

SECTION 09 65 16
RESILIENT SHEET FLOORING

CSI 3-PART **LONG-FORM** GUIDE SPECIFICATION
USE FOR CONTRACT DOCUMENT (CD) SPECIFICATION ISSUES
EDIT TO SUIT PROJECT

PART 1 - GENERAL

1.1 SUMMARY

- A. Work of this Section consists of an inlaid wear surface embossed resilient sheet vinyl flooring and accessories including, but not limited to:
1. C.I. Takiron **Pathways** Commercial Sheet Vinyl Flooring
 2. C.I. Takiron **Nattice** Commercial Sheet Vinyl Flooring
 3. Accessories
 - a. Adhesives
 - b. Cleaning solutions
 - c. Finish top coatings
- B. Related Documents and Sections: Examine Contract Documents for requirements that directly affect or are affected by Work of this Section. A list of those Documents and Sections include, but is not limited to, the following:
1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and DIVISION 01 General Requirements, Specification Sections, apply to this Section.
 2. SECTION 033000, CAST-IN-PLACE CONCRETE: For proper concrete design, underslab vapor barrier and finished concrete surface required to accept sheet vinyl flooring (SVF).
 3. SECTION 035416, HYDRAULIC CEMENT UNDERLAYMENT: For leveling of existing concrete slabs.
 4. SECTION 061000, ROUGH CARPENTRY: For proper wood-based panel underlayment required to accept installation of sheet vinyl flooring (SVF).
 5. SECTION 079200, JOINT SEALERS: For exposed movement joints.
 6. SECTION 079513, EXPANSION JOINT COVER ASSEMBLIES: For expansion joint assembly penetrating through sheet vinyl flooring (SVF).
 7. SECTION 096513, RESILIENT BASE AND ACCESSORIES: For wall base, and expansion joint trim between sheet vinyl flooring (SVF) and other flooring surfaces.

NOTE: Edit Definitions, and References below to suit project.

1.2 REFERENCES

NOTE: Coordinate and edit the correct Section number below. The numbers shown indicate relevant broad-scope, medium-scope, and narrow-scope numbers of the CSI MasterFormat® system.

- A. Abbreviations and Acronyms per SECTION 011000, SECTION 014000, and as follows:
1. AHJ. Authority Having Jurisdiction from local, state and federal regulatory agencies.
 2. Per. In accordance with
 3. RH. Relative humidity.
 4. SCOF. Static Coefficient of Friction
 5. SVF. Sheet Vinyl Flooring

NOTE: Definitions are included here as an educational tool but are not required for the final

specification issue. Delete if desired.

- B. Definitions per SECTION 011000, SECTION 014000, and as follows:
1. HAP: Hazardous Air Pollutant
 2. Resilient: The property of an elastic material to recover its shape after it is deformed under loading and then unloaded.
 3. SVF. Sheet Vinyl Flooring is produced by a rolled “calendering” process in which a layer of PVC compound (PVC resin with plasticizers and other additives such as fungicides) is applied over a backing material.
 4. VOC: Volatile Organic Compounds are chemical compounds that have a high vapor pressure and low water solubility.
- C. Referenced Standards per SECTION 014000 and as follows:
1. ANSI. American National Standards Institute; www.ansi.org
 2. ASTM. ASTM International; www.astm.org
 - a. Practices:
 - 1). ASTM F710, Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
 - 2). ASTM F1482, Installation and Preparation of Panel Type Underlayments to Receive Resilient Flooring
 - 3). ASTM F1516, Sealing Seams of Resilient Flooring Products by the Heat Weld Method
 - 4). ASTM F1869, Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride
 - 5). ASTM F2170, Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes
 - b. Specifications:
 - 1). ASTM F1303, Standard Specification for Sheet Vinyl Floor Covering with Backing
 - c. Terminology:
 - 1). ASTM F141, Standard Terminology Relating to Resilient Floor Coverings
 - d. Test Methods – Performance:
 - 1). ASTM D2047, Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine
 - 2). ASTM D5116, Standard Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions From Indoor Materials/Products
 - 3). ASTM E648, Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source
 - 4). ASTM E662, Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
 - 5). ASTM E2179, Standard Test Method for Laboratory Measurement of the Effectiveness of Floor Coverings in Reducing Impact Sound Transmission Through Concrete Floors (IIC)
 - 6). ASTM F925, Standard Test Method for Resistance to Chemicals of Resilient Flooring
 - 7). ASTM F970, Standard Test Method for Static Load Limit
 - 8). ASTM F1514, Standard Test Method for Measuring Heat Stability of Resilient Vinyl Flooring by Color Change.

