

SECTION 09 65 16.23
RESILIENT FLOORING - VINYL SHEET FLOORING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes

1. Vinyl Sheet Flooring
 - a. TEKNOFLOR® Symphony HPD
 - b. TEKNOFLOR® Elevated Classics HPD
2. Accessories
 - a. Adhesives
 - b. Concrete Slab Primer
 - c. Patching, Leveling, Underlayment
 - d. Welding Rods
 - e. Chemical Weld
 - f. Terminating Reducers

B. Related Requirements

1. Section 01 30 00, Administrative Requirements
2. Section 01 45 00, Quality Control
3. Section 01 60 00, Product Requirements
4. Section 01 71 00, Examination and Preparation
5. Section 01 73 00, Execution
6. Section 01 74 00, Cleaning and Waste Management
7. Section 01 78 00, Closeout Submittals
8. Section 03 30 00, Cast-in-Place Concrete
9. Section 07 92 00, Joint Sealants
10. Section 07 95 13, Expansion Joint Cover Assemblies
11. Section 09 65 13, Resilient Base and Accessories

1.02 REFERENCE

A. Organizations

1. American Concrete Institute (ACI) - www.concrete.org
2. American Institute of Architects, The (AIA) - www.aia.org
3. American National Standards Institute (ANSI) - www.ansi.org
4. American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) - www.ashrae.org
5. APA-The Engineered Wood Association - www.apawood.org
6. ASTM International - www.astm.org
7. California Department of Public Health (CDPH) - <https://www.cdph.ca.gov/>
8. European Chemicals Agency (ECHA) - echa.europa.eu/
9. Flooring Contractors Association (FCICA) - www.fcica.com
10. Health Product Declaration Collaborative (HPDC) - www.hpd-collaborative.org
11. International Living Future Institute (ILFI) - living-future.org
12. International Standards and Training Alliance (INSTALL) - www.installfloors.org
13. International WELL Building Institute (IWBI) - www.wellcertified.com
14. mindful Materials (mM) - www.mindfulmaterials.com
15. National Fire Protection Association (NFPA) - www.nfpa.org
16. North American Association of Floor Covering Distributors (NAFCD) - www.nafcd.org
17. Resilient Floor Covering Institute (RFCI) - rfci.com
18. SCS Global Services - www.scsglobalservices.com
19. South Coast Air Quality Management District (SCAQMD) - www.aqmd.gov
20. U.S. Consumer Product Safety Commission (CPSC) - www.cpsc.gov

21. U.S. Green Building Council (USGBC) - www.usgbc.org
22. Vinyl Sustainability Council (VSC) - vantagevinyl.com/vinyl-sustainability-council/
23. Women in Sustainability Leadership Awards (WSLA) - www.wsla.global
24. World Floor Covering Association (WFCA) - www.wfca.org

B. Standards

1. ACI 302.1 - Guide to Concrete Floor and Slab Construction
2. ACI 302.2 - Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials
3. ANSI/ASHRAE Standard 55 - Thermal Environmental Conditions for Human Occupancy
4. ANSI/ESD STM97.2 - Floor Materials and Footwear - Voltage Measurement In Combination With a Person
5. ASTM D2047 - Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine
6. ASTM D4060 - Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser
7. ASTM E648/NFPA 253 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source
8. ASTM E662/NFPA 258 - Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials
9. ASTM F1303 - Standard Specification for Sheet Vinyl Floor Covering with Backing
10. ASTM F137 - Standard Test Method for Flexibility of Resilient Flooring Materials with Cylindrical Mandrel Apparatus
11. ASTM F1482 - Standard Practice for Installation and Preparation of Panel Type Underlayments to Receive Resilient Flooring
12. ASTM F1514 - Standard Test Method for Measuring Heat Stability of Resilient Flooring by Color Change
13. ASTM F1515 - Standard Test Method for Measuring Light Stability of Resilient Flooring by Color Change
14. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride
15. ASTM F1914 - Standard Test Methods for Short-Term Indentation and Residual Indentation of Resilient Floor Covering
16. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes
17. ASTM F2419 - Standard Practice for Installation of Thick Poured Gypsum Concrete Underlayments and Preparation of the Surface to Receive Resilient Flooring
18. ASTM F2678 - Standard Practice for Preparing Panel Underlayments, Thick Poured Gypsum Concrete Underlayments, Thick Poured Lightweight Cellular Concrete Underlayments, and Concrete Subfloors with Underlayment Patching Compounds to Receive Resilient Flooring
19. ASTM F3191 - Standard Practice for Field Determination of Substrate Water Absorption (Porosity) for Substrates to Receive Resilient Flooring
20. ASTM F3311 - Standard Practice for Mat Bond Evaluation of Performance and Compatibility for Resilient Flooring System Components Prior to Installation
21. ASTM F410 - Standard Test Method for Wear Layer Thickness of Resilient Floor Coverings by Optical Measurement
22. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
23. ASTM F925 - Standard Test Method for Resistance to Chemicals of Resilient Flooring
24. ASTM F963 - Standard Consumer Safety Specification for Toy Safety (see Table 1 for permissible heavy metal content levels). Note - while this standard applies to toys, flooring manufacturers (including TEKNOFLOR®) have adopted similar/same limits for their products
25. ASTM F970 - Standard Test Method for Measuring Recovery Properties of Floor Coverings after Static Loading
26. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi
27. CDPH Standard Method v1.2-2017 - Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers
28. CPSC-CH-C1001-09.4 - Standard Operating Procedure for Determination of Phthalates (Per U.S. Consumer Product Safety Commission)
29. CPSIA (Consumer Product Safety Improvement Act) - U.S. law passed in August 2008 that, amongst other things, imposed new testing and documentation requirements, and set new acceptable levels for several

