

SECTION 09 6519
RESILIENT TILE FLOORING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. Resilient Tile Flooring
2. Installation Accessories
 - a. Adhesives
 - b. Finishes & Cleaners

B. Related Requirements

1. Section 01 4000, Quality Requirements
2. Section 01 6116, Volatile Organic Compound (VOC) Content Restrictions: SCS FloorScore® certification documentation
3. Section 01 7000, Execution & Closeout Requirements
4. Section 01 7419, Construction Waste Management & Disposal
5. Section 07 9513, Expansion Joint Cover Assemblies
6. Section 07 9200, Joint Sealants

1.02 REFERENCE ORGANIZATIONS & STANDARDS

A. Organizations

1. American National Standards Institute (ANSI) - www.ansi.org
2. APA-The Engineered Wood Association (Formerly American Plywood Association) - www.apawood.org
3. ASTM International (formerly known as American Society for Testing and Materials) - www.astm.org
4. California Air Resources Board (CARB) - www.arb.ca.gov
5. California Office of Environmental Health Hazard Assessment (OEHHA) - www.oehha.ca.gov
6. Canada Green Building Council (CaGBC) - www.cagbc.org
7. Collaborative for High Performance Schools (CHPS) - www.chps.net
8. Flooring Contractors Association (FCICA) - www.fcica.com
9. Green Building Initiative (GBI) - www.thegbi.org
10. Health Product Declaration Collaborative (HPDC) - www.hpd-collaborative.org
11. International Interior Design Association (IIDA) - www.iida.org
12. International Living Future Institute (ILFI) - <https://living-future.org>
13. International WELL Building Institute (IWBI) - www.wellcertified.com
14. Multilayer Flooring Association (MFA) - www.multilayerflooringassociation.com
15. National Fire Protection Association (NFPA) - www.nfpa.org
16. National Science Foundation (NSF) - www.nsf.gov
17. North American Association of Floor Covering Distributors (NAFCD) - www.nafcd.org
18. Resilient Floor Covering Institute (RFCI) - www.rfci.com
19. SCS Global Services (formerly Scientific Certification Systems, Inc.) - www.scsglobalservices.com
20. Southface Energy Institute - www.southface.org
21. U.S. Consumer Product Safety Commission (CPSC) - www.cpsc.gov
22. U.S. Environmental Protection Agency (EPA) - www.epa.gov
23. U.S. Green Building Council (USGBC) - www.usgbc.org
24. World Floor Covering Association (WFCA) - www.wfca.org

B. Standards

1. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars
2. ASTM D2047 - Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine
3. ASTM D4060 - Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser

4. ASTM D5116 - Standard Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions from Indoor Materials/Products
5. ASTM D7823 - Standard Test Method for Determination of Low Level, Regulated Phthalates in Poly (Vinyl Chloride) Plastics by Thermal Desorption-Gas Chromatography/Mass Spectrometry
6. ASTM E413 - Classification for Rating Sound Insulation
7. ASTM E492 - Standard Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine
8. ASTM E648/NFPA 253 - Standard Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source
9. ASTM E662/NFPA 258 - Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials
10. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
11. ASTM E989 - Standard Classification for Determination of Impact Insulation Class (IIC)
12. ASTM F137 - Standard Test Method for Flexibility of Resilient Flooring Materials with Cylindrical Mandrel Apparatus
13. ASTM F1514 - Standard Test Method for Measuring Heat Stability of Resilient Flooring by Color Change
14. ASTM F1515 - Standard Test Method for Measuring Light Stability of Resilient Flooring by Color Change
15. ASTM F1700 - Standard Specification for Solid Vinyl Floor Tile
16. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride
17. ASTM F1914 - Standard Test Methods for Short-Term Indentation and Residual Indentation of Resilient Floor Covering
18. ASTM F2055 - Standard Test Method for Size and Squareness of Resilient Floor Tile by Dial Gage Method
19. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes
20. ASTM F2199 - Standard Test Method for Determining Dimensional Stability of Resilient Floor Tile after Exposure to Heat
21. ASTM F2421 - Standard Test Method for Measurement of Resilient Floor Plank by Dial Gage
22. ASTM F386 - Standard Test Method for Thickness of Resilient Flooring Materials Having Flat Surfaces
23. ASTM F410 - Standard Test Method for Wear Layer Thickness of Resilient Floor Coverings by Optical Measurement
24. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
25. ASTM F925 - Standard Test Method for Resistance to Chemicals of Resilient Flooring
26. ASTM F963 - Standard Consumer Safety Specification for Toy Safety (Sec. 4.3.5.1(2) - Permissible Heavy Metal Content Levels)
27. ASTM F970 - Standard Test Method for Static Load Limit
28. CHPS/CA Section 01350 - California Standard Section 01350 Specification for evaluating and restricting VOC (Volatile Organic Compound) emissions for indoor air
29. CPSC-CH-C1001-09.3 - Standard Operating Procedure for Determination of Phthalates (Per U.S. Consumer Product Safety Commission)
30. FloorScore® - Tests to the CA Section 01350 Specification, which includes the Chronic Reference Exposure Levels (CRELs) concentrations established by the California OEHHA and procedures developed by the US EPA
31. Green Globes - Green building certification program developed and maintained (in the United States) by the Green Building Initiative (GBI)
32. LEED (Leadership in Energy & Environmental Design) - Green building certification program developed and maintained by the U.S. Green Building Council (USGBC)
33. NSF/ANSI 332 - Sustainability Assessment for Resilient Floor Coverings