- 9). ASTM F1515, Standard Test Method for Measuring Light Stability of Resilient Vinyl Flooring by Color Change
 - 10). ASTM F1516, Practice for Sealing Seams of Resilient Flooring Products by the Heat Weld Method (when Recommended)
 - 11). ASTM F1914, Standard Test Method for Short-Term Indentation and Residual Indentation of Resilient Floor Covering
- e. Test Methods – Products and Materials:
- 1). ASTM F137, Standard Test Method for Flexibility of Resilient Flooring Materials with Cylindrical Mandrel Apparatus
 - 2). ASTM F386, Standard Test Method for Thickness of Resilient Flooring Materials Having Flat Surfaces
 - 3). ASTM F410, Standard Test Method for Wear Layer Thickness of Resilient Floor
3. NFPA. National Fire Protection Association; www.nfpa.org
- a. NFPA 253, Standard Method of Test for Critical Radiant Flux for Floor Covering Systems Using a Radiant Energy Source.
 - b. NFPA 258, Research Test Method for Determining Smoke Generation of Solid Materials
4. RFCI. Resilient Floor Covering Institute; www.rfci.com
- a. Recommended Work Practices for Removal of Resilient Floor Coverings
5. Takiron Flooring Technical Documents
- a. [Material Handling & Subfloor Preparation Guide](#)
 - b. [Installation Guide](#)
 - c. [Tech Data Sheet](#)
 - d. [Maintenance Guide](#)

1.3 ADMINISTRATIVE REQUIREMENTS

NOTE: Coordinate and edit to the correct Section number below.

- A. Coordination per SECTION 013000 or 013100, and as follows:
1. Coordinate expansion joint system installation prior to installing resilient sheet flooring. Refer to SECTION 079200 and SECTION 079500, 079510 or 079513.

RED NOTE: Specifier to closely coordinate applicable sections between concrete and other subfloor finishes with floor covering.

2. Coordinate concrete topping finish per SECTION 035400 or 035416.

NOTE: Coordinate and edit to the correct Section number below.

- B. Preinstallation Meetings per SECTION 013000 or 013100 and as follows:
1. Meeting purpose is to review site conditions, installation procedures, schedules, coordination with other work, and warranty requirements.

NOTE: Coordinate and edit to the correct Section number below.

- C. Sequencing: Per SECTION 010000 or 011100.

NOTE: Coordinate and edit to the correct Section number below.

- D. Scheduling: Per Section 010000 or 011100, and SECTION 013000 or 013200.

1.4 SUBMITTALS

NOTE: Coordinate and edit to the correct Section number below.

- A. Product Data per SECTION 013000 or 013300 and as follows: Submit manufacturer's printed descriptions of materials, components and systems, performance criteria, use limitations, recommendations, installation information, and the following:
1. Typical section details indicating each specified system on proposed substrates and transitions to other flooring systems.
 2. Sections indicating flooring system abutting walls.
 3. Typical plan views of various layout patterns.

NOTE: Coordinate and edit to the correct Section number below.

- B. Shop Drawings per SECTION 013000 or 013300 and as follows: Submit keyed location plans, plans indicating resilient sheet flooring type, layout, pattern direction, edge transitions, columns, doorways, enclosing partitions, built-in furniture, cabinets, cutouts, expansion and control joints, and attachment requirements.

NOTE: Coordinate and edit to the correct Section number below.

- C. Samples per SECTION 013000 or 013300 and as follows:
1. Initial for Selection: Submit printed color charts, sample chains or Architectural Binder indicating manufacturer's complete range to determine color, texture, shape, and/or composition for each type of material finish.
 2. Final Selection: Submit two (2) 9-inch x 12-inch samples of each different type, color and pattern selected for acceptance.
- D. Quality Assurance Submittals per SECTION 014000 and as follows:
1. Test and Evaluation Reports: Submit certified test results by a recognized testing laboratory in accordance with specified test methods for each product and/or system indicating physical, chemical and performance characteristics.

NOTE: Edit LEED Requirements below to suit project.

- E. Sustainable Design (USGBC LEED®) Submittals: Submit the following in accordance with the requirements of SECTION 018113, LEED REQUIREMENTS:
1. LEED Credit MR, Materials & Resources. Submit completed LEED 2009-NC v.3 Submittal Templates, and other required paperwork as follows:
 - a. MR 4.1: Recycled Content: 10 Percent (post-consumer + 1/2 pre-consumer)
 - 1). Submit product data indicating percentage by weight of recycled content with a statement indicating costs for each.
 2. LEED Credit EQ, Indoor Environmental Quality. Submit completed LEED-NC 2.2 Submittal Templates and required paperwork as follows:
 - a. EQ 4.1: Low Emitting Materials, Adhesives & Sealants, VOC Data
 - 1). Submit manufacturers' product data for construction adhesives and sealants, including printed statement of VOC content and MSDS Sheets.
 - b. EQ 4.3: Low Emitting Materials, Carpet and Resilient Flooring Systems
 - 1). Submit manufacturer's product data for systems that includes printed statement of VOC content.

