Specifier Note: This Specification has been created to assist in preparing a Project or Master Specification. In accordance with Construction Specifications Institute (CSI)'s MasterFormat®, this Specification can be used with most Master Specifications following simple editing.

*Specifier Note: **The enclosed requirements are intended for indoor installations over concrete** (or in some cases wood). If the provisions described herein are adopted for installations outdoors or over asphalt, Mondo's Warranty will be null and void and the Specifier will be held liable. Specifications for outdoor installations, or indoor installations over asphalt, can be obtained from the Technical Department at Mondo America, Inc.*

Specifier Note: This Specification describes the resilient athletic flooring to be installed. The number and title of the section may be changed, if the Specifier deems necessary, but in any circumstance it will belong to the general CSI Section 09 65 00: Resilient Flooring.

SECTION 09 65 66
Resilient Athletic Flooring

1 PART 1 – GENERAL

1.1 SUMMARY

1.1.1 Products Supplied

A. Resilient athletic flooring.
B. Accessories required for installation, line marking (if specified), maintenance and repair.

1.1.2 Related Requirements

Specifier Note: The following CSI sections serve as a guide to what is essential information needed to determine the acceptability of the site conditions required for the installation of resilient athletic flooring. The Specifier may choose to include other sections he/she deems necessary.

A. Section 02 25 00 – Existing Material Assessment
B. Section 03 05 00 – Common Work Results for Concrete
C. Section 06 05 00 – Common Work Results for Wood, Plastics, and Composites
D. Section 07 05 00 – Common Work Results for Thermal and Moisture Protection
E. Section 07 10 00 – Dampproofing and Waterproofing

1.2 REFERENCES

1.2.1 Association(s)

Specifier Note: When applicable, specify desired Association(s) for required level of competition. Specifier may omit or add any Association he/she deems necessary.

A. Canadian Collegiate Athletic Association (CCAA).
B. National Collegiate Athletic Association (NCAA).
C. National Federation of State High School Association (NFHS).
D. International Tennis Federation (ITF).

1.2.2 ASTM International (ASTM)

A. ASTM D412: Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension.
B. ASTM D2240: Standard Test Method for Rubber Property (Durometer Hardness).
C. ASTM D3389: Standard Test Method for Coated Fabrics Abrasion Resistance (Rotary Platform Abrader).
D. ASTM E648: Standard Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.
E. ASTM E1643: Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.
F. ASTM E1745: Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.
G. ASTM F387: Standard Test Method for Measuring Thickness of Resilient Floor Covering With Foam Layer.
H. ASTM F710: Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.
I. ASTM F925: Standard Test Method for Resistance to Chemicals of Resilient Flooring.
J. ASTM F1514: Standard Test method for Measuring Heat Stability of Resilient Flooring by Color Change.
K. ASTM F1515: Standard Test Method for Measuring Light Stability of Resilient Flooring by Color Change.
L. ASTM F1869: Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
M. ASTM F2170: Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.

1.2.3 State of California (CA)

A. CA Section 01350: Standard Method for the Testing and Evaluation of Volatile Organic Compound Emissions from Indoor Sources Using Environmental Chambers.

1.2.4 European Committee for Standardization (CEN)

A. EN 13036-4: Road and airfield surface characteristics. Test methods - Part 4: Method for measurement of slip/skid resistance of a surface: The pendulum test.

1.2.5 Grenelle Environmental Forum

A. Decree № 2011-321: French labeling requirement for VOC emissions of construction products, wall and floor coverings, as well as paints and varnishes.

1.2.6 GREENGUARD Environmental Institute (GEI)

A. GREENGUARD Certification: Compliant with stringent emission levels for over 360 VOCs, plus a limit on the total of all chemical emissions combined (TVOC).
B. GREENGUARD Gold: Compliant with safety factors to account for sensitive individuals (such as children and the elderly) and ensures that a product is acceptable for use in environments such as schools and healthcare facilities.

1.2.7 International Organization for Standardization (ISO)

A. ISO 9001: Quality Management Systems - Requirements.

1.3 SUBMITTALS

Specifier Note: The following are typical submittals. The Specifier may choose to include other submittals he/she deems necessary.

