SECTION 10273 - ACCESS FLOORING SYSTEM, HPL COVERED

City of San Diego, CWP Guidelines

PART 1 -- GENERAL

1.1 WORK OF THIS SECTION

A. The WORK of this Section includes providing the HPL covered access flooring system and appurtenant work, complete.

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NTS: USE DESCRIPTION OPTIONS BELOW IF UNDERFLOOR CAVITY IS USED FOR AIR DISTRIBUTION.

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B. The access flooring system shall consist of an assembly of interchangeable panels mounted on adjustable pedestals to provide an underfloor space for the accommodation of electric conduit and mechanical service lines, [and to serve as an air supply plenum]. System shall be complete with all components, including support system, removable floor panels with floor panel cutouts as required and related trim and accessories such as facia panels, [plenum dividers], ramps, stairs and railings and all necessary anchorage and bracing.

1.2 RELATED SECTIONS

A. The WORK of the following Sections applies to the WORK of this Section. Other Sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this WORK.

1. Section 03300 Cast-in-Place Structural Concrete
2. Section 09250 Gypsum Board
3. Section 09650 Resilient Flooring
4. Section 09900 Architectural Paint Finishes
5. Division 15 Mechanical, as applicable
3. Division 16 Electrical, as applicable

1.3 CODES

A. The WORK of this Section shall comply with the current editions of the following codes as adopted by the City of San Diego Municipal Code:

1. Uniform Building Code

1.4 SPECIFICATIONS AND STANDARDS

A. Except as otherwise indicated, the current editions of the following apply to the WORK of this Section:

ASTM E84	Test Method for Surface Burning Characteristics of Building Materials
NEMA LD-3	Fabrication and Installation of High-Pressure Decorative Laminates
NFPA 75	Standard for the Protection of Electronic Computer/Data Processing Equipment
NFPA 99	Standard for Health Care Facilities

1.5 SHOP DRAWINGS AND SAMPLES

A. The following shall be submitted in compliance with Section 01300:

1. Manufacturer's specifications, technical data, installation instructions, and maintenance instructions.

2. Manufacturer's certified laboratory results of performance or calculations signed by a registered civil or structural engineer showing that the access flooring system and its structural connections are designed to meet all specified system performance design criteria and applicable code requirements.

3. Shop drawings showing complete layout of access flooring based on field-verified dimensions, including dimensional relationships to adjoining work.

   a. Flooring layout shall clearly define all known interruptions to grid, requirement for special sized panels, panels required to be drilled or cut out for services, appurtenances or interruptions, unusual conditions, ramps, elevation differences and other pertinent information.

   b. Drawings shall also include full size details, with descriptive notes indicating materials, finishes, fasteners, typical and special edge conditions, accessories, understructure, bracing, and all other data necessary to permit a full evaluation of the entire access floor system.

   c. Drawings shall clearly indicate underfloor grounding configuration, including individual component sizes, gauges and attachment details, pedestal attachment points and location(s) of intended connections to building grounding system.

4. Manufacturer's calculations verifying the capability of the access floor system to resist the indicated seismic forces.

5. Samples of the access flooring system manufacturer's full range of the finish flooring products and colors conforming to the Specifications. If "equal" products are submitted, they shall include the manufacturer's full range of similar products. In addition, the CONTRACTOR shall submit one complete full-size floor panel with a representative cut-out and edge trim. Also included shall be a 12-inch length of finished railing and an adjustable air register panel.

6. Samples of the full range of ramp floor finish surface materials, colors and textures.

7. Evidence of qualifications of the access flooring installer.

1.6 QUALIFICATIONS

A. **Installer**: Firm approved in writing by the access flooring manufacturer and who has successfully installed access flooring systems of comparable size and complexity in the recent past.

1.7 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Materials shall be delivered in manufacturer's original, unopened protective packaging. Materials shall be stored and safeguarded against damage.

1.8 EXTRA STOCK

A. The CONTRACTOR shall furnish and deliver to the CONSTRUCTION MANAGER after completion and acceptance of the access floor installation, an extra stock of panels equivalent to 5 percent of the total area installed. Also included shall be an equivalent number of subsystem components and perforated panels. This required extra stock shall be exclusive of that necessary for proper installation, waste and remainder stock.