NOTE: Coordinate and edit to the correct Section number below.

- F. Closeout Submittals per SECTION 017000 or 017800, unless noted otherwise.
1. Operation and Maintenance Data: Including, but not limited to, methods for maintaining installed products and precautions against cleaning materials with methods detrimental to finishes and performance.

2. **Warranty Documentation:** Manufacturers' material warranties and installers workmanship warranty.
3. **Record Documents:** Drawings, Specifications, and Product Data.
4. **Sustainable Design Closeout Documentation:** Submit completed USGBC LEED® Submittal Worksheet Templates for the following credits:
 - a. MR 4.1
 - b. EQ 4.1, EQ 4.3

NOTE: Edit percentage below to suit scope of project.

- G. **Maintenance Material Submittals - Extra Materials:** Submit no less than five (5) percent additional material of each type and pattern of sheet good used.

1.5 QUALITY ASSURANCE

A. Regulatory Requirements

1. **Fire-Test-Response Characteristics:** As determined by testing identical products as follows by a qualified testing agency.
 - a. ASTM E648: Critical Radiant Flux Classification: Class I
 - b. ASTM E662: Smoke Density: 450 or less

B. Qualifications:

1. **Manufacturer:** A company with a minimum ten (10) years' experience in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance. A single source manufacturer supplying both product and adhesive.
 - a. Company shall be ISO 9001 Certified.
 - b. Company shall be ISO 14001 Certified.
2. **Installer / Applicator:** Perform installation with skilled, experienced, and trained workmen with demonstrated ability to install Takiron products supervised by trained personnel who shall have a minimum three (3) years successful experience in installations of similar size and scope.
3. **Testing Agency:** An independent testing agency with the experience and capability to conduct the testing indicated, meeting requirements of ISO/IEC Standard 17025 or ASTM E699 and ASTM E329.

- C. **Source Limitations:** Obtain primary resilient sheet flooring materials and adhesive through one source from a single manufacturer.

1. Provide secondary materials, including patching and fill material, joint sealant, and repair materials, of type and from source recommended by manufacturer of primary materials.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. **Delivery, Storage and Handling** per industry and manufacturer guidelines, SECTION 016000, and as follows:

1. Delivery and Acceptance Requirements

- a. Deliver materials to Project site in an undamaged condition, in original unopened rolls or other packaging bearing manufacturer's intact label, names, brand names, types and sizes of contents, and proper handling, upright storing, unpacking, protecting, and installation instructions, as warranted.
- b. Inspect shipped materials on delivery to ensure compliance with requirements of Contract Documents and to ensure that products are undamaged and properly protected.
 - 1). Document and report damaged goods at time of delivery. Accept properly ordered, protected and undamaged goods. [Material Handling & Subfloor Preparation Guide](#).

2. Storage and Handling Requirements
 - a. Store materials in a dry, temperature-controlled interior area at 65-80 deg F (18-27 deg C). Avoid exposure to temperature extremes. Protect materials from damage from improper handling, and the action of other trades.
 - 1). Store rolls of sheet goods standing up, with capped end down. Do not lay flat.
3. Packaging Waste Management
 - a. Request that manufacturers, suppliers and shippers provide least amount of packaging that adequately and properly protects, supports and contains the items shipped, and is reusable, returnable or recyclable.

1.7 WARRANTY

- A. Manufacturer Warranty. Provide manufacturer's limited warranty to be free from defects in material and workmanship, under normal use and service, to repair or replace all defective sheet flooring.
 1. Warranty Period: Five (5) year limited warranty from the date of CBC invoice. Warranty to include reasonable labor. [Product Warranty](#)

