SECTION 09 69 00 – access flooring

1. General
   1. SUMMARY
      1. Furnish labour, materials, and other services to complete the fabrication and installation of the following:
         1. Interchangeable access flooring panels
         2. Access flooring finishes
         3. Under structure
      2. Related Requirements:
         1. Section 09 29 00 – Gypsum Board.
         2. Section 09 30 00 – Tiling.
         3. Section 09 65 00 – Resilient Flooring and Accessories.
         4. Section 09 68 13 – Tile Carpeting.
         5. Section 09 91 23 – Interior Painting.
   2. REFERENCE Standards
      1. Ceilings Interior Systems Construction Association (CISCA):
         1. Recommended Test Procedures for Access Floors, 2007 Edition.
      2. American Society for Testing and Materials (ASTM):
         1. ASTM E136-12, Standard Test Method for Behavior of Materials in a vertical Tube Furnace at 750 deg C.
      3. UL Canada (ULC) Approvals:
         1. ULC-S102: Standard Method of Test for Surface Building Characteristics of Building Materials and Assemblies.
   3. SUBMITTALS
      1. Submit submittals in accordance with Section 01 33 00 – Submittal Procedures.
      2. Shop Drawings:
         1. Shop drawings shall clearly show system components, layout and configuration, construction and installation details, all dimensions, materials, material thicknesses, mass, loading, all other relevant information, and details.
            1. If required, show edge details and anchoring of pedestal bases to subfloor.
         2. When the space beneath the access floor system is designated as an air delivery plenum, submit with shop drawings, air flow data through perforated panels being proposed. Include static pressure, CFM and velocity information, and independent laboratory test data certifying that all specified panels meet the structural design requirements specified herein.
      3. Samples:
         1. Submit two samples of each access flooring system components, including but not limited to the following:
            1. Full size panel of access flooring system including specified finishes.
            2. Pedestal types.
            3. Fasteners.
            4. All accessories necessary to complete the work of this Section.
      4. Maintenance Instructions:
         1. Submit three (3) copies of printed maintenance instructions for incorporation into Operating and Maintenance Manual.
         2. Maintenance instructions shall contain specific warnings against methods and materials harmful to work of this Section.
      5. Certificates:
         1. Submit independent testing organization certificates indicating compliance with specified design criteria when tested and reported according to CISCA “Recommended Test Procedures for Access Floors.”
         2. Submit seismic calculations if required in accordance with local building codes as specified.
            1. Calculations shall be performed using a current seismic program and submitted to a local structural engineer licensed in the province where the project is located.
            2. The structural engineer shall sign and seal these calculations confirming that these calculations meet all local and state codes for seismic pedestal assemblies. A signed copy of these calculations must be given to the Consultant and local building department as required.
   4. QUALITY ASSURANCE
      1. The Contractor executing work of this Section shall have a minimum five (5) years continuous experience in successful manufacture and installation of work of type and quality shown and specified. Submit proof of experience upon Consultant's request.
      2. When the space beneath the access floor system is designated as an air delivery plenum, take the necessary precautions when installing work so as not to impact the integrity of the plenum space specific to air leakage and cleanliness. All trades are responsible for sealing penetrations created in vertical surfaces within the plenum related to their scope of work.
   5. PERFORMANCE REQUIREMENTS
      1. Provide access flooring system consisting of moveable assemblies composed of modular floor panels supported on pedestals forming accessible under floor cavities to accommodate electrical, mechanical, and HVAC services which comply with performance requirements specified. Raised floor panels must be interchangeable with each other except where cut for special conditions.
      2. Where applicable load testing shall be performed according to “Recommended Test Procedures for Access Flooring” as established by the Ceiling and Interior Systems Construction Association (CISCA). These procedures shall be used as a guideline when presenting load performance product information.
         1. Concentrated Load: 1,250 lb. on 25mm (1”) square at any location with a top surface deflection not to exceed 2.5mm (0.10"), and a permanent set not to exceed 0.25mm (0.010”).
         2. Uniform Load: With a top surface deflection not exceeding 1mm (0.040”), floor can hold 600 pounds per square foot evenly distributed over the surface of the panel with a permanent set not exceeding 0.25mm (0.010”).
         3. Ultimate Load: Panel shall be designed to withstand a load of 1800 lb. applied over 25mm (1”) at the weakest point on a pedestal.
         4. Rolling Load: Panels shall withstand a rolling load of 1,300 lbs. applied through a 75mm (3") dia. x 46mm (1-13/16") wide caster for ten (10) cycles over the same path with a maximum of 1mm (0.040”) top surface permanent set. Panels shall withstand a rolling load of 900 lb. applied through a hard rubber-surfaced wheel 150mm (6”) dia. x 50mm (2”) wide for 10,000 cycles over the same path with a maximum of 1mm (0.040”) top surface permanent set.
         5. Impact Load: A 150 lb. load dropped from 914mm (36") onto a 25mm (1”) square indenter shall not render the system unserviceable.
         6. Flammability: Bare panel system shall meet a maximum Flame spread of 25, Smoke development of 50 based on the average of three runs when tested in accordance with CAN/ULC S102.
         7. 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 degrees C.
         8. Recycled Content: Panel and under structure system shall be required to have a minimum recycled content of 50%.
         9. Pedestal Axial Load Test: Provide pedestal assemblies without panels or other supports in place, capable of withstanding a 5000 lb. (22 240 N) Axial load per pedestal, according to CISCA A/F, Section 5 “Pedestal Axial Load Test.”
         10. Verify requirements for pedestal overturning moment in seismic zones with authorities having jurisdiction. Coordinate with pedestals selected in Part 2 and method of attachment specified.
         11. Pedestal Overturning Moment Test: Provide pedestal assemblies, without panels or other supports in place, capable of withstanding an overturning moment per pedestal of 1000 in\*lbs. (113 N\*m) when bonded to clean concrete slab according to CISCA A/F, Section 6, “Pedestal Overturning Moment Test.”
   6. DESIGN REQUIREMENTS
      1. Panel shall be easily removed by one person with a suction cup lifting device and shall be interchangeable except where cut for special conditions.
      2. Quantities finished floor heights (FFH) and location of accessories shall be as specified on the contract drawings.
      3. The finished floor surface shall be free of exposed metal edges and the finished floor surface shall serve as an isolation pad for safety of operating personnel.
      4. All parts shall be easily removed and replaced or dismantled, re-arranged, interchanged, and easily removed for cable outlets, air outlets and other services.
      5. The completed access flooring system shall be sturdy, rigid, firm, and free of vibration, rocking panels, rattles, squeaks and other noises.
   7. EXTRA MATERIALS
      1. Upon completion of work of this Section, supply to site, 5% of each different component of the access flooring system. Properly pack all components in original containers and visibly identify component on outside of container. Store on site as directed by Owner.
      2. Provide two complete sets of all special tools required for dismantling access flooring system. Each set shall contain 1 lifter (suction cup device of the double suction cup type with lifting handle for both concrete and plastic laminate smooth surfaces), and any special keys or spanners required for removing floor panels or stringers. Store on site as directed by Owner.
   8. DELIVERY, STORAGE, HANDLING AND PROTECTION
      1. Co-ordinate deliveries to comply with construction schedule and arrange ahead for strategic off the ground, under cover storage locations. Do not load any areas beyond the design limits.
      2. Handle and store materials in accordance with manufacturer's recommendations.
      3. Ship, deliver and store materials in factory-crated containers with seals and labels intact. Pack material in a manner to prevent damage to and contamination of finished surfaces.
      4. Provide protection for finished surfaces of access flooring system after installation to prevent damage, marring, contamination and soiling due to construction activities consisting of heavy-duty kraft paper covering, held in place by means of non-staining, non-marking, pressure sensitive adhesive tapes. Provide plywood protective panels required for Owner's move-in operations.
      5. Exercise extreme care in handling units to prevent damage and scratched surfaces.
      6. Be responsible for damage to the work of this Section until the building is complete and accepted by the Owner. In case of damage, material shall be completely removed and replaced with new.
   9. site conditions
      1. Provide a clean, level, dry subfloor, temperature controlled, and protected from the weather.
      2. Access flooring storage and installation areas shall be maintained at a temperature between 40°F to 120°F and be less than 70% relative humidity for 24 hours a day before, during and after installation.
      3. Overhead construction work must be completed before installing access floor to avoid damage to panels and finishes. Any damage to panels or finishes resulting from construction work done after floor is installed.
   10. WARRANTY
       1. Warrant the Work of this Section in accordance with General Conditions but for a period of five (5) years and agree to repair or replace faulty materials or work which becomes evident during the warranty period without cost to the Owner.
       2. Defects, faulty materials, or faulty work shall include but not be limited to the following:
       3. Delamination, chipping or cracking of panels.
       4. Formation of corrosion.
       5. Pitting and disintegration of metals due to electrolysis (galvanic action) resulting from contact between incompatible materials.
       6. Failures in connections and structural stability and soundness causing collapse, vibration, rattle, squeaks, rocking panels and the like.
       7. Failure of installation to maintain its elevation or remain level within the specified installation tolerances.
       8. Failures in case of removal, dismantling or interchangeability of components.
       9. Static development.
2. Products
   1. MATERIALS

