

SECTION 10270
ACCESS FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
1. Gravity-held panels on bolted stringer understructure.
- B. Related Sections:
1. Division 3 Section "Cast-in-Place Concrete" for concrete floor sealer.
 2. Division 15 Sections for computer room air-conditioning units.
 3. Division 16 for connection to ground of access flooring understructure.

1.3 PERFORMANCE REQUIREMENTS

- A. Performance Requirements, General: Provide access flooring systems that comply with the following requirements:
1. Access flooring systems are proprietary portable systems composed of modular floor panels on elevated supports (understructures) forming accessible underfloor cavities (air spaces) to accommodate electrical and mechanical services.
 2. Access flooring systems comply with performance requirements specified as determined by testing manufacturers' current standard products representing those indicated for this Project.
- B. Structural Performance per CISCA A/F: Provide access flooring systems capable of supporting the following loads, within limits and under conditions indicated, as demonstrated by testing according to the referenced procedures in Ceilings and Interior Systems Construction Association's (CISCA) "Recommended Test Procedures for Access Floors." This publication and its procedures are referenced elsewhere in this Section as CISCA A/F.
1. Concentrated-Load Performance: Capability of floor panels, including those with cutouts, to support concentrated design loads of the following magnitude, with a top-surface deflection under load and a permanent set not to exceed, respectively, 0.10 and 0.010 inch, according to CISCA A/F Section I.
 - a. 1,250 lbf.
 2. Ultimate-Load Performance: Capability of access flooring systems to support a minimum ultimate concentrated load equal to the value obtained by multiplying the specified concentrated floor panel design load by the factor indicated below, without failing, according to CISCA A/F Section II. Failure is defined as the point at which the access flooring system will not take any additional load.
 - a. Factor: 2.
 3. Rolling-Load Performance: Capability of access flooring system to withstand rolling loads of the following magnitude applied to panels, with a combination of local and overall deformation not to exceed 0.040 inch after exposure to rolling load over CISCA A/F path A or B, whichever path produces the greatest top-surface deformation, according to CISCA A/F Section III.
 - a. CISCA A/F Wheel 1 rolling load: 1,000 lbf.; 10 passes
 - b. CISCA A/F Wheel 2 rolling load: 800 lbf.; 10,000 passes
 4. Stringer Concentrated-Load Performance: Capability of stringers, without panels in place, to support a concentrated load of 200 lbf at center of span with a permanent set not to exceed 0.010 inch, as determined per CISCA A/F Section IV.

5. Pedestal Axial-Load Performance: Capability of pedestal assemblies, without panels or other supports in place, to withstand the following axial load per pedestal, according to CISCA A/F Section V.
 - a. 5,000 lbf.
6. Pedestal Overturning-Moment Performance: Capability of pedestal assemblies, without panels or other supports in place, to withstand the following overturning moment per pedestal, according to CISCA A/F Section VI.
 - a. 1,000 lbf x inches.
- C. Floor Panel Impact-Load Performance: Capability of access flooring system to withstand the following impact load when dropped from 36 inches onto a 1-sq. in. area located anywhere on panel, without failing. Failure is defined as the point at which the access flooring system will not take any additional load.
 1. 150 lbf.
- D. Static-Conductive Floor Covering Resistance: Not less than 25,000 ohms, nor more than 1 megohm, as determined by testing identical products according to the method for conductive flooring specified in Chapter 12 of NFPA 99 but modified to place 1 electrode on floor surface and to attach the other electrode to understructure.
- E. Panel to Understructure Resistance: Not more than 10 ohms.

1.4 SUBMITTALS

- A. Product Data for each type of access flooring specified.
- B. Shop Drawings showing complete layout of access flooring based on field-verified dimensions; include dimensional relationships to adjoining work and installation tolerances. Include details, with descriptive notes indicating materials, finishes, fasteners, typical and special edge conditions, accessories, understructure, and other data to permit a full evaluation of entire access flooring system.
- C. Samples for initial selection in the form of manufacturer's color charts consisting of actual units or sections of units showing the full range of colors, textures, and patterns available for each type of floor covering and exposed finish indicated.
- D. Samples for verification in full-size units of each type of floor covering and exposed finish indicated.
 1. In addition, submit one complete full-size floor panel, pedestal, and understructure unit for each type of access flooring system required.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who is approved by the access flooring manufacturer for installing the types of access flooring indicated for this Project.
- B. Single-Source Responsibility: Obtain access flooring from one source and by a single manufacturer.
- C. NFPA Standard: Provide access flooring complying with NFPA 75 requirements for raised flooring.
- D. Provide floor panels that are clearly and permanently marked on their underside with the panel type and concentrated-load rating.
- E. Mockups: Prior to installing access flooring, construct mockups for each type of panel and understructure required to verify selections made under Sample submittals and to demonstrate aesthetic effects as well as qualities of materials and execution. Build mockups to comply with the following requirements, using products indicated for final access flooring installation.
 1. Locate mockups on-site, in the location and of the size indicated or, if not indicated, as directed by CM.

