SECTION  – resilient flooring

This Section has been edited to include Gensler's Product Sustainability Standards ("GPS Standards") criteria, providing language for only the "Gensler Standard" tier of performance - the required minimum level of performance for sustainable attributes of the product. To include "Market Differentiator" level of performance or for any other questions, please contact your regional specification leader, Tim Taylor, or Kaley Blackstock.

1. GENERAL
   1. summary
      1. This Section includes, but is not limited to, the following:

SPEC NOTE: Edit the following to reflect what is required on the Project. Delete paragraphs that are not required on this Project.

SPEC NOTE: There are additional resilient flooring materials which can be provided. If you require different then what is listed below, please consult your Spec Leader for additional options.

* + - 1. Resilient Tile Flooring:
         1. Vinyl Composition Tile (VCT).
         2. Luxury Vinyl Tile (LVT).
         3. Vinyl Static Dissipative Tile.
      2. Resilient Sheet Flooring:
         1. Homogeneous sheet rubber flooring.
         2. Homogeneous sheet vinyl flooring.
         3. Sheet linoleum flooring.

SPEC NOTE: Resilient Wall Base and Transition Strips have been moved to their own Section 09 65 13 Resilient Wall Base and Accessories. If resilient wall base or transition strips are required, please add that Section into the Project as well.

* 1. REFERENCE STANDARDS
     1. American Society for Testing and Materials (ASTM):
        1. ASTM F 1066-04(2014) e1, Standard Specification for Vinyl Composition Floor Tile.
        2. ASTM F 1516-13, Standard Practice for Sealing Seams of Resilient Flooring Products by the Heat Weld Method (when Recommended).
        3. ASTM F 1859-14, Standard Specification for Rubber Sheet Floor Covering Without Backing.
        4. ASTM F 1869-11, Standard Test Method for Measuring Moisture Vapour Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
        5. ASTM F 1913-04(2010), Standard Specification for Vinyl Sheet Floor Covering Without Backing.
        6. ASTM F 2034-08, Standard Specification for Sheet Linoleum Floor Covering.
     2. Canadian General Standards Board (CGSB):
        1. CAN/CGSB 51.34-M86, Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
  2. ADMINISTRATIVE REQUIREMENTS
     1. Coordination: Close spaces to traffic during flooring installation and until time period after installation recommended in writing by manufacturer; install flooring and accessories after other finishing operations, including painting and ceiling construction have been completed.
     2. Pre-Installation Conference: Conduct conference at Project site in accordance with requirements of Section 01 31 19 – Project Meetings, to verify project requirements, substrate conditions, patterns and layouts, coordination with other Sections affected by work of this Section, manufacturer's installation instructions and manufacturer's warranty requirements.
  3. submittals
     1. Sustainable Design Submittals: Refer to Division 01 Section 01 81 13 – Sustainable Design Requirements.
     2. Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.
     3. Action Submittals:
        1. Product Data: Submit one copy of product data for each type of product specified.
        2. Shop Drawings: Submit shop drawings indicating:
           1. Location of seams and edges.
           2. Location of columns, doorways, enclosing partitions, built in furniture, cabinets, and cut out locations.
        3. Samples for Selection: Submit manufacturer's colour charts and samples for initial selection consisting of full range of colours and patterns available for each type of product indicated.
        4. Samples for Verification:
           1. Resilient Flooring: Submit samples of each different specified product for verification of colour and pattern in manufacturer's standard size, but not less than 150mm x 150mm (6" x 6") in size for tile, or 150mm (6") long for sheet products.
     4. Informational Submittals: Provide the following submittals during the course of the work:
        1. Site Quality Control Test Results: Submit results or moisture emission testing of concrete subfloors prior to installation of flooring. Results shall include comparison of manufacturer's recommended moisture content to actual moisture vapour emission rate.
     5. Maintenance Data and Operating Instructions:
        1. Operation and Maintenance Data: Submit manufacturer's written instructions for maintenance and cleaning procedures, include list of manufacturers recommended cleaning and maintenance products, and name of original installer and contact information in accordance with Section 01 33 00 – Submittal Procedures.
     6. Safety Data Sheets:
        1. Submit WHMIS safety data sheets for incorporation into the Operation and Maintenance Manual. Keep one copy of WHMIS safety data sheets on site for reference by workers.
     7. Maintenance Materials:
        1. Provide 5% of each colour of vinyl composition tile and 9144mm (30') lineal feet coil stock of each colour of resilient sheet flooring specified, boxed and labelled.
        2. Store maintenance materials on the premises as directed by the Owner.
  4. Informational Submittals

The following submittal is a part of the GPS Standards and is required for all projects. Contractors must submit a Type III EPD.