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Manufacturers List: Subject to compliance with requirements, provide products by one of the following:
 1. C.I. TAKIRON, a flooring manufacturer represented by CBC AMERICA LLC, 2000 Regency Parkway, Cary, NC 27518; Telephone: 919.230.8700; E-mail: technical@cbcflooring.com; website: www.cbcflooring.com
 2. Substitution Limitations: No substitutions permitted because of the specific attributes listed in sections 2.2, 2.3 and 2.4
- B. Product Options
 1. Flooring Type:
 - a. TAKIRON **Pathways**: Class I per ASTM E648
 - 1). Size: 6' x 66' by 0.100" (1.82m x 20m x 2.5mm)
 - 2). Color and Pattern: [The Collection](#)
 - b. TAKIRON **Nattice**: Class I per ASTM E648
 - 1). Size: 6' x 66' by 0.100" (1.82m x 20m x 2.5mm)
 - 2). Color and Pattern: [The Collection](#)
 2. Accessories
 - a. Underlayment leveling compound per SECTION 035416
 - b. Expansion joints per SECTIONS 079200 and 079513
 - c. Interior & Non-Wet Area Acrylic Adhesive
 - 1). CBC 5001 High Performance Resilient Flooring Adhesive
 - d. Wet Area & Exterior Adhesive
 - 1). CBC 951 2-Part Epoxy Floor Covering Adhesive for Indoor (wet area) and Outdoor Installations
 - e. Wet Area and Exterior Accessory
 - 1). Edge Sealer Henkel Terostat MS939 Sealant or similar for Indoor (wet area) and Outdoor Installations
 - f. [Cleaning products](#)
 - g. Takiron Welding Rod to match

2.2 DESCRIPTION

- A. Takiron **Pathways** and **Nattice** per ASTM 1303 are Type II, Grade 1, Class B, inlaid embossed commercial slip-retardant sheet flooring.
- B. Sustainability Characteristics
 - 1. USGBC LEED Rating: Comply with project requirements intended to achieve the following Rating, as measured and documented according to the USGBC LEED® Green Building Rating System, Version indicated:

NOTE: Each LEED Version requires a different credit total to achieve the desired LEED Rating.
NOTE. Select one of the following Ratings:

- a. Rating: Certified
- b. Rating: Silver
- c. Rating: Gold
- d. Rating: Platinum
- 2. Applicable LEED Credits: Performance requirements of the following LEED Categories and Credits apply to this Section and are met as follows:
 - a. Materials & Resources (MR):
 - 1). MR 4.1: Recycled Content: 10 Percent (post-consumer + 1/2 pre-consumer)
 - a). Takiron Pathways® and **Nattice** contain 8% post-consumer and 12% pre-consumer, or 14% calculated recycled content.
 - b). CBC 5001 adhesive comes packaged in a recyclable PET pail.
 - b. Indoor Environmental Quality (EQ):
 - 1). EQ Credit 4.1, Low-Emitting Materials: Adhesives and Sealants: as applied to CBC 5001 acrylic and CBC 951 Epoxy adhesives.
 - a). Acrylic Adhesive - CBC 5001 VOC: 0 g/L
 - b). Epoxy Adhesive – CBC 951 VOC: 0 g/L
 - 2). EQ Credit 4.3, Low-Emitting Materials: Carpet and Resilient Flooring Systems
 - a). Takiron Pathways FloorScore Certified Low Emitting. Floor Score Certificate.

2.3 PERFORMANCE / DESIGN CRITERIA

- A. Performance Capacities – TAKIRON **Pathways** and **Nattice**
 - 1. Average Thickness per ASTM F386: 0.100” (2.5mm) ± 0.005”
 - 2. Static Load Limit per ASTM F970: 750 psi ≤ 0.005” residual indentation
 - 3. Short Term Indentation per ASTM F1914: ≤ 0.007” residual indentation
 - 4. Critical Radiant Flux per ASTM E648: Class I ≥ 0.45 watts/cm squared
 - 5. Smoke Density per ASTM E662:
 - Non-flaming: Passes; < 450
 - Flaming: Passes; < 450
 - 6. Heat Resistance per ASTM F1514: Max. avg. Delta E <1.0
 - 7. Light Resistance per ASTM F1515: Max. avg. Delta E <1.0
 - 8. Flexibility per ASTM F137: Pass; 1/4 inch (6.4mm) Mandrel
 - 9. Chemical Resistance per ASTM F925: No effect
 - 10. TVOC Emissions per ASTM D5116: Pass; CA 01350 Compliant (Pathways)
 - 11. Slip Resistance per ASTM D2047: ≥ 0.8 ADA Compliant (wet and dry)

2.4 MATERIALS

- A. Takiron **Pathways** and **Nattice** Sheet per ASTM F1303: Type II, Grade 1, inlaid wear layer sheet vinyl.
1. Composition: Sheet vinyl formed under heat and pressure from a PVC layer formulated from polyvinyl esters and inorganic fillers materials, with a backing material of recycled PVC and virgin PVC from polyvinyl esters and inorganic filler materials.
 2. Thickness: 0.100" (2.5 mm)
 3. Roll Size: 6' x 66' (1.82m x 20m)
 4. Color: As selected by Architect from Manufacturer's standard Collection.

2.5 ACCESSORIES

- A. Leveling and Patching Compound: Trowelable, latex-modified Portland cement-based formulation provided or approved by manufacturer for applications indicated.
- B. Self-Leveling Underlayment: Pourable latex-modified Portland cement-based formulation provided or approved by manufacturer for applications indicated.
- C. Expansion Joints: Refer to SECTION 079200 and SECTION 079500 or 079513.

