SECTION 096900 - ACCESS FLOORING

Revise this Section by deleting and inserting text to meet Project-specific requirements.

Verify that Section titles referenced in this Section are correct for this Project's Specifications; Section titles may have changed.

1. GENERAL

Coordinate with electric engineer to be sure electric work covers positive electrical grounding of access flooring to building ground. If the area below the floor is used as an underfloor air distribution system with a concrete floor, then the concrete must be sealed to prevent dust. Also coordinate floor dampers with mechanical engineer

* + - 1. RELATED DOCUMENTS
         1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
      2. SUMMARY
         1. Section Includes:

Cementitious-core steel panel access flooring.

Wood-core steel panel access flooring.

Aluminum panel access flooring.

Retain paragraph below if grounding work is part of a single contract. Delete if there is a separate electrical work contract.

* + - * 1. Related Requirements:

Section 260526 “Grounding and Bonding for Electrical Systems” for connection to ground of the access-flooring understructure.

Retain paragraph below if grounding work provided by a separate electrical work contract.

* + - * 1. Related Work Provided by Others:

Grounding and bonding of access-flooring understructure to be provided by the Electrical Work Contract.

* + - 1. COORDINATION
         1. Coordinate location of mechanical and electrical work in underfloor cavity to prevent interference with access flooring.
         2. Mark pedestal locations on subfloor to enable mechanical and electrical work to proceed without interfering with access-flooring pedestals installed after mechanical and electrical work.
      2. PREINSTALLATION MEETINGS

Retain "Preinstallation Conference" paragraph below if Work of this Section is extensive or complex enough to justify a conference.

* + - * 1. Preinstallation Conference: Conduct conference at Project site.

If needed, insert list of conference participants.

Review connections between access flooring and mechanical and electrical systems.

Retain subparagraphs below for underfloor air distribution (UFAD) systems.

Review requirements related to sealing the plenum.

Review procedures for keeping underfloor space clean.

* + - 1. SUBMITTALS
         1. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.
         2. Manufacturer’s installation instructions shall be provided along with product data.
         3. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
         4. Product Data: For each type of product.

Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for access flooring.

Include loading capacities.

USE PARAGRAPH BELOW WITH EPD REQUIREMENT WHEN PROJECT ESTIMATE IS $1M OR MORE.

* + - * 1. Submit an Environmental Product Declaration (EPD) from the manufacturer for steel panels within this specification section, if available. A statement of the contractor’s good faith effort to obtain the EPD shall be provided if not available.

Manufacturer-provided EPDs must be Product Specific Type III (Third-Party Reviewed), in adherence with ISO 14025 *Environmental labels and declarations*, ISO 14044 *Environmental management – Life cycle assessment*, and ISO 21930 *Core rules for environmental product declarations of construction products and services.*

* + - * 1. Shop Drawings: For access flooring:

Include layout of access flooring and relationship to adjoining Work based on field-verified dimensions.

Details and sections with descriptive notes indicating materials, finishes, fasteners, typical and special edge conditions, accessories, and understructures.

Retain "Samples" paragraph below for single-stage Samples, with a subordinate list if applicable. Retain "Samples for Initial Selection" and "Samples for Verification" paragraphs for two-stage Samples.

* + - * 1. Samples: For the following products:

Floor Coverings: Full-size units for each color and texture specified.

Exposed Metal Accessories: Approximately 10 inches in length.

One full-size floor panel, pedestal, and understructure unit for each type of access flooring required.

* + - * 1. Samples for Initial Selection: For each type of exposed finish.
        2. Samples for Verification: For the following products:

Floor Coverings: Full-size units.

Exposed Metal Accessories: Approximately 10 inches in length.

One full-size floor panel, pedestal, and understructure unit for each type of access flooring required.

Retain "Delegated-Design Submittal" paragraph below if design services have been delegated to Contractor. Coordinate with delegated design requirement in "Performance Requirements" Article.

* + - * 1. Delegated-Design Submittal: For seismic design of access flooring.

Coordinate "Qualification Data" paragraph below with qualification requirements in "Quality Assurance" Article.

* + - * 1. Qualification Data: For [**Installer**] [**and**] [**testing agency**].

Retain "Product Certificates" paragraph below to require submittal of product certificates from manufacturers.

* + - * 1. Product Certificates: For each type of access flooring.
        2. Product Test Reports: For each type of access-flooring material and floor covering, performed by a qualified testing agency.

Retain "Seismic Design Calculations" paragraph below if delegated-design submittal for seismic performance is required.

* + - * 1. Seismic Design Calculations: For seismic design of access flooring, including analysis data signed and sealed by the qualified professional engineer, licensed in the State of New York, responsible for their preparation.

Retain "Preconstruction Test Reports" paragraph below if specifying preconstruction testing in "Preconstruction Testing" Article as Contractor's responsibility.

* + - * 1. Preconstruction Test Reports: For preconstruction adhesive field test.
      1. MAINTENANCE MATERIAL SUBMITTALS

Increase numbers in paragraph below if desired but verify with OGS Team Leader. Delete “stringers” from paragraph below if stringerless system is being used. Consult manufacturer or structural consultant if stringers are required.

* + - * 1. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

Panels: Four.

