

SECTION 096500  
RESILIENT FLOORING

## PART 1—GENERAL

## 1.01 REFERENCE:

Requirements in Addenda, Alternates, Conditions, and Division 1 collectively apply to this work.

- A. American Society for Testing and Materials
1. ASTM F 1066 *Standard specification for vinyl composition floor tile.*
  2. ASTM D 2047 *Static coefficient of friction.*
  3. ASTM F 970 *Static load limit.*
  4. ASTM E 648-97/NFPA 253 *Critical Radiant Flux.*
  5. ASTM E 662 *Smoke Generation.*
  6. ASTM F 710 *Preparation for installation of Resilient flooring concrete subfloors.*
  7. ASTM F 1482 *Preparation for installation of Resilient flooring wood subfloors.*
  8. ASTM F 1869, *Standard test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.*
  9. ASTM F 2170, *Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using In Situ Probes.*
  10. ISO 9001:2000 Certification
  11. ISO 14001:2004 Certification

## 1.02 DESCRIPTION:

- A. Principal Work Items Are:
1. High Performance Sheet Vinyl Flooring, Stair Treads and Risers.
  2. Resilient base.
    - a. At resilient flooring.
    - ~~b. At carpet flooring.~~
    - c. At fixed casework.
  3. Adhesives and primers.
  4. Accessories.
- B. Related Work Specified elsewhere:
- ~~1. Section 03300 Cast in Place Concrete~~
  - ~~2. Section 06100 Rough Carpentry, Plywood Subflooring and Underlayment.~~
  3. Section 07260 Vapor Retarders, Moisture Remediation.
  - ~~4. Carpeting: Section 09680.~~

1.03 SUBSTITUTIONS:

Only written approval of F.U.S.D. will permit substitutions for materials specified.

1.04 SUBMITTALS:

- A. Product Data: Submit 3 copies of manufacturer's product data and installation instructions for each type of resilient flooring and accessories as proof of specification compliance.
- B. Shop Drawings: Seaming Diagrams as required.
- C. Samples: Submit 3 sets of samples of each type, color and finish of resilient flooring and accessory required, indication full range of color and pattern variation as proof of specification compliance.
- D. Closeout Submittals: Submit 3 copies of the following:
  - 1. Maintenance and Operations data includes—methods for maintaining installed products, and precautions against cleaning materials and methods detrimental to finishes and performance.
  - 2. Warranty: Warranty documents specified herein.
- E. Flame Spread Certification: Submit manufacturer's certification that resilient flooring furnished for areas indicated to comply with required flame spread rating has been tested and meets or exceeds indicated standard.

1.05 QUALITY ASSURANCE:

- A. Manufacturer: Whenever possible, provide each type of resilient flooring and accessories as provided by a single manufacturer, including recommended primers, adhesives, sealants, finish accessories, and leveling compounds.
- B. Flooring Contractor Qualifications:
  - 1. The Awarded Contractor shall be an established firm, experienced in the installation of the specified product and shall have access to all manufacturer's required technical, maintenance, specifications, and related documents.
  - 2. The Flooring Contractor shall have completed at least three projects of similar magnitude, material and complexity, and must provide project reference details including contact names and telephone numbers.
- C. Installer Qualifications: Installer experienced in performing work of this section who is specialized in installation of work similar to that required for this project.
- D. Standard of Quality: For the purpose of evaluating the quality of workmanship, a mock up installation of the specified floor covering shall be provided by the flooring contractor in an area designated by the Architect as per Section 01450. Upon approval, this test

installation shall then be considered the standard of quality and basis of comparison for the balance of the project. The mock up area can then be incorporated into the finished project upon approval. Areas found to be deficient by specification standards or application procedures shall be repaired/replaced at contractor's expense.

1.06 PRODUCT DELIVERY, STORAGE, AND HANDLING:

- A. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- B. Storage and Protection: Store materials protected from exposure to harmful weather conditions and at a temperature and humidity conditions recommended by manufacturer.
  - 1. Move resilient flooring and installation accessories into spaces where they will be installed at least 48 hours before installation, unless longer conditioning periods are recommended in writing by the manufacturer.

