FS200D Specifications
For Vinyl Tile Covered Panels on Bolted Stringer System

NOTE: These specifications conform to CSI MasterFormat 2004/2005 Edition, AIA MasterSpec Section 096900 and to CSI MasterFormat 1995 Edition, AIA MasterSpec Section 10270

PART 1 – GENERAL

1.1 RELATED DOCUMENTS
A. Drawings and general provisions Contract, including General and Supplementary Conditions and Division 01 Specifications Sections, apply to this section.

1.2 SUMMARY
A. This section includes:
1. Access flooring panels and understructure
2. Floor panel coverings
3. Various accessories, including, but not limited to ramps, steps and electrical boxes.

B. Related Sections include the following:
1. Division 3 Section "Cast-In-Place Concrete" for concrete floor sealer.
Note: Concrete sealer shall be compatible with pedestal adhesive.
2. Division 26 Section "Grounding and Bonding for Electrical Systems" for connection to ground of access flooring understructure.
Note: The electrical contractor shall provide the necessary labor and materials to electrically connect the access flooring to the building ground to comply with this section.

C. Quantity Allowances: Provide the following as specified in Division 01 Section "Allowances."
1. Cutouts in floor panels
2. Service outlets

1.3 DEFINITION
A. Access flooring: A complete portable assembly of modular floor panels on an elevated support system (understructure), forming an accessible under-floor cavity to accommodate electrical and mechanical service.

B. ESD: Electrostatic Discharge. The transfer of electric charge between bodies at different potentials.

1.4 SYSTEM DESCRIPTION
A. Access Flooring System: Assemblies composed of modular floor panels on stringers that are bolted to adjustable height pedestals.

1.5 PERFORMANCE REQUIREMENTS
A. Structural Performance: Provide access flooring system capable of supporting the following loads and stresses within limits and under conditions indicated, as demonstrated by testing manufacturer's current standard products according to referenced procedures in latest revised edition of Ceilings and Interior Systems Construction Associates (CISCA) "Recommended Test Procedures for Access Floors" referenced elsewhere in this section as CISCA/AF or, if not specified, manufacturers standard method.

1. Concentrated Design Loads: Provide floor panels capable of withstanding a concentrated design load of 1,250 lbf. (5560 N) applied on a one square inch area at any location on the panel with a permanent set not to exceed 0.010 inch (0.25 mm) as defined by CISCA. The loading method used to determine the concentrated design load shall be in conformance with CISCA/AF, Section 1, "Concentrated Load".
2. Ultimate Load: Provide access flooring system capable of withstanding a minimum ultimate load of two times the Concentrated Design Load without failing, according to CISCA/AF, Section 2, "Ultimate Loading".
3. Rolling Loads: Provide access flooring system capable of withstanding rolling loads of the following magnitude, with a combination of local and overall deformation not to exceed 0.040 inch (1.02) mm

after exposure to rolling over CISCA/FA Path A or B, whichever path produced the greatest top surface deformation, according to CISCA/AF, Section 3, "Rolling Loads".
a. CISCA/AF Wheel A, Rolling Load: 1,000 lbf. (4,448 N) - 10 Passes
b. CISCA/AF Wheel B, Rolling Load: 800 lbf. (3,558 N) - 10,000 Passes

4. Stringer Load Testing: Provide stringers, without panels in place, capable of withstanding a concentrated load of 450 lbf (2002 N) at center span with a permanent set not to exceed 0.010 inch (0.25 mm), as determined per CISCA/AF Section 4, Stringer Load Testing".
5. Pedestal Axial Load Test: Provide pedestal assemblies, without panels in place, capable of withstanding a 6,000 lbf (44,448 N) axial load per pedestal, according to CISCA/AF Section 5, "Pedestal Axial Load Test", without any permanent deformation.
6. Pedestal Overturning Moment Test: Provide pedestal assemblies, without panels in place, capable of withstanding an overturning moment of 1,000 inch-pounds (113 NM) per pedestal, according to CISCA/AF Section 6, "Pedestal Overturning Moment Test", when glued to a clean, sound, uncoated concrete surface.
7. Drop Impact Load Test: Provide access flooring system capable of withstanding a drop impact load of 150 lb. (68 kg) dropped from a height of 36 inches (914 mm) without a failure of the system, according to CISCA/AF Section 8, "Drop Impact Load Test".
8. Panel Drop Test: Provide access flooring system with panels capable of meeting all structural performance requirements specified, after the panel is dropped from a height of 36 inches onto a concrete surface.
9. Panel Cutout: Panel with an 8.625" diameter interior cutout shall be capable of withstanding a minimum ultimate load of two times the concentrated load without failure without the use of additional supports, according to CISCA/AF, Section 2, "Ultimate Loading".

