

SECTION 10270 ACCESS FLOORING: Underfloor Air

PART 1 - GENERAL

1.1 Section Includes

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

1.2 Related Sections

- A. Throughout the project, raised access floor shall be incorporated to function as the office floor whilst at the same time providing an air tight plenum for the direct distribution of conditioned air without ducts to all parts of the building and an undercroft for power and data cable distribution and management. Tenders shall fully acquaint themselves with the requirements of the purpose systems.
- B. The floor voids shall be left completed clean from dust and builders debris. The voids shall be vacuum cleaned and the concrete surfaces sealed with epoxy sealant to ensure a high quality surfaces finish for easy maintenance.
- C. The floor therefore shall meet the requirements of the engineers with regard to air leakage, fire resistance, acoustic and thermal performance and shall accommodate the purposed air conditioning equipment without modification or the need for adaptor kits. The floor system shall be such that any fan terminal or electrical outlet can be relocated to suit changes in office layouts to any other point. The floor shall be provided with structural supporting stringers to carry grilles, fan assisted terminals and air segregation baffles.

1.3 References

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

1.4 Performance Requirements

Air Leakage Rate:

- A. Tenders shall submit air leakage certification based on test pressure at 50pa and 100pa and thermal conductivity documentation at tender submission.

Pedestals:

- A. **Axial Load:** Pedestal assembly shall provide a 6000 lb. axial load without permanent deformation.
- B. **Overtopping Moment:** Pedestal assembly shall provide an average overturning moment of 1000 in-lbs. when glued to a clean, sound, uncoated concrete surface.
- C. **Acoustic:** Pedestal head shall provide gasket to ensure a good acoustic performance.

Stringers:

- A. **Vertical Load:** Stringer shall provide a 330 lb. vertical load without permanent deformation.
- B. **Air Leakage Rate:** The stringers shall be provided with gaskets to ensure a high performance with to air leakage and shall be screwed at each connection to the floor pedestals to ensure electrical continuity.

Floor Panels:

- A. **Concentrated Load:** Panel shall be capable of supporting a concentrated load of 1250 lbs. placed on a one square inch area (using a round or square indenter) at any location on the panel with a maximum top surface deflection of 0.100 inches. Panel shall not exceed a permanent set of 0.010 inches, after the load is removed. Panel shall demonstrate ductility by being loaded to a deflection of 0.100 inches without incurring damage.
- B. **Uniform Load:** Panel shall be capable of supporting a uniform load of 300 lbs. placed on a one square foot area at any location on the panel with a maximum top surface deflection of 0.060 inches. Panel shall not exceed a permanent set of 0.010 inches, after the load is removed.
- C. **Ultimate Load:** Panel shall be capable of withstanding a concentrated load of 3750 lbs. applied onto a one square inch area (using a round or square indenter) **at any location on the panel** without failure. Failure is defined as the point at which the panel will no longer accept the load. Certified test report shall be provided attesting to this ultimate load.
- D. **Rolling Load:** 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 1 1/2" wide Load: 800 lbs .Passes: 10,000

- E. **Impact Load:** Panel and supporting understructure shall be capable of supporting an impact load of 100 lbs. dropped from a height of 12 inches onto a one square inch area (using a round or square indenter) at any location on the panel without failure.
- 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 8" diameter cutout shall be capable of withstanding an ultimate load without failure of 1500 lbs. anywhere on the panel.
- H. **Stability:** Panel shall be screwed on the floor pedestals to ensure stability.
- I. **Fire Performance:** Non-combustible.

1.5 Design Requirements:

- A. Access floor system, where indicated on the design documents, shall consist of modular cementitious filled welded steel panels fastened onto, and supported by adjustable height pedestal assemblies.
- B. Panel shall be easily removed by one person with a 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.
- D. Controlled air plenum system shall be an integral part of the Access Flooring System and be capable of providing a controlled and uniform flow of supply air at the temperature and air volume as indicated on the mechanical plans.

1.6 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.

1.7 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 Jindao Floors, Inc. (86 535) 2743 446. System shall consist of the FS1250 panel supported by understructure system.
- B. Alternative products shall meet or exceed the feature requirements as indicated herein and the performance requirements as outlined in section 1.4 and must receive prior written approval by the architect or designer.