1.9 SPECIAL WARRANTY

A. The flooring system shall be covered by a three-year written warranty providing for removal and replacement, of any system components or groups of components which show evidence of the following:

1. Loss of specified structural capability as indicated by deformation, warping or punching-through of panels subjected to loads within the specified range.

2. Separation or deterioration of panel perimeter trim.

3. Panels with visible peeling, separation, buckling or any other evidence of delamination of the surface material from the substrate.

PART 2 -- PRODUCTS

2.1 GENERAL

A. **Manufacturer's Standards:** The flooring system products shall be in accordance with the manufacturer's literature and published and specifications for the indicated products.

B. **NFPA Standard**: The CONTRACTOR shall furnish an access flooring system which, when installed, shall comply with requirements of NFPA 75 for raised floors.

2.2 SYSTEM PERFORMANCE CRITERIA

A. **Structural Performance**: Manufacturer's standard access flooring system shall be provided which, when in place and functioning as part of the complete floor system, complies with the following minimum requirements for structural performance.

1. Floor Panels: Units, including those with cutouts, shall be capable of supporting loads of the type and magnitude indicated below:

   a. Concentrated load of 600 pounds applied to one square inch located anywhere on the panel, with a deflection under load not to exceed 0.080-inch and a permanent set not to exceed 0.010-inch.

   b. Rolling load of 400 pounds applied anywhere on the panel across a 6-inch diameter with a 1-1/2-inch wide wheel made of hard neoprene, resulting in a surface deformation and permanent set not to exceed 0.020-inch after exposure to 2000 passes.

   c. Impact load of 120 pounds when dropped from 12 inches onto one square inch located anywhere on the panel, with a resulting indentation not to exceed 0.06-inch.

2. Pedestals: Pedestal assemblies capable of withstanding the following types of loads per pedestal, without panels or other supports in place.

   a. Bending moment of 1000 inch-pounds.

   b. Axial load of 5000 pounds.

3. Grid System: Stringers capable, without panels in place, of supporting a concentrated load of 200 pounds at center of span with a permanent set not to exceed 0.010-inch.

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NTS: REQUIREMENT IN "4." BELOW IS BASED ON UBC REQUIREMENTS FOR EARTHQUAKE RISK ZONE 4.

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4. Resistance to Seismic Forces: Entire access floor system shall be capable of withstanding a horizontal force (Fp) of 14 pounds per square foot plus 22.5 percent of the access floor system weight, including pedestals. Fp = ZICpWp. Cp shall be as appropriate for the application and Wp is defined as the dead load of the access floor system plus 25 percent of the floor live load plus a 10 psf partition load allowance. Fasteners shall be designed for four times the force, Fp, as calculated from the formula.

5. Ultimate Strength: Entire access floor system shall be capable of sustaining twice the concentrated panel loading indicated, without permanent set or deformation.

6. Floor system shall be laterally stable in all directions with panels in place or removed, without the use of additional framing or horizontal stringers.

B. **Electrical Resistance**: Manufacturer's standard access flooring system shall be provided which, when in place and functioning as a complete floor system, shall have the following electrical resistance characteristics.

1. Static-Control Floor Covering Resistance: Not less than 500,000 ohms nor more than 20,000 megohms measured across the surface of floor covering through panel to understructure by test method for conductive flooring specified in NFPA 99, Chapter 12, Section 12-4.1.3.

2. Panel to Understructure Resistance: Not more than 10 ohms.

3. Components shall have positive contact for safe, continuous electrical grounding of entire floor system. Spring clips or other mechanical devices are not permitted. Non-conductive vinyl, cork, or other sound-deadening materials which prevent grounding of the system are not approved.

C. **Fire Resistance**: The floor panels, exclusive of the covering, shall have a Class 1 (UBC Classification) flame spread when tested in accordance with ASTM E-84 and NFPA by an independent laboratory.

1. The flame spread integrity shall not be affected when the floor panel is cut.

2.3 MATERIALS AND FABRICATION

A. Standard Field Floor Panels: Panels shall be modular and free of exposed metal edges in the installed position with floor covering in place and shall be interchangeable with other standard field panels except where cut for special conditions. Panels shall be easily placed and removed without disturbing adjacent panels, by one person using a portable lifting device.

