SECTION 27 00 00 - COMMUNICATIONS

PART 1 - General

GENERAL

1.01 SUMMARY

1. This project requires the Contractor furnish, label, test, document, and warranty a Structured Cabling System in conformance with this specification for the facilities of the University of California Santa Cruz (UCSC) referenced as - the Project Number, Project Name.

B. Construction drawings and all provisions of other Contract Divisions, if issued in conjunction with this specification, shall apply to this Division 27 specification. Coordination of work and resolution of conflicts between project documents issued by others such as Architects, Civil Engineers, Electrical/Mechanical Engineers, Plumbing Engineers, Civil Engineers, etc. and this Division 27 specification with its conjoined construction drawings shall be the responsibility of the Contractor.

C. The list of Division 27 section specifications that may be included as part of this Division 27 specification set includes, but is not limited to, the following:

1. Section 27 06 00 - Schedules for Communications

2. Section 27 05 26 - Grounding and Bonding for Communications Systems

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

4. Section 27 05 33 - Conduits and Backboxes for Communications Systems

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

6. Section 27 11 00 - Communications Equipment Room Fittings

7. Section 27 11 13 - Communications Entrance Protection

8. Section 27 11 16 - Communications Cabinets, Racks, Frames, and Enclosures

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

10. Section 27 13 00 - Communications Backbone Cabling

11. Section 27 15 13 - Communications Copper Horizontal Cabling

12. Section 27 15 43 - Communications Faceplates and Connectors

13. Section 27 15 53 - Communications Cable Plant Testing

14. Section 27 16 00 - Communications Connecting Cords, Devices, and Adapters

Note: If a specific Division 27 specification section listed above is not included in the Division 27 specification set issued for this project, the work of that section is not required for this project.

D. UCSC Project Manager: The UCSC Physical Planning and Construction (PP&C) department project manager assigned to this project is the project manager for all aspects of this project and shall be referenced here-in-after as the PP&C project manager. At all phases of this project, address all requests for information (RFI), all correspondence, and all required submittals to the assigned PP&C project manager or his/her designate.

E. Progress Review Meetings:During the execution phase of this project the selected Contractor shall be prepared to attend weekly progress review meetings with the assigned PP&C Project Manager or his/her designate.

1.02 Quality Control

A. The Contractor shall have a current State of California C-7 license or C-10 license.

B. All work shall be performed in a neat and workmanlike manner (also see Division 01).

C. Product, materials, and equipment provided by the Contractor shall be of the quality specified.

D. All materials furnished under this contract shall be new and of a regularly manufactured line, currently in production at the time of installation.

E. Codes: (Most recent editions with addenda/TSB, etc.) All materials, installation, and workmanship shall comply with the applicable requirements and codes addressed within the following references:

1. National Electrical Manufacturers Association (NEMA).

2. National Electrical Code (NEC) 2008.

3. National Electrical Safety Code (NESC) 2009.

4. FCC Rules and Regulations.

5. Local, county, state, and federal regulations and codes in effect as of the bid submission date.

F. Standards: (Most recent editions with addenda/TSB, etc.) All materials, installation, and workmanship shall comply with the applicable requirements and standards addressed within the following references:

1. ANSI/TIA/EIA-568-C, Commercial Building Telecommunications Wiring Standard.

2. ANSI/TIA-568-C.0, Generic Telecommunications Cabling for Customer Premises, published 2009.

3. ANSI/TIA-568-C.1, Commercial Building Telecommunications Cabling Standard, published 2009.

4. ANSI/TIA-568-C.2, Balanced Twisted-Pair Telecommunication Cabling and Components Standard, published 2009.

5. ANSI/TIA-568-C.3, Optical Fiber Cabling Components Standard, published 2008, errata issued in October, 2008.

6. ANSI/TIA-569-B, Commercial Building Standard for Telecommunications Pathways and Spaces.

7. ANSI/TIA-606-A, Administration Standard for Commercial Telecommunications Infrastructure.

8. ANSI/TIA/EIA-STD-607-A, Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications.

9. ANSI/TIA-758-A, Customer-Owned Outside Plant Telecommunications Infrastructure Standard.

10. BICSI - Telecommunications Distribution Methods Manual (TDMM) - 12th edition.

11. BICSI - Outside Plant Design Reference Manual (OSPDRM) - 4th edition.

12. BICSI - Wireless Design Reference Manual (WDRM) - 3rd edition.

13. All products shall be Underwriters Laboratories (UL) listed, or other nationally recognized testing laboratory acceptable to UCSC listed for the application intended.

G. Where conflicts exist from one code or standard to another, the code or standard to adhere to will be decided by the PP&C Project Manager or his/her designate.

