SECTION 27 11 19 - COMMUNICATIONS TERMINATION BLOCKS AND PATCH PANELS

PART 1 - General

1.01 SUMMAry

A. Provide all services, labor, materials, tools, and equipment required for the complete and proper installation of communication blocks and patch panels as called for in this section of the Division 27 specifications and conjoined construction drawings.

B. The specification sections of this Division 27 that are particularly applicable to this section include, but are not limited the following:

1. Section 27 00 00 - Communications

2. Section 27 06 00 - Communications Schedules

3. Section 27 11 13 - Communications Entrance Protection

4. Section 27 13 00 - Communications Backbone Cabling

5. Section 27 15 13 - Communications Copper Horizontal Cabling

6. Section 27 15 53 - Cable Plant Testing

C. Division 28 - Electronic Safety and Security also has sections that maybe applicable to this section of the Division 27 - Communications specification set.

1.02 quality control

Comply with Section 27 00 00 - Communications.

1.03 warranties

Comply with Section 27 00 00 - Communications.

1.04 material substitutions

Comply with Section 27 00 00 - Communications.

1.05 Submittals

Comply with Section 27 00 00 - Communications.

1.06 Delivery, storage, and handling

Comply with Section 27 00 00 - Communications.

Part 2 - products

2.01 Quantity determination

Comply with Section 27 00 00 - Communications.

2.02 Copper Termination blocks

A. Furnish all 110 (or approved equal) termination block fields required to terminate the copper backbone (riser) cabling and the voice cross-connect system cabling - Reference Section 27 15 13 - Communications Horizontal Cabling; Section 27 13 00 - Communications Backbone Cabling.

B. Furnish all required 110 system (or approved equal) C4 and C5 termination blocks.

C. Furnish all required pair grouping 110 (or approved equal) termination block label strips.

D. See Section 27 06 00 - Schedules for Communications, UCSC Master Pre-Approved Product/Material/Manufacturer List Index, Product/Material Category, "Telecom Room."

2.03 copper Patch Panels

A. Furnish all patch panels required to support the TR terminations of the WAO horizontal cabling.

B. Furnish all patch panels required to support the voice cross-connect system - Reference Section 27 15 13 - Communications Horizontal Cabling.

C. See Section 27 06 00 - Schedules for Communications, UCSC Master Pre-Approved Product/Material/Manufacturer List Index, Product/Material Category, "Telecom Rm."

2.04 backbone fiber Patch Panels

A. Furnish all required wall mount fiber patch panels - see Section 27 06 00 - Schedules for Communications, UCSC Master Pre-Approved Product/Material/Manufacturer List Index, Product Material Category "Fiber."

B. Furnish all required rack mount fiber patch panels - see Section 27 06 00 - Schedules for Communications, UCSC Master Pre-Approved Product/Material/Manufacturer List Index, Product Material Category, "Fiber."

C. Furnish all fiber patch panel piece parts required for the termination of SMF and MMF OM3+ optical fiber backbone cables and complete build-out of associated fiber patch panels including blank fill plates - see Section 27 06 00 - Schedules for Communications, UCSC Master Pre-Approved Product/Material/Manufacturer List Index, Product Material Category, "Fiber."

D. SMF fiber connectors: Furnish all required SMF connector "Pigtails" - see Section 27 06 00 - Schedules for Communications, UCSC Master Pre-Approved Product/Material/Manufacturer List Index, Product Material Category, "Fiber."

E. MMF fiber connectors: Furnish all required MMF OM3+ connector "Pigtails" - see Section 27 06 00 - Schedules for Communications, UCSC Master Pre-Approved Product/Material/Manufacturer List Index, Product Material Category, "Fiber."

PART 3 - EXECUTION

3.01 installation

A. Copper backbone termination.

1. Mount 110 (or approved equal) termination fields per manufacturer's specifications, instructions, and recommendations. Use accompanying construction drawing set to determine mounting locations and configurations.