- substances (including phthalates). While such limitations were not set on flooring products, many such manufacturers (including TEKNOFLOR®) have adopted same/similar limits for their products.
30. FloorScore® - an indoor air quality (IAQ) certification standard for hard surface flooring materials, adhesives, and underlayments. Developed by SCS Global Services and the RFCI, it qualifies for many green building schemes - including LEED and WELL.
 31. LEED (Leadership in Energy & Environmental Design) - Green building certification program developed and maintained by the U.S. Green Building Council (USGBC).
 32. NFPA 101 Life Safety Code - The Life Safety Code, which is also known as NFPA 101, is currently used within every U.S. state, with statewide adoption taking place across 43 states. The current version of this standard addresses the minimum building design, construction, operation, and maintenance guidelines necessary for limiting the danger to life brought on by fire, smoke, heat, and toxic fumes.
 33. REACH SVHC - Substances of very high concern (SVHCs) are chemicals that have serious effects on human health and/or the environment. These chemicals may be individual substances or present in articles contained within a complex product. Some examples of the criteria for these substances, as stated in Article 57 of the EU REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) Regulation, include substances that are carcinogenic, mutagenic, bio-accumulative, or toxic for reproduction. Individual substances and articles within products may not contain an SVHC over the allotted 0.1 percent weight by weight threshold.
 34. SCAQMD 1168 - South Coast Air Quality Management District Rule No. 1168; VOC (Volatile Organic Compound) emissions of adhesives and sealant applications.
 35. WELL – Green building certification program developed and maintained by the International WELL Building Institute (IWBI).

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data
 1. Technical Data
 2. Installation & Maintenance
 3. Warranty
 4. Safety Data Sheets (SDS) for accessories (specifically, unfinished goods)
 5. LEED v4.1 Submittals
- C. Selection Samples: Submit manufacturer's complete set of color samples for Architect's initial selection.
- D. Verification Samples: Submit two samples, 4 in. x 4 in. (101 mm x 101 mm) in size, illustrating color and pattern for each resilient flooring product specified.
- E. Shop Drawings: jointing, termination details. Includes 8½ x 11 in. diagram indicating joint method and termination details (including reducers and/or caps required).
- F. Document and archive project documentation to include moisture and pH test results.

1.04 QUALITY ASSURANCE

- A. Comply with applicable regulatory requirements:
 1. ASTM E648 (NFPA 253): Critical Radiant Flux (Class I)
 2. ASTM E662 (NFPA 258): Smoke Density (≤ 450 DM Corrected)
- B. Possess valid licenses, registrations, and/or (insurance) certificates required by federal law, including but not limited to licenses, registrations, and/or certificates required to:
 1. Conduct business in the designated locale
 2. Perform the contract work it seeks to perform
- C. Manufacturer Qualifications:
 1. Company specializing in manufacturing products specified in this section, with not less than ten (10) years of documented experience.
 2. ISO 9001 - Quality Management System (Manufacturing Site)
 3. ISO 14001 - Environmental Management System (Manufacturing Site)
- D. Installer Qualifications: Professional flooring contractors with a minimum of five (5) years of successful in-service sheet flooring installations of similar size and scope. **Provide three (3) recent project references, technical certifications, and resources, including equipment, personnel and financial resources, to perform the referenced contract.**

- E. Source Limitations: Provide each type of resilient sheet flooring and accessory from a single manufacturer, including recommended primers, adhesives, sealants, and leveling compounds.
- F. Field Samples: Provide field samples, dry laid, to demonstrate aesthetic effects of materials in-situ, to assist the Architect and Owner in making final selections.

