SECTION 09 69 00
ACCESS FLOORING

PART 1 - GENERAL

1.1 SUMMARY

A. Furnish and install the following:
   1. Access flooring panels, perforated floor panels and understructure systems.

1.2 RELATED REQUIREMENTS

A. Division 26 - ELECTRICAL: Receptacles, wiring, and conduit for service outlets.

1.3 REFERENCES

A. Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 42 00 - REFERENCES. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.
   1. ASTM E84 - Test for Surface Burning Characteristics of Building Materials.
   2. CISCA (Ceilings & Interior Systems Construction Association) - “Recommended Test Procedures for Access Floors”.
   3. All applicable federal, state and municipal codes, laws and regulations regarding flammability and smoke generation of interior finishes.

B. The following reference materials are hereby made a part of this Section by reference thereto:
   1. All applicable federal, state and municipal codes, laws and regulations regarding flammability and smoke generation of interior finishes.

1.4 PERFORMANCE REQUIREMENTS

A. Pedestals: Maximum axial load of 5,000 pound (2,722 kg) without permanent deformation, and shall resist an average 1,000 inch-pound turnover moment when bonded to a clean concrete slab. Ultimate strength, not less than twice design load.

B. Type AF-1 Floor Panels shall conform to the following requirements:
   1. Design load: 1,250 pounds (454 kg).
   2. Uniform load: 400 pounds per square foot (16.75 kPa).
   3. Impact load: 150 lbs. @ 36 inches above floor surface.
   4. Concentrated load of 1,250 pounds on one square inch (500 kg on 710 sq mm) at any location with a maximum deflection of 0.10 inch (2 mm).
   5. Permanent deformation 0.02 inch (0.2 mm) maximum at design load.
   6. Ultimate strength: Not less than twice design load.
   7. Class A flame spread rating when tested in accordance with ASTM E84.

C. Type AF-5 Floor Panels shall conform to the following requirements:
   1. Design load: 3,000 pounds (1361 kg).
   2. Ultimate Load: 6000 pounds per square foot (2711kg).
   3. Impact load: 200 lbs. @ 36 inches above floor surface.

4. Concentrated load of 6,000 pounds on one square inch (907 kg on 710 sq mm) at any location with a maximum deflection of 0.010 inch.
5. Permanent deformation 0.010 inch maximum at design load.
6. Ultimate strength: Not less than twice design load.
7. Class A flame spread rating when tested in accordance with ASTM E84.

D. Type AF-6 Floor Panels shall conform to the following requirements:
1. Design load: 3,000 pounds (1361 kg).
2. Ultimate Load: 6000 pounds per square foot (2711kg).
3. Impact load: 200 lbs. @ 36 inches above floor surface.
4. Concentrated load of 6,000 pounds on one square inch (907 kg on 710 sq mm) at any location with a maximum deflection of 0.010 inch.
5. Permanent deformation 0.010 inch maximum at design load.
6. Ultimate strength: Not less than twice design load.
7. Class A flame spread rating when tested in accordance with ASTM E84.

E. Lateral stability: Design system for lateral stability in all directions, with or without panels in place.

F. Surface electrical resistance: Maximum one ohm per panel.

1.5 SUBMITTALS

A. Submit the following under provisions of Section 01 33 00 - SUBMITTAL PROCEDURES:
1. Literature: Manufacturer's product data sheets, specifications, performance data, physical properties and installation instructions for each item furnished hereunder.
2. Certification: Manufacturer's written certification stating that flooring system and all related components meets or exceeds the requirements specified under this Section and in particular meets or exceeds specified design strength and electrical resistance requirements.
3. Manufacturer’s instructions: Manufacturer’s installation instructions indicating special procedures, and perimeter conditions requiring special attention.
4. Warranty: Provide sample copies of manufacturers' actual warranties for all materials to be furnished under this Section, clearly defining all terms, conditions, and time periods for the coverage thereof.
5. Shop drawings:
   a. Plans showing floor layout, interruptions to grid, special sized panels, panels requiring drilling or cut-out for services, appurtenances or interruptions. Indicated elevation differences, stairs ramps, grilles and registers.
   b. Large scale details of edge conditions, assembly components and anchoring.