Gratings or Perforated Panels: One.

Pedestals: Four.

Stringers: Four.

* + - * 1. Special Tools: Furnish one panel lifting device for each room, and for each 1000 sq ft of access flooring in large rooms.
      1. QUALITY ASSURANCE
         1. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
         2. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

Build mockup of typical access flooring, as shown on Drawings. Size to be an area no fewer than five floor panels in length by five floor panels in width.

Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Director’s Representative specifically approves such deviations in writing.

Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

* + - 1. PRECONSTRUCTION TESTING

Retain this article for preconstruction testing. Project-specific preconstruction testing of assemblies can be expensive but may be the best means of proving that performance requirements are met.

* + - * 1. Preconstruction Testing Service: [**Director’s Representative will engage**] [**Engage**] a qualified testing agency to perform preconstruction testing on field mockups.

Retain first subparagraph below if size and configuration of assemblies are not indicated on Drawings.

<**Insert sizes and configurations of assemblies**>.

Use personnel, materials, and methods of construction that will be used at Project site.

Notify Director’s Representative seven days in advance of the dates and times when laboratory mockups will be tested.

Retain "Preconstruction Adhesive Field Test" paragraph below if overturning moment is critical, for example, in seismic applications. Testing can add time and expense to access-flooring installation.

* + - * 1. Preconstruction Adhesive Field Test: Before installing pedestals, field test their adhesion to subfloor surfaces by doing the following:

In areas representative of each subfloor surface, set typical pedestal assemblies in same adhesive, and use methods required for the completed Work.

Cure time in first subparagraph below can be 30 days or longer.

Allow test installation to cure for manufacturer's recommended cure time, with a pressure of 25 lbf applied vertically to pedestals during this period.

After curing, apply lateral load against a straight steel bar inserted 2 inches into pedestal stems. Measure the force needed to cause adhesive failure of pedestal base.

Remove and discard failed pedestals, and clean pedestals of adhered residue.

Proceed with installation only after tests show compliance with performance requirement specified for pedestals' capability to resist overturning moment.

* + - 1. FIELD CONDITIONS

Revise this article to suit products. Retain option in "Environmental Limitations" paragraph below for UFAD systems.

* + - * 1. Environmental Limitations: Do not install access flooring until spaces are enclosed,[**subfloor has been sealed,**] ambient temperature is between 50 and 90 deg F, and relative humidity is not less than 20 and not more than 70 percent.

1. PRODUCTS

Manufacturers and products listed in SpecAgent and Masterworks Paragraph Builder are neither recommended nor endorsed by the AIA or Deltek. Before inserting names, verify that manufacturers and products listed there comply with requirements retained or revised in descriptions and are both available and suitable for the intended applications.

* + - 1. PERFORMANCE REQUIREMENTS

Retain "Delegated Design" paragraph below if Contractor is required to assume responsibility for design of seismic performance. Not all projects require delegated design; some manufacturers have pre-engineered designs for common conditions, such as when access flooring is less than 24 inches high (610 mm), imposed loads are small, and seismic zone has lower activity. Consult authorities having jurisdiction, structural engineer, and manufacturers.

* + - * 1. Delegated Design: Engage a qualified professional engineer, licensed in the State of New York, to design access flooring for seismic performance, including loads imposed on the access flooring by items and equipment installed on the access flooring.

Retain "Seismic Performance" paragraph below for projects requiring seismic design. Delete paragraph if performance requirements are indicated on Drawings. Model building codes and ASCE/SEI 7 establish criteria for buildings subject to earthquake motions. Coordinate requirements with structural engineer.

* + - * 1. Seismic Performance: Access flooring shall withstand the effects of earthquake motions determined according to ASCE/SEI 7, including loads imposed on the access flooring by items and equipment installed on the access flooring.

Loads in "Structural Performance" paragraph below are examples only; revise to suit Project. Verify that loading requirements coordinate with each other and match the products specified. If needed, revise the text. See the Evaluations.

* + - * 1. Structural Performance: Provide access flooring capable of complying with the following performance requirements according to testing procedures in CISCA's "Recommended Test Procedures for Access Floors":

Concentrated Loads: 1500 lbf with the following deflection and permanent set:

Insert requirements for bottom-surface deflection if required.

Top-Surface Deflection: 0.10 inch.

Permanent Set: 0.010 inch.

Ultimate Loads: 3000 lbf.

Coordinate loads specified in "Rolling Loads" subparagraph below with loads specified in "Structural Performance" paragraph above to avoid failure in panels with insufficient concentrated- and ultimate-load capability.

Rolling Loads: With local or overall deformation not to exceed 0.040 inch.

"CISCA Wheel 1" subparagraph below simulates low-repetition, small-wheel loads similar to equipment move-in on dollies; "CISCA Wheel 2" subparagraph below simulates high-repetition, large-wheel loads similar to recurring office cart traffic.

CISCA Wheel 1: 10 passes at 600 lbf.

CISCA Wheel 2: 10,000 passes at 600 lbf.

Stringer Load Test: 450 lbf at center of span with a permanent set not to exceed 0.010 inch.

Pedestal Axial Load Test: 6000 lbf.