1.05 WARRANTY

- A. See Section 01 78 00, Closeout Submittals, for additional warranty requirements.
- B. Twelve (12) year limited non-prorated warranty (including labor) commencing on date of substantial completion. Refer to warranty document for more details.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Comply with manufacturer's instructions and recommendations, Section 01 60 00 requirements.
- B. Deliver materials to project site in manufacturer's original, unopened containers with labels indicating brand names, colors and patterns, and quality designations legible and intact.
- C. Store all roll goods vertically and stage materials to install rolls in consecutive roll numbers.
- D. Store and protect all materials in a dry interior area maintained between 55°F and 85°F (13°C and 29°C). **DO NOT** use outdoor storage, temporary storage, shipping containers or any other type of uncontrolled or unconditioned storage. Improper storage can result in unintended installation issues including bond failure, gapping or buckling, and it is not covered under the product warranty.
- E. **ACCLIMATION:** Store resilient flooring materials in the conditioned space into which it will be installed, for as long as necessary to fully equilibrate, but never less than 72 hours prior to installation.

1.07 SITE CONDITIONS

- A. Ambient Conditions:
 - 1. Building envelope must be completely enclosed.
 - 2. Areas to receive resilient flooring shall be maintained at temperatures and relative humidity (RH) in accordance with ANSI/ASHRAE 55 and Resilient Flooring and Adhesive Manufacturer requirements.
 - 3. Set and operate permanent or temporary HVAC at a consistent temperature between 65°F to 85°F (18°C and 29°C), using data logging of temperature and ambient RH. HVAC must be fully functional for as long necessary to reach occupancy conditions, but never less than one (1) week before and at all times during and after installation. Space heaters are not an acceptable source of environmental control.
 - 4. Install resilient flooring and accessories after other trades have been completed, including painting and overhead trades.
 - 5. **DO NOT** install resilient flooring if substrate conditions fail to meet requirements.
 - 6. **DO NOT** install resilient flooring over new concrete slabs until cured and sufficiently dry to achieve bond with adhesive as determined by resilient flooring manufacturer's bond, moisture, and pH tests.

1.08 EXTRA MATERIALS

- A. Furnish a minimum one percent (1%) extra resilient flooring and accessory materials for each color and pattern installed.

PART 2 - PRODUCTS

2.01 MANUFACTURER

- A. Shannon Specialty Floors dba TEKNOFLOR®
 - 1. Address: 1005 South 60th Street, Milwaukee, WI 53214, United States of America
 - 2. Contact: To find the TEKNOFLOR® Sales Representative that services your area, please call us at 800.522.9166 or visit <https://www.hmtxcommercial.com/sales>.
- B. Substitutions: Not permitted

2.02 VINYL SHEET FLOORING

- A. TEKNOFLOR® Symphony HPD – Commercial Heterogeneous Resilient Sheet Flooring
 - 1. Substitutions: Not permitted
- B. TEKNOFLOR® Elevated Classics HPD – Commercial Heterogeneous Resilient Sheet Flooring
 - 1. Substitutions: Not permitted
- C. Patterns (**Note to Specifier: List by Pattern Number and include the Collection Name, Pattern Name, and Emboss associated with each Pattern Number**)
 - 1.

2.

3.

D. Physical Properties & Packaging:

1. Construction: Heterogeneous Sheet Vinyl Flooring – Phthalate-Free, Formaldehyde-Free, Free of Halogenated Flame Retardants
2. Classification (ASTM F1303): Type I, Grade 1, Class A
3. Size – Roll (W x L): 6 x 75 ft (1.829 x 22.86 m / 2 x 25 yd)
4. Coverage – Roll: 450 Sq. ft (41.81 Sq. m / 50 Sq. yd)
5. Weight: 6.4 lbs. per Sq. yd
6. Total Thickness (Gauge): 2.3 mm (0.091 in.)
7. Wear Layer Thickness: 0.5 mm (20 mil)
8. Finish: HP Urethane with Ceramic Bead

