

Tate Access Floors, Inc.
All Steel 1250 Access Floor Panel
Bolted Stringer Understructure System

Notice:

If you are using MasterFormat 2004 Edition, the proper section number to use is “Section 09 69 00, Access Flooring”, which appears below.

If you are continuing to use MasterFormat 1995 Edition, the proper section number to use is “Section 10270, Access Flooring”. Please change the section number below if required.

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 temperature between 35° to 95° F and relative humidity levels between 20% to 80% relative. 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):** Panel supported on actual understructure system shall be capable of supporting a load point of 1250 lbs. applied on one square inch area at any location on the panel without experiencing permanent set 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:** 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:** 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 of 2) when tested in accordance with CISCA A/F, Section 2, "Ultimate Loading".
- D. **Rolling Load:** 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:** 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. **Panel Drop Test:** Panel shall be capable of being dropped face up onto to a concrete slab from a height of 36", after which it shall continue to meet all load performance requirements as previously defined.
- G. **Panel Cutout:** Panel with an 8" diameter interior cutout supported on actual understructure shall be capable of maintaining its design load strength with a minimum safety factor of 2 anywhere on the panel without the use of additional supports.
- H. **Flammability:** System 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.
- I. **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.
- J. **Recycled Content:** Panel and understructure system shall be required to have a minimum post-consumer recycled content of 18% and a minimum total recycled content of 49%.
- K. **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".

- L. **Overturning 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 Overturning 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.
- M. **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 ____ 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: 2000 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 ISO14001:2004 certified demonstrating that they maintain an environmental management system.
- E. Access floor manufacturer's facilities shall be OHSAS 18001:2007 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, 2B and 3B 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. Stringer shall have conductive galvanized coating. 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. (Also available in 2' x 4' and 2' x 2' grid patterns).

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. Perforated Airflow Panels: Perforated steel airflow panels designed for static loads of [800] [1000] [1250] lbs. shall be interchangeable with standard field panels and shall have 25% open surface area with the following air distribution capability:
 - 1. Panel without damper: 746 cfm at 0.1-inch of H₂O (static pressure).
 - 2. Panel with damper at 100% open position: 515 cfm at 0.1-inch of H₂O (static pressure).
- D. Perforated Directional Airflow Panels: Perforated steel airflow panels designed for static loads of [800] [1000] [1250] lbs. shall be interchangeable with standard field panels and shall have 25% open surface area with the following air distribution capability without a damper: 765 cfm at 0.1-inch of H₂O (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 93%. Perforated 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 [800] [1000] [1250] 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. Impact load: 150 lbs.

E. GrateAire Panels: 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: 2096 cfm at 0.1-inch of H₂O (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. Directional Airflow Panels: Welded steel airflow panel design 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: 2594 CFM at 0.1-inch of H₂O (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 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: (2) two Times Design Load
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: 2000 lbs. Passes: 10

Wheel 2: 10" dia x 4" wide Load: 2000 lbs. Passes: 10,000

4. Impact Load: 200 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.
 - 1. OPTION A (Interior Cutout)
 - a) 4.075" from the left edge of the panel
 - b) 7.375" from the top and bottom edge of the panel
 - c) The cutout in the panel shall measure 6.75"x9.25" and shall be a punched penetration, saw cutting is not acceptable
 - d) 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.
 - 2. OPTION B (Perimeter Edge Cutout)
 - a) The flange shall align with the left edge of the panel
 - b) 7.75" from the top edge and bottom edge of the panel
 - c) 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, 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 relative humidity level between 20% to 80% and shall remain within these ranges through installation and occupancy.
- B. High-pressure laminate floor covering shall meet requirements of NEMA LD3, and shall conform to one of the following grades: Grade HDH (1/8"/ 3.0mm) or Grade HDM (1/16"/ 1.5mm).
- C. High-pressure laminate floor coverings shall have an edge condition that is integral to the tile. Separate edge trim pieces are not acceptable.
- D. All other tile coverings that require trim edge shall be applied to the panel's top surface and shall not wrap around the panel's edge.
- E. Surface to Ground Resistance of Standard High Pressure Anti-Static Laminate Covering: Average test values shall be within the range of 1,000,000 ohms (1.0×10^6) to 20,000 megaohms (2.0×10^{10} ohms), as determined by testing in accordance with the test method for conductive flooring specified in Chapter 3 of NFPA 99, but modified to place one electrode on

the floor surface and to attach one electrode to the understructure. Resistance shall be tested at 500 volts.

- F. Surface to Ground Resistance of Conductive Laminate Covering: Not less than 25,000 ohms (2.5×10^4), nor more than 1,000,000 ohms (1.0×10^6), as determined by testing in accordance with the test method for conductive flooring specified in Chapter 3 of NFPA 99, but modified to place one electrode on the floor surface and to attach one electrode to the understructure. Resistance shall be tested at 500 volts.

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.
- A. Area to receive and store access floor materials shall be enclosed and maintained at 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 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.

End