1 General

1.1 Scope of work

1.1.1 The Contractor is held responsible to be familiar with the provisions contained herein and with other Sections of this Specification as applicable to the completion of the installation.

1.1.2 Work covered by this Section shall consist of furnishing labor, equipment, supplies, materials, and testing unless otherwise specified, and in performing the following operations recognized as necessary for the installation, termination, and labeling of all telecommunications infrastructure as described on the Drawings and/or required by these specifications.

1.2 Intent of the drawings and specifications

1.2.1 These Specifications, together with the Drawings accompanying them, are intended to depict the installation requirements necessary to support this Project.

1.2.2 Contractor shall furnish materials shown and/or called for on the Drawings but not mentioned in the Specifications, or vice versa, that are necessary for the installation and support of the described work, whether or not specifically called for in both.

1.2.3 Contractor shall provide incidental equipment and materials required for the completion of systems included in this contract whether or not specified or shown on the Drawings.

1.3 Communication

1.3.1 It is Purdue’s expectation that the A/E of Record will work jointly with Purdue’s Telecommunication representatives to address specific technical issues and Owner requirements.

1.3.2 All questions, deviations, comments concerning guideline(s) interpretation, content, and/or use must be submitted in writing to the Project Manager for approval.

1.3.3 No deviations from these guidelines shall be incorporated into the project without written approval from the Project Manager and Purdue Telecommunications representative.

2 Products

2.1 All materials shall conform to the current applicable industry standards including, but not limited to:

- NEMA (National Electrical Manufacturers’ Association)
- ANSI (American National Standards Institute)
- ASTM (American Society for Testing and Materials)
- ICEA (Insulated Cable Engineers Association)
- IEEE (Institute of Electrical and Electronic Engineers)
- NEC (National Electric Code)
- NESC (National Electrical Safety Code)

2.2 In addition, all Material shall be Underwriters Laboratories Listed unless otherwise indicated.

2.3 All products must be new.

2.4 Plywood used in telecommunications rooms shall be 3/4” fire retardant plywood, grade B-B.

2.5 Telecommunication Room Cable Trays

2.5.1 Except as otherwise indicated, provide metal cable trays, of types, classes and sizes indicated; with splice plates, bolts, nuts and washers for connecting units. Construct units with rounded edges and smooth surfaces; in compliance with applicable standards; and with the following additional construction features.

2.5.2 Ladder type trays shall be 1 8” in width unless otherwise specified by Purdue ITIS Personnel. Ladder type trays shall consist of two longitudinal members (side rails) with transverse members (rungs) welded to the side rails.

2.5.2.1 Rungs shall be spaced 12 inches on center. Spacing in radiused fittings shall be 9 inches and measured at the center of the tray's width.

2.5.2.2 Rungs shall have a minimum cable-bearing surface of 7/8 inch with radiused edges.

2.5.2.3 No portion of the rungs shall protrude below the bottom plane of the side rails.

2.5.2.4 Each rung must be capable of supporting the maximum cable load, with a safety factor of 1.5 and a 200 pound concentrated load when tested in accordance with NEMA VE-1, section 5.4.

2.5.3 Owner approved butt-splice straight clamp kit for 1½” runway height single stringer straight splices.

2.5.4 Owner approved 90-degree junction splice clamp kit for 1½” runway height.
2.5.5  Owner approved 1"x7¾" ground strap to bond each section of cable tray together.

2.5.6  Owner approved adjustable corner support kit for 1½" runway

2.5.7  Owner approved drop-out (waterfall) to match the width of the cable tray to maintain proper bending radius for cables exiting/entering tray.

2.5.8  Owner approved wall angle support kit for terminating end of 18" cable tray to wall or Owner approved equal.

2.5.9  Owner approved wall support kit for mounting 18" cable tray to wall.

2.5.10 Owner approved runway support clip for hanging 18" cable tray using threaded rod.

2.5.11 Owner approved runway hold-down clamp kit for surface mounting 1½" cable tray to wall.

2.5.12 Owner approved relay rack support junction plate to attach 18" horizontal cable tray to equipment frames. J-bolt assemblies are not approved for securing frames to cable tray.

