



Choir Mic Array coordinate location with owner and sound designer for best functional placement

Speaker Arrays Fly Subs or coordinate with Owner for appropriate location both ascetically and from a sound propagation standpoint.

jacks from back of stage breakout box for monitors or microphones

Back of stage break out box

location of stage sound rack on Mezzanine

Location of sound booth and board

Camera will be mounted in sound booth

MULTIPURPOSE ROOM

STORAGE

VESTIBULE

OFFICE

STAGE

Front of stage break out box

STORAGE

CORRIDOR

MAIN CONCESSIONS

CORRIDOR

HIGH SCHOOL COMMONS

HIGH SCHOOL COMMONS

AUDITORIUM

HALL OF FAME CORRIDOR

VESTIBULE

VESTIBULE

SECTION 274134 - AUDIO VISUAL SYSTEMS**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes audio visual systems indicated on the construction drawings including but not limited to:
 - 1. Video Camera for streaming
 - 2. Wireless In-Ear Monitors
 - 3. Hot Spot Monitors
 - 4. Touch Screens/Ipad (owner supplied)
 - 5. Audio Visual Cabling, Faceplates, Connectors
 - 6. Speakers and speaker cabling
 - 7. AV Racks
 - 8. AV Components including amplifiers, A/V Controller, touch screens
 - 9. Wired and wireless Microphones

1.2.1 SUBMITTALS

- A. Product Data: For each type of product indicated. Include operating characteristics, furnished specialties, and accessories.
- B. Shop Drawings:
 - 1. Wiring Diagrams: For power, signal, and control wiring.
- C. Field quality-control test reports.
- D. Operation and Maintenance Data: For audio visual equipment and components to include in Maintenance manuals.
Section "Operation and Maintenance Data" include the following:
 - 1. Hard copies of manufacturer's specification sheets, operating specifications, design Guides, user's guides for software and hardware, and PDF files on CD-ROM of the hardcopy Submittal.
 - 2. System installation and setup guides, with data forms to plan and record options and Setup decisions.
- E. Warranty documents for equipment.
- F. As-Built Drawings upon completion of project.

1.3 QUALITY ASSURANCE

- A. Installer Qualifications: An employer of workers trained and approved by manufacturer.

- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for Intended use.
- C. Comply with NFPA 70, "National Electrical Code."
- D. Compliance with Local Requirements: Comply with applicable building code, local ordinances And regulations and requirements of authorities having jurisdiction.

1.5 WARRANTY

- A. Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace Components of audio/visual systems and equipment that fail in materials or workmanship within Specified warranty period.
 - 1. Warranty Period: One year from date of Substantial Completion as determined by Owner.

PART 2 – PRODUCTS

2.1 PATHWAYS

- A. General Requirements: Comply with TIA/EIA-569-A/B.
- B. Types of pathways:
 - 1. Non-Continuous Cable Support:
 - a. Manufacturers: Subject to compliance with requirements, available manufacturers Offering products that may be incorporated into the work include, but are not limited To, the following:
 - 1) Erico/Caddy
 - 2) Cooper/B-line
 - 3) Panduit Corp.
 - b. NRTL labeled for support of UTP cabling, designed to prevent degradation of cable Performance and pinch points that could damage cable.
 - c. J-hooks and or adjustable cable supports (also called slings) shall be used.

2.2 MANUFACTURERS / PRODUCTS

- A. Refer to plans and specifications for acceptable manufacturers and product data. All part numbers shown represent current equipment available at time of bid. Should any piece of equipment become unavailable or be replaced by a different model number, the contractor shall provide the current model at time of order or an equal replacement at no additional cost to the project.
- B. All cabling shall be plenum rated unless otherwise indicated.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Examine pathway elements intended for cables. Check raceways, cable trays, and other Elements for compliance with space allocations, installation tolerances, hazards to cable Installation, and other conditions affecting installation.

