

**SECTION 09 65 16  
LINOLEUM TILE**

**PART 1 - GENERAL**

**1.01 GENERAL REQUIREMENTS**

- A. The Contractor is referred to the Instructions to Bidders and General Conditions, NYCHA Contracts; the Special Notice to Contractors; the Form of Proposal; the Form of Bid Bond; Division 01 - General Requirements of the Contract Specifications; the Contract Drawings and all Amendments and Addenda thereto; all of which govern the Work of this Section.

**1.02 DESCRIPTION OF WORK**

- A. The Work of this Section includes all labor, materials, equipment, and services necessary for the provision and installation of all resilient flooring and related accessories indicated on the Drawings, the Schedule of Finishes and consisting of the following:
- B. Linoleum floor tile.
  - 1. Resilient base.
  - 2. Resilient flooring accessories.

**1.03 RELATED WORK**

- A. 09 29 00 GWB Systems

**1.04 QUALITY CONTROL**

**1.05 PERFORMANCE REQUIREMENTS: PROVIDE FLOORING WHICH HAS BEEN MANUFACTURED, FABRICATED AND INSTALLED TO PERFORMANCE CRITERIA CERTIFIED BY MANUFACTURER WITHOUT DEFECTS, DAMAGE, OR FAILURE.**

**1.06 REFERENCES**

- A. ASTM E648-88 Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Energy Source.
- B. ASTM E662-83 Test Method for Specific Density of Smoke Generated by Solid Materials.
- C. ASTM F710-86 Practice for Preparing Concrete Floors and Other Monolithic Floors to Receive Resilient Flooring.
- D. ASTM F970-87 Test Method for Static Load Limit.
- E. Fed Spec SS-T-312B Tile, Floor: Asphalt, Rubber, Vinyl, Vinyl Asbestos, 10 Oct 74.
- F. NFPA 253-1984 Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Energy Source.
- G. NFPA 258-1989 Test Method for Specific Density of Smoke Generated by Solid Materials.

**1.07 REGULATORY REQUIREMENTS:**

- A. Fire Performance Characteristics: Provide resilient linoleum tile flooring with the following fire performance characteristics as determined by testing products in accordance with ASTM method indicated below by a certified testing laboratory or another testing and inspecting agency acceptable to authorities having jurisdiction:
  - 1. Critical Radiant Flux: Class 1 Rating per NFPA 253 (ASTM 648) (0.45 watts/cm<sup>2</sup> or greater).
  - 2. Smoke Density: Less than 450 per NFPA 258 (((ASTM E662))).

**1.08 SUBMITTALS**

- A. Product Data: Submit product data, including manufacturer's SPEC-DATA product sheet, for specified products.
- B. Maintenance Instructions: Submit manufacturer's written instructions for recommended maintenance practices for each type of resilient flooring and each accessory.

- C. Where color selections by Architect are required, include color charts showing full range of manufacturer's standard colors and designs available.

**1.09 SAMPLES: SAMPLES OF ALL FINISHES, COLORS, AND TEXTURES.**

- A. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.
- B. Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria, and physical requirements.

**1.10 DELIVERY, STORAGE, AND HANDLING**

- A. General: Comply with Division 01 Product Requirements Sections.
- B. Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.
- C. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- D. Storage and Protection: Store materials protected from exposure to harmful weather conditions and at temperature and humidity conditions recommended by manufacturer.
- E. Material should be stored in areas that are fully enclosed, weathertight with the permanent HVAC system set at a uniform temperature of at least 68 degrees Fahrenheit for 72 hrs. prior to, during and after installation.

## **1.07 PROJECT CONDITIONS**

**A. ENVIRONMENTAL REQUIREMENTS: IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, AREAS TO RECEIVE FLOORING SHALL BE CLEAN, FULLY ENCLOSED, WEATHERTIGHT WITH THE PERMANENT HVAC SET AT A UNIFORM TEMPERATURE OF AT LEAST 68 DEGREES FAHRENHEIT. THE FLOORING MATERIAL SHOULD BE CONDITIONED IN THE SAME MANNER. MAXIMUM TEMPERATURE SHOULD NOT EXCEED 100 DEGREES FAHRENHEIT AFTER INSTALLATION.**

**B. TEMPERATURE REQUIREMENTS: MAINTAIN AIR TEMPERATURE IN SPACES WHERE PRODUCTS WILL BE INSTALLED BEFORE, DURING, AND AFTER INSTALLATION AS RECOMMENDED BY MANUFACTURER.**