E. Manufacturing, Performance, and Safety Standards

1. ASTM F1303, Classification – Type I, Grade 1, Class A
2. ASTM F410, Wear Layer Thickness – Passes Requirements for Type I, Grade 1
3. ASTM F137, Flexibility – Passes Requirements for Type I
4. ASTM F1914, Residual Indentation – Passes Requirements for Type I
5. ASTM F970, Static Load Limit – Passes Requirements for Commercial Classification (Results - 1,500 psi at 0.005 in.)
6. ASTM F925, Chemical Resistance – Passes Requirements
7. ASTM F1514, Resistance to Heat – Passes Requirements
8. ASTM F1515, Resistance to Light – Passes Requirements
9. ASTM E648 / NFPA 253, Critical Radiant Flux (Radiant Panel) – Class I per NFPA 101 Life Safety Code
10. ASTM E662 / NFPA 258, Smoke Density (Flaming & Non-Flaming) – ≤ 450
11. CDPH Standard Method v1.2-2017, VOC/TVOCs & Formaldehyde – Passes Requirements (FloorScore® certified)
12. REACH SVHC, 235 Substances of Very High Concern – Passes Requirements
13. ASTM F963 (Table 1), Heavy Metals – Passes Requirements
14. CPSC-CH-C1001-09.4, Phthalates – Per CPSIA: ≤ 0.1% per Substance
15. ASTM G21, Antifungal Activity – Top Surface: 0 (No Growth)
16. ASTM D2047, Coefficient of Friction / Slip Resistance – ≥ 0.6 (Dry)
17. ANSI/ESD STM97.2, Body Voltage – Average (Absolute): ≤ 2.0 kV
18. ASTM D4060, Abrasion Resistance – 42,000 cycles

F. Sustainability and Affiliations:

1. Product Sustainability:
 - a. FloorScore®: TEKNOFLOR® flooring products are FloorScore® certified by SCS Global Services and thus comply with CDPH Standard Method v1.2-2017.
 - b. LEED v4.1 - Contributions Towards Certification:
 - 1) MR Credit, Building Product Disclosure and Optimization - Environmental Product Declarations (EPD) (Option 1): Product-Specific Type III EPD is available for TEKNOFLOR® Symphony HPD and TEKNOFLOR® Elevated Classics HPD.
 - 2) MR Credit, Building Product Disclosure and Optimization - Material Ingredients (Option 1): Material ingredients for TEKNOFLOR® Symphony HPD and TEKNOFLOR® Elevated Classics HPD have been disclosed in the form of Declare labels and Health Product Declarations (HPD).
 - 3) EQ Credit, Low-Emitting Materials (Flooring): TEKNOFLOR® Symphony HPD and TEKNOFLOR® Elevated Classics HPD are FloorScore® certified and thus meet the requirements of CDPH Standard Method v1.2-2017.
 - c. The WELL Building Standard v2 – Contributions Towards Certification:
 - 1) Materials Concept - Feature X01 (Material Restrictions), Part 1(a) - Restrict Asbestos: TEKNOFLOR® Symphony HPD and TEKNOFLOR® Elevated Classics HPD do not contain asbestos and thus comply with this prerequisite for resilient floor coverings.
 - 2) Materials Concept - Feature X05 (Enhanced Material Restrictions), Part 2(a) - Select Compliant Architectural and Interior Products: TEKNOFLOR® Symphony HPD and TEKNOFLOR® Elevated Classics HPD do not contain halogenated flame retardants, PFAs, or orthophthalates.

- 3) Materials Concept - Feature X06 (VOC Restrictions), Part 2(a) - Restrict VOC Emissions from Furniture, Architectural, and Interior Products: TEKNOFLOR® Symphony HPD and TEKNOFLOR® Elevated Classics HPD are FloorScore® certified and thus meet the requirements of CDPH Standard Method v1.2-2017.
 - 4) Materials Concept - Feature X07 (Materials Transparency), Part 1(a)(b) - Select Products with Disclosed Ingredients: Material ingredients for TEKNOFLOR® Symphony HPD and TEKNOFLOR® Elevated Classics HPD have been disclosed in the form of Declare labels and Health Product Declarations (HPD).
 - 5) Materials Concept - Feature X07 (Materials Transparency), Part 2(a)(b) - Select Products with Enhanced Ingredient Disclosure: All material ingredients at/above 100 ppm in TEKNOFLOR® Symphony HPD and TEKNOFLOR® Elevated Classics HPD have been disclosed in the form of Declare labels and HPDs.
2. Affiliations - Member Bodies and/or Sponsorships (Direct and/or through HMTX Industries, our parent company):
- a. American Institute of Architects, The (AIA)
 - b. ASTM International
 - c. Connecticut Fund for the Environment and Save the Sound
 - d. Flooring Contractors Association (FCICA)
 - e. Health Product Declaration Collaborative (HPDC)
 - f. International Living Future Institute (ILFI)
 - g. International Standards and Training Alliance (INSTALL)
 - h. mindful MATERIALS (mM)
 - i. North American Association of Floor Covering Distributors (NAFCD)
 - j. Resilient Floor Covering Institute (RFCI)
 - k. U.S. Green Building Council (USGBC)
 - l. Vinyl Sustainability Council (VSC)
 - m. Women in Sustainability Leadership Awards (WSLA)
 - n. World Floor Covering Association (WFCA)

