



## **All Steel 1250 Access Floor Panel With Forbo Colorex ESD Vinyl Bolted Stringer Understructure System**

### **SECTION 09 69 00 ACCESS FLOORING**

#### **PART 1 - GENERAL**

##### **1.1 Section Includes**

- A. Work of this section includes, but is not limited to: access floor panels, floor coverings, understructure and various electrical, data and communication accessories.

##### **1.2 Related Sections**

- A. Concrete sealer shall be compatible with pedestal adhesive, see Division 3.
- B. See Division 26 Section "Grounding and Bonding for Electrical Systems" for connection to ground of access flooring understructure. Note: The electrical engineer or contractor shall determine requirements for grounding and the electrical contractor shall provide the necessary labor and materials to electrically connect the access flooring to the building ground if it is required.

##### **1.3 Environmental Conditions for Storage and Installation**

- A. Area to receive and store access floor materials shall be enclosed and maintained at ambient temperatures between 35° to 95° F and a minimum relative humidity of 20%. All floor panels shall be stored at ambient temperature between 50° to 90° F for at least 24 hours before installation begins. All areas of installation shall be enclosed and maintained at ambient temperature between 50° to 90° F and at relative humidity level between 20% to 80%, and shall remain within these environmental limits throughout occupancy.

##### **1.4 References**

- A. CISCA (Ceilings & Interior Systems Construction Association) - "Recommended Test Procedures for Access Floors" shall be used as a guideline when presenting load performance product information.

##### **1.5 Performance Certification**

- A. Product tests shall be witnessed and certified by independent engineering and testing laboratory based in the U.S. with a minimum of five years experience testing access floor components in accordance CISCA "Recommended Test Procedures for Access Floors".

##### **1.6 Country-of-Origin and Product Marking**





- A. Access floor materials shall comply with the provisions outlined in FAR Subpart 25.2 – Buy American Act – Construction Materials.
- B. Floor panels shall be permanently marked with manufacturer’s name, product identification, manufacturing date and country-of-origin. Removable Product ID stickers are not acceptable.

1.7 **Performance Requirements**

- A. **Design Load (Allowable Load):** A bare panel supported on actual understructure system shall be capable of supporting a load point of 1250 lbs. applied on a one square inch area at any location on the panel without experiencing permanent set in excess of 0.010 inches as defined by CISCA. The loading method used to determine design (allowable) load shall be in conformance with CISCA Concentrated Load test method but with panel tested on actual understructure instead of steel blocks.
- B. **Safety Factor:** A bare panel supported on actual understructure system shall withstand a point load of no less than (2) two times its design load rating on a one square inch area anywhere on the panel without failure when tested in accordance with CISCA A/F, Section 2, “Ultimate Loading”. Failure is defined as the point at which the system will no longer accept the load.
- C. **Ultimate Load:** A bare panel supported on actual understructure system shall be capable of supporting a point load of at least 2500 lbs. applied through a load indenter on a one square inch area at any location on the panel without failure (i.e. minimum safety factor if 2) when tested in accordance with CISCA A/F, Section 2, “Ultimate Loading”.
- D. **Rolling Load:** A bare panel supported on actual understructure system shall be able to withstand the following rolling loads at any location on the panel without developing a local and overall surface deformation greater than 0.040 inches when tested in accordance with CISCA A/F Section 3, “Rolling Loads”. Note: wheel 1 and wheel 2 tests shall be performed on two separate panels.  

CISCA Wheel 1: Size: 3” dia x 1 13/16” wide	Load: 500 lbs.	Passes: 10
CISCA Wheel 2: Size: 6” dia x 2” wide	Load: 500 lbs.	Passes: 10,000
- E. **Impact Load:** A bare panel and supporting understructure (the system) shall be capable of supporting an impact load of 150 lbs. dropped from a height of 36 inches onto a one square inch area (using a round or square indenter) at any location on the panel when tested in accordance with CISCA A/F, Section 8, “Drop Impact Load Test”.
- F. **Flammability:** Panel (excluding laminate) shall meet *Class A* Flame spread requirements for flame spread and smoke development. Tests shall be performed in accordance with ASTM-E84-1998, Standard Test Method for Surface Burning Characteristics for Building Materials.





