

SECTION 274116

AUDIO VIDEO SYSTEMS EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. These specifications and the associated TA-series drawings describe the requirements for the sound and audio-visual (AV) system (hereafter referred to as the "Technical System").
- B. Refer to Division 27 Section "Audio Video Systems" for additional information.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section, as do the following:
 - 1. Division 27 Section "General Communications Requirements".
 - 2. Division 27 Section "Common Work Results for Communications".
 - 3. Division 27 "Audio Video Systems".
- B. All Category 5e/6 and fiber optic cabling and terminations shall adhere to the Division 27 Section "Audio Video Systems".

1.3 QUALITY ASSURANCE

- A. Refer to Division 27 "Audio Video Systems" for quality assurance requirements with the following modifications:
 - 1. Contractor General Qualifications:
 - a. Active membership in the National Systems Contractors Association (NSCA).
 - b. Active membership in Avixa. Authorized dealer for major components of Technical System. Major components include: mixing consoles and wireless microphones.
 - 2. Contractor Personnel Qualifications:
 - a. Minimum of one full-time staff member who has attended technical system engineering courses taught by Syn-Aud-Con in the past 10 years.
 - b. Minimum of one InfoComm CTS-I (Certified Technology Specialist - Installation) systems technician.

1.4 SUBMITTALS

- A. Refer to requirements in Division 27 Section "General Communications Requirements".
- B. Refer to Division 27 Section "Audio Video Systems" for submittal requirements with the following alterations and additions:
 - 1. Pre-Construction
 - a. Schedule specific items include:
 - 1) Off-site: system preparation
 - 2) On-site under scope: equipment installation
 - 3) On-site other scope: space access
 - b. Signal Flow Shop Drawings – One-line diagrams indicating full intended system configuration. Any generic diagrams found within the Construction Documents shall be drawn to specific requirements. Alterations from basis of design found within the Construction Documents shall be reflected and identified.
 - c. Millwork Shop Drawings - Sound console layout details, and related equipment layout.
 - 2. Project Completion

- a. Refer to Division 27 Section "General Communications Requirements" and the Operation and Maintenance Data section in Part 3 of this section for additional requirements.

1.5 EXISTING AND/OR OWNER-FURNISHED EQUIPMENT

- A. Refer to Division 27 Section "Audio Video Systems" for general Existing and/or Owner-Furnished Equipment requirements.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Refer to Division 27 Section "Audio Video Systems" for general product requirements.
- B. All major components of technical system equipment shall be provided and installed by a qualified contractor as outlined in Part 1 of this section.
- C. All electronic audio devices shall have electronic or transformer balanced inputs and outputs except for specific program source equipment and specific mixing console inputs and/or outputs. If an electronic device specified or furnished has an unbalanced input and/or output, make provisions to balance said input/output (*i.e.*, active signal balancing device as approved) unless other arrangements have been agreed upon with the Design Consultant.

2.2 COMMON EQUIPMENT

- A. Refer to Division 27 Section "Audio Video Systems" for common equipment and components.

2.3 MICROPHONES – PORTABLE

- A. Microphone – Single Ear Headworn: headworn omnidirectional microphone, condenser, for wireless beltpack transmitter, lightweight, single over-the-ear style. Coordinate connector to mate with beltpack, color as selected by Owner's Representative (one required for each wireless beltpack furnished):
 - 1. Shure MX153B (black) or MX153T (tan) or MX153C (cocoa); or
 - 2. Approved equal.