The requirements for pedestal-overturning moment in seismic zones will vary based upon project conditions and the attachment method determined by the delegated design submittal if required. Coordinate with manufacturer.

Pedestal-Overturning-Moment Test: 1000 lbf x inches.

Uniform Load Test: 500 lbf/sq. ft. with a maximum top-surface deflection not to exceed 0.040 inch and a permanent set not to exceed 0.010 inch.

Drop Impact Load Test: 150 lb.

* + - * 1. Fire Performance:

Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

Flame-Spread Index: 25 or less.

Smoke-Developed Index: 450 or less.

* + - 1. CEMENTITIOUS-CORE STEEL PANEL ACCESS FLOORING <**Insert drawing designation**>

If retaining more than one panel type, indicate location of each on Drawings and insert drawing designation. Use these designations on Drawings to identify each product.

* + - * 1. Fabricate panels from cold-rolled steel sheet, with die-cut flat top sheet and die-formed and stiffened bottom pan welded together. Protect metal surfaces against corrosion using manufacturer's standard factory-applied finish. Fully grout internal spaces of completed units with manufacturer's standard cementitious fill.

[Manufacturers:](http://www.specagent.com/Lookup?ulid=523) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[ASM Modular Systems, Inc](http://www.specagent.com/Lookup?uid=123457065859).

Global IFS.

[Tate Access Floors, Inc](http://www.specagent.com/Lookup?uid=123457065864).

Approved equivalent.

Option in "Configuration" subparagraph below is standard. Special sizes may be available from some manufacturers, including 600-by-600-mm panels for buildings constructed to SI (metric) sizes.

Configuration: Provide modular panels with nominal size of 24 by 24 inches, interchangeable with other field panels without disturbing adjacent panels or understructure.

Retain "Tile Carpeting System" subparagraph below for panels manufactured to mate with proprietary tile carpeting system. Specify tile carpeting in Section 096813 "Tile Carpeting."

Tile Carpeting System: Fabricate panels with alignment pins to accept field-installed carpet tile with receptors designed to engage pins.

Attachment to Understructure: [**Bolted**] [**By gravity**].

Retain "Perforated Panels" and "Grates" paragraphs below if required. Perforated panels and grates are used for delivering large amounts of air to heavy equipment rooms, such as telecommunications switch centers, but not for normal office ventilation. Perforated panels are typically not rated for the same rolling-load performance as solid panels or grates.

* + - * 1. Perforated Panels: Perforated top surface with [**holes**] [**slots**] of number, spacing, and size standard with manufacturer to produce a nominal open area of 25 percent.[**Provide mechanical dampers with each panel unit.**]

Quantity: As shown on Drawings.

Finish: Manufacturer's standard.

* + - * 1. Grates: Grating ribs arranged in manufacturer's standard pattern to produce a nominal open area of 50 percent.[**Provide mechanical dampers with each panel unit.**]

Quantity: As shown on Drawings.

Finish: Manufacturer's standard.

Retain "Pedestal System Understructure" or "Stringer System Understructure" paragraph below.

Pedestals are typically made of steel, although some manufacturers have stainless-steel pedestals available. Several manufacturers have pedestal systems using both steel and aluminum; revise text if required. Some methods of galvanizing may be susceptible to formation of zinc whiskers, which can damage electronic equipment; consult with manufacturers for access floors used in data centers.

* + - * 1. Pedestal System Understructure: System consisting of base, column with provisions for height adjustment, and head (cap); made of steel.

Retain option in "Base" subparagraph below for standard base. Insert area for larger bases if needed to comply with seismic requirements. Verify requirements with structural engineer.

Base: Square or circular base with not less than 16 sq. in. of bearing area.

Column: Of height required to bring finished floor to elevations indicated. Weld column to base plate.

Provide vibration-proof leveling mechanism for making and holding fine adjustments in height over a range of not less than 2 inches and for locking at a selected height, so deliberate action is required to change height setting and prevent vibratory displacement.

Head: Designed to support the floor panel indicated.

Pads or gaskets specified in first subparagraph below are not used with bolted-panel systems and may be optional with nonbolted-panel systems. Verify requirements with manufacturers.

Provide sound-deadening pads or gaskets at contact points between heads and panels.

Retain "Bolted Assemblies" subparagraph below if required.

Bolted Assemblies: Provide head with four holes aligned with holes in floor panels for bolting of panels to pedestals.

Some methods of galvanizing may be susceptible to formation of zinc whiskers, which can damage electronic equipment; consult with manufacturers for access floors used in data centers.

* + - * 1. Stringer System Understructure: Modular steel stringer systems designed to bolt to pedestal heads and form a grid pattern. Protect steel components with manufacturer's standard galvanized or corrosion-resistant paint finish.

"Continuous Gaskets" subparagraph below may not be required where panel edge trim provides effective seal or where stringers are nested between panels.

Continuous Gaskets: At contact surfaces between panel and stringers to deaden sound, seal off the underfloor cavity from above, and maintain panel alignment and position.

* + - * 1. Floor Finish: Provide factory-applied floor finish fabricated in one piece to cover entire panel face; with [**integral trim**] [**applied perimeter plastic**] edging.

