

SECTION 09 69 00 – ACCESS FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specifications Sections, apply to this section.

1.2 SUMMARY

- A. Section Includes:

1. Interchangeable access-flooring panels
2. Understructure
3. Labor, material, equipment and installation as per specifications and/or shown on the Architect's drawings.
4. Floor panel coverings

- B. Related Requirements:

1. Section 03 30 00 – Concrete work and concrete floor sealer
 - a. Concrete sealer and pedestal adhesive must be chemically compatible with each other.
2. Section 09 68 00 – Carpet and carpet tile work
3. Section 23 30 00 – Mechanical air distribution
4. Section 26 05 00 – Electrical connections and grounding

- C. Access Floor Air Plenum Requirements (Delete if not using underfloor air)

1. The access floor contractor is aware that the space beneath the access floor will be used as an air delivery plenum and as such will take the necessary precautions when installing their work so as not to impact the integrity of the plenum space specific to air leakage and cleanliness.
2. Panel construction shall have a flat steel bottom to create a fully sealed plenum.
3. When panels are to be used bare without carpet or other floor coverings an optional air sealing gasket may be used to prevent air leakage.

1.3 PERFORMANCE REQUIREMENTS

- A. Provide access flooring system consisting of moveable assemblies composed of modular floor panels supported on pedestals forming accessible under floor cavities to accommodate electrical, mechanical, and HVAC services which comply with performance requirements specified. Raised floor panels must be interchangeable with each other except where cut for special conditions.

- B. Where applicable, load testing shall be performed according to “Recommended Test Procedures for Access Flooring” as established by the Ceiling and Interior Systems Construction Association (CISCA). These procedures shall be used as a guideline when presenting load performance product information.
- C. For 1250 Raised Access Floor Systems
1. Concentrated Load: 1,250 lb. on one square inch (25mm) at any location with a top surface deflection not to exceed 0.10" (2.5mm), and a permanent set not to exceed .010" (.25mm).
 2. Uniform Load: With a top surface deflection not exceeding 0.040" (1mm), floor can hold 600 pounds per square foot evenly distributed over the surface of the panel with a permanent set not exceeding 0.010" (0.25mm).
 3. Ultimate Load: Panel shall be designed to withstand a load of 1800 lb. applied over one inch at the weakest point on a pedestal.
 4. Rolling Load: Panels shall withstand a rolling load of 1,300 lbs. applied through a 3" (76mm) dia. x 1-13/16" (46mm) wide caster for 10 cycles over the same path with a maximum of .040" (1mm) top surface permanent set. Panels shall withstand a rolling load of 900 lb. applied through a hard rubber-surfaced wheel 6" (152mm) dia. x 2" (51mm) wide for 10,000 cycles over the same path with a maximum of .040" (1mm) top surface permanent set.
 5. Impact Load: A 150 lb. load dropped from 36" (914mm) onto a one inch square indenter shall not render the system unserviceable.
 6. Flammability: Bare panel system shall meet Class A requirements for Flame spread and smoke development when tested in accordance with ASTM-E84 and a maximum Flame spread of 25, Smoke development of 50 based on the average of three runs when tested in accordance with CAN/ULC S102.
 7. Combustibility: All components of the access floor system shall qualify as noncombustible by demonstrating compliance with requirements of ASTM E 136, Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 degrees C.
 8. Recycled Content: Panel and understructure system shall be required to have a minimum recycled content of 50%.
 9. Pedestal Axial Load Test: Provide pedestal assemblies without panels or other supports in place, capable of withstanding a 5000 lb. (22 240 N) Axial load per pedestal, according to CISCA A/F, Section 5 “pedestal Axial Load Test.”
 10. Verify requirements for pedestal overturning moment in seismic zones with authorities having jurisdiction. Coordinate with pedestals selected in Part 2 and method of attachment specified.

11. Pedestal Overturning Moment Test: Provide pedestal assemblies, without panels or other supports in place, capable of withstanding an overturning moment per pedestal of 1000 in*lb (113 N*m) when bonded to clean concrete slab according to CISCA A/F, Section 6, "Pedestal Overturning Moment Test."

D. Product test shall be witnessed and certified by an accredited independent engineering and testing laboratory based in the U.S.A. with a minimum of five (5) years' experience testing access floor components in accordance with CISCA test methods.

1.4 COUNTRY OF ORIGIN

A. Access floor materials shall comply with the provisions outlined in FAR Subpart 25.2–Buy American Act–Construction Materials.

1.5 SUBMITTALS

A. Samples:

1. Submit a sample of the floor panel and each understructure component.

B. Shop Drawings:

1. Submit drawings showing raised floor panel layout including starting point of installation.

2. Include details of component panels and pedestals. If required show edge details of ramps, steps, handrails and anchoring of pedestal bases to subfloor.