2.03 ACCESSORIES

- A. Adhesives – Products: As recommended by flooring manufacturer to suit material and substrate conditions.
1. Tek One
 - a. Acrylic dispersion adhesive ideal for most situations
 - b. Provides a 10 year under bed bond warranty
 - c. Moisture & pH Limits: 90% RH and 8 lbs. MVER & 7-10 pH
 2. Tek Five v2
 - a. Modified silane adhesive used in areas where a more aggressive bond is necessary
 - b. Provides a 10 year under bed bond warranty
 - c. Moisture & pH Limits: 90% RH and 8 lbs. MVER & 7-10 pH
 3. TUF STIK 150 Spray Adhesive
 - a. Spray adhesive suitable for many situations. Ideal for occupied renovations or where fast turnaround is important. Allows immediate use of the floor after installation.
 - b. Moisture & pH Limits: 93% RH and 6 lbs. MVER & 8-10 pH
 4. Prevail 4000 Epoxy
 - a. Two-part reactive epoxy adhesive for extreme conditions. Use under Bariatric beds and areas with topical water, direct sun exposure or heavy point loads.
 - b. Moisture & pH Limits: 90% RH and 8 lbs. MVER & 7-10 pH
- B. Adhesives – Sustainability
1. FloorScore® / SCAQMD 1168: the adhesives required for use in the installation of TEKNOFLOR® Symphony HPD and TEKNOFLOR® Elevated Classics HPD are FloorScore® certified by SCS Global Services and have thus been found to comply with CDPH Standard Method v1.2-2017 and SCAQMD Rule No. 1168.
 2. LEED v4.1 – Contributions Towards Certification

- a. EQ Credit, Low-Emitting Materials (Adhesives & Sealants): the adhesives required for use in the installation of TEKNOFLOR® Symphony HPD and TEKNOFLOR® Elevated Classics HPD are FloorScore® certified.
- 3. The WELL Building Standard v2 – Contributions Towards Certification
 - a. Materials Concept – Feature X06 (VOC Restrictions), Part 1(a)(b) – Limit VOCs from Wet-Applied Products: the adhesives required for use in the installation of TEKNOFLOR® Symphony HPD and TEKNOFLOR® Elevated Classics HPD are FloorScore® certified by SCS Global Services and have thus been found to comply with CDPH Standard Method v1.2-2017.
- C. Concrete Slab Primer: If a concrete slab primer is used it should be non-staining, low or no VOC acrylic or latex based primer suitable for the application and specifically for use with the respective adhesives.
- D. Patching, Leveling, Underlayment:
 - 1. Trowelable or self-leveling portland cement and/or calcium aluminate patching and leveling compound.
 - 2. Recommended by its manufacturer for intended use conditions.
 - 3. The underlayment shall be non-shrinking and resistant to mold, mildew, water, and alkali, with a minimum compressive strength of 3,500 psi.
 - 4. **Note: Gypsum patching compounds shall not be used unless recommended and warranted by product manufacturer as project compliant.**
- E. Welding Rods: As recommend by the manufacturer; color as selected.
- F. Chemical Weld: As recommend by the manufacturer.
- G. Terminating Reducers: Manufacturer's standard; color as selected.

PART 3 - EXECUTION

3.01 EXAMINATION PER SECTION 01 71 00 AND AS FOLLOWS:

- A. Ensure substrate is properly prepared and in compliance with ASTM F2678. Concrete slabs (per ASTM F710, ACI 302.1, and ACI 302.2), thick poured gypsum (per ASTM F2419), suspended wood (per ASTM F1482), or metal deck should be prepared in accordance with the respective industry standards. Determining jobsite suitability rests solely with the General Contractor and Flooring Contractor.
- B. Examine substrates to ensure they are suitable for intended use. Unsuitable substrates or pre-existing floor coverings should be properly removed.
- C. The substrate shall be rigid, smooth, flat, permanently dry, clean, and free of all foreign materials, including, but not limited to dust, paint, marker, grease, oils, solvents, cutting/parting/curing compounds, sealers, residual adhesive, or any other deleterious contaminants that may act as a bond breaker or staining agent.
- D. Concrete must have a compressive strength of 3,500 psi or greater.
- E. Inspect substrate for any contamination, such as oil drippings, cutback adhesives, etc. Properly remove or encapsulate contamination prior to installation of floor covering.
- F. Test the substrate for absorbency. It may be possible to determine surface porosity by placing a ¼ in. (7 mm) drop of potable water onto a properly cleaned substrate using a dropper or pipette from a height no greater than ½ in. (13 mm). If the drop of water is absorbed within one (1) minute, the surface is likely considered porous / absorbent. If the drop of water is still beaded after one (1) minute, the surface is likely considered non-porous/non-absorbent. Testing must be done in compliance with the current version of ASTM F3191. Substrate absorbency testing should be performed in at least three (3) areas for each installation. For large projects, testing should be completed in distances not exceeding 50 feet (15 m) in any direction. Testing locations should be documented and archived.
- G. Avoid contamination: During spackling, painting, pipe cutting and other operations, protect the substrate to prevent contamination. Spackling, permanent marker, paint, paint thinner, machine oil, and other deleterious substances must be properly managed as these can permanently contaminate the substrate, resulting in issues such as bond failure or discoloration.
- H. Do not allow resilient flooring work to proceed until substrate is qualified and suitable. Communicate adverse conditions of any type in writing to all appropriate parties, including the Architect and General Contractor.
- I. Restrict the project area to prevent all non-essential traffic before and after installation, as specified.
 - 1. **Note: After installation, the General Contractor shall protect flooring surface from damage from other trades until final acceptance by Owner or appropriate party. When traffic must be permitted onto the flooring, protect**