- G. **Recycled Content:** Panel (excluding laminate) and understructure system shall be required to have a minimum post-consumer recycled content of 18% and a minimum total recycled content of 49%.
- H. **Axial Load:** Pedestal support assembly shall provide a 6000 lb. axial load without permanent deformation when tested in accordance with CISCA A/F, Section 5, "Pedestal Axial Load Test".
- I. **Overturing Moment:** Pedestal support assembly shall provide an average overturning moment of 1000 in-lbs. when glued to a clean, sound, uncoated concrete surface when tested in accordance with CISCA A/F, Section 6, "Pedestal Overturing Moment Test". ICBO number for the specific system or structural calculations shall be required attesting to the lateral stability of the system under seismic conditions.
- J. **Stringer Concentrated Load:** Stringer shall be capable of withstanding a concentrated load of 450 lbs. placed in its midspan on a one square inch area using a round or square indenter without exceeding a permanent set of 0.010" after the load is removed when tested in accordance with CISCA A/F, Section 4, "Stringer Load Testing".

#### 1.8 **Design Requirements:**

- A. Access floor system, where indicated on the design documents, shall consist of modular and removable welded steel panels supported on all four edges by structural steel members which are designed to bolt onto adjustable height pedestal assemblies forming a modular grid pattern.
- B. Panel shall be easily removed by one person with a suction cup lifting device and shall be interchangeable except where cut for special conditions.
- C. Quantities, finished floor heights (FFH) and location of accessories shall be as specified on the contract drawings.

#### 1.9 **Submittals for Review**

- A. Detail sheets, for each proposed product type, which provide the necessary information to describe the product and its performance.
- B. Test reports, by an independent testing laboratory, certifying that component parts perform as specified.

#### 1.10 **Submittals for Information**

- A. Manufacturer's installation instructions and guidelines.
- B. Manufacturer's Owner Manual outlining recommended care and maintenance procedures.

### **PART 2 - PRODUCTS**

#### 2.1 **Manufacturers**





- A. Access floor system shall be as manufactured by Tate Access Floors, Inc. and shall consist of All Steel 1250 access floor panels supported by a bolted stringer understructure system.
- B. Alternative products shall meet or exceed all requirements as indicated herein and must receive prior written approval by the architect or designer.
- C. Access floor manufacture shall be ISO9001: 2015 certified demonstrating it has a robust and well documented quality management system with continuous improvement goals and strategies.
- D. Access floor manufacturer's facilities shall be ISO14001:2015 certified demonstrating that they maintain an environmental management system.
- E. Access floor manufacturer's facilities shall be OHSAS 18001:2018 certified demonstrating that they maintain an Occupational Health and Safety Management system.

## 2.2 Support Components

### **Pedestals:**

- A. Pedestal assemblies shall be corrosive resistant, all steel welded construction, and shall provide an adjustment range of +/- 1" for finished floor heights 6" or greater. Zinc electroplating shall be prohibited on all pedestal components, including head plate, threaded rod, adjustment nut, pedestal tube, base plate, and all fasteners.
- B. Pedestal assemblies shall provide a means of leveling and locking the assembly at a selected height, which requires deliberate action to change height setting and prevents vibration displacement.
- C. Hot dip galvanized steel pedestal head shall be welded to a threaded rod that includes a specially designed adjusting nut. The nut shall provide location lugs to engage the pedestal base assembly, such that deliberate action is required to change the height setting.
- D. Threaded rod shall provide a specially designed anti-rotation device, such that when the head assembly is engaged in the base assembly, the head cannot freely rotate (for FFH of 7" or greater and Types 1A and 2B square tube bases only). Note: This prevents the assembly from inadvertently losing its leveling adjustment when panels are removed from the installation during use.
- E. 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.

### **Stringer:**

- A. Stringers shall support each edge of panel.





- B. [Steel stringer shall have conductive galvanized coating. Zinc electroplating shall be prohibited on stringers and stringer fasteners.] [Steel box stringer shall have conductive hot dipped galvanized coating and factory applied gasket. Zinc electroplating shall be prohibited on stringers and stringer fasteners.]
- C. Stringers shall be individually and rigidly fastened to the pedestal with one machine screw for each foot of stringer length. Bolts shall provide positive electrical contact between the stringers and pedestals. Connections depending on gravity or spring action are unacceptable.
- D. Stringer grid shall be 4' stringers in a basketweave configuration ensuring maximum lateral stability in all directions.