C. Product Certificates:

1. Submit independent testing organization certificates indicating compliance with specified design criteria when tested and reported according to CISCA "Recommended Test Procedures for Access Floor."

2. Submit seismic calculations in accordance with building codes as specified and cite the specific criteria. Calculations shall be performed using a current seismic program and submitted to a local structural engineer licensed in the state where the project is located. The structural engineer shall sign and seal these calculations confirming that these calculations meet all local and state codes for seismic pedestal assemblies. A signed copy of these calculations must be given to the architect and local building department as required.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications:

1. All primary products specified in this section will be supplied by a single manufacturer with a minimum of ten (10) years' experience and is ISO 9001:2000 certified, demonstrating a well-documented quality management system.

2. Manufacturer facilities shall be ISO 4001:2004 certified, demonstrating that they maintain an environmental management system.

- B. Installer Qualifications: Engage an experienced installer with minimum of 5 years' experience in the installation of access floor systems of comparable size and complexity.
- C. Access Floor Tolerances:
 - 1. Manufacturing Tolerance:
 - a. Nominal panel size: ± 0.020 " (.5mm) or less.
 - b. Panel flatness: ± 0.020 " (.5mm) or less.
 - c. Panel squareness: ± 0.015 " (.4mm) or less.
 - d. Panel interchangeability: All panels, except those modified to meet special conditions, shall be interchangeable.
 - 2. Installation Tolerance:
 - a. Finished installation shall be level within ± 0.060 " (2mm) in 10 feet (3m) and ± 0.100 " (3mm) for the entire floor.

1.7 DELIVERY STORAGE AND HANDLING

- A. Deliver flooring components clearly labeled with manufacturer's name and item description.
- B. Handle and store packages containing flooring in a manner which avoids overloading building structure.
- C. The General Contractor and or owner shall provide a dry accessible area to receive and unload material with a free path to elevators, hoists and/or the area receiving the floor.
- D. The subfloor shall be free of moisture, dust, dirt and other debris. Once installed, the tile floor must be maintained in the same manner.

1.8 PROJECT CONDITIONS

- A. The General Contractor and/or Owner shall provide a clean, level, dry subfloor, temperature controlled, and protected from the weather.
- B. Access flooring storage and installation areas shall be maintained at a temperature between 40° F to 120° F and be less than 70% relative humidity for 24 hours a day before, during and after installation.
- C. Overhead construction work must be completed before installing access floor to avoid damage to panels and finishes. Any damage to panels or finishes resulting from construction work done after floor is installed shall be the responsibility of the general contractor.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Haworth, Inc.; [**TecCrete Access Flooring**], located in Grand Rapids, MI 49512.
1. Substitutions will be considered, providing the alternative products meet or exceed the feature requirements as indicated herein and the performance requirements including the rolling load as outlined in section 1.03 and receive prior written approval by the Architect. The manufacturer shall certify that all panels meet or exceed the stated design criteria.

2.2 MATERIALS

- A. Floor Panels: TecCrete 1250 lb. Panels shall be an integrated steel pan construction with lightweight concrete fill. Floor Panels are corner-locked.
1. Panels shall be nominal 24" (610mm) square x 1-1/8" (29mm) deep, manufactured with galvanized steel pan having shear tabs that integrally bond to the lightweight, high-strength concrete fill. Panel corners shall be manufactured to receive the pedestal head positioning dome and containing a corner-lock/grounding insert. Each panel shall accept a flush-fit metal fastener which securely fastens each panel corner to the pedestal head.
 2. Panel Finish: Floor panel surface shall be factory standard bare concrete for field installed porcelain tile.
- B. Air Supply Panels:
1. Provide and/or install passive floor diffusers with factory cutouts as indicated on drawings.
 2. Factory cut-outs shall be (centered) (quadrant) as shown. Panels with cutouts that are located in traffic areas as shown on the drawings shall have extra pedestal assemblies under the panel to support the cutout.
 3. For under floor air applications, provide air strip gaskets for exposed concrete panels, or high pressure air highways, as indicated.
- C. Understructure:
1. Pedestal assemblies shall be of hot-dip galvanized steel.
 2. The base shall be a minimum of 16 square inches and shall be stamped and/or embossed on its underside and shall be adhered to the sub floor with an adhesive recommended by the access flooring manufacturer.
 3. Where mechanical anchors are required for seismic zones, provide same as required by project specific seismic calculations.