SPEC NOTE: Edit the following (RF#’s) to reflect what is listed in the Product and Finish Schedule. Delete paragraphs that are not required on this Project.

* + 1. Concrete Floor Panels (AF-#):

SPEC NOTE: There are two (2) typical panel loading weights: 1250 lbs & 1500 lbs.

SPEC NOTE: 1250 lbs is most common for office work. 1500 lbs is common for heavy equipment (point loading) onto panels.

* + - 1. Design Load: Supporting a point load of 1250 lbs.
         1. Basis of Design Materials: TecCrete 1250lb by Camino Systems.
      2. Panels shall be integrated steel pan construction with exposed top surface of lightweight concrete fill. Floor Panels are bare corner-lock.
      3. Panels: Nominal 610mm x 610mm (24” x 24”) x 1-1/2” (38mm) deep, manufactured with galvanized steel pan having shear tabs that integrally bond to the lightweight, high-strength concrete fill. Manufactured panel corners to receive the pedestal head positioning dome and containing a corner-lock/grounding insert. Each panel shall accept a flush-fit metal fastener which securely fastens each panel corner to the pedestal head.
      4. Panel Finish:
         1. Concrete Sealer: Manufacturers standard concrete sealer, shop applied. Finish: As indicated in Section 09 06 05 Product and Finish Schedule.