**4.01 TEMPERATURE CONDITIONS: 68 DEGREES FAHRENHEIT FOR 72 HOURS PRIOR TO, DURING AND AFTER INSTALLATION.**

**C. FIELD MEASUREMENTS: VERIFY ACTUAL MEASUREMENTS/OPENINGS BY FIELD MEASUREMENTS BEFORE FABRICATION; SHOW RECORDED MEASUREMENTS ON SHOP DRAWINGS. COORDINATE FIELD MEASUREMENTS AND FABRICATION SCHEDULE WITH CONSTRUCTION PROGRESS TO AVOID CONSTRUCTION DELAYS.**

## **1.08 SEQUENCING AND SCHEDULING**

**A. FINISHING OPERATIONS: INSTALL TILE FLOORING AFTER FINISHING OPERATIONS, INCLUDING PAINTING AND CEILING OPERATIONS, HAVE BEEN COMPLETED.**

## **1.09 WARRANTY**

**A. MANUFACTURER'S WARRANTY: SUBMIT, FOR OWNER'S ACCEPTANCE, MANUFACTURER'S STANDARD WARRANTY.**

**9.01 WARRANTY PERIOD: FIVE (5) YEAR LIMITED WARRANTY COMMENCING ON DATE OF SUBSTANTIAL COMPLETION.**

## **1.10 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 01 CLOSEOUT SUBMITTALS (MAINTENANCE MATERIALS) SECTION.**

**11.01 QUANTITY: FURNISH QUANTITY OF FLOORING UNITS EQUAL TO 5% OF AMOUNT INSTALLED FOR ALL COLORS AND FINISHES INSTALLED.**

**11.02 DELIVERY, STORAGE AND PROTECTION: COMPLY WITH OWNER'S REQUIREMENTS FOR DELIVERY, STORAGE AND PROTECTION OF EXTRA MATERIALS.**

## **PART 2- PRODUCTS**

### **12.01 2.01 MATERIALS**

**A. MANUFACTURER: FORBO LINOLEUM, INC., HUMBOLDT INDUSTRIAL PARK, P.O. BOX 667, HAZLETON, PA 18201; TELEPHONE: 800 842 7839, 717 459 0771; FAX: 717 450 0258, OR EQUAL.**

**B. DESCRIPTION: HOMOGENEOUS TILE OF PRIMARILY NATURAL MATERIALS CONSISTING OF LINSEED OIL, WOOD FLOUR, AND ROSIN BINDERS, MIXED AND CALENDERED ONTO A POLYESTER BACKING. PATTERN AND COLOR SHALL EXTEND THROUGHOUT TOTAL THICKNESS OF TILE MATERIAL.**

**14.01 SIZE: 19.7" X 19.7" APPROX.**

**14.02 GAUGE: 1/10" (2.5 MM).**

**14.03 BACKING: POLYESTER BACKING.**

**14.04 PATTERN(S) AND COLOR(S): AS SELECTED BY ARCHITECT FROM MANUFACTURERS STANDARD PATTERNS AND COLORS, SEE DRAWINGS.**

**14.05 ADHESIVE: FORBO LINOLEUM, INC., L910 ADHESIVE, OR EQUAL.**

**14.06 HEAT WELDING ROD: FORBO LINOLEUM, INC., MARMOWELD COLOR-MATCHED WELDING ROD, OR EQUAL.**

**14.07 COLOR AND PATTERN SHALL BE AS SELECTED BY THE ARCHITECT AND APPROVED BY THE DEVELOPMENT, SELECTED FROM THE MANUFACTURER'S STANDARD COLORS.**

**C. ADHESIVE FOR LINOLEUM TILE: TYPE AS RECOMMENDED BY FLOORING MANUFACTURER.**

**D. RUBBER WALL BASE: UNLESS OTHERWISE SHOWN, BASE SHALL BE BOTH STRAIGHT AND TOP-SET COVE STYLE, 4 INCHES HIGH (UNLESS OTHERWISE INDICATED) BY 1/8-INCH THICKNESS WITH MATCHING END STOPS AND PREFORMED OR MOLDED EXTERIOR AND INTERIOR CORNER UNITS; CONFORM TO FS SS-W-40, TYPE I. COLOR SHALL BE AS SELECTED BY THE ARCHITECT AND APPROVED BY THE DEVELOPMENT, SELECTED FROM THE MANUFACTURER'S STANDARD COLORS, SEE DRAWINGS.**