## 2.3 Panel Components

### Floor Panels:

- A. Panels shall consist of a top steel sheet welded to a formed steel bottom pan. Mechanical or adhesive methods for attachment of the steel top and bottom sheets are unacceptable.
- B. Floor panels shall be protected from corrosion by electro-deposited epoxy paint. The use of zinc electroplating shall be prohibited.
- C. Perf1250 25%: Perforated steel airflow panels with design loads up to 1250 lbs. shall be interchangeable with standard field panels and shall have 25% open surface area with the following air distribution capability:
  - 1. Powder coated panel without damper: 750 cfm at 0.1-inch of H<sub>2</sub>O (static pressure).
  - 2. Laminated panel without damper: 700 cfm at 0.1-inch of H<sub>2</sub>O (static pressure).
- D. DirectPerf 1250 32%: Perforated directional steel airflow panels with design loads up to 1250 lbs. shall be interchangeable with standard field panels and shall have 32% open area with the following air distribution capability *without* a damper: 1285 CFM at 0.1-inch of H<sub>2</sub>O (static pressure). The panel shall be equipped with directional vanes for angular air flow across the entire face of a typical 78" high IT rack, providing a rack Total Air Capture (TAC) index of 88%.
- E. GrateAire: Die cast aluminum grate panels designed for static and rolling loads shall be interchangeable with standard field panels. Grate panels shall have 56% open area with the following air distribution capability without a damper: 2340 cfm at 0.1-inch of H<sub>2</sub>O (static pressure). Grate panels shall have the following load bearing capacities:
  - 1. Design Load: Panel supported on actual understructure shall be capable of supporting a safe working or design load of 1000 lbs. placed on a one square inch area, using a round or square indenter, at any location on the panel without yielding.
  - 2. Safety Factor: (2) Times Design Load





3. Rolling Load: Grate panel and supporting understructure shall be able to withstand the following rolling loads at any location on the panel without developing a local and overall surface deformation greater than 0.040 inches. Note: wheel 1 and wheel 2 tests shall be performed on two separate panels.

Wheel 1:        Size: 3” dia x 1 13/16” wide    Load: 1000 lbs.        Passes: 10

Wheel 2:        Size: 6” dia x 2” wide                    Load: 800 lbs.        Passes: 10,000

4. Impact load: 100 lbs.

- F. DirectAire directional airflow panel: Welded steel airflow panel designed for static and rolling loads shall be interchangeable with standard field panels. Directional airflow panels shall have 68% open area with the following air distribution capability without a damper: 2850 CFM at 0.1-inch of H<sub>2</sub>O (static pressure). The panel shall be equipped with directional vanes equipped with pressure equalizing perforation for even flow and also produces an angular air flow across the entire face of a typical 78” high IT rack, providing a rack Total Air Capture (TAC) index of 93%. Directional airflow panels shall have the following load bearing capacities, and shall be installed with all four perimeter edges fully supported on a 4’ steel roll formed stringer:

1. Design Load: Directional airflow panel supported on actual understructure shall be capable of supporting a safe working or design load of 2500 lbs. placed on a one square inch area, using a round or square indenter, at any location on the panel without yielding.

2. Safety Factor: 1.6 Times Design Load (4000 lbs.)

3. Rolling Load: Directional airflow panel supported on actual understructure shall be capable of withstanding the following rolling loads at any location on the panel without developing a local and overall surface deformation greater than 0.040 inches. Note: wheel 1 and wheel 2 tests shall be performed on two separate panels.

Wheel 1: 3” dia x 1 13/16” wide    Load: 1500 lbs.        Passes: 10

Wheel 2: 6” dia x 2” wide                    Load: 1500 lbs.        Passes: 10,000

4. Impact Load: 200 lbs.

- G. DirectAire® Al 24" Panel: Aluminum directional grate airflow panel designed for static and rolling loads shall be interchangeable with standard field panels. Panel shall have 60% open area with the following air distribution capability without a damper: 2775 CFM at 0.1-inch of H<sub>2</sub>O (static pressure). Panel shall have a directional design where its airflow shall flow in an angular direction from the panel’s surface. The panel shall achieve its angular flow via directional vanes designed for even flow across the entire face of a typical 78” high IT rack, providing a Capture Index of 93%. Directional airflow panels shall have the following load bearing capacities, and shall be installed with all four perimeter edges fully supported on a 4’ steel roll formed stringer:





1. Design Load: Directional airflow panel supported on actual understructure shall be capable of supporting a safe working or design load of 1500 lbs. placed on a one square inch area, using a round or square indenter, at any location on the panel without yielding.
2. Safety Factor: 1.66 Times Design Load (2500 lbs.)
3. Rolling Load: Directional airflow panel supported on actual understructure shall be capable of withstanding the following rolling loads at any location on the panel without developing a local and overall surface deformation greater than 0.040 inches. Note: wheel 1 and wheel 2 tests shall be performed on two separate panels.  

Wheel 1: 3" dia x 1 13/16" wide	Load: 1250 lbs.	Passes: 10
Wheel 2: 6" dia x 2" wide	Load: 1000 lbs.	Passes: 10,000
4. Impact Load: 150 lbs.

## 2.4 Accessories

- A. Air sealing grommet shall be installed in the interior or on the edge of a factory placed cutout located in the one of the two following position in the panel.

