

SECTION 27 53 19 - DISTRIBUTED ANTENNA SYSTEM (DAS)

PART 1 - GENERAL

1.1 SUMMARY

- A. Provide all services, design, installation and calculations necessary for a complete code compliant system.
- B. This is a bidder designed system; contact AHJ prior to bid to determine system requirements including ambient local signal levels and frequencies.
- C. Building to be tested at 75 percent construction completion to determine the signal strength and the extent of the system to be installed.

1.2 RELATED SECTIONS

- A. Division 01
- B. Division 26
- C. Division 27
- D. Division 28

1.3 REFERENCES AND STANDARDS

- A. References and Standards as required by Section 27 01 00.
- B. In addition, meet the following:
 - 1. FCC regulations:
 - 2. Oregon Fire Code requirements.
 - 3. Oregon Structural Specialty Code

1.4 SUBMITTALS

- A. Submittals to be completed as described in Section 27 01 00.
- B. See architectural documents for additional requirements.
- C. In addition, provide:
 - 1. Drawings indicating locations of all hardware (electronics, antenna(s), etc.) and cable routes. In addition, note any equipment needing power and list

- requirements.
- 2. Provide a coverage plan, indicating signal strength for each frequency band, for the proposed system.
- 3. Provide manufacturer documentation for all devices to be installed.

1.5 QUALITY ASSURANCE

- A. Submit a list of at least 5 facilities of equal size and technical requirements utilizing the equipment submitted.
 - 1. For each facility, list:
 - a. Name and location of facility.
 - b. Date of Occupancy by customer.
 - c. Representative to contact and telephone number.
 - d. Construction Manager or General Contractor.
 - e. Provide information on the installed locations with operational equipment.
- B. Certifications
 - 1. Copies of certifications held by employees for the system to be installed.
 - 2. Certificates shall be from the manufacturer or facility that provided the training listing the employee who has successfully passed the program.
- C. Additional requirements listed in Specification 27 01 00.

1.6 WARRANTY

- A. Warranty of materials and workmanship as required by Section 27 01 00.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- 1. Have verified testing and documentation showing the parameters and abilities of the system as installed.
- 2. The system and its components must be manufactured by a company engaged in the manufacture of the specific equipment for a minimum of 3 years.

2.2 MATERIALS

- A. Materials shall be of the proper designation and design for the area in which they are to be installed so as to be in compliance with all Standards and Codes i.e. plenum or OSP rated.
- B. All anchors used for the support of any equipment are to be of the appropriate design and load rating for that area as set by manufacturer recommendations.

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION REQUIREMENTS

- A. The installation will meet or exceed all applicable codes.
- B. Devices and cabling will be installed, labeled, and tested per manufacturer recommendation.
- C. Coordination:
 - 1. Coordinate the installation and schedule with the Owner and General Contractor prior to the start of installation activities.
 - 2. Once the Owner and General Contractor have accepted the coordination and schedule, the Contactor may proceed with installation.
- D. Provide modifications necessary to achieve provider performance and code minimum levels for emergency responder radios.

3.2 FCC LICENSEING

- A. Represent the Owner to obtain required licenses for operation under FCC Regulations.
- B. Represent the Owner during negotiations with wireless operators, coordinate site preparation, assist with wireless service providers' installation, and coordinate connection of wireless service providers to the System.
- C. The Wireless Operator integration should be turnkey.

3.3 TESTING

- A. The Contractor shall perform acceptance testing for percent coverage and signal strength in accordance with code. Testing shall be performed after furniture move-in.

3.4 LABELING

- A. General Requirements:
 - 1. Per NEC requirements for equipment and cabling. The as built documents to match labeling on devices.

3.5 FINAL INSPECTION AND CERTIFICATION

- A. The Contractor shall perform pre-installation testing for percent coverage and signal strength in accordance with code. Testing shall not be performed until after the building is fully enclosed (roof, exterior skin, doors and windows are installed), and interior ceilings and walls are in place.

- B. Measure the percent coverage and signal strength in both the critical and general areas on each floor. Measure the signal strength receivable within the building and the signal strength received when transmitting from within the building.
- C. Install amplification only on the floors which fail to have the required percent coverage and signal strength.
- D. Provide spare capacity to install amplification later on floors that pass pre-installation testing but may drop below the required percent coverage or signal strength when construction and furniture move-in are completed.

3.6 EXTENDED SUPPORT SERVICES

- A. Provide support services for 12 months following the Owner's acceptance of the System (for services such as integration of additional wireless operators).

END OF SECTION 27 53 19