

SPECIFICATION STANDARD

Copper Riser and Intrabuilding Cabling

27 14 13

PART 1: GENERAL

The Designer and Contractor are 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.

1.01 SCOPE OF WORK

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 copper riser infrastructure as described on the Drawings and/or required by these specifications.

1.02 RELATED SECTIONS

- A. Division 26 Electrical
- B. Division 27 Communications Systems
- C. Division 28 Electronic Safety and Security

PART 2: PRODUCTS

2.01 COPPER RISER CABLING

- A. Riser Cable (Voice) - Provide riser cables from the ER/BDF to each TR/IDF as indicated on Drawings or as indicated herein.
 - 1. Riser cables shall consist of twenty-five pair bundled unshielded twisted pairs, 24 gauge, solid copper Category 3 rated. The jacket shall be CMR (ARMM) or CMP-rated to meet the application of the environment. The size of the cables and shielding will be determined by the project's requirements.
 - a. Category 5E Power Sum Riser Cables requirements are project specific.
 - 2. Manufacturer shall be Superior Essex or Bertek by specification only.
- B. Riser Termination Blocks and Patch Panels
 - 1. See Section 27 11 17 Termination Blocks and Patch Panels

SPECIFICATION STANDARD

Copper Riser and Intrabuilding Cabling

27 14 13

PART 3: EXECUTION

3.01 TELECOMMUNICATIONS INSTALLATION

- A. This Section describes the installation locations for the products and materials, as well as methods and UNM IT Standards associated with the Telecommunications Installation portions of the Project. These Specifications, along with the drawings and other UNM-supplied specifications shall be followed during the installation.
- B. The Contractor is instructed to coordinate his efforts with the other tradesmen who may be working within the same vicinity to avoid conflict and lost time.
- C. The Contractor is required to supply all necessary tools, equipment, accessories, safety equipment, protective clothing, etc., as customary for the craft and necessary for the installation.
- D. The Contractor shall verify space requirements and locations with UNM IT before starting cable installations and terminations.
- E. The Contractor shall verify the cable type and jacket rating required before starting the riser cable installation.
- F. The Contractor shall verify new conduit cable fill in riser conduit so as not to exceed 40% cable fill. The contractor shall notify UNM IT if the existing riser conduit will meet or exceed the 60% cable fill. UNM IT will determine if additional conduits are required.

3.02 RISER CONDUITS

- A. Provide a measure marked 1320 tensile strength mule tape in each empty conduit to facilitate future installation of cables.
- B. Communication pathways requiring fire stopping shall utilize re-enterable fire-stopping systems as per section 27 05 28 Pathways.
- C. All fire-stopping penetrations shall conform to the recommended practices listed in UL1479 or ASTM E814 and must be labeled with the UL1479 or ASTM E814 reference number, dated, and signed by the technician who installed the fire-stopping material.

SPECIFICATION STANDARD

Copper Riser and Intrabuilding Cabling

27 14 13

3.03 RISER COPPER CABLING

- A. The Category 3 copper riser cabling will be terminated at the ER/BDF and TR/IDF on 110-type wiring blocks.
 - 1. A second set of 110 blocks shall be installed where the 25-pair pre-connectorized tails go to a voice-rated patch panel located near the top of the racks, and above the horizontal cable patch panels.
 - 2. A third set of 110 blocks shall be installed where life safety cables are installed.
 - 3. These blocks utilize cross-connection wires to complete the circuits.
- B. Category 5E Power Sum cabling shall be terminated such that wire pair twists are maintained as closely as possible to the point of mechanical termination. No greater than 0.5. Maintain cable sheath to the leading edge of the connector block.