NOTE: Select one of the following adhesive types, deleting that not chosen.

NOTE: Select CBC 951 Epoxy adhesive for all exterior installations or when expecting floors to be frequently washed or wet, or floors installed in extremely hot, cold or wet spaces, such as near outside entrances or freezer cases, or floors subject to heavy loads, including hospital beds, heavy carts, rolling chairs, etc.

CBC 5001 adhesive is suitable for indoor dry area applications.

- D. Adhesive - Acrylic: Solvent-free, low odor, acrylic based, high tack type adhesive acceptable to resilient sheet flooring manufacturer to suit flooring product and substrate conditions indicated. (indoor non-wet applications only)
1. Manufacturer / Product: CBC 5001 High Performance Resilient Floor Adhesive
- E. Adhesive – Heavy Duty Epoxy: 2-part solvent-free, low odor, flooring epoxy adhesive recommended for all exterior and flooring installations over porous and non-porous substrates under heavy static loads, areas that are subject to top-down water, freezer cases, and areas exposed to extremes of temperature.
1. Manufacturer / Product: CBC 951 2-Part Epoxy Floor Covering Adhesive for Indoor and Outdoor Installations

RED NOTE: CBC/TAKIRON does not warrant the compatibility and performance of TAKIRON Products with non-CBC adhesives

- F. Edge Sealing- Recommended for all exterior and wet areas
1. Manufacturer / Product: Henkel Terostat MS939 or equivalent sealant for Indoor wet area and all Outdoor Installations
- G. Adhesive Equipment: "V" notched professional adhesive application trowel for interior applications.
1. V-notch 1/16 x 1/16 x 1/16 inch for porous substrates.
 2. U-notch 1/32 x 1/16 x 1/32 inch for non-porous substrates or use with CBC 951 2-Part Epoxy
- H. Seam Sealing:
1. Heat Welding:
 - a. Welding Rod: 3.5mm diameter Takiron weld rod as recommended for the product(s) specified.
 - b. Color: As selected by Architect from manufacturer's full range.

- I. Floor Cleaning Systems: Clean as recommended by flooring manufacturer's [Maintenance Product Guide](#)

PART 3 - EXECUTION

3.1 FIELD CONDITIONS

- A. Conditions and Measurements: Visit jobsite to verify installation conditions and floor measurements.

NOTE: Coordinate and edit to the correct Section number below.

- B. Ambient Conditions per manufacturer's most recent published written recommendations, SECTION 017000 or 017100 or 017116, and as follows:
 - 1. New concrete slabs shall be flat, clean and dry meeting each moisture test, passing manufacturer's most recent published written requirements. [Material Handling & Subfloor Preparation Guide](#).
 - 2. Concrete floors shall be prepared in accordance with the latest version of ASTM F710.
 - 3. Acclimate product to installation location.
 - a. Deliver materials to jobsite room in which it will be installed 48 hours before installation.
 - 4. Environmental Limitations: Do not deliver or install until building is enclosed, overhead work is complete, wet work is complete, and HVAC system has been fully operating a minimum (1) one week, consistently maintaining temperature and relative humidity at occupancy levels, all in accordance with manufacturer's most recent published recommendations.
 - a. Maintain Temperature: Minimum 65 deg F (18 deg C), and maximum 80 deg F (27 deg C) for forty-eight (48) hours prior to, during and after installation.
 - 1). Thereafter, maintain minimum temperature of 50 deg F (10 deg C) for interior applications when using CBC 5001 adhesive.
 - b. Maintain recommended relative humidity for 48 hours prior to, during, and after installation.
- C. **RED NOTE: Use of portable heaters may cause failure.**

3.2 EXAMINATION

NOTE: Coordinate and edit to the correct Section number below.

- A. Examination per SECTION 017000 or 017100 or 017116, and as follows:
 - 1. Acceptance of Conditions: Carefully examine installation areas with Installer/Applicator present, for compliance with requirements affecting Work performance.
 - a. Verify that field measurements, surfaces, substrates, structural support, tolerances, levelness, plumbness, temperature, humidity, moisture content level, cleanliness and other conditions are as required by the manufacturer, and ready to receive Work.
 - 1). Verify that substrate meets ASTM F710 requirements and is flat to within 3/16 inch in 10 ft (4.8mm per 3m) or the equivalent of 1/32 inch in 12 inches (0.8mm in 300mm).
 - 2. Test substrates as required by manufacturer to verify proper conditions.

NOTE: Coordinate and edit requirements to the project substrates present.