1.3.1 Action Submittals

A. Provide current printed data sheets for all Products Supplied.
B. Provide samples, 6 inches x 6 inches, for verification of such characteristics as color and surface texture of each specified resilient athletic flooring product.
C. As necessary, provide shop drawings prepared for project illustrating layouts, details, dimensions and other data.
D. If line marking is specified, provide samples of available paint colors for selection and approval.

1.3.2 Informational Submittals

Specifier Note: When applicable, indicate to Surfacing Contractor if line marking must meet Association requirements and provide current copy of guidelines for the desired sport(s) application with the Informational Submittals.

A. Provide Manufacturer's current printed base surface preparation guidelines.
B. Provide Manufacturer's current printed installation guidelines for Products Supplied.

1.3.3 Closeout Submittals

A. Provide Manufacturer's current printed maintenance guidelines for Manufactured Product.
B. Provide Manufacturer's current printed standard warranty for Manufactured Product.

1.3.4 Maintenance Material Submittals

A. Provide extra stock materials from original dye lots, for use in facility operations and maintenance (approximately 2% of the total floor surface for each color, surface texture and format of Manufactured Product).

1.4 QUALITY ASSURANCE

A. Manufacturer must be certified ISO 9001.
B. Manufactured Product must have undergone a vulcanization process; factory lamination should not be accepted as equivalent.
C. Manufacturer must have a minimum of fifteen (15) years of experience in the manufacturing of prefabricated rubber athletic flooring.
D. Surfacing Contractor to be recognized and approved by the Manufacturer.
E. Surfacing Contractor shall be fully acquainted with the existing facility and utilities and shall fully understand the difficulties and restrictions attending the execution of the work under contract. Surfacing Contractor to advise the Owner of any restrictions or anticipated difficulty, before submitting bids.
F. Surfacing Contractor to have completed at least ten (10) multipurpose/track and field facilities in North America that have been properly certified (when applicable) to meet specified Association requirements for desired level of competition.
G. Installer must be approved by the Surfacing Contractor and must have performed installations of the same scale in the last three (3) years.

H. Surfacing Contractor must ensure that a designated Project Manager/Superintendent be on site every day to supervise the installation of the Manufactured Product. Substitution of Project Manager/Superintendent shall not be permitted.
I. Surfacing Contractor shall submit an affidavit attesting that the Manufactured Product to be installed meets the requirements defined in the Manufacturer's currently published specifications and any modifications outlined herein, prior to the commencement of any work.
J. If line marking is specified, the Line Marker shall be approved by the Surfacing Contractor. Painting must be done by professionals with proper experience and qualifications to effectively perform the work; Line Marker to have painted a minimum of twenty (20) multipurpose/track and field facilities in North America that have been properly certified (when applicable) to meet specified Association requirements for desired level of competition.

Specifier Note: Specify mock-up dimensions as instructed by Owner or Architect.

K. Installation of mock-up is highly recommended and must be deemed acceptable by Owner and Architect. Mock-up is to be installed following the same procedures and utilizing the same specified materials that will be used for the actual project.

- Mock-up size: [XX in x XX in (XX cm x XX cm)].

1.5 DELIVERY, STORAGE AND HANDLING

A. Products Supplied must be delivered in Manufacturer's original, unopened and undamaged packaging with identification labels intact.
B. Products Supplied must be protected from exposure to harmful weather conditions and must be safely stored on a clean, dry, flat surface. Store all rolls of resilient athletic flooring upright.
C. Climate controlled storage is recommended. Storage temperature must not be below 55°F (13°C) and must not exceed 100°F (38°C).
D. Avoid storing resilient athletic flooring for extended periods of time or additional material trimming may be required.
E. Products Supplied need not suffer damage during handling (i.e. dents/scratches, edge chipping, excessive warping, etc.).