with a suitable material as recommended by the flooring manufacturer. Failure to properly protect flooring from construction and trade damage may result in permanent damage to the flooring.

- J. Service lighting should be fully operational so the substrate evaluation, preparation, and flooring installation can be performed under lighting equal to occupancy-conditions and final assessment criteria. Poor lighting is not a valid cause for improper workmanship or the installation of flooring with visible defects.
- K. Expansion joints and isolation joints are intentionally incorporated into slabs and structures to accommodate expected movement. These and any other active or moving joints must be honored through the flooring assembly with the finished floor terminating on both sides. Do not fill these joints with patch, underlayment products, and/or cover with the floor covering. Cover moving or expansion joints with an expansion joint covering system. These systems should be specified and detailed by the architect, designer, or engineer based upon requirements and aesthetic interests. Install movement joint systems per manufacturer's instructions and per Section 07 95 13 and Section 07 92 00.
- L. Moisture and pH testing shall be properly performed in accordance with the current version of the respective test standard to confirm subfloor suitability. Moisture testing should be formally documented at the time of testing and permanently archived for future reference. Do not install when the moisture vapor emission rate (MVER) or in-situ Relative Humidity (RH) exceeds adhesive limits or when surface pH is not within specification.
 - 1. Concrete:
 - a. ASTM F2170 In-situ Relative Humidity
 - b. ASTM F1869 Calcium Chloride
 - c. ASTM F710 pH Testing
 - 2. Wood: Calibrated Wood Pin Meter
 - a. **Note:** Self-leveling underlayments can have very high moisture contents and require longer curing times, some up to ten (10) days. Check moisture level with a Calcium Chloride test prior to installation.
- M. Perform a mat bond test, making certain the test area and all system components are properly conditioned before and during the testing period. Select an area with light traffic, for example next to walls or columns; avoid placement in doorways, walkways, or near windows. Protect the test area from all traffic for the duration of the test. Flooring Contractor is to determine the appropriate placement and quantity of test locations. On large projects, it is recommended that a test be performed every 50 linear feet (15.25 m), on every level, and in any area where conditions may vary. To ensure accurate results, the test must include all aspects of the project and flooring assembly including: the concrete surface profile (CSP), any surface preparation products, the proper adhesive, the specified floor covering materials, temperature, humidity, and any other ambient or relevant conditions. Install a 36 in. x 36 in. (1 m x 1 m) section and cover the perimeter edges with duct tape (or equivalent) to prevent the adhesive from drying prematurely. After allowing the adhesive to cure for a minimum of 72 hours, the adhesive should be dry (although not fully cured) and the flooring should be difficult to remove. Slowly peel the floor covering from the substrate; if the material is easy to remove, do not proceed with the installation until corrections have been made. Perform any necessary corrective actions and repeat the mat bond test. All mat bond tests must be performed in accordance with ASTM F3311.

3.02 PREPARATION

- A. Prepare per manufacturer's written instructions, Section 01 71 00, and as below.
- B. Allow other trades to complete their work before beginning the floor installation. This is particularly critical for plumbing, electrical, and painting.
- C. Remove debris, grit, and other foreign materials or substances from the surface of the substrate before patching and smoothing. Sand or grind surface to remove mortar, drywall compound and curing compounds, paint, permanent marker and other contaminants or surface irregularities which may result in lack of adhesion, telegraphing or bleed-through.
 - 1. **WARNING:** Do not sand, dry sweep, dry scrape, drill, saw, bead blast, or mechanically chip or pulverize existing resilient flooring, backing, lining felt, asphaltic "cutback" adhesive, or other adhesives. These products may contain asbestos fibers and/or crystalline silica. Avoid creating dust. Inhalation of such dust is a cancer and respiratory tract hazard. Smoking by individuals exposed to asbestos fibers greatly increases the risk of serious bodily harm. Unless positively certain that the product is non-asbestos containing material, you must presume it contains asbestos. Regulations may require that the material be tested to determine asbestos content. RFCI's Recommended Work Practices for Flooring Removal are a defined set of instructions addressed to the task of removing all resilient floor covering structures.