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 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data
 1. Technical Data
 2. Installation & Maintenance
 3. Warranty
 4. Reclamation Program
 5. Safety Data Sheets (SDS) for accessories
 6. LEED v4 Submittals
 7. Health Product Declaration (HPD) v2.0 and/or Declare Label
- C. Selection Samples: Submit manufacturer's complete set of color samples for Architect's initial selection.
- D. Verification Samples: Submit two samples, 4 inches x 4 inches (101mm x 101mm) in size, illustrating color and pattern for each resilient flooring product specified.

1.04 QUALITY ASSURANCE

- A. Comply with applicable laws and possess valid licenses, registrations, and/or 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.
- B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than ten years of documented experience.
- C. Installer Qualifications: Professional-flooring contractors showing successful LVT installations in similar size and scope. **Provide technical certifications, qualifications and resources, including equipment, personnel and financial resources, to perform the referenced contract.**

1.05 WARRANTY

- A. See Section 01 7800, Closeout Submittals, for additional warranty requirements.
- B. Aspecta® One Warranty - 20-Year Limited Non-Prorated Commercial Material Warranty.
Coverage includes:
 1. 100% Cost of Material for the entire duration of Warranty (20 Years).
 2. Pro-Rated Cost of Labor (Fair-Market Value) for the first 10 Years.
 3. One-Time Transferability of Warranty.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Upon receipt, immediately remove any shrink-wrap and check material for damage, and that the material is of the correct style, color, quantity and run number(s).
- B. General Storage
 1. Store all materials flat and off of the floor in an acclimatized, weather-tight space between 65°-85°F (18°-29°C).
 2. Do not double stack pallets.

1.07 FIELD CONDITIONS

- A. Acclimate material at jobsite between 65°-85°F (18°-29°C) and 35%-85% RH for 48 hours prior to installation. Temperature and relative humidity should also be maintained at the same levels during installation, and after installation.
- B. Spread unopened cartons no more than 6 cartons high and at least 4 inches (101mm) apart.
- C. Keep away from heating and cooling ducts and direct sunlight.
- D. If permanent HVAC is not operational, temporary means should be used to maintain the recommended temperature and relative humidity levels.
- E. Close areas to traffic during installation of flooring and accessories.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Metroflor Corporation
 - 1. Address: 15 Oakwood Avenue, Norwalk, CT 06850.
 - 2. Contact: To find the Aspecta® Commercial Sales Specialist that services your area – visit <http://www.aspecta flooring.com/industry-tools/representative-search/>.
- B. Substitutions: Not permitted

