



PART1- GENERAL

1.1 HorizontalCablingDescription

- A. Physical cabling and terminating hardware that provides the means of transporting data and voice signal between the Work Area Outlets and its horizontal cross-connect location in the Telecommunications Room (TR). This section will cover all the types of cables used and the connectors associated with each type of cable. It will also cover the standard methods and configurations

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- J. Work Area Outlet: A connecting device on which horizontal cable terminates opposite of the Telecommunications Room (TR or ETR).
- K. Wet Location: Slab-on-grade construction where pathways are installed underground or in concrete slabs in direct contact with soil is considered a wet location.
- L. ITS: Information Technology Services
- M. UNI: University Network and Infrastructure

1.4 Administrative Requirements



- d. Patch panel row # (first installed patch panel is ^ í _ •
- e. Patch panel jack position # (1-24)
- f. End room # of circuit
- g.83 669.2 Tm 0 g 0 G [() TJ ET Q q 0.00000912 0 612 792 re W* n BT E



- a. Part # CPP24WBLY

2.5 FiberOpticCableConnectors:

- A. All fiber cable strands shall be terminated using LC type connectors. The connector shall match the rating of the fiber that it is terminating.
- B. Work Area Outlet:
 - 1. A work area outlet fiber termination will consist of two parts: the connector for the termination of the fiber strand and the coupler insert for the work area outlet faceplate.
 - 2. Fiber connector to terminate fiber strands.
 - a. Use of a crimp type connector will be allowed at the work area outlet only. Use the following:
 - 1) Corning: UniCam LC
 - 2) Single Mode
 - 3) Part # 95-200-99
 - 3. Fiber coupler insert for the work area outlet faceplate.
 - a. Panduit: LC/ LC coupler insert
 - 1) Single Mode
 - 2) Part # CMDSLCZBU
- C. Fiber Optic Connector Housings:
 - 1. Fiber cross-connect housing (fiber patch panel)
 - 2. Fiber cross-connect housings shall be manufactured to fit a 19-inch relay rack.
 - 3. The housings shall be sized to accommodate the appropriate number of fiber connections and utilize the least amount of rack space. When possible it is advised that multiple cables be terminated in a single housing to save rack space.
 - 4. Use the following products or approved equal:
 - a. Corning
 - 1) CCH-0XU (where X represents the # of rack units needed to accommodate the housing).
- D. Telecommunication Rooms:
 - 1. The termination of the fiber will happen in a fiber patch panel mounted in the relay rack.
 - 2. The horizontal fiber cable will be terminated in a Fiber Optic Housing Cassette.



- 3) xx = in the above part numbers represents the color of the faceplate and insert. The 2 shall match. IW (International White/ Off White), EI (Electric Ivory), WH (White), IG (International Grey), or BL (Black).

B. Floor Mounted - Work Area Outlet

- 1. Provide a single gang, 4-port duplex frame. Frames shall be manufactured to accept the same modular jacks as the standard work area outlet faceplates. Provide blank inserts for all unused ports.
 - a. Manufacturer: Hubbell Inc.
 - b. E-series
 - 1) Part # S1PTBRS
 - 2) With sub plate part # S1SP (with 106 Frame)
 - 3) Or sub plate part # S1SP4X4PA

2.8 Labeling:

- A. Comply with TIA/ EIA-606-A and UL 969 for labeling materials, including label stocks, laminating adhesives, and inks used by label printers.
- B. NO hand written labels will be accepted.

PART3: EXECUTION

3.1 GeneralCableInstallation:

- A. Comply with TIA/ EIA-568-C.
- B. Comply with BICSI TDMM, Ch. 5 ^ , } CE] i } Distribution ^ Ç • š u • X _
- C. NO cable ties are allowed in > ^ h c b e plant. All cables shall be neatly arranged and tied with hook and loops straps. Wiring is neatly arranged and can be easily modified.
- D. Horizontal cabling shall contain no consolidation points, splice points, or transition points between the nearest Telecommunications Room and the Work Area Outlet. (Exception: Horizontal fiber optic cable shall be pulled thru the nearest TR to the building Entrance Telecommunications Room.)
- E. The proper cable for the environment is to be installed. (Wet locations shall have the appropriate cable.)
- F.