B. Submit the following under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS:
1. Manufacturer’s maintenance data; include recommended cleaning methods, cleaning materials stain removal methods.
2. Manufacturer’s warranties.

1.6 QUALIFICATIONS

A. Fabricator, with a minimum of 5 years documented experience demonstrating previously successful work of the type specified herein.

1.7 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with NFPA 75 requirements for raised flooring.

B. Performance Certification: Product tests to be witnessed and certified by independent engineering and testing laboratory based in the U.S. in accordance with CISCA “Recommended test procedures for access floor”.

C. Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.

D. Test and ensure that pedestal base adhesive is compatible with concrete sealer specified under Section 03 05 13 - CONCRETE SEALERS.

1.8 DELIVERY, STORAGE AND HANDLING

A. Protect materials from damage due to moisture, direct sunlight, excessive temperatures, surface contamination, corrosion and damage from construction operations and other causes.

1.9 ENVIRONMENTAL REQUIREMENTS

A. Maintain ambient temperatures between 35° to 95° F and relative humidity levels between 20% to 80%. At least 24 hrs. before installation begins, all floor panels shall be stored at ambient temperatures between 50° to 90° F and relative humidity levels between 20% to 80% and shall remain within these environmental limits until Substantial Completion.

1.10 FIELD MEASUREMENTS

A. Take field measurements before preparation of shop drawings and fabrication, where possible, to ensure proper fitting of Work.

B. Allow for adjustments within specified tolerances wherever taking of field measurements before fabrication might delay Work.

1.11 SEQUENCING AND SCHEDULING

A. Schedule work to commence after sub-floor work and utilities are installed.

1.12 WARRANTY

A. Provide 5 year warranty under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS.

1.13 EXTRA MATERIALS (ATTIC STOCK)

A. Upon completion of the Work of this Section, deliver to the Owner the following extra materials for future repairs and maintenance:
   1. Floor panel (floor tile) attic stock general requirements:
      a. Finish to match other tiles installed.
      b. Each attic stock panel shall be furnished with an identification sticker at the underside corner of each panel. Identification sticker shall indicate Flooring System (A or B), panel type, load rating and size.
   2. Perforated Floor Panels (general stock): one perforated tile per every 4 kw of UPS power plus an additional 5 percent stock.

a. Verify quantity and location of perforated tiles and floor cut outs with engineers.

3. System “AF-1” floor panels: Furnish sufficient stock to back fill 75 percent of perforated tiles for initial build out of first pod. Verify with Owner quantities for each addition pod.
4. System “AF-5” floor panels: Furnish 10 floor panels per computer room.
5. System “AF-6” floor panels: Furnish 10 floor panels per computer and IDF room.
6. Stringers: 25 spare stringers for each system type.
7. Pedestals: Furnish 25 spare pedestals for each system type.

B. Panel Lifting Devices: Furnish to Owner one panel lifting device per door and an additional quantity of one per every 1,500 square feet of access flooring.

C. Clearly label and package extra materials securely to prevent damage.

PART 2 - PRODUCTS

2.1 MANUFACTURER AND MODELS

A. Specified Manufacturer: To establish a standard of quality, design and function desired, Drawings and specifications have been based on the Tate Access Floors, Inc., Jessup, MD. No substitution will be accepted for named products.

