SECTION 09 6519
COMMERCIAL RESILIENT TILE FLOORING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. TEKNOFLOR® FOREST PLANK HPD™ Commercial Luxury Vinyl Plank Flooring.
   2. Accessories.

B. Related Requirements:
   1. Section 03 3000, Cast-in-Place Concrete: For underslab vapor barrier.
   2. Section 06 10 00, Rough Carpentry: For wood-based panel underlayment required for installation of resilient tile flooring.
   3. Section 07 26 16, Below Grade Vapor Retarders.
   4. Section 07 92 00, Joint Sealers: For exposed movement joints.
   5. Section 07 95 13, Expansion Joint Cover Assemblies: For expansion joint assemblies at resilient tile flooring.
   6. Section 09 65 13, Resilient Base and Accessories: For wall base, and expansion joint trim between resilient tile flooring and other finish flooring.

1.2 REFERENCES

A. Reference Standards in accordance with current editions from the following organizations:
   1. ASTM. ASTM International; www.astm.org
      a. ASTM F710, Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
      b. ASTM F1482, Installation and Preparation of Panel Type Underlayments to Receive Resilient Flooring
      c. ASTM F1700, Standard Specification for Solid Vinyl Floor Tile
      d. ASTM F1869, Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride
      e. ASTM F2170, Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes
   2. BAAQMD. Bay Area Air Quality Management District; www.baaqmd.gov
   3. GS. Green Seal; www.greenseal.org
   4. ISO. International Organization for Standardization; www.iso.org
   5. RFCI. Resilient Floor Covering Institute; www.rfci.com
   6. SCAQMD. South Coast Air Quality Management District; www.aqmd.gov
   7. USGBC. United States Green Building Council; www.usgbc.org

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate work of Section 03 30 00 and Section 07 26 16 to ensure an approved underslab vapor barrier has been installed in accordance with requirements.
      a. Ensure concrete trade does not create holes in membrane and immediately repair holes if and when they occur.
   2. Coordinate work of Section 03 30 00 to ensure curing compounds are NOT used in areas to receive Resilient Tile Flooring.
   3. Coordinate expansion joint system installation prior to installing resilient tile flooring. Refer to Section 07 95 13

B. Sequencing: Install resilient flooring and accessories only after painting overhead and other finishing operations have been completed.

4. Manufacturers' Instructions: Submit two (2) copies of manufacturer's recommended maintenance practices for resilient flooring and accessories installed.
5. Site Quality Control Submittals:
    a. Moisture Tests: Submit test reports to Flooring Distributor-Installer prior to delivery and installation of resilient tile flooring.
    b. pH Tests: Submit test results to Flooring Distributor-Installer prior to delivery and installation of resilient tile flooring as required per adhesive.

1.4 SUBMITTALS

A. Submit in accordance with Section 01 3300.
B. Manufacturer's technical data for each type of resilient flooring and accessory.
C. Manufacturer's standard color chart in the form of actual selections of resilient flooring, including accessories, showing full range of colors and patterns available.
D. Two copies of manufacturer's recommended maintenance practices for resilient sheet flooring and accessories required.
E. Shop Drawings: Jointing, Termination Details; Includes 8½" x 11" details indicating joint method, termination details including reducers and/or caps required.
F. Document and Archive project documentation to include Moisture and pH Test Results.

NOTE: Delete the following Article if LEED is not applicable; otherwise edit to meet project LEED requirements.