1.6 SITE CONDITIONS

A. The General Contractor or Construction Manager shall be responsible for ensuring all site conditions meet the requirements of the Manufacturer, as referenced herein at sections 3.2 and 3.3.
B. Concrete slabs, on or below grade, must be installed over a permanent effective vapor retarder, respecting current versions of the standard practice ASTM E1643 and the standard specification ASTM E1745. The vapor retarder must be placed directly underneath the concrete slab, above the granular fill, as per Manufacturer's instructions. The vapor retarder must have a perm rating of 0.1 or less and must have a minimum thickness of 10 mil (0.010 in).
C. No sealers or curing compounds are applied to or mixed into the concrete (refer to Section 03 05 00 – Common Work Results for Concrete of Division 3).
D. Installation of the resilient athletic flooring to be carried out no sooner than the specified curing time of the concrete (normal density concrete curing time is approximately 28 days for development of design strength, having a minimum 3500 psi in compressive strength). Refer to current version of ASTM F710 for additional information.
E. Concrete surface must be free of all contaminants that can inhibit bond (paint, wax, dust, oil or grease, sealer, curing compound, solvent, asphalt, old adhesive residues, etc.). All contaminants must be removed from the surface via mechanical abatement. Use of abatement chemicals is not recommended.

F. Concrete must have a smooth finish, proper density and be highly compacted with a tolerance of 1/8th of an inch in a 10 foot radius (3.2 mm in 3.05 m radius). Floor Flatness (FF) and Floor Levelness (FL) numbers are not recognized.
G. Moisture and alkalinity tests must be performed on all concrete substrates, under in-service conditions. It is recommended to turn on the HVAC unit prior to performing moisture testing, in order to ensure stable testing conditions and accurate results. The concrete's surface pH should be between 7 and 10. Relative humidity of the concrete slab must not exceed 85%, in accordance with ASTM F2170 (in situ probes). Moisture vapor emissions from the concrete slab must not exceed the tolerance of the adhesive specified, in accordance with ASTM F1869 (anhydrous calcium chloride).
H. If installing over a wood base, ensure exterior grade plywood with at least one good side, such as: APA (Engineered Wood Association) Exterior grade plywood (A-A Exterior, A-B Exterior or A-C Exterior) and CANPLY (Canadian Plywood Association) Exterior certified plywood (Canada: Grade G2S A-A or G1S A-C. USA: G2S A-A, A-B, B-B, or G1S A-C, B-C). There must be proper underfloor ventilation, plywood must be dry and should have a moisture content ranging between 6 and 12%, when measured with a quality wood moisture meter (electronic hygrometer).
I. Room and concrete temperature must be maintained within the recommended range of 65°F to 86°F (18°C to 30°C), 48 hours prior to installation, during the installation, and 48 hours after the installation. Recommended ambient humidity control level is between 35 to 55%.
J. Installation of resilient athletic flooring will not commence until the building is enclosed and all other trades have completed their work. It is the General Contractor or Construction Manager's responsibility to maintain a secure and clean working area before, during and after the installation of the resilient athletic flooring.

1.7 LIMITED WARRANTY

A. The resilient athletic flooring is warranted to be free from manufacturing defects for a period of one (1) year from the date of shipment from the Manufacturer.
B. The resilient athletic flooring is warranted against excessive wear under normal usage for a period of ten (10) years from the date of shipment from the Manufacturer.
C. Refer to current copy of Manufactured Product's Limited Warranty for all terms and conditions.

2 PART 2 – PRODUCTS

2.1 MANUFACTURED PRODUCT

2.1.1 Manufacturer

A. Mondo S.p.A., Piazzale E. Stroppiana, 1, 12051 Alba, Fraz. Gallo – Italia.
Distributed by: RFS SPORTS 375 Columbia Memorial Pkwy, Kemah, TX 77565
Contact: Michelle Music 512-755-9497 michelle@teamrfs.com

2.1.2 Description

Specifier Note: Specify color(s) and width(s) required. Manufactured Product width and length to minimize joints in all areas. If line markings is specified, side and/or head joints to be located under line markings when possible.

A. Sportflex M is prefabricated rubber athletic flooring, calendered and vulcanized with a particular closed cell structure, based on special isoprenic rubbers, mineral fillers, stabilizing agents and pigmentation,

highly resistant to UV rays and atmospheric agents, with system of differential elasticity between top surface and base, as manufactured by Mondo S.p.A. or approved equal.

B. Manufactured in two layers which are vulcanized together. The shore hardness of the top layer will be greater than that of the bottom layer; shore hardness of layers to be recommended by the Manufacturer and the limits specified.
C. Thickness: 0.394 in. (10 mm).
D. Colors: Provided in standard, solid background colors. Consult available colors for indoor applications.
E. Surface Texture: ATS embossing.
F. Format: Sheets available in widths from 3' (0.92 m) to 6' (1.83 m) and 49'2" (15 m) long [min. 19'8" (6 m)/max. 52'5" (16 m)].

