



Starnet Low-Profile Wire Management System Specifications SLP-40 / SLP-50 (1-1/2" / 2") Fixed Height Low-Profile Access Floor System

NOTE: These specifications conform to CSI MasterFormat 2012 Section 09 69 33, AIA MasterSpec Section 09 69 00 and to CSI MasterFormat 1995 Edition, AIA MasterSpec Section 10270

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specifications Sections, apply to this section.
- B. IBC (International Building Code)
- C. ICC-ES AC151 Acceptance Criteria for Fixed-Height, Low-Profile, Raised Floor Systems
- D. National Fire Protection Association (NFPA)
 - NFPA 70 – National Electrical Code (NEC)
 - NFPA 101 – Life Safety Code
- E. Underwriters Laboratories (UL) Standards
 - UL 183 – Modular Wiring Systems
 - UL 50 – Enclosures for Electrical Equipment
 - UL 1863 – Communications Circuit Association
 - UL 514A – Standard for Metallic Outlet Boxes
- F. American Society for Testing and Materials:
 - A-1011 – Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength

 - A653 – Standard Specification for Sheet Steel, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by Hot-Dip Process

 - E2322 – Standard Test Method for Conducting Traverse and Concentrated Load Tests on Panels used in Floor and Roof Construction

1.2 SUMMARY

- A. This section includes:
 - 1. Low-Profile access flooring system consisting of steel panels and resin bases.
 - 2. Various accessories, including, but not limited to ramps, thresholds and electrical equipment.
 - 3. Electrical Equipment including, but not limited to Main Distribution Boxes, Multi-Conductor Home Run Cables, Extender Cables, Whip End Extender Cables, Access Floor Modules and Cable Accessories.
- B. 1. CSI Related Sections include the following:
 - Section 01330 Submittal Procedures
 - Section 01430 Quality Assurance
 - Section 01620 Product Options
 - Section 01630 Product Substitution Procedures
 - Section 01659 Product Delivery Requirements
 - Section 01660 Product Storage Requirements
 - Section 01770 Closeout Procedures
 - Section 01780 Closeout Submittals

1.3 DEFINITION

- A. Access flooring: A complete portable assembly of modular floor panels on an elevated support system, forming an accessible under-floor cavity to accommodate electrical and data service.

1.4 SYSTEM DESCRIPTION

This section includes the following:

- A. Low-profile access floor system consisting of a series of modular, removable, interchangeable steel panels, resin bases, steel filler plates and accessories that form an accessible under floor cavity to accommodate electrical, voice and data services.
- B. System shall be gravity held on a structural subfloor system designed to support all loads required by the IBC or local code requirements, whichever is the more stringent.
- C. All flooring system structural components shall be steel. Support bases shall be of polypropylene resin.
- D. Maximum height from subfloor to top of access flooring system (less carpet) shall not exceed 2 inches.
- E. Floor units shall be removable by one person without the need for special lifting devices.
- F. The low-profile access floor is not part of the grounding system, and is not intended to enclose splices or other types of wiring that are required to be enclosed in raceway as defined in the NEC, Art. 100. All wiring/cabling installed under the floor(s) must conform to the applicable sections of the National Electrical Code (NEC) in effect.
- G. Low-profile access floor system is not intended for use as a duct, plenum or air handling space. As such, non-plenum rated cabling is permitted under the low-profile access floor.
- H. Seismic Requirements: All load carrying storage units and other heavy equipment shall be anchored directly to the existing structure so as to resist design seismic loads. Direct attachments to the access flooring system shall not be permitted.
- I. Modular PowerTraXX System:
 - a. Modular power system shall ensure efficient electrification and delivery of power from power panels to workstations or equipment at any location. System shall be prefabricated and totally flexible, with true plug-and-play modularity, to include modular plug-and-play workstation termination modules. System shall be designed and approved for use below raised access floor systems.
 - b. Modular wiring system is based on zone wiring requirements. Power distribution is achieved below access floor through use of multi-conductor open power cables run from circuit breaker panel to prewired Main Distribution Box(s). This method of wiring eliminates need for individual home run cabling. From the Main Distribution Box(s), closed power cables distribute power to any point where electrical power is required, terminating into workstation terminating modules installed within user workspace.