G. LEED Submittals: Submit required information or documentation for each LEED Credit being pursued applicable to materials, products, and assemblies specified under this section; Refer to Section 01 8115, LEED Design Requirements.
    1. LEED v4 Credits being pursued:
        a. MR Credit 2 (MRc2): Building Product Disclosure and Optimization - Environmental Product Declarations (EPD): Option 1: Submit a third-party certified Industry-wide (generic) EPD (counts 50%) or Product Specific Type III EPD (counts 100%)
        b. MR Credit 3 (MRc3): Building Product Disclosure and Optimization - Sourcing of Raw Materials: Option 1: Submit documentation that products meet responsible extraction criteria of incorporating reused materials, or recycled content.
        c. MR Credit 4 (MRc4): Building Product Disclosure and Optimization - Material Ingredients: Option 2: Submit a certified report benchmarking chemical ingredients inventoried to 100 ppm using either GreenScreen v1.2, Cradle to Cradle, REACH Optimization, or another USGBC approved program meeting the material ingredient reporting criteria.
        d. EQ Credit 2 (EQc2): Low-Emitting Materials: Option 1: Submit a General Emissions Evaluation using CDPH Standard Method v1.1. Option 2: Submit certification documentation that product is FloorScore® or NSF/ANSI 332 certified to meet CDPH Standard Method v1.1.
    2. LEED v4. Submit information and documentation to complete LEED™ Worksheet Templates for the following credits:
        a. MRc2, MRc3, MRc4
        b. EQc2, EQc9
H. Submit manufacturer's certification that products meet the requirements of SCAQMD Rule 1168 in areas where exposure to freeze/thaw conditions and direct exposure to moisture will not occur.

1.5 QUALITY ASSURANCE

A. Regulatory Requirements:
    1. ASTM E648 (NFPA 253): Critical Radiant Flux — Class I
    2. ASTM E662 (NFPA 258): Smoke Density — ≤ 450 DM Corrected
B. Installer Qualifications: Minimum five (5) years of successful in-service performance and experience with installations of similar size and scope. Provide 3 recent project references, state license documentation (where applicable), insurance certificate and workman's comp documentation.
C. ISO 9001 and ISO 14001 Certified Manufacturer

D. Source Limitations: Provide each type of resilient flooring and adhesives from a single manufacturer, and provide secondary materials, including recommended primers, sealants, and patching leveling, fill and repair compounds from recommended sources by resilient flooring manufacturer.

E. 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.

1.6 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. Upon receiving, confirm materials receive are the correct color, style and quantity for each dye lot.

D. Store cartons flat and stacked squarely on top of one another. Do not lay cartons on sides or edges.

E. Store and protect all materials in a dry interior area maintained between 55°F and 85°F (13ºC and 29ºC). **DO NOT** use outside temporary, shipping containers or uncontrolled storage. Improper storage can result in unintended installation issues including bond failure, gapping or buckling, and it is not covered under the product warranty.

F. ACCLIMATION: Store resilient flooring materials in spaces where they will be installed for at least 72 hours prior to installation.

1.7 SITE CONDITIONS

A. Ambient Conditions:

1. The 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 (with data logging of Temp and ambient RH) HVAC at a consistent temperature between 65°F to 85°F (18ºC and 29ºC) for a minimum of 1 week and preferably 2-3 weeks or longer before, during and 72 hours after installation. This includes a minimum slab temperature of 65°F.
4. Install resilient flooring and accessories after other trades, including painting and overhead trades have been completed.
5. Maintain resilient flooring, adhesives, sundries and substrate surface as a consistent and stable temperature between 65°F and 85°F (18ºC and 29.40ºC) during installation. Ensure that all components of installation and substrate are within 2-3 degrees Fahrenheit of each other before beginning installation.
6. Maintain HVAC at a minimum temperature of 55°F (13°C) thereafter as per the manufacturer's recommendations. Space heaters are NOT acceptable.
7. **DO NOT** install Resilient Tile Flooring if temperatures fail to meet requirements.
8. **DO NOT** install resilient flooring over new concrete slabs until they are cured and sufficiently dry to achieve bond with adhesive as determined by resilient flooring manufacturer's bond, moisture and pH tests.

1.8 EXTRA MATERIALS

A. Furnish a minimum one percent (1%) extra resilient tile flooring and accessory materials in full and unopened cartons for each color and pattern installed.

1.9 WARRANTY

A. Twenty (20) year limited non-prorated warranty including labor commencing on date of substantial completion.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. **Teknoflor®** 1005 S. 60th Street, Milwaukee, WI 53214
WEBSITE: www.teknoflor.com; Toll Free: **800-522-9166**
SUBSTITUTIONS: Not permitted.

2.2 DESCRIPTION

A. Teknoflor® Forest Plank HPD™ Luxury Vinyl Plank: Printed film vinyl flooring with an embossed scuff resistant low maintenance surface manufactured in accordance with ASTM F1700.