1.07 PROJECT CONDITIONS:

- A. Substrate Conditions: Use the method described below to determine the dryness as required to ensure initial and long-term success.
  - 1. F1869 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride:
    - a. This test method covers the quantitative determination of the rate of moisture vapor emitted from below-grade, on-grade, and above-grade (suspended) concrete floors.
    - b. Conduct one calcium chloride test for every 1,000 square feet (minimum 3 tests) to ensure concrete moisture emissions do not exceed 3 -5 lbs per 1,000 square feet within a 24-hour period.
  - 2. F2170 Standard Test Method for Determining Relative Humidity in Concrete Slab Using in situ Probes:
    - a. This test method covers the quantitative determination of percent relative humidity in concrete slabs for field or laboratory test.
    - b. Conduct one test for every 1,000 square feet (minimum 3 tests) to ensure concrete does not exceed 85% internal relative humidity.
  - 3. Alkalinity Testing: ASTM F710 Maximum pH of 9.9.
- B. The General Contractor shall be responsible for insuring independent inspection of items 1, 2 and 3 above. The Contractor shall verify in writing to the Owner and Subcontractor, a minimum of thirty (30) days prior to scheduled resilient flooring installation, the following substrate conditions: Reference Section 01450
- C. Contingency for High Moisture Readings: If at the time of testing the moisture readings are in excess of manufacturer's recommendations the Contractor will initiate testing using petrographic core analysis to determine if the Water Cement Ratio and sufficient hydration has taken place. If the Specifications were not followed in their entirety, water/cement ratio (as specified), and or the concrete surface has been inadequately

hydrated the Contractor responsible for the placement of the cement shall be responsible for the costs associated with the petrographic analysis and subsequent remediation requirements.

- D. Moisture Remediation: Basic Steps as follows:
  - 1. Removal of all floor coverings, adhesive residue, curing compounds, parting compounds or other surface contaminants by mechanical means (shot-blasting, or other suitable method).
  - 2. Identification and treatment of all cracks and joints, by the sealer manufacturer's approved methods.
  - 3. Application of the sealer (Must be a product designed and warranted for the purpose of controlling excessive concrete moisture vapor emission and the alkali it may carry).
  - 4. Application of a sacrificial cementitious topping to act as a substrate for the installation of resilient floor coverings.
  
- E. Environmental Requirements/Conditions: In accordance with manufacturer's recommendations. Areas to receive flooring shall be clean, fully enclosed, weather tight with the permanent HVAC set at a uniform temperature of at least 68 degrees F (20 degrees C) 72 hours prior to and during and for not less than 48 hours after installation. The flooring material should be conditioned in the same manner.
  
- F. Close spaces to traffic during resilient flooring installation and for time period after installation recommended in writing by the manufacturer.
  
- G. Install resilient flooring material and accessories after other finishing operations, including painting, have been completed.
  
- H. Where demountable partitions and other items are indicated for installation on top of sheet resilient flooring material, install flooring material before these items are to be installed.

## 1.08 WARRANTY:

- A. Manufacturer's Warranty: Submit manufacturers standard warranty document.
  - 1. Warranty Period: Fifteen (15) year limited warranty commencing on date of substantial completion.

## 1.09 MAINTENANCE:

- A. Extra Materials: Deliver to owner extra materials from same production run as Products installed. Package products with protective covering and identify with descriptive labels. Comply with Division 1 closeout submittals (maintenance materials) section.
  - 1. Quantity: Furnish quantity of flooring units equal to 5% of amount installed.
  - 2. Delivery, storage and protection: comply with owner's requirements for delivery, storage and protection of extra materials.

- B. Maintenance of finished flooring to be conducted per Manufacturer's maintenance guide.

## PART 2—PRODUCTS

### 2.01 MATERIALS:

- A. Colors and Patterns: Reference color schedule.
- B. Certification Upon request by Architect, Flooring manufacturing to provide independent testing labs verification of all applicable test results.

### 2.02 VINYL SHEET FLOORING:

#### A. General

1. Reference: Federal Specifications L-F-475A (3), Type II, Grade A; Military Standard 1623D.
2. Fire Performance: ASTM E662, ASTM E84, ASTM E648.
3. 50 mil wear thickness.
4. Size: 6' wide.
5. Overall Thickness: .085".
6. Minimum Load Limit: 100 lbs/sq. in.

#### B. Acceptable Manufacturer and Product:

1. Armstrong DecorArt (Formerly named Classic Corlon Series). Design elements shall extend throughout the thickness of the wear layer.