B. Seismic Performance: Provide access flooring system capable of withstanding the effects of seismic motions as calculated for the area of installation according to **<insert applicable building code requirement>**.

C. Flammability: System shall meet Class A Flame Spread requirements for flame spread and smoke development. Tests shall be performed in accordance with ASTM E84, Standard Test Method for Surface Burning Characteristics for Building Materials.

D. Combustibility: All components of the access floor system shall qualify as non-combustible by demonstrating compliance with requirements of ASTM E 136, Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 deg. C.

E. ESD-Control Properties:
1. Static-Dissipative Vinyl Floor Covering Properties:
a. Electrical Resistance: Test per ASTM F 150 – 98 with 100-V applied voltage.
1) Average no less than one megohm (1.0×10^6) and not greater than 1,000 megohms (1.0×10^9) when tested surface-to-ground.
2. Static-Conductive Vinyl Floor Covering Properties:
a. Electrical Resistance: Test per ASTM F 150 – 98 with 500-V applied voltage.
1) Average no less than 25,000 ohms (2.5×10^4) and not greater than 1.0 megohm (1.0×10^6) when tested surface-to-ground.

1.6 SUBMITTALS

A. Product Data: For each type of product indicated.
1. Shop Drawings: Include complete layout of access flooring system based of field verified dimensions.
a. Details and sections with descriptive notes indicating materials, finishes, fasteners, typical and special edge conditions, accessories and understructure.
b. Detail Cut Sheets for each type of product indicated, including accessories, to show the information necessary to make a full evaluation of the entire flooring system.
c. For installed products indicated to comply with seismic design loads, include calculated structural analysis data signed by the qualified engineer responsible for their preparation.
2. Samples for Initial Selection: For each type of flooring material indicated and exposed finish indicated, submit samples in the form of manufacturers color charts consisting of actual units or sections of units showing full range of colors, textures and patterns
3. Samples for Verification: Full size units of each type of floor covering and exposed finish indicated.

B Product Certificates: For each type of access flooring system indicated, to certify that the flooring system meets the requirements of these written specifications and signed by a qualified employee of the manufacturer.

C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency,

or performed by access flooring manufacturer and witnessed by a qualified testing agency, for each type of flooring material and exposed finish.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced installer who is approved by the access flooring manufacturer for installations of the type of access flooring indicated for this project.
B. Source Limitations: Obtain access flooring system through one source from a single manufacturer.
C. Regulatory Requirements: Fabricate and install access flooring system to comply with NFPA 75 requirements for raised flooring.
D. Provide floor panels that are clearly and permanently marked with manufacturer's name and panel type. Removable product identification stickers are not acceptable.
E. Mockups (if required): Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
   1. Build mockup of typical access flooring assembly as shown on Drawing. Size to be an area no less than [**three**] <**Insert number**> floor panels in length by [**three**] <**Insert number**> floor panels in width.
   2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
G. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."
   1. Review connection with mechanical and electrical systems.
   2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

1.8 DELIVERY, STORAGE AND HANDLING

A. Deliver access flooring components in original, unopened packages, clearly labeled with manufacturer's name and item description.
B. Handle and store packages containing access flooring in a manner which avoids overloading building structure.

1.9 PROJECT CONDITIONS

A. Environmental Limitations: Do not install access flooring until installation area is enclosed and has an ambient temperature of between 50 degrees Fahrenheit and 90 degrees Fahrenheit (10^0 C to 32^0 C) and a relative humidity of not less than 20 percent and not more than 80 percent.

1.10 COORDINATION

A. Coordinate locations of mechanical and electrical work in under-floor cavity to prevent interferences with access flooring pedestals
B. Pre-mark pedestal locations on a grid of 10' x 10' on sub-floor so that mechanical and electrical work can take place without interfering with pedestals.
C. Do not proceed with installation of access flooring until after substantial completion of other performable construction within affected spaces.

1.11 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed, are packaged with protective covering for storage and identified with labels clearly describing contents.
   1. Standard field panels – 2%
   2. Pedestals – 2%
   3. Stringers – 2%

PART 2 - PRODUCTS

2.1 FLOOR PANELS AND UNDERSTRUCTURE

A. Manufacturers: Subject to compliance with requirements, provide access flooring by ASM Modular Systems, Inc., consisting of FS200D access floor panels supported on a bolted stringer understructure.

B. Floor Panels General: Provide modular panels complying with the following requirements, that are

interchangeable with other standard field panels, and can be easily relocated by one person, using a lifting device, without disturbing adjacent panels or understructure. Installed panels with floor covering in place are to be free of exposed metal edges.