3.03 GENERAL CABLE INSTALLATION

- A. Cable bends shall not be greater than that recommended by the manufacturer of the cable. Ensure the cable sheath is not deformed, perforated, kinked, or damaged in any manner.
- B. Care shall be taken so as not to damage the cable during the installation process and that manufacturer's pull tension specification is not exceeded. The damaged cable shall be replaced with a new one.
- C. When breaking out any multi-pair copper cable of 25 pairs or greater for splicing or termination, the binder groups shall have PIC color-coded cable ties attached to the cable at the point of fan out from supergroups for splicing, and at the point of fan out for termination on termination blocks. (Panduit Part Number PAN-TY PPC25X50F)
- D. Bond all metallic cable sheaths to the room's Telecommunications Main Ground Bar.
- E. Provide individual riser cables to each floor.
- F. Within TRs, cables shall be snugly wrapped using Velcro reusable cable ties, a minimum of every 3 feet inches for cable organization. Wire ties shall only be used on OSP cables and shall be tightened so as not to deform cable jackets and thus affect cable performance.
- G. Cable fill in riser conduits shall not exceed 40% cable fill on initial installation.
- H. 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 installed and closed during the termination and

SPECIFICATION STANDARD

Copper Riser and Intrabuilding Cabling

27 14 13

locked when not occupied. The Contractor is responsible for theft and damages when the IT Room is not locked and secured.

3.06 CABLE TESTING AND ACCEPTANCE

- A. The vertical multiple-pair copper riser cables shall be tested and documentation should be provided to UNM IT.
- B. Physical inspection requirements include:
 - a. Installation evaluation
 - b. Placement and support
 - c. Conduits seals
 - d. Splices – bonding, color coding, neatness, fold back
 - e. Splice cases – NEC and Manufacturer’s instructions
 - f. Grounding and bonding
 - g. Waterproofing compound
 - h. Labeling
 - i. Cleanup
- C. Testing and documentation requirements include:
 - a. Line mapping result: Pass/Fail
 - b. Proper wiring configuration for cable pairs and bundles
 - c. Open conductors- Shall be repaired
 - d. Split pairs
 - e. Reversed pairs
 - f. Shorts – provide ohms & provide loop resistance in ohms
 - g. Grounds – provide ohms & distance to fault on failures
 - h. Crossed pairs
 - i. Pair Integrity- UNM IT expects 100% Pair Integrity.
 - j. Verify red lines or provide as-builts to submittals of the installation.
- D. Provide all test results in the following format.
 - a. Electronic test reports and summary pages shall be submitted in a readable format to UNM IT.

3.07 EQUIPMENT INSTALLATION AND CABLE TERMINATIONS

- A. All equipment shall be installed in a neat and workmanlike manner, arranged for convenient operation, testing, and future maintenance.
- B. All paired cables shall be installed and terminated by technicians experienced in the termination of cables on 110/66 connector blocks in the proper color code sequence.

SPECIFICATION STANDARD

Copper Riser and Intrabuilding Cabling

27 14 13

- C. The Contractor shall employ manufacturer-certified system installation technicians who have at least 5 years of experience in the installation of similar and equivalent systems. The Contractor shall supply verification of experience, for this type of work, to the UNM IT for approval before performing any work.
- D. All cables shall be installed, terminated, and labeled in sequential order.

3.08 AS-BUILT INFORMATION

- A. The contractor shall provide as-built information to UNM IT to accompany all test result information.
- B. As-built information shall be submitted to UNM IT in electronic PDF format. Indicate the location of all riser conduit routes, distribution cable trays, junction boxes, and all additions and deletions related to telecommunications. Include riser labeling next to all telecom symbols (symbols are from the national CAD Standard and BICSI).
- C. If construction drawings are not utilized, the Contractor shall provide all telecommunications location information on an accurately scaled floor plan.
- D. The contractor shall perform all labeling requirements and provide testing documentation for verification as described herein.
- E. The contractor shall submit cable records to reflect all moves, adds, and changes

3.09 SYSTEM WARRANTY REQUIREMENTS

- A. The Contractor shall provide a 20-year Warranty for parts and labor on all riser cable installs.

End of Section