* + 1. Embodied Carbon Reporting: Type III Environmental Product Declarations, per ISO 14025 disclosing the Global Warming Potential of the product from Stages A1 through A3 in accordance with Section 01 81 33 "Sustainable Design Requirements - Embodied Carbon" for products listed under "Embodied Carbon Reporting" in Article "Quality Assurance."

The paragraph below aligns with edits made in January of 2023 to Gensler's master specifications for our GC3 initiative. This requires that contractors complete an EPD Reporting Form, referenced in 018133 "Sustainable Design Requirements - Embodied Carbon" disclosing (checking a box) if an EPD exists for the product.

* + 1. Environmental Product Declaration (EPD) Disclosure Submittals: Completed Environmental Product Declaration Reporting Form in accordance with Section 01 81 33 "Sustainable Design Requirements - Embodied Carbon" for the following product types in this Section:
       1. Trowelable Leveling and Patching Compounds.

The following submittal is a part of the GPS Standards and is required for all projects. This relates to VOC content limit requirements listed in Part II.

* + 1. VOC Content: Product data or laboratory reports showing compliance with VOC content limits.

The following submittal is a part of the GPS standards and is required for all projects. This relates to TVOC emissions testing reports or certificates listed under 'Quality Assurance' for select product types.

* + 1. TVOC Emissions: Laboratory test reports or third-party certificates showing compliance with the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers" version 1.2-2017 for products listed under "TVOC Emissions" in Article "Quality Assurance."

The following submittal is a part of the GPS Standards and is required for all projects. This relates to material ingredient disclosure reports listed under 'Quality Assurance' for select product types.

* + 1. Material Ingredient Disclosure: Submit one of the following reports for products listed under "Material Ingredient Disclosure" in Article "Quality Assurance."
       1. Health Product Declaration.
       2. UL Product Lens.
       3. Living Building Challenge Declare Label or Living Product Challenge Label.
       4. EPEA Material Health Statement.
       5. Cradle-to-Cradle v4 Material Health Certificate or multi-attribute certificate.

The following submittal is a part of the GPS Standards and is required for all projects.

* + 1. Sustainability Reporting: Provide the following for resilient sheet products.
       1. Recycled content, including Pre-consumer and post-consumer percentages.
       2. Biobased content.
       3. Manufacturing location.
  1. QUALITY ASSURANCE
     1. Contractor executing work of this Section shall have a minimum of five (5) years continuous experience in successful and installation of work of type and quality shown and specified. Submit proof of experience upon Consultant's request.
     2. Resilient Flooring Installer: Use an installer who is competent in heat welding and have a minimum of five (5) years documented experience in the installation of resilient sheet flooring and seams in accordance with manufacturer's training or certification program.

The following requirement is a part of the GPS Standards and is required for all projects. This corresponds to the GPS Standards requiring that select products have EPDs. Edit list of product types below to align with the project.

* + 1. Embodied Carbon Reporting: Obtain the following products with the type of publicly available, third-party verified Type III Environmental Product Declaration (EPDs) listed below in accordance with Section 01 81 33 "Sustainable Design Requirements - Embodied Carbon."
       1. Luxury Vinyl Sheet: Industry-wide or product-specific Type III EPD.
       2. Rubber Sheet: Product-specific Type III EPD.
       3. Vinyl Composite Sheet: Industry-wide or product-specific Type III EPD.

The following requirement is a part of the GPS Standards and is required for all projects. This corresponds to the GPS Standards requiring that select products have testing reports or certificates for the California Department of Public Health (CDPH) Standard Method v1.2-2017 emissions testing ("TVOC emissions").