2. Notify Construction Manager one week in advance of the dates and times when mockups will be constructed.
 3. Obtain CM's approval of mockups before start of final unit of Work.
 4. Retain and maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 - a. Approved mockups in an undisturbed condition at the time of Substantial Completion may become part of the completed Work.
- F. Preinstallation Conference: Conduct conference at Project site to comply with requirements of General and Supplementary Conditions.
- 1.6 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.
- 1.7 PROJECT CONDITIONS
- A. Environmental Conditions: Do not proceed with installation of access flooring until installation area is enclosed and has an ambient temperature of between 40 and 90 deg F and a relative humidity of not more than 70 percent.
 - B. Field Measurements: Check actual locations of walls and other construction to which access flooring must fit by accurate field measurements before preparing Shop Drawings; show recorded measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 1. Where field measurements cannot be made without delaying the Work, guarantee dimensions and proceed with preparing Shop Drawings for access flooring without field measurements. Coordinate construction to ensure that actual dimensions correspond to guaranteed dimensions.
- 1.8 COORDINATING AND SCHEDULING
- A. Coordination of Work: Coordinate location of mechanical and electrical work in underfloor cavity to prevent interference with access flooring pedestals.
 - B. Mark pedestal locations with a grid of size indicated below on concrete subfloor so that mechanical and electrical work can proceed without interfering with pedestals.
 1. 120 by 120 inches.
 - C. Do not proceed with installation of access flooring until after Substantial Completion of other construction within affected spaces.
- 1.9 EXTRA MATERIALS
- A. Furnish extra materials described below that match products installed, are packaged with protective covering for storage, and are identified with labels clearly describing contents.
 1. Field Panels and Understructure: Furnish quantity of standard field panels and understructure components equal to 2 percent of amount installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide access flooring by one of the following:
 1. Systems with Cementitious-Filled Formed-Steel Panels:

- a. Maxcess Technologies, Inc.; RWC 200.
- b. Tate Access Floors, Inc.; Concore SF 1250.

2.2 FLOOR PANELS

- A. Provide modular field panels complying with the following requirements that one person, using a portable lifting device, can interchange with other field panels without disturbing adjacent panels or understructure and that are free of exposed-metal edges with floor covering in place.
 1. Nominal Panel Size: 24 by 24 inches.
 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 0.015 inch of required size, with a squareness tolerance of plus or minus 0.015 inch, unless tolerances are otherwise indicated for a specific panel type.
 - b. Flatness: Plus or minus 0.020 inch, measured on a diagonal on top of panel.
 3. Panel Attachment to Understructure: By gravity.
- B. Cementitious-Filled Formed-Steel Panels: Cementitious-filled panels fabricated with die-cut flat top sheet and die-formed and stiffened bottom pan formed from cold-rolled steel sheet and joined together by resistance welding to form an enclosed assembly, with metal surfaces protected against corrosion by manufacturer's standard factory-applied finish.

2.3 FLOOR PANEL COVERING

- A. Provide floor panels prepared to receive carpet tile where access flooring is scheduled for carpet tile.
- B. Provide factory-applied floor coverings laminated by the access flooring manufacturer to tops of floor panels other than carpet tile applications.
- C. Colors and Patterns: Provide floor covering materials in colors and patterns as indicated below:
 1. Provide Architect's selections made from manufacturer's full range of colors and patterns.
- D. Conductive Plastic Laminate: NEMA LD 3, High-Wear Type, of grade indicated below, fabricated in one piece to cover each panel face within perimeter plastic edging or with integral trim serving as edging, and with static decay of 5000 to 0 V in less than 0.5 seconds per FED-STD-101C/4046 at 15 percent relative humidity.
 1. Grade: HW 62.
- E. Edging: Manufacturer's standard form of edge trim. For applied edge trim, use method standard with manufacturer to attach edge trim to perimeter of each panel. Provide size and profile of applied edge trim that fits floor covering selected.

2.4 UNDERSTRUCTURE

- A. Pedestals: Assembly consisting of base, column with provisions for height adjustment, and head (cap); made of steel.
 1. Base: Square base with not less than 16 sq. in. of bearing area.
 2. Provide vibration-proof leveling mechanism for making and holding fine adjustments in height over a range of not less than 2 inches. Include means of locking leveling mechanism at a selected height that requires deliberate action to change height setting and prevents vibratory displacement.
 3. Provide units of sufficient height to achieve underfloor clearance indicated.
 4. Head: Designed to support understructure system indicated.
 5. Postinstalled Expansion Anchors: Where required to comply with performance requirements, provide expansion anchors for bolting pedestal bases to subfloor that have the capability to sustain, without failure, a load equal to 5 times that specified under Part 1 Article "Performance Requirements."