Many types of finishes may be used with access flooring. Retain one or more of "High-Pressure Plastic Laminate," "Conductive High-Pressure Plastic Laminate," "Static-Dissipative Vinyl Tile," and "Conductive Vinyl Tile" subparagraphs below for factory-applied finishes, or revise to suit Project. If retaining more than one finish, indicate location of each in finish schedule.

"High-Pressure Plastic Laminate" subparagraph below describes floor coverings with electrical-resistance characteristics suitable for use in computer room or office environments. Manufacturers may describe some tiles as "antistatic," as "low-static generating," or as having "low-static-generating properties"; however, specific definitions of these properties may vary among manufacturers. Coordinate with Facility's electrostatic discharge (ESD) requirements. Grade HDH is for 0.118-inch thickness. High-Pressure Plastic Laminate: NEMA LD 3, High-Wear type, Grade HDH.

[Manufacturers:](http://www.specagent.com/Lookup?ulid=12860) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Formica Corporation](http://www.specagent.com/Lookup?uid=123457068728).

[Nevamar; a Panolam Industries International, Inc. brand](http://www.specagent.com/Lookup?uid=123457068730).

Approved equivalent.

Electrical Resistance: Average no less than 1 megohm and no more than 20,000 megohms when installed floor coverings are surface-to-ground tested according to NFPA 99.

Colors, Textures, and Patterns: [**As indicated by manufacturer's designations**] [**Match Director’s Representative's samples**] [**As selected by Director’s Representative from manufacturer's full range**].

"Conductive High-Pressure Plastic Laminate" subparagraph below describes conductive floor coverings with electrical-resistance characteristics suitable for use in computer, clean, and hospital operating rooms. Coordinate with Facility’s ESD requirements. Grade HDH is for 0.118-inch thickness.

Conductive High-Pressure Plastic Laminate: NEMA LD 3, High-Wear type, Grade HDH.

[Manufacturers:](http://www.specagent.com/Lookup?ulid=12861) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Nevamar; a Panolam Industries International, Inc. brand](http://www.specagent.com/Lookup?uid=123457068731).

Approved equivalent.

Electrical Resistance: Average no less than 25,000 ohms and no more than 1 megohm when installed floor coverings are surface-to-ground tested according to ASTM F150 with 100-V applied voltage.

Colors, Textures, and Patterns: [**As indicated by manufacturer's designations**] [**Match Director’s Representative's samples**] [**As selected by Director’s Representative from manufacturer's full range**].

"Static-Dissipative Vinyl Tile" subparagraph below describes static-dissipative floor coverings with electrical-resistance characteristics suitable for use in office environments. Coordinate with Facility’s ESD requirements.

Static-Dissipative Vinyl Tile: ASTM F1700, Class I (Monolithic Vinyl Tile), Type A (Smooth Surface).

[Manufacturers:](http://www.specagent.com/Lookup?ulid=12863) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Flexco; Roppe Holding Company](http://www.specagent.com/Lookup?uid=123457068734).

[VPI Corporation](http://www.specagent.com/Lookup?uid=123457068735).

Approved equivalent.

Electrical Resistance: Average no less than 1 megohm and no more than 1000 megohms when installed floor coverings are surface-to-ground tested according to ASTM F150 with 100-V applied voltage.

Colors, Textures, and Patterns: [**As indicated by manufacturer's designations**] [**Match Director’s Representative's samples**] [**As selected by Director’s Representative from manufacturer's full range**].

"Conductive Vinyl Tile" subparagraph below describes conductive floor coverings with electrical-resistance characteristics suitable for use in computer, clean, and hospital operating rooms. Coordinate with Facility’s ESD requirements.

Conductive Vinyl Tile: ASTM F1700, Class I (Monolithic Vinyl Tile), Type A (Smooth Surface).

[Manufacturers:](http://www.specagent.com/Lookup?ulid=12862) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Flexco; Roppe Holding Company](http://www.specagent.com/Lookup?uid=123457068732).

[VPI Corporation](http://www.specagent.com/Lookup?uid=123457068733).

Approved equivalent.

Electrical Resistance: Average no less than 25,000 ohms and no more than 1 megohm when installed floor coverings are surface-to-ground tested according to ASTM F150 with 100-V applied voltage.

Colors, Textures, and Patterns: [**As indicated by manufacturer's designations**] [**Match Director’s Representative's samples**] [**As selected by Director’s Representative from manufacturer's full range**].

* + - 1. WOOD-CORE STEEL PANEL ACCESS FLOORING <**Insert drawing designation**>

If retaining more than one panel type, indicate location of each on Drawings and insert drawing designation. Use these designations on Drawings to identify each product.

* + - * 1. Fabricate panels with 1-inch- thick particleboard core laminated to top and bottom steel face sheets, and with a flame-spread index of 25 or less according to ASTM E84. Provide core edges enclosed with upturned, die-formed, bottom-sheet edge or with perimeter steel channel welded to top sheet and welded or bonded to bottom sheet. Protect metal surfaces against corrosion by manufacturer's standard factory-applied finish.

[Manufacturers:](http://www.specagent.com/Lookup?ulid=525) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Computer Environments, Inc](http://www.specagent.com/Lookup?uid=123457065870).

Global IFS.