2. Backbones are to be routed neatly on overhead cable runway to block termination locations. For cable management from cable runway to block termination and the dressing of cable at the blocks, follow manufacturer’s specifications, instructions, and recommendations and standard industry practices.

3. Terminate all riser backbone cables per manufacturer’s specifications, instructions, and recommendations.

4. At the termination end of multi-pair riser cables, the Contractor shall provide 15 feet (15’) of managed service slack.

5. If removal of the cable jacket is required to facilitate routing of ARMM or plenum backbone cable into the blocks, the exposed cable pairs shall be fully covered with black or gray plastic tape, neatly lapped to prevent gaps.

6. Install five (5) pair and four (4) pair 110 I.D. strips for backbone cabling as required per the construction drawing set accompanying this Division 27 specification.

B. WAO horizontal cable termination.

1. Install one (1) 48-port patch panel for every 48 horizontal UTP CAT6 cables.

2. Mount patch panels per the construction drawing set accompanying this Division 27 specification. Note: See Section 27 11 00 - Communications Equipment Room Fittings. Each patch panel shall have a 2RU horizontal manager placed both above and below the panel.

3. Horizontal cables are to be routed neatly on overhead cable runway to equipment racks; exit cable runway into equipment rack vertical cable management and proceed to the patch panels.

4. Cable termination.

a. Cables on the left side of the patch panel shall enter from the left side vertical cable manager. Cables on the right side of the patch panel shall enter from the right side vertical cable manager. Cables shall not cross the center line of the patch panel.

b. Terminate cables using the 8-pin jack, T568-B four (4) pair termination standard and comply with manufacturer's termination practices, specifications, instructions, and recommendations.

C. Voice cross-connect system termination.

1. 110 or approved equal cable end termination.

a. Mount 110 (or approved equal) termination fields per manufacturer's specifications, instructions, and recommendations. Use accompanying construction drawing set to determine mounting locations and configurations.

b. 110 or approved equal C4 blocks shall be used for all but the last position on each twenty-five (25) pair row of a 110 one hundred (100) pair field and C5 blocks for the last five (5) pair positions in each twenty-five (25) pair row.

2 Patch panel end terminations.

a. Install one (1) 48-port patch panel for every 48 Category 6 cables terminated at the voice cross-connect systems 110 blocks.

b. Mount patch panels per the construction drawing set accompanying this Division 27 specification. Note: See Section 27 11 00 - Communications Equipment Room Fittings. Each patch panel shall have a 2RU horizontal manager placed both above and below the panel.

c. Terminate cables using the 8-pin jack, T568-B four (4) pair termination standard and comply with manufacturer's termination practices, specifications, instructions, and recommendations.

D. Fiber backbone cable termination.

1. Install at the locations indicated on the construction drawing set and per manufacturer's specifications, instructions, and recommendations the wall mount and rack mount optical fiber patch panels.

2. Fiber backbone cables are to be routed neatly on overhead cable runway to patch panel termination locations. For cable management from cable runway to patch panel termination and the dressing of cable at the patch panel termination, follow manufacturer’s specifications, instructions, recommendations, and standard industry practices.

3. Before terminating fiber backbone cable neatly install twenty-five feet (25') of service loop slack on Telecommunication Room wall near location where backbone cable is to be terminated. Diameter of service loops shall be eighteen inches (18").

4. Terminate fiber backbone cable by fusion splicing the appropriate connector "Pigtail" to the backbone cable. Comply with manufactures specifications, instructions, and recommendations.

5. Fiber connector "Pigtail" splicing: Use only fusion splicing to splice fiber connector pigtails to fiber backbone cable. No other splicing methodology shall be allowed.

3.02 examination

Comply with Section 27.00 00 – Communications.

3.03 ISP/OSP Backbone copper 110 Termination block labeling

A. 110 block cable ID label shall be as follows:

1. Label shall be UCSC generated cable number - from Telecommunications Room (TR) number - cable pair count per 25 pairs (1-25, 26-50, etc.).