2.1.3 Performance

Specifier Note: Results may vary slightly between production runs, due to manufacturing tolerances and testing methods/equipment used by laboratories during analysis. However, Manufactured Product must meet the minimum requirements listed. WARNING: Any result posted regarding fire safety and any indoor air quality certificate awarded only applies to indoor installations over concrete and Mondo products designed for this purpose.

A. When applicable, refer to Association performance requirements for desired level of competition.
B. Performance of Manufactured Product to conform to the following criteria:

Performance Criteria	Test Methods	Requirements	Results*
Elongation at Break	ASTM D412	≥100%	≥163%
Tensile Strength	ASTM D412	≥75 psi	≥168 psi
Hardness of wear layer (Shore A durometer)	ASTM D2240	55 ±5	60
Hardness of backing (Shore A durometer)	ASTM D2240	40 ±5	45
Abrasion Resistance (H18 wheel, 1000g, 1000 cycles)	ASTM D3389	≤2.0 g	≤1.2 g
Critical Radiant Flux	ASTM E648	≥0.1 W/cm²	≥0.45 W/cm² (Class 1)
Thickness	ASTM F387	10 mm (±0.3 mm)	10 mm (±0.3 mm)
Resistance to Chemicals	ASTM F925	≤ Slight Change	Compliant
Heat Stability	ASTM F1514	≤8.0 ΔE	Compliant
Light Stability	ASTM F1515	≤8.0 ΔE	Compliant
Indoor Air Quality	CA 01350	Compliant	Compliant
VOC Emissions Labeling Requirement	Decree № 2001-321	Compliant	Compliant
Slip/Skid Resistance (Dry)	EN 13036-4	80-110	90
Slip/Skid Resistance (Wet)	EN 13036-4	55-110	79
Greenguard Certification	Greenguard	Compliant	Compliant
Greenguard Gold	Greenguard	Compliant	Compliant

* Results obtained from manufacturing controls can vary between production lots and do not constitute representations or warranties as to any particular production lot. Mondo reserves the right to modify product design and/or specifications at any time without notice.

2.1.4 Limitations

A. Sportflex M is not resistant to athletic footwear with spikes.

2.1.5 Materials

A. Provide Sportflex M resilient athletic flooring manufactured by Mondo S.p.A. or approved equal.
B. Provide resilient athletic flooring as specified in section 2.1.2 Description.

2.2 ACCESSORIES

Specifier Note: Accessories should be specified in accordance with the project requirements.

A. Provide adhesive certified by Manufacturer: Mondo PU 105 (polyurethane). For suitability, recommendations and use, please refer to Manufacturer's current printed adhesive guidelines. In some cases, Mondo EP 55 (epoxy) may be used in areas that have not been specified to receive Everlay, and that will not be subject to surface impacts (such as falling free weights) or heavier dynamic loads (such as bleachers).
B. Portland cement based patching or leveling compound to be supplied or recommended/approved by Manufacturer.
C. If line marking is specified, all painting products are to be supplied or recommended/approved by Manufacturer.

3 PART 3 – EXECUTION

3.1 INSTALLERS

A. Refer to section 1.4 of this document for information on installers.

3.2 EXAMINATION

Specifier Note: The following must be ensured prior to installation of resilient athletic flooring.

