

## **FS400 (2,000 lb) Specifications For HPL 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 apply to this section.

#### **1.2 SUMMARY**

- A. This section includes:
  - 1. Access flooring panels and understructure
  - 2. Floor panel coverings
  - 3. Various accessories.

#### **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 Loads: Provide floor panels capable of withstanding a concentrated design load of 2,000 lbs with a top-surface deflection under load not to exceed an average of 0.100 inch and a permanent set not to exceed 0.010 inch according to CISCA/AF Section 1, "Concentrated Loads".
  - 2. Ultimate Load: Provide access flooring system capable of withstanding a minimum ultimate load of three (3) times the concentrated 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 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 1 Rolling Load: 1,500 lbs
    - b. CISCA/AF Wheel 2 Rolling Load: 1,200 lbs
  - 4. Stringer Load Testing: Provide stringers, without panels in place, capable of withstanding a concentrated load of 550 lbs at center span with a permanent set not to exceed 0.010 inch, 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 9,000 lbs 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 per pedestal, according to CISCA/AF Section 6, "Pedestal Overturning Moment Test", when glued to a clean, sound, uncoated concrete

surface.

7. Uniform Load Test: Provide access flooring system capable of withstanding a uniform load of 600 lbs/ft<sup>2</sup> placed over one panel with a permanent set not to exceed 0.010 inch after the load is removed, according to CISCA/AF Section 7, "Uniform Load Test"

Note: The uniform load rating of an access floor panel shall not be confused with the "uniform live load" as specified for use in seismic calculations for seismic zone applications.

8. Drop Impact Load Test: Provide access flooring system capable of withstanding a drop impact load of 200 lbs dropped from a height of 36 inches without a failure of the system, according to CISCA/AF Section 8, "Drop Impact Load Test".

9. 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.

B. Seismic Performance: Provide access flooring system capable of withstanding the effects of seismic motions as calculated for the area.

C. ESD-Control Properties:

1. Provide access flooring system with Panel-to-Understructure resistance of not more than 10 ohms as measured without floor coverings, according to test method as specified in ASTM F 150 with 500-V applied voltage with one electrode on the top face of the panel and one electrode attached to the tube of the pedestal.
  - a. Panel must have a permanently attached positive grounding device (PGD) to assure electrical continuity between panel and understructure to maintain compliance to required maximum resistance of 10 ohms.
2. Static-Resistant High Pressure Laminate (HPL) Floor Covering Properties:
  - a. Electrical Resistance: Test per ASTM F 150 with 500-V applied voltage.
    - 1) Average no less than one megohm ( $1.0 \times 10^6$ ) and not greater than 20,000 megohms ( $2.0 \times 10^{10}$ ) when tested surface-to-ground.

## 1.6 SUBMITTALS

- A. 1. Product Data: For each type of product indicated.
    - 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.
  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 marked with manufacturer's name and panel type.

## 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 85 degrees Fahrenheit (10<sup>0</sup> C to 29<sup>0</sup> 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. 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 – As indicated

## 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 FS400 access floor panels supported on a bolted stringer understructure as distributed by Computer Floors, Inc (973-340-3666).
- 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"
  - 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" of required size, with squareness tolerance of plus or minus 0.015" (0.38 mm).
    - b. Flatness: Plus or minus 0.020", measured on a diagonal on top of the panel.
  - 3. Panel Attachment to Understructure: By gravity.
- C. Cementitious-Filled, Formed-Steel Panels: Fabricate panels with a die formed all-steel bottom pan consisting of a minimum 64 embossments, 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 powder-coat epoxy finish.
  - 1. Solid Panels: Flat, solid top surface
  - 2. Grates: Grating ribs arranged in manufacturer's standard pattern to produce a nominal open area of 56%. **[Optional: Provide mechanical dampers with each panel unit]**
    - a. Concentrated Load Rating: 1,500 lbf
    - b. Uniform Load Rating: 500 psf
    - c. Quantity: As indicated
    - d. Construction: Die cast aluminum construction with 100% recycled content
    - e. Finish: Provide grate panels with manufacturer's standard epoxy powder coat finish – color "Grey Hammertone". Mill finish aluminum is not acceptable.
- 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 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" diameter solid steel, and vertical column of minimum 7/8" 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 stringer.
    - a. 4' x 4' basketweave
  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.
- B. Colors, Textures and Patterns: As selected by Architect from manufacturer's full range.
- C. Provide floor covering materials in colors and patterns as indicated below:
  1. Standard Plastic Laminate (HPL): NEMA LD 3, High wear type, 1/16"; fabricated in one piece to cover each panel face with integrated trim serving as edging.
- D. Edge Condition of HPL: Provide HPL with "Smart-Trim" integrated as an internal element of the HPL material with no machined grooves at the edge of the HPL to allow for the collection of dirt and debris.

## 2.3 ACCESSORIES

- A. 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.
- B. Ramps: Manufacturer's standard ramp construction of width and slope indicated, but not steeper than 1:12, with black non-slip raised-disc rubber floor covering, and of same materials, performance, and construction requirements as the access flooring.
- C. 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.
- D. Panel Lifting Device: Manufacturer's standard portable lifting device of type and number required for lifting panels.
  1. Provide the following quantity: 2
- D. Perforated Panels: Provide perforated panels as indicated in previous section.
  1. Provide the following quantity: As indicated
- E. Grate Panels: Provide grate panels as indicated in previous section.
  1. Provide the following quantity: As indicated

## 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. 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.
- D. 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 40<sup>0</sup> F and not more than 95<sup>0</sup> F (4<sup>0</sup> C to 35<sup>0</sup> C), with a relative humidity level between 20% min. to 80% max.
- E. Area Of Installation: Shall be maintained throughout entire duration of installation of access floor at a temperature of 50<sup>0</sup> F min. to 85<sup>0</sup> F max. (10<sup>0</sup> C to 29<sup>0</sup> 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 40<sup>0</sup> F and no more than 95<sup>0</sup> F (4<sup>0</sup> C to 35<sup>0</sup> 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 computer flooring manufacturer to provide full bearing of the pedestal base on the sub floor.
  - 1. Pedestals shall be attached to sub-floor using pedestal adhesive.
- 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" where panels abut vertical surfaces.
- G. Install accessories according Manufacturer's instructions.
- H. Clean up dust, dirt and construction debris caused by floor installation.
- I. Level installed access floor to within 0.10" over the entire access flooring area and within 0.060" of true level in any 10 ft. 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. Replace any flooring panels that are stained, scratched, or otherwise damaged or that do not comply with specified requirements.
- C. 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.*