

Tate Access Floors, Inc.
FF 3000 Heavy Duty Aluminum Panel and Understructure

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. Conductive raised-access flooring and accessories for a Class ____ Clean Room.

1.2 References

- A. **Applicable Standards:** Refer to the following applicable standards:

1. NFPA 99 – National Fire Protection Association Health Care Facilities; Electrical Resistance Criteria.
2. Federal Standard Test Method 101C Method 4046.
3. ASTM E595-93 – Total Mass Loss and Collected Volatile Condensable Materials From Outgassing in a Vacuum Environment.
4. ANSI/ESD-S7.1-1994 – ESD Association Standard for Protection of Electrostatic Discharge Susceptible Items – Resistive Characterization of Materials Floor Materials
5. AATCC-134 – Electrostatic Propensity
6. ASTM D3359 – Method for Measuring Adhesion by Tape Test
7. ASTM D3363 – Test Method for Film Hardness by Pencil Test
8. UNS A03800 – Unified Numbering System Aluminum Alloy Specification
9. ASTM SC84B (formally ASTM B85) – Aluminum Alloy Specification
10. UNS A03830 - Unified Numbering System Aluminum Alloy Specification
11. ASTM SC102 - (formally ASTM B85) – Aluminum Alloy Specification

1.3 Definitions

- A. **Clean Room Access Flooring:** The die-cast aluminum access floor system shall consist of modular removable panels supported by adjustable pedestal assemblies with integral locator tabs. The installed system to provide a level, rigid floor surface and allow for a uniform, vertical laminar flow of clean room air.

1.4 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 relative humidity levels between 20% to 80%. 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 levels between 20% to 80%, and shall remain within these environmental limits throughout occupancy.

1.5 Performance Requirements

- A. **Design Load:** Solid and Perforated Panels supported on actual understructure (the system) shall be capable of supporting a safe working load or design load of 2250 and 2000lbs. respectively. This rating signifies that the system will withstand not only a concentrated load placed on a one square inch area at any location on the panel without yielding but also demonstrates the ability to withstand an overload capacity of two times its rating (ie. a safety factor of 2). (For a detailed description of this important criteria, refer to www.tateaccessfloors.com and click on Technical Resources/Technical Bulletins).
- B. **Safety Factor:** Solid and Perforated Panels supported on actual understructure (the system) shall be capable of withstanding a minimum of (2) two times the design load anywhere on the panel without failure. Failure is defined as the point at which the system will no longer accept the load.
- C. **Rolling Load:** Solid and perforated bare panels when supported on actual understructure shall be able to withstand the following rolling loads at any location on the panel without developing a local or beam surface deformation greater than .040 inches (1.02 mm)

Solid:

Wheel 1: Size:	3" dia. X 1 13/16" wide	Load: 2000 lb (907 kg)	Passes: 10
Wheel 2: Size:	10" dia. X 4" wide	Load: 2000 lbs. (907 kg)	Passes: 10,000

Perforated:

Wheel 1: Size:	3" dia. X 1 13/16" wide	Load: 1500 lb (680 kg)	Passes: 10
Wheel 2: Size:	10" dia. X 4" wide	Load: 2000 lbs. (907 kg)	Passes: 10,000

- D. **Impact Load:** Solid bare panels when supported on actual understructure shall be capable of supporting an impact load of 200 lbs. (90.7 kg) when dropped from a height of 12 inches (30.5 cm) onto a 1 in² (6.45 cm²) area at any location on the panel without failure. Perforated panels when supported on actual understructure shall be capable of supporting an impact load of 100 lbs. (45.4 kg) when dropped from a height of 12 inches (30.5 cm) onto a 1 in² (6.45 cm²) area at any location on the panel without failure.
- E. **Air Distribution:** [Specify hole type (standard or chamfered) and quantity. Other standard and chamfered hole patterns are shown in Appendix A.] Perforated Panels with 1024 hole pattern and Chamfered 1024 hole pattern have the following air distribution:

1. 11/32" dia. 1024 Standard holes – 16.5% open area

Downward flow with Damper at 100% open 558 cfm at .1" of H₂O
Downward flow without Damper 634 cfm at .1" of H₂O