1.03 WARRANTIES

A. The Contractor shall provide a one (1) year material and labor warranty on all the work the Contractor has performed.

B. The Contractor shall provide the SCS system manufacturer's 25-year materials and link performance certification warranty for all new cable installed by the Contractor in his execution of the work of this specification.

1.04 MATERIAL SUBSTITUTIONS

A. All requests for substitutions of products shall be made and approved or disallowed during the stated bid period for this project - see Division 01.

B. Five (5) hard copies and a URL reference of all proposed product substitution documentation are required. Proposed product substitution documentation shall contain, at a minimum, the following:

1. The product manufacturer's performance specifications cut sheet(s).

2. If existing, the manufacturer's installation instructions and/or installation recommendations for that product.

C. Acceptance of proposed substitutions is at the discretion of the PP&C Project Manager.

D. Substitutions must comply with the warranty requirements specified above.

1.05 SUBMITTALS

A. Required submittals upon award of contract.

1. A complete jack numbered plan set in UCSC jack numbering format in printed and Autocad format.

2. Mock-ups of each type of communications outlet faceplate to be furnished for this project. Each faceplate mock-up shall contain the following:

a. Full load of required connectors with eighteen inches (18") of connector type appropriate specified cable terminated on each connector.

b. Required faceplate labeling to include faceplate icons as required by these Division 27 Specifications and the accompanying construction drawing set.

3. Manufacturers’ cut sheets for all products to be supplied by the Contractor in response to these Division 27 specification sections.

4. Listed fire stop system documentation - reference Section 27 05 41 - Fire Stopping for Communication Systems.

5. A copy of the Contractor's C-7 license or C10 license - both if Contractor has both.

6. A copy of testing personnel certification(s) that show they are properly trained in the use of the testing equipment that will be employed by the contractor - reference Section 27 15 53 - Cable Plant Testing.

7. Testing device(s) calibration documentation.

8. Copies of Contractor's Structured Cabling System (SCS) manufacturer's authorized vendor/installer Certification document(s).

B. Required submittals prior to final acceptance.

1. Two (2) sets of CDs or DVDs of the as-built drawings (AutoCAD or AutoCAD Lite Rev 2007 or later) - reference Section 27 15 53 - Cable Plant Testing.

2. Two (2) sets of CDs or DVDs of cable plant testing documentation - reference Section 27 15 53 - Cable Plant Testing.

3. Two (2) sets of CDs or DVDs of all fire stop pictures reference Section 27 05 41 - Fire Stopping for Communication Systems.

4. Two (2) copies of required warranties.

PART 2 - PRODUCTS

2.01 SECTION 27 06 00 - Schedules for Communications

1. It is recommended that the reader examine Section 27 06 00 - Schedules for Communications before continuing.
2. Section 27 06 00, Schedules for Communications presents the UCSC Core Technologies Department's pre-approved Product/Material Listing by Division 27 Section number. In this specification set product/material shall be specified by reference to the Product/Materials Schedule contained in Section 27 06 00.

C. The Contractor shall supply a complete and functioning system; if a product/material required for this project is not listed in Section 27 06 00 - Schedules for Communications, Products and Materials Schedule, it shall be furnished by Contractor with submittal approval by the PP&C Project Manager or his/her designate.

D. The Product and Materials Schedule allows for "approved equal" substitutions. When "approved equal" product/material is substituted, the "approved equal" product/material submitted shall be equivalent in every way to the product/material listed in Section 27 06 00 - Schedules for Communications, the Products and Materials Schedule - see Material Substitutions above.

2.02 QUANTITIES

Determining quantity of any given required item or product shall be the Contractor's responsibility using this specification and accompanying drawing set.

2.03 Definition

In this Division 27 specification, the term "Furnish" shall mean "provide and install."

PART 3 - EXECUTION

3.01 COORDINATION

A. The Contractor shall coordinate the work specified in this Division 27 specification with the work of the other trades

B. The Contractor shall coordinate with Division 26 - Electrical (or 1995 CSI Master Format Edition Division 16 – Electrical) concerning provision and installation of the following:

1. Conduit and cable tray pathway for communications.

2. Wall penetrations and floor coring for communications.

3. Backboxes for communications.

4. Telecommunications Space Power placement of communications.

5. Grounding and bonding for communications.

C. All questions and issues regarding coordination and construction element phasing shall be directed to the PP&C Project Manager or his/her designate.

D. The Contractor shall coordinate their work so there shall be no disruption to any occupants of the UCSC campus unless coordinated and approved by the PP&C Project Manager or his/her designate. Any necessary disruption shall be scheduled a minimum of 2 weeks in advance of its occurrence and affected parties shall be notified in writing of date, time, and planned duration of the disruption.