B. Sustainability Characteristics of Teknoflor® Forest Plank HPD™ Luxury Vinyl Flooring:
1. FloorScore® certified to meet requirements of CDPH Standard Method v1.1.
2. Virgin Vinyl to eliminate all sources of unintended contaminants that is 100% recyclable.
3. Plasticizer used is DOTP (Dioctyl terephthalate), a non-toxic and phthalate-free additive.
4. Stabilizer used is CaZn (Calcium-Zinc), a non-toxic and heavy metal-free additive.
5. No fire-retardant additives used.

2.3 PERFORMANCE / DESIGN CRITERIA

A. Design Criteria for Teknoflor® Forest Plank HPD™ Luxury Vinyl Flooring:
1. Standard Specification - ASTM F1700: Meets or Exceeds Requirements
2. Classification: Class III, Type B
3. Top Coat: HP Urethane Coating with Ceramic Bead.
4. Dimensions (Width x Length): 4” x 36” (101.6 mm x 914.4 mm)
5. Thickness: 2.5 mm (0.098”)
6. Wear Layer: 28 mils (0.7 mm)
7. Sq. Ft. Per carton: 30 sq. ft.
8. Pcs./Carton: 30
9. Colors & Patterns: 22 SKU’s

B. Test Data:
1. ASTM E648 (NFPA 253 and FTM Standard 372) Critical Radiant Flux/Flammability: 0.84 W/cm^2 Class I (≥0.45 W/cm^2) - Meets Requirements
2. ASTM E662 Smoke Density: <450 Flaming & Non-Flaming - Passes Requirements
3. ASTM F925 Resistance to Chemicals: No or slight staining - Meets or exceeds requirements (Refer to Chemical resistance chart)
4. ASTM F970 Static Load Limit: 1,200 PSI at or below maximum residual indentation (Standard Specification is 250 PSI @ ≤0.005 Inch Residual Indentation) - Exceeds Requirements
5. ASTM F1914 Short Term Indentation: ≤ 0.007” @ 140 lbs – Passes Requirements
6. ASTM F1514 Heat Stability: Avg. Delta E 0.86 – Exceeds Requirements (<8.0 Delta E)
7. ASTM F1515 Light Stability: 300 AFU Exposure Delta E 1.18 – Exceeds Requirements (<8.0 Delta
8. ASTM D2047 Slip Resistance: Static Coefficient of Friction, SCOF Dry (Standard Requirement ≥ 0.5 SCOF Dry): ≥ 0.6 SCOF Dry
9. ANSI B101.3 Dynamic Coefficient of Friction: Acceptable Traction Surface Wet DCOF
10. ASTM F963 Heavy Metals Content Analysis: <0.1 ppm None detected
11. Castor Chair Test ISO 4918: 25,000 cycles 4.5 – Slight Change in appearance with no delamination (198 lbs. load, 25,000 cycles Rating Scale 5 - No Change / 1 - Severe Change)
12. ASTM D-4060 30,000 Cycles to see effect on design layer (H-18 wheel & 1 kg mass)
13. REACH – Substances of Very High Concern (SVHC): SVHC’s tested must be less than 0.1% by product weight. Passes Requirements.
14. ASTM D7823/CPSC-CH-C1001-09.3 Phthalates - Refer to Consumer Product Safety Improvement Act (CPSIA): Passes Requirements
15. ASTM G21 Antifungal Activity – No growth or trace of growth (< 10% growth): Passes requirements

16. ANSI ESD STM97-2 Body Voltage - Average (Abs): ≤2.0kV: Passes Requirements
17. ASTM F137 Flexibility - No cracks/breaks from 0.25" (6.4mm) Mandrel: Passes Requirements