3.2 SYSTEM SETUP

- A. Intent is a Modern Live Stage Sound system – comprised of the following System Components
 - a. Digital Mixing Board – basis of design – PreSonus Studio Live 32S
 - i. This board will be supplied with software to be programmed into owner supplied Ipad – this Ipad will remotely control all aspects of the main board from the stage area.
 - ii. This board will be programmed by the system installer to have several stage presets as designated by owner - for ease of owner use – these will include the following scenes:
 - Show Choir
 - Choir
 - Band
 - Musical
 - Play
 - Public Meeting
 - b. The Digital Mixing board will communicate with two Stage Boxes – one at front of stage and one at the back of stage rack. The basis of design for these stage boxes will be the Presonus NSB 8.8/16.8/Studio Live 32R. These will be networked with Cat 6E cable to the main board to be programmed and function as a complete system with the Digital Mixing Board.
 - i. The Stage boxes will be responsible to bring signal to the Mixer and provide Monitor capability to the stage.
 - ii. The Front stage box will be able to connect microphones, and media devices for play back – as well as powered monitors from a monitor mix.
 - c. The Stage Rack box Studio Live 32R rack mount will provide connections for cabling to be ran for the following
 - i. New Choir Mic Array Supply and install Shure CVO or equal
 - ii. Back stage monitor signal Supply and install wall jacks
 - iii. Back stage microphone connections Supply and install wall jacks
 - iv. Wireless microphone receivers (8 existing 8 new)
 - v. Wireless In Ear Monitor Mix

- d. Provide appropriate DSP to prevent feedback and still provide a natural sounding sound stage to audience. If the Mixing board is capable through software – or external equipment prior to amplification to stage.
- B. Existing Equipment to be incorporated:
- a. Back of stage rack has 8 Sure Wireless mic receivers installed that work with 8 body packs and headsets.
 - b. In the sound booth there is a projector/playback system that needs to be maintained for public meetings or movie display – this system will be used as part of Presentation Program.
- C. New signal locations:
- a. Back of stage microphones cabling Qty 2
 - b. Back of stage monitor output Qty 1
 - c. Front of stage – up to 5 hard wired mics
 - d. Front of stage – connection from media player (Ipad/phone/laptop etc)
 - e. Overhead Microphone array (choir)
 - f. Additional Stage Wireless Microphones (8 hand held with receivers – 8 additional head set/transmitter/receiver sets)
 - g. Shure handheld wireless Qty 8
 - h. Shure body packs and headsets Qty 8
- D. Galaxy Audio PA6BT Hot Spot Monitor Speaker with Bluetooth
- a. Provide 2 of these with height adjustable stands and 25' cables
 - i. One to be used back of stage for musicals
 - ii. Other to be used as needed front of stage – booth – etc.
- E. Speakers and Amplification
- a. Speakers to be mounted on Brick walls adjacent to stage
 - i. Coordinate location with Owners for ascetic locations that provide quality sound
 - b. Speakers to be as listed with appropriate mounting hardware from manufacturer:
 - i. Provide 2 Line Arrays Equal to Atlas ALA20TW
 - ii. Provide 2 Subwoofers Equal to Atlas SM12SUB70-B
 - c. Amplification to be as listed:
 - i. Provide Amplifiers Internally or externally to above speakers Equal to
 - 1. Quantity 2 – Atlas HPA602
- F. Supply a Assistive Listening system that meets 2010 ADA standards for Accessible Design
- a. Train owner in use of system an how to provide signal to it from board.
- G. Microphones
- a. As stated above supply and install the following – the intent is to have the ability to use up to 8 hand held and 8 head sets at the same time or 16 head sets at once or any variant in between using the existing 8 headsets/transmitters and 8 receivers add the following to achieve this:
 - i. 8 hand held wireless mics and receivers
 - ii. 8 head sets and transmitters to work with above receivers
 - iii. 4 Shure CVO Centraverve Overhead Mics

- H. Supply and Install a Sony HXR-NX80 camera:
 - a. Train owner in use of camera to produce a live stream of events
 - b. Supply camera, stand/mount, and any software or hardware to provide a live stream to social media (twitter, Facebook, Youtube etc.)
- I. Supply 2 pairs of In ear monitors Shure PSM 300 Twin-Pack Pro Wireless In-Ear Monitor Kit
 - a. Program to use without interference with other wireless sources
 - b. Train owner in use.