2.02 RESILIENT TILE FLOORING

- A. Aspecta® One - Luxury Vinyl Plank & Tile
 - 1. Substitutions: Not permitted
- B. Patterns (**Note to Specifier: List by SKU and include the Collection Name, Pattern Name, Size & Emboss associated with each SKU**).
 - 1.
 - 2.
 - 3.
- C. Physical Properties:
 - 1. Construction: Solid Plank & Tile - Phthalate-Free, Formaldehyde-Free, and made from 100% Virgin Vinyl.
 - 2. Wear Layer Thickness: 22mil (0.55mm).
 - 3. Total Thickness (Gauge): 0.098 inch (2.5mm).
 - 4. Finish: Urethane Coating with Ceramic Bead Particles.
- D. Manufacturing, Performance, and Safety Standards
 - 1. ASTM F1700, Classification - Class III, Type B.
 - 2. ASTM F386, Thickness - Passes Requirements.
 - 3. ASTM F410, Wear Layer Thickness - Passes Requirements for Commercial Classification.
 - 4. ASTM F2421/F2055, Size & Squareness - Passes Requirements.
 - 5. ASTM F1914, Residual Indentation - Surpasses Requirements.
 - 6. ASTM F137, Flexibility - Surpasses Requirements.
 - 7. ASTM F2199, Dimensional Stability - Surpasses Requirements.
 - 8. ASTM F925, Chemical Resistance - Passes Requirements.
 - 9. ASTM F1514, Resistance to Heat - Surpasses Requirements.
 - 10. ASTM F1515, Resistance to Light - Surpasses Requirements.
 - 11. ASTM E648 / NFPA 253, Critical Radiant Flux - Class I.
 - 12. ASTM E662 / NFPA 258, Smoke Density (Flaming & Non-Flaming) - Passes Requirements.
 - 13. CHPS/CA Section 01350 & ASTM D5116 - Passes Requirements.
 - 14. ASTM F963, Sec. 4.3.5.2(2)(B), Heavy Metals - Passes Requirements.
 - 15. ASTM D2047, Coefficient of Friction (Dry) - ≥ 0.6 .
 - 16. ASTM F970, Static Load Limit - $\geq 1,000$ Lbs. (Surpasses Requirements).
 - 17. ASTM D4060, Abrasion Resistance - $\geq 20,000$ cycles (Varies with Emboss).
 - 18. ASTM D7823/CPSC-CH-C1001-09.3, Phthalates - Meets CPSIA Guidelines.
 - 19. ASTM E90 & ASTM E413, Airborne Sound Transmission Loss - Sound Transmission Class (STC) 61.
 - 20. ASTM E492 & ASTM E989, Impact Sound Transmission (Floor-Ceiling Assemblies) - Impact Insulation Class (IIC) 70.
- E. Sustainability and Affiliations:
 - 1. Product Sustainability:
 - a. FloorScore® / CHPS 01350: Aspecta® One flooring products are FloorScore® Certified by SCS Global Services and thus comply with the volatile organic compound emissions criteria of the California Section 01350 standard.
 - b. VOC Content Limits: As specified in Section 01 6116.
 - c. NSF/ANSI 332: Aspecta® One flooring products are Gold Certified by SCS Global Services and thus meet benchmark standards for social, environmental, and economic sustainability as defined by the NSF/ANSI 332 standard. The assessment evaluates:

product design, product manufacturing, long-term value, end-of-life management, corporate governance, and innovation.