2.2 ACCESSORIES

A. Adhesives: As recommended by flooring manufacturer to suit material and substrate conditions.
   1. TUF STIK™ 9000
      a. Standard acrylic adhesive suitable for most situations. Strong green grab when wet and sets hard when cured.
      b. Provides a 10 year under bed bond warranty.
      c. Moisture & pH Limits: 90% RH and 8 Lbs. MVER & 8-10 pH
   2. TUF STIK™ 150 Spray Adhesive
      a. High Shear spray adhesive suitable for most 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
   3. TUF STIK™ SPX Multi-Function Adhesive
      a. One-part reactive modified polymer adhesive used in place of Epoxy or Urethane adhesives. Reduces footfall sound by Delta IIC 19, provides underfoot comfort as adhesive remains permanently flexible and provides a topical Waterproof bond when cured. TUF STIK™ SPX is suitable for use under Bariatric beds and can be used over clean scraped cutback adhesive.
      b. Moisture & pH Limits: - 10 lbs. MVER No pH limit
   4. TEK 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: 85% RH - 6 Lbs. MVER No pH limit

B. Concrete Slab Primer: Non-staining, low or no VOC acrylic or latex based primer suitable for use with acrylic adhesives.

C. Patching, Leveling, Underlayment:
   a. Trowalable or Self-Leveling Portland cement and/or calcium aluminate patching and leveling compound.
   b. Recommended by its manufacturer for intended use conditions.
   c. The underlayment shall be mold, mildew and alkali resistant, non-shrinking and water-resistant with a minimum 3,500 psi cured compressive strength.

CAUTION: Gypsum patching compounds shall not be used unless recommended and warranted by product manufacturer as project compliant.

D. Terminating Reducers: Manufacturer's standard; color as selected.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Ensure subfloor is properly prepared Concrete Slab (ACI 302.1, ACI 302.2 and ASTM F710), Thick Pour Gypsum (ASTM F2419), Suspended Wood (ASTM F1482) or Metal deck. Determining jobsite and subfloor suitability rests solely with the General Contractor and Flooring Contractor. Starting the installation implies acceptance of all jobsite conditions by the installation contractor and general contractor.

B. Verification if conditions in accordance with current Teknoflor Installation Instructions, ASTM F710 and or ASTM F1482 and as follows:
   1. Examine subfloor surfaces to ensure they are suitable for intended use. The subfloor shall be rigid, smooth and flat, permanently dry, clean & free of all foreign materials, including, but not limited to, dust, paint, marker, grease, oils, solvents, cutting/parting/curing compounds, sealers and residue from old adhesive or any other deleterious contaminants that may act as a bond breaker or staining agent (ASTM F710).
   2. Acceptable Subfloor Substrates: Properly prepared concrete, APA underlayment grade plywood, particleboard and OSB, manufacturer recommended cork, recycled rubber or urethane underlayment, existing well-bonded resilient flooring, terrazzo, cementitious and calcium aluminate

underlayments, and radiant heated subfloors where surface temperatures do NOT exceed 85°F (29.40°C).

WARNING:	When adhering panel underlayment, avoid using urea-formaldehyde based interior glues to help reduce indoor air pollution.

Luan wood boards and panels are NOT acceptable.

