

**AUDIO SYSTEMS AND EQUIPMENT BUCK THOMAS PARK
CITY OF MOORE, OKLAHOMA
Bid # 1900-03**

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. General provisions of the Contract, including General and Supplementary Conditions apply to this section. Reference product details for additional information.

- B. Each of the following:
 - 1. Required licenses and permits including payment of charges and fees.
 - 2. Verification of dimensions and conditions at the job site.
 - 3. Provision of submittal information.
 - 4. Pick-up of Owner Furnished Equipment (OFE) and incorporation into Project if applicable.
 - 5. Development and implementation of any AV control system software code and control panel layouts, which will become the property of the Owner.
 - 6. Installation in accordance with the contract documents, manufacturer's recommendations, applicable codes and authority having jurisdiction.
 - 7. Documented A/V System tests and adjustments.
 - 8. Instruction of operating personnel.
 - 9. Provision of manuals.
 - 10. Maintenance services and warranty.

1.2 BID REQUIREMENTS

- A. The Bids (4 copies) should be submitted on 8 1/2" by 11" paper, single-sided, single-spaced using 10 or 12 point type, in

3-ring binders clearly labeled and numbered to show the Bidder's name.

B. Liability & Property Damage Insurance

1. The contractor assumes all risks incident to or in connection with its purpose to be conducted herein under and shall indemnify, defend and save the City of Moore harmless from damage or injuries of whatever nature or kind to persons or property arising directly or indirectly out of the Contractor's operations and arising from acts or omissions of its employees and shall indemnify, defend, save harmless the City of Moore from any penalties for violation of any law, ordinance or regulation affecting or having application to said operation or resulting from the carelessness, negligence or improper conduct of Contractor or any of its agents or employees.
2. In this connection, the Contractor shall carry Workmen's Compensation in accordance with State laws and Employer's Liability Insurance in the following amount:
 - A. Property Damage Liability - Limits shall be carried in the amount of not less than twenty-five thousand dollars (\$25,000) to any one person for any number of claims for damage to or destruction of property, including but not limited to consequential damages, arising out of a single accident or occurrence.
 - B. All Other Liability - In the amount not less than one hundred thousand dollars (\$100,000) for claims including accidental death, personal injury, and all other claims to any one person out of a single accident or occurrence.
 - C. Single Occurrence or Accident Liability - In an amount not less than one million dollars (\$1,000,000) for any number of claims arising out of a single occurrence or accident.
3. The insurance policies shall be issued by a company approved by the City of Moore. The City of Moore shall be furnished with a certificate of insurance, which shall provide that such insurance shall not be changed or canceled, without ten days prior written notice to the City of Moore. Certificates of Insurance shall be delivered to the City of Moore prior to the commencement of the agreement. THE POLICY SHALL LIST THE CITY OF MOORE AS CO-INSURED OR ADDITIONAL INSURED.

C. BONDS

No surety will be accepted who is now in default or delinquent on any bond or who is interested in any litigation against the City. All bonds shall be executed by surety companies licensed to do business in the State of Oklahoma and acceptable to the Council. Each bond shall be executed by the Contractor and the Surety. Upon award of bid, bonds shall be submitted to the City of Moore.

1. Maintenance Bond:

A. A good and sufficient Maintenance Bond shall be required in an amount equal to one hundred (100) percent of the total amount of the contract, guaranteeing such improvements against defective workmanship and/or materials for a period of one (1) year from and after the time of completion and acceptance by the City of said improvements.

2. Statutory Bond:

A. A good and sufficient Statutory Bond shall be required in an amount equal to one hundred (100) percent of the total contact amount guaranteeing payment in full for all materials and labor used in the construction of the work.

3. Performance Bond:

A. A good and sufficient Performance Bond shall be required in an amount equal to one hundred (100) percent of the total contract amount guaranteeing execution and completion of the work in accordance with the specifications.

D. CONTRACT

Selected contractor will submit a contract for review by the City of Moore and approval by the Moore City Council.