11/32" dia. 1024 Chamfered holes (Vinyl Tile only) Holes chamfered to a 3/32 inch radius
Downward flow with Damper at 100% open 960 cfm at .1" of H₂O
Downward flow without Damper 1081 cfm at .1" of H₂O

13/32" dia. 1024 Standard holes – 23% open area (Vinyl Tile only)
Downward flow with Damper at 100% open 764 cfm at .1" of H₂O
Downward flow without Damper 868 cfm at .1" of H₂O

F. Axial Load [Specify 1 or 2.]

1. Aluminum pedestal head assembly with aluminum pedestal base assembly shall provide a minimum 10,000 lb. (4536 kg) axial load without permanent deformation.
2. Aluminum pedestal head assembly with steel pedestal base assembly shall provide a minimum 10,000 lb. (4536 kg) axial load without permanent deformation.

G. Overturning Moment:

1. Aluminum pedestal head assembly with aluminum or steel pedestal base assembly shall provide an average overturning moment of 1000 in-lbs. (113 N-m) when bonded to a clean, sound, unsealed concrete surface. Mechanical fasteners can achieve higher overturning moments.

J. Stringers: [Specify stringer or stringerless.]

1. Shall be capable, without panels in place, of supporting a concentrated load of 200 lbs. (91 kg) at the center of the span with a permanent set not to exceed .010 inch (.25 mm) after the load is removed.

K. Electrical Grounding Criteria: [Specify Section A, B, or C.]

- A. Conductive floor covering resistance of not less than 25,000 ohms (2.5×10^4), nor more than 1,000,000 ohms (1.0×10^6), measured across surface of floor covering through panel to understructure. Please specify NFPA 99 (500 volts) or ESD 7.1 (100 volts) test method.
- B. Static dissipative floor covering resistance of not less than 1×10^6 ohms nor more than 1×10^8 ohms, measured across surface of floor covering through panel to understructure. Please specify NFPA 99 (500 volts) or ESD 7.1 (100 volts) test method.
- C. Anti-static floor covering shall have typical resistance test values of 1.0×10^6 ohms to 2.0×10^{10} ohms, measured across surface of floor covering through panel to understructure as tested per NFPA 99.
- D. Conductive epoxy powder coating resistance of not less than 25,000 ohms (2.5×10^4), nor more than 1,000,000 ohms (1.0×10^6), measured across floor surface through panel to understructure per ESD 7.1 (100 volts) test method.

1.6 Quality Assurance

- A. Construction Managers Quality Assurance Responsibilities: Construction Manager is solely responsible for quality control of the work.

- B. **Manufacturer's Qualifications:** Manufacturer shall have been engaged in the fabrication of access flooring of types and sizes required and whose products have been in satisfactory use in similar service for not less than 10 years. Like items of material provided herein, shall be the products of one manufacturer in order to achieve standardization for appearance, maintenance and replacement.
- C. **Installer:** Access flooring installer shall be trained, approved by the floor system manufacturer and shall have successfully completed within the last three years, at least (3) three installations similar in type and size to that of this project.
- D. **[Optional] Field Samples:** Prior to the Pre-Construction Conference, provide a field sample of access flooring, not less than 100 square feet in an area designated by the Architect/Engineer. Utilize the same materials and installation methods in the sample as required for the final work. Sample areas shall serve as the standard for materials, workmanship and appearance for such work throughout the project and shall remain apart of the final work.
- E. **Pre-Installation Meeting:** Prior to installation of the Clean Room Access flooring system, and at Construction Manager's discretion, meeting shall be held to coordinate Access Floor System work with other trades. Meeting shall include Owner, Architect/Engineer, Construction Manager, access flooring system Contractor, and other subcontractors whose work requires coordination with the Clean Room access flooring system.

