

TILE CARPETING

GENERAL INFORMATION

- 1.1 Carpet tile is the CUFO standard for carpeted surfaces. Any desired deviation from 1) this requirement, 2) approved manufacturers, or 3) flooring material selections for stair treads and risers may be requested in writing and submitted prior to the design review meeting with the CUFO Project Manager and Design and Compliance.

DESIGN REQUIREMENTS

- 2.1 Approved Carpet Vendors:
- a. Bentley
 - b. Interface
 - c. Mohawk
 - d. Shaw
- 2.2 All carpet, cushions, and adhesive shall display the CRI (Carpet and Rug Institute) Carpet Testing Program label.
- 2.3 All carpet systems shall comply with the CRI (Carpet and Rug Institute) indoor air quality green label emissions testing program (ASTM D 5116) for carpet
- 2.4 All primers, and adhesives must be approved by manufacturer and be strippable, waterproof, non flammable, non combustible, low-odor and low VOC.
- 2.5 All carpet to be installed as per “Standard of installation of Carpet” CRI 104 CRI (Carpet and Rug Institute).
- 2.6 Below grade concrete slabs shall receive a waterproofing sealer as per flooring manufacturer’s recommendation.

CONSTRUCTION REQUIREMENTS

- 3.1 Submit shop drawings including carpet directional layout.
- 3.2 Provide 5% or agreed upon amount of attic stock to hand off to the Project Manager at the conclusion of the project.

REFERENCE

TILE CARPETING PERFORMANCE REQUIREMENT

GENERAL INFORMATION

- 1.1 Carpet tile, vinyl base and accessories.
- 1.2 References: American Association of Textile Chemists and Colorists (AATCC)
 - a. AATCC 16 Test Method 16
 - b. AATCC 20 Fiber Analysis – Qualitative
 - c. AATCC 134 Electrostatic Propensity of Carpets
 - d. AATCC 165 Colorfastness to Crocking - AATCC Crockmeter Method
- 1.3 American National Standards Institute (ANSI) ISO 2551 Machine-made Textile Floor Coverings -- Determination of Dimensional Changes Due to the Effects of Varied Water and Heat Conditions ISO 2551
- 1.4 American Society of Testing and Materials (ASTM)
 - a. D1335 Standard Test Method for Tuft Bind of Pile Yarn Floor Coverings
 - b. D2859 Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials
 - c. D3676 Standard Specification for Rubber Cellular Cushion Used for Carpet or Rug Underlay
 - d. D3936 Standard Test Method for Resistance to Delamination of the Secondary Backing of Pile Yarn Floor Covering
 - e. D5116 Standard Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions from Indoor Materials/Products
 - f. D5252 Standard Practice for the Operation of the Hexapod Drum Tester
 - g. D5417 Standard Practice for the Operation of the Vetterman Drum Tester
 - h. E648 Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source
 - i. E662 Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials
- 1.5 Carpet and Rug Institute (CRI)
 - a. Indoor Air Quality Testing Program
 - b. TM101 Assessment of Carpet Surface Appearance Change
 - c. TM102 Fluorochemical Finishes
 - d. 104 Standard for Installation of Commercial Carpet
- 1.6 Consumer Product Safety Commission (CPSC) FF-1-70 Methenamine Pill Test
- 1.7 National Fire Protection Association (NFPA)
 - a. 101 Life Safety
 - b. 253 Standard Method of Test for Critical Radiant Flux of Floor Covering Systems using a Radiant Heat Energy Source
- 1.8 Warranty:
 - a. Warranties shall cover all labor and materials, including labor and installation costs involved to replace defective product and workmanship. All warranty items are full term, not pro-rated.
 - b. General Warranty: Special warranties specified in the Article shall not deprive Columbia University of other rights Columbia University may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
 - c. Special Carpet Tile Warranty: Written warranty, signed by carpet tile manufacturer agreeing to replace carpet tile that does not comply with requirements or that fails within specified warranty period. Failures include, but are not limited to, more than 10 percent loss of face fiber, edge raveling, snags, runs, and delamination. Warranty Period: minimum, non-prorated 15 years, from date of construction complete.
 - d. Special Installation Warranty: Written warranty, signed by carpet tile installer and general contractor agreeing to correct faulty workmanship. Installation Warranty Period: 2 years from date of construction complete.