**E. EDGING STRIPS: UNLESS OTHERWISE INDICATED, EDGE STRIPS SHALL BE 1/8 INCH THICK, BUT NOT LESS THAN 1 INCH WIDE, HOMOGENEOUS LINOLEUM WITH TAPERED EDGE AND COLOR TO MATCH FLOORING OR AS SELECTED BY AUTHORITY FROM MANUFACTURER'S STANDARD COLORS.**

**F. RESILIENT TRANSITION STRIPS: HOMOGENEOUS LINOLEUM OR RUBBER COMPOSITION, TAPERED, WITH EDGE THICKNESS AS REQUIRED FOR SMOOTH TRANSITION FROM ONE FINISHED FLOOR MATERIAL TO ANOTHER, COLOR TO MATCH FLOORING AS SELECTED BY THE ARCHITECT FROM STANDARD COLORS AVAILABLE; BUT NOT LESS THAN 1" INCH WIDE.**

**G. PRIMERS AND UNDERLAYMENT COMPOUNDS IF REQUIRED SHALL BE WATER-RESISTANT TYPE AND OF CONSISTENCY RECOMMENDED BY THE FLOORING MANUFACTURER FOR THE TYPE AND CONDITION OF THE SURFACE TO BE COVERED. USE PRIMER AND UNDERLAYMENT COMPOUND IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTRUCTIONS.**

**H. ADHESIVES FOR WALL BASES SHALL BE WATERPROOF, STABILIZED TYPE AS RECOMMENDED BY FLOORING MANUFACTURER. ASPHALT EMULSIONS AND OTHER NON-WATERPROOF TYPES ARE NOT ACCEPTABLE.**

### **PART 3 – EXECUTION**

#### **21.01 3.01 MANUFACTURER'S INSTRUCTIONS**

**A. COMPLIANCE: COMPLY WITH MANUFACTURER'S PRODUCT DATA, INCLUDING PRODUCT TECHNICAL BULLETINS, PRODUCT CATALOG INSTALLATION INSTRUCTIONS, AND PRODUCT CARTON INSTRUCTIONS FOR INSTALLATION.**

#### **3.02 PREPARATION**

**A. PRIOR TO LAYING FLOOR, BROOM-CLEAN OR VACUUM SURFACES TO BE COVERED AND INSPECT SUBFLOOR. ADVISE THE ARCHITECT OF ANY UNACCEPTABLE CONDITIONS. START OF FLOORING INSTALLATION INDICATES ACCEPTANCE OF SUBFLOOR CONDITIONS AND FULL RESPONSIBILITY FOR COMPLETED WORK.**

**B. ADJACENT SURFACES PROTECTION: PROTECT ADJACENT WORK AREAS AND FINISH SURFACES FROM DAMAGE DURING PRODUCT INSTALLATION.**

**C. SURFACE PREPARATION:**

**26.01 GENERAL: PREPARE FLOOR SUBSTRATE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.**

**26.02 FLOOR SUBSTRATE: PREPARE FLOOR SUBSTRATE TO BE SMOOTH, RIGID, FLAT, LEVEL, PERMANENTLY DRY, CLEAN AND FREE OF FOREIGN MATERIALS SUCH AS DUST, PAINT, GREASE, OILS, SOLVENT, CURING AND HARDENING COMPOUNDS, SEALERS, ASPHALT AND OLD ADHESIVE RESIDUE.**

**26.03 CONCRETE FLOOR SUBSTRATE: CONCRETE FLOOR SUBSTRATE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3500 PSI. REFER TO DIVISION 3 CONCRETE SECTIONS FOR PATCHING AND REPAIRING CRACK MATERIALS, AND LEVELING COMPOUNDS WITH PORTLAND CEMENT-BASED COMPOUNDS. DO NOT USE OR INSTALL FLOORING OVER GYPSUM-BASED LEVELING OR PATCHING MATERIALS.**

- A. Reference Standard: Comply with ASTM F710 Practice for Preparing Concrete Floors and Other Monolithic Floors to Receive Resilient Flooring.

**26.04 CONCRETE MOISTURE TEST: PERFORM MOISTURE TESTS ON CONCRETE FLOORS REGARDLESS OF THE AGE OR GRADE LEVEL WITH A MINIMUM OF THREE TESTS FOR THE FIRST 1000 SQ FEET.**

**26.05 CONCRETE PH TEST: PERFORM PH TESTS ON CONCRETE FLOORS REGARDLESS OF THE AGE OR GRADE LEVEL. IF THE PH IS GREATER THAN 10, IT MUST BE NEUTRALIZED PRIOR TO BEGINNING THE INSTALLATION.**

