

SECTION 09645
ARCHITECTURAL SPECIFICATIONS FOR INDOOR RESILIENT
ATHLETIC SURFACING

PART 1 – GENERAL

- 1.1 *SECTION INCLUDES*
- A. Supply and installation of the moisture vapor barrier system, athletic wood substructure, and the indoor resilient multipurpose surfacing.
 - B. Application of the game lines
- 1.2 *SUBMITTALS*
- A. Product Data:
Manufacturer's promotional brochures, specifications and installation instructions
 - B. Samples:
 - 1. Submit for selection and approval three (3) sets of the indoor resilient multipurpose surfacing, manufacturer's brochures and sample boards. To be included are actual samples of all of the available colors, textures and styles.
 - 2. Submit color samples of all the available game line paint colors for selection and approval.
 - C. Closeout Submittals:
 - 1. Submit three (3) copies of the indoor resilient multipurpose surfacing and manufacturer's maintenance instructions.
 - 2. Submit three (3) copies of the material and installation warranties as specified.
- 1.3 *QUALITY ASSURANCE*
- A. Qualifications:
 - 1. The indoor resilient multipurpose surfacing shall have been actively marketed for a minimum of ten (10) years.
 - 2. The indoor resilient multipurpose surfacing shall be manufactured in an ISO 9001 certified plant.
 - 3. The indoor resilient multipurpose surfacing shall be manufactured in an ISO 14001 certified plant.
 - 4. The indoor resilient multipurpose surfacing supplier shall be an established firm experienced in the field and appointed as a distributor by the manufacturer of the indoor resilient multipurpose surfacing.
 - 5. The installer of the indoor resilient multipurpose surfacing shall have a minimum of five (5) years experience in the field installing the specified indoor resilient multipurpose surfacing and have worked on at least five (5) projects of similar size, type and complexity.
 - B. Certifications:
 - 1. Installer to submit the indoor resilient athletic surfacing manufacturer's or distributor's certification attesting that they are an approved installer of the indoor resilient multipurpose surfacing.
 - 2. The indoor resilient multipurpose surfacing manufacturer to submit official ISO 9001 certification for the facility in which the indoor resilient multipurpose surfacing is manufactured.

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3. The indoor resilient multipurpose surfacing manufacturer to submit official ISO 14001 certification for the facility in which the indoor resilient multipurpose surfacing is manufactured.

C. Testing:

Submit shock absorption (force reduction) test results of the indoor resilient multipurpose surfacing when tested in accordance with the DIN V 18032-2 (April 2001) standard and certified by an independent testing laboratory approved to perform such testing.

1.4 *DELIVERY, STORAGE AND HANDLING*

A. Delivery:

Material shall not be delivered until all related work is in place and finished and/or proper storage facilities and conditions can be provided and guaranteed stable according to Gerflor's recommendations.

B. Storage:

Store the material in a secure, clean and dry location. Maintain temperature between 55° and 85° Fahrenheit. Store the indoor resilient athletic surfacing rolls in an upright position on a smooth flat surface immediately upon delivery to jobsite.

1.5 *PROJECT/SITE CONDITIONS*

A. It is the responsibility of the general contractor/construction manager to maintain project/site conditions acceptable for the installation of the indoor resilient multipurpose flooring.

B. The area in which the indoor resilient multipurpose surfacing will be installed shall be dry and weather tight. Permanent heat, light and ventilation shall be installed and operable.

C. All other trades shall have completed their work prior to the installation of the resilient athletic flooring. The general contractor or Construction Manager shall maintain a secure and clean working environment before, during and after the installation. Suspension of other trades' work may be authorized providing their work will not damage the new flooring.

D. Maintain a stable room temperature of at least 65°F for a minimum of one (1) week prior to, during and thereafter installation.

E. An effective low-permeance vapor barrier is placed directly beneath the concrete subfloor. For "on" or "below grade" installations, it is recommended to provide a permanent vapor barrier resistant to long term hydrostatic pressure/moisture exposure. Protrusions should be sealed to prevent moisture migration into the slab. Moisture should not be allowed to enter the slab after the completed construction.

F. Concrete sub-floor moisture content less than five (12) pounds/1,000 sq.ft./24 hours when tested using calcium chloride per ASTM F 1869.

G. Concrete subfloor should be no greater than 1/8" within a 10 ft diameter. This tolerance can be measured in accordance with ASTM E1155. A specified (F_F) of 50 and an (F_L) of 30 should reach this degree of floor flatness and floor level. There is no numerical correlation between F numbers and the deviation from the straight edge, however the above

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specified numbers should achieve a flat floor with minimal deviation in the slab. Reference ACI 117 and ACI 302.1R. The general contractor should provide a certificate of compliance with the above recommendations.