[Tate Access Floors, Inc](http://www.specagent.com/Lookup?uid=123457065871).

Approved equivalent.

Option in "Configuration" subparagraph below is standard. Special sizes may be available from some manufacturers, including 600-by-600-mm panels for buildings constructed to SI (metric) sizes.

Configuration: Provide modular panels with nominal size of 24 by 24 inches, interchangeable with other field panels without disturbing adjacent panels or understructure.

Retain "Tile Carpeting System" subparagraph below for proprietary panels if required. Specify tile carpeting in Section 096813 "Tile Carpeting."

Tile Carpeting System: Fabricate panels with alignment pins to accept field-installed carpet tile with receptors designed to engage pins.

Attachment to Understructure: [**Bolted**] [**By gravity**].

Retain "Perforated Panels" and "Grates" paragraphs below if required. Perforated panels and grates are used for delivering large amounts of air to heavy equipment rooms, such as telecommunications switch centers, but not for normal office ventilation. Perforated panels are typically not rated for the same rolling-load performance as solid panels or grates.

* + - * 1. Perforated Panels: Perforated top surface with [**holes**] [**slots**] of number, spacing, and size standard with manufacturer to produce a nominal open area of 25 percent.[**Provide mechanical dampers with each panel unit.**]

Quantity: As shown on Drawings.

Finish: Manufacturer's standard.

* + - * 1. Grates: Grating ribs arranged in manufacturer's standard pattern to produce a nominal open area of 50 percent.[**Provide mechanical dampers with each panel unit.**]

Quantity: As shown on Drawings.

Finish: Manufacturer's standard.

Retain "Pedestal System Understructure" or "Stringer System Understructure" paragraph below.

Pedestals are typically made of steel, although some manufacturers have stainless-steel pedestals available. Several manufacturers have pedestal systems using both steel and aluminum; revise text if required. Some methods of galvanizing may be susceptible to formation of zinc whiskers, which can damage electronic equipment; consult with manufacturers for access floors used in data centers.

* + - * 1. Pedestal System Understructure: System consisting of base, column with provisions for height adjustment, and head (cap); made of steel.

Retain option in "Base" subparagraph below for standard base. Insert area for larger bases if needed to comply with seismic requirements. Verify requirements with structural engineer.

Base: Square or circular base with not less than 16 sq. in. of bearing area.

Column: Of height required to bring finished floor to elevations indicated. Weld to base plate.

Provide vibration-proof leveling mechanism for making and holding fine adjustments in height over a range of not less than 2 inches and for locking at a selected height, so deliberate action is required to change height setting and prevent vibratory displacement.

Head: Designed to support the floor panel indicated.

Pads or gaskets specified in first subparagraph below are not used with bolted-panel systems and may be optional with nonbolted-panel systems. Verify requirements with manufacturers.

Provide sound-deadening pads or gaskets at contact points between heads and panels.

Retain "Bolted Assemblies" subparagraph below if required.

Bolted Assemblies: Provide head with four holes aligned with holes in floor panels for bolting of panels to pedestals.

Some methods of galvanizing may be susceptible to formation of zinc whiskers, which can damage electronic equipment; consult with manufacturers for access floors used in data centers.

* + - * 1. Stringer System Understructure: Modular steel stringer systems designed to bolt to pedestal heads and form a grid pattern. Protect steel components with manufacturer's standard galvanized or corrosion-resistant paint finish.

"Continuous Gaskets" subparagraph below may not be required where panel edge trim provides effective seal or where stringers are nested between panels.

Continuous Gaskets: At contact surfaces between panel and stringers to deaden sound, seal off the underfloor cavity from above, and maintain panel alignment and position.

* + - * 1. Floor Finish: Provide factory-applied floor finish fabricated in one piece to cover entire panel face; with [**integral trim**] [**applied perimeter plastic**] edging.

Many types of finishes may be used with access flooring. Retain one or more of "High-Pressure Plastic Laminate," "Conductive High-Pressure Plastic Laminate," "Static-Dissipative Vinyl Tile," and "Conductive Vinyl Tile" subparagraphs for factory-applied finishes, or revise to suit Project. If retaining more than one finish, indicate location of each in finish schedule.

"High-Pressure Plastic Laminate" subparagraph below describes floor coverings with electrical-resistance characteristics suitable for use in computer rooms or office environments. Manufacturers may describe some tiles as "antistatic," as "low-static generating," or as having "low-static-generating properties"; however, specific definitions of these properties may vary among manufacturers. Coordinate with Facility’s ESD requirements. Grade HDH is for 0.118-inch thickness.

High-Pressure Plastic Laminate: NEMA LD 3, High-Wear type, Grade HDH.

[Manufacturers:](http://www.specagent.com/Lookup?ulid=12864) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Formica Corporation](http://www.specagent.com/Lookup?uid=123457068736).

[Nevamar; a Panolam Industries International, Inc. brand](http://www.specagent.com/Lookup?uid=123457068738).

Approved equivalent.

Electrical Resistance: Average no less than 1 megohm and no more than 20,000 megohms when installed floor coverings are surface-to-ground tested according to NFPA 99.