### **3.02 INSTALLATION**

#### **A. JOB CONDITIONS**

**28.01 CONTINUOUSLY HEAT AREAS TO RECEIVE FLOORING TO 70 DEGREES FAHRENHEIT FOR AT LEAST 48 HOURS PRIOR TO INSTALLATION, WHEN PROJECT CONDITIONS ARE SUCH THAT HEATING IS REQUIRED. MAINTAIN 70 DEGREES F TEMPERATURE CONTINUOUSLY DURING AND AFTER INSTALLATION, AS RECOMMENDED BY FLOORING MANUFACTURER, BUT NOT LESS THAN 48 HOURS.**

**28.02 INSTALL FLOORING AFTER FINISHING OPERATIONS, INCLUDING PAINTING, HAVE BEEN COMPLETED AND PERMANENT HEATING SYSTEM IS OPERATING.**

#### **B. GENERAL**

**29.01 PLACE FLOORING WITH ADHESIVE CEMENT IN STRICT COMPLIANCE WITH MANUFACTURER'S RECOMMENDATIONS. BUTT TIGHTLY TO VERTICAL SURFACES, THRESHOLDS, NOSINGS, AND EDGINGS. SCRIBE AROUND OBSTRUCTIONS AND TO PRODUCE NEAT JOINTS, LAID TIGHT, EVEN AND STRAIGHT. EXTEND FLOORING INTO TOE SPACES, DOOR REVEALS, AND INTO ALCOVES, CLOSETS AND SIMILAR OPENINGS.**

**29.02 MAINTAIN REFERENCE MARKERS, HOLES OR OPENINGS THAT ARE IN PLACE OR PLAINLY MARKED FOR FUTURE CUTTING BY REPEATING ON FINISH FLOORING AS MARKED ON SUBFLOOR. USE CHALK OR OTHER NON-PERMANENT MARKING DEVICE.**

**29.03 MAINTAIN OVERALL CONTINUITY OF COLOR AND PATTERN WITH PIECES OF FLOORING INSTALLED IN THESE CORNERS. TIGHTLY CEMENT EDGES TO PERIMETER OF FLOOR AROUND CORNERS AND TO CORNERS.**

**29.04 TIGHTLY CEMENT FLOORING TO SUB-BASE WITHOUT OPEN CRACKS, VOIDS, RAISING AND PUCKERING AT JOINTS, TELEGRAPHING OF ADHESIVE SPREADER MARKS OR OTHER SURFACE IMPERFECTIONS.**

**29.05 LAY TILE FROM CENTER MARKS ESTABLISHED WITH PRINCIPAL WALLS, DISCOUNTING MINOR OFFSETS, SO THAT TILE AT OPPOSITE EDGES OF THE ROOM ARE OF EQUAL WIDTH. ADJUST, AS NECESSARY, TO AVOID USE OF CUT WIDTHS LESS THAN ½ TILE AT ROOM PERIMETERS. LAY TILE SQUARE TO ROOM AXIS, UNLESS OTHERWISE SHOWN OR DIRECTED IN WRITING BY ARCHITECT.**

**29.06 MATCH TILES FOR COLOR AND PATTERN BY USING TILE FROM CARTONS IN SAME SEQUENCE AS MANUFACTURED AND PACKAGED. CUT TILE NEATLY TO AND AROUND ALL FIXTURES. BROKEN, CRACKED, CHIPPED OR DEFORMED TILE ARE NOT ACCEPTABLE. LAY TILE WITH GRAIN IN TILE RUNNING IN THE SAME DIRECTION ON ALL FLOORS.**

**29.07 INSTALL TILE FLOORING WITH FULL SPREAD ADHESIVE METHOD FROM ESTABLISHED AREA CENTER MARKS, IN ORDER FOR TILE AT OPPOSITE EDGES OF AREA TO BE OF EQUAL WIDTH. AVOID USING CUT TILE WIDTHS AT PERIMETER LESS THAN FOUR INCHES OF TILE WIDTH. INSTALL TILES SQUARE WITH ROOM AXIS. LAY TILE MATERIAL INTO WET ADHESIVE, AS RECOMMENDED BY TILE MANUFACTURER.**

**29.08 USE TROWEL AS RECOMMENDED BY FLOORING MANUFACTURER FOR SPECIFIC TYPE OF ADHESIVE. SPREAD AT RATE OF APPROXIMATELY 150 SQ. FT./GAL. AS RECOMMENDED BY FLOORING MANUFACTURER.**