1.5 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide access flooring system capable of supporting the following loads and stresses within limits and under conditions indicated, as demonstrated by testing manufacturer's current standard products according to referenced procedures in latest revised edition of Ceilings and Interior Systems Construction Associates (CISCA) "Recommended Test Procedures for Access Floors" referenced elsewhere in this section as CISCA/AF or, if not specified, manufacturers standard method.
 - 1. Concentrated Live Load over 6.25 square feet per IBC Table 1607.1:
Provide floor panels capable of withstanding a concentrated design live load of 2,000 lbf. (8.9 kN) over an area of 2-1/2 ft. x 2-1/2 ft., when tested per CISCA/AF, Section 7 "Uniform Load Test".
 - 2. Concentrated Point Load on area of 1 in. x 1 in.:
Provide floor panels capable of withstanding a concentrated design load of 500 lbf. (2224 N) placed upon one square inch anywhere on the panel with a top-surface deflection under load not to exceed 0.080 inch (2.0 mm) and a permanent set not to exceed 0.010 inch (0.25 mm) according to CISCA/AF Section 1, "Concentrated Loads".
 - 3. Ultimate Load: Provide access flooring system capable of withstanding a minimum ultimate load of two times the concentrated load without failing, according to CISCA/AF, Section 2, "Ultimate Loading".
 - 4. Uniform Live Load:
Provide floor panels capable of withstanding a uniform live load of 2,000 lbf. (8.9 kN) over a uniform area of 2-1/2 ft. x 2-1/2 ft., with a permanent set not to exceed 0.010 inch (0.25 mm) when tested per CISCA/AF, Section 7 "Uniform Load Test".
 - 5. Rolling Load:
Provide floor panels capable of withstanding a rolling load of 410 lbf. (1.8 kN) using CISCA wheel A, 10 pass test, with a permanent deflection not to exceed 0.040 inch (1.016 mm) when tested per CISCA/AF, Section 3 "Rolling Loads".
- B. Floor assembly: Floor assembly to be rigid, free of vibration, rocking parts, rattles and squeaks.
- C. Exposed Metal: Exposed metal shall not be allowed at the wearing surface of the floor.
- D. Corrosion Resistance: Galvanizing thickness rating of metallic outlet boxes and base units, corner plates,

channel plates and border units when tested per UL514A, shall conform to the IBC or local code requirements, whichever is the more stringent, but shall not be less than: Galvanized Coating - G60 Minimum (Per ASTM A-653).

E. Electrical Performance: The modular power system shall be in accordance with NEC Article 604 and all applicable UL standards. All components shall be labeled with both voltage ratings and installation information. All devices and wiring shall be rated for 20 amperes.

1.6 SUBMITTALS

- A. Comply with Division 1 Submittal Procedures.
- B. Bill of Materials: Complete list of all parts needed to fully install selected system of components.
- C. Product Data: For each type of product indicated:
 - 1. Shop and Wiring Drawings: Include complete layout of access flooring system based of field verified dimensions.
 - a. Details and sections with descriptive notes indicating materials, finishes, fasteners, typical and special edge conditions and accessories.
 - b. Detail Cut Sheets for each type of product indicated, including accessories, to show the information necessary to make a full evaluation of the entire flooring system.
 - c. One-lined wiring diagrams, wire counts, size and physical dimensions of each item.
 - i. Specifications and catalog numbers for each cable and accessory type shall be available upon request.
 - 2. Manufacturer's literature, product data and installation instructions.
 - 3. Samples for Initial Selection: For each type of flooring material indicated and exposed finish indicated, submit samples in the form of actual units or sections of units.
- D. Product Certificates: For each type of access flooring system indicated, to certify that the flooring system meets the requirements of these written specifications and signed by a qualified employee of the manufacturer.
- E. Product Test Reports: Submit test reports or specification summary Product Data Sheets based on evaluation of comprehensive tests performed by a qualified testing agency, or performed by access flooring manufacturer and/or witnessed by a qualified testing agency, for each type of flooring material.
- F. Maintenance Data: A complete replacement parts list shall be provided with the as-build package.
- G. Warranty: Submit manufacturer's standard warranty.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer who is approved by the access flooring manufacturer for installations of the type of access flooring indicated for this project.
- B. Source Limitations: Obtain access flooring system through one source from a single manufacturer.
- C. Regulatory Requirements: Fabricate and install access flooring system to comply with NFPA 75 requirements for raised flooring.
- D. Mockups (if required): Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Build mockup of typical access flooring assembly as shown on Drawing. Size to be an area no less than 6 feet in length by 6 feet in width.
- G. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."
 - 1. Review connection with mechanical and electrical systems.
 - 2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
- H. During installation, all traffic on access floor shall be controlled by access floor installer such that the floor capacity is never exceeded.
- I. Acceptance: General contractor shall accept floor in whole or in part prior to allowing use by other trades.
- J. Modular Wiring Systems:
 - 1. Electrical Distribution System: UL Listed as Manufactured Wiring System, compliant with UL 183.
 - 2. Workstation Termination Modules: UL Listed as Multi-Outlet Assembly, compliant with UL 183 standards for safety.
 - 3. Workstation Termination Devices Containing Electrical Receptacles and Voice and Data Outlets: ADA compliant, easily accessible to user, and provide integral method of cable and cord management.
 - 4. UL listing shall allow for 1-phase, 120 volts, 60 Hz power distribution, 20 Amps.
 - 5. Manufactured Wiring System: Compliant with National Electrical Code, Article 604.

