SECTION 27 15 13 - COMMUNICATIONS copper horizontal cable

PART 1 - General

1.01 SUMMARY

A. Provide all services, labor, materials, tools, and equipment required for the complete and proper installation and termination of new Category 6 horizontal cabling as specified in this section of the specifications.

B. The horizontal link portion of the cabling system specified in this section extends from the jack termination of the cable at the Work Area Outlet (WAO) faceplate to its patch panel jack termination in its assigned IDF (TR). It also applies to the voice cross-connect system described below.

C. All specifications and conjoined construction drawings issued as part of the construction documentation for this project are applicable to this Division 27 and this section. Those specifications that are particularly applicable to this section include, but are not limited to, the following:

1. Division 26 (or 1995 CSI Master Format Edition Division 16) – Electrical
2. Division 15 Mechanical

3. Section 27 00 00 - Communications

4. Section 27 06 00 - Schedules for Communications

5. Section 27 05 29 - Hangers and Supports for Communications Systems

6. Section 27 05 41 - Fire Stopping for Communications Systems

7. Section 27 11 00 - Communications Equipment Room Fittings

8. Section 27 11 19 - Communications Termination Blocks and Patch Panels

9. Section 27 15 43 - Communications Faceplates and Connectors

10. Section 27 15 53 - Communications Cable Plant Testing

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 - product

2.01 Quantity determination

Comply with Section 27 00 00 - Communications.

2.02 Horizontal WAO cable

Furnish all required CAT 6 plenum cable - see Section 27 06 00 - Schedules for Communications, UCSC Master Pre-Approved Product/Material/Manufacturer List Index, Product/Material Category, "Horizontal Cable."

**2.03 VOICE CROSS-CONNECT CABLING**

Furnish all Category 6 cable required to support the voice services cross-connect system - Reference: 271119-Blocks & Patch Panels.

PART 3 – eXECUTION

3.01 General

A. All cable runs shall be installed per manufacturer's installation instructions.

B. Cable installation is “home-run” between the jack termination of the cable at the faceplate to the patch panel jack termination in its assigned IDF (TR).

1. Each cable shall be installed without any splices.

2. Each cable shall be installed without intermediate termination points unless approved by the PP&C Project Manager or his/her designate in writing.

C. The total length of any horizontal station cable from jack termination of the cable at the WAO faceplate to the patch panel jack termination in its assigned IDF (TR) shall not exceed ninety meters (90m) - two hundred ninety-five feet (295’) - unless approved by the PP&C Project Manager or his/her designate in writing.

3.02 Ceiling tile

A. Ceiling tile shall be removed as necessary for the cable installation and put back in place without damaging or soiling any of the tiles or supporting framework.

B. Ceiling tile shall be handled so no fingerprints or marks are left on the tiles, and the tiles are not damaged in any way.

C. The Contractor is responsible for the cost of repair or replacement of any tile or ceiling tile support/framework hardware that is damaged or soiled during the SCS installation.

3.03 WAO Horizontal Cable placement

A. No cable shall run unsupported by conduit, cable tray, hangers, or other specified support for distances greater than five feet (5’).

B. No cable shall be attached to the suspended ceiling structure or laid directly on the ceiling tiles or hard lid as a means of support, and the bottom of a cable or cable bundle shall remain a minimum of six inches (6") above the ceiling tile grid.

C. No cable or cable bundle shall be supported by or attached by any means to fire sprinkler heads, delivery system hardware, environmental sensor system hardware, or the exterior of any conduit, ladder rack, or cable tray. Cable shall be supported by systems specifically installed for cable support.

D. When cable being installed is not enclosed in conduit or cable tray, cross all electrical power circuit transport at right angles.

E. Where discontinuity of cable trays or conduit pathway occurs that causes cable or cable bundle to sag vertically three inches (3") or more, support the cable or cable bundle over the discontinuity using hangers, brackets, hooks, rings, and other applicable supporting devices specified in Section 27 05 29 - Hangers and Supports for Communications Systems.