1.3 RESPONSIBILITY

A. All materials, equipment, transportation, and labor necessary to achieve a complete and functionally working system as shown or inferred in the Specifications. Supply accessories and minor equipment items (such as, but not limited to: power strips, adapters, connectors, mounting hardware, etc.) needed for a complete system, even if not specifically mentioned in these Specifications, without claim for additional payment.

B. Notwithstanding any detailed information in the Contract Documents, it is the responsibility of the Contractor to supply a full

working, tested, and calibrated system. Notify the owner of any discrepancies in part numbers or quantities before bid. Failing to provide such notification, supply items and quantities according to the intent of the Specification, without claim for additional payment.

C. Specifications and any drawings are complementary. Work called for by one is binding as if called for by both. Any discrepancies between specifications and/or drawings shall be brought to the attention of the owner for clarification during the bidding period. No allowance shall subsequently be made to the Contractor by reason of his failure to have brought said discrepancies to the attention of the owner.

D. Execute all work in accordance with the National Electrical Code (NEC), the National Electrical Safety Code, the Occupational Safety and Health Act (OSHA) and all applicable State and Local codes, ordinances, and regulations. If a conflict develops between the contract documents and the appropriate codes and is reported to the owner prior to bid opening, the owner will prepare the necessary clarification. Where a conflict is reported after contract award, propose a resolution of the conflict and, upon approval, perform Work.

1.4 REFERENCES

A. Published specification standards, tests or recommended methods of trade, industry or governmental organizations apply to Work in this section where cited:

1. National Electric Code (NEC)
2. National Electrical Manufacturer's Association (NEMA)
3. American National Safety Institute (ANSI).
4. Underwriters Laboratories (UL).
5. American Society of Testing and Materials (ASTM).
6. Electronics Industries Association (E.I.A).
7. Davis and Davis, Sound System Engineering (2nd Edition), Howard W. Sams, 1987.
8. Giddings, Audio System - Design and Installation, (ASDI) Howard W. Sams, 1990.

1.5 RELATED WORK

A. Electrical

1. Installer is responsible for all Power requirements and costs for this work and included in bid package. Power will be terminated to a panel within or near the equipment enclosure.
2. Installer is responsible all conduit infrastructure system, including wire for AC Power and grounding for the Audio Systems. Coordination between different disciplines is required to achieve a proper conduit system installation and power provisions for the Audio Systems. All electrical installation shall be in accordance with the National Electric Code.
3. The installer shall be responsible for connecting ground point to all equipment in accordance with NEC Code, local codes and standards specified herein. The contractor shall be responsible for coordinating termination and distribution of electrical power from the panel to the equipment as required.
4. Install signal/speaker cabling in conduits.
5. Include Conduit/raceway/tray/wire management that is not listed, and required for a complete system, or by code, in this scope of work. Provide any additional conduit/raceway/tray required for complete systems.
6. All cabling exposed to public view is to be in conduit.
7. All exterior junction boxes, conduit/raceway, terminations, etc. including those within other enclosures, where enclosures are exposed to outdoor conditions are to meet NEMA ratings for outdoor electrical applications.