### OPTION A (Interior Cutout)

1. 4.075" from the left edge of the panel
2. 7.375" from the top and bottom edge of the panel
  - a) The cutout in the panel shall measure 6.75"x9.25" and shall be a punched penetration, saw cutting is not acceptable
  - b) The cutout location shall allow the air sealing grommet to be located in such a way that regardless of rack position or overall dimensions, that the unit will be position beneath the rack allowing for cable penetrations to enter the rack footprint.

### OPTION B (Perimeter Edge Cutout)

1. The flange shall align with the left edge of the panel
  3. 7.75" from the top edge and bottom edge of the panel
    - a) The cutout in the panel shall measure 7.875"x9.25" and shall be a punched penetration, saw cutting is not acceptable.
- B. Provide manufacturer's standard steps, ramps, fascia plate, perimeter support, and grommets where indicated on the contract drawings.
- C. Provide \_\_\_\_\_ spare floor panels and \_\_\_\_\_ square feet of understructure systems for each type used in the project for maintenance stock. Deliver to project in manufacturer's standard packaging clearly marked with the contents.
- D. Provide \_\_\_\_\_ panel lifting devices.



- E. When applicable provide manufacturer's standard underfloor air systems components (including, grilles, diffusers and perforated floor panels) where indicated on the contract drawings.

## 2.5 Finishes

- A. Finish the surface of floor panels with floor covering material as indicated on the contract drawings. Where floor coverings are by the access floor manufacturer, the type, color and pattern shall be selected from manufacturer's standard. All areas to be furnished with laminated floor panels must be maintained at ambient temperature between 50° to 90° F and at humidity level between 20% to 80% relative and shall remain within these ranges through installation and occupancy.
- B. Forbo Colorex .080" ESD vinyl tile that meets or exceeds all technical requirements as set forth in ASTM F 1700, Standard Specification for Solid Vinyl Floor Tile. Class 1, Type A
- C. ESD vinyl floor coverings shall have a monolithic edge condition. Separate edge trim pieces are not acceptable.
- D. Surface to Ground Resistance of Conductive Laminate Covering: Not less than 25,000 ohms ( $2.5 \times 10^4$ ), nor more than 1,000,000 ohms ( $1.0 \times 10^6$ ), as determined by testing in accordance to ASTM F 150, NFPA 99, and/or EOS/ESD S7.1
- E. Surface to Ground Resistance of Static Dissipative Laminate Covering: 1,000,000 ohms ( $1 \times 10^6$ ) to 100,000,000 ohms ( $1.0 \times 10^8$ ), as determined by testing in accordance to ASTM F 150, NFPA 99, and/or EOS/ESD S7.1 .

## 2.6 Fabrication Tolerances

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

## PART 3 - EXECUTION

### 3.1 Preparation

- A. Examine structural subfloor for unevenness, irregularities and dampness that would affect the quality and execution of the work. Do not proceed with installation until structural floor surfaces are level, clean, and dry as completed by others.
- B. Concrete sealers, if used, shall be identified and proven to be compatible with pedestal adhesive. Verify that adhesive achieves bond to slab before commencing work.
- C. Verify dimensions on contract drawings, including level of interfaces including abutting floor, ledges and doorsills.





- D. The General Contractor shall provide clear access, dry subfloor area free of construction debris and other trades throughout installation of access floor system.
- E. Area to receive and store access floor materials shall be enclosed and maintained at ambient temperatures between 35° to 95° F and a minimum relative humidity of 20%. 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 throughout occupancy.

### **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 installation.
- B. Installation of access floor shall be coordinated with other trades to maintain the integrity of the installed system. All traffic on access floor shall be controlled by access floor installer. No traffic but that of access floor installers shall be permitted on any floor area for 24 hours to allow the pedestal adhesive to set. Access floor panels shall not be removed by other trades for 72 hours after their installation.
- C. Floor system and accessories shall be installed under the supervision of the manufacturer's authorized representative and according to manufacturer's recommendations.
- 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. Access floor installer shall keep the subfloor broom clean as installation progresses.
- F. Partially complete floors shall be braced against shifting to maintain the integrity of the installed system where required.
- G. Additional pedestals as needed shall support panels where floor is disrupted by columns, walls, and cutouts.
- H. Understructure shall be aligned such that all uncut panels are interchangeable and fit snugly but do not bind when placed in alternate positions.
- I. Finished floor shall be level, not varying more than 0.062" in 10 feet or 0.125" overall.
- J. Inspect system prior to application of floor covering and replace any floor panels that are cracked, broken and structurally damaged and do not comply with specified requirements.
- K. Acceptance: General contractor shall accept floor in whole or in part prior to allowing use by other trades.
- L. All cable and wire openings shall be sealed with manufacturer's removable cable cutout seal or grommets.





### End ###



Rev: 09/22/25

ECN: 16502

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