2.5.13 Owner approved J-bolt assemblies for mounting cable tray to shelf brackets and wall angle assemblies.

2.5.14 Owner approved cable runway feet for 1½" runway height with 9/16" hole to secure cable tray to floor.

2.6  Telecommunication Room D-Rings

2.6.1  Panduit #CMVDR1, plastic vertical d-rings for Owner furnished cross-connects.

3  Execution

3.1  Telecommunication Room Finishes

3.1.1  New TRs must be free from dust, dirt, and other foreign materials before the installation of any termination hardware or the termination of copper or fiber optic cables. The door to the telecommunication rooms must be permanently installed and closed during termination.

3.1.2  Each Contractor shall be knowledgeable of work to be performed by other trades and take necessary steps to integrate and coordinate their work with other trades.

3.1.3  The Contractor shall be responsible for furnishing all materials on the drawings or as specified herein for a complete telecommunications system.

3.1.4  All telecommunications infrastructure shall be installed utilizing BICSI installation practices in an aesthetically pleasing and organized fashion. All surface raceway in new buildings must be approved by a Purdue IT Infrastructure Services Representative.

3.1.5  All telecommunications infrastructure shall be installed for optimal performance.

3.1.6  All telecommunications infrastructure shall be installed to accommodate future moves, adds, and changes.

3.1.7  All work performed in occupied spaces shall be in a manner that allows the Owner to operate the existing facilities on a continuous basis.

3.1.8  All user outages, including wireless access points, shall be submitted to the Purdue Infrastructure Services Department for approval (1) week before starting work that will affect user connectivity.

3.2  Backboards

3.2.1  Install a 3/4" x 8' x 4' fire-retardant plywood vertically on all walls from 6” AFF or just above baseboard. Plywood shall not be painted.

3.2.2  No mechanical/electrical equipment or conduits shall be installed on or across the plywood or impair the routing of telecommunication cables.

3.2.3  Fire-retardant stamp to be visible in each Telecommunications Room.

3.3  Cable Tray

3.3.1  Install cable tray around entire perimeter of telecommunications room.

3.3.2  Install cable tray above all equipment frames and secure both ends of cable tray to perimeter cable tray around room. Cable tray and equipment frame shall be secured to each other so that the top of the equipment frame cannot move.

3.3.3  Install horizontal cable tray at 7’ 2" AFF to the bottom of the tray. Contact a Purdue Telecommunications Infrastructure Services Representative prior to installation if there are conflicts in mounting heights.

3.3.4  Install additional horizontal and vertical sections of cable tray on walls where OSP cables, riser cables, and large bundles of horizontal cables route from conduits entering/exiting the room. Provide waterfall devices at the transition from horizontal to vertical cable routing.

3.3.5  Horizontal cable tray routed around perimeter of the BDF room shall be installed in such a way that the route for future “unprotected” OSP cabling does not pass through, on, or in front of the cable tray containing “unprotected” UTP cabling.

3.4  Electrical Outlets
3.4.1 Affix thermal label to all electrical outlet covers indicating circuit number and panel of origin.

3.4.2 Electrical outlets designated for UPS units located behind equipment frames shall have thermal label indicating reading “UPS only” and contain the circuit number and panel of origin.

3.4.3 Electrical outlets designated for service use shall have thermal label indicating reading “Service Use” and contain the circuit number and panel of origin.

3.4.4 Each circuit serving the telecommunication room shall have a critical circuit tag affixed adjacent to breaker/switch. Panel schedules/directories shall be labeled to indicate the outlets within the telecommunications room.

3.5 Wire Management

3.5.1 Install D-rings on plywood as specified herein or shown on drawings.

3.5.2 Install D-rings horizontally and vertically on plywood backboard to manage horizontal cabling from the cable tray to the 110 blocks for voice.

3.5.3 Install D-rings horizontally and vertically on plywood backboard to manage Owner furnished and installed voice cross-connects.

3.5.4 Install D-rings horizontally and vertically on plywood backboard to manage horizontal cables that enter the telecommunications room from below up to the cable tray. Route these horizontal cables to the nearest corner of the room to maximize wall space.