Project Owner:	Frankfort-Elberta Area Schools
Project Name:	District Technology Renovations
Issue Date:	July 1, 2022

ADDENDUM NO. 1

*This Addendum No. 1 of the **Technology Request for Bid** for the above referenced project hereby amends, supplements and/or augments all prior issued document(s) as described herein, and becomes an inseparable part of the Contract Documents, superseding all previous, contrary and/or conflicting information.*

AD1 - 1 Section 27 51 16 is hereby revised, reissued and attached hereto.

END OF ADDENDUM NO. 1

SECTION 27 51 16
PUBLIC ADDRESS & PROGRAM SYSTEM

PART 1 - GENERAL

1.01 DESCRIPTION OF PROJECT

A. Work described in this specification section pertains to a Public Address System component upgrades across the district. Work shall include, but not be limited to public address head end equipment, amplifier(s), cabling, replacement ceiling and/or wall speakers, interface units and all other components and services required for a full and operational system.

B. Owner desires to replace systems currently in operation and serving indicated locations with new and more maintainable technology.

C. Contractor shall propose a system to be installed and connected to the owner's existing infrastructure where possible and replace existing infrastructure if it is inadequate to perform the specified functions.

D. All head-end equipment shall be installed and/or relocated to the Owner's Main Distribution Frame (MDF).

E. The Contractor shall design, engineer, configure, supply, connect, test, document, train Owner representatives and warrant a fully operational and compliant system, complete and with full functionality as specified herein.

F. Contractor shall coordinate their installation with other communication systems, contractors, Designer and the Owner as is appropriate.

1.02 WARRANTY

A. Complete installation shall be fully functional and free from defect and/or failure for a period of three (3) years. Any replacement, upgrade or fix, including labor for any non-conforming or non-operational part of the system shall be fixed and/or replaced at no cost to the Owner.

1. Owner shall be provided full operation of system functions and features during the complete warranty period incurring absolutely no costs during that time.

B. Manufacturer's warranty shall be provided for all components of the system.

1. Any paperwork and/or submittals required by individual manufacturers for compliance with the standard and/or applicable extended warranty programs shall be provided and submitted for approval by the Contractor.

2. Contractor shall submit all paperwork, apply for warranty or extended warranty certification, and provide a Certificate of Warranty or Extended Warranty as may be applicable from the manufacturer prior to project closeout.

C. On site services provided under the warranty shall be performed by personnel or representatives of Contractor as herein defined and located within physical proximity to provide response levels deemed acceptable to Owner.

D. Contractor shall provide the following response times for all malfunctioning equipment:

1. Four (4) hours or less for matters that render twenty percent (20%) or more of the system users unable to maintain normal productivity.

2. Two (2) business days for matters not meeting the above criteria.

3. Response time shall be measured from the time Contractor is notified by Owner to the time work is begun to resolve the matter.

E. Bidder shall provide current monthly maintenance/service contract pricing for recommended programs for all equipment following the specified and included period as additional information. This information will be considered by Owner and Designer as part of the bid evaluation process.

F. System Warranty shall commence on date of substantial completion as certified by Designer and provided for herein. Delivery to work site of materials, connection of circuits, turn-up of system, physical removal from packaging, issuance of Contractor documents including, but not limited to invoices and/or packing slips, or any event or documentation, not specifically provided for herein, shall have no effect on Warranty or System Acceptance by Owner and/or Designer.

1.03 STORAGE OF MATERIALS

A. All materials shall be secured when not in use by the Contractor.

B. It shall be the Contractor's responsibility to secure all equipment including material to be installed as part of the contract. No changes shall be made to the contract due to loss or theft of equipment and/or materials not officially accepted by the Owner.

C. Formal receipt of the materials shall not be completed by the Owner until completion of project closeout. The Contractor shall be responsible for all equipment until time of closeout as provided for herein.

1.04 SUBMITTALS

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A. Submittals shall consist of, but not be limited to, technical cut sheets and detailed information pamphlets on all components of the system to be installed. All cut sheets and submittals shall be distinctly marked to highlight the actual part number of the item being submitted for approval with Bid Proposals.