1. Nominal Size: 24-inch by 24-inch square panels arranged such that installed finished floor height shall be approximately [12] inches measured from the top of the base floor to top of finished floor panels.

2. Panels shall be rigid structural assemblies fabricated to size required plus or minus 0.005 inches, with a squareness tolerance, expressed as the difference between the diagonal measurements from corner to corner and with a flatness tolerance of plus or minus 0.020 inches measured on a diagonal across the top of the panel. Panels shall be provided which are free of manufacturing imperfections.

3. Steel-Covered Concrete Core Panels: Manufacturer's standard panel construction consisting of flat cold-rolled steel top sheet and die-formed cold-rolled steel bottom pan with lightweight cementitious core; top and bottom sheets joined together by resistance welding to form an enclosed assembly.

a. Fabricate units with holes drilled in corners to align precisely with threaded holes in pedestal heads and to accept countersunk screws with heads flush with top of panel.

b. Panels shall be protected from corrosion on all exterior and interior surfaces by manufacturer's standard factory applied coatings.

c. The floor panel's structural integrity shall not be adversely affected by humidity or water.

B. **Floor Covering**: Tops of floor panels shall be finished to comply with the following requirements:

1. Color and Patterns: Floor covering materials shall be provided which comply with the colors and patterns indicated or, if not indicated, as selected by the CONSTRUCTION MANAGER from manufacturer's standard colors and patterns.

2. Plastic Laminate: NEMA LD 3, High Wear Type, Grade HW 120 (0.120-inch thick) fabricated in one piece to cover each panel face within perimeter plastic edging.

3. Plastic Edging: Edging shall be manufacturer's standard plastic edge trim, applied by manufacturer's standard method, either mechanically or adhesively, or both, to the perimeter of each panel, of size and profile to suit the plastic laminate floor covering.

C. **Pedestals**: CONTRACTOR shall provide manufacturer's standard pedestal assembly. The understructure system shall consist of all metal pedestal base and head assemblies fabricated with manufacturer's standard corrosive resistant finishes. All components are to be factory assembled, including base, column with provisions for height adjustment, and head, made of either steel or aluminum or a combination of both. The system shall be capable of accepting each of the manufacturer's standard stringers without modifying the pedestal head assembly.

1. Assemblies shall be fabricated of sufficient height to provide required underfloor clearance shown.

2. Base: Base shall be square or circular in shape, with not less than 16 square inches of bearing area.

3. A vibration proof mechanism shall be provided for making and holding fine adjustments in height for leveling purposes over a range of not less than 2 inches. Included shall be a means of locking the leveling mechanism at a selected height which shall require deliberate action to change the height setting and shall not allow displacement of the height setting through vibration.

4. Pedestal Heads: Heads shall be of the proper type for direct, bolted support of the floor panels. Fabricate each head with four threaded holes aligned with holes in the floor panels for positive bolting of the panels to the pedestals. Each head shall also be provided with the means for positive bolted connection of stringers to pedestals.

5. Stringer Systems: Stringer system shall be manufacturer's standard all steel modular stringer system designed and fabricated to interlock with pedestal head and to form a modular grid pattern with members under each edge of each floor panel. Stringers shall be bolted to the pedestal heads. Stringers shall have permanently bonded sound deadening gaskets at contact surfaces between panel and grid to deaden sound and to form an effective plenum seal where required.

2.4 ACCESSORIES

A. **Colors and Finishes**: Where exposed accessories are available in more than one standard color or finish, the CONTRACTOR shall provide colors and finishes as selected by the CONSTRUCTION MANAGER.

B. **Cutouts**: Cutouts shall be fabricated in floor panels to accommodate cable penetrations and service outlets. CONTRACTOR shall comply with requirements indicated for size, shape, number and location. Reinforcement or additional support shall be provided if needed to make panels with cutouts comply with the performance criteria.