- G. All horizontal cable shall be plenum rated cable.
- H. Install lacing bars and distribution spools to restrain cables, to prevent straining connections, and to prevent bending cables to smaller radii than the minimum recommended by the manufacturer.
- I. Cable shall not be run through structural members or in contact with pipes, ducts, or other potentially damaging items.
- J. Inside routing shall be installed parallel and perpendicular to existing structural lines and members.
- K. Do not install bruised, kinked, scored, deformed, or abraded cable. Remove and discard cable if damaged during installation and replace it with new cable.
- L. Telecommunications horizontal cable shall be installed in conduit where routed in walls, floors, and inaccessible ceilings.
- M. If cable has to cross fluorescent lighting and/or power cables, the cables must cross perpendicular to both.
- N. For cable not installed horizontally in conduit, support exposed cable in accessible ceiling space at most every five feet using industry standard J-hooks. Mount as high as possible next to floor/ roof deck. Do not support cabling from conduit, joists, or ductwork directly. Use only the J-hooks.
- O. Separation from EMI Sources:
 - 1. Comply with BICSI TDMM and TIA-569-B for separating unshielded copper voice and data communication cable from potential EMI sources.

- 3. No cable shall have pairs that are split between 2 connectors.
- 4. When terminating cable, comply with TIA/ EIA-568-C.
- 5. The jack shall be terminated according to the T568B wiring standard.
- B. Coaxial Cable
 - 1. Terminate all coaxial cable using F type connectors.
 - 2. The connector shall have a modular insert design to fit into the same faceplate as the balanced twisted pair cables.
- C. Fiber Optic Cable
 - 1. All fiber optic cables shall be terminated using type LC connector specified.
 - 2. Use LC UniCam connectors at the outlet and LC pigtails in the TRs (pigtails are part of the Cassettes).

3.3. Telecommunications Work Area Outlet Configuration

- A. Work Area Outlet (Typical for an office space)
 - 1. TIA/EIA-568-C.1 requires that a minimum of two work area outlet/connectors be installed for each work area
 - 2. All work area outlets must be accessible after final furniture is placed in space.
 - 3. Standard work area outlet for an office space shall consist of TWO (2) Category 6a compliant data ports. See Appendix A Figure 6.
 - 4. If there is a need for Coax for CATV, then the outlet shall consist of the appropriate cabling to provide this service. ONE (1) RG-6 Coax cable port for CATV.
 - 5. Ports will be positioned in the outlet per Appendix A Figure 6 for all cables.
- B. Fiber Optic Work Area Outlet
 - 1. When fiber optics are required at a work area, it must be installed in a separate outlet box from other horizontal cabling.
 - 2. A 6-strand single mode fiber cable) will be pulled from the nearest TR to the servicing outlet location.
 - 3. All strands of the fiber cable shall be terminated. No strand shall be left un-terminated.
 - 4. The fiber optic connector shall be LC type connector.
 - 5. This outlet will be required to have a 4-port




- c. The location of the Horizontal fiber cassette will be located as far to the right of the housing as possible. (More details on the set up of the Fiber Optic Housing will be covered in Section 271300 t ^ } u u μ v] š] } v • l } v o] v P _ •
- d. All fiber optic cables shall be terminated using the factory-manufactured pigtailed that are included in the cassettes specified.
- e. All pigtailed shall be fusion spliced into fiber optic cable.

Identification

3.4 Labeling

- A. No paper labels or tags will be acceptable.
- B. No hand-written labels or tags will be acceptable.
- C. Work Area Outlets:
 - 1. Work Area Outlet:
 - a. Each Work Area Outlet shall have its own unique identifier. The } μ š o š i q e identifier shall be placed at the top of each faceplate, and shall consist of the official room number of the wiring closet serving the outlet, followed by a colon, followed by a space, then the faceplate number. For example, Faceplate 1 served from Closet 1023 would have the following label: 1023: 1.
 - b. Faceplate numbers shall

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- a. Cables installed for wireless access points and cameras, shall be flagged with the room number of the TR as well as the Rack/ Patch Panel Row/ Panel Port location as described above.

4. Equipment







- b. The horizontal coax cabling will be physically inspected and a continuity test will be made to determine that the f-type connectors have been properly terminated.
- c. If the cable fails to meet the above requirements, the contractor will perform corrections to the cable or it shall be

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3. Fiber Optic performance testing:

- a. All singlemode fiber cables shall be tested at both 1310 nm and 1550 nm after installation. All tests are to be performed in accordance with ANSI/ TIA/ EIA