#### C. Color Selection: Selected by F.U.S.D.

### 2.03 RUBBER STAIR TREADS, RISERS AND SKIRTS:

#### A. Acceptable Manufacturers and Products:

1. Stair Tread: The rubber stair tread shall be as manufactured by Burke Flooring Products Division of Burke Industries. Slip-resistant rubber treads shall have a 2" black adhesive strip which is embedded in the tread and shall be of first quality vulcanized rubber compound, and each tread shall be free of objectionable odors, blisters, cracks, or other imperfections which will detract from the serviceability and appearance of the tread. Stair treads shall conform to Federal Specifications 22-T. 001237 (GSA-FSS) Type II, Class 2, A and B and RR-T-650c, composition A, Types 1, 2 and 5.

2. Color and Pattern: As selected by F.U.S.D. from manufacturer's full range of colors and patterns produced for rubber stair treads and accessories complying with requirements indicated. Visually impaired.
3. Nosing Style: Square, adjustable to cover angles between 60 and 90 degrees.
4. Size: Lengths and depths to fit each stair tread in one piece.
5. Skirts: Rubber, 1/8" x 12" x 36", Burke or equivalent.
6. Risers: Use 6" cove base in 4' lengths - color to match stair tread.
7. Other manufacturers: See Substitutions.

## 2.04 RESILIENT BASE:

### A. General:

1. Standards: Per Federal Specifications SS-W-40, Type I or Type II.
2. Rubber, uniform size, thickness.
3. Size: 4" or 6" height typical, other heights as indicated, 48" lengths typical, .080" minimum thickness, pre-formed inside and outside corners.
4. Style: Coved top-set at resilient flooring and sealed concrete.
5. Colors: Commercial and decorator colors as selected by F.U.S.D.

### B. Acceptable Manufacturers and Products:

1. Rubber Base: Burke commercial and decorator colors as a standard of quality.
2. Other manufacturers: See Substitutions.

## 2.06 ADHESIVES, PRIMERS AND FILLERS:

- ### A. Types and brands as recommended by manufacturer of flooring and base materials.

## 2.07 TRANSITIONAL AND EDGE MOLDINGS:

- ### A. Vinyl transitions and edge as manufactured by Mercer Plastics Company.
- ### B. Color as selected by F.U.S.D.
- ### C. Other manufacturers: See substitutions.

## 2.08 ACCESSORIES:

- ### A. Adhesive: Provide manufacturers recommended adhesive as required by project conditions.
1. Ecofix 25 for porous or non porous substrate with moisture Emissions of 3 lbs. or less.
  2. Altrofix 31 polyurethane adhesive for wet areas, areas of high rolling loads and for substrates with moisture emissions of 5 lbs. or less.
- ### B. Leveling and Patching Compounds: Portland Cement types as recommended by flooring manufacturer.

- C. Sealants: Use Altromastic to seal around pipes and other adjacent surfaces.  
Note! Not to be used for sealing seams or drains.

## PART 3—EXECUTION

### 3.01 INSPECTION:

- A. Installer must examine areas and conditions under which resilient flooring and accessories are to be installed and must notify General Contractor in writing of conditions detrimental to proper and timely completion of work. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Owner and Architect.
- B. General: Examine surfaces to determine suitability to receive flooring. Do not start work until unsatisfactory conditions are corrected.
- C. Moisture Test: Using the flooring material and recommended adhesives, install 3'x3' panels - tape edges to prevent edge drying of adhesive. If the panels are securely bonded after 72 hours, sub-floor is sufficiently dry.
- D. Calcium Chloride Test: A quantitative test such as the calcium chloride test may be conducted. If test fails, the concrete is not sufficiently dry for installation of resilient flooring.

### 3.02 PREPARATION:

- A. Surface Preparation:
  - 1. Concrete floors shall be constructed in accordance with the American Concrete Institute (ACI) 302.1 R-95 Guide for concrete floor and slab construction.
  - 2. Floors must be finished and cured according to ACI with a minimum compressive strength of 3500 psi.
  - 3. Floors must be clean, dry and smooth. Any surface materials, such as paint, wax, grease, oil, adhesive residues, etc. must be removed. Floors must be free of any sealers, curing, hardening or parting compounds that would adversely affect the adhesive used with the flooring. Refer to ASTM F 710 standard practice for preparing concrete floors and other monolithic floors to receive resilient flooring.
  - 4. Where chemical adhesive removers have been used on existing slab floors, residual chemicals must be neutralized with a solution of 2 cups white vinegar per gallon of water using a floor scrubber with brush attachment and vacuumed dry with a wet dry vacuum so as to not reactivate remover chemicals when new adhesive is applied.
  - 5. A moisture barrier shall be installed prior to pouring of on or below grade slabs. Moisture vapor transmission shall not exceed 3 or 5.0lbs. /1,000 sq. ft./24hours, per ASTM F1869 Calcium Chloride Test.
  - 6. Wood floors must be double construction with a minimum thickness of one (1) inch. The top layer of wood shall be APA Underlayment Grade Plywood or other wood