1.8 DELIVERY, STORAGE AND HANDLING

- A. Deliver access flooring components in original, unopened packages, clearly labeled with manufacturer's name and item description.
- B. Handle and store packages containing access flooring in a manner which avoids overloading building structure.
- C. Deliver, store, handle and install all materials and equipment in such a manner as not to degrade quality, serviceability or appearance.
- D. Store materials in secure and dry facility and in original packaging in a manner to prevent soiling, physical damage, wetting or corrosion prior to installation.

1.9 PROJECT CONDITIONS

- A. Storage of Materials: Area to receive and store access floor materials shall be enclosed and dry. Storage area shall be maintained at a temperature of not less than 40⁰ F and not more than 95⁰ F (4⁰ C to 35⁰ C), with a relative humidity level between 20% min. to 80% max.
- B. Area of Installation: Shall be maintained throughout entire duration of installation of access floor at a temperature of 50⁰ F min. to 85⁰ F max. (10⁰ C to 29⁰ C and at 20% min. to 80 % max. relative humidity.
- C. Prior to installation, all floor panels shall be stored for at least 24 hours in a dry enclosed area at no less than 40⁰ F and no more than 95⁰ F (4⁰ C to 35⁰ C).

1.10 COORDINATION

- A. Coordinate locations of any mechanical and electrical work in under-floor cavity to prevent interferences with access flooring bases.
- B. Do not proceed with installation of access flooring until after substantial completion of other performable construction within affected spaces.

1.11 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed, are packaged with protective covering for storage and identified with labels clearly describing contents.
 1. Standard field panels – 2%
 2. Resin Bases – 2%
 3. Master Power Distribution Modules: As required by customer.
 4. Low Profile Satellite Power Distribution Modules: As required by customer.
 5. Closed Power Cables: As required by customer.
 6. Coupler Modules: As required by customer.
 7. Low-Profile Electrical Box: As required by customer.

PART 2 - PRODUCTS

2.1 FLOOR PANELS AND UNDERSTRUCTURE

- A. Manufacturers: Subject to compliance with requirements, provide access flooring by ASM Modular Systems, Inc., consisting of SLP-40 (1-1/2" FFH) and/or SLP-50 (2" FFH) Low-Profile Access Floor System.
- B. Floor Panels General: Provide modular hot dip galvanized steel panels complying with the following requirements, that are interchangeable with other standard field panels, and can be easily relocated by one person without the need for any special lifting devices.
 1. Nominal Panel Size:
 - Square panel = 6.497" (165.0 mm) x 6.497" (165.0 mm)
 - Rectangular panel = 6.497" (165.0 mm) x 13.058" (331.7 mm)
 2. Fabrication Tolerances: Fabricate panels to the following tolerances with squareness tolerances expressed as the difference between diagonal measurements from corner to corner.
 - a. Size and Squareness: Plus or minus 0.010" (0.25 mm) of required size, with squareness tolerance of plus or minus 0.015" (0.38 mm).
 - b. Flatness: Plus or minus 0.020" (0.50 mm), measured on a diagonal on top of the panel.
- C. Formed-Steel Panels: Fabricate panels of die formed steel with hot dip galvanized zinc finish.
 - b. Finish: Provide grate panels with manufacturer's standard finish.
- D. Bases: Provide manufactures standard polypropylene resin bases of proper height for required finished floor height.