2. **Note:** All ink, markers and paint on substrate must be removed by sanding to prevent bleed-through and staining of the sheet flooring. Sealing and/or skim coating is not a substitution for sanding.
 3. **Note:** TEKNOFLOR® does not recommend the use of solvent adhesive removers (inorganic or bio-based) or chemically abating an existing floor covering or adhesive. Adhesive removers can remain in the slab, under walls, and within cracks and cause failure of the new floor covering and or adhesive after installation. For removal of all flooring and adhesives, follow the resilient flooring removal procedure as detailed in the RFCI's Recommended Work Practices for Flooring Removal.
- D. Substrates which are structurally sound but exhibiting dusting shall be primed by applying one or more coats of an appropriate primer. Primer applications should be done in accordance with manufacturer instructions and allowed to fully dry before proceeding.
 - E. The substrate shall be smooth and flat in accordance with ASTM F710. Substrates must be flat to within 3/16 in. in a 10 ft. radius (5 mm in a 3 m radius). Elevated, protruding, or high areas shall be corrected by grinding or sanding. Low areas shall be filled using a patch or leveling compound engineered and warranted by the patch manufacturer for this purpose and following their written instructions. Substrates shall be free of irregularities, roughness, excessive texture, or abrupt changes in elevation. Surface defects or deficiencies must be corrected before installing the flooring product.
 - F. Where leveling or smoothing is required, apply trowelable or self-leveling portland cement or calcium aluminate patching and leveling compound recommended by its manufacturer for intended use conditions. Apply compound in accordance with manufacturer's current printed instructions. The underlayment shall be mold, mildew, and alkali resistant, non-shrinking and water-resistant with a minimum 3,500 psi cured compressive strength. Ensure proper mix water ratio, working time, and drying time.
 1. **Note:** Gypsum patching compounds shall not be used unless recommended and warranted by product manufacturer as project compliant.
 - G. Vacuum the entire surface, paying close attention to the perimeter to remove all dust and debris.
 - H. Floor covering should not be installed over expansion joints. An appropriate expansion joint covering system should be as specified and detailed by the architect, designer, or engineer based upon requirements and aesthetic interests.
 - I. Perform a mat bond test, making certain the test area and all system components are properly conditioned before and during the testing period. Select an area with light traffic, for example next to walls or columns; avoid placement in doorways, walkways, or near windows. Protect the test area from all traffic for the duration of the test. Flooring Contractor is to determine the appropriate placement and quantity of test locations. On large projects, it is recommended that a test be performed every 50 linear feet (15.25 m), on every level, and in any area where conditions may vary. To ensure accurate results, the test must include all aspects of the project and flooring assembly including: the concrete surface profile (CSP), any surface preparation products, the proper adhesive, the specified floor covering materials, temperature, humidity, and any other ambient or relevant conditions. Install a 36 in. x 36 in. section (1 m x 1 m) and cover the perimeter edges with duct tape (or equivalent) to prevent the adhesive from drying prematurely. After allowing the adhesive to cure for a minimum of 72 hours, the adhesive should be dry (although not fully cured) and the flooring should be difficult to remove. Slowly peel the floor covering from the substrate; if the material is easy to remove, do not proceed with the installation until corrections have been made. Perform any necessary corrective actions and repeat the mat bond test. All mat bond tests must be performed in accordance with ASTM F3311.

3.03 INSTALLATION

- A. Installation per manufacturer's written instructions, Section 01 73 00, and as below.
- B. Installation of the resilient sheet flooring and accessories should be performed in strict compliance with the current version of manufacturer's instructions.
- C. Roll out resilient sheet flooring material with top surface facing up. Cut materials 2-3 inches longer than needed and allow material to relax for twenty-four (24) hours before installation. This will help to reduce end curl and difficulty getting the flooring to lay flat. For materials that are not laying flat, carefully back roll.
- D. Trim selvedge and ends to remove all edge compression, distortion, and damage.
- E. Scribe or trim resilient sheet flooring as appropriate. Flooring shall be fitted next to door jambs and other abutments, as necessary.
- F. For placing marks onto the substrate, use chalk, pencil, or another non-staining marking device.