Colors, Textures, and Patterns: [**As indicated by manufacturer's designations**] [**Match Director’s Representative's samples**] [**As selected by Director’s Representative from manufacturer's full range**].

"Conductive High-Pressure Plastic Laminate" subparagraph below describes conductive floor coverings with electrical-resistance characteristics suitable for use in computer, clean, and hospital operating rooms. Coordinate with Facility’s ESD requirements. Grade HDH is for 0.118-inch thickness.

Conductive High-Pressure Plastic Laminate: NEMA LD 3, High-Wear type, Grade HDH.

[Manufacturers:](http://www.specagent.com/Lookup?ulid=12865) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Nevamar; a Panolam Industries International, Inc. brand](http://www.specagent.com/Lookup?uid=123457068739).

Approved equivalent.

Electrical Resistance: Average no less than 25,000 ohms and no more than 1 megohm when installed floor coverings are surface-to-ground tested according to ASTM F150 with 100-V applied voltage.

Colors, Textures, and Patterns: [**As indicated by manufacturer's designations**] [**Match Director’s Representative's samples**] [**As selected by Director’s Representative from manufacturer's full range**].

"Static-Dissipative Vinyl Tile" subparagraph below describes static-dissipative floor coverings with electrical-resistance characteristics suitable for use in office environments. Coordinate with Facility’s ESD requirements.

Static-Dissipative Vinyl Tile: ASTM F1700, Class I (Monolithic Vinyl Tile), Type A (Smooth Surface).

[Manufacturers:](http://www.specagent.com/Lookup?ulid=12866) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Flexco; Roppe Holding Company](http://www.specagent.com/Lookup?uid=123457068740).

[VPI Corporation](http://www.specagent.com/Lookup?uid=123457068741).

Approved equivalent.

Electrical Resistance: Average no less than 1 megohm and no more than 1000 megohms when installed floor coverings are surface-to-ground tested according to ASTM F150 with 100-V applied voltage.

Colors, Textures, and Patterns: [**As indicated by manufacturer's designations**] [**Match Director’s Representative's samples**] [**As selected by Director’s Representative from manufacturer's full range**].

"Conductive Vinyl Tile" subparagraph below describes conductive floor coverings with electrical-resistance characteristics suitable for use in computer, clean, and hospital operating rooms. Coordinate with Facility’s ESD requirements.

Conductive Vinyl Tile: ASTM F1700, Class I (Monolithic Vinyl Tile), Type A (Smooth Surface).

[Manufacturers:](http://www.specagent.com/Lookup?ulid=12867) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Flexco; Roppe Holding Company](http://www.specagent.com/Lookup?uid=123457068742).

[VPI Corporation](http://www.specagent.com/Lookup?uid=123457068743).

Approved equivalent.

Electrical Resistance: Average no less than 25,000 ohms and no more than 1 megohm when installed floor coverings are surface-to-ground tested according to ASTM F150 with 100-V applied voltage.

Colors, Textures, and Patterns: [**As indicated by manufacturer's designations**] [**Match Director’s Representative's samples**] [**As selected by Director’s Representative from manufacturer's full range**].

* + - 1. FABRICATION
         1. Fabrication Tolerances:

Size: Plus or minus 0.020 inch of required size.

Squareness: Plus or minus 0.015 inch between diagonal measurements across top of panel.

Flatness: Plus or minus 0.035 inch, measured on a diagonal on top of panel.

* + - * 1. Panel Markings: Clearly and permanently mark floor panels on their underside with panel type and concentrated-load rating.
        2. Bolted Panels: Provide panels 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.

Retain "Captive Fasteners" subparagraph below if required and available from manufacturers.

Captive Fasteners: Provide fasteners held captive to panels.

* + - * 1. Cutouts: Fabricate cutouts in floor panels for cable penetrations and service outlets. Provide reinforcement or additional support, if needed, to make panels with cutouts comply with structural performance requirements.

Number, Size, Shape, and Location: As indicated.

Cutouts for outlets, diffusers, and some other accessories may not require grommets described in "Grommets" subparagraph below. On Drawings, indicate locations of cutouts that are to receive grommets.

Grommets: Where indicated, fit cutouts with manufacturer's standard grommets; or, if size of cutouts exceeds maximum grommet size available, trim edge of cutouts with manufacturer's standard plastic molding with tapered top flange. Furnish removable covers for grommets.

Retain subparagraph below for UFAD systems.

Provide foam-rubber pads for sealing annular space formed in cutouts by cables.

* + - 1. ACCESSORIES

Retain "Adhesives" or "Post-Installed Anchors" paragraph below. Seismic installations are possible with either adhesives or post-installed anchors, depending on project conditions. Verify anchor requirements with structural engineer and access-flooring manufacturers. Coordinate with "Installation" Article. Insert more detailed requirement for type of material in "Adhesives" subparagraph if necessary.

* + - * 1. Adhesives: Manufacturer's standard adhesive for bonding pedestal bases to subfloor.

Verify expansion anchor requirements with structural engineer and, if necessary, insert more detailed requirements for type and depth of anchors. Revise zinc-plating thickness to suit Project's service conditions but only after verifying availability.