1. Type ‘AF-1’ Flooring System: Tate Access Floors, Product; “ConCore CC1250” access floor panels, having both solid and perforated panels (as indicated) with bolted stringer understructure system.
   a. Concentrated Load: 1,250 lbs
   b. Uniform Load: 300 lbs/ft2
   c. Rolling load: 10,000 Passes 800 lbs
   d. Impact Loads: 150 lbs
   e. Finish: 1/16” HPL with integral trim edge.
2. Type ‘AF-2’ Flooring System: Tate Access Floors, Product; “ConCore CC2000” access floor panels with bolted stringer understructure system.
   a. Concentrated Load: 2,000 lbs
   b. Uniform Load: 550 lbs/ft2
   c. Rolling load: 10,000 Passes 1250 lbs
   d. Impact Loads: 150 lbs
   e. Finish: 1/16” HPL with integral trim edge.
3. Type ‘AF-6’ Flooring System: Tate Access Floors, Product; “ConCore CC3000” access floor panels with 2” bolted stringer understructure system.
   a. Concentrated Load: 3,000 lbs
   b. Ultimate Load: 6000 lbs/ft2
   c. Rolling load: 10,000 Passes 2400 lbs
   d. Impact Loads: 200 lbs
   e. Finish: 1/16” HPL with integral trim edge.
4. Perforated Steel Airflow Panels: Tate series “PERF 1250” Air Flow Panels (Open area 25 percent).
   a. 725 cfm at 0.1-inch of H2O (static pressure) Without Damper
   b. Concentrated load: 1250 lbs.
   c. Finish: 1/16” HPL with integral trim edge
   d. Quantity: Refer to Drawings.
5. Aluminum Grate Airflow Panels: Tate Series GrateAire die-cast aluminum Airflow Panels: Tate series GrateAire 24” for bolted string systems having 56% open area.
   a. 2100 cfm at 0.1-inch of H2O (static pressure) with damper.
   b. Concentrated load: 1000 lbs.

c. Finish: SparkLite White antistatic powder coat
d. Quantity: Refer to Drawings.

1.14 MATERIALS

A. Recycled content of access flooring system: Use maximum available percentage of materials by weight. Products incorporated into the work shall contain not less than 32.8 percent of recycled content.

1.15 SUPPORT COMPONENTS

A. Pedestals: Hot dip galvanized pedestal base assembly shall consist of a formed steel plate welded to a 7/8" square steel tube designed to engage the head assembly.
   1. Loading:
      a. Axial load: 6,000 lbs.
      b. Overturn Moment: 1,000 lbs.
   2. Minimum base size: 16 square inches.
   3. Threaded stud Type A: 5/8 inch diameter steel.
   4. Threaded stud Type B: 7/8 inch diameter steel.
   5. Pedestal assemblies shall be corrosive resistant, all welded steel construction, with an adjustment range of +/- 1 inch for finished floor heights of 6 inches or greater.
   6. Pedestal assemblies shall provide a means of leveling and locking the assembly at a selected height and prevent vibration displacement.
   7. Threaded stud shall be provided with an anti-rotation device, preventing the head assembly once engaged in the base assembly, from freely rotating.
   8. Hot dip galvanized pedestal base assembly shall consist of a formed steel plate with no less than 16 inches of bearing area, welded to a 7/8" square steel tube and shall be designed to engage the head assembly.

B. Stringers: 2" deep x ¾" wide bolted stringers, 4 foot long steel stringers with conductive galvannealed coating with manufacturer's standard bolts providing a positive electrical contact between the stringer and the pedestal.
   1. Stringer Grid Pattern: 4'/4' Basketweave.

1.16 PANEL COMPONENTS

A. Floor Panels: Panels shall consist of a top steel sheet welded to a formed steel bottom pan filled internally with a lightweight cementitious material and painted with an electrically conductive epoxy paint. Mechanical or adhesive methods for attachment of the steel top and bottom sheets will not be accepted.
   1. Floor panel size: 24 inches square.
   2. Floor panel finish: High Pressure Laminate, Formica Cheyenne – Unless noted otherwise.
   3. Cementitious fill material shall be totally encased within the steel welded shell except where cut for special conditions.
   4. Corner of panel shall have a locating tab and integral shape design to interface with the pedestal head for positive lateral retention and positioning with or without fasteners.
   5. Top surface of the panel shall have four positioning location holes to engage positioning buttons on the carpet tile for precise matching of the carpet tile to the panel.

6. Fit between the pedestal head, panel, and screw shall enable an installation with an average panel to panel gap of 0.015”.
7. Maximum electrical resistance: 1 ohm or less from the top edge of the panel, less surface covering to the understructure.