2.4 WIRELESS MICROPHONE SYSTEMS

- A. Furnish complete UHF diversity wireless microphone system(s) including the following components (select components from one manufacturer listed below):
- B. Wireless Microphone Receiver: furnish single, dual, or quad channel models with rack mount kits as required to achieve the number of receiver channels as shown on the drawings:
 - 1. Shure ULXD4Q (four channel) digital wireless receiver with encryption capability (encryption must be off when one receiver shares more than one transmitter) with included rack mount kit; or
 - 2. Approved equal.
- C. Wireless Beltpack Transmitter: furnish beltpack transmitter with headworn microphone and belt pouch (sixteen required):
 - 1. Shure ULXD1 with headworn microphone as specified elsewhere and WA570A belt pouch; or
 - 2. Approved equal.
- D. Wireless Handheld Transmitter – Dynamic (four required):
 - 1. Shure ULXD2/SM58 with (SM58A) head, 95T9279 microphone clip (included), and A58WS windscreen; or
 - 2. Approved equal.
- E. Wireless Antenna DA: active antenna distribution system supporting up to four receiver inputs, terminate all unused output ports:
 - 1. Shure UA844SWB four-way active antenna splitter; or

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2. Approved equal.
- F. Wireless Remote Antenna: omnidirectional ½-wave remote mounted antenna:
 1. Shure UA8 (1/2-wave); or
 2. Approved equal.
- G. Wireless rechargeable battery system: including batteries, chargers, and power supplies to charge all transmitters simultaneously (one rechargeable battery and associated charging slot required for each transmitter furnished):
 1. Shure SBC-900A battery, SBC-900-8 battery (eight pack), SBC200-US dual charger with power supply, SBC200 dual charger expansion, SBC800-US Eight Battery Charging Station; or
 2. Approved equal.
- H. Each receiver shall be connected via Ethernet to the computer. Furnish the most recent configuration software, install on the computer, and configure each receiver and transmitter for optimum operation. Test each and all receiver/transmitters to ensure no problems arise.
- I. Where remote 1/4 wavelength antennas are used, and mounting conditions allow, mount each antenna on a standard metal wall plate to serve as a ground plane.
- J. Provide all connections and components necessary for proper operation of the wireless systems described above.
- K. Coordinate the selection of transmitter/receiver frequencies to be free of interference from outside sources or interference between wireless systems. Select the frequency from an unused channel between (470 - 698 MHz) per FCC regulations Part 74, subpart H.
- L. Label each receiver/transmitter combination as noted on the drawings. See Labeling and Placards section in this specification for additional labeling requirements.

2.5 MIXING CONSOLES - DIGITAL

- A. Mix Engine DR64/32/1/0, digital, rack-mounted input and output mix engine module with 64 mic/line inputs minimum, 32 output busses minimum, three expansion card slots, and zero operating layers:
 1. Allen & Heath DM-64 Mix Engine; or
 2. Approved equal.
- B. Digital Console Surface, digital, mixing console control surface with 36 fader strips, (2) 12" inch touch screens, eight XLR mic/line inputs, eight XLR line outputs, record and playback via USB, and six operating layers:
 1. Allen & Heath dLive S7000 Control Surface with optional LEDLamp 18" gooseneck lamp; or
 2. Approved equal.
- C. Mixing Console iPad app, Provide the most recent version of the mixing console's mobile application either directly or via a gift card to the Owner's Representative. Once installed onto the iPad, configure the app to work with the mixing console.
 1. Allen & Heath iLive Mix Pad App.

2.6 MIXING CONSOLE ACCESSORIES

- A. Console Dust Cover, black pack cloth nylon dust cover tailored to fit the mixer with connectors inserted, for mixers specified without a manufacturer-supplied cover (one required for each non-rack mounted mixing console):
 1. Cloud 9 Covers, 1-800-599-7429 (www.cloud9covers.com); or
 2. Le Cover Company, 1-800-228-3878 (www.lecover.com); or
 3. By console manufacturer.

2.7 CABLE ADAPTERS – PORTABLE

- A. All unbalanced adapters requiring assembly shall be wired pin 2/tip "hot" and pin 3/ring tied to the shield. XLR adapters shall not have pin 1 connected to case ground.
- B. Audio Adapter – TRS1/8 to 2XLRM 6', three conductor 1/8" male connector to dual XLRM connectors with six foot cable (two required):
 - 1. HOSA CYX-402; or
 - 2. ProCo IPMB2XM-5.

PART 3 - EXECUTION

3.1 COMMON REQUIREMENTS

- A. Refer to Division 27 Section "Audio Video Systems" for common requirements.

END OF SECTION 274116