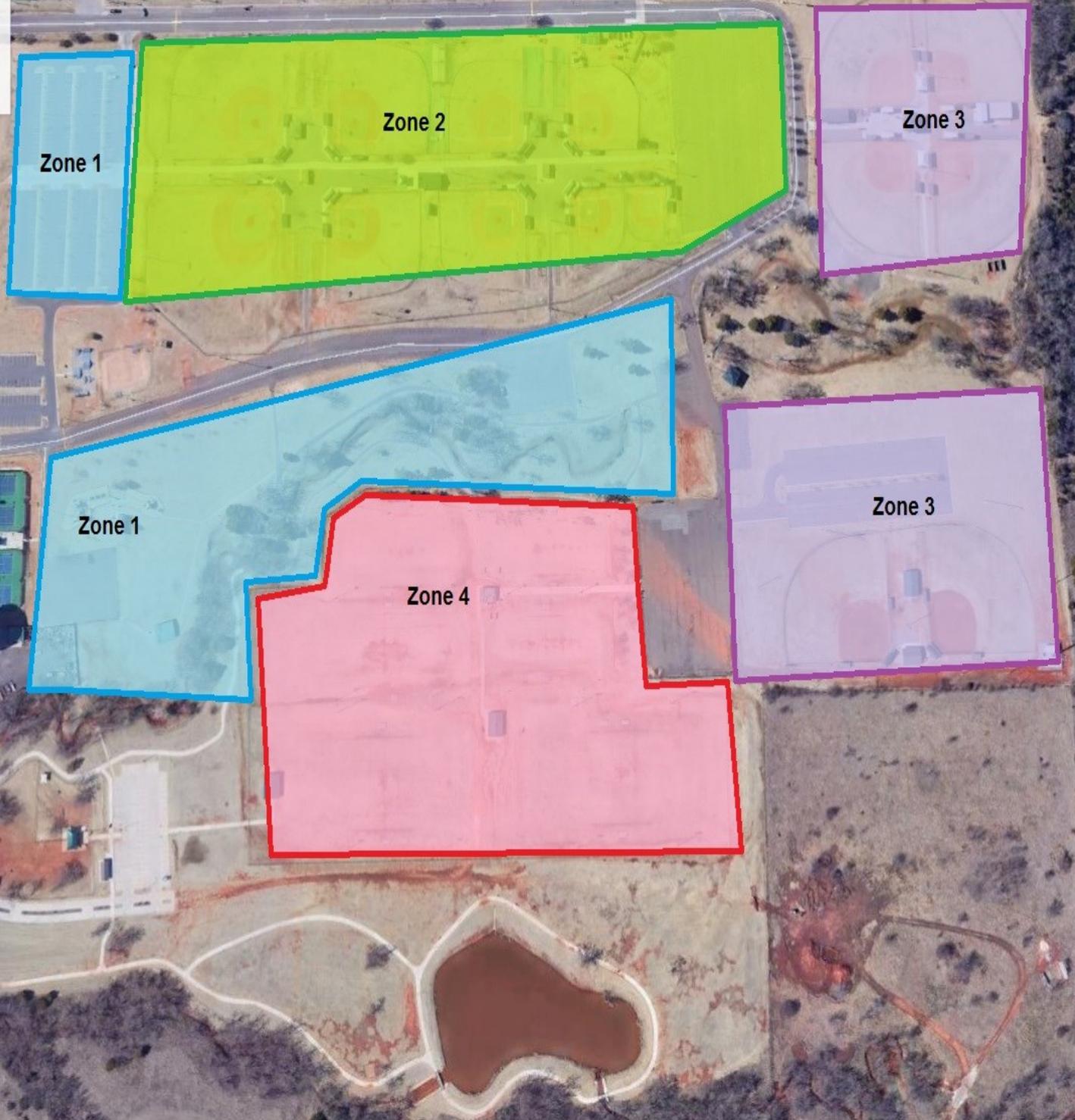
1.6 SYSTEM DESCRIPTIONS AND REQUIREMENTS

- A. The following is intended to provide an overview of the design concepts and is not an exhaustive description of the audio systems.
- B. 4-Zone System that includes PA system for Girls Softball Complex, Youth Baseball Complex, Youth Football Complex, and special event area of the park (see attached map). The proposed system should have the capability to be tied

Buck Thomas Park

- Zone 1: Park
- Zone 2: Baseball
- Zone 3: Softball
- Zone 4: Football

Legend



Google Earth

©2018 Google



700 ft

together so in case of an emergency or special event announcements can be made to all 4 zones.

C. Park Audio

1. Speakers to be mounted on **existing** poles located throughout the park for complete and redundant coverage.
2. An amplifier rack, located in concessions, will house the power amplifier(s), DSP signal processors, and other miscellaneous equipment. Signals for the DSP processors will be supplied from the audio mixer feeds.
3. Underground conduits
4. Cabling rated for underground use.
5. 120 volt electrical for amplifiers.

