International Standard DIN 18032, Part 2.
 - b. DIN testing engineer shall be an ISO 17025 System member rated for each performed test conducted.
 - c. Flooring system shall have been independently tested and evaluated for Engineering Performance according to the Structural Testing and Engineering Measures (STEM).
2. PermaFlex II (specify above or delete)
 - a. PermaFlex II may be substituted when the project specification does not require a floor system which meets or exceeds all DIN performance requirements.

D. Floor System Design

1. PermaFlex
 - a. System construction shall include sleepers captured with continuous 16 gauge coated steel channels.
 - b. Double sleepers shall be provided in a sandwich design capturing resilient pads between upper flex sleepers and lower rigid base sleepers.
 - c. Lower base sleeper shall include special housing to limit compression of resilient pads.
2. PermaFlex II (specify above or delete)
 - a. PermaFlex II floor system may be substituted when the project specification allows lighter than 16 gauge steel channel, or does not require a double sleeper design.

1.4 SUBMITTALS

- A. Specification** - Submit Connor PermaFlex specification sheets.
- B. Sample** - Submit one sample of specified system, if requested by architect.
- C. Maintenance Literature** - Upon completion of floor installation, send to owner, attendants or individuals in charge and responsible for the upkeep of the building a CARE CARD. This card spells out care and maintenance instructions including temperature and humidity ranges for areas where flooring is installed.

1.5 WORKING CONDITIONS

- A.** The wood flooring specified herein shall not be installed until all masonry, painting, plaster, tile, marble and terrazzo work is completed, and overhead mechanical trades and painters have finished in the wood floor areas. The building shall be enclosed and watertight.
- B.** The concrete subfloor shall be determined dry by industry standard testing procedures, free of foreign materials and turned over to the installer (Flooring Contractor) broom clean. Moderate room temperature of 65 degrees or more shall be maintained a week preceding and throughout the duration of the work. Humidity conditions within the building shall approximate the humidity conditions that will prevail when the building is occupied.
- C.** Permanent heat, light and ventilation shall be installed and operating during and after installation, maintaining a range of temperature and humidity compatible with the expected low and high moisture content of the flooring. The wood moisture content range is determined by the flooring contractor based on the facility's mechanical controls and/or geographical location.
- D.** Flooring must be stored in a dry, well-ventilated area, not in contact with masonry, to acclimate to building conditions and shall be installed at moisture content compatible with the normally expected environmental range of temperature and relative humidity achieved while the facility is occupied.
- E.** General Contractor shall lock floor area after floor is finished to allow proper cure time. If general contractor or owner requires use of gym after proper cure time, he shall protect the floor by

covering with non-marring Kraft paper or red rosin paper with taped joints until acceptance by owner of complete gymnasium floor.

- F. Working conditions as described above shall be followed. Variations and substitutions shall be submitted for approval to the architect who shall advise Connor of the same.

1.6 HUMIDITY CONTROL

- A. Since all wood flooring will expand and contract as relative humidity varies, it is important to minimize extremes between low and high. Hardwood flooring is manufactured at moisture content most compatible with a 35%-50% relative humidity range. Geographical regions and available mechanicals determine the typical range of temperature and humidity for each facility. Maintaining a 15% fluctuation between highest and lowest average indoor relative humidity provides limited shrinkage and growth. Facility managers should make use of available HVAC systems to prevent excessive tightening and shrinkage of flooring.

1.7 WARRANTY

- A. Connor warrants that the materials it has supplied will be free from manufacturing defects for a period of one year. The foregoing warranty is in lieu of and excludes all other warranties not expressly set forth herein whether express or implied in operation of law or otherwise, including, but not limited to, any implied warranties of merchantability or fitness. This warranty is expressly limited to the flooring materials (goods) supplied by Connor. This warranty does not cover floor damage caused (wholly or in part) by fire, winds, floods, moisture, other unfavorable atmospheric conditions or chemical action, nor does it apply to damage caused by ordinary wear, misuse, abuse, negligent or intentional misconduct, aging, faulty building construction, concrete slab separation, faulty or unsuitable subsurface or site preparation, settlement of the building walls or faulty or unprofessional installation of Connor flooring systems.
- B. Connor shall not be liable for incidental or consequential losses, damages or expenses directly or indirectly arising from the sale, handling or use of the materials (goods) or from any other cause relating thereto, and their liability hereunder in any case is expressly limited to the replacement of materials (goods) not complying with this agreement, or at their elections, to the repayment of, or crediting buyer with, an amount equal to the purchase price of such materials (goods), whether such claims are for breach of warranty or negligence. Any claim shall be deemed waived by buyer unless submitted to Connor in writing within 30 days from the date buyer discovered, or should have discovered, any claimed breach.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. **Vapor Barrier** - 6-mil polyethylene.
- B. **Resilient Pads**
1. Connor 7/16" R4 Rezill DIN pads
- C. **Sleepers**
1. PermaFlex
 - a. PermaFlex Upper Flex Sleepers - 8' X 3-3/4" X 23/32" APA rated plywood Exposure 1.
 - b. PermaFlex Lower Perma Base Sleepers - 8' X 4" X 23/32" APA rated plywood Exposure 1.
 - c. PermaFlex Channel - 16 gauge coated steel.
 - d. Optional factory applied truss - (specify or delete) Factory applied trusses shall be included to provide full system profile height of ___ including flooring surface.
 - e. Optional PermaFlex channel anchor clips (specify or delete) - 16 gauge steel Z clips.
 2. PermaFlex II (specify above or delete)
 - a. PermaFlex II Sleepers - 8' X 2-3/4" X 23/32" APA rated plywood Exposure 1 with anchorage pockets provided.
 - b. PermaFlex II Channel - 20 gauge coated steel.
- D. **Subfloor**
1. Subfloor sheathing shall be 15/32" APA rated plywood sheathing Exposure 1.
 2. Optional (specify or delete) - Subfloor sheathing shall be 23/32" APA rated sheathing Exposure 1.
- E. **Flooring** (Connor Laytite Maple)
1. 25/32" X 2-1/4", Second & Better Grade, Northern Hard Maple Flooring, TGEM, MFMA Grade marked and stamped as manufactured by Connor Sports Flooring, Amasa, MI.
 2. Optional sizes and grades (specify above or delete) -