PRODUCT PERFORMANCE

- 2.1 Materials:
 - a. Compatibility: Provide carpet, adhesives, and other related materials that are compatible with one another and with substrates under conditions of service and application.
 - b. Appearance Retention Rating: Severe (short-term not less than 4.0, long-term not less than 3.5) based on ASTM D-5252 (Hexapod) using 3750-gram tumbler or ASTM D-5417 (Vettermann) test method. Carpets shall be tested without underlay. The exposure conditioned carpet shall be assessed according to CRI TM101.
 - c. Tuft bind: minimum average value, 8.0 pounds (Loop Pile)
 - d. Dimensional Stability: maximum dimensional change ± 0.2 percent
 - e. Delamination Resistance of the Secondary Backing: not less than 2.5 pounds per inch
 - f. Colorfastness (entire colorline): To Crocking: Color transfer Class 4 minimum, wet and dry, when tested as specified. To light: Color contrast between the exposed and unexposed carpet areas equivalent to a minimum of Grade 4 on the Gray Scale for Color Change after an exposure to 60 AFU (AATCC fading units) for all colors

- g. Fluorochemical finish: minimum average of 350 parts-per-million fluorine on the pile fiber when tested in accordance with CRI TM-102.
 - h. Antimicrobial Activity: Inherently antimicrobial, topical finishes not allowed.
 - i. Electrostatic Propensity: maximum 3.5 kV
 - j. Flammability: Methenamine Pill Test: Self Extinguishing – compliance with Federal Flammability Standards CPSC FF-1-70 when tested in accordance with ASTM D 2859. Radiant Panel: minimum critical radiant flux of 0.45 watts per square centimeter. Smoke Density: maximum 450.
 - k. Indoor Air Quality: Carpet: shall be only those certified with the CRI IAQ Carpet Testing Program Green Label, or tested for compliance to meet the CRI IAQ Carpet Testing Program requirements and criteria. Adhesive: shall be only those certified with the CRI IAQ Adhesive Testing Program Green Label or tested for compliance to meet the CRI IAQ Adhesive Testing Program requirements and criteria. All products (carpet, cushion and adhesives) from current production must be retested on a quarterly basis to ensure continuing compliance with CRI IAQ Test Program requirements.
- 2.2 Material Requirements:
- a. Pile Fiber Type: 100 percent continuous filament nylon, Type 6 or Type 6,6
 - b. Backing Materials: Primary Backing: 100 percent synthetic materials. Secondary Backing: Fiberglass reinforced secondary backing consisting of a polymeric cushion or hard back compound consistent with all performance testing requirements.
 - c. Recycled Content: Renewed nylon carpet, which is cleaned, retextured, recolored, or otherwise reused to produce new nylon carpet is acceptable; otherwise comply with the following recycled content requirements: Nylon Carpet Face Fiber: 25 percent minimum total recovered materials content. Nylon Carpet Backing: For vinyl primary backing, use the highest percentage of total recovered materials content available; however 0% is not acceptable. Polymeric Cushion: Preference will be given to recycled content cushion backings.
 - d. All materials must be 100% recyclable
- 2.3 Construction Requirements
- a. Surface texture: level or textured loop, multi-level loop, or pattern
 - b. Yarn: Multi-ply
 - c. Tufting Machine Gauge: minimum 1/10 gauge
 - d. Number of Stitches: minimum 8 per inch
 - e. Finished pile thickness: minimum 0.125 inch, maximum 0.5 inch
 - f. Average Finished Pile Yarn Weight: minimum 20 ounces per square yard
 - g. Dye method: Yarn or solution dyed
 - h. Color: To be selected.
- 2.4 Manufactured Units:
- a. Product shall have a lead-time of not more than six (6) weeks from the time the dealer receives the order to the time Columbia University receives the product, unless a shorter lead-time is required for the specific project.