* + 1. TVOC Emissions: Obtain the following products with publicly available reports or certificates verifying compliance with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers" version 1.2-2017, following the private office scenario:
       1. Resilient Sheet.
       2. Adhesive.

The following requirement has been included as part of the GPS Standards and is required for all projects.

* + 1. Material Ingredient Disclosure: Obtain resilient sheet products with publicly available reports disclosing material ingredients to residuals no greater than 1000ppm.
  1. DELIVERY, STORAGE, HANDLING and protection
     1. Coordinate deliveries to comply with Construction Schedule and arrange ahead for off-the-ground, under cover storage location. Do not load any area beyond the design limits.
     2. Materials shall be carefully checked, unloaded, stored, and handled to prevent damage. Protect materials with suitable non-staining waterproof coverings.
     3. Store material in original, undamaged containers or wrappings with manufacturer's seals and labels intact.
     4. Restrict traffic by other trades during installation.
     5. Provide adequate protection of completed flooring to prevent damage by other trades until final completion of this project. Minimum protection shall consist of kraftpaper.
  2. environmental CONDITIONS
     1. Temperature of room, floor surface and materials shall not be less than 21 deg C for forty-eight (48) hours before, during and for forty-eight (48) hours after installation. Concrete floors shall be aged for a minimum of twenty-eight (28) days and shall be dry before application of the resilient flooring.
     2. Moisture content of floor shall not exceed a maximum of 3 lbs. of water per 1,000 sq. ft. of concrete slab area over a twenty-four (24) hour period as measured by one of the following methods, as approved by Consultant:
        1. Rubber Manufacturer's Association (RMA) moisture test using anhydrous calcium chloride.
        2. Does not exceed 3% as measured by Calcium Carbide Hygrometer procedure.
        3. Does not exceed 5% as measured by normal Protimeter.
     3. Avoid exposure to high humidity, cold drafts, and abrupt temperature changes.
  3. warranty
     1. Warrant the work of this Section against defects in materials and workmanship in accordance with the General Conditions but for an extended period of five (5) years and agree to repair or replace faulty materials or work which become evident during warranty period without cost to the Owner. Defects shall include, but not limited to, bond failure, and extensive colour fading.

1. products
   1. RESILIENT TILE FLOORING

SPEC NOTE: Edit the following (RT#'s) to reflect what is listed in the Product and Finish Schedule. Delete the following if not required on the Project.

* + 1. Vinyl Composition Floor Tile (RT-#): Asbestos free uniform in thickness with uniform colour and pattern through the full thickness, with straight, sharp and square edges and corners, accurately cut to size, conforming to ASTM F 1066 and the following:
       1. Thickness: 3mm (1/8")
       2. Size 305mm x 305mm (12" x 12")
       3. Colour, Model and Manufacturer: As indicated in Section 09 06 05 Product and Finish Schedule.

SPEC NOTE: Edit the following (RT#'s) to reflect what is listed in the Product and Finish Schedule. Delete the following if not required on the Project.

* + 1. Luxury Vinyl Tile (RT-#): Meeting ASTM F 1700 and the following:

The following requirement is a part of the GPS Standards and is required for all projects that include LVT.

* + - 1. Embodied Carbon: Maximum Global Warming Potential for Production Stages A1 through A3 as defined in Section 01 81 33 "Sustainable Design Requirements - Embodied Carbon":
         1. Luxury Vinyl Tile: 20.5 kg of CO2eq per m2.
      2. Class III, Type B.
      3. Accessories:
         1. Adhesive: As recommended by luxury vinyl tile manufacturer; Allow for installation of luxury vinyl tile over existing floor tile.
      4. Colour, Size, Model and Manufacturer: As indicated in Section 09 06 05 Product and Finish Schedule.

SPEC NOTE: Edit the following (RT#'s) to reflect what is listed in the Product and Finish Schedule. Delete the following if not required on the Project.

* + 1. Static Dissipative Tile (RT-#): Polyvinyl chloride resin, and installed as a system SDT yields an electrical resistance which meets ASTM F-150 for point to point and point to ground.
       1. Classification: Class 2 - Through Pattern.
       2. Thickness: 3mm (1/8").
       3. Size: 305mm x 305mm (12" x 12").
       4. Colour, Model and Manufacturer: As indicated in Section 09 06 05 Product and Finish Schedule.
  1. RESILIENT SHEET FLOORING

SPEC NOTE: Edit the following (VF#'s) to reflect what is listed in the Product and Finish Schedule. Delete the following if not required on the Project.