1.17 ACCESSORIES

A. Electrostatic grounding connectors: Solid copper.

B. Cable cutout protection: Extruded polyvinyl chloride or neoprene edging, 3/8 inch (90 mm) thick, self-extinguishing.

C. Panel lifting devices: Two per panel, recommended manufacturer’s standard type.

D. Gaskets: Closed cell sponge rubber, preformed to suit.

E. Edge trim: Extruded plastic channels.

F. Plenum divers: Aluminum plate, thickness as recommended by the manufacturer.

G. Sealant: As specified under Section 07 92 00 - JOINT SEALANTS.

1.18 FABRICATION – ACCESS FLOORING

A. Refer to the Drawings for location and details of access flooring to be furnished and installed hereunder.
   1. Verify pedestal heights shown on Drawings comply with referenced codes and regulations.

B. Access flooring performance requirements; conform to all requirements of those codes and regulations referenced under Section 01 41 00 - REGULATORY REQUIREMENTS.

1.19 FABRICATION TOLERANCES

A. Floor panel flatness measured on a diagonal: +/- 0.035 inch.
B. Floor panel flatness measured along edges: +/- 0.025 inch.
C. Floor panel width or length of required size: +/- 0.010 inch.
D. Floor panel out of square tolerance: +/- 0.015 inch.

1.20 FACTORY FINISHING

A. Exposed metal surfaces: Baked enamel finish, color as selected from manufacturer’s full available library of colors.

PART 3 - EXECUTION

1.21 EXAMINATION

A. Inspect all surfaces and verify that they are in proper condition to receive the work of this Section.

B. Verify field measurements are as shown on shop drawings.

C. Verify that required sub-floor utilities are available, in proper locations and ready to use.

D. Beginning of installation means acceptance of existing substrate and project conditions.

3.2 PREPARATION

A. Clean substrate surfaces concealed by flooring system.

B. Clean understructure components within the plenum of dust and dirt, excess loose galvanizing, or any other contaminant capable of becoming airborne in the plenum.

3.3 INSTALLATION

A. Install components in accordance with manufacturer's instructions. Install access flooring system and accessories under supervision of access flooring manufacturer's authorized representative to produce a rigid, firm installation that complies with performance requirements and is free of instability, rocking, rattles, and squeaks.

B. Secure pedestal base plate to subfloor with metal fasteners.

C. Install additional pedestals where grid pattern is interrupted by room appurtenances and at cutouts.

D. Install floor panels solidly on pedestals and securely in place, properly seated with panel edges flush. Do not force panels into place.
   1. Scribe perimeter panels to provide a close fit with adjoining construction with no voids greater than 1/8 inch (3 mm) where panels abut vertical surfaces

E. Seal field cuts of floor panels with edge trim.

F. Cut holes in floor panels for installation of Owner's equipment as directed.

G. Provide positive electrical earth grounding of entire floor assembly.

H. Install plenum dividers to provide a positive air seal between sub-floor and elevated floor. Include gasket and sealant to insure airtight seal where holes are cut in elevated floor for penetration of cable.

I. Seal underfloor air cavities at construction seams, penetrations, and perimeter to control air leakage as recommended in writing by manufacturer. Provide gasketing around through floor equipment such as CRAC's and CRAC stands. Verify results of air leakage test

   performed by mechanical contractor and provide additional seals as required. Floor not to exceed 10% air leakage.

3.4 ERECTION TOLERANCES

A. Maximum out of level tolerance: 1/16 inch in 10 feet (1.6 mm in 3 m).

3.5 ADJUSTING AND TESTING

A. Testing access flooring system and verify in writing air leakage test have been performed and there is less than 10% air leakage of closed floor system.

B. Adjust pedestals to achieve a level floor and to assure adjacent floor panel surfaces are flush.

3.6 CLEANING

A. Clean and vacuum subfloor area as installation of floor panels proceeds.

B. Daily clean work areas, dispose all debris and scraps.

3.7 PROTECTION

A. Protect finished work under provisions of Section 01 50 00 - TEMPORARY FACILITIES AND CONTROLS. Do not permit traffic over unprotected floor surface.

B. Advise Architect if flooring has been overloaded after completion and prior to Substantial Completion.

END OF SECTION