

## SECTION 27-40-10 CABLE ANTENNA TELEVISION SYSTEM (CATV)

### PART 1 – GENERAL

#### 1.01 DESCRIPTION

- A. The work covered by this section of the Specifications shall include all labor necessary to perform and complete such construction, all materials and equipment incorporated or to be incorporated in such construction and all services, facilities, tools and equipment necessary or used to perform and complete such construction. The work of this section shall include, but is not limited to, the following:
  - 1. A complete and operable Cable Antenna Television System, CATV.
- B. All install locations, products, product configurations, and or labeling must be approved by the Cal Poly ITS Telecomm group.

#### 1.02 QUALITY ASSURANCE

- A. Refer to Section 27-00-00 for general details.

#### 1.03 CODES, STANDARDS, AND GUIDELINES

- A. Except as modified by governing codes and by the Contract Documents, comply with the applicable provisions and recommendations in Section 27-00-00.
- B. UL/CSA 60950
- C. FCC Regulations 47CFR part 68
- D. Cal Poly ITS Telecomm group, Telecommunications Standards Document and the Labeling, Design and Syntax Standard in Appendix B.

#### 1.04 SUBMITTALS

- A. Refer to Section 27-00-00 for general details. B. Shop Drawings:
  - 1. All system designs, drawings and specifications shall be reviewed for approval by the Cal Poly ITS Telecomm group.
- B. Submit Manufacturer's Cut Sheets for the following:
  - 1. Provide a Submittal for approval by the Cal Poly ITS Telecomm group for all CATV projects, designs and systems.
- C. Provide Manufacturer's Warranty statement.
- D. Provide all user/installation/programming manuals for all installed equipment.

#### 1.05 IDENTIFICATION

- A. All cables, junction boxes, faceplates, taps, splitters, nodes and other CATV infrastructure shall be labeled per the Cal Poly ITS Telecomm Labeling, Design and Syntax Standards in Appendix B.
- B. Refer to Section 27-05-53 for additional details.

## 1.06 DEFINITIONS

- A. CATV System shall provide acceptable picture quality and meet FCC level Standards to all areas of the specified project. Connected load estimates (meaning the potential number of users that shall be supported by the system simultaneously) shall be provided by the University.

## 1.07 WARRANTY

- A. Refer to Section 27-00-00 for general details.

## PART 2 – PRODUCTS

### 2.01 PRODUCT CONSISTENCY

- A. Product Consistency: Any given item of equipment or material shall be the product of one manufacturer throughout the facility. Multiple manufacturers of CATV system active equipment shall not be permitted. CATV passive components may vary with respect to Manufacturer with approval of the Cal Poly ITS Telecomm group.

### 2.02 CATV – CABLE ANTENNA TV SYSTEM

#### A. GENERAL

1. The Contractor shall provide current state-of-the-art, fiber optic based connectivity between the campus/signal provider “head end” and the new project under design. The University requires the installation of a site-wide system delivering signal levels that support the University specified/provided user loading characteristics.
2. The University shall purchase (with project funds) and have delivered to the Cal Poly ITS Telecomm group, the specified active system components. Once all tests of the passive infrastructure have been approved by the Cal Poly ITS Telecomm group, the ITS Telecomm group shall install all active system components. and Once all active components have been installed the system shall be returned to the Contractor for picture quality, signal level and leakage testing. The results of all tests shall be submitted to the Cal Poly ITS Telecomm group for final review and approval.
3. All other construction materials necessary to create the complete specified system shall be the sole responsibility of the Contractor to purchase, install and test.
4. ***The Contractor shall provide a complete system, designed by an ITS Telecomm group approved RCDD or Engineer. The Contractor shall work in conjunction with and with the approval of the Cal Poly ITS Telecomm group to connect the system to the campus signal provider’s “head end” equipment via fiber optic cable.***
5. The Cal Poly Campus CATV “head end” connection is located in Building #2.
6. The contractor shall submit all system designs and component selections to the Cal Poly ITS Telecomm group for approval prior to construction and/or installation.
7. The contractor shall provide tangible evidence in advance that their proposed installation and testing team members have substantial experience installing and testing similar sized CATV systems. Certification by the State of California is acceptable.