* + 1. Unbacked Sheet Vinyl Flooring (RS##): Conforming to ASTM F 1913 and the following:
       1. Classification: Commercial.
       2. Colour, Model and Manufacturer: As indicated in Section 09 06 05 Product and Finish Schedule.
       3. Total Thickness: nominal 1.6mm (1/16").
       4. Length: Manufacturers standard roll length.

SPEC NOTE: Edit the following (RF#'s) to reflect what is listed in the Product and Finish Schedule. Delete the following if not required on the Project.

* + 1. Unbacked Sheet Rubber Flooring (RS##): Conforming to ASTM F 1859 and the following:
       1. Class: [I - Homogenous] [II - Layered].
       2. Backing: None.
       3. Thickness: [3mm (1/8")][4mm (100mm)].
       4. Length: Manufacturers standard roll length.
       5. Colour, Texture, Model and Manufacturer: As indicated in Section 09 06 05 Product and Finish Schedule.

SPEC NOTE: Edit the following (LF#'s) to reflect what is listed in the Product and Finish Schedule. Delete the following if not required on the Project.

* + 1. Sheet Linoleum Flooring (RS##): Conforming to ASTM F 2034 and the following:
       1. Type: I - Linoleum Sheet with Backing.
       2. Class: Commercial 33 - Heavy.
       3. Thickness: Nominal 3.5mm (1/8").
       4. Width: Nominal 2m.
       5. Length: Manufacturers standard roll length.
       6. Colour, Model and Manufacturer: As indicated in Section 09 06 05 Product and Finish Schedule.
  1. RESILIENT ACCESSORIES

SPEC NOTE: Resilient Wall Base and Transition Strips have been moved to their own Section 09 65 13 Resilient Wall Base and Accessories. If resilient wall base or transition strips are required, please add that Section into the Project as well.

* + 1. Resilient Wall Base: As indicated in Section 09 65 13 – Resilient Wall Base and Accessories.
    2. Resilient Transition and Edge Strips: As indicated in Section 09 65 13 – Resilient Wall Base and Accessories.
    3. Trowellable Levelling and Patching Compounds: Latex modified, Portland cement based formulation provided or approved by resilient product manufacturer; As indicated in Section 03 35 00 – Concrete Finishing.
       1. Gypsum based materials will not be accepted for use on this project.
    4. Fillers and Primers:
       1. Types and brands approved, acceptable to flooring material and resilient base manufacturers for the applicable conditions. Use non-shrinking latex compound.
    5. Resilient Floor Tile Adhesive:

The following requirement is a part of the GPS Standards and is required for all projects

* + - 1. VOC Content: Adhesives shall comply with the more stringent VOC content limits of Federal, State, or local authorities having jurisdiction, including California Air Resources Board (CARB), South Coast air Quality Management District Rule 1168 (effective date January 1, 2023).
      2. Standard Tile: Waterproof, clear setting type and brands as recommended by the tile manufacturer.

SPEC NOTE: Delete the following if Static Dissipative Flooring is not on the Project.

* + - 1. Static Dissipative Tile: One-part latex static dissipative adhesive, complete with copper grounding strips.
    1. Sealer and Wax: Coordinated with Owners preferred long term maintenance program, sealer, or wax as appropriate to flooring materials specified.

SPEC NOTE: Delete the following if Static Dissipative Flooring is not on the Project.

* + - 1. Static Dissipative Tile: Static control polish, enhancing the tiles electrical properties.

SPEC NOTE: Delete the following if Static Dissipative Flooring is not on the Project.

* + 1. Grounding Strips: Copper, as recommended by static dissipative tile manufacturer.
    2. Polyethylene: 150mm (6") thickness conforming to CAN/CGSB 51.34.
    3. Tape: Self adhesive 75mm (3") wide cloth tape.