- H. Concrete subfloor must be clean and free of all foreign materials or objects.
- I. Refer to ACI 302.2R "Guidelines for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials" for concrete design.
- J. Concrete slab shall be fortified with continual steel reinforcement.

1.6 *WARRANTY*

A. Materials:

The indoor resilient athletic surfacing and substructure shall be covered against manufacturing defects by a two (2) year written, limited warranty. The manufacturer of the indoor resilient multipurpose surfacing must provide these warranties.

B. Installation:

The installation of the indoor resilient multipurpose surfacing shall be covered against poor workmanship and faulty installation by a two (2) year written, limited warranty provided by the manufacturer-approved installer.

C. Wear:

The indoor resilient multipurpose surfacing shall be covered against wear through the wear layer by a fifteen (15) year written, limited warranty. This warranty must be provided by the manufacturer of the indoor resilient athletic surfacing.

1.7 *ADDITIONAL MATERIALS*

Furnish to the owner additional materials containing a total of at least 1% of each different color or design of the indoor resilient athletic surfacing and substructure used on the project.

1.8 *LEED™ CERTIFICATION*

The indoor resilient athletic surfacing should be able to help this facility to achieve up to seven points towards *LEED™ certification*.

LEED categories positively affected by the indoor resilient athletic surfacing

- Water Efficiency	credit reference WE 3.1 & 3.2	Points Attainable 1- 2
- Materials & Resources	credit reference MR 4.1 & 4.2	Points Attainable 1- 2
- Indoor Environmental Quality	credit reference EQ 4.1 & 4.2	Points Attainable 1
- Design Innovation	credit reference ID 1.1 & 1.4	Points Attainable 1- 2

PART 2 - PRODUCTS

2.1 *MANUFACTURERS*

The basis of the design for the indoor resilient multipurpose surfacing is EBS Vapor Barrier System, Evolution Wood Substructure, and Taraflex Foam Backed Resilient Sport Flooring. All other installation accessories and related components must be either made or approved by the indoor resilient athletic

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surfacing manufacturer. Other products may be approved as equal if deemed qualified and submitted in accordance with the General Conditions.

2.2 MATERIALS.

A. The wood subfloor system shall consist of patented DIN Certified 15 layer birch plywood laminate planks having a thickness of 1-1/8" and a width of 5-3/8". Planks shall be double tongue and grooved and permanently joined during installation. Cushioning is provided by two Evazote 50 extruded foam strips bonded within cut recesses on the underside of the birch laminate planks. Foam cushioning will not compress more than 50% regardless of load. Blocking or other special treatment shall not be necessary to support the wood substructure in case of heavy loading.

1. Physical properties of the wood substructure shall conform to the following minimums:

Plank Width	..... ....	5-3/8"
Plank Length	..... ....	83-5/8"
Total Thickness	..... ....	1-1/8"
Ply	..... ...	15
Cushion System	.....	Recessed Evazote 50 Foam

B. Vapor Barrier:

Vapor barrier is to be a 3 ply laminate combining 2 layers of U.V. stabilized coextruded poly and a high strength cord grid. Vapor barrier system is to provide up to 12lbs of moisture vapor protection as determined by ASTM F1869.

1. Physical properties of barrier shall conform to the following minimums:

Weight	.....	56lbs/1000 FT ²
3" Load @ break	.....	2550 p.s.i
3" Elongation @ break	.....	200 p.s.i.
Tongue Tear	.....	27 LBF
Trapezoidal Tear	39 LBF
PPT Resistance	36 LBF
Permeance	0.0185 Grain/Hr·Ft ² ·In.Hg

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C. Indoor Resilient Multipurpose Surfacing:

Product shall consist of a 2.1 mm thick over 95% pure polyvinyl chloride (PVC) wear layer combined with pure PVC-CXP™ vertically elongated closed-cell foam cushion backing or VHD™ high density foam backing. (AED and Wood designs) D-Max™ multi-layer surface complex shall be reinforced with a non-woven fiberglass mesh placed between the wear layer and the foam backing to improve dimensional stability. Sanosol®, a fungistatic and bacteriostatic treatment shall be incorporated throughout the entire thickness. The wear surface shall be Triple-Action ProtecSol®, UV cured, factory applied, and permanently bonded to the surface of the resilient flooring. Field application of the surface treatment and/or Multi-Durometer products laminated or constructed in the field are unacceptable.