1.7 QUALITY ASSURANCE

A. Contractor shall be experienced in the provision of systems similar in complexity to those required for this project and meet the following requirements:

1. The primary business of contractor shall be the installation of sound and video systems.
2. No less than five years' experience with equipment and systems of the specified types.
3. Experience with at least two projects involving sound reinforcement systems of this type and comparable scale within the last three years.
4. Project Manager assigned to this project shall have experience on new theatrical facilities while employed with the Contractor. Provide name of project team with proposal.
5. Be a franchised dealer and service facility for the major products furnished.
6. Maintain a fully staffed and equipped service facility with full time field technicians. One or more members of the installation team to have an OSHA certification.
7. At the request of the Owner, the Contractor shall demonstrate that he has:
 - a. Adequate plant and equipment to complete the work.
 - b. Adequate staff with commensurate technical experience.

B. Work shall be in compliance with the applicable standards listed above and all governing codes and regulations of the authorities having jurisdiction and the Contract Documents.

1. Drawings and specification requirements shall govern where they exceed Code and Regulation requirements.
 2. Where requirements between governing Codes and Regulations vary, the more restrictive provision shall apply.
 3. Nothing in the Contract Documents shall be construed as authority or permission to disregard or violate legal requirements.
- C. Coordinate exact location and installation of equipment, power, conduit, and raceway systems with the owner.
- D. Attend pre-installation meeting with owner before beginning the installation of systems. Attendees to this meeting must be, but not limited to the following personnel: Project Manager, Project Engineer, Field Supervisor, and Senior Field Technician.

1.8 SUBMITTALS

- A. General: Provide submittals in accordance with the project general conditions.
- B. The submittal information required by the specification is to be presented complete and as submissions noted below. Submittals are a crucial and integral part of the construction process; as such the Owner's consultant will not recommend payment to the contractor above 25% of the scheduled value of this work until all submittal information has been approved.
- C. Cost for the Owner's consultant to review secondary and re-submittals due to the Contractor's failure to include all required submittal information, or rejection of incomplete or improperly prepared submittal information will be the responsibility of the Contractor. The cost shall be based on the hourly rates of the owner and his consultants as published in their current professional fees schedules and shall also include reimbursable costs for delivery, mailing, and photocopies at direct cost plus ten percent (10%).
- D. Supplementary submittal requirements:
 - A. Complete schedule of submittals.
 - B. Provide a copy of each manufacturer's data sheet for all products to be incorporated within the Work. Arrange data sheets in the same order they appear in this specification. Where a data sheet shows more than one product, indicate the model being proposed with an arrow or other appropriate symbol.
 - C. Functional diagrams and description of all parts of the system installation.
 - D. Shop Drawings:

- a. Schematic: Detailed, redrawn, wiring diagrams showing interconnection of components and products, wiring and cabling diagrams depicting cable types and designators, and device designators. Provide connector designations and terminal strip identification, along with color codes for cables connecting to these devices. Give each component a unique designator and use this designator consistently throughout the project.
- b. Coordination Drawings:
 1. Prepare and submit a set of coordination drawings showing major elements, components, and devices of the A/V System in relationship with other building components.
 2. Prepare floor plans, reflected ceiling plans, elevations, sections, and details to conclusively coordinate and integrate all equipment. Indicate locations where space is limited, and where sequencing and coordination of installations is of importance to the efficient flow of the work including but not necessarily limited to the following:
 3. Equipment housings
 4. Ceiling, wall and pole mounted devices
 5. Raceways/Conduits
 6. Cabling
- c. Equipment: Location of equipment in racks, consoles, or on tables, with dimensions; wire routing and cabling within housings; AC power outlet and terminal strip locations.
- d. Patch panel layouts and labeling strips, including color schemes.
- e. Full fabrication details of custom enclosure and millwork indicating size, material, finish, and openings for equipment.
- f. Fabricated Plates and Panels: Provide complete drawings on custom fabricated plates or panels. Drawings shall include dimensioned locations of components, component types, engraving information, plate material, and color, and bill of material.
- g. Schedules: Wiring schedule showing source and destination of wiring and indicating which wiring is in conduit. Junction box schedule showing type of box, size, mounting, and location. Include this information with remainder of wiring diagrams.