2.2 ACCESSORIES

- A. Vertical Closures at perimeters: Where under floor cavity is not enclosed by abutting walls or other construction, provide manufacturer's standard metal closure feature with manufacturer's standard finish.
- B. Ramps: Manufacturer's standard ramp construction of width indicated, with available slopes of 1:12, 1:20 & 1:40, with top surface to receive floor covering application to match access floor.

2.3 MODULAR WIRING SYSTEM

A. Home Run Cable

- 1. The cable shall be metal clad cable (type "MC") consisting of multiple #10 AWG, THHN 90°C insulation. The cable type shall be UL listed and recognized as outlined in Article #334 of the latest edition of National Electrical Code.

B. Main Distribution Box

- 1. A Main Distribution Box (MDB) with multiple ports (per project requirements) shall provide general-purpose and isolated-ground 1-phase, 120 volt power. The MDB shall include a home run as specified below. Ground conductors shall be added as required by National Electrical Code (NEC). An insulated green with yellow stripe grounding conductor shall be installed in the cable when an isolated-ground system is required.
- 2. The MDB shall be constructed of cold-rolled steel conforming to ASTM A596. Minimum thickness shall be 16 gauge or 0.060+/-0.005, with powder-coated finish, tamper proof screwed covers, and four leg mounting supports. The 5-pin bulkhead connectors shall be secured by rivets. Output ports are single port configuration.
- 3. The MDB shall be UL-listed and identified as such on each cover. The MDB shall be suitable for use in environmental air-handling spaces (plenums) in accordance with NEC 300.22(c). Compliance with this requirement shall be marked on the cover.
- 4. Each cover of the MDB shall have a label indicating the circuit number at each bulkhead connector.

C. Extender Cables

- 1. Extender cables, as required, shall interface with the Main Distribution Box and feed to an individual electrical box or split to multiple electrical boxes via a double headed extender cable.
- 2. Extender cables shall be type "MC" consisting of 90° C insulated, #12 AWG solid copper conductors, accompanied by a #12 AWG solid copper ground conductor.
- 3. The extender cable shall have line side (power out) and load side (power in) connectors. The connectors shall be capable of having 5 pins for the distribution of 1-phase, 4 wire, 120 volt general-purpose power or 5 pins for the distribution of 1-phase, 4 wire, 120 volt general-purpose and isolated-ground power.
- 4. The contacts shall be male pin and female receptacle type with minimum conductivity of .60. The contacts shall be manufactured of .016 tinned copper alloy #194.
- 5. The plastic that encases the contacts shall be Lexan #241, manufactured by Sabic with a UL standard rating of 94V2.
- 6. Labels shall be permanently attached to both the load (power in) side connector and the line (power out) side connector. The labels shall be color coded to differentiate the general-purpose power and the isolated-ground power.

E. Whip End Extender Cables

- 1. Whip end extender cables shall extend from the single or double headed extender cable (connected to the Main Distribution Box) to individual convenience power modules.
- 2. Whip end extender cables shall be type "MC" consisting of 90°C insulated, type THHN #12 AWG solid copper conductors, accompanied by a #12 AWG solid copper ground conductor.
- 3. The whip end extender cable shall have a load side (power in) connector. The connector shall be capable of having 5 pins for the distribution of 1-phase, 4 wire, 120 volt general-purpose power or 5 pins for the distribution of both 1-phase, 4 wire, 120 volt general-purpose and isolated-ground power.
- 4. The contacts for the load side (power in) shall be male pin type with minimum conductivity of 60% IACS (International Annealed Copper Standard). The contacts shall be manufactured of .016 tinned copper alloy #194.
- 5. The plastic that encases the contacts shall be #241, manufactured by Sabic with a UL94 flammability rating of V2.
- 6. A label shall be permanently attached to the load side (power in) side connector. The label shall be color

coded to differentiate the general-purpose power and the isolated-ground power.