* + - * 1. Post-Installed Anchors: For anchoring pedestal bases to subfloor, provide [**two**] [**four**] post-installed [**expansion anchors**] [**threaded concrete screws**] made from carbon-steel components, zinc plated to comply with ASTM B633, Class Fe/Zn 5 (5 microns) for Class SC 1 (Mild), with the capability to sustain, without failure, a load equal to 1.5 times the loads imposed by pedestal-overturning moment on fasteners, as determined by testing according to ASTM E488/E488M, conducted by a qualified independent testing agency.

Retain "Service Outlets" paragraph below if required. Designs of outlets differ among manufacturers; if retaining, revise to suit Project.

* + - * 1. 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:

Structural Performance: Cover capable of supporting a [**300-lbf**] [**800-lbf**] [**1000-lbf**] concentrated load.

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**] [**Grommet with twist-close cover and including steel junction box for electrical receptacle with provision for telephone connectors and signal cables**].

Location: In center of panel quadrant unless otherwise indicated.

Retain one of two "Receptacles and Wiring" subparagraphs below. Coordinate with electrical distribution system requirements and revise to suit Project.

Receptacles and Wiring: Electrical receptacles and wiring for service outlets are specified elsewhere.

Receptacles and Wiring: Equip each service outlet with power receptacles to comply with the following requirements:

Type of Receptacle: Heavy-duty duplex, two-pole, three-wire grounding, 20 A, 125 V, NEMA WD 6, Configuration 5-20R unless otherwise indicated.

Number of Receptacles for Outlet: [**One**] [**Two**] [**Four**].

Retain one of two "Wiring Method" subparagraphs below.

Wiring Method: Factory wired for field hardwiring with armored cable, containing three insulated No. 12 AWG solid-copper conductors, terminated with a 6-inch- long pigtail.

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.

Retain "Occupant Adjustable Diffusers" paragraph below if required for UFAD systems used in office environments; gratings or perforated panels are typically used for UFAD in computer rooms and data centers.

* + - * 1. Occupant Adjustable Diffusers: Manufacturer's standard round diffusers, [**4 inches**] [**8 inches**] in diameter, formed from [**aluminum**] [**polycarbonate plastic**] to produce a removable one-piece unit complete with diffuser, manually adjustable flow regulator, dirt and dust receptacle, trim ring, and underfloor compression mounting ring; precisely fitted in factory-prepared openings of standard field panels and complying with the following requirements:

Values in "Air-Distribution Characteristics," "Structural Performance," and "Fire-Test-Response Characteristics" subparagraphs below are examples only. Revise to suit Project.

Air-Distribution Characteristics: 100 cfm at 0.096-inch static pressure and a maximum noise criterion rating of 15.

Structural Performance: Capable of supporting a 600-lbf concentrated load.

Fire-Test-Response Characteristics: Classified 94V-0 according to UL 94.

Retain "Floor Grilles" paragraph below if required for UFAD systems. Grilles are designed to fit into a hole cut into a panel. Grates, specified in other articles, are typically full-panel size.

* + - * 1. Floor Grilles: Standard load-bearing grilles formed from [**aluminum**] [**polycarbonate plastic**] to produce removable one-piece unit precisely fitted in factory-prepared openings of standard field panels, [**with adjustable/removable**] [**without**] dampers and complying with the following requirements:

Values in "Air-Distribution Characteristics," "Structural Performance," and "Fire-Test-Response Characteristics" subparagraphs below are examples only. Revise to suit Project.

Air-Distribution Characteristics: 468 cfm at 0.10-inch wg static pressure.

Structural Performance: Capable of supporting a 1000-lbf concentrated load.

Fire-Test-Response Characteristics: Classified 94V-0 according to UL 94.

Retain "Plenum-Wall Brush Grommets" paragraph below if required for UFAD systems.

* + - * 1. Plenum-Wall Brush Grommets: Self-sealing cable brush grommet with [**4-by-13-inch rectangular**] [**3-inch round**] [**5-inch round**] <**Insert dimension(s)**> usable area for passage of power and signal cables through plenum walls. Provide [**ABS plastic**] [**Aluminum**] frame with passageway of interwoven nylon filaments and intermediate layer of EPDM.[**Provide units with plastic cable tray for support of cables and protection of wallboard.**]

Retain "Cavity Dividers" paragraph below if required for UFAD systems. Cavity dividers are used for air control; framed or masonry walls are recommended for acoustic privacy and security.

* + - * 1. Cavity Dividers: Provide manufacturer's standard metal dividers located where indicated to divide underfloor cavities.
        2. Fascia Closures: Where underfloor cavity is not enclosed by abutting walls or other construction, provide metal closure plates with manufacturer's standard finish.

Retain "Ramps," "Steps," and "Railings" paragraphs below if required for access from adjacent flooring. Indicate locations and details on Drawings.

* + - * 1. Ramps: Manufacturer's standard ramp construction of width and slope indicated, but not steeper than 1:12, with raised-disc or textured rubber or vinyl-tile floor coverings, and of same materials, performance, and construction requirements as access flooring.
        2. Steps: Provide steps of size and arrangement indicated with floor coverings to match access flooring. Apply nonslip aluminum nosings to treads unless otherwise indicated.
        3. Railings: Standard extruded-aluminum railings at ramps and open-sided perimeter of access flooring where indicated. Include handrail, intermediate rails, posts, brackets, end caps, wall returns, wall and floor flanges, plates, and anchorages where required.