1. Nominal Panel Size: 24" x 24" (610 mm x 610 mm)
2. Fabrication Tolerances: Fabricate panels to the following tolerances with squareness tolerances expressed as the difference between diagonal measurements from corner to corner.
   a. Size and Squareness: Plus or minus 0.010" (0.12 mm) of required size, with squareness tolerance of plus or minus 0.015" (0.38 mm).
   b. Flatness: Plus or minus 0.035" (0.89 mm) measured on a diagonal on top of the panel. Plus or minus 0.025" (0.64 mm) measured along edges.
3. Panel Attachment to Understructure: By gravity.

C. Cementitious–Filled, Formed-Steel Panels: Fabricate panels with a die formed all-steel bottom pan fully welded to a die-cut full-hard steel top sheet to form a structural unitized construction. Completed panels to be filled with light-weight cementitious fill. Panels to be cleaned with 3-part wash and rinse system, prior to applying a protective electro-deposited epoxy paint finish.

1. Solid Panels: Flat, solid top surface
2. Perforated Panels: Perforated top surface with holes of number, spacing and size standard with manufacturer to produce a nominal open area of 25**% <or 32%>. [Provide mechanical dampers with each panel unit]**
   a. Quantity: **[2% of total panels] <Insert number>**
   b. Finish: Provide perforated panels with manufacturer's standard finish to match solid panels.
3. Grates: Grating ribs arranged in manufacturer's standard pattern to produce a nominal open area of 56%. **[Provide mechanical dampers with each panel unit]**
   a. Quantity: **[2% of total panels] <Insert number>**
   b. Finish: Provide grate panels with manufacturer's standard finish.

D. Pedestals: Provide manufactures standard pedestal assembly including base, column with provisions for height adjustments, and head (Cap), made of steel.

1. Base: Square base plate with not less than 16 square inches (103 sq. mm) of bearing area.
2. Column: Welded to base plate and of height required to bring finished floor to elevations indicated.
3. Provide vibration-proof leveling mechanism for making and holding fine adjustments in height over a range of not less than 2 inches (50 mm) and for locking at a selected height, so deliberate action is required to change height setting and prevents vibratory displacement.
4. Construct pedestal adjusting rod of minimum 3/4" (19 mm) diameter solid steel, and vertical column of minimum 7/8" (22 mm) square steel tubing. All steel components to have manufacturer's standard galvanized finish.
5. Head: Pedestal head to accept bolted stringers as specified below.

E. Stringer System: Manufacturer's modular steel stringer system designed and fabricated to interlock with pedestal head and to form a grid pattern with a stringer under each edge of each floor panel and a pedestal under each corner of each floor panel. Protect steel component against corrosion with manufacturer's standard galvanized finish.

1. Bolted Stringers: System of main and cross stringers of sizes shown below, attached to pedestal heads with 1/4-20 fasteners accessible from top of stinger.
   a. (2' x 2' or 4' x 2' or 4' x 4' basketweave) **<Insert required system>**
2. Provide stringers that support each edge of each panel where required to meet design load criteria.

2.2 FLOOR PANEL COVERINGS

A. General: Provide factory-applied floor coverings of type indicated that are laminated by access flooring manufacturer to tops of floor panels **[including perforated panels].**

B. Colors, Textures and Patterns: [**As indicated by manufacturer's designations**] [**As selected by Architect from manufacturer's full range**] <**Insert colors, textures, and patterns**>

C. Provide floor covering materials in colors and patterns as indicated below:
(choose from the following)

1. Static-Dissipative Solid Vinyl Tile fabricated in one piece to cover each panel face.
2. Static-Conductive Solid Vinyl Tile fabricated in one piece to cover each panel face.

D. Edge Condition of Solid Vinyl Tile:
(choose from the following)

1. Manufacturer's standard applied edge trim of size and profile that fits floor covering selected.

2. Monolithic edge with minimum chamfer to prevent chipping and without applied trim

2.3 ACCESSORIES

A. Service Cutouts: Fabricate cutouts in floor panels to accommodate cable penetrations and service outlets. Comply with requirements indicated for size, shape, number, and location. Provide reinforcement or additional support, if needed, to make panels with cutouts comply with standard performance requirements.
   1. Fit cutouts with manufacturer's standard grommets in size indicated or, where size of cutouts exceeds maximum grommet size available, trim edge of cutouts with manufacture's standard plastic molding having tapered top flange. Furnish removable covers for grommets.
   2. Provide foam-rubber pads for sealing annular space formed in cutouts by cables. Trim edge of cutout with molding having a double-flanged internal edge for containing and supporting foam pads.