- 29.09 SCRIBE, CUT, FIT FLOORING TO BUTT TIGHTLY TO VERTICAL SURFACES, PERMANENT FIXTURES AND BUILT-IN FURNITURE, INCLUDING PIPES, OUTLETS, EDGINGS, THRESHOLDS, NOSINGS, AND CABINETS.
- 29.10 EXTEND FLOORING INTO TOE SPACES, DOOR REVEALS, CLOSETS, AND SIMILAR OPENINGS.
- 29.11 INSTALL FLOORING ON COVERS FOR TELEPHONE AND ELECTRICAL DUCTS, AND SIMILAR ITEMS OCCURRING WITHIN FINISH FLOOR AREAS. MAINTAIN OVERALL CONTINUITY OF COLOR AND PATTERN WITH PIECES OF FLOORING INSTALLED ON COVERS.
- 29.12 DO NOT INSTALL RESILIENT FLOORING OVER EXPANSION JOINTS. USE EXPANSION JOINT COVERS MANUFACTURED FOR USE WITH RESILIENT FLOORING. REFER TO OTHER SPECIFICATION SECTIONS FOR EXPANSION JOINT COVERS.
- 29.13 ADHERE RESILIENT FLOORING TO FLOORING SUBSTRATE WITHOUT PRODUCING OPEN CRACKS, VOIDS, RAISING AND PUCKERING AT JOINTS, TELEGRAPHING OF ADHESIVE SPREADER MARKS, OR OTHER SURFACE IMPERFECTIONS IN COMPLETED FLOORING INSTALLATION.
- 29.14 USE ADHESIVE APPLIED TO SUBSTRATE IN COMPLIANCE WITH FLOORING MANUFACTURER'S RECOMMENDATIONS, INCLUDING THOSE FOR TROWEL NOTCHING, ADHESIVE MIXING, AND ADHESIVE OPEN AND WORKING TIMES.
- 29.15 ROLL RESILIENT FLOORING AS REQUIRED BY FLOORING MANUFACTURER.

#### **D. ACCESSORIES**

- 30.01 APPLY RESILIENT BASE TO WALLS, COLUMNS, CASEWORK AND OTHER PERMANENT FIXTURES IN ROOMS OR AREAS WHERE BASE IS REQUIRED. INSTALL BASE IN AS LONG LENGTHS AS PRACTICABLE, WITH PREFORMED CORNER UNITS OR FABRICATED FROM BASE MATERIALS WITH MITERED OR COPED INSIDE CORNERS. TIGHTLY BOND BASE TO BACKING THROUGHOUT THE LENGTH OF EACH PIECE, WITH CONTINUOUS CONTACT AT HORIZONTAL AND VERTICAL SURFACES.
- 30.02 PLACE RESILIENT TRANSITION STRIPS TIGHTLY BUTTED TO FLOORING MATERIALS AND SECURE WITH ADHESIVE. INSTALL TRANSITION STRIPS AT ALL CHANGES OF THICKNESS FROM ONE FINISHED FLOOR TO ANOTHER.
- 30.03 PLACE RESILIENT EDGE STRIPS TIGHTLY BUTTED TO FLOORING AND SECURE WITH ADHESIVE. INSTALL EDGING STRIPS AT ALL UNPROTECTED EDGES OF FLOORING, UNLESS OTHERWISE SHOWN.

#### **CLEANING AND PROTECTION**

**A. REMOVE TEMPORARY COVERINGS AND PROTECTION OF ADJACENT WORK AREAS. REPAIR OR REPLACE DAMAGED INSTALLED PRODUCTS. CLEAN INSTALLED PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS PRIOR TO OWNER'S ACCEPTANCE. REMOVE CONSTRUCTION DEBRIS FROM PROJECT SITE AND LEGALLY DISPOSE OF DEBRIS.**

- 32.01 REMOVE VISIBLE ADHESIVE AND OTHER SURFACE BLEMISHES USING CLEANING METHODS RECOMMENDED BY TILE FLOOR MANUFACTURER.
- 32.02 SWEEP AND VACUUM FLOOR AFTER INSTALLATION.
- 32.03 DO NOT WASH FLOOR UNTIL AFTER TIME PERIOD RECOMMENDED BY TILE FLOORING MANUFACTURER.
- 32.04 DAMP-MOP TILE FLOORING TO REMOVE BLACK MARKS AND SOIL. AFTER COMPLETION OF PROJECT, AND JUST PRIOR TO FINAL INSPECTION OF WORK, THOROUGHLY CLEAN FLOORS, BASES AND ACCESSORIES.

**B. FULLY COVER PROTECT FINISHED FLOOR UNTIL ACCEPTANCE OF SUBSTANTIAL COMPLETION BY THE AUTHORITY.**

**END OF SECTION 09 65 16**