3.3 CABLING

- A. Wiring Method: Install cables in raceways, jhooks and cable trays except within consoles, cabinets, Desks, and counters, and except in accessible ceiling spaces and in gypsum board partitions where unenclosed wiring method may be used. Conceal raceway and cables except in Unfinished spaces. In exposed structure areas, route conduit tight to structure. Conduit shall be Routed parallel and perpendicular to structure in a neat manner. Exposed cabling of any type Shall not be allowed. All cabling to be run in a neat an professional manner.
- B. General Cable Installation Requirements:
 - 1. Terminate conductors; no cable shall contain unterminated elements. Make terminations Only at outlets and terminals.
 - 2. Splices, Taps, and Terminations: Arrange on numbered terminal strips in junction, pull, And outlet boxes; terminal cabinets; and equipment enclosures. Cables may not be Spliced.
 - 3. Secure and support cables at intervals not exceeding 48 inches and not more than 6 Inches from cabinets, boxes, fittings, outlets, racks, frames, and terminals.
 - 4. Bundle, lace, and train conductors to terminal points without exceeding manufacturer's Limitations on bending radii. Install lacing bars and distribution spools.
 - 5. Do not install bruised, kinked, scored, deformed, or abraded cable. Do not splice cable Between termination, tap, or junction points. Remove and discard cable if damaged During installation and replace it with new cable.

3.4 GROUNDING

- A. Comply with NFPA 70 "Grounding and Bonding for Electrical Systems."
- B. Comply with IEEE 1100, "Power and Grounding Sensitive Electronic Equipment."
- C. Ground cable shields, drain conductors, and equipment to eliminate shock hazard and to Minimize ground loops, common-mode returns, noise pickup, cross talk, and other impairments.

- D. Bond shields and drains conductors to ground at only one point in each circuit.

3.5 IDENTIFICATION

- A. In addition to requirements in this Article, comply with applicable requirements in Division 26 Section "Identification for Electrical Systems" and with TIA/EIA-606.
- B. Label each terminal strip and screw terminal in each cabinet, rack, or panel.
 - 1. All wiring conductors connected to terminal strips shall be individually numbered, and Each cable or wiring group being extended from a panel or cabinet to a building-mounted Device shall be identified with the name and number of the particular device as shown.
 - 2. Each wire connected to building-mounted devices is not required to be numbered at the Device if the color of the wire is consistent with the associated wire connected and Numbered within the panel or cabinet.
- C. At completion, O&M's reflect as-built conditions including cable routing and labeling.

3.6 SYSTEM SOFTWARE

- A. Develop, install, and test software and databases for the complete and proper operation of Systems involved. Install software on owner-designated workstations and mobile devices. Assign software license to Owner.
- B. All programming code(s) for controllers and touch screens/lpads shall be turned over to owner after programming, commissioning, and setup of system is complete.

3.7 FIRESTOPPING

- A. Comply with TIA/EIA-569-A; Annex A, "Fire stopping."
- B. Select appropriate type or types of through penetration fire stop devices or systems appropriate For each type of communications penetration and base each selection on criteria specified Herein.
 - 1. Use fire stop devices for all wall, floor, and roof penetrations.
 - 2. Putty or caulk is only to be used on small penetrations.
- C. Selected systems shall not be less than the hourly time delay ratings indicated in the Contract Documents for each respective fire-rated floor, wall, or other partition of building construction. Fire stop for each type of communications penetration shall conform to requirements of an Independent testing laboratory design drawing or manufacturer's approved modification when Used in conjunction with details shown on the Drawings.
- D. Perform all necessary coordination with trades constructing floors, walls, or other partitions of Building construction with respect to size and shape of each opening to be constructed and Device or system approved for use in each instance.

3.8 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to Inspect, test, and adjust field-assembled components and equipment installation, including Connections.
- B. Testing Agency: Engage a qualified testing and inspecting agency to perform field tests and

Inspections and prepare test reports:

- C. Remove and replace malfunctioning devices and circuits and retest as specified above.

3.9 STARTUP SERVICE

- A. Engage a factory-authorized service representative to supervise and assist with startup service. Complete installation and startup checks.

3.10 PROGRAMMING

- 1. Programming and owner training.
 - a. Programming shall meet the requirements of the "System Setup" section of this document for intent of function.

3.11 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to Adjust, operate, and maintain audio visual systems.
 - 1. Conduct a minimum of eight hours' training to Owner's employees
 - a. To include but not be limited to Operations of Scenes
 - b. Operation of Ipad control of system
 - c. Operation and connection of external media devices.
 - d. Proper setting of levels for external media devices to not damage systems.

END OF SECTION 274134