- underlayment panel approved and warranted beneath resilient flooring. Refer to ASTM F 1482 Standard Guide to Wood underlayment products available for use under resilient flooring.
7. Maintain room temperature, adhesive and flooring material at 68 – 72 Degrees Fahrenheit (18 – 22C) for 72 hours before during and after installation.
  8. Broom clean or vacuum surfaces to be covered and inspect subfloor. Start of flooring installation indicates acceptance of subfloor conditions and full responsibility for completed work.
  9. Clean sub-floor and wall surface. All floor fill, toppings, or underlayment must comply with resilient flooring manufacturer's specifications.
  10. Prime surfaces as recommended by flooring materials manufacturer.
  11. Sub-floor should be dry, smooth, structurally sound, free of depressions, scale or foreign deposits of any kind.
  12. Floor fill, toppings or underlayment must have minimum compressive Strength of 4,000 PSI.
  13. Level sub-floor within 1\4 inch in 10 feet, non-cumulative, in all directions. Sand or grind protrusions, bumps, and ridges. Patch and repair cracks, and rough areas. Fill depressions.
  14. Use stair-tread-nose filler, according to resilient tread manufacturer's written instructions, to fill nosing substrates that do not conform to tread contours.

### 3.03 INSTALLATION:

- A. General: Follow manufacturer's printed instructions. Work to be aligned, square, with tight joints, well fitted to walls, cabinets and other work.
- B. Finish Flooring Patterns: As selected by Architect.
- C. Laying Floors:
  1. Spread adhesive evenly with notched trowel according to manufacturer's recommendation.
  2. Install tile only after all finishing operations, including painting, have been completed and permanent heating system is operating. Moisture content of concrete slabs, building air temperature and relative humidity must be within limits recommended by tile manufacturer.
  3. Butt units tightly to vertical surfaces, thresholds, nosing and edgings. Scribe as necessary around obstructions and to produce neat tight joints with even and straight lines.
  4. Extend units into toe spaces, door reveals, and in closets and similar openings.
  5. Maintain reference markers, holes, or openings that are in place or plainly marked for future cutting by repeating on the finish tile as marked in the subfloor. Use chalk or other non-permanent marking device.
  6. Lay tile from center marks established with principle walls, discounting minor off-sets, so that tile at opposite edges of the room are of equal width. Adjust as necessary to avoid use of cut widths less than 3' at room perimeters. Lay tile square to room axis.



7. Match tiles for color and pattern by using tile from cartons in the same sequence as manufactured and packaged. Broken, cracked, chipped or deformed tile are not acceptable.

8. Lay tile pattern selected by F.U.S.D.

D. Resilient Base:

1. Apply coved top-set base at all resilient floors, after laying tile. Use maximum practicable lengths.
2. Apply adhesive, firmly adhere base, press down bottom cove of top-set base to permanently contact flooring at all points.
3. Corners: Use pre-molded inside and outside corners that fit accurately.

E. Sheet Vinyl Flooring:

1. Install in strict accordance with manufacturer's written instructions with a minimum of seams by the Armstrong Securabond Installation System with Armstrong S-200 adhesive at the seams.
2. Installer shall be competent in the Securabond installation technique.
3. All flash coving must be by the one-piece flash coving method.
4. All flash coving must be finished to "hard cap".
5. All heat-welded seams must be in strict compliance with manufacturer's guidelines.
6. When seam treatments are recommended and require protection until they cure or dry, provide adequate protection and post signs with necessary cautions.

3.04 ADJUSTMENT AND CLEANING:

- A. Adjustment: Remove and replace loose, damaged, mismatched, or misaligned work. Remove adhesive smears.

3.05 FIELD QUALITY REQUIREMENTS:

- A. Manufacturer's Field Services: Upon Owner and Architects requests, and with sufficient notice, provide manufacturer's field service consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.
1. Site Visits: (specify number and duration of periodic site visits)

3.06 CLEANING:

- A. Dispose of all containers in a legal manner.
- B. Follow manufacturers written recommendations for cleaning and routine maintenance.

3.07 PROTECTION:

- A. Protection: Protect installed product and finish surfaces from damage during construction. Remove and legally dispose of protective covering at time of substantial completion.

END OF SECTION