- G. Apply adhesive in accordance with label instructions. Use the proper trowel to achieve correct adhesive coverage. Open and working times will vary based on surface absorbency and environmental conditions.
- H. Roll flooring with 100 lbs. 3-section roller. Hand roll resilient sheet flooring at seams and perimeter.
- I. Heat welding is the manufacturers preferred seaming method, as this provides the strongest seam.
 - 1. Heat weld seams.
 - a. Groove seam to accept weld rod.
 - b. Melt specified weld rod into grooves using heat weld gun.
 - c. Once the heat weld is cool, use a guide plate on spatula or other trim knife to trim the weld rod for the first pass. Trim the second pass without the guide plate to provide a smooth, flush seam.
 - 2. Chemical weld seams using manufacturers approved low gloss chemical weld.

3.04 FIELD QUALITY CONTROL

- A. Site tests and Inspections per Section 01 45 00 and as follows:
 - 1. Inspect flooring installation for non-conforming work, including (but not limited to) the following:
 - 2. Lack of adhesion;
 - 3. Bubbles or raised areas;
 - 4. Dirt and debris underneath flooring;
 - 5. Improper substrate preparation (as indicated by telegraphing);
 - 6. Damage to flooring, including: dents/indentations, cuts, cracks, burns, or punctures.
- B. Non-conforming work per General Conditions and as follows:
 - 1. Repair or replace damaged material if not acceptable to the Architect.

3.05 CLEANING AND PROTECTION

- A. **WASTE MANAGEMENT:** per Section 01 74 00.
- B. **CLEANING:** per manufacturer's written instructions, Section 01 74 00, and as below.
- C. **ROUTINE MAINTENANCE:** TEKNOFLOR® Symphony HPD and TEKNOFLOR® Elevated Classics HPD are NO-WAX, NO BUFF products.
 - 1. Reference www.hmtxcommercial.com for complete Maintenance Instructions.
 - 2. Before beginning any wet maintenance procedure, read all equipment and cleaning product instructions and safety warnings, wear appropriate protective gear, and put out caution signs in the area to be cleaned.
 - 3. Sweep, dust mop, or vacuum the floor to remove all loose dirt and grit. Do not use treated dust mops.
 - 4. When available, clean the floor with an auto scrubber using a properly diluted neutral pH cleaner and a 3M 5100 red pad or equivalent pad or brush. Rotary or cylindrical brush cleaning is recommended for textured floors.
 - a. **Note: Do not use a more aggressive pad or brush.**
 - 5. When an auto scrubber is not available, mop on a properly diluted neutral pH floor cleaner. Apply the solution liberally, but do not flood the floor. Clean the floor using a mop, flat mop, or scrub with a low speed (175-350 RPM) swing arm floor machine using a 3M 5100 red pad or equivalent pad or brush.
 - a. **Note: Do not use a more aggressive pad or brush.**
 - 6. Completely remove the cleaning solution using an auto scrubber, wet/dry vacuum, or mop and let the surface dry.
 - 7. Fans or air movers can speed up the drying process.
 - 8. Once the floor surface is clean and dry, remove caution signs.
- D. **FURNITURE GLIDES & PROTECTORS:**
 - 1. Use appropriate furniture glides and floor protectors under all chairs, furniture, rolling equipment, and beds. Proper selection and care of furniture glides, wheels, and floor protectors is an important part of effective floor care.
 - 2. Key Elements Include:
 - a. **NON-STAINING:** Be made of non-staining materials.
 - b. **RADIUSED EDGE:** Provide slightly radius or rounded edges.
 - c. **SUFFICIENT CONTACT AREA:** Have a surface contact area that is large enough to evenly distribute the load without causing damage to the floor. Generally, a 1 in. or larger diameter flat smooth contact area is appropriate for most applications.
 - d. **COMPOSITION OF FLOOR GLIDES:** Commercial grade felt glides are preferred for resilient flooring. Stainless steel, nylon, and non-staining rubber glides can be used. Do not use metal glides that may rust

or plastic glides, as they become abrasive with use and can scratch the floor.

- e. **COMPOSITION OF WHEELS:** Wheels for resilient & hard surface flooring should have a soft tread compound of urethane or non-staining rubber. Do not use hard plastic or metal wheels or rollers on resilient flooring. Hard wheels can cause surface damage to the flooring and break the adhesive bond causing bubbling.

E. FLOOR PROTECTION:

1. After installation protect installation from foot traffic for 24 hours and protect flooring from rolling and heavy point loads for 48-72 hours.
2. The Owner and General Contractor are responsible to protect completed flooring after installation is released by the Flooring Contractor. Cover with protective material appropriate to prevent any damage from other construction trades until final acceptance by owner.

END OF SECTION