Structural Performance: Railings, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

Handrails and Top Rails of Guards:

Uniform load of 50 lbf/ ft. applied in any direction.

Concentrated load of 200 lbf applied in any direction.

Uniform and concentrated loads need not be assumed to act concurrently.

Infill of Guards:

Concentrated load of 50 lbf applied horizontally on an area of 1 sq. ft.

Infill load and other loads need not be assumed to act concurrently.

For computer rooms to comply with NFPA 75, retain option in "Panel Lifting Device" paragraph below.

* + - * 1. Panel Lifting Device: Panel manufacturer's standard portable lifting device for each type of panel required[**for each computer room**].

Pedestals are generally used for perimeter support. If special extrusion or other means are required, indicate details on Drawings and revise "Perimeter Support" paragraph below accordingly.

* + - * 1. Perimeter Support: Where indicated, provide manufacturer's standard method for supporting panel edge and forming transition between access flooring and adjoining floor coverings at same level as access flooring.

1. EXECUTION
   * + 1. EXAMINATION

Coordinate requirements specified in other Sections for subfloor construction and tolerances to ensure that they are appropriate for pedestal installation.

* + - * 1. Examine substrates, with Installer and manufacturer's authorized representative present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

Verify that substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of conditions and deleterious substances that might interfere with attachment of pedestals.

Retain subparagraph below if required for UFAD systems.

Verify that concrete floor sealer and finish have been applied and cured.

* + - * 1. Proceed with installation only after unsatisfactory conditions have been corrected.
      1. PREPARATION
         1. Lay out floor panel installation to keep the number of cut panels at floor perimeter to a minimum. Avoid using panels cut to less than 6 inches.
         2. Locate each pedestal, complete any necessary subfloor preparation, and vacuum subfloor to remove dust, dirt, and construction debris before beginning installation.
      2. INSTALLATION
         1. Install access flooring and accessories under supervision of access-flooring manufacturer's authorized representative to produce a rigid, firm installation that complies with performance requirements and is free of instability, rocking, rattles, and squeaks.

Retain "Adhesive Attachment of Pedestals" or "Mechanical Attachment of Pedestals" paragraph below. Retain first paragraph for more common adhesive attachment of pedestals. Retain second paragraph if bolted attachment of pedestal bases is required for seismic applications or where increased rigidity is needed. Coordinate with "Accessories" Article. Retain option if seismic design is required.

* + - * 1. Adhesive Attachment of Pedestals: Set pedestals in adhesive, according to access-flooring manufacturer's written instructions, to provide full bearing of pedestal base on subfloor[**; and as required to meet seismic design requirements**].
        2. Mechanical Attachment of Pedestals: Attach pedestals to subfloor with post-installed mechanical anchors[**as required to meet seismic design requirements**].
        3. Adjust pedestals so installed panels are flat, level, and at the proper height.
        4. Stringer Systems: Secure stringers to pedestal heads according to access-flooring manufacturer's written instructions.
        5. Install flooring panels securely in place, leaving them properly seated with panel edges flush. Do not force panels into place.
        6. Scribe perimeter panels to provide a close fit, with adjoining construction having no voids greater than 1/8 inch where panels abut vertical surfaces.

To prevent dusting, seal cut edges of steel-encapsulated, wood-core panels with sealer recommended in writing by panel manufacturer.

* + - * 1. Cut and trim access flooring and perform other dirt-or-debris-producing activities at a remote location or as required to prevent contamination of subfloor under installed access flooring.
        2. Grounded Access Flooring: Ground access flooring as recommended by manufacturer and as needed to comply with performance requirements for electrical resistance of floor coverings.

Resistance in "Panel-to-Understructure Resistance" subparagraph below represents maximum allowable to obtain electrical continuity for electrical-shock protection. Revise if lower value is needed.

Panel-to-Understructure Resistance: Not more than 10 ohms as measured without floor coverings.

* + - * 1. Underfloor Dividers: Scribe and install underfloor-cavity dividers to closely fit against subfloor surfaces, and seal with mastic.
        2. Closures: Scribe closures to closely fit against subfloor and adjacent finished-floor surfaces. Set in mastic and seal to maintain plenum effect within underfloor cavity.
        3. Clean dust, dirt, and construction debris caused by floor installation, and vacuum subfloor area as installation of floor panels proceeds.

Retain first paragraph below for UFAD systems.

* + - * 1. Seal underfloor air cavities at construction seams, penetrations, and perimeter to control air leakage, according to manufacturer's written instructions.
        2. Install access flooring without change in elevation between adjacent panels and within the following tolerances:

Plus or minus 1/8 inch in any 10-foot distance.

Plus or minus 1/4 inch from a level plane over entire access flooring area.

* + - 1. PROTECTION
         1. Prohibit traffic on access flooring for 24 hours and removal of floor panels for 72 hours after installation, to allow pedestal adhesive to set.
         2. Replace access-flooring panels that are stained, scratched, or otherwise damaged or that do not comply with specified requirements.

END OF SECTION 096900