- E. Structural rigging and mounting details:
 - a. Structural rigging and mounting details of all loudspeakers suspended from or mounted to the building structure and poles: These drawings will identify all types of hardware, fittings, and materials to be used. Detail the product manufacture, part numbers, and load capacity of the hardware, fittings and materials selected.
 - b. The drawings noted above to include the following:
 - 1. Attachment method to building structure/poles for suspended loudspeakers or mounting brackets.
 - 2) Any secondary steel required for attachment to the building structure.
 - 3) All fittings, hardware, materials, and cable used for suspended loudspeakers.
 - 4) All custom brackets, mounts, suspension grids or trusses and loudspeaker cabinet frames or brackets not supplied by the manufacturer of the specific loudspeaker to be mounted or suspended.
- F. Submittal format:
 - a) Electronic (PDF) submittals are encouraged. Ensure titles include specification section name and number.
 - b) In lieu of electronic submittals, bind contents in titled three ring D style binders sized for 150 per cent of the material. Maximum size: three-inch spine. Use multiple volumes if necessary. Separate major grouping with labeled binder tabs in specification order.
- G. Project list and description:
 - a) A list of all equipment provided and installed as a part of this project

1.9 PROJECT CLOSEOUT

- A. General: Provide submittals in accordance with the project general conditions.
- B. Supplementary Project Closeout Procedures
 - 1. Provide all closeout documents on a finalized CDR as well as hard copy.
The CDR shall be set up using a non-proprietary "PDF" format.
 - 2. Product Data: Product actually incorporated within the Work:
 - a. Manufacturer's data for each type of product conforming to the submission format specified herein. Include manufacturer's serial numbers within the list of product.
 - b. For custom circuits or modifications, a description of the purpose, capabilities, and operation of each item.

c. Each product's Owner/Instruction Manual. Provide high quality copies where necessary, with all text legible and illustrations of equal resolution and sharpness as the original manual. Faxed copies or copies with portions of the information missing or smeared are not acceptable.

d. Manufacturer's maintenance and care instructions.

e. Separately bound list by manufacturer and model or part number of product incorporated within the Work arranged in alphanumeric order. When applicable Manufacturer's warranty statements bound separately.

3. Record drawings: Final rendition of Shop Drawings depicting what is actually incorporated within the Work. These drawings are to comply with all the requirements of the submittal documents noted above.

4. Service & Maintenance Manual:

a. Provide an original manufacturer's copy of the service manual on every piece of equipment for which the manufacturer offers a service manual. On equipment where there is no service manual, provide statement from company indicating manual is not available. Arrange manuals in the same order as the operations manual.

b. Manufacturer's maintenance and care instructions.

c. Maintenance Instructions, including maintenance phone numbers and hours; maintenance schedule; description of products recommended or provided for maintenance purposes, and instructions for the proper use of these products.

1.10 DELIVERY, STORAGE, AND HANDLING

A. To prevent damage or entrance of foreign matter, ship product in its original container.

B. Ship in accordance with manufacturer's recommendations.

C. Provide protective covering during construction.

D. At no expense to Owner, replace product damaged during storage or handling.

1.11 PROJECT CONDITIONS

A. Field verify job site conditions applicable to this work. Notify owner's representative in writing of discrepancies, conflicts, or omissions promptly upon discovery.

B. If conditions exist at the job site which make it impossible to install work as shown, recommend solutions and submit drawings to the owner for approval, showing how the work may be installed.

1.12 FINAL INSPECTION AND TESTING

A. Upon completion of installation and contractor commissioning as specified in Part 3, inspection and testing shall be performed by the owner.

B. The process of testing the System may necessitate moving and adjusting certain components such as speaker aiming, transformer taps, DSP configuration and processing objects.

C. Testing includes operation of each major system and any other components deemed necessary. Provide required test equipment, tools, and materials required to make necessary repairs, corrections, or adjustments.

1.13 WARRANTY

A. Installer shall warrant equipment to be free of defects in materials and workmanship for one-year following the date of the first regular use, trouble free operation, or substantial completion, whichever is later.

B. Within the Warranty period, answer service calls within eight hours, and correct the problem within twenty-four hours.

C. This warranty shall not void specific warranties issued by manufacturers for greater periods of time, nor shall it void any rights guaranteed to the Owner by law.