- a. Concrete:
 - 1). Perform moisture testing to verify that concrete substrate is sound and dry. Both of the following tests are required:
 - a). Perform relative humidity (RH) test using in situ probes per ASTM F2170. Proceed with installation only after each substrate measures a maximum 85 percent RH (subject to Adhesive Specification). [Adhesive Reference Chart](#).

- b). Perform anhydrous calcium chloride testing per ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 6 lbs. of water/1000 sf (2.27 kg of water/92.9m²) in 24 hours (subject to Adhesive Specification). [Adhesive Reference Chart](#).
- 2). Perform alkalinity testing to verify pH level is between 7 and 10 per ASTM F710. [Adhesive Reference Chart](#).
- 3). Perform and document bond testing per ASTM F710 to determine compatibility of adhesive to concrete substrate and establish open time and working time.
- b. Plywood: Shall be dry, clean, structurally sound, and flat to within 1/8 inch in 10 ft (3mm per 3m) and comply with ASTM F1482. Plywood to be well nailed and/or glued, free of voids and with joints that do not exceed 1/16 inch (1.6mm) per underlayment manufacturer's most recent published installation instructions. Underlayment manufacturer shall warrant underlayment compatibility with resilient flooring.
 - 1). Perform pin meter reading to verify maximum 14 percent moisture with all readings to be within 2 percent of each other.
3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 PREPARATION

NOTE: Coordinate and edit to the correct Section numbers below.

- A. Preparation per manufacturer's most recent published written instructions, SECTION 017000 or 017100 or 017123, and as follows:
 1. General: Prepare substrates to ensure proper adhesion of flooring system per adhesive manufacturer's most recent published written instructions. [Takiron Installation Guide](#).

NOTE: Select correct substrate(s), edit to suit project, and delete items that do not suit project.

2. Concrete Substrates: Prepare substrate per ASTM F710.
 - a. Verify the substrate is smooth, permanently dry, and clean, being free of dirt, rust, oil, wax, paint, or other contaminants that will interfere with adhesive bonding.
 - b. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer.
 - 1). Do not use solvents.
 - 2). Mechanically abrade substrate as needed.
 - 3). Sweep and vacuum substrate just prior to installation.
 - c. Use latex Portland cement filler to patch cracks, small holes, and for leveling of small areas.
 - 1). Do NOT skim coat large areas with latex patching compound.
 - 2). Sand patched areas smooth after material is cured.

RED NOTE: Do not use gypsum-based underlayment products, and do not skim coat concrete subfloors.

- d. Self-Leveling Underlayments: Provide a dry and smoothly sanded underlayment substrate ready for homogeneous vinyl tile flooring system installation. Underlayment compound shall be moisture, mildew, and alkali resistant, and have a minimum 3,500 psi (24.1 MPa) compressive strength.
- e. Lightweight concrete shall have a compressive strength greater than 115 pcf (1849 kg/m³).
 - 1). For lightweight concrete substrates that are less than the minimum, place a minimum 1 inch (25.4mm) topping of standard weight concrete (140 pcf (2251 kg/m³)).

3. Wood Substrates or Panel Type Underlayment:

(Interior use only) Prepare and install per PS1, PS2, APA Form L335, and manufacturer's installation instructions as follows:

- a. Wood substrate shall be double layer construction of a minimum 1 inch (25.4mm) total thickness with a minimum 18 inches (457mm) of well-ventilated airspace beneath.
 - 1). Crawl spaces shall be insulated and protected by a vapor barrier.
- b. The top layer of a wood substrate shall be completely free of knots or surface voids and specified as underlayment grade for resilient flooring.

NOTE: Edit below to wood substrate type and thickness used. Delete APA item above if not used.

c. [Insert wood product or panel type selected]

d. Thickness: [Insert product thickness]

e. Underlayment shall be smooth, dry and clean, being free of paint, varnish, wax, oils, solvents or other foreign matter, structurally sound, and meets flatness requirements, well nailed or screwed per manufacturer's installation instructions.

- 1). Ensure that each nail or screw head is set flush with or below surface.

RED NOTE: Do not install over 'sleeper' floors or plywood floors installed directly over concrete slabs. Remove existing resilient floors prior to installation per OSHA regulations and work practices, as applicable.

4. Existing Substrates:

RED NOTE: Unacceptable surfaces include, but are not limited to, luan, plywood with knots, underlayment made of pine or other soft woods, particleboard, Masonite® or other hardboard underlayment, hardwood flooring, textured or cushioned flooring or other uneven or unstable substrates.