3. CONCRETE SUBSTRATES (ASTM F710):
   a. Dry, clean, structurally sound, and flat to within 3/16 inch in 10 feet (3 mm in 3 m) and within the equivalent of 1/32 inch in 12 inches (0.8 mm in 30 cm)
   b. Minimum Compressive Strength: 3,500 psi (20.7 MPa)
   c. Concrete Mix Water/Cement Ratio: 0.45-0.5
   d. Minimum Density: 115 pcf (1,842 kg/m^3)
   e. Lightweight concrete NOT acceptable when less than 115 pcf (1,842 kg/m^3)
   f. Concrete slabs on or below grade must be installed directly over properly installed and intact vapor retarder that complies with ASTM E1745 “Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs.” On or below grade concrete slabs shall be free from hydrostatic pressure, excessive moisture or alkalinity or any other deleterious condition.
   g. Remove all curing compounds or sealers that might prevent proper bonding or proper moisture testing. Mechanically abrade surface to ensure 100% removal of any curing compounds or incompatible sealers.
   h. Determine surface porosity. Place dime to quarter size drops of water on the surface of the concrete and time how long they take to fully absorb into the concrete surface. It the water drops take longer than 2 minutes to be fully absorbed, the surface in considered non-porous. Slab absorbency testing should be performed in at least 3 areas on each installation. For large projects, test every 50 feet in both directions and document on floor plan along with moisture and pH test results.
4. WOOD SUBSTRATES (ASTM F1482):
   a. Dry, clean, structurally sound, and flat to within 3/16 inch in 10 ft (4.8 mm in 3 m) or the equivalent of 1/32 inch in 12 inches (0.8 mm in 30 cm), well nailed and/or glued, free of voids and with joints that are properly prepared.
   b. Wood subfloors shall be of double layer construction with at least one (1) inch total thickness and comply with current local and national building code requirements.
   c. Minimum BC grade plywood or other panel type underlayment recommended by its manufacturer for use beneath resilient flooring and suitable for project conditions.
   d. The double layer wood subfloor shall incorporate an APA Underlayment Grade top layer such as Multi-Ply® or TEKPLY® that is designed for the intended use meeting the following requirements:
      1). Minimum ¼ inch (5.5 mm) thickness
      2). Sanded face free of knots or roughness to prevent any surface telegraphing
      3). Solid core free of voids to resist indentations and punctures from concentrated loads
      4). Designed for resilient flooring use and free of any substance that may stain vinyl
      5). Moisture content less than 14.0% and panel layers within 2.0% of each other
      6). Confirm panel moisture level by checking in several areas using a calibrated pin moisture meter
      7). Compliant with APA or manufacturer recommended as “Underlayment Grade” for resilient flooring
      8). Do not install directly over Luan, pine or other soft woods, particle board, hardboard, hardwood flooring, treated wood or underlayment panels with core voids, face knots or rough surface or any underlayment that is not recommended by its manufacturer for the intended use and for use beneath resilient flooring. Cover these and other unacceptable wood based surfaces with ½ inch thick underlayment grade panel in compliance with all underlayment requirements listed in this guide.

5. Hazardous Materials: If existing asbestos or other hazardous containing materials are known or suspected, review and comply with all applicable building code regulations and requirements of Division 01 upon discovery, prior to, and during removal.

Regulations may require that the material be tested to determine asbestos content. RFCI's Recommended Workplace Practices for Removal of Resilient Floor Coverings are a defined set of instructions addressed to the task of removing all resilient floor covering structures.

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 adhesive. 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.

6. Inspect substrate for any contamination, such as oil drippings, cutback adhesives, etc. Remove or encapsulate contamination prior to installation of floor covering.

CAUTION: 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.

F. Allow other finishing trades, especially plumbing and electrical, ceiling and walls and painting to complete their work before beginning the floor installation.

G. During spackling, painting, pipe cutting and other operations that can contaminate the subfloor are ongoing, cover the substrate to prevent contamination. Spackling, permanent marker, paint, paint thinner or machine oil and other construction trade items that contaminate the substrate and cause bond failure or discoloration.

H. Do not allow resilient flooring work to proceed until subfloor surfaces are satisfactory. Indicate adverse conditions of any type by letter to Architect and Flooring Distributor.

I. Close working spaces to all non-essential traffic before installation and as specified after installation.

NOTE: After installation, the GC shall protect flooring surface from damage from other trades until the space is turned over. If traffic must be permitted on the flooring, protect with construction paper for foot traffic and plywood for heavy items or rolling loads. Failure to properly protect flooring from construction and trade damage may result in permanent damage to the flooring.

J. Provide good overhead lighting for proper subfloor preparation and installation. Poor lighting is no excuse for improper workmanship or installation of visible defects.

K. Expansion, Isolation and other moving joints are designed and incorporated in concrete slabs to permit movement without causing random cracks. Moving joints shall not be filled or covered with any floor covering. Moving joints must be honored through the flooring and should be treated with an expansion joint covering system as determined though consultation with the system manufacturer.

3.2 PREPARATION

A. Prepare subfloor in accordance with manufacturers printed instructions, ASTM F710, Division 01 requirements, and as follows:

1. Protection of In-Place Conditions:

a. Close areas to traffic and to other work until flooring is firmly set.

1). When using acrylic or epoxy adhesives, **DO NOT** allow flooring to have foot traffic for 24 hours. **DO NOT** allow use of heavy fixtures or rolling carts on the floor for 72 hours.

2). If traffic is necessary, cover floor with approved plywood protection.