F. Access Floor Modules

1. The Access Floor Module shall be designed for use in the open office environment. It shall provide power and telecom outlets in a raised floor. The Access Floor Module shall have a square shape to allow repositioning to any of four orientations without modification of the module or floor panel. The basic configuration shall provide device mounting positions for four (4), 20A receptacles in the power side of the box. A total of six (6) mounting positions shall be provided on the low voltage telecommunication side of the box. No tools shall be required to install the Access Floor Module in the floor. The box shall be pre-wired with the specified electrical devices at the factory and tested for continuity and highpot before shipping.
2. The body of the Access Floor module shall be fabricated using welded 0.0625 inch minimum thickness electro-galvanized steel. The 10 in. x 10 in. (nominal) SLP-10 unit shall fit into a 10.125 in. x 10.125 in. cutout in a raised floor panel.
3. The standard hinged cover for the 10 in. x 10 in. (nominal) SLP-10 unit shall be constructed from powder-coated steel and shall feature a recess to accept a carpet insert or a powder-coated steel insert and shall feature a flush top surface. Two cable exit ports shall be provided in each cover and lock in the open position to provide crush protection for cables.
5. Power to the Access Floor Module shall be provided via an ACS/Uni-Fab standard Whip End Extender modular wiring cable. The whip extender shall be manufactured from type MC cable, AC cable, or FMC flex and shall be equipped with a listed connector to fit a ½ in. knockout. The conductors extending into the Access Floor Module for connection to the devices shall be 90°C insulated type THHN #12 AWG solid copper.
6. All whip extenders shall be rated for use on 20-ampere branch circuits.
7. The standard Access Floor Module shall be designed to also accommodate termination of fiber optic and copper cable pairs with industry standard connectors. It shall provide wire management for slack storage and routing for optical fibers and jacketed copper cables. Slack storage configuration shall be arranged so that fiber and copper pairs are allowed no less than a 1.5-inch bend radius.

PART 3 – EXECUTION

3.1 PREPARATION

- A. Examine sub-floor for any problems that would prevent a satisfactory installation of access floor, such as moisture an unevenness of top surface. Do not proceed with installation until sub-floor is clean, dry and level as completed by other trades. Minimum Sub-floor Flatness (FF=25) and Sub-floor Levelness (FL=20) shall be achieved by others.
- B. Verify field dimensions to contract drawings for size of area of installation, height and level of recessed slabs, door openings, ledges, etc.
- C. Access to Installation Area: General Contractor shall provide clear access to installation area throughout entire duration of installation of access floor that is free of construction debris and other trades.

3.2 INSTALLATION

- A. Install access floor system and accessories under supervision of the access flooring manufactures authorized representative to ensure rigid, firm installation that complies with performance requirements.
- B. Layout floor panel installation to keep the number of cut panels at the floor perimeter to a minimum.
- C. Foam pad underlayment shall not be permitted.
- D. Install floor panels securely in place and properly seated with panel edges flush.
- E. Scribe panels at perimeter to provide a close fit with adjoining construction with no voids greater than 1/8 in. (3 mm) where panels abut vertical surfaces.
- F. Install accessories according to Manufacturer's instructions.
- G. Install modular wiring system in accordance with manufacturer's instructions, system design drawings, National Electrical Code, and local municipal codes as required.
- H. Coordinate with the general contractor or owner so as not to interfere with other work in progress.
- I. Clean up dust, dirt and construction debris caused by floor installation as the installation progresses.

3.3 ADJUSTING, CLEANING AND PROTECTION

- A. During installation, all traffic on access floor shall be directed by access floor installer.
- B. After completing installation, vacuum clean access flooring.

- C. After installation of low-profile access floor, all traffic on low-profile access floor shall be controlled by the General Contractor. No traffic shall be permitted on the access floor that exceeds the published floor capacity.
- D. General contractor and/or owner shall provide and maintain suitable protection to prevent damage to completed access floor throughout entire duration of installation.
- E. Provide minimum ¾-inch plywood sheathing over all partially- or fully-completed floors per manufacturers requirements, before approved construction or delivery traffic is permitted travel on the access floor. It is the General Contractor's responsibility to ensure that wheel loads do not exceed the floor capacity.

END OF SECTION 096933

All specifications are subject to change without notice or obligation.