B. ACCEPTABLE PRODUCT MANUFACTURERS

<u>Item</u>	<u>Approved Manufacturers:</u>
1. Optical Node Transmitters	ARRIS Group, Inc. or Cal Poly ITS Telecomm approved equal
2. Optical Fiber Node (receiver)	ARRIS Group, Inc. or Cal Poly ITS Telecomm approved equal
3. Optical Splitters	AOC Technologies, Inc. or Cal Poly ITS Telecomm approved equal
3. Optical Line Extenders (booster amp)	ARRIS Group, Inc., Blonder Tongue or Cal Poly ITS Telecomm approved equal
4. Coax Taps and Splitters	Antec, Inc., Signal Vision, Inc., Antronics, Inc., Regal Division of ARRIS, Inc. or Cal Poly ITS Telecomm approved equal

For other passive components of a complete system refer to the appropriate Division 27 Section relating to that component.

## PART 3 – EXECUTION

### 3.01 INSTALLATION

- A. All equipment and materials shall be installed per manufacturer's installation instructions and be in compliance with all codes, regulations and specifications.
- B. ***Do not install or connect to optical nodes and other active CATV system devices until test data for all fiber optic and coax cabling has been approved by and only if specifically directed to do so by the Cal poly ITS Telecom group.***
- C. Contractor shall provide all conduits, cable, boxes and other passive materials to deliver a fully functional CATV system that is constructed within the bounds of all codes, restrictions and specifications.
- D. Electrical circuits required to provide power to CATV system active components shall be provided by the contractor as part of the project and shall meet all applicable codes and regulations. Refer to other appropriate Divisions and Sections of the Telecommunications Standards Document for information as needed.
- E. ***The Cal Poly ITS Telecomm group shall be allowed to monitor the installation and have tested any or all of the components of the CATV system. Acceptable signal level at each faceplate shall be +4 to +7 dbm. Use padding as necessary to provide acceptable signal levels at all faceplates.***
- F. Any work or test results that are deemed unacceptable by the Cal Poly ITS Telecomm group shall be reworked and/or retested until the work and/or test data is deemed acceptable.
- G. Post Project Cleanup
  1. Remove rubbish, debris, and waste materials and legally dispose of such at an off-campus site.
  2. Restore any landscape, concrete, asphalt or aesthetic elements disturbed during installation.

### 3.02 QUANTITIES

- A. Quantities of system elements shown on the drawings shall be illustrative only and are meant to indicate the general configuration of the work. The Contractor shall be responsible for providing the correct quantities of materials to construct a system that meets the intent of these Specifications and the relevant codes.

### 3.03 GROUNDING & BONDING

- A. See Division 27 Section 27-05-26

### 3.04 TESTING

- A. ***Testing shall require a quality HD picture be viewed on an HD monitor at the faceplate in every room. A random evaluation or demonstration of certain faceplates shall be performed by the contractor at the request of and in the presence of a Cal Poly ITS Telecomm group representative. Required leakage testing shall be provided by the contractor once acceptable signal levels are measured at all faceplates. Any locations not meeting FCC Standards shall be reworked and retested until compliance is reached.***

### 3.06 ACCEPTANCE

- A. Upon receipt of the Contractor's testing documentation, the Cal Poly ITS Telecomm group representative will review/observe the installation and randomly request tests of the device as installed. Once the installation and testing has been completed and the Cal Poly ITS Telecomm group representative is satisfied that all work is in accordance with the Contract Documents, the Cal Poly ITS Telecomm group representative will notify the Contractor and/or the Cal Poly Project Manager of acceptance in writing or via email.
- B. All install locations, product configurations, and labeling must be approved in advance by the Cal Poly ITS Telecomm group and conform to Cal Poly ITS Telecomm Labeling, Design and Syntax Standards in Appendix B.

### 3.05 RECORD (AS-BUILT) DRAWINGS

- A. The Project Record Drawings shall show the type and location of each CATV component and connection.

END OF SECTION

**DOCUMENT VERSION CONTROL**

<b>REVISION</b>	<b>DATE</b>	<b>AUTHOR</b>	<b>REASON</b>
1	02/20/2014	R. VOLK	INITIAL DOCUMENT DEVELOPMENT
	02/20/2014	DW & MH	PRIMARY REVIEW COMPLETE