1.7 Delivery, Storage and Handling

- A. All access floor panels and understructure must be cleaned, inspected and packaged in a clean and debris free environment.
 - 1. **[Optional] Cleanroom pack for panels:** Panels shall be individually cleaned and individually packed within a moisture absorbing plastic bag sealed with tape. The panels shall then placed on a pallet with plastic sheet separators between each bagged panel to prevent damage to bags. The entire stack shall then covered in a plastic bag and cardboard corner protectors shall be added to the corners. A cardboard sleeve shall be used to cover the entire stack of panels and shall then be banded tightly. [Specify Cleanroom pack.]
 - 2. **[Optional] Cleanroom pack for understructure:** Understructure shall be individually cleaned and packed within a shipping carton lined with a moisture absorbing plastic bag. Plastic sheet separators shall be placed between layers of understructure. The bag shall be sealed and the carton shall be closed and tightly banded. [Specify Cleanroom Pack.]
- B. Deliver and store materials in their original unopened packages.

1.9 Submittals

- A. Provide samples of each type of floor panel and pedestal illustrating finishes and color.
- B. Detail sheets, for each proposed product type, which provides the necessary information to describe the product and its performance.
- C. Test reports, by an independent testing laboratory, certifying that component parts perform as specified.

PART 2 - PRODUCTS

2.1 Manufacturers

A. TATE ACCESS FLOORS, INC.

- 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.

2.2 Support Components [Specify All Aluminum or Aluminum/Steel Pedestals]

All Aluminum Pedestal Assembly:

A. Aluminum Pedestal Head Assembly:

- 1. Pedestal assemblies shall be corrosive resistant, all aluminum construction, and shall provide an adjustment range of +/- 1" for finished floor heights 9" or greater.
- 2. 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.
- 3. Aluminum pedestal head shall have universal feature, i.e. one head for cornerlock, stringerless, bolted stringer without effecting the height. The aluminum head shall have a 1 inch diameter aluminum threaded rod, which includes a specially designed adjusting nut, pressed into it. The nut shall engage the pedestal base assembly, such that deliberate action is required to change the height setting.
- 4. Aluminum 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.
- 5. Provide conductive vinyl grounding pad on the head assembly for electrical grounding and conductivity.

B. Aluminum Base Assembly: [Specify 1, 2, or 3]

- 1. Type A Aluminum Pedestal Base Assembly
 - a. Aluminum pedestal base assembly shall consist of a die cast aluminum base with 25 inches of bearing area, pressed into a hard drawn 1-1/2" diameter aluminum tube on one end and an aluminum collar at the other which is designed to engage the head. (Note: Depending on seismic zone and environmental conditions, the height of this pedestal assembly ranges from 9-36 inch FFH.)
- 2. Type B Aluminum Pedestal Base Assembly
 - a. Aluminum pedestal base assembly shall consist of a die cast aluminum base with 36 inches of bearing area, pressed into a hard drawn 1-1/2" diameter aluminum tube on one end and an aluminum collar at the other which is designed to engage the head. (Note: Depending on seismic zone and environmental conditions, the height of this pedestal assembly ranges from 9-48 inch FFH.)
- 3. Type 800 Aluminum Pedestal Base Assembly

- a. Aluminum pedestal base assembly shall consist of a die cast aluminum base with 36 inches of bearing area, pressed into a hard drawn 2" diameter aluminum tube on one end and an aluminum collar at the other which is designed to engage the head. (Note: Depending on seismic zone and environmental conditions, the height of this pedestal assembly ranges from 9-60 inch FFH.)

Aluminum/Steel Pedestal Assembly:

- A. Aluminum Head / Steel Base Assembly:
 1. Pedestal assemblies shall provide an adjustment range of +/- 1" for finished floor heights 13" or greater.
 2. 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.
 3. Aluminum pedestal head shall be universal, i.e. one head for cornerlock, stringerless, or bolted stringer without effecting the height. Aluminum pedestal head shall have a 7/8 inch diameter galvanized solid steel threaded rod, which includes a specially designed adjusting nut, pressed into it. The nut shall engage the pedestal base assembly, such that deliberate action is required to change the height setting.
 4. Provide conductive vinyl grounding pad on the head assembly for electrical grounding and conductivity.
- B. Steel Pedestal Base Assembly:
 1. Type 6 Steel Pedestal Base Assembly
 - a. Steel pedestal base assembly shall consist of a steel base plate with 36 inches of bearing area, welded to a 1-1/2 inch diameter steel formed tube. The top of the tube is designed to engage the head. (Note: Depending on seismic zone the height of this pedestal assembly ranges from 16-60 inch FFH.)