 - b. Patterns and colorways shall be available for a minimum of ten (10) years.
 - c. All product within the same floor of a project shall be from the same dye lot.
- 2.5 Accessories:
- a. Carpet Edge Guard, Nonmetallic: Extruded or molded heavy-duty vinyl or rubber carpet edge guard of size and profile required with minimum 2-inch wide anchorage flange; colors compatible with carpet furnished.
 - b. Cutback Underlayment and Patching Compound: "Henry 345" Flooring Underlayment Powder, as manufactured by W. W. Henry Company or approved equal.
 - c. Miscellaneous Materials: As recommended by manufacturers of carpet and other carpeting products for intended application.
 - d. Releasable Adhesive for Carpet: Provide water-resistant, low VOC (not to exceed 10.0 milligram per square meter per hour), non-staining type as recommended by carpet manufacturer which complies with flame spread rating required for carpet installation and by local code.
 - e. Concrete Sealer: Provide low-VOC concrete sealer compatible with carpet backing material and adhesive.
- 2.6 Source Quality Control:
- a. Flammability Tests: Radiant Panel: ASTM E648, Class I; Smoke Density: ASTM E662; Methenamine Pill Test: Self Extinguishing (CPSC FF-1-70 or ASTM D 2859) (or as per code).
 - b. Lightfastness: AATCC 16E
 - c. Crocking: AATCC 165
 - d. Static Electricity: AATCC 134
 - e. Dimensional Stability: ISO 2551
 - f. Turf Bind: ASTM D1335
 - g. Delamination Resistance: ASTM D3936
 - h. Fluorochemical Finish: CRI TM-102
 - i. Electrostatic Propensity: AATCC 134
 - j. Indoor Air Quality: ASTM D5116
 - k. Pile Fiber Identity: AATCC 20
 - l. Backing Material Identity: AATCC 20
 - m. Attached Backing: Thickness: ASTM D3676; Volume Density: ASTM D3676; Compression Resistance: ASTM D3676; Compression Set: ASTM D3676
 - n. Test in accordance with NFPA 253 (ASTM E-648) when applying the floor finish requirements of the Life Safety Code (NFPA 101) and all other applicable codes.
 - o. Carpets and rugs should have a critical radiant flux not less than the following: -0.45 watts per square centimeter in

areas unprotected by an automatic fire suppression system; and -0.22 watts per square centimeter in areas protected by an automatic fire suppression system.

2.7 Submittals:

- a. Product Data: Submit manufacturer's product literature and installation instructions for each type of carpeting material and installation accessory required.
- b. Manufacturer's standard size carpet tile samples showing full range of colors, textures and patterns available for each type of carpet tile required.
- c. Samples of each type exposed edge stripping, vinyl base, and accessory item.
- d. Certification stating that the manufacturer and installer comply with Quality Assurance requirements. Include a minimum of five (5) references, complete with addresses, telephone numbers and contact persons for installations within the time period indicated.
- e. Manufacturer's certificate stating that materials furnished comply with specified requirements. Include supporting independent certified laboratory testing data indicating that material meets specified test requirements.
- f. Material Safety Data Sheet (MSDS) for adhesives, leveling compounds, and primers required.
- g. Written warranty information stating compliance with requirements.
- h. Maintenance Instructions: Submit manufacturer's printed instructions for maintenance of installed work, including methods and frequency recommended for maintaining optimum condition under anticipated traffic and use conditions. Include precautions against materials and methods which may be detrimental to finishes and performance.