SPEC NOTE: Edit the following (RF#’s) to reflect what is listed in the Product and Finish Schedule. Delete paragraphs that are not required on this Project.

SPEC NOTE: Use the following panel finish when a finished porcelain panel for the access flooring. This is a supplied panel with finish attached. Loading is lower due to the finish. This should also be identified within the Product and Finish Schedule. Delete when not required.

* + 1. Porcelain Floor Panel (AF-#):
       1. Design Load: Supporting a point load of 1000 lbs.
          1. Basis of Design Materials: Elevate Porcelain Floor Panels by Camino Systems.
       2. Panel Composition:
          1. Porcelain calcium sulfate panels construction with PVC protective edge banding.
          2. Size: 610mm (24”) x 610mm (24”) x 29mm (1-5/16”) deep.
          3. Porcelain panel must meet all porcelain tile requirements as defined by ISO 13006 for dry pressed ceramic tiles with low water absorption less than or equal to 0.5%.
    2. Under Structure:
       1. Pedestal assemblies: Hot-dip galvanized steel.
       2. Base: Minimum of 406mm (16”) square and shall be stamped and/or embossed on its underside and shall be adhered to the sub floor with an adhesive recommended by the access flooring manufacturer.
       3. Where mechanical anchors are required for seismic zones, provide same as required by project specific seismic calculations.
       4. The threaded stud shall be 19mm (3/4") diameter steel.
       5. The head assembly shall be designed so that the panels will be held in place with or without corner-lock fasteners.
       6. Pedestal assembly shall provide an adjustment range of +/- 25mm (1”) when finished floor height is 152mm (6”) or more, adjustable at 0.4mm (1/64") increments.
       7. The assembly shall provide a mechanical means to lock the floor in a level plane and adjustments shall be capable of being made without special tools.
       8. For corner-lock system, the head of the all-steel assembly shall be designed to accept a metal fastener to mechanically lock the panels in place.
       9. Pedestal assembly shall support not less than 6,000 lb. axial load and shall resist an average 1,000 inch-pound overturning moment when bonded to a clean concrete slab.
  1. access flooring TOLERANCES
     1. Manufacturing Tolerance:
        1. Nominal panel size: ± 0.4mm (0.015") or less.
        2. Panel flatness: ± 0.5mm (0.020") or less.
        3. Panel squareness: ± 0.4mm (0.015") or less.
        4. Panel interchangeability: All panels, except those modified to meet special conditions, shall be interchangeable.
     2. Installation Tolerance:
        1. Finished installation shall be level within ± 2mm in 3m (0.060" in 10’) and ± 3mm (0.100") for the entire floor.

1. Execution
   1. EXAMINATION AND PREPARATION
      1. Prior to commencing work, examine substrate for suitability of receiving pedestals. Do not commence work until ridges and high spots have been removed, and low spots filled as required for satisfactory installation. Ensure surface sealer has been re-applied after any of the above repairs have been made.
      2. Clean structural slab thoroughly of dirt, dust, extraneous materials, foreign matter and contamination.
      3. 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.
      4. Verify dimensions on contract drawings, including level of interfaces including abutting floor, ledges, and doorsills.
   2. INSTALLATION
      1. Pedestal locations shall be established from approved shop drawings so that mechanical and electrical work can be installed without interfering with pedestal locations.
      2. Installer is to coordinate with other trades to maintain the integrity of the installed access flooring. All traffic on access floor shall be controlled by the installer only. No traffic other than the access floor installation crew shall be permitted on any floor area for forty-eight (48) hours to allow the pedestal adhesive to set. Access floor panels shall not be removed by other trades for seventy-two (72) hours after their installation.
      3. Floor system and accessories shall be installed by an authorized factory trained installation company with a minimum of five (5) years’ experience.
      4. 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.
      5. Installer shall keep the subfloor broom clean as installation progresses.
      6. Install floor diffusers if required as indicated on Mechanical Plans.
      7. Finished installation shall be level within +/- 2mm in 3m (0.060” in 10’) and +/- 3mm (0.100”) for the entire floor area.
      8. Replace damaged materials prior to the application of field applied surfaces.
      9. Assure compatibility between the concrete sealer and the pedestal adhesive provided by the access floor manufacturer.
      10. Co-operate with work of other Sections installing work beneath and on access flooring.
   3. CLEANING
      1. Upon completion of Work of this Section, clean exposed surfaces and areas below raised access flooring of dirt, dust, fingerprints, foot marks and other contaminants and extraneous materials.
      2. Inspect finished installation and make good and replace damaged and faulty workmanship, materials and finishes as directed at no cost to Owner.
      3. During installation, clean-up and remove daily, rubbish, debris and extraneous materials.

END OF SECTION