3). When using spray adhesive allow traffic immediately upon completion of installation.

B. Perform a bond test before starting installation to confirm compatibility of adhesive and prepared substrate. Perform at least one bond test for each section of the concrete pour. Perform bond tests on the prepared surface with a 3' x 3' section of flooring. Allow a minimum of 48 hours and preferably 72 hours or longer before determining compatibility

and bond strength. Pull up bond test areas by hand to confirm that the adhesive has a strong bond between the flooring and subfloor. If flooring is not strongly bonded to the subfloor additional testing is needed to determine why there is not a strong bond.
When performing a bond test, always check for complete adhesive transfer on the back of the flooring in case more adhesive is needed for porous or rough concrete surface, or if too much adhesive is being used over a nonporous or burnished smooth surface. Adjust trowel size used to increase or decrease the amount of adhesive applied to suit substrate and environmental conditions.

C. Moisture and pH testing shall be properly performed in accordance with current test standard and documented to confirm subfloor suitability. **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:
      ASTM F2170 In-situ Relative Humidity
      ASTM F1869 Calcium Chloride;
      ASTM F710 pH Testing
   2. Wood: Calibrated Wood Pin Meter

D. Remove debris, grit, and other foreign materials or substances from the surface of the subfloor 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.

WARNING: 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 Workplace Practices for Removal of Resilient Floor Coverings.

E. Verify the subfloor surface is smooth and flat to 3/16" in 10 ft. (3.9 mm in 3 m) and 1/32" in 1 ft. (1 mm in 300 cm) per ASTM F710.

F. Where leveling or smoothing is required, apply trowelable or self-leveling Portland cement and 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.

CAUTION: Gypsum patching compounds shall not be used unless recommended and warranted by product manufacturer as project compliant.

G. Porous and/or dusty structurally sound substrates shall be primed by applying one or more coats of acrylic based primer-sealer with a short nap paint roller and allowed to dry before proceeding.

H. After patching, sand the surface to remove all ridges and rework any remaining low spots or surface defects. Vacuum the entire surface paying close attention to the perimeter to remove all dust and debris.

I. Floor covering should not be installed over expansion joints. Expansion joint covers compatible with floor covering should be used.

3.3 INSTALLATION

A. Install resilient flooring and accessories using method indicated in strict compliance with manufacturer's current printed instructions, Division 01, and the following: lay out flooring as indicated by the Drawings or, if not indicated, starting from center-of-the-floor by marking vertical and horizontal lines across the floors at the center of the walls. Measure the squareness of the marked lines to confirm the lines are square, and adjust starting point to balance the installation. Avoid using cut widths that are less than ½ product width at perimeter, if possible. Also adjust product alignment to accommodate specified pattern matching through doorways.
   1. Begin to work from the center start point outwards to walls. Making sure that planks are installed butted together without gap, overlap or misalignment to reference lines. Optionally for plank

installations, start installation along longest straight wall and installation across the room. Measure width and trim starting plank if necessary to avoid a narrow final plank width at opposite side of room.

2. Teknoflor® Forest Plank HPD™ resilient flooring has a distinct variation in visual. It is advised to rack-out the flooring from several cartons during installation to provide a random visual. This can include turning some planks 180 degrees to provide an authentic varied appearance.

CAUTION: Failure to sort and mix the planks during installation can result in an undesirable visual from concentration of similar planks together. It is the installers responsibility to mix, shuffle and rotate planks during the installation process to obtain a random visual appearance.

3. Offset end joints by at least 6 inches between rows and avoid H pattern unless specified.
4. When installing multiple dye lots, 'shuffle' the tiles to mix the dye lots, creating a random look, or use the different lots in different areas.
5. Collect, store, and recycle broken, cracked, chipped, or deformed tile.
6. Scribe, cut and fit resilient tile flooring to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets and permanent columns, walls and partitions. Fit floor beneath or make floor tile tight to door bucks.
7. Extend floor tile into toe spaces, door reveals, closets, and similar openings.
   a. Extend floor tile to center of door openings.
8. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tile as marked on substrates. Use chalk, pencil or other nonpermanent, non-staining marking device.