2.8 Quality Assurance:

- a. Manufacturer Qualifications: Firm (material producer) with not less than 5 years of production experience, whose published literature clearly indicates general compliance of products with requirements of this section.
- b. Installer Qualifications: Firm with not less than 5 years of experience in installation of commercial carpet tile of type, quantity and installation methods similar to work of this section.

CONSTRUCTION**3.1 Examination**

- a. Examine substrates for moisture content alkaline presence and other conditions under which carpet tile is to be installed. Provide Calcium Chloride test results to verify amount of moisture in new or existing slabs. Calcium Chloride shall be less than or equal to three (3) pounds per one thousand (1000) square feet in 24 hours. Alkalinity testing shall result in a pH range of 5–9. Notify CPM in writing of conditions detrimental to proper completion of

the work. Do not proceed until unsatisfactory conditions have been corrected.

- b. Field verify all dimensions and other work conditions affecting the installation of carpet tile.
- c. The carpet covered by this specification is intended for end use applications that have a Severe Use Classification. It is the Contractor's responsibility to provide only products compatible with adjacent materials in the assembly.

3.2 Preparation

- a. General: Comply with CRI 104, Section 6.2, "Site Conditions; Floor Preparation," and carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile installation. Concrete shall be cured, clean and dry before installation proceeds. Repair minor holes, cracks, depressions or rough areas using floor patching/leveling compound that is compatible with the adhesive to be used and per manufacturer's recommendation. Protrusions over 1/32 inch shall be leveled. Large patched areas shall be primed. Whenever a powdery or porous surface is encountered, a primer compatible with the adhesive and per manufacturer's recommendation shall be used to provide a suitable surface for glue-down installation. Remove grease, oils, loose particles, paint, dirt, curing and parting agents, and all other foreign substances. Clear away debris and scrape up cementitious deposits from surfaces to receive carpet tile; vacuum clean immediately before installation. Subfloor shall be level and smooth and free from scaling and irregularities per Carpet and Rug Institute acceptable standards (CRI 104). Coordinate carpet installation with any underfloor electrical/telephone/data so conductors and cables are pulled prior to carpet installation. Accessories (floor power/communications monuments) shall be installed on top of carpet after installation. Sequence carpet tile installation with other work to minimize possibility of damage and soiling of carpet during remainder of construction period. Maintain room temperature at minimum 65 degrees F for at least 24 hours prior to installation and relative humidity at approximately that at which the area is to be maintained.
- b. Concrete (No Previous Flooring Material): Apply a concrete sealer coat at the rate recommended by the sealer manufacturer and per the carpet manufacturer's recommendation. Use thin, fast drying primers that are compatible with adhesives. Apply low-VOC adhesive only after primer is completely dry.
- c. Concrete (Previous Flooring Materials Removed): Remove existing adhesive by grinding with a concrete grinding machine and moist sand. Do not use solvents to remove adhesive. Apply concrete sealer at rate recommended by the sealer manufacturer. Use thin, fast drying primers that

are compatible with adhesives. Completely cover area with cutback neutralizer per manufacturer's recommendations.

- d. Wood: Patch all surface irregularities and seal with wood sealer as recommended by manufacturer.
- e. Vinyl Tile: Replace all loose, missing, and broken tiles with tiles of equal thickness making note of any special requirements with respect to asbestos on the Jobsite Hazard Evaluation. Strip existing tile of wax, dirt and other foreign substances. Completely cover area with cutback neutralizer per manufacturer's recommendations.
- f. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 Installation:

