SECTION _____

MODULAR WIRING SYSTEM
ACCESS FLOOR

1.01 GENERAL:

TateFlex modular wiring solutions are modular systems, integrating power and telecommunications wiring systems for the commercial office environment.

1.02 SECTION INCLUDES

A. Master Distribution Boxes.

B. Zone Distribution Boxes

C. Multi-Conductor Home Run Cables

D. Extender Cables

E. Whip End Extender Cables

F. Access Floor Modules

G. Cable accessories.

H. Telecommunications Racks and Patch Panels (Optional)

1.03 PRODUCTS FURNISHED BUT NOT INSTALLED UNDER THIS SECTION.

A. Distribution panels and circuit breakers

B. Telecommunications Racks and Patch Panels (Optional) (re: 1.02F)

C. Access floor

D. Carpet and carpet installation

1.04 RELATED SECTIONS

1.05 CODES AND STANDARDS

A. National Fire Protection Association (NFPA)

a. 70, National Electrical Code (NEC)

b. 101, Life Safety Code

B. Underwriter's Laboratory (UL) Standards

a. UL 183, Modular Wiring Systems

b. UL 1836, Communications Circuit Accessories

C. Electronics Industry Assoc./Telecommunications Industry Assoc. (EIA/TIA)

a. 568A Commercial Building Telecommunications Cabling Standard (SP2840A Link Performance Standards)

1.06 SUBMITTALS

A. Product Data: Specifications for each cable, fitting and accessory type are available by request.

B. Record Drawings: Pre-installation and As-Built drawings of all components associated with the Manufactured Wiring System.

1.07 OPERATION AND MAINTENANCE DATA

A. Maintenance Data:

Adds, moves and changes must be accomplished in accordance with EIA/TIA 568A cable handling guidelines and EIA/TIA 569 routing guidelines.

A complete replacement parts list will be provided with the as-built package.

B. Warranty Requirements (provided as applicable)

1.08 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver, store, handle and install all materials and equipment in such a manner as not to degrade quality, serviceability or appearance.

B. 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.

C. Materials shall be delivered in the manufacturer's original unopened, protective packages.

1.09 GENERAL REQUIREMENTS

A. The America Cable System (TATEFLEX) modular power system is based on zone wiring architecture. Power system cable management is achieved through the use of multi-conductor cables, run from the power panel to pre-wired master distribution boxes. This method eliminates individual home run cabling. The master distribution boxes branch out to feed zone distribution boxes in a hierarchy. From zone locations, factory-sized prefabricated multi-conductor extender cables send power to any point under the floor surface, servicing end users via access floor workstation modules.

The TATEFLEX modular power system shall be in accordance with N.E.C. ARTICLE 604 and all applicable U.L. standards. All components shall be labeled with voltage ratings and installation information. The system shall be designed and keyed to prevent backfeeding. All devices and wiring shall be rated for 20 amperes and 600 volt insulation.

The connector grounding pin on each modular assembly shall be so designed that the grounding connection is made prior to the contact made within the current carrying conductors per NEC 410-58d.

B. The TATEFLEX modular horizontal telecommunication cabling system is based on a zone wiring architecture. Four pair, 100 Ohm UTP or 62/125 optical fiber pairs are bundled in an armored jacket and home run routed from the main or intermediate cross-connect to a zone distribution box. The zone distribution box can be common with that described in 1.09A. From zone locations, factory-sized prefabricated extender cables transmit voice or data to any point in the work area, servicing end users via industry standard workstation modules.

1. The telecommunication system shall provide Category 5 UTP, single mode fiber optic cable, multi-mode fiber optic cable, or any combination of the above. All cables shall meet the link performance requirements of EIA/TIA-568a (SP2840).

   Note: Category 3 wire is available if specified by the customer, but will not meet the Category 5 link performance criteria.

PART 2 - PRODUCTS:

Standard Products:

2.01 ACCESS FLOOR MODULAR WIRING SYSTEM

A. Home Run Cable (Power)

The Cable shall be 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.

The cable can be equipped with super neutral conductors of # 8AWG, if required.

B. Master Distribution Box (Power)

A **M**aster **D**istribution **B**ox (MDB) with multiple ports (per project requirments) will provide General Purpose and/or Isolated Ground 3 phase, 208/120 volts power. The MDB will include a Homerun as specified in 2.01 A. Gound conductors are added as required by National Electric Code (NEC).

The MDB shall be constructed of cold-rolled steel conforming to ASTM A596. Minimum thickness shall be16 gauge or .060+/-.005, with powder-coated finish, tamper proof screwed covers, and four leg mounting supports. The 5 or 10 pin bulkhead connectors shall be secured by rivets. Output ports can be single or double port configurations.

Each MDB shall be equipped with a mechanical type grounding lug attachment of the equipment ground conductor. The equipment ground conductor shall be extended to each connector housing and connected to each ground pin position.