- d. LEED v4 - Potential Contributions Towards Certification:
 - 1) MR Prerequisite 2, Construction & Demolition Waste Management Planning: Aspecta® One flooring products fall under the REVISE (Reclamation) Program, which is designed to aid architects, designers, and builders in preparation of their construction waste management plan.
 - 2) MR Credit 2, Environmental Product Declarations (EPD): Metroflor supported and was included in the RFCI industry-wide EPD (Environmental Product Declaration) for Luxury Vinyl Tile (LVT).
 - 3) MR Credit 4, Material Ingredients: A Declare Label and Health Product Declaration (HPD) v2.0 have been published for Aspecta® One to disclose material ingredients.
 - 4) MR Credit 5, Construction & Demolition Waste Management: The REVISE (Reclamation) Program provides an avenue for the recycling of Aspecta® One vinyl flooring (scraps / unused product) during the construction process, thus diverting unused material from landfills.
 - 5) EQ Credit 2, Low-Emitting Materials (Flooring Systems): Aspecta® One is FloorScore® Certified and thus meets the requirements of CDPH Standard Method v1.1-2010.
 - 6) IN Credit 1, Innovation - Pilot Credit: Aspecta® One is certified under NSF/ANSI 332.
- e. Green Globes - Potential Contributions Towards Certification:
 - 1) Section 3.1 - Project Management (Subsection 3.1.1.2.2.6), IDP Performance Goals for Construction Waste Diversion: Aspecta® One flooring products fall under the REVISE (Reclamation) Program, which is designed to aid architects, designers, and builders in preparation of their construction waste diversion plan.
 - 2) Section 3.5 - Materials & Resources (Subsection 3.5.2.2.1.1), Prescriptive Path for Interior Fit-Outs: Metroflor supported and was included in the RFCI industry-wide EPD (Environmental Product Declaration) for Luxury Vinyl Tile (LVT). Also, Aspecta® One is certified under NSF/ANSI 332, a multi-attribute, third-party certification program that includes a Life Cycle Assessment (LCA).
 - 3) Section 3.5 - Materials & Resources (Subsection 3.5.4.1), Construction Waste: The REVISE (Reclamation) Program provides an avenue for the recycling of Aspecta® One vinyl flooring (scraps / unused product) during the construction process, thus diverting unused material from landfills.
 - 4) Section 3.7 - Indoor Environment (Subsection 3.7.2.1.4), Volatile Organic Compounds: Floors & Floor Coverings: Aspecta® One is FloorScore® Certified and thus meets the requirements of CDPH Standard Method v1.1-2010.
 - 5) Section 3.7 - Indoor Environment (Subsection 3.7.5.1.3), Acoustic Comfort Design - STC: Aspecta® One achieved a Sound Transmission Class (STC) of 61 when tested with Prevail® Glue-Down Pad (GDP) over a 6" concrete slab with drop-ceiling assembly.
 - 6) Section 3.7 - Indoor Environment (Subsection 3.7.5.1.4), Acoustic Comfort Design - IIC: Aspecta® One achieved an Impact Insulation Class (IIC) of 70 when tested with Prevail® Glue-Down Pad (GDP) over a 6" concrete slab with drop-ceiling assembly.
- f. The WELL Building Standard v1 - Potential Contributions Towards Certification:
 - 1) Air - Feature 04 (VOC Reduction), Part 3(a): Flooring: Aspecta® One is FloorScore® Certified and thus meets the requirements of CDPH Standard Method v1.1-2010.
 - 2) Air - Feature 25 (Toxic Material Reduction), Part 2(b): Flame Retardant Limitation - Flooring: No flame retardants (halogenated or otherwise) are added to Aspecta® One during the manufacturing process.
 - 3) Air - Feature 25 (Toxic Material Reduction), Part 3(a): Phthalate (Plasticizers) Limitation - Flooring: None of the listed plasticizers (DEHP, DBP, BBP, DINP, DIDP or DNOP) are used in the manufacturing of Aspecta® One. Aspecta® One is made with DOTP (Dioctyl Terephthalate), a non-phthalate plasticizer.

- 4) Air - Feature 28 (Cleanable Environment), Parts 1(a)(b)(c) - Material Properties - High-Touch & Non-Porous Surfaces: Aspecta® One is a brand of embossed resilient flooring that is smooth when walked upon and manufactured to be free of visual defects. The product will have smooth seams and be free of sharp edges when properly installed.
 - 5) Air - Feature 28 (Cleanable Environment), Part 2(a) - Cleanability: Aspecta® One is a hard surface floor that's easy to clean.
 - 6) Mind - Feature 97 (Material Transparency), Parts 1(a)(b): Material Information: A Declare Label and a Health Product Declaration (HPD) v2.0 have been published for Aspecta® One to disclose material information.
 - 7) Mind - Feature 97 (Material Transparency), Part 2(a): Accessible Information: The Declare Label and HPD v2.0 for Aspecta® One are available at aspectaflooring.com (Downloads section).
2. Affiliations - Manufacturer Member Bodies and/or Sponsorships:
- a. ASTM International
 - b. Canada Green Building Council (CaGBC)
 - c. Flooring Contractors Association (FCICA)
 - d. Green Building Initiative (GBI)
 - e. Health Product Declaration Collaborative (HPDC)
 - f. International Interior Design Association (IIDA)
 - g. International Living Future Institute (ILFI)
 - h. Multilayer Flooring Association (MFA)
 - i. North American Association of Floor Covering Distributors (NAFCD)
 - j. Resilient Floor Covering Institute (RFCI)
 - k. Southface Energy Institute
 - l. U.S. Green Building Council (USGBC)
 - m. World Floor Covering Association (WFCA)