- a. Sizes – 25/32" X 1-1/2", 33/32" X 1-1/2", 33/32" X 2-1/4"
 - b. Grades – First Grade, Third Grade
 3. Option (specify or delete) – Manufactured flooring profile shall include 1/64" side edge crush bead.
 4. SMARTWOOD^{cm} (specify or delete) - Hard maple flooring shall be certified as harvested from managed forest in compliance with the SmartWood^{cm} program of the Rainforest Alliance.
- F. Fasteners**
1. Flooring Fasteners - 1-3/4" barbed cleats or coated staples.
 2. Subfloor Fasteners - 1-1/4" subfloor staples or screws, and PL400 adhesive or equal. Substitute 1-1/2" subfloor staples when installing 23/32" plywood.
 3. PermaFlex Optional Clip Anchors - 1-1/4" long steel pins (or length as dictated by site conditions-achieving a minimum 900 lbs pullout strength) applied with an air driven or low velocity powder actuated tool.
 4. PermaFlex II – 1-1/2" RAWL Spikes or equal (or length as dictated by site conditions-achieving a minimum 900 lbs pullout strength) hammer driven concrete anchors.
- G. Finish Materials** - Connor oil modified polyurethane seal and finish or equal.
- H. Game Lines** - Game line paint shall be compatible with finish.
- I. Wall Base** - 3" X 4", heavy duty, molded, vented cove base with pre-molded outside corners.
- J. Protective Floor Cover** (specify or delete) – Provide Connor "Court Cover" 39" x 79" protective floor cover tiles, Blue Chip™ Type 6,6 nylon, available color options (Blue, Gray, Brown, Brown Multi, Blue Multi, Green Multi).

PART 3 - EXECUTION

3.1 EXECUTION

- A.** Inspect concrete slab for proper tolerance and dryness. Report any discrepancies to general contractor and architect in writing.
- B.** Concrete slab shall be broom cleaned by general contractor.
- C.** Installer (Flooring Contractor) shall document all working conditions provided in General specifications prior to commencement of installation.

3.2 INSTALLATION

A. Subfloor

1. Cover concrete with poly, sealing and lapping joints a minimum of 6".
2. PermaFlex Sleepers
 - a. Place PermaFlex channels 16" on center at right angle to finished flooring, staggering end joints by 4' in adjacent rows. Provide 1-1/2" expansion void at perimeter and at all vertical obstructions. Install solid blocking at doorways, under bleachers in the stacked position, and below portable goals.
 - b. PermaFlex optional channel clip anchorage - (specify or delete) - Install one channel clip approximately 6" in from each sleeper end and midway along sleeper, alternating side of channel at each clip location.
 - c. PermaFlex II anchorage – Drill anchor hole in concrete at each designated anchor pocket location and soundly drive anchorage pin to secure.
3. Attach plywood subfloor with 8' edges parallel to and resting on sleepers. Set plywood in staggered brick pattern with ends offset by 4' in adjacent rows. Offset plywood ends by 2' from sleeper end joints, and space 1/4" at all edges. Fasten plywood to sleepers using a single ribbon of PL 400 adhesive and 1-1/4" staples fastened 12" on center (1-1/2" staples when installing 23/32" plywood). Provide 1-1/2" expansion void at perimeter and at all vertical obstructions.

B. Maple Flooring

1. Install maple flooring parallel to main playing court by power nailing or stapling approximately 12" on center. Do not allow flooring fasteners to contact steel channel.
2. If required, size joints between flooring strips to allow for intermediate expansion in accordance with local humidity conditions.
3. Provided 1-1/2" expansion voids at perimeter and at all vertical obstructions.

3.3 FINISHING

A. Maple Flooring

1. Machine sand with coarse, medium, and fine paper to a smooth, even and uniform surface.
2. Remove sanding dust from entire surface by tack or vacuum.
3. Inspect entire area of floor to insure that surface is acceptable for finishing, clean and completely free from sanding dust.
4. Apply two (2) coats of approved seal and two (2) coats of approved finish per manufacture's instructions.
5. Buff and clean floor between coats.

6. Games Lines: Apply game lines as indicated on drawings, between seal and first coat of finish.

3.4 BASE INSTALLATION

- A. Install vent cove base to walls with base cement or screws. Use pre-molded outside corners and mitered inside corners.

3.5 CLEANING

- A. Remove excess and waste materials from the area of work.

END OF SECTION 09642

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PermaFlex 100
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