- a. Properly prepare manufacturer acceptable substrates to accept flooring.
 - 1). Cover manufacturer unacceptable substrates with a minimum 1/4-inch (6.4mm) panel underlayment, such as Tecply, designed for use intended.
- b. Substrate shall be smooth, dry, clean, and flat to within 1/8 inch in 10 ft. (3mm per 3m), well nailed and/or glued, free of voids and with joints that do not exceed 1/16 inch (1.6mm).
- c. Underlayment shall be sanded smooth to remove varnish, high edges, chips, or other contaminants.
- d. Ensure that each nail head is set flush with or below surface.
- e. Allow 1/32 to 1/16-inch (0.8mm to 1.6mm) expansion space between sheets with staggered joints. Leave 3/4 inch (19mm) minimum expansion space at all vertical obstructions.
- f. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps, ridges, and other irregularities to produce a uniform and smooth substrate.
 - 1). Verify that substrate is flat to within 3/16 inch in 10 ft (4.8mm per 3m).
 - 2). Comply with manufacturer's recommendations for compatible products.

RED NOTE: Do not fill expansion and isolation joints with patching compound or cover with resilient flooring. Use an expansion joint covering system.

5. Sweep and vacuum clean flooring substrates immediately prior to installation of sheet flooring.

3.4 INSTALLATION

NOTE: Coordinate and edit to the correct Section number below and to project requirements.

- A. Installation per manufacturer’s most recent published written [instructions](#), SECTION 017000 or 017300 or 017316, and the following:
1. Storage on site:
 - a. Store sheet rolls standing up, capped end down.
 - b. Do not lay rolls on side or flat.
 - c. Protect flooring and adhesives from temperature extremes.
 2. Acclimation:
 - a. Deliver all materials to the job site at least 48 hours before installation.
 - b. Acclimate materials and job site to stable environmental conditions between 65-80 degrees Fahrenheit.
 3. Seaming considerations:
 - a. Establish layout to use as few seams as possible.
 - b. Place seams in low traffic areas when possible.
 - c. Avoid cross seams and utilize only length seams as they blend better with sheet flooring material.
 4. Layout: **TAKIRON Pathways** and **Nattice** sheet flooring products have no pattern match requirements in width or length.
 5. Trial Laying: Dry Lay flooring without adhesive.
 - a. Make cuts from rolls in sequential order and do not reverse sheets.
 - b. Cuts can be rolled face-in if the material will be installed the next day.
 - c. Lay sheets flat on subfloor overnight to relax material.
 - d. Trim materials longer than needed to allow for shifting sheets to adjust pattern if necessary.
 6. Cutting and Trimming: With the first cut dry laid, trim resilient sheet flooring starting along starting wall.
 - a. Cut the first sheet closely to the wall using a utility knife.
 - b. Trim all factory edges at least 1/4 inch to remove shipping damage or deformities.
 - c. Cut all seams net. Do not leave a gap and do not cut seams tight so that material peaks. Preferred seam trimming methods are to ‘double cut’ or ‘recess scribe’.
 7. Adhesive Application and Rolling: Evenly comb adhesive perpendicular to length of sheet using proper trowel for conditions.
 - a. Allow for proper “flash-off” time before placing the flooring into adhesive.
 - b. Only spread as much adhesive as can be reasonably covered with current environmental conditions and adhesive working and open time.
 - c. Remove uncured residual adhesive per recommendations.
 - d. Carefully roll flooring into adhesive and avoid trapping air or allowing wrinkles or stresses in material.
 - 1). Acrylic Adhesives: Immediately roll flooring into adhesive with a 3-section 100 lb. roller.
 - a). Roll across the width to remove air bubbles and then roll in the length.
 - b). Ensure adhesive transfer to the back of the flooring.

NOTE: Edit to use ACRYLIC adhesive verbiage above or EPOXY adhesive language below, deleting the one not chosen as appropriate.

- 2). Epoxy Adhesive: Roll entire floor three (3) times every 30 minutes with a 3-section 100 lb. roller immediately after placing resilient sheet flooring into the adhesive bed.
 - a). Begin rolling across the width parallel to the adhesive ridges. This helps to force out all air bubbles from under the floor.
 - b). Carefully identify curled edges, seams or slight bubbles after the first rolling and correct.
 - c). Carefully apply heat to the bubble, immediately hand roll, and then cool area with a damp cloth.
 - 3). Use a high wattage light to highlight remaining bubbles. (Do not allow the light to rest on the material)
8. Seam Sealing
- a. Heat welding: Wait 24 hours after installation.
 - 1). Practice all techniques on scrap material to ensure proper techniques and settings.
 - 2). Rout/groove using a 3.5 mm blade or hand groover to 2/3 the thickness of the material.
 - 3). Center groove on the seam so that both sides are equally grooved.
 - 4). Use a hot-air gun, thermally weld proper weld rod into the grooved seam. Takiron welding thread is 3.5 mm. Do not use heat welding tip larger than 4.0 mm.
 - 5). Immediately trim weld rod with proper blade and trim plate leaving raised weld rod to thoroughly cool.