4. The threaded stud shall be 3/4" (19mm) diameter steel.
5. The head assembly shall be designed so that the panels will be held in place with or without corner-lock fasteners.
6. Pedestal assembly shall provide an adjustment range of +/- 1" (25mm) when finished floor height is 6" (152mm) or more, adjustable at 1/64" (.4mm) increments.
7. The assembly shall provide a mechanical means to lock the floor in a level plane and adjustments shall be capable of being made without special tools.
8. For corner-lock system, the head of the all-steel assembly shall be designed to accept a metal fastener to mechanically lock the panels in place.
9. Pedestal assembly shall support not less than 6,000 lb. axial load and shall resist an average 1,000 inch-pound overturning moment when bonded to a clean concrete slab.

D. Accessories

1. Furnish bare ramps and steps, lateral bracing, fascia, handrails, cutouts and miscellaneous items where indicated.

2.3 FLOOR PANEL COVERINGS

A. MANUFACTURERS - PORCELAIN DRY LAY FLOOR SYSTEM

1. Basis-of-Design Product: Subject to compliance with requirements, provide Haworth, Inc.; [**Haworth Porcelain Floor**], located in Kentwood, MI, manufactured in The Netherlands.
2. Substitutions will be considered, providing the alternative products meet or exceed the feature requirements as indicated herein and the performance requirements including the rolling load as outlined in section 2.3C and receive prior written approval by the Architect. The manufacturer shall certify that all panels meet or exceed the stated design criteria.

B. MATERIALS – PORCELAIN DRY LAY FLOOR SYSTEM

1. The surface of tile system consisting of a .43" (10.9mm) technical porcelain tile & carrier system that fits into a 0.37" (9.4mm) grout for an overall height of 0.8" (20.3mm).
2. General Description:
 - a. Tiles: Manufacturer's standard, modular, components, designed to interconnect and system consists of a polymer carrier, bonded via a metal interlayer to the back of each top surface module.
 - b. The polymer carrier has a joining system that consists of a series of pegs which are molded into the sides of the grid. The 'L'-shaped flexible joining strip (or "grout") is perforated with holes within which the pegs interlock.

- c. The dry-lay tile flooring system can be removed and reinstalled as many times as necessary, allowing the user to change the floor layout with minimum disruption. The floor elements can be interchanged, while the floor is in use. At the end of the product life cycle, every element can be recycled, or re-purposed.
3. Tile and Grout Module Size: 23.62”x 23.62” (600mm x 600mm)
 4. Tile Thickness: [0.8” (20.3mm)]
 5. Tile Colors, Textures, and Patterns: Provide tile that complies with ISO13006 for types, compositions and other characteristics indicated. Provide tile in the locations and of the types colors and pattern indicated on the Drawings and identified in the Schedule. Tile shall also be provided in accordance with the following:
 - a. Factory Color and Pattern: As selected by Architect from manufacturer's full range. Porcelain tile is a natural product and color variation is standard.
 - b. Factory Blending: For tile exhibiting color variations within the ranges selected under Submittal of samples, blend tile in the factory and package so tile taken from one package shows the same range of colors as those taken from other packages.

C. PERFORMANCE REQUIREMENTS – PORCELAIN DRY LAY FLOOR SYSTEM

1. Porcelain tiles must be interchangeable with each other except where cut for special conditions.
2. Porcelain tiles must meet all porcelain tile requirements as defined by ISO 13006 for dry pressed ceramic tiles with low water absorption less than or equal to 0.5%.
3. Critical Radiant Flux: Tile shall meet Fire performance testing in accordance with ASTM-E648 testing greater than or equal to 0.45 watts/cm², Class 1.
4. Recycled Content: Tile shall be required to have a minimum recycled content of 30% and must be reusable in another facility.
5. VOC & Aldehyde Emissions: System tested to UL 2818, Greenguard Gold Certified.
6. Coefficient of friction per ASTM (C1028) greater than or equal to 0.6.
7. Chair Castor Durability 100,000 cycles at 300 lbs. with no change to appearance.
8. When used in combination with Access Floor, load testing shall be performed according to “Recommended Test Procedures for Access Flooring” as established by the Ceiling and Interior Systems Construction Association (CISCA). These procedures shall be used as a guideline when presenting load performance product information.
 - a. Concentrated Load: 1,000 lb. on one square inch (25mm) at any location with a top surface deflection not to exceed 0.10” (2.5mm), and a permanent set not to exceed .010” (.25mm).