B. Shop drawings and diagrams shall be submitted by Bidder for approval by Designer with Bid Proposals.

   1. Shop drawings and diagrams shall show all data relating to structural, electrical, wiring, cross connect, interconnect, equipment arrangement/layout, and any other information deemed significant by the Designer.

   2. No work constituting final installation shall be commenced until after approval of shop drawings by Designer.

C. Contractor shall provide proof of manufacturer support by photocopy of certification and letter of support from major component manufacturers for this specific project with Bid Proposals.

D. Equipment or material installed for this project that does not have an approved submittal associated with it, will be removed and replaced with acceptable equipment or material as defined by the Designer. All replacement costs including, but not limited to material and labor, shall be the sole responsibility of the Contractor.

   1. The Owner and/or Designer may notify Contractor of any offending situations under this provision allowing Contractor up to forty-eight (48) hours to correct the situation prior to taking other corrective action.

   2. The Owner reserves the right to replace unapproved materials and deduct the costs of doing so as defined herein from any amounts that may be due, or become due Contractor.

E. The Contractor shall submit within five (5) calendar days after the Notice to Proceed, a schedule that reflects the sequence of activities of the contractor's approach to the execution of and completion of the work. The schedule shall be broken into work areas to provide for a clear identification of the planned progress of the work. Included in the schedule will be a list of tasks with list of deliverables and the percentage of work completed. This schedule shall coincide with progress payments applications dates and projected amounts. All durations shown will be in working days. The timeframe described in the Contractor's Schedule shall represent the Contractor's plan for organizing, directing, managing, controlling, staffing and executing the work required by the Contract Documents. Owner will rely on such schedules to coordinate and

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otherwise plan related work of Owner personnel, other separate contractors, or the Owner's routine daily work.

1.05 REFERENCE SPECIFICATIONS

A. All work, products, and materials shall conform with the following standards as applicable for the intended use:

1. EIA/TIA Commercial and Administration Standards
2. NEC
3. IEEE 802
4. IETF RFCs
5. FCC Emissions Ratings
6. UL
7. MOSHA Safety Standards

1.06 CONTRACTOR

A. The Contractor shall accept complete responsibility for the installation, certification and support of the system. Contractor shall be an authorized vendor of all major components.

B. All work shall be performed and supervised by Project Managers, Engineers and/or Technicians who are qualified to install Voice Communication System and perform related tests as recommended by the manufacturer and in accordance with the manufacturer's best practices and methods.

C. Project Managers, Engineers and Technicians employed on this project shall be properly and fully trained and qualified by the manufacturer on the installation and testing of the equipment and systems to be installed.

D. The Contractor shall have a proven track record in Public Address System configuration and installation. This must be shown by the inclusion of references of at least three (3) projects involving the installation of similar systems completed by the Contractor in the prior two (2) years on unaltered forms with the sealed Bid Proposal as provided herein.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

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A. Manufacturer of major components of the included Public Address / Paging system shall be known and leading entity in the relevant communications field, and shall have been designing, manufacturing and installing similar systems for a period of no less than three (3) years.

1. Acceptable Manufacturers

a. ATLASIED

b. BOGEN

c. CAREHAWK/DUKANE

d. TELECOR

e. VALCOM

f. Or Equal

B. System manufacturer shall support a centralized management software instance to collectively and centrally manage all speakers and all buildings throughout the scope of the project. Individually configured, managed and controlled systems per facility with no central management and control will not be favorably considered.

2.02 Supply most current version of all products provided.

A. Prior and/or old versions of products, unless specifically approved and documented by Designer and/or Owner shall not be acceptable.

B. In cases where a newer version of hardware or software is available at the time of installation, Contractor shall request clarification from Designer on which version is to be used.

2.03 Furnish only new, first-class quality materials and equipment.

2.04 PUBLIC ADDRESS AND PROGRAM SYSTEM

A. A fully compliant public address and program system shall be configured and installed to service Owner's worksites listed herein. Each facility shall be capable of independent administration of all program functions and meet or exceed all functional and performance requirements as established herein.