1. Edges of cutouts shall be fitted with manufacturer's standard grommets in sizes indicted or, where size of cutouts exceeds maximum grommet size available, the edges of cutouts shall be trimmed with manufacturer's standard plastic molding having tapered top flange.

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NTS: RETAIN "2." BELOW IF UNDERFLOOR CAVITY IS USED FOR AIR DISTRIBUTION.

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[2. Foam rubber pads shall be provided for sealing the spaces between cables and edges of cutouts. Trim edge molding shall have flanges and ledges for capturing and supporting pads.]

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NTS: RETAIN "3." BELOW IF FLOOR MOUNTED SERVICE OUTLETS ARE A PROVISION OF THE DESIGN. ANOTHER APPROACH INVOLVES MAKING THESE CONNECTIONS BELOW THE ACCESS FLOORING SYSTEM.

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[3. Service Outlets: In locations and configurations indicated, CONTRACTOR shall provide manufacturer's standard assemblies, designed for recessed mounting, flush with the top of the floor panels, and fabricated to accommodate power, communication, and signal cables. Locate outlets in the center of panels unless specifically instructed otherwise.]

C. **Vertical Fascia**: Where underfloor cavity is not enclosed by abutting walls, columns, beams, or downturned slabs, CONTRACTOR shall provide manufacturer's standard metal closure plates with factory-applied finish.

D. **Ramps**: Where ramps are required, CONTRACTOR shall provide manufacturer's standard ramp construction of width and slope indicated and of same structural performance criteria and construction requirements as specified for the access floor system.

1. Slope shall not exceed 1 inch in 12 feet.

2. Ramp finish floor surface shall be grooved sheet vinyl. Grooves shall be run perpendicular to ramp slope. Color shall be as selected by CONSTRUCTION

MANAGER. Surface material shall be adhered to the substrate with manufacturer's recommended adhesive for the substrate material used.

3. Top and bottom of ramp surface material shall be secured with heavy duty extruded aluminum and resilient, insert-type transition moldings, appropriate to the specific transition application.

E. **Steps**: Where steps are required, they shall be provided in the size and arrangement indicated with floor covering to match access flooring. Non-slip aluminum nosings shall be applied to the treads unless otherwise indicated.

F. **Railings**: Railings shall be manufacturer's standard satin-finished extruded aluminum post- and rail-type railings, at ramps and open-sided perimeter of access flooring where indicated. Handrail assembly shall include all required and necessary components such as intermediate rails, posts, brackets, end caps, wall returns, wall and floor flanges, plates and anchorages.

G. **Panel Lifting Device**: Portable lifting device shall be manufacturer's standard, suction type appropriate to the laminate floor covering material specified. CONTRACTOR shall furnish a minimum of two such devices, with a total quantity equivalent to one for every 2000 square feet of access flooring installed.

H. **Perimeter Support**: Where indicated or required, CONTRACTOR shall provide manufacturer's standard aluminum extrusion to support panel edge and form a transition between the access flooring and adjoining floor material which may occur at the same level as the access flooring system.

I. **Grounding Conductors and Connectors**: All electrical components provided as a part of the grounding apparatus for the access floor system shall be solid copper.

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NTS: RETAIN "J" BELOW IF UNDERFLOOR CAVITY IS USED FOR AIR DISTRIBUTION AND "K" BELOW IF MULTI-ZONE DISTRIBUTION IS EMPLOYED.

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[J. **Perforated Panels**: Perforated air flow panel shall be manufacturer's standard, with high pressure plastic laminate floor covering and with equivalent strength to standard field panel. The percentage of free area indicated shall be provided, and if not indicated, as selected by CONSTRUCTION MANAGER from manufacturer's standard offerings. Panel shall have manufacturer's standard air volume control damper with no metal parts exposed to contact on wearing surface.]

[K. **Plenum Dividers**: Manufacturer's standard metal plenum dividers shall be installed where indicated on the drawings to divide the underfloor plenum into air conditioning zones.]