2.03 ACCESSORIES

A. Adhesives

1. Refer to the Aspecta® One Installation Guide/Manual for full details on the recommended Prevail® Adhesive(s) to use for installation:
 - a. Prevail® 3100 Acrylic Spray Adhesive
 - b. Prevail® 3500 Hard-Set Adhesive
 - c. Prevail® 4000 2-Part Epoxy Adhesive
 - d. Prevail® 6000 Pressure-Sensitive Adhesive
2. Substitutions: Not permitted
3. Sustainability
 - a. FloorScore® / CHPS 01350 / SCAQMD 1168: The Prevail® Adhesives recommended for use in the installation of Aspecta® One are FloorScore® Certified by SCS Global Services and have thus been found to comply with the volatile organic compound emissions criteria of the California Section 01350 standard, as well as the volatile organic compound emissions criteria of the South Coast Air Quality Management District (SCAQMD) Rule No. 1168.
 - b. VOC Content Limits: As specified in Section 01 6116.
 - c. LEED v4 - Potential Contributions Towards Certification:
 - 1) EQ Credit 2, Low-Emitting Materials (Adhesives & Sealants): All Prevail® Adhesives recommended for use in the installation of Aspecta® One are FloorScore® Certified.
 - 2) MR Credit 3, Building Product Disclosure and Optimization - Sourcing of Raw Materials: Prevail® 6000 PSA, one of the adhesives recommended for use in the installation of Aspecta® One, has been certified by SCS Global Services as having at least 21% post-consumer recycled glass content (dry-weight basis).
 - d. Green Globes - Potential Contributions Towards Certification:
 - 1) Section 3.7 - Indoor Environment (Subsection 3.7.2.1.1), Volatile Organic Compounds (Adhesives & Sealants): All Prevail® Adhesives recommended for use

in the installation of Aspecta® One are FloorScore® Certified and thus meet the requirements of SCAQMD Rule 1168.

- e. The WELL Building Standard v1 - Potential Contributions Towards Certification:
 - 1) Air - Feature 04 (VOC Reduction), Parts 2(a)(b): Interior Adhesives & Sealants: All Prevail® Adhesives recommended for use in the installation of Aspecta® One are FloorScore® Certified and thus meet the requirements of CDPH Standard Method v1.1-2010 and SCAQMD Rule 1168.
- B. Finishes & Cleaners
 - 1. Refer to the Aspecta® One Installation Guide/Manual for full details on the recommended Prevail® Finishes & Cleaners:
 - a. Prevail® Matte Finish
 - b. Prevail® Gloss Finish
 - c. Prevail® Vinyl Stripper (For removal of non-factory applied Finishes)
 - d. Prevail® 1-Step Neutral Cleaner
 - e. Prevail® Ready-to-Use Neutral Cleaner
 - f. Prevail® Scratch Remover
 - 2. Substitutions: Not permitted.
 - 3. Sustainability
 - a. CARB: The Prevail® Finishes and Cleaners listed above are V.O.C. Compliant with the requirements set forth by the California Air Resources Board (CARB).
 - b. VOC Content Limits: As specified in Section 01 6116.

