

## SECTION 27 51 24 – TELEPHONE SYSTEM

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Furnish and install, as hereinafter specified, modifications and expansion of the existing telephone system including wiring, instruments, modules, and software upgrades as required for a complete and first-class operating system. All equipment and installation material required shall be furnished whether or not enumerated herein.
  - 1. The modifications shall include upgrades as required to install IP based phones throughout the building.
- B. Contractor shall be responsible to reprogram existing system as required to accommodate the revised room designations and numbering throughout the entire building. All telephones shall be programmed with revised numbering scheme. Coordinate all work with school district.
- C. **This is a phase project. All additional accessories, wiring, time, programming, etc. shall be provided as required so that there is a complete and functioning telephone system at the end of each individual phase. All features of the system shall be available throughout the construction. Refer to the Phasing drawings for a complete understanding of the scope of the phases for the project.**

#### 1.2 SUBMITTALS

- A. Submittals shall only be provided for newly provided products as part of this contract. Due to the limited nature of the phone work, it is anticipated submittals for this system will be minimal.
- B. Product Data: Submit manufacturer's product literature and installation instructions with system wiring diagrams. Provide a complete listing of all major components required for a complete and fully operational system.
- C. Maintenance Data: Include data in the maintenance Manual specified in Non-Technical Specifications.
- D. Maintenance Instructions: Submit manufacturer's printed instructions for maintenance of installed work, including methods and frequency recommended for maintaining optimum condition under use conditions. Submit three complete sets of operating instructions including wiring and circuit diagrams. Communications Systems Submittals may be on CD-ROM in indexed PDF format.
- E. Inventory: Supply with the manuals an inventory of the equipment provided.

#### 1.3 QUALIFICATIONS

- A. Manufacturer: Equipment manufactured by those named shall be considered as meeting these specifications. Catalog and model numbers are intended to indicate type, quality of design, material, as well as exact operating features required.
- B. Supplier: The supplier must have a minimum of five years' experience in the design and installation of systems equal in size and type required by this project.

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- C. The supplier must be the authorized representative of the equipment manufacturer supplied and have full-time technicians trained and certified in the installation and service of the equipment supplied. The supplier must supply with the shop drawing submittal a list of five installations (along with contact personnel) of the proposed control equipment provisioned by the proposed installation team.
- D. **The contractor shall contract with the District's current Telephone System supplier, Sage Technology Solutions Inc. Contact Charlie Mowrer at 717-653-6641.**

1.4 REGULATORY REQUIREMENTS

- A. Electrical Code Compliance: Comply with applicable local code requirements of the authority having jurisdiction, and that portion of the NEC which pertains to installation and construction of specified products.
- B. FCC Compliance: Comply with U.S. Federal Communication Class B standard for allowable radiation from equipment and wiring.
- C. Institute for Electrical and Electronic Engineers (IEEE): Comply with all applicable standards for audio, video, and data networks.
- D. Americans with Disabilities Act (ADA): Accessibility Guidelines for buildings and Facilities.

1.5 MAINTENANCE SERVICE WARRANTY

- A. Special Project Warranty: Submit a written warranty, executed by the contractor, installer, and the manufacturer, agreeing to repair or replace equipment which fails in material or workmanship within the specified warranty period. This warranty shall be in addition to and not a limitation of other rights the owner may have against the contractor under the contract documents.
- B. Warranty of Conformance with Specifications: The contractor shall warrant that all specified functions shall be provided even if functional omission is not discovered until the end of the warranty period. This shall warranty full function of the system even if the owner does not fully utilize the capabilities of the system initially.
- C. Warranty period is one (1) year after the Date of substantial Completion. Warranty shall include Hardware and Software.

PART 2 - PRODUCTS

2.1 EQUIPMENT

- A. The existing equipment shall be modified as required, cleaned and reinstalled wherever possible. Components no longer used at the completion of the project shall be removed.
  - 1. Existing phones shall be salvaged as required by the district, or disposed as directed. No additional costs will be provided for salvaged or disposal of the equipment.
- B. Phones shall be installed in quantity and locations as shown on the plans.
- C. Provide all control equipment modules required to activate new phones. Survey the existing system to determine capacity of existing headend.