2.5 MANUFACTURERS

A. Products shall be of the following manufacture and type (or equal):

1. Access Flooring

Take Access Floors, Inc., Series 900, "ConCore" with Combination Bolted Stringer/Cornerlock System

U.S.G. Interiors, Inc. Donn Access Floor Systems, "SolidFeel II" with bolted stringers and "Cornerloc" bolted panel corners

2. Ramp Finish Floor Surface

R.C. Musson, No. 1009g

PART 3 -- EXECUTION

3.1 GENERAL

A. The access flooring system shall be installed per the manufacturer's printed instructions.

B. The CONTRACTOR shall take accurate field measurements of the entire area prior to preparing shop drawings and fabrication to ensure proper fitting of the WORK. He shall coordinate the access flooring work with other operations to ensure that all items which are installed below the access floor system or intended to penetrate through the flooring are provided correct and in place.

3.2 PROHIBITION OF ON-SITE CUTTING

A. The completed access floor system shall form a plenum for the cooling of delicate electronic computer equipment and peripheral devices. As such, residue from installation of the access floor system, in the form of metal shavings and similar particulate matter in the underfloor plenum space, will not be permitted.

B. CONTRACTOR shall not cut, trim or conduct other debris-producing operations associated with installation of the access flooring system in the actual rooms where access flooring is to be installed.

3.3 PREPARATION

A. Installation shall begin only after work area is free and clear of all other trades. Grid layout shall not commence until underfloor slab has been properly and acceptably sealed with specified sealer. Confirm that pedestal adhesive is compatible with sealer used.

B. Access floor system shall be laid out according to approved shop drawings and in coordination with instrumentation equipment installation and all other affected trades. Layout shall be made in such a way as to keep the number of cut panels to a minimum Pedestal locations shall be marked with a permanent marker so that mechanical and electrical work can be installed without interfering with pedestals.

C. Complete necessary subfloor preparation and vacuum clean the subfloor of all dust, dirt, and construction debris before starting installation.

3.4 INSTALLATION

A. Install floor system and accessories under the supervision of the manufacturer's authorized representative to ensure a smooth, rigid, substantial, workmanlike installation, free of vibration, rocking, rattles, squeaks, and other unacceptable performance.

B. Pedestals shall be set in adhesive as recommended by the floor system manufacturer to provide full bearing of the pedestal base on the subfloor.

C. Grid members shall be secured to pedestal heads in accordance with manufacturer's instructions.

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NTS: RETAIN "D" BELOW IF UNDERFLOOR CAVITY IS USED FOR AIR DISTRIBUTION.

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[D. Plenum dividers shall be accurately scribed and fitted to subfloor. Perimeter of each plenum panel shall be thoroughly sealed with sealant to ensure maintenance of plenum effect.]

E. Fascia panels shall be accurately scribed and fitted to the subfloor and to adjacent finish floor. Perimeter of each fascia panel shall be thoroughly sealed with sealant to ensure maintenance of plenum effect where underfloor cavity is used for air distribution. Remove visible evidence of sealant from exposed surfaces of fascia.

F. The subfloor shall be thoroughly vacuum cleaned as the installation of floor panels proceeds. Cleaning shall extend as far as possible under installed panels.

G. Prior to the final installation of floor panels, the CONTRACTOR shall connect the access floor substructure to the building ground in conformance with approved shop drawing layout.

H. Installed access floor shall be leveled to within 0.10-inch of true level over the entire area and within 0.0625-inch in any 10-foot distance.

I. Ramps, railings and other accessory items shall be provided in accordance with manufacturer's recommendations.

3.5 CLEANING, PROTECTION AND FINAL ADJUSTMENTS

A. The CONTRACTOR shall replace access floor panels which are chipped, broken, stained, scratched, or otherwise damaged.

B. After completion of the installation, the entire floor system shall be vacuum cleaned and covered with continuous sheets of reinforced paper or plastic. The CONTRACTOR shall maintain and repair damages to protective covering until the CONSTRUCTION MANAGER directs its removal.

3.6 EXTRA STOCK

A. The CONTRACTOR shall furnish extra stock of access floor system materials to the CONSTRUCTION MANAGER. Extra stock materials shall be furnished which completely

match the products installed, packaged with protective coverings for storage and identified with appropriate labels.

B. The following extra stock shall be furnished:

1. [ ] floor panels
2. [ ] pedestals
[3. [ ] perforated panels]

** END OF SECTION **