- a. General: Comply with CRI 104, Section 13, "Carpet Modules (Tiles)," and carpet tile manufacturer's written instructions, except where more stringent requirements are shown or specified, and except where project conditions require extra precautions or provisions to ensure satisfactory performance of the work. Field verify all dimensions and other work conditions affecting the installation of carpet tile. Unless otherwise noted or approved on drawings, begin laying tile at centerline. Comply with carpet tile instructions for direction of carpet tile. Unless otherwise noted on drawings align pattern and pile in the same direction, parallel to the centerline of the area or room. Extend carpet tile under open-bottomed obstructions and under removable flanges and furnishings, and into alcoves and closets of each space. Existing systems furniture shall be raised or removed to accommodate continuous carpet installation. Provide cut-out where required, and bind cut edges where not concealed by protective edge guards or overlapping flanges. Install carpet edge guard where edge of carpet is exposed; anchor guards to substrate. Use full-length strips only. Expansion Joints: Do not bridge building expansion joints with carpet tile; provide for movement. Carpet tile shall be free from movement when subjected to traffic. Do not use pieces smaller than 1/3 of a standard tile without prior approval. Where there are floor finish material changes at doors, place centerline of abutting materials below door.
- b. Glue Down Installation: Fit sections of carpet tile into each space prior to application of adhesive. Trim edges. Apply a full spread of adhesive uniformly to substrate in accordance with manufacturer's instructions unless otherwise indicated by SDR. Follow MSDS instructions for ventilation requirements. Butt carpet tile edges tightly together to form seams without gaps. Butt edges tightly to vertical surfaces. Eliminate air pockets and ensure uniform bond. Remove adhesive promptly from face of carpet tiles.
- c. Miscellaneous Installation, Stairway Carpeting: Install per manufacturer's recommendation. Provide vinyl nosing at each riser. Match adjoining carpet installation.
- d. Install vinyl base after completion of carpet work. Use adhesive recommended by vinyl base manufacturer.
- e. Coordinate adhesive blocking areas with SDR when floating carpet tile over access flooring.

3.4 Cleaning and Protection

- a. Remove and dispose of debris and recycle all unusable scraps.
- b. Remove excess adhesive and other surface blemishes using cleaner recommended by carpet tile manufacturer. Replace carpet tile where blemishes cannot be removed. Trim protruding face yarn from carpet tile surface. Vacuum carpet tile using commercial quality vacuum cleaner with face-beater element.
- c. Protect installed carpet tile to comply with CRI 104, Section 15, "Protection of Indoor Installations."
- d. Protect installation with a heavy, non-staining building paper. Do not use a moisture barrier such as plastic film. Maintain protection intact until construction complete.

3.5 Carpet Removal:

- a. All carpet tile and scraps removed from the project shall be recycled or reapplied. Disposal of product in landfill is not permitted.
- b. Vacuum in-place carpet with industrial vacuum prior to demolition or debris-producing renovation.
- c. Remove carpet.
- d. Stack on pallets for handling.
- e. Store carpet off ground and under cover to prevent contamination of materials by water, foreign matter or other causes.

3.6 Delivery, Storage and Handling:

- a. Deliver materials to site in original factory wrappings and containers, clearly labeled with identification of manufacturer, brand name, quality or grade, fire hazard classification, and lot number or provide independent certificates.
- b. Store materials in original undamaged packages and containers, inside well-ventilated area protected from weather, moisture, soiling, extreme temperatures, humidity; laid flat, blocked off ground to prevent sagging and warping. Maintain temperature in storage area above 40 degrees F. Do not stack packages higher than recommended by manufacturer.
- c. Comply with instructions and recommendations of manufacturer for special delivery, storage, and handling requirements.
- d. Extra Materials; On projects over 100 square yards, furnish an additional 2 percent of carpet to be stored on project site for maintenance/replacement needs. Additional carpet shall be packaged for storage to prevent damage from sagging, warping, and other deleterious effects.

- 3.7 Environmental Limitations: Do not install carpet tile until wet work in spaces is complete and dry, and ambient temperature

and humidity conditions are maintained at the levels indicated for project when occupied for its intended use.

- 3.8 Do not install carpet tile over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive and concrete slabs have pH range recommended by carpet tile manufacturer.
- 3.9 When demountable partitions or other items are indicated for installation on top of carpet tile, install carpet tile before the installation of these items.