1. execution
   1. examination
      1. Testing and Inspections: Test moisture emission rate of concrete subfloor prior to installing flooring, using the calcium chloride test method in accordance with ASTM F 1869.
      2. Examine substrates, areas, and conditions affecting work are in accordance with manufacturer's requirements, and as follows:
         1. Verify that floor surfaces are smooth and flat to plus or minus 3mm over 3m (1/8" over 10'); notify Consultant in writing where floor tolerances are not within acceptable values.
         2. Verify that concrete slabs exhibit normal alkalinity of between 5 and 9 and that they are free of carbonization or dusting deleterious to flooring installation or adhesive bond.
         3. Verify that subfloors are free of cracks, ridges, depressions, scale, and foreign deposits that could interfere with flooring installation.
   2. preparation
      1. Comply with resilient flooring manufacturer's written installation instructions for preparing substrates indicated to receive flooring.
      2. Fill cracks, holes, and depressions in substrates using trowellable levelling and patching compounds in accordance with manufacturers written instructions and as follows:
         1. Levelling and patching shall be restricted to correcting minor deviations or imperfections to bring floor surface finish to within flooring manufacturers tolerances for flatness.
      3. Remove coatings from concrete substrates, including curing compounds and other substances that are incompatible with flooring adhesives, and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer; do not use solvents.
      4. Broom and vacuum clean substrates immediately before installing flooring.
   3. installation
      1. Comply with resilient flooring manufacturer's written installation instructions.
      2. Unroll flooring and allow stabilizing before cutting and fitting in accordance with manufacturer's installation instructions.
      3. Apply primer in strict accordance with manufacturer's printed instructions. Permit primer to dry.
      4. Apply adhesive uniformly with an approved notchtooth spreader at the recommended rate. (Mechanical spreader not approved). Do not spread more adhesive than can be covered before initial set takes place. Use waterproof adhesive throughout. Follow manufacturer's instructions.

SPEC NOTE: Delete the following where resilient tile flooring is not required on the Project.

* + 1. Layout tile flooring as follows:
       1. Lay tile with joints parallel to building lines or as indicated on drawings to produce a symmetrical tile pattern.
       2. Install tile flooring so that perimeter tile width is minimum 1/2 full size.

SPEC NOTE: Delete the following where resilient sheet flooring is not required on the Project.

* + 1. Layout sheet flooring as follows:
       1. Maintain uniformity of resilient flooring direction.
       2. Do not bridge building expansion joints with sheet flooring.
       3. Arrange for a minimum number of seams, where seams are necessary place them in inconspicuous and low traffic areas, and not less than 150mm (6") away from parallel joints in flooring substrates.
       4. Match edges of flooring for colour shading and pattern at seams in accordance with manufacturer's written recommendations.
       5. Obtain Consultant's acceptance in writing before installing materials having cross seams; make adjustments to seaming plan as directed by Consultant to minimize or eliminate cross seams.
       6. Weld seams with welding rod in accordance with written instructions for treatment of flooring adjacent to seams:
          1. Route joints of sheet flooring, leaving recommended joint profile for welding rod and permanently weld seams in accordance with ASTM F 1516.
       7. Install flooring flush with adjoining floor covering surfaces.
       8. Scribe sheet flooring to walls, columns, cabinets, floor outlets and other appurtenances.
       9. Top of coved sheet flooring shall be straight and level to variation of plus or minus 3mm over 3000mm (1/8" over 10') straight edge.
       10. Roll sheet flooring in both directions in accordance with manufacturer's instructions.
    2. Accurately scribe tile around walls, and other floor conditions.
    3. Each type of material used shall be from one manufacturer throughout the work and material in each area shall be of same production run.
    4. Remove and replace loose, damaged, and defective flooring where required and as directed by Consultant.
  1. CLEANING, SEALING AND FINISHING
     1. Cleaning, sealing, and finishing of resilient tile flooring shall be performed using the cleaning, sealing, and finishing materials specified of one manufacturer in accordance with the manufacturer's instructions and recommendations.
     2. Allow a minimum of four (4) days to elapse after completion of each resilient flooring installation before commencing cleaning, sealing, and finishing operations.
     3. Work shall be handed over to the Owner free of blemishes and in perfect condition.

end of section