B. Administration access to <u>all</u> system functions shall be by both computer via a web browser across the Owner's existing data network and by telephone from the Owner's system provided by others and shall be protected by unique and secure log on.

C. System administrator shall be capable of complete system back-up and full system restoration from a previously saved configuration.

D. In the event of a power failure, complete system shall automatically re-initialize and "become active" to the last configuration in use with no human intervention.

E. Reuse of existing building speakers and cable is generally expected in corridors, large spaces, offices and common areas. However, intelligibility and quality of installation are not to be compromised. Bidder shall provide as part of bid submission, in order to reasonably allow for expected existing non-functional unit replacement and new unit installation the following materials and services:

1. Twenty (20) new Common Interior Speakers with back boxes including all cabling and labor to integrate speakers into provided Public Address speaker system.

2. Contractor shall be responsible for conducting a full pre and post installation inspection of paging infrastructure to identify non-functional or malfunctioning units.

3. Particular units to be replaced and/or additions shall be coordinated with the Designer, Owner and selected Contractor.

F. Reuse of existing exterior building speakers and cable is generally expected. However, intelligibility and quality of installation are not to be compromised. Bidder shall provide as part of bid submission, in order to reasonably allow for expected existing non-functional unit replacement and new unit installation the following materials and services:

1. Five (5) new Exterior Horns including all cabling and labor to integrate speakers into provided Public Address speaker system.

2. Contractor shall be responsible for conducting a full pre and post installation inspection of paging infrastructure to identify non-functional or malfunctioning units.

3. Particular units to be replaced and/or additions shall be coordinated with the Designer, Owner and selected Contractor.

G. Reuse of existing classroom speakers and cable is generally expected. However, intelligibility and quality of installation are not to be compromised. Bidder shall provide as part of bid submission, in order to reasonably allow for expected existing non-functional unit replacement and new unit installation the following materials and services:

1. Forty-two (42) new Interior Intercom Speakers including all cabling and labor to integrate speakers into provided Public Address speaker system.

2. Contractor shall be responsible for conducting a full pre and post installation inspection of paging/intercom infrastructure to identify non-functional or malfunctioning units.

3. Particular units to be replaced and/or additions shall be coordinated with the Designer, Owner and selected Contractor.

H. Reuse of existing Double Sided Hallway speakers and cable is generally expected. However, intelligibility and quality of installation are not to be compromised. Bidder shall provide as part of bid submission, in order to reasonably allow for expected existing non-functional unit replacement and new unit installation the following materials and services:

1. Five (5) new Double Sided Hallway Speakers including all cabling and labor to integrate speakers into provided Public Address speaker system.

2. Contractor shall be responsible for conducting a full pre and post installation inspection of paging/intercom infrastructure to identify non-functional or malfunctioning units.

3. Particular units to be replaced and/or additions shall be coordinated with the Designer, Owner and selected Contractor.

I. CENTRAL CONTROLLER

1. Central Controller shall provide for distribution of balanced audio that is free from distortion, clear of noise and intelligible.

2. Central Controller shall be configured and installed for amplification and distribution of audio programming to all areas of the facility. Owner applications may include, but will not be limited to:

   a. Emergency alerting including possible building evacuation, shelter in place and/or lock-down.

   b. System access from remote locations via either telephone and/or web browser to individual buildings for zone paging and/or alerting.

   c. System access from remote locations via web browser to allow for program changes (i.e. Regular schedule to Snow day).

3. Central Controller and all attached devices shall be installed and configured to meet or exceed all of the following requirements:

a. Interface to Voice Communication system (phone system) as primary voice input connection.

    1. Specific coded authorization shall be required to authenticate any user attempting to broadcast on the system. Codes shall originate by DTMF from voice terminals, and shall be up to four (4) tones (keys) in length.

    2. Capable of integrating with existing phone system over SIP protocol including all equipment, licensing and installation for a fully functional system.

b. Interface to computer data network system over Owner provided Ethernet.

    1. Specific password protected authorization shall be required to authenticate any user attempting to broadcast or modify programming on the system.