A. Ensure that concrete slabs, on or below grade, are installed over a permanent effective vapor retarder, respecting current versions of the standard practice ASTM E1643 and the standard specification ASTM E1745. The vapor retarder must be placed directly underneath the concrete slab, above the granular fill, as per Manufacturer's instructions. The vapor retarder must have a perm rating of 0.1 or less and must have a minimum thickness of 10 mil (0.010 in).
B. Installation of the resilient athletic flooring to be carried out no sooner than the specified curing time of the concrete (normal density concrete curing time is approximately 28 days for development of design strength, having a minimum 3500 psi in compressive strength). Refer to current version of ASTM F710 for additional information.
C. Ensure that no sealers or curing compounds have been applied to or mixed into the concrete (refer to Section 03 05 00 – Common Work Results for Concrete of Division 3).
D. Ensure that concrete surface is free of any contaminant that could inhibit bond (paint, wax, dust, oil or grease, sealer, curing compound, solvent, asphalt, old adhesive residues, etc.). All contaminants must be removed from the surface via mechanical abatement. Use of abatement chemicals is not recommended.
E. Confirm concrete has a smooth finish, proper density and is highly compacted with a tolerance of $1/8^{th}$ of an inch in a 10 foot radius (3.2 mm in 3.05 m radius). Floor Flatness (FF) and Floor Levelness (FL) numbers are not recognized.
F. Moisture and alkalinity tests must be performed on all concrete substrates, under in-service conditions. It is recommended to turn on the HVAC unit prior to performing moisture testing, in order to ensure stable testing conditions and accurate results. The concrete's surface pH should be between 7 and 10. Relative humidity of the concrete slab must not exceed 85%, in accordance with ASTM F2170 (in situ probes).

Moisture vapor emissions from the concrete slab must not exceed the tolerance of the adhesive specified, in accordance with ASTM F1869 (anhydrous calcium chloride).

G. If installing over a wood base, ensure exterior grade plywood with at least one good side, such as: APA (Engineered Wood Association) Exterior grade plywood (A-A Exterior, A-B Exterior or A-C Exterior) and CANPLY (Canadian Plywood Association) Exterior certified plywood (Canada: Grade G2S A-A or G1S A-C. USA: G2S A-A, A-B, B-B, or G1S A-C, B-C). There must be proper underfloor ventilation, plywood must be dry and should have a moisture content ranging between 6 and 12%, when measured with a quality wood moisture meter (electronic hygrometer).
H. Ensure room and concrete temperature are maintained within the recommended range of 65°F to 86°F (18°C to 30°C), 48 hours prior to installation, during the installation, and 48 hours after the installation. Recommended ambient humidity control level is between 35 to 55%.
I. Installation of resilient athletic flooring will not commence until the building is enclosed and all other trades have completed their work. Ensure a secure and clean working area before, during and after the installation of the resilient athletic flooring.

3.3 PREPARATION

Specifier Note: The surface of the concrete (or wood when specified) is to be prepared according to Manufacturer's current printed guidelines; it is recommended that the Specifier review said guidelines. A copy of the base surface preparation guidelines can be obtained from the Technical Department at Mondo America, Inc. The guidelines are considered common practice for the preparation and verification of base surfaces that will receive resilient athletic flooring, and as such should not be omitted or altered in any case.

A. Prepare base surface in accordance with Manufacturer's current printed guidelines.

3.4 INSTALLATION

Specifier Note: Products Supplied are to be installed following their current printed guidelines; it is recommended that the Specifier review said guidelines. Copies of all installation guidelines for Products Supplied can be obtained from the Technical Department at Mondo America, Inc. Installation procedures may be altered to accommodate special project needs, as deemed necessary by the Specifier and after he/she has consulted the Technical Department at Mondo America, Inc. to ensure suitability. When applicable, refer to Association rules and regulations for desired level of competition.

A. Install rolls of resilient athletic flooring following Manufacturer's current printed guidelines.
B. Install all accessories following Manufacturer's current printed guidelines.
C. Line Marker to paint all lines following Manufacturer's current printed guidelines, respecting Association requirements for the sport(s), the drawing(s) and the Master Specification.
D. All lines markings shall be spray-applied.

3.5 REPAIR

A. Refer to section 1.3.4 for extra stock materials.
B. Repair material must come from the same original dye lot as the Manufactured Product initially installed.
C. Repairs are to be performed by Surfacing Contractor's qualified installers/technicians only.

3.6 CLEANING

A. Always wait at least a minimum of 72 hours after the resilient athletic flooring has been completely installed before performing initial maintenance.
B. For surfaces having received newly painted lines, wait a minimum of 30 days after the application of the paint before going over the surface with a scrubber/scrubbing the lines, in order to ensure proper curing of the paint.
C. Always maintain the resilient athletic flooring following Manufacturer's current printed guidelines.

3.7 PROTECTION

A. As needed, protect resilient athletic flooring with 1/8" Masonite during and after the installation, prior to acceptance by the Owner.