- B. Stringer Systems: Modular steel stringer systems made to interlock with pedestal heads and form a grid pattern placing stringers under each edge of each floor panel and a pedestal under each corner of each floor panel. Protect steel components with manufacturer's standard galvanized or corrosion-resistant paint finish.
 - 1. Bolted Stringers: System of main and cross stringers connected to pedestals with threaded fasteners accessible from above.
 - a. Provide continuous gasket at contact surfaces between panel and stringers to deaden sound, to seal off underfloor cavity from above, and to maintain panel alignment and position.
- C. Lateral Bracing: Provide manufacturer's recommended lateral diagonal bracing bolted to pedestals and bolted to floor with post-installed expansion anchors.

2.5 ACCESSORIES

- A. Colors and Finishes: For exposed accessories available in more than one standard color or finish, provide color or finish complying with the following requirements:
 - 1. Match Architect's sample.
 - 2. Match color or finish indicated by referencing manufacturer's standard designations for these characteristics.
 - 3. Provide Architect's selections made from manufacturer's full range of available colors and finishes.
- B. Cutouts: Provide cutouts in floor panels for cable penetrations and service outlets. 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.
 - 1. Trim edge of cutouts with manufacturer's standard plastic molding.
 - 2. Fit cutouts with manufacturer's standard grommets in sizes indicated or, where size of cutouts exceed maximum grommet size available, trim edge of cutouts with manufacturer's standard plastic molding having tapered top flange.
 - a. Furnish removable covers for grommets.
 - 3. Provide foam-rubber pads for sealing annular space formed in cutouts by cables and trim edge of cutout with molding having flange and ledge for capturing and supporting pads.
- C. Service Outlets: Standard UL-listed and -labeled assemblies, for recessed mounting flush with top of floor panels, for power, communication, and signal services, and complying with the following requirements:
 - 1. Structural Performance: Cover capable of supporting a 1000-lbf concentrated load.
 - 2. Cover and Box Type: Hinged polycarbonate cover with opening for passage of cables when cover is closed and including frame and steel box or formed-steel plate for mounting electrical receptacles.
 - 3. Location: Locate outlets in center of panel quadrant.
 - 4. Receptacles and Wiring: Equip each service outlet with power receptacles to comply with requirements indicated below.
 - a. Type of Receptacle: Heavy-duty duplex, 2-pole, 3-wire grounding, 20 A, 125 V, NEMA configuration 5-20R, unless otherwise indicated.
 - b. Number of Receptacles for Outlet: 4.
 - c. Wiring Method: Power-in connectors, built into outlet housing, of type to fit power-in and power-out connectors of branch circuit cables supplied with building electrical system.
- D. Die-Cast Aluminum Floor Grates: Standard load-bearing die-cast aluminum grates complying with the following requirements:
 - 1. Air-Distribution Characteristics of Units Without Dampers: 56% free area.
 - 2. Structural Performance: Capable of supporting a 1000-lbf concentrated load.
- E. Panel Lifting Device: Manufacturer's standard portable lifting device of type and number required for lifting panels with floor covering provided.

1. Provide 4 lifting devices of each type required.
- F. Perimeter Support: Where indicated, provide manufacturer's standard method for supporting panel edge and form transition between access flooring and adjoining floor covering at same level as access flooring.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Locate each pedestal, complete any necessary subfloor preparation, and vacuum clean the subfloor to remove dust, dirt, and construction debris before beginning installation.

3.2 INSTALLATION

- A. Install access flooring system and accessories under supervision of the access flooring manufacturer's authorized representative to produce a rigid, firm installation that complies with performance requirements and is free of vibration, rocking, rattles, and squeaks.
- B. Attach pedestals to subfloor by postinstalled expansion anchors.
- C. Lay out floor panel installation to keep the number of cut panels at the floor perimeter to a minimum. Scribe perimeter panels to provide a close fit with adjoining construction with no voids greater than 1/8 inch where panels abut vertical surfaces.
1. To prevent dusting, seal cut edges with sealer recommended by panel manufacturer:
 2. Connect grounding strips embedded in static-conductive floor covering to connector clips attached to pedestals at the intervals needed to comply with performance requirements for electrical resistance of floor covering.
- D. Secure stringers to pedestal heads according to the access flooring manufacturer's instructions.
- E. Clean dust, dirt, and construction debris caused by floor installation, including vacuuming the subfloor area, as installation of floor panels proceeds.
- F. Cut and trim access flooring and perform other dirt-or-debris-producing operations as remotely as possible from installation area and to prevent contamination of subfloor under access flooring already installed.
- G. Level installed access flooring to within 0.10 inch of true level over the entire access flooring area and within 0.062 inch in any 10-foot distance.

3.3 ADJUSTING, CLEANING, AND PROTECTION

- A. After completing installation, vacuum clean access flooring and cover with continuous sheets of reinforced paper or plastic. Maintain protective covering until the time of Substantial Completion.
- B. Replace access flooring panels that are stained, scratched, otherwise damaged, or not complying with specified requirements.

END OF SECTION 10270