    2. Access shall be by standard web browser (MS Edge, Chrome, etc.) and shall not require specific application software be loaded onto access devices.

c. System shall store pre-recorded schedule for tone generation and interface to Owner's existing time sync (NTP Server) over Ethernet. System shall broadcast school "bells".

    1. Unlimited number of schedules must be supported for each building/facility (half day, normal day, exam schedule, etc.)

d. System shall store pre-recorded emergency alert messages matching owners existing standard in use at other facilities.

    1. Broadcast of up to six (6) alarm tones, pre-recorded messages or emergency voice messages to all or selected areas of the facility.

    2. Specific alarm tones shall be given priority over any other broadcast material.

e. System shall provide two (2) additional contact closures (to be interfaced to by others), which when activated result in broadcast of predefined alarm tone(s) to predefined zone(s).

f. System shall provide forty-eight (48) intercom station ports in each site.

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g. Intercom call buttons shall be provided in the spaces as identified on provided diagrams.

   1. Frankfort High School/Middle School – Four (4)

   2. Frankfort Elementary – Three (3)

h. Speaker zones shall be provided for in each building. Zones shall be easily modified using the web browser interface to add or eliminate individual classrooms from zone lists.

   1. Frankfort High School/Middle School – Four (4)

   2. Frankfort Elementary School – Three (3)

i. A suitable speech amplifier(s) shall drive the speaker lines.

   1. Common area zone amplifiers may consist of multiple power amplifiers connected in series.

j. Each building system shall contain one (1) physical external interface in addition to telephone (primary voice interface) for connection to any one of a variety of music sources (including, but not limited to MP3, tuner, etc.) to be broadcast to designated zones or groups of zones. This interface shall be 3.5mm audio jack and located in building central office in each building to provide for building administrator convenient access.

k. System shall automatically generate and transmit a pre-announcement attention signal prior to any voice broadcast.

l. Feedback elimination precautions or system features shall be employed to suppress any audio coupling between and audio source and nearby speaker.

m. All building-based equipment shall be installed in existing PA/Intercom location.

n. Gain control of alarms and announcements shall be individually configurable to different volume levels.

o. Amplifiers provided shall include internal overload and shutdown protection.

p. Amplifiers provided shall have anti-clipping protection.

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q. The unit shall operate from standard owner supplied 110 VAC power outlets within six feet (6') of required rack mounting in normal ambient climatic conditions for office communication closets.

4. Program System shall provide for, but not be limited to:

a. Integrated calendar for storage of various different programs to be scheduled

1. Normal Day

2. Half Day

3. Early Release Day

4. Exam Day

5. Delayed Start Day

b. Six (6) different tones/chimes/bells to signify class start/end/tardy etc.

c. Password protected unique User ID access to the system by individual building principals and/or secretaries to manage and administer program calendars. Such credentials shall be integrated with the Owner's existing Microsoft Active Directory for common login control across the network.

d. Separate program databases for each facility that can be manipulated/managed by that facility's specific administrative team.

5. Preference will be given to system architectures where a common central server can be used from the district's data center for control and management of both building operations the entire system.

J. COMMON INTERIOR SPEAKERS

1. Twenty (20) interior Speakers shall be provided in corridors and/or other common public areas of the facility as coordinated and provided for herein.

a. Final speaker placement shall be adjusted as needed for appropriate audio intelligibility, volume levels and ceiling obstructions and/or conditions and shall remain the responsibility of the contractor.

2. Speakers shall provide balanced intelligible sound that is free of distortion, free from noise and evenly dispersed.

3. Ceiling Mounted 8" dual-cone speaker complete with integral line match transformer assembled to a metal baffle. Power range is 15 watts RMS. Frequency range is 45-18,000Hz.

4. Speaker baffles shall be installed with hardware matching the color of the baffle. Baffle color shall match finished ceiling color.

5. All baffles shall be flush against the ceiling and enclosures shall be fully supported. All recessed speakers shall include a back box.

6. All devices, including but not limited to, amplifiers, brackets, baffles and Control Unit shall be mounted square and plumb and as recommended by the manufacturer and required by Owner and Architect.

7. Each speaker shall be connected to central equipment with approved and appropriate media using established and approved pathways to provide for system wide broadcast and/or zone-specific broadcast.