D. Contractor must provide Owner with the name and telephone number of the person to call for service. This information must be included as part of Project Record Drawings.

E. Thirty days prior to the end of the warranty period provide a complete checkout of all system components. Repair or replace any defective equipment or transducers discovered during the testing. Correct any defects in wiring or other functional problems reported by Owner. Warranty replacement and service of equipment shall not apply to Owner furnished equipment. Coordinate inspection visit with the Owner.

1.14 INSTRUCTION OF OWNER PERSONNEL

- A. After final completion, provide four hours of instruction to Owner designated personnel on the operation and maintenance of the System. If any component is not operational at the time of testing or training, the vendor shall return to complete the testing or training on the component.
- B. Training Submittals:
 - 1. All Operations and Maintenance manuals, as well as as-built drawings must be on site for all sessions of training.

PART 2 – EQUIPMENT

2.1 GENERAL

- A. Product quantity is as required. If a quantity is given, Contractor shall provide at least the given amount. Some product listed under this section may not be required to fulfill the obligations of the work.
- B. Unless otherwise specified, supply only new equipment, parts, and materials and operate only as required for testing as part of the installation procedure.
- C. Certain items of equipment are specified herein by manufacturer's type numbers to indicate the quality and functional performance required from the system and its components.
- D. Regardless of the length or completeness of the descriptive paragraph herein, each device shall meet published manufacturer's specifications.

2.1 ACCEPTABLE MANUFACTURERS

- A. Model numbers and manufacturers included in this specification are listed as a standard of function, performance, and quality.
- B. Where required, provide manufacturer's rack mount adapter or one manufactured by Middle Atlantic unless specified elsewhere.

2.3 LOUDSPEAKERS AND ACCESSORIES

- A. Outdoor Pole Mounted Speaker (mounted to existing poles)

1. Transducers: Ferro fluid-cooled drivers
2. Finish: Hand-laminated reinforced fiberglass
3. Rated Impedance: 8 ohms
4. Continuous Max Output: 134 dB (140 dB Peak)
5. Operating Mode: Passive
6. Provide Drawings for Speaker Location, Rigging, Load
7. Acceptable: JBL, Community, Meyer Sound or Approved Equal.
8. Prior to installation, submit details of speaker placement and anchoring to owner for approval.

2.4 POWER AMPLIFIERS

1. Load Impedance: 2 - 16 ohms
2. Maximum Single Channel Output Power: 600 W
3. Maximum Bridged Output Power: 1200 W
4. THD at rated output power: 0.35%
5. Frequency Response: (8 Ohms, 20 Hz - 20 kHz) +/- 0.25 db
6. Signal to Noise Ratio Amplifier A-weighted: > 108 dB
7. Quantity: As Needed
8. Acceptable: Crown, Electro-Voice, QSC or Approved Equal

2.5 MICROPHONE

A. Page Microphone:

1. Frequency response tailored for voice communications.
2. Directional microphone element.
3. Switch-selected dual impedance output.
4. PTT switch that can be locked "On" for hands-free operation.
5. Adjustable height.
6. Acceptable: Shure, Electro-Voice, Sennheiser or Approved Equal

2.6 DIGITAL SIGNAL PROCESSORS (DSP)

1. The Digital Signal Processor shall be a modular, network-compatible and freely configurable audio system with which complete system solutions can be constructed. The unit shall integrate all components ranging from the matrix to the speakers including system control and system monitoring in a common audio platform. The central unit shall have up to 32

audio channels, mixer and matrix functions, signal processing and extensive control and monitoring functions. The unit must be able to be networked together via a CobraNet or Dante audio and control network so that a large, decentralized audio system can be assembled. The system shall have comprehensive built in supervision functions to monitor and report failures in all aspects of the systems functions. In addition with the support of compatible IRIS-Net enabled power amplifiers, the unit shall be able to run and measure full impedance frequency sweeps on any speaker line connected to the unit and indicate if the measurement is out of range of a pre-selected tolerance. The system processor shall also be able to control IRIS-Net compatible amplifiers and distribute DSP functions to the remote amplifiers if necessary. All audio connections, interfaces and processor systems are monitored and displayed in case of fault.