WARNING: **DO NOT** use or lay over permanent market or pain or similar markings on the subfloor. Teknoflor will not be responsible for claims related to color bleed through.

9. Expansion Joints: Locate expansion joints and other movement joints, including control, contraction, and isolation joints, where indicated prior to installation of adhesive and tile.
   a. **DO NOT** fill movement joints with patching compound or cover with resilient flooring.
   b. Install movement joint systems in accordance with manufacturers' instructions and Division 07.
10. Adhesive: Apply adhesive with recommended trowel or spray method and lay tile after recommended open time. Install tightly bonding tile to sub-base without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, or other surface imperfections.
11. Roll installed resilient flooring with 100-150 lb. (45-68 kg) rollers as recommended by resilient tile flooring and adhesive manufacturers.

NOTE: TUF STIK™ 9000, TUF STIK™ SPX and TUF STIK™ 150 Spray adhesives are recommended by the Flooring Distributor for use under hospital beds or borders.

3.4 FIELD QUALITY CONTROL

A. Site Tests and Inspections: In accordance with Division 01, and as follows:
   1. Inspect floor installation for non-conforming work including, but not limited to, the following:
      a. Improper substrate preparation as indicated by:
         1). Surface undulations or telegraphing
         2). Air bubbles, buckles, and dirt or debris under the resilient flooring
      b. Lack of adequate adhesion
         1). Loose edges or seams
         2). Edge curling
      c. Adhesive on top of the flooring
      d. Gap or too tight joints
      e. Damaged tile flooring as indicated by dents, splits, cuts, cracks, punctures, gouges, scratches, melting, burn marks or other visible damage.

B. FLOOR PROTECTION:
1. After installation is completed protect floor from foot traffic for 24 hours and protect flooring from rolling and heavy point loads for 72 hours. For spray adhesive allow immediate use of flooring.
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.

3.5 CLEANING AND PROTECTION

A. INITIAL FLOOR CARE: TEKNOFLOR® FOREST PLANK HPD™ is a NO-WAX, NO BUFF product. Reference www.teknoflor.com for complete Care and Maintenance Instructions.
1. Remove acrylic adhesive residue contamination with Heavy Duty Goof Off® water based cleaner (in plastic containers). Before use of any cleaner, test in an inconspicuous area first for any adverse reaction. Apply cleaner to a clean terry cloth towel. Place the damp cloth over the spot and let sit for 1-2 minutes to loosen and soften the adhesive. Carefully blot and rub the adhesive off the surface with the damp cloth rotating to clean sections of the cloth during cleaning. Rinse the surface with clean water and blot dry. Installation
2. Flooring contractor shall sweep, dust mop or vacuum the floor to remove all loose dirt and grit. Lightly damp floor with well rung mop as needed to turn over a clean floor.
3. Wait 72 hours (3 days) or longer before wet cleaning the new floor or in areas where flooring has recently been replaced.
4. Facility shall perform their first cleaning using the Periodic Deep Cleaning Maintenance procedures.
   a. 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.
   b. Sweep, dust mop or vacuum the floor to remove all loose dirt and grit. Do not use treated dust mops.
   c. 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.
   DO NOT USE A MORE AGGRESSIVE PAD OR BRUSH.
   d. 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 machine scrub with a low speed (175-350 RPM) swing arm floor machine using a 3M 5100 Red pad or equivalent pad or brush.
   DO NOT USE A MORE AGGRESSIVE PAD OR BRUSH.
   e. Completely remove the cleaning solution using an auto scrubber, shop vacuum or mop and let the surface dry.
   f. Fans or air movers can speed up the drying process. Once the floor surface is clean and dry, remove caution signs.

B. FURNITURE RESTS & PROTECTORS: Use appropriate furniture rests and floor protectors under all chairs, furniture, rolling equipment and beds. Proper selection and care of furniture rests, wheels and floor protectors is an important part of effective floor care.
KEY ELEMENTS INCLUDE:
1. NON-STAINING: Be made of non-staining materials.
2. RADIUSED EDGE: Provide slightly radius or rounded edges.
3. 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” or larger diameter flat smooth contact area is appropriate for most applications.
4. 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.
5. 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.

END OF SECTION