2.3 Fabrication Tolerances

Floor Panels:

- A. Floor panels shall be modular and completely interchangeable with other standard floor panels. Panels shall be easily placed and removed without disturbing adjacent panels or understructure by one person using a portable lifting device.
- B. Die cast panels from manufacturer's standard aluminum alloy, but with not less than strength and corrosion resistant properties of UNS A03800 per ASTM SC84B or UNSA03830 per ASTM SC102, to produce one piece units with flat solid surface on top and symmetrically-spaced crisscrossing ribs on bottom; edge-machined after casting to tolerances indicated.
- C. Nominal Module Size: 24 in. x 24 in. (60 cm x 60 cm).
- D. Floor panel flatness: corner to corner and all four corners: +/- .030 (.762 mm); corners diagonally: +/- .060 (1.524 mm).
- E. Floor panel width or length from specified size: +/- .0075 inches (.191 mm).
- F. Floor panel squareness: +/- .015 inches (.381 mm) difference between opposite diagonal dimensions.

- G. Floor panel thickness at pedestal support shall vary +/- .010 inches (.254 mm) for panels.
- H. All Heavy Duty 3000 lb. aluminum floor panels shall be interchangeable with all standard duty 1250 lb. aluminum floor panels and grates when supported on common understructure as specified in Section 2.2.

Stringer System:

- A. Stringers shall be all aluminum construction, designed and fabricated to mount to the pedestal head and to form a modular grid pattern with members under edges of all field floor panels. Stringer to be bolted to the pedestal head using a stainless steel grade fastener.

Cornerlock Option:

- A. Panels shall be fastened to the aluminum pedestal head using four corrosion resistant, nylon (or stainless steel) fasteners. Panels shall be removable by releasing the four fasteners and shall remain positively positioned onto the pedestal head without the fasteners in place.

2.4 Finishes

- A. Laminated Panels [Choose 1, 2, 3 or 4 as per Electrical Grounding Criteria Selection from Section 1.4]

Conductive Tile Options:

1. Conductive vinyl tile: Conductive vinyl tile shall be fabricated in one piece to cover each panel face within perimeter plastic edging or monolithic [and specify]. The tile shall have a static generation of less than 12 volts with conductive footwear at 20 percent relative humidity per AATCC-134 and static decay of 5,000 volts to zero in less than 0.01 seconds per Fed. Test Method 101C, Method 4046, at 15 percent relative humidity. **(Note: Due to load limitations and the nature of the vinyl, the product performance may differ from the performance as specified in Section 1.4.)**
2. Conductive High Pressure Laminate: Provide panels with [Specify 1/16 inch or 1/8 inch] tile within a perimeter plastic edging with static decay rate of less than 0.25 seconds per Federal Test Method 4046. Provides panels with tile a resistance of not less than 2.5×10^4 ohms nor more than 1.0×10^6 ohms as tested by NFPA 99 (500 volts).

Static Dissipative Tile Options:

3. Static Dissipative vinyl tile: Static dissipative vinyl tile shall be fabricated in one piece to cover each panel face within perimeter plastic edging or monolithic [and specify]. The tile shall have a static generation of less than 30 volts with conductive footwear at 20 percent relative humidity per AATCC-134 and static decay of 5,000 volts to zero in less than 0.2 seconds per Fed. Test Method 101C, Method 4046, at 15 percent relative humidity.

Anti-Static Tile Options:

4. Anti-static High Pressure Laminate: Provide panels with [Specify 1/16 inch or 1/8 inch] tile within a perimeter plastic edging and typical resistance test values of 1.0×10^6 ohms to 2.0×10^{10} ohms as tested by NFPA 99.
- B. Coating and Metallic Finishes: Understructure and panels shall be bare aluminum or coated as follows: [Specify finish for support components selected in Section 2.2]

All Aluminum Pedestal Assembly:

1. Aluminum head assemblies with aluminum stud: E-coat paint on head and stud.
Aluminum base assemblies: E-coat or conductive epoxy powder coat paint.
2. Coverage: Aluminum head assemblies with aluminum stud – complete coverage of head, stud and nut. No exposed aluminum. Aluminum base assemblies – complete coverage of base plate, tube and collar. No exposed aluminum.