2. Provide all necessary input and output modules for a complete operational system.
3. Acceptable: Bi-Amp, Electro-Voice, BSS London or Approved Equal

2.7 INPUT SOURCES

A. CD Player with auxiliary input:

1. Inputs and outputs to be RCA type connectors.
2. Frequency response: 25Hz to 18kHz \pm 0.5dB.
3. 2-U Rack Mountable.
4. Integral Bluetooth Receiver
5. Acceptable: Denon, Tascam, Yamaha Or Approved Equal
6. One each for all 4 zones (see section 1.6 B for zone detail)

2.8 WIRE & CABLE

1. Direct Burial Underground Cable
2. 14 AWG
3. Conductor
4. 41 strands of 99.9% pure copper conductors
5. Acceptable: Belden, West Penn, JSC Or Approved Equal

PART 3 – EXECUTION

3.1 - GENERAL

- A. Coordinate work with any other trades to avoid causing delays in construction schedule.

3.2 – INSTALLATION

A. Electronic audio equipment shall be permanently mounted in equipment racks.

This does not include the sound reinforcement console.

B. Assemble any items shipped incomplete.

C. Provide shaft locks or security covers on non-user operated equipment having front panel controls. Install at the conclusion of Acceptance Testing.

D. Contractor will be responsible for any trenching done in the project. Line spots are required and are the responsibility of the contractor.

3.3 – LABELING

A. Provide engraved lamacoid label adjacent to the front and rear of equipment mounted in housing. Install in a plumb, level, and permanent manner. Provide rear-mounted labels on equipment mounted in furniture console.

B. Provide engraved label over each user-operated control that describes the function or purpose of the control. Adjust label size to fit available space.

C. Provide each terminal strip with a unique descriptor and a numerical designator for each terminal. Show terminal strip descriptor and designator on system schematic drawing.

3.4 – EQUIPMENT HOUSING

A. Install equipment and amplifiers in equipment racks according to manufacturer's recommendations.

B. Provide adequate ventilation or fans to maintain a maximum rack temperature of 90 degrees Fahrenheit.

C. Floor racks located in equipment rooms to be mounted on wood riser-minimum of 2 inches high.

D. Provide unused panel space with blank or vent panels, painted or anodized to match housing.

E. Provide rear support for housing mounted equipment greater than 15 inches deep.

F. Key door locks for each housing type alike.

G. Looking at the housing from the rear, install AC power and ground cabling on the left; audio and video cabling on the right.

3.5 - SYSTEM CABLING AND WIRING

A. General:

1. Take precaution to prevent and guard against electromagnetic and electrostatic hum. For line-level audio signals, float cable shield at the output of source device. Shields not connected shall be folded back over cable jacket and covered with heat-shrink tubing. Do not cut off unused shield.
2. Exercise care in cabling and wiring. Damaged cables or wire will not be accepted. Isolate cables and wires of different signal levels. Separate or re-route to reduce channel crosstalk or feedback oscillation in any amplifier section.
3. Provide splice free wiring and cabling from origination to destination.

B. AC Power and Grounding:

1. Coordinate final connection of power and ground wiring to housings. Hard-wire power wiring directly to power contactors or internal AC receptacles to ensure uninterrupted operation.
2. Provide 3-conductor, isolated ground, 120 VAC outlets as required within each housing.
3. Provide a copper ground buss in each housing. Ground equipment chassis not having a three-wire power cord to these busses using 6/32 nuts, bolts and lock-washers with No. 12 wire. Connect green ground wire from each AC outlet in housing to this buss bar.

4.00 - SYSTEM PERFORMANCE, TEST AND ADJUSTMENTS:

A. Hum and Noise Level:

1. Load power amplifier with resistors matching nominal impedance of output terminals used in system in place of actual loudspeaker loads.
2. Adjust gain controls for optimum signal - to - noise ratio and full amplifier output with -55 dBm at the microphone input and 0 dBm at the line input. Then, without changing the gain, terminate microphone and line inputs with shielded resistors of 150 and 600 ohms, respectively.
3. Measure overall hum and noise level at each power amplifier output for each input channel. Level shall be at least

80 dB below rated power output over a bandwidth of 20 to 20,000 Hz.