8. Each speaker shall be volume adjustable at installation to accommodate specific acoustical properties of the intended coverage area.

9. Coordinate final placement of speakers with Designer and/or Architect.

    a. Area of coverage will be such that calls will be clearly audible in the operating area and surrounding space.

10. System shall produce audio at a peak level of approximately eighty-five (85) dBA at probable listener's positions.

K. WIDE ANGLE EXTERIOR HORNS – WITH CABLING FOR EXTERIOR ZONE

1. Five (5) wide angle weather-proof exterior horns shall be installed on the structure.

2. Horns shall meet or exceed the following requirements:

    a. Weatherproof

    b. Tilt and swivel base for easy positioning

    c. 15 watts continuous

    d. Frequency response of 300Hz – 3.9 kHz.

    e. Output rating of 121 dB @ 4' with 15-watt input at 1000 Hz

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f. Each speaker shall be connected to central equipment with approved and appropriate media using established and approved pathways to provide for system wide broadcast and/or zone-specific broadcast.

g. Exterior speakers are new and will require cabling to support connectivity to new system. Contractor shall supply all materials and labor to discreetly connect exterior speaker zone to supplied paging system for independent addressability.

3. Final placement of exterior horns shall be carefully coordinated with Designer and Architect.

L. COMMON INTERIOR CLASSROOM TWO-WAY INTERCOM SPEAKERS

1. Forty-two (42) interior classroom intercom speakers shall be provided in classrooms or other areas of the facility as coordinated and provided for herein.

a. Final speaker placement shall be adjusted as needed for appropriate audio intelligibility, volume levels and ceiling obstructions and/or conditions and shall remain the responsibility of the contractor.

2. Intercom speakers shall be surface mount white.

3. Intercom speakers and microphones shall provide bi-directional communication using provided central controller.

4. Existing classroom intercom speakers will generally be direct replacement of existing units. Existing cabling shall be utilized.

5. Speakers shall provide balanced intelligible sound that is free of distortion, free from noise and evenly dispersed.

6. Ceiling Mounted 8” dual-cone speaker complete with integral line match transformer assembled to a metal baffle.

7. Interior classroom intercom speakers shall include volume control.

8. Speaker baffles shall be installed with hardware matching the color of the baffle. Baffle color shall match finished ceiling color.

9. All devices, including but not limited to, amplifiers, brackets, baffles and Control Unit shall be mounted square and plumb and as recommended by the manufacturer and required by Owner and Architect.

10. Each speaker shall be connected to central equipment with approved and appropriate media using established and approved pathways to provide for system wide broadcast and/or zone-specific broadcast.

11. Each speaker shall be volume adjustable at installation to accommodate specific acoustical properties of the intended coverage area.

12. Coordinate final placement of speakers with Designer and/or Architect.

    a. Area of coverage will be such that calls will be clearly audible in the operating area and surrounding space.

13. System shall produce audio at a peak level of approximately eighty-five (85) dBA at probable listener's positions.

M. COMMON BI-DIRECTIONAL CORRIDOR WALL SPEAKER

1. Five (5) bi-directional corridor speakers shall be provided in hallways or other areas of the facility as coordinated and provided for herein.

    a. Final speaker placement shall be adjusted as needed for appropriate audio intelligibility, volume levels and ceiling obstructions and/or conditions and shall remain the responsibility of the contractor.

2. Speakers shall provide balanced intelligible sound that is free of distortion, free from noise and evenly dispersed.

3. Bi-directional wall mounted 8" dual-cone speaker complete with integral line match transformer assembled to a metal baffle. Power range is 15 watts RMS. Frequency range is 45-18,000Hz.

4. Speaker baffles shall be installed with hardware matching the color of the baffle. Baffle color shall match finished ceiling color.

5. All baffles shall be flush against the ceiling and enclosures shall be fully supported. All recessed speakers shall include a back box.

6. All devices, including but not limited to, amplifiers, brackets, baffles and Control Unit shall be mounted square and plumb and as recommended by the manufacturer and required by Owner and Architect.