The MDB shall be UL listed and identified as such on each cover.

Each cover of the MDB shall have a label indicating the circuit number at each bulkhead connector.

C. Zone Distribution Box (Power and Telecommunications)

The **Z**one **D**istribution **B**ox (ZDB)is a multi-media interconnect enclosure designed for use below access floors. The box is divided into two compartments. One side supports power, while the other side supports telecommunications.

The ZDB shall be constructed of cold-rolled steel conforming to ASTM A596. Minimum thickness shall be16 gauge or .060+/-.005. Finish is powder coated. Four leg mounting supports are provided. The 5 or 10 pin bulkhead connectors shall be secured by rivets. Tamper-proof screws are installed in the covers. Power output ports can be single or double port configurations. Voice / Data ports are RJ45 or fiber as required. Dimensions of the ZDB vary, in standard increments, in accordance with the power and telecommunications wiring requirements for a specific project.

The ZDB shall be UL listed and identified as such on each cover.

Cable strain relief (for telecommunications) is provided for cable entrance and exit openings.

Cable access is provided through two 1.25" knockouts. Other single access hole options and sizes are available. Conduit chase nipples and conduit locknuts are used to secure the box to the wireway. A 105° C rated plastic bushing is mounted inside the box to eliminate cable chaffing. The mounting hardware is provided with the box.

Each cover of the ZDB shall have a label indicating the power circuit identification at each bulkhead connector and a label indicating telecommunication address at each telecommunication port.

Power

The ZDB shall provide multilple ports (per project requiments) for General Purpose and/or Isolated Ground 3 phase, 208/120 volts power.

Each ZDB shall be equipped with a mechanical type grounding lug attachment of the equipment ground conductor. The equipment ground conductor shall be extended to each connector housing and connected to each ground pin position.

Telecommunications (Copper)

In a copper application, the telecommunications compartment of the ZDB provides 110/RJ45 connections through the use of industry standard connectors. These connections are available in 6 port increments, from a minimum of 6 to a maximum of 24. The number of available ports is specific to the project application.

The ZDB provides cable management for individual (Category 3 and/or Category 5) 4-pair cables which will be terminated on industry standard connectors.

The ZDB provides wire management for slack storage and routing for 24 copper cable pairs within the unit.

Slack storage configuration must be arranged so copper pairs are provided with no less than a 1.5-inch bend radius.

Telecommunications (Fiber)

The telecommunications compartment of the ZDB provides fiber connections in increments of 6, with a minimum of 6 and a maximum of industry standard fiber pair connections.

The ZDB provides cable management for individual fiber pairs terminated on industry standard connectors per customer requirement.

The ZDB provides wire management for slack storage and routing for 18 optical fiber within the unit. Other custom enclosure are available upon request.

D. Extender Cables (Power)

Extender Cables, as required will interface with the Master Distribution Box and feed to the Zone Distribution Boxes.

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.

The extender cable shall have line side (power out) and load side (power in) connectors. The connectors shall be capable of having 5 pins (contacts) for the distribution of 3 phase, 4 wire 208/120 volt General Purpose power or 10 pins (contacts) for the distribution of both 3 phase, 4 wire 208/120 volt General Purpose and Isolated Ground power.

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.

The plastic which encases the contacts shall be General Electric Lexan #141 with a UL standard rating of 94V2. The plastic shall be keyed differently to prevent mismatching of voltages/use.

The plastic shall be color coded to identify voltage and use.

a. Clear plastic - 208/120 V General Purpose Power.

b. Orange plastic - 208/120 V Isolated Ground Power

The latching mechanisms shall be of a different design so that engagement of dissimilar voltages is not possible.

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 (Power)

Whip end extender cables will extend from the Zone Distribution Boxes to individual power modules.

Whip end 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.

The whip end extender cable shall have a load side (power in) connector. The connector shall be capable of having 5 pins (contacts) for the distribution of 3 phase, 4 wire 208/120 volt General Purpose power or 10 pins (contacts) for the distribution of both 3 phase, 4 wire 208/120 volt General Purpose and Isolated Ground power.

The line side (power out) conductors extending into the access floor module for hardwire connection shall be eight inches in length.

The contacts for the load side (power in) connector shall be male pin type with minimum conductivity of .60. The contacts shall be manufactured of .016 tinned copper alloy #194.

The plastic which encases the contacts shall be General Electric Lexan #141 with a UL standard rating of 94V2. The plastic shall be keyed differently to prevent mismatching of voltages/use.

The plastic shall be color coded to identify voltage and use.

a. Clear plastic - 208/120 V General Purpose Power.

b. Orange plastic - 208/120 V Isolated Ground Power

The latching mechanism shall be of a different design so that engagement of dissimilar voltages is not possible.