F. During placement of cable runs, do not exceed manufacturer's maximum pulling tension or minimum bend radius limits.

G. Do not bundle cables in cable trays. Do bundle two (2) or more cables with plenum-rated Velcro ties that are snug but which do not deform the cable geometry as follows:

1. Whenever cables in cable trays leave the cable tray and enter/exit distribution conduit.

2. Whenever cables enter a TS. Maintain bundling with the TS.

H. Manage slack to avoid excess cable or kinking.

I. Pull new pulling string through all conduits while placing new horizontal cable. Leave a pulling string in the utilized conduits for future use.

J. Do not roll or store cable reels without an appropriate underlay.

K. Cables with jackets that are chaffed, burned, have exposed internal conductor insulation, or have any bare copper (shiners) shall be replaced.

L. Maintain the following clearances from EMI sources:

1. Unshielded power lines or equipment less than or equal to 5 kVA near cable in open or non-metal pathway: twelve inches (12").

2. Unshielded power lines or equipment greater than 5 kVA near cable in open or non-metal pathway: twenty-four inches (24").

3. Unshielded power lines or equipment less than or equal to 5 kVA near cable in grounded metal pathway: six inches (6").

4. Unshielded power lines or equipment greater than 5 kVA near cable in grounded metal pathway: twelve inches (12").

5. Power lines enclosed in grounded metal conduit less than or equal to 5 kVA near cable in grounded metal pathway: three inches (3").

6. Power lines enclosed in grounded metal conduit greater than 5 kVA near cable in grounded metal pathway: six inches (6").

7. Fluorescent fixtures near cable in open or non-metal pathway: twelve inches (12").

8. Fluorescent fixtures near cable in grounded metal conduit: six inches (6").

9. Motors or transformers near cable in non-metal pathway: forty-eight inches (48").

10. Motors or transformers near cable in grounded metal pathway: thirty-six inches (36").

11. Radiating coaxial cabling: six inches (6”).

M. After cable installation is complete, tested, and, if necessary, repairs made, install all required fire stopping. The PP&C Project Manager or his/her designate will not accept the installation as completed until all required fire stopping has been installed and accepted as complete. See Section 27 05 41 – Fire Stopping.

3.04 voice cross-connect cable Placement

A. This cabling system connects 48-port patch panel(s) in each rack to 110 blocks installed adjacent to the voice backbone or riser cable 110 terminations in each TS.

B. One Category 6 cable shall be used for each jack in the patch panels. Jack counts are based on copper backbone/riser pair counts. Example: A 100-pair copper riser cable would require two (2) 48-port patch panels, a total of ninety-six (96) jack positions, and four (4) one hundred (100) pair 110 blocks - Reference: 271119-Blocks & Patch Panels

C. Bundle the Category 6 cables per 100 pair 110 block increments - 24 cables per bundle.

D. Within the TS, do not mix WAO cables in any bundles with voice cross-connect cables - keep separate.

E. Test cable as for station cabling - Reference Testing below.

3.05 termination

Comply with Section 27 11 19 - Communications Termination Blocks & Patch Panels and Section 27 15 43 - Communications Faceplates and Connectors.

3.06 examination

Comply with Section 27.00 00 – Communications.

3.07 labeling

A. Cable labels are required on the WAO cables only. Voice cross-connect cables do not require cable labels.

B. Label placement: Attach a label to both ends of each cable six inches (6") from the cables termination at WAO and TS patch panel port.

C. Label content and format, both ends of cable shall be XXX - YZZZ where:

1. XXX = the 3-digit building number which is the last 3 digits of the facility asset designator - a 4-digit number called a CAAN number.

2. Y = the floor number - use zero (0) for basement.

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

4. Example: 195-2001 = Building 195, (2) second floor, (001) first jack on the second floor.

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

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

3.08 Testing

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

3.09 as-built drawings

Comply with Section 27.00 00 – Communications.

3.10 verification

Comply with Section 27.00 00 – Communications.

3.11 adjustments

Comply with Section 27.00 00 – Communications.

3.12 acceptance

Comply with Section 27.00 00 – Communications.

**END OF SECTION**