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- D. Provide system software update to the latest version available (or agreed to with District IT department) when the new system is turned over to the owners at substantial completion.

2.2 PHONES

A. Administration Phones:

- 1. Provide (17) Avaya J179 - #700513569 administration phones.
  - a. Provide additional expansion module, Avaya J100 EM for Administration assistance (three (3) locations). The expansion module shall provide additional touchscreen and softkeys.
- 2. Locate phones in offices, and where directed by the Owner.

B. General Phones:

- 1. Provide (90) Avaya J129 - #700513638 general phones.
- 2. Locate phones in classrooms and other general spaces throughout the building where directed by the Owner.

C. Licenses

- 1. Provide an Avaya "IP Endpoint License" - #383110 per phone.

D. Spare phones shall be turned over to the Owner.

2.3 PROGRAMMING & CROSS-CONNECTIONS

- A. Programming shall be provided to ensure extensions and voicemail are migrated.
- B. Carefully track existing extension cross-connections during demolition and construction to ensure system remains operational throughout the project.
- C. At the completion of each phase, and of the project, ensure all extensions and voicemail are fully operational, and meet the Owner's needs for the system.
- D. Additional accessories and wiring shall be provided as required to accommodate the renovations.

2.4 INTERCONNECTIONS

- A. Provide interface to the telephone system for full integration so that the classroom phones can communicate with the office over the intercom system. There shall also be an interconnection so that any phone, analog, digital or IP, can initiate a general page.
- B. An additional interface between the intercom and telephone system shall be made so that after a code has been presented, the intercom system will sound a tone on incoming phone call. Once the phone is answered, the tone will cease.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Comply with installation instructions provided by system manufacturer. Provide type of cables as shown on plans and schedules.
- B. All phone locations shall be equipped with CAT6 data cabling as specified in the structured cabling portion of this project. Phone drops shall be terminated with a CAT6 RJ45 jack at the station end of the cable. Wall Hanger plates shall be provided where wall phone locations are designated. Phone drops shall be landed at existing phone termination points. Contractor shall be responsible for testing, identifying, and tagging all existing cabling. Contractor shall provide all necessary patch cords and cross connect wiring. All wiring shall be plenum rated where required by code.
- C. Install system to comply with drawings and final shop drawings in compliance with manufacturer's printed instructions and the project plans.
- D. Cable identification: shall be provided on both ends of each cable and termination with the owner's room number and the wiring block or device to which it is connected. Tags shall be permanent and neat.
- E. Furnish and install necessary wire to provide a complete system or systems as herein specified. All wiring shall be tested for continuity and freedom of all grounds and short circuits.
- F. Provide cable as specified in Division 27 Communications Cabling.
- G. The Contractor shall use the types of wire recommended by the Equipment Manufacturer; however, the size and quality shall not be less than that previously specified or indicated on the drawings. If cross talk, appreciable loss of volume or distortion occurs after installation has been completed, it shall be the mutual responsibility of the Contractor and Manufacturer to correct any such condition without cost to the owner. The Contractor in no case shall use the type of wire which he merely assumes to be the best. This recommendation shall be from the equipment manufacturer. Remote system loudspeaker wiring shall be 14awg minimum.
- H. The central control console shall be provided with a 10AWG ground wire to earth ground. Conduit ground shall not be acceptable for this purpose.

### 3.2 TESTING: COMMUNICATIONS SYSTEMS

- A. Programming: Review all system programming with the owner's representative and the engineer, and obtain written approval before system is put on line. Telephone service interface shall be arranged by the owner.
- B. Subsequent to hookups of equipment, test the entire system and demonstrate proper functioning in accordance with requirements. Where necessary, correct malfunctioning units, and then retest to demonstrate compliance.

END OF SECTION 27 51 24