Aluminum/Steel Pedestal Assembly:

1. Aluminum head assemblies with galvanized steel stud: E-coat paint on head only.
Steel base assemblies: Hot dip galvanized, E-coat or conductive epoxy powder coat paint.
2. Coverage: Aluminum head assemblies with galvanized steel stud - coverage on head only, stud and nut are galvanized steel. Steel base assemblies – complete coverage of base plate and tube. No exposed steel.

Panels:

1. Panels:
 - a. Side and underside panel coating for use with tile: E-coat paint.
 - b. Protective panel coatings for use without tile: epoxy powder coat [Specify conductive or non-conductive] paint or other [and specify].
 2. Panel Coverage:
 - a. E-coat Paint: Coverage on underside of panel and sidewalls. Milled edge and perforated holes shall be bare aluminum.
 - b. Epoxy Powder Coat (conductive or non-conductive): Complete coverage on top and side surfaces. No coating on bottom on 2 inch wide perimeter strip, including the corner (overspray is acceptable). Complete coverage on bottom from perimeter strip to center of panel. Top Surface – shall be free from surface imperfections such as blisters, blemishes, shadows, stains, cuts, voids, scratches or variation of color across the panel.
- C. Stringers: E-coat or conductive epoxy powder coat paint. Coverage is complete.

- D. Colors and Patterns: Submit available color and patterns as indicated in material schedule.

2.5 Accessories

Cutouts:

- A. Fabricate manufacturer's standard cutout assemblies in floor panels as required or as indicated on the drawings. 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.
- B. Specify accessory cutouts for vacuum connection fittings and/or recessed emergency lifters.
- C. Specify clear or stainless steel access door with stainless steel framed opening.
- D. Use manufacturer's standard grommet where applicable.

PART 3 - EXECUTION

3.1 Examination

Verification of Conditions:

- A. Examine subfloor and report all defects which would prevent proper installation of access flooring. Do not proceed with work until all defects have been corrected.
- B. Ensure that subfloor is free from dust, dirt and construction debris before starting installation. Do not proceed until corrected.
- C. Prior to installation take field measurements to ensure proper fitting of work. If there are discrepancies with previously submitted shop drawings, revise to indicate final measurements and resubmit shop drawings for final approval.

3.2 Preparation

- A. Coordinate with Construction Manager and subfloor contractor a pre-installation pedestal adhesive field test to ensure compatibility of any applied subfloor sealer or coating.

3.3 Installation

- A. Install access floor system and accessories under supervision of the access flooring manufacturer's authorized representative to ensure rigid, firm installation free of rocking, rattles, squeaks, and other unacceptable performance.
- B. Secure pedestal bases with adhesive or mechanical fasteners as recommended by the access flooring manufacturer to provide full bearing of the pedestal base on the subfloor.
- C. Floor panels shall be installed according to the layout indicated on the drawings to keep the number of cut panels at the floor perimeter to a minimum.
- D. Thoroughly clean up dust, dirt, and construction debris caused by floor installation, including vacuuming the subfloor area, as installation of floor panels proceeds. Extend cleaning under installed panels.

E. Cutting and Trimming of Parts:

1. Cutting and trimming or other dirt-or-debris producing operations will not be permitted in the areas where the floor is being installed.
2. Perform cutting and trimming or other dirt-or-debris producing operations as remotely as possible from installation as instructed by the construction manager and in a manner to prevent contamination of subfloor surfaces under sections of access floor which already have been installed.

3.4 Cleaning and Protection

- A. Upon completion of the work, repair surfaces that have been permanently stained, marred, or otherwise damaged. Replace work, which is damaged or cannot be adequately cleaned as directed.
- B. Upon completion of the work, remove unused materials, debris, containers, and equipment from the project site. In addition to the initial cleaning procedure required, and before acceptance by the Owner, clean the work as recommended by the manufacturer.
 1. After completion of installation, vacuum clean the entire floor surface and cover with continuous sheets of reinforced paper or plastic.
- C. Protect the work during the construction period so that it will be without any indication of use or damage at the time of acceptance.

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