2. 'From' UCSC building Telecommunications Room (TR) number for ISP riser or 'From' UCSC building number for OSP cable.

3. Cable pair count per 25 pairs (1-25, 26-50, etc.)

B. See PP&C Project Manager or his/her designate to obtain UCSC generated cable number.

C. Pair call-out labeling: Pair call-out labeling shall designate every fifth (5th) pair consecutively through total pair count of the cable terminated on the block but not including the first (1st) and twenty-fifth (25th) pairs of each twenty-five (25) pair field bundle: Example for fifty (50) pair cable -- 5, 10, 15, 20, 30, 35, 40, 45.

D. All labels shall be machine/printer created labels. Hand labeling is not acceptable unless approved in writing as acceptable by the PP&C project manager or his/her designate.

3.04 Horizontal Copper patch panel labeling

A. Label placement.

1. WAO jack assignment number and TR patch panel port number shall be the same number. Example: A horizontal cable terminated on WAO jack 001 shall be terminated on patch panel port 001. A horizontal cable terminated on WAO jack 099 shall be terminated on patch panel port 099.

2. Start patch panel port labeling at the first port in the patch panel that is at the top of the equipment rack closest to the wall. Work left to right and down that equipment rack to the last patch panel port within that equipment rack. Continue to the next equipment, starting in its upper left hand corner and moving down the rack, if more than one (1) equipment rack supporting WAO horizontal cabling is installed in the TR.

B. Patch Panel Port Label content and format shall be YZZZ where:

1. ZZZ = the WAO jack number the cable is terminated on - 001 through 999.

2. Y = the floor number the TR and WAOs are on - use zero (0) for basement.

3. Example: 2055 = (2) second floor, (055) fifty-fifth WAO/Patch Panel port. As an observation, the above number is also a key component of the horizontal cable number.

C. All labels shall be machine/printer created labels. Hand labeling is not acceptable unless approved in writing as acceptable by the PP&C project manager or his/her designate.

D. Machine label technology: Use Brady technology or approved equivalent.

3.05 Backbone Fiber patch panel labeling

A. Each backbone fiber patch panel shall have a header label.

B. Header Label format and content shall be as follows:

1. UCSC generated cable number.

2. 'From' UCSC building Telecommunication Room (TR) number for ISP riser or 'From' UCSC building number for OSP cable.

3. Fiber strand type designation and strand count. SM (single mode) XX; MM (multi-mode) XX where XX = strand count. If cable is a hybrid make sure both strand type counts are accounted for in header label.

B. See PP&C Project Manager or his/her designate to obtain UCSC generated cable number.

C. Fiber Patch Panel Port Labeling: Label each fiber patch panel port with the strand count terminated on the port. Example for a duplex port termination: 5-6 = strand 5 and strand 6 of cable are terminated on this fiber patch panel port. Simplex port termination 6 = strand 6 is of cable is terminated on this fiber patch panel port.

D. All labels shall be printed labels. Hand labeling is not acceptable unless approved in writing as acceptable by the PP&C project manager or his/her designate.

3.06 voice cross-connect system labeling

A. The 110-Blocks shall be labeled “Voice Cross-Connect to Rack #\_ Panel #\_\_”. Each cable shall be numbered from 1-48 on the 110-block Designation Strips.

B. The patch panels on the racks shall be labeled “Voice Cross-Connect Rack #\_ Panel #\_\_”. Each jack shall be numbered from 1-48 on each panel.

3.07 testing

Comply with Section 27 15 53 - Communications Cable Plant Testing.

3.08 as-built drawings

Comply with Section 27 15 53 - Communications Cable Plant Testing.

3.09 ADJUSTMENTS

Comply with Section 27.00 00 – Communications.

3.10 acceptance

Comply with Section 27.00 00 – Communications.

**END OF SECTION**