- b. Uniform Load: With a top surface deflection not exceeding 0.040" (1mm) TecCrete can hold 600 pounds per square foot evenly distributed over the surface of the panel with a permanent set not exceeding 0.010" (0.25mm).
 - c. Ultimate Load: Panel shall be designed to withstand a load of 1800 lb. applied over one inch at the weakest point on a pedestal.
 - d. Rolling Load: Panels shall withstand a rolling load of 1000 lbs. applied through a 3" (76mm) dia. x 1-13/16" (46mm) wide caster for 10 cycles over the same path with a maximum of .040" (1mm) top surface permanent set. Panels shall withstand a rolling load of 800 lb. applied through a hard rubber-surfaced wheel 6" (152mm) dia. x 2" (51mm) wide for 10,000 cycles over the same path with a maximum of .040" (1mm) top surface permanent set.
 - e. Impact Load: A 150 lb. load dropped from 36" (914mm) onto a one inch square indenter shall not render the system unserviceable.
 - f. Recycled Content: Panel and understructure system shall be required to have a minimum recycled content of 30%.
9. Product test shall be witnessed and certified by an accredited independent engineering and testing laboratory based in the U.S.A. with a minimum of five (5) years' experience testing access floor components in accordance with Cisca test methods.

D. SUBMITTALS – PORCELAIN DRY LAY FLOOR SYSTEM

- 1. Samples: Submit One full-size unit for each components of each type of dry-lay tile flooring system required. Showing each tile color, texture and grout element.
- 2. Shop Drawings: Submit drawings showing dry-lay tile layout including starting point of installation, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, thresholds, ceramic accessories, and relationship to adjoining work and any special edge conditions based on field-verified dimensions.
- 3. If required show edge details of ramps, steps, handrails.
- 4. Product Data Sheet: For Porcelain flooring system to indicate compliance with specified design criteria reported in this specification.

E. INSTALLATION – PORCELAIN DRY LAY FLOOR SYSTEM

- 1. Prior to and during installation, a secure and dry storage space closed to the weather must be made available, with recommended environment at not less than 60° F and below 90% relative humidity for 24 hours a day before, during and after installation. Floor tiles should be unpacked a minimum of 24 hours prior to install and allowed to acclimatize to the atmospheric conditions that will prevail after installation and during use. It is recommended to install porcelain floor system product as close to occupancy conditions as possible.

2. Tile layout and starting point shall be established from approved shop drawings so that mechanical and electrical work can be installed.
3. Lay tile to pattern indicated. Arrange pattern so that a full tile or joint is centered on each wall and that no tile less than 4-inch width is used. Do not interrupt tile pattern through openings.
4. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.
5. Installer is to coordinate with other trades to maintain the integrity of the installed flooring.
6. Floor system and accessories shall be installed by an authorized factory trained installation company.
7. No dust or debris producing operations by other trades shall be allowed in areas where tile is being installed to ensure clean subfloor.
8. Installer shall keep the subfloor broom clean as installation progresses.
9. After installation, the porcelain floor surface must be protected with RAM board when applying heavy loads to protect the top surface from marking or cracking.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine the subfloor which is to receive access flooring for dryness, cleanliness, unevenness, or any irregularities that will affect the quality of the access flooring.
 1. Verify that material storage and installation areas are at recommended temperature and relative humidity before, during, and after installation.
 2. Verify that access floor is level to within 1/8" (3mm) in 10 feet (3m).
- B. Do not commence installation of dry-lay tile until subfloor is level, clean and dry, temperature controlled, and protected from the weather.

3.2 INSTALLATION

- A. Pedestal locations shall be established from approved shop drawings so that mechanical and electrical work can be installed without interfering with pedestal locations.

- B. Installer is to coordinate with other trades to maintain the integrity of the installed access flooring. All traffic on access floor shall be controlled by the installer only. No traffic other than the access floor installation crew shall be permitted on any floor area for 48 hours to allow the pedestal adhesive to set. Access floor panels shall not be removed by other trades for 72 hours after installation.
- C. Floor system and accessories shall be installed by an authorized factory trained installation company with a minimum of five (5) years' experience.
- D. No dust or debris producing operations by other trades shall be allowed in areas where access floor is being installed to ensure proper bonding of pedestals to subfloor.
- E. Installer shall keep the subfloor broom clean as installation progresses.
- F. Install floor diffusers if required as indicated on Mechanical Plans.
- G. Access Floor Finished installation shall be level within +/- 0.060" (2mm) in 10 feet (3m) and +/- 0.100" (3mm) for the entire floor area.
- H. Replace damaged materials prior to the application of field applied surfaces.
- I. The General Contractor or Subcontractor shall assure compatibility between the concrete sealer and the pedestal adhesive provided by the access floor manufacturer.

3.3 ACCEPTANCE

- A. General Contractor or Owner shall accept completed access floor in whole or in part, prior to allowing other trades to perform work which affects the installed access floor and surface finish.
- B. General Contractor shall suitably protect the accepted access floor, surface finish and accessories from damage, contamination or overloading.
- C. The General Contractor shall be responsible for the final underfloor and tile cleaning.

END OF SECTION 09 69 00