1. Physical properties of the indoor resilient athletic surfacing shall conform to the following minimums:

Width Dependent upon design	.....	4' 11" (1.50m) or 6' 6" (2.0m)
Length Dependent upon thickness	.....	86' 6" Wood Designs or 98' 5" Solid Color Design
Total Thickness	.....	1-1/8" + resilient surface selected
Static Load Limit ASTM F970 modified	.....	≤200 p.s.i.
Dynamic Load Limit (N) DIN V 18032-2 (April 2001)	.....	≥1000 N
Chemical Resistance ASTM D543	.....	Excellent
Fungus Resistance ASTM G21	.....	Complete
Critical Radiant Flux ASTM E648	.....	Class 1
Sound Insulation ISO 717/2	.....	>18 dB
Ball Rebound DIN V 18032-2 (April 2001)	.....	>90%
Force reduction (shock absorption) DIN V 18032-2 (April 2001)	.....	DIN CERTIFIED

1. Color: As available from the indoor resilient athletic surfacing manufacturer's standard range.
2. Hardwood Design Series: A wood look design as available from the indoor resilient athletic surfacing manufacturer's standard range including Maple Design and Oak Design

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3. Texture: Slightly grained (Hardwood Design Series) or textured (Solid Colors)

- B. Welding Rod:
As supplied by the indoor resilient athletic surfacing manufacturer or supplier. Color to blend with the indoor resilient athletic surfacing color or design. All seams shall be welded to create a monolithic and impermeable surface.
- C. Adhesive:
As approved by the indoor resilient athletic surfacing manufacturer.
- D. Game Line Paint Primer:
As approved by the indoor resilient athletic surfacing manufacturer.
- E. Game Line Paint:
As approved by the indoor resilient athletic surfacing manufacturer. Colors are to be selected from the manufacturer's standard range.

PART 3 - EXECUTION

3.1 *EXAMINATION*

- A. It is the responsibility of the general contractor/construction manager to ensure that project/site conditions are acceptable for the installation of the indoor resilient athletic flooring.
- B. Verify that the area in which the indoor resilient athletic surfacing will be installed is dry and weather tight. Verify that permanent heat, light and ventilation is installed and operable.
- C. Verify that all other work that could cause damage, dirt and dust or interrupt the normal pace of the indoor resilient athletic flooring installation is completed or suspended.
- D. Verify that there is a stable room temperature of at least 65°F.
- E. Verify that there are no foreign materials or objects on the subfloor and that the subfloor is clean and ready for installation.
- F. Review and document the results of the moisture tests to verify that the moisture evaporative rate is less than five (12) pounds/1,000 sq.ft./24 hours per ASTM F1869.
- G. Document the results indicating the slab is within manufacturer's tolerances for slab deviation.

3.2 *PREPARATION OF SURFACES*

- A. Sand the entire surface of the concrete slab.
- B. Sweep the concrete slab so as to remove all dirt and dust.

3.3 *INSTALLATION*

- A. The installation area shall be closed to all traffic and activity for a period to be set by the indoor resilient athletic surfacing installer. The indoor resilient athletic surfacing installation shall not begin until the installer is familiar with the existing conditions.

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- B. All necessary precautions should be taken to minimize noise, smell, dust, the use of hazardous materials and any other items that may inconvenience others.
- C. Install the vapor barrier, substructure, and indoor resilient athletic surfacing in strict accordance with the indoor resilient athletic surfacing manufacturer's written instructions.
- D. Install the indoor resilient athletic surfacing minimizing cross seams. Provide a seam diagram during the submittal process for approval prior to installation.
- E. Paint game lines using approved game line paint primer and game line paint in strict accordance with the game line paint manufacturer's instructions.
- F. Install appropriate threshold plates or transition strips where necessary.

3.4 *CLEANING*

- A. Remove all unused materials, tools, and equipment and dispose of any debris properly. Clean the indoor resilient athletic surfacing in accordance with the manufacturer's instructions.

3.5 *PROTECTION*

If so required, protect the indoor resilient athletic surfacing from damage using coverings approved by the manufacturer until acceptance of work by the customer or their authorized representative.

3.6 **RELATED STANDARDS AND GUIDELINES**

- A. ASTM F1869 "Standard Test Method for Measuring Moisture Evaporation Rate of Concrete Subfloor Using Anhydrous Calcium Chloride"
- B. ASTM F2170 "Standard Test Method for Determining Relative Humidity In Concrete Floor Slabs Using In-Situ Probes"
- C. ASTM F710 "Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring"
- D. ACI 302.2R-06 "Guideline for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials"

END OF SECTION