PART 3 EXECUTION

3.01 EXAMINATION PER SECTION 01 7000 AND AS FOLLOWS:

- A. Install flooring and accessories after other operations (including painting) have been completed.
- B. Acceptance of Conditions: Carefully examine all installation areas with Installer/Applicator present, for compliance with requirements affecting Work performance.
 - 1. Verify that field measurements, product, adhesives, substrates, surfaces, structural support, tolerances, levelness, temperature, humidity, moisture content level, pH, cleanliness and other conditions are as required by the manufacturer, and ready to receive Work.
- C. Verify that substrate is contaminant-free (including old adhesives and abatement chemicals).
- D. Test substrates as required by manufacturer to verify proper conditions exist.
 - Note to Specifier: Coordinate and edit requirements to the project substrates present.**
 - 1. **Concrete:**
 - a. Check for concrete additives such as fly ash, curing compounds, hardeners, or other surface treatments that may prevent proper bonding of floor coverings.
 - b. Moisture testing: Perform either the In-Situ Relative Humidity (RH) test (ASTM F2170) or Moisture Vapor Emission Rate (MVER) test (ASTM F1869). NOTE: Refer to the Manufacturer's Installation Guide/Manual for the maximum allowable substrate moisture content. Substrates above the maximum allowable moisture content will require a moisture mitigation system.
 - c. Perform alkalinity testing per ASTM F710 to verify pH level is between 7 to 10.
 - d. Check substrate for absorbency per manufacturer's recommendations.
 - e. Perform bond testing per ASTM F710 to determine compatibility of adhesive to concrete substrate.
 - 2. **Wood:**
 - a. Shall be dry, clean, structurally sound and installed per underlayment manufacturer's installation instructions.
 - b. Test wood subfloors and underlayment panels using a suitable wood moisture pin-meter. Readings between the subfloor and underlayment panels should be within 3% prior to installing the underlayment panels.
 - c. The maximum moisture content is 14%.
 - d. Proceed with installation only after satisfactory conditions have been met.
- E. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

- A. Prior to installation, the flooring installer should plan and attend an on-site construction meeting with the General Contractor, Architect and Property Owner to review all requirements and inspect site conditions as outlined in the manufacturer's installation document, as well as to review the requirements of ASTM F710 and any relevant building codes, or local, state, or national regulations.
- B. Flooring installation should not begin until all site conditions have been assessed, testing has been completed and subfloor conditions have been approved.
- C. Prepare per manufacturer's written instructions, SECTION 01 7000, and as follows:
 - 1. Prepare substrates to ensure proper adhesion of Luxury Vinyl Plank & Tile.
 - 2. **Concrete Substrates:** Prepare substrate per ASTM F710.
 - a. Verify that subfloor is clean, flat, smooth, free of dirt, rust, paint, oil, wax or any contaminant that will interfere with adhesive bonding.
 - b. Mechanically remove substrate coatings that are not compatible with adhesives, such as sealers, curing, hardening or parting compounds, soap, wax, oil, etc.
 - 1) Do not use solvents or adhesive removers.
 - c. Expansion joints, isolation joints, or other moving joints must be honored and must not be filled with underlayment products or other materials, and floor coverings must not be laid over them. Expansion joint covering systems should be detailed by the architect or engineer, and based upon intended usage and aesthetic considerations.
 - d. Surface cracks, grooves, depressions, control joints or other non-moving joints, and other irregularities shall be filled or smoothed with high-quality Portland Cement or Calcium Aluminate based patching or underlayment compound for filling or smoothing, or both.
 - 1) Do **NOT** skim-coat large areas with patching compound, especially slick power-troweled surfaces.
 - 2) Sand smooth per manufacturer's instructions.
 - e. Slick surfaces, such as power-troweled concrete, shall be profiled as needed to allow for a mechanical bond between the adhesive and subfloor.
 - 1) Do **NOT** use gypsum-based underlayment products and do not skim coat concrete subfloors.
 - f. Self-leveling underlayments: Provide a dry and smoothly-sanded underlayment substrate ready for installation of Luxury Vinyl Plank & Tile. Underlayment compound shall be moisture-resistant, mildew-resistant, and alkali-resistant and must have a minimum of 3,000 psi compressive strength or greater per ASTM C109/C109M.
 - g. Lightweight concrete shall have a compressive strength greater than 90lbs per cubic foot with minimum compression strength of 2,500 psi or greater.
 - 3. **Wood Substrates or Panel Type Underlayment:**
 - a. Wood subfloors require an underlayment (double layer construction) with a minimum total thickness of 1 inch (25mm) and minimum of 18 inches (457mm) of well ventilated space beneath.
 - 1) Crawl spaces shall be insulated and protected by a vapor barrier.
 - b. Use minimum 0.25 inch (6mm) thick APA-rated "underlayment grade" plywood with a fully sanded face or other underlayment panel that is appropriate for the intended usage. Install and prepare panels and seams according to the manufacturer's instructions.
 - 4. **Existing and other substrates:**
 - a. Refer to manufacturer's professional installation guide and or contact manufacturer, as special conditions may exist.