RED NOTE: Wait a minimum of 1 hour before final trimming of welding rod.

- 6). Using proper blade, trim weld rod to be flush with top embossing of flooring.
9. Edge sealing: Apply Henkel Terostat MS939 sealant or equivalent, per flooring manufacturer's most recent published instructions, around all edges in indoor wet areas and outdoor installations.
10. Flash Cove: Apply cove stick where wall meets the floor and install cap molding on the wall where the flooring ends. Adhere sheet flooring flash cove to wall and hand roll.
- a. Weld inside and outside cove corners.

RED NOTE: Do not wet mop until adhesive has properly set per adhesive manufacturer's most recent published written instructions.

3.5 FIELD QUALITY CONTROL

NOTE: Coordinate and edit to the correct Section number below.

- A. Site Tests and Inspections: Per SECTION 014000 or 014500 or 014523, and as follows:
1. Inspect floor installation for non-conforming work including, but not limited to, the following:
 - a. Lack of adequate adhesion
 - b. Air blisters, buckles, and dirt or debris under the tile flooring
 - c. Loose edges or seams
 - d. Adhesive on top of the flooring
 - e. Improper substrate preparation as indicated by buckling or telegraphing
 - f. Damaged flooring as indicated by dents, splits, cuts, cracks, punctures, melting, burn marks
 - g. Edge sealant application workmanship
 - h. Seam integrity and gapping

- B. Non-Conforming Work per General Conditions and as follows:
 - 1. Remove, Repair and Reinstall or Restore in Place damaged items.
 - a. Finish touch-up damaged surface finishes.
 - 2. Replace damaged materials or items with new if repair not acceptable to Architect.

3.6 CLEANING

NOTE: Coordinate and edit to the correct Section number below.

- A. Provide Progress Cleaning per SECTION 017000 or 017400 or 017413, and as follows:
 - 1. Work Areas: Continuously clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
 - a. Clean and maintain completed construction until Substantial Completion.

NOTE: Coordinate and edit to the correct Section number below.

- B. Provide Final Cleaning immediately prior to Substantial Completion inspection per manufacturer's most recent published written instructions, and SECTION 017000 or 017400 or 017423. [Takiron Maintenance Guide](#).

3.7 CLOSEOUT ACTIVITIES

NOTE: Coordinate and edit to the correct Section number below.

- A. Substantial Completion Requirements per SECTION 017000 or 017700 and as follows:
 - 1. Perform Closeout Procedures per SECTION 017000 or 017700.
 - 2. Perform Demonstration and Training with Owner's designated staff per SECTION 017000 or 017900.
 - 3. Sustainable Design Closeout Documentation per SECTION 017000, 017800 or 017853: LEED credit worksheet paperwork.

3.8 PROTECTION

- A. Protect materials from construction operations until date of Final Completion or Owner occupancy, whichever occurs first.
 - 1. Protect finished floor from abuse and damage by using heavy non-staining kraft paper, drop cloths or equivalent. Use additional non-damaging protective materials as needed.
 - 2. Light foot traffic on a newly installed floor can be permitted after:
 - a. 3-4 hours if installed with CBC 5001 acrylic adhesive
 - b. 12 hours if installed with CBC 951 epoxy adhesive
 - 3. Keep heavy traffic, rolling loads and other equipment off the newly installed TAKIRON floor for:
 - a. 24 hours if installed with CBC 5001 adhesive
 - b. 48 hours if installed with CBC 951 epoxy
 - c. Protect the floor from rolling traffic by covering with protective boards.

3.9 MAINTENANCE

- A. Initial Maintenance per flooring manufacturer's most recent published written instructions and as follows:
 - 1. Begin initial maintenance only after the adhered sheet flooring has been properly cured and bonded to the subfloor.
 - 2. When floor adhesive is fully cured, sweep and lightly damp mop with well wrung mop.
 - 3. Wait 72 hours before wet cleaning.
 - 4. [Takiron Maintenance Guide](#).

END OF SECTION

RED NOTE: Be sure to obtain the latest version of this Guide Specification.

This Guide Specification is not a completed document ready for use. It must be edited, deleting, adding, or modifying text, as required to suit project requirements.

The professional stamping and the contracting parties of the Contract Documents are responsible for the accuracy of issued project specifications, including any use of this Takiron Sheet Flooring Guide Specification.

C.I. TAKIRON AND CBC AMERICA LLC SHALL NOT BE LIABLE FOR DAMAGES ARISING OUT OF THE USE OF THIS GUIDE SPECIFICATION.