B. Electrical Distortion:

1. Adjust gain controls and amplifier loads as for hum and noise -level test.
2. Apply 50 Hz., 1 kHz and 15 kHz sine wave signals from an oscillator having less than 0.05% total harmonic distortion to each microphone and line input at level required to produce measured full amplifier output.
3. Distortion at any point in the system shall measure less than the limit listed in the specification for the driving amplifier.

C. Parasitic Oscillation and RF Pickup:

1. Set up system for each specified mode of operation.
2. Use 5 MHz bandwidth oscilloscope and loudspeaker monitoring.
3. Check to ensure that system is free of spurious oscillation and RF pickup in the absence of any input signal and also with system driven to full output at 160 Hz.

D. Absolute Impedance's:

1. Set any loudspeaker level controls at zero attenuation.
2. Measure absolute impedance value of each loudspeaker line at 250, 1000, and 4000 Hz without amplifier connected but with all loudspeakers connected. Impedance shall be at least 90% of rated load impedance of respective amplifier. Check resistance of lines to all loudspeakers and microphone receptacles with receptacles open and short-circuited.

E. Buzzes, Rattles and Distortion:

1. Apply high-quality music signal to the system for frequent peaks at its specified maximum sound pressure level.
2. Apply sine wave sweep from 30 to 500 Hz at 6 dB below rated power of loudspeaker.
3. In both cases, listen carefully for buzzes, rattles and objectionable distortion.
4. Correct all causes of such defects. If cause is outside system, promptly notify the owner, indicating cause and suggested corrective procedures.

F. Equalization:

1. Adjust 1 octave equalizer to obtain a pink noise response no greater than plus or minus 3 dB from 80 Hz to 8 kHz. From this point a fall-off of 3 dB per octave will be followed. Verify suitability of settings with careful listening tests coupled with an acceptable margin of gain before feedback, which should be at least 15 dB with mic in fore front on floor. System should be capable of high-fidelity stereo music reproduction as well as accurate reproduction of the spoken word.

5.0 -ACCEPTANCE AND SIGN-OFF

A. Assist the Owner and Consultant in performing final system adjustments and acceptance tests. Provide all labor, materials, tools and measurement equipment necessary for these tests and adjustments, unless otherwise specified.

B. The contractor's representative assisting in these tests shall be thoroughly familiar with all details of the system and shall include the field supervisor in overall charge during the course of the installation work.

C. Budget four (4) working hours for the performance of these tests and adjustments

D. Any measurements of frequency response, distortion, noise or other characteristic; and any adjustments deemed necessary by the Consultant must be performed on any item or group of items, to insure optimum performance of the system.

6.0 -TIMELINE OF PROJECT

A. There will be a mandatory pre-bid conference on February 05, 2019 in the Moore City Council Chambers (301 N. Broadway Ave., Moore) at 2pm.

B. Project must be completed by July 1, 2019.

The City of Moore reserves the right to reject any and all bids. Also, the City of Moore reserves the right to work with the selected bidder to make minor alterations to the project. The bidder with the successful lowest and best bid will be required to contract with the

City and execute all necessary warranties on the equipment to be purchased.

Bids should be submitted to:

Barbara Furgiani
Purchasing Agent
301 N Broadway
Moore, OK 73160

Deadline for bids is Thursday, 4:00pm February 15, 2019.

Bid #

AUDIO SYSTEMS AND EQUIPMENT BUCK THOMAS PARK

Base Bid Total _____

Alternate #1 Bid Total _____

Total Bid: _____

References YES / NO

Warranty Information Attached (Circle One) YES / NO

Period of Warranty (1 Year, 2 Years, etc.) _____

Bonds (Circle One) YES / NO

Insurance Information YES / NO

Completed Non-Collusion Affidavit (Circle One) YES / NO

Bidder Information

Bidders Firm Name: _____

Bidder's Address: _____
Street/PO Box City/State/Zip Code

Contact Person: _____
Name Title

Phone Number: () _____ Fax Number: () _____

Email Address: _____