A labels shall be permanently attached to the load side (power out) side connector. The label shall be color coded to differentiate the General Purpose Power and the Isolated Ground Power.

F. Modular Wiring System (Telecommunications)
Copper

Standard 24 AWG paired, thermoplastic insulated copper cables with a mutual capacitance of 0.083 micro-fared per mile at 1000 Hertz. All copper cables and jumpers shall conform to the REA color guide and meet NEC Article 725-38, 3(b) 1,2, and 3.

Backbone cables to main and intermediate cross-connects shall be Category 5, solid conductor unshielded twisted pair cables, plenum or non-plenum-rated, in an over-all jacketed 25-pair or individual four pair configuration as required or requested.

* Plenum or Non-plenum-rated level 3, 24 AWG unshielded twisted pair riser cables are optionally available for voice support only.

The number of pairs in each cable shall be indicated on the contract drawings.

Communications Extender Cables

Communications Extender Cables shall be factory or field terminated (as specified) using Category 5 stranded conductor cable in compliance with the requirements of the EIA/TIA-568A (SP2840).

Communications Extender Cables shall be available with color-coded boots for circuit identification.

* Where the optional level 3, 24 AWG UTP is selected (see backbone cables, 2.01E) a 4-twisted pair round cord with stranded conductors covered by a PVC jacket is employed. It has an 8-position modular plug at one end and is factory terminated to an 8-position modular outlet. These cables will meet all requirements of the ANSI/EIA/TIA 568 standard and TSB 36 for Category 3 performance.

Fiber Optic Extender Cables shall be terminated with industry standard connectors as specified by the project.

Custom Products:

The TATEFLEX Master distribution box, Zone Distribution Box and Access Floor Modules, described in the standard products section above, are also available as customized products. These units can be delivered with a size and port count capacity that exceeds maximum / minimum capacities outlined above. The associated horizontal cabling will be provided to support the customized product.

2.02 GENERAL DESIGN

Power

A. Shall provide a complete, factory assembled, under floor electrical distribution system for the electrification of power modules in raised floor environments.

B. System shall provide both general purpose and/or isolated ground power with separate neutrals for each of the 20 AMP rated circuits.

C. Power modules shall be equipped with modular wiring outlets to permit quick disconnect of power.

D. The entire TateFlex electrical distribution system shall be factory assembled. Each conductor of the Home Run Cable shall be color identified and numbered.

Telecommunications

A. Main and Intermediate Cross-Connects

Industry standard cross-connect products will be used to terminate horizontal cabling.

Patch panels which terminate horizontal twisted pair distributed cables shall mount on an EIA standard 19" equipment rack and provide ports/blocks in a single rack space.

Horizontal distribution panels shall comply with performance requirements and the wiring pattern specified by the project.

Horizontal distribution panels shall terminate using industry standard products compliant with project specifications.

Horizontal distribution panels shall have a numbering scheme on the front of the panel and shall accommodate color-coded icons for circuit identification.

Horizontal panels shall accommodate a cable strain relief device attached to the rest of the panel.

B. Horizontal Wiring

The individual Category 5, 24-pair cables (or individual 4 pair cable) from the telecommunications closet will be terminated on EIA/TIA Category 5, 110/IDC to RJ45 jacks in the ZDB.

Cable routing and protection between the telecommunications closet and the ZDB is provided by a flexible metal conduit.

Individual Category 5, 4-pair, 100 Ohm, 24 AWG UTP cables will run from the Zone Distribution Box to the user outlet. The individual cable pairs will terminated with RJ45 plugs at the Zone Distribution Box and on industry standard connection ports at the user outlet.

C. Access Floor Module

The body of the Access Floor module is fabricated of fourteen (14) gauge steel, conforming to ASTM A569 with protective coating conforming to ASTM A 525 G90.

The Access Floor Module provides for the unobstructed installation of:

1. Standard and Isolated Ground power

2. Copper and Fiber Optic voice and data communication cabling.

Access Floor Modules will be factory wired with Whip End Extender Cables.

The Access Floor Modules will be capable of providing General Purpose and Isolated ground electrical outlets for power, as well as 8 position EIA/TIA Category 5 RJ45 jacks or fiber optic ports, as per design, for communications.

Access Floor Module workstation outlets shall be of a type which will support multiple data and telecommunications systems interface requirements without re-termination of the building wiring. Modular jacks shall comply with appropriate performance requirements as defined in TIA/EIA-568A (SP2840). Modular jack wiring shall conform to design standards (ISOC, T568A, T568B).

Connection of the outlet to twisted pair building wiring shall be through the use of industry standard connectors, in compliance with design performance specifications.

PART 3- EXECUTION:

3.01 GENERAL

A. Install the complete modular wiring system in accordance with manufacturer's recommendations and system design drawings.