3.03 INSTALLATION

- A. Installation per manufacturer's written instructions, SECTION 01 7000, and as follows:
 - 1. Layout shall be specified by Architect, Designer, or End User.
 - 2. Follow layout and ensure installation reference lines are square.
 - 3. Field tiles shall be installed with directional arrows on back aligned in the same direction, or may be installed in quarter-turned fashion.

4. Check cartons for and do **NOT** mix dye lots.
5. Expansion joints: Locate expansion, isolation, and other moving joints prior to installation.
 - a. Do not fill expansion, isolation, and other moving joints with patching compound nor cover with resilient flooring.
 - b. Install movement joint systems per manufacturer's instructions and per SECTION 07 9513 and SECTION 07 9200.
6. Adhesives: Adhere flooring to substrate using the full spread method resulting in a completed installation without gaps, voids, raised edges, bubbles or any other surface imperfections.
 - a. Select appropriate adhesive, trowel and follow manufacturer's instructions.
 - b. Periodically spot-check transfer of adhesive to back of tile during installation.
 - c. Roll floor with a 100lbs. roller to ensure proper transfer of adhesive and bonding.
 - d. Protect floor from traffic per manufacturer's instructions.
 - e. Do not wet mop floor until the adhesive has properly set per written instructions.

3.04 FIELD QUALITY CONTROL

- A. Site tests and Inspections per SECTION 01 4000 and as follows:
 1. Inspect flooring installation for non-conforming work, including (but not limited to) the following:
 - a. Lack of adhesion.
 - b. Bubbles, loose tiles or raised edges.
 - c. Dirt and debris underneath flooring.
 - d. Excessive gaps.
 - e. Improper substrate preparation (as indicated by telegraphing).
 - f. Damage to tiles, 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

- A. Waste Management per SECTION 01 7000 or 01 7419, and as follows:
 1. Coordinate material reclamation program with manufacturer, if applicable.
 - a. Store and return cartons and pallets to manufacturer or recycler for reuse or recycling.
- B. Provide Progress Cleaning per manufacturer's written instructions, SECTION 01 7000, and as follows:
 1. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the work.
 - a. Clean and protect completed construction until Substantial Completion.
 - b. During installation, remove wet adhesive from surface of flooring per manufacturer's instructions.
 2. Site: Maintain project site free of waste materials and debris.
- C. Provide Final Cleaning immediately prior to Substantial Completion inspection per manufacturer's written instructions and SECTION 01 7000.
 1. Protection: Remove manufacturer's and other installed protection immediately prior to Substantial Completion inspection, unless required otherwise.
 2. Clean floor with a neutral 6-8 pH cleaner.

3.06 MAINTENANCE

- A. Initial maintenance per flooring manufacturer's written instructions and as follows:
 1. Allow the adhesive to cure for at least 48 hours prior to wet cleaning the floor.
 2. Sweep, dust mop or vacuum the floor thoroughly to remove all loose dirt, dust, grit and debris. Do not use vacuums with a beater bar assembly.
 3. Remove any dried adhesive residue from the surface with mineral spirits applied to a clean, lint-free cloth.
 4. Damp mop the floor using a Cleaner recommended by the flooring Manufacturer.
 5. If necessary, scrub the floor using an auto scrubber or rotary machine (300 rpm or less) with a Cleaner recommended by the flooring Manufacturer... using the proper dilution ratio and the appropriate scrubbing brush or pad.

6. Thoroughly rinse the entire floor with fresh, clean water. Remove the dirty residue with a wet-vacuum or clean mop and allow the floor to dry completely.

3.07 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 24 hours.
 3. Keep heavy traffic and rolling loads off the newly installed LVT flooring for 48 hours. Protect the floor from rolling loads by covering with protective boards.

END OF SECTION