B. **<Electrical Continuity Connector: For factory applied Conductive High Pressure Laminate (HPL) panels. Provide Electrical Continuity Connector, one per panel to meet surface to ground resistance requirements.>**

C. Vertical Closures (Fascia): Where under floor cavity is not enclosed by abutting walls or other construction, provide manufacturer's standard metal closure plates with manufacturer's standard finish.

D. Ramps: Manufacturer's standard ramp construction of width and slope indicated, but not steeper than 1 : 12, with non-slip raised-disc runner or vinyl floor covering, and of same materials, performance, and construction requirements as the access flooring.

E. Steps: Provide steps of size and arrangement indicated with floor covering to match access flooring. Apply non-slip aluminum nosing to treads, unless otherwise indicated.

F. Panel Lifting Device: Manufacture's standard portable lifting device of type and number required for lifting panels.
   1. Provide the following quantity: **[one lifting device per room] <Insert quantity>**

G. Perforated Panels: Provide perforated panels as indicated in previous section.
   1. Provide the following quantity: **[2% of total panels] <Insert quantity>**

H. Grate Panels: Provide grate panels as indicated in previous section.
   1. Provide the following quantity: **[2% of total panels] <Insert quantity>**

PART 3 - EXECUTION

3.1 PREPARATION

A. Examine sub-floor for any problems that would prevent a satisfactory installation of access floor, such as moisture an unevenness of top surface. Do not proceed with installation until sub-floor is clean, dry and level as completed by other trades.

B. Verify field dimensions to contract drawings for size of area of installation, height and level of recessed slabs, door openings, ledges, etc.

C. Floor Sealers: Verify that any concrete sealer that has been used is compatible with pedestal adhesive.

D. Access to Installation Area: General Contractor shall provide clear access to installation area throughout entire duration of installation of access floor that is free of construction debris and other trades.

E. Storage of Materials: Area to receive and store access floor materials shall be enclosed and dry. Storage area shall be maintained at a temperature of not less than 35^0 F and not more than 95^0 F (2^0 C to 35^0 C), with a relative humidity level between 20% min. to 80% max.

F. Area of Installation: Shall be maintained throughout entire duration of installation of access floor at a temperature of 50^0 F min. to 90^0 F max. (10^0 C to 32^0 C) and at 20% min. to 80 % max. relative humidity.

Prior to installation, all floor panels shall be stored for at least 24 hours in a dry enclosed area at no less than 50^0 F and no more than 90^0 F (10^0 C to 32^0 C).

3.2 INSTALLATION

A. Install access floor system and accessories under supervision of the access flooring manufactures authorized representative to ensure rigid, firm installation that complies with performance requirements and is free of vibration, rocking, rattles and squeaks.

B. Layout floor panel installation to keep the number of cut panels at the floor perimeter to a minimum.

C. Set pedestal in adhesive as recommended by the access flooring manufacturer to provide full bearing of the pedestal base on the sub floor.
   1. Pedestal locations shall be established from approved shop drawings to allow mechanical and electrical work to be installed without interfering with pedestal installation.
   2. Pedestals shall be attached to sub-floor using manufacturer's approved method.
D. Secure grid member to pedestal heads in accordance with access floor manufacturer's instructions.
E. Install floor panels securely in place and properly seated with panel edges flush. Do not force panels into place.
F. Scribe panels at perimeter to provide a close fit with adjoining construction with no voids greater than 1/8" (3 mm) where panels abut vertical surfaces.
G. Install accessories according Manufacturer's instructions.
H. Clean up dust, dirt and construction debris caused by floor installation, and vacuum the sub-floor area, as installation of floor panel proceeds. Extend cleaning under installed panels as far as possible.
I. Level installed access floor to within 0.10" (2.5 mm) over the entire access flooring area and within 0.060" (1.5 mm) of true level in any 10 ft. (3 M) distance.

3.3 ADJUSTING, CLEANING AND PROTECTION

A. During installation, all traffic on access floor shall be directed by access floor installer.
   1. No traffic, other than access floor installer, shall be allowed on the floor area for 24 hours after installation to allow the pedestal adhesive to set.
   2. No access floor panels shall be removed by other trades for 72 hours after installation.
B. After completing installation, vacuum clean access flooring.
C. Replace any flooring panels that are stained, scratched, or otherwise damaged or that do not comply with specified requirements.
D. General contractor and/or owner shall provide and maintain suitable protection to prevent damage to completed access floor throughout entire duration of installation.

END OF SECTION 096900

All specifications are subject to change without notice or obligation.