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.
- 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. Galvanized steel pedestal head shall be welded to a threaded rod which 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 6" or greater).
- E. Pedestal base assembly shall consist of a galvanized steel plate with no less than 30 square inches of bearing area, welded to a no less than 7/8" square galvanized steel tube and shall be designed to engage the head assembly.
- F. Pedestal head shall provide gasket to ensure a good acoustic performance.

Stringers:

- A. The stringers shall be provided with gaskets to ensure a high performance with to air leakage and shall be screwed at each connection to the floor pedestals to ensure electrical continuity.

2.3 Panel Components

Floor Panels:

- A. Panels shall consist of a top steel sheet **welded** to a formed steel bottom pan filled internally by a lightweight cementitious material. **Mechanical or adhesive methods for attachment of the steel top and bottom sheets is unacceptable. Woodcore panels shall not be offered.**
- B. Cementitious fill material shall be totally encased within the steel welded shell except where cut for special conditions.
- C. Panel shall have a black electrically conductive epoxy paint finish.
- D. Fastening of panels to pedestal heads shall be accomplished by the use of a machine screw which is specially designed to be self capturing within the body of the panel.
- E. Fit between the pedestal head, panel, and screw shall enable an installation with an average panel to panel gap of 0.015".

2.4 Accessories

- A. Access floor outlet boxes shall be provided in locations as detailed on the contract drawings. 11 ¼ inch square service outlet boxes shall be capable of accommodating four duplex receptacles and eight individual voice/data termination points. 7-5/16 by 6-15/16 inch service outlet boxes shall be capable of accommodating two duplex receptacles and four individual voice data/termination points. Service outlet box shall be capable of withstanding without failure an 800 lb. load.
- 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. Floor diffusers, shall be capable of supporting a 1400 lb. concentrated load. The diffuser shall deliver a minimum air flow of 75 cfm depending upon the static pressure indicated in the mechanical section of the specification. A complete unit consists of the twist element, dirt collecting basket, damper and carpet tension ring. The product has no moving parts nor requires any power to be operable.

Maintenance materials: Provide the following spare materials

_____panels, _____pedestals, _____service outlets _____KB-200 _____lifting devices.

2.5 Fabrication Tolerances

- A. Floor panel flatness: _____ 0.030" in any direction.
- B. Floor panel width or length from specified size: +/- 0.010"
- C. Floor panel squareness: _____ +/- 0.015"

PART 3 - EXECUTION

3.1 Examination

- 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. If other than manufacturer's recommended adhesives or sealers are used, 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.

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. Traffic shall not be permitted on any floor area for 24 hours to allow the pedestal adhesive to set.
- 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. Acceptance: General contractor shall accept floor in whole or in part prior to allowing use by other trades.
- K. Plenum dividers: Shall be accurately scribed and fit to the subfloor and sealed with mastic to ensure maintenance of plenum effect. Include gaskets and sealant to ensure airtight seal where holes are cut for penetration.
- L. Air Diffuser: Shall be installed in one of four quadrants of a standard 600 x 600 mm access floor panel utilizing a factory cutout to ensure proper tolerances. Trim frame shall be placed in factory cutout and secured to panel with retainer.
- M. Cut panel:
 - 1. Make cutouts required for services penetrating panels.
 - 2. Cut panels to fit walls and columns where required.
 - 3. **Seal cut edges with waterproof cement sealer to prevent spalling.**
 - 4. Cover interior cut edges with grommets, plastic trim, molding and/or gaskets
- N. **Acceptance:** General contractor shall accept floor in whole or in part prior to allowing use by other trades.

3.3 Cleaning, Protection and Grounding After Completion of Installation - By Others

- 1. Vacuum clean the entire system.
- 2. Before any equipment is moved across the access floor, the floor shall be protected by ½" plywood.
- 3. Electrical contractor shall connect the access floor to building ground as follows: A bare grounding wire shall be attached to one pedestal every 300 to 400 sq. m and run to the building ground.

END OF SECTION 10270