E. The Contractor shall follow all rules, regulations, and instructions stipulated by this specification, general provisions of the Contract, including General and Supplementary Conditions, and Division 01 specification sections, if issued in conjunction with these Division 27 specifications with regard to the following:

1. Delivery hours.

2. Delivery locations.

3. Storage.

4. Hazardous Material.

5. Security

6. Safety.

7. Logistics.

3.02 INTENT OF Drawings AND SPECIFICATIONS

A. Contractor shall keep on the Project site a copy of the Specifications and Drawings, and the same shall be available at all reasonable times for inspection and use by The University's Representative and by any other person authorized by The University's Representative. Any Drawings listed in the detail Specifications shall be regarded as a part thereof and of the Contract. Anything mentioned in these Specifications and not shown on the Drawings, or shown on the Drawings and not mentioned in these Specifications, shall be of like effect as though shown or mentioned in both.

1. It shall be the duty of Contractor to see that the provisions of these Specifications are complied with in detail irrespective of the inspection given the work during its progress by The University's Representative. Any failure on the part of Contractor to observe the Specifications will be sufficient cause for the rejection of the work at any time before its acceptance.
2. The University's Representative will furnish from time to time, such detail drawings, drawings, profiles, and information as The University's Representative may consider necessary for Contractor's guidance to insure the proper and adequate execution of the Contract. Contractor shall comply with such detail drawings, drawings, profiles and information.

D. Only favorably reviewed shop drawings and submittals shall be used in construction. Refer to Section 01300.

E. See and comply with Division 01.

F. DO NOT USE drawing scale to determine exact dimensions or exact location. Scaled drawings are still to be considered diagrammatic and scale should be used for estimates only. If exact lengths or location placement dimensions are required, the drawings will specifically show those dimensions or placement coordinates.

3.03 INSTALLATION

Furnish all required materials, equipment, and tools necessary to properly complete the work of these specifications including, but not limited to, tools for pulling and terminating the cables, mounting hardware, cable ties, bolts, anchors, clamps, hangers, kits of consumables, lubricants, technician communication devices, cable testing equipment, stands for cable reels, cable wenches, etc.

3.04 examination

A. The Contractor is responsible for examining existing conditions and comparing them with drawings and specifications and notifying the PP&C Project Manager or his/her designate of any discrepancies.

B. The Contractor is responsible for coordinating with the PP&C Project Manager or his/her designate to address, adjust, and resolve any discrepancies found before commencing work.

C. If a discrepancy between existing conditions and these drawings and specifications are found after commencing work, stop any work that in the Contractor's opinion is affected by the found discrepancy. It shall then be the Contractor's responsibility to resolve all issues caused by the found discrepancy before commencing work in work areas affected by the discrepancy.

3.05 Verification

A. It is incumbent upon the Contractor to verify that the installation and materials used have been inspected before they are enclosed within building features, or otherwise hidden from view. The Contractor shall bear costs associated with uncovering or exposing installations or features that have not been inspected and approved.

B. After installation, test, certify, and provide required warranties for the Structured Cabling System installed per the requirements of this specification.

3.06 ADJUSTMENTS

The Contractor is responsible for coordinating and documenting with the PP&C Project Manager or his/her designate the change order process.

3.07 List of required As-built drawings

A. As stated under "Submittals" above, as-built drawing files shall be "AutoCAD" or "AutoCAD Lite" 2007 or later release.

B. The list of required as-built drawings is as follows:

1. All cabling outlets with IDs for each connector on the faceplate.

2. Two-inch (2”) and larger conduit pathways to include conduit size label.

3. Pull box locations.

4. Two-inch (2”) and four-inch (4”) J hook runs indicated by a line series of “x”s.

5. Telecom room layout labeled per current construction drawing field mark-ups.

6. Rack elevation labeled per current construction drawing field mark-ups.

7. Backbone copper and fiber schematic drawings with labeling information.

C After review of as-built drawings by the PP&C project manager or his/her designate be prepared to make any required corrections for final submittal.

3.08 acceptance

The project specified by this specification shall be considered completed and signed off as completed by the PP&C Project Manager or his/her designate contingent upon the following:

1. All punch lists have been completed and signed as complete by the PP&C Project Manager or his/her designate.

2. Required cable plant testing has been executed and required test result documentation has been submitted and approved by the PP&C Project Manager or his/her designate - Refer to Section 27 15 53 - Communications Cable Plant Testing.

3. Any required adjustments to as-built drawings have been completed, submitted, and approved as complete by the PP&C Project Manager or his/her designate.

4. Required warranty documentation has been submitted and approved as complete by the PP&C Project Manager or his/her designate.

**END OF SECTION**