7. Each speaker shall be connected to central equipment with approved and appropriate media using established and approved pathways to provide for system wide broadcast and/or zone-specific broadcast.

8. Each speaker shall be volume adjustable at installation to accommodate specific acoustical properties of the intended coverage area.

9. Coordinate final placement of speakers with Designer and/or Architect.

    a. Area of coverage will be such that calls will be clearly audible in the operating area and surrounding space.

10. System shall produce audio at a peak level of approximately eighty-five (85) dBA at probable listener's positions.

N. LED STROBE/VISUAL INDICATORS

1. LED Strobe/Visual Indicators shall be installed in the following locations (with quantity) and as directed by the Owner:

    a. High School/Middle School

        1. Band Room – one (1)

        2. Gym – two (2)

        3. Cafeteria – two (2)

    b. EL

        1. Gym - two (2)

        2. Cafeteria – two (2)

2. System shall be capable of providing a bright and visible indicator when paging system is engaged.

3. Indicators shall be blue in color and be mounted securely to ceilings or ceiling structure.

4. Indicators installed and integrated into Public Address System for consistent and reliable operation.

5. Contractor shall supply all parts, accessories and labor for a fully functional system.

6. Device shall flash 1-3 times at the initiation of a page, and then remain illuminated throughout the duration of the address. Power for the device is the responsibility of the contractor.

O. NEW HALLWAY SPEAKER ZONE CABLING – HIGH SCHOOL

1. Contractor shall provide all labor to install speaker cabling for high school paging zone to connect to existing zone in athletic wing.

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2. Fifteen (15) Speakers for high school hallway speaker zone shall be utilized from common ceiling speaker stock as necessary.

P. EXISTING PAGING SPEAKER RECONFIGURATION

1. Contractor shall provide all labor and materials to reconfigure and rework the following areas to allow independent and discreet addressability:

   a. Frankfort High School/Middle School

      1. Middle School Hallway Zone

      2. High School Hallway Zone

2. If spaces are currently integrated into existing paging zones, Contractor shall be responsible for reconfiguration of exiting paging zone including all materials and labor to allow continued full functionality.

3. Additional amplification shall be provided to separate current single Frankfort High School/Middle School speaker zone into independently addressable spaces.

Q. COMPONENT INTERCONNECTION

1. All wiring not installed in conduit shall be plenum type cable and shall be so identified with continuous marking.

2. No wiring installed shall be visible unless specifically and individually approved by Owner and Designer. All wire that traverses open areas shall be installed in metal raceway of appropriate size for the number of wires installed plus twenty percent more.

   a. All metal raceway shall be ordered in standard colors to as closely match the environment in which it is being installed as possible.

   b. Metal raceway shall be carefully and neatly installed, to meet manufacturer recommendations and standards for professional installation.

   c. Sharp edges, gaps in the covering or corners or other unprofessional workmanship characteristics of installation will not be acceptable.

3. Wiring color shall remain the same throughout the system. Colors used for coding shall be as directed by the system manufacturer, Owner and Architect.

4. Wire shall be copper.

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R. Owner shall provide adequate ethernet ports in the designated MDF and IDF locations for the connection of all devices required for system operation. Contractor shall remain responsible for all connection to switches, including, but not limited to patch cables at both the closet and device location. All patch cable colors must be coordinated with Owner to match Owner site standards.

2.05 ALLOWANCES

A. Contractor shall include allowances for equipment and/or other contract service reimbursements as required below in base bid lump sum amount(s). Equipment and/or contract services shall be provided and sourced at Owner's discretion and convenience with full cooperation by Contractor and paid for from successful bidder's contract in the amount(s) provided for herein. Any allowance amount proving to be excessive for the intended equipment and/or contract services shall be credited to the Owner against contract payment requests.

1. Allowance shall be made in the amount of $5,000.00 for contract services related to Owner directed infrastructure upgrades, installation and configuration.

PART 3 - EXECUTION

3.01 PREPARATION

A. Contractor shall conduct detailed walk-through examination verifying equipment and material locations as well as mounting and placement requirements prior to commencement of other installation activities.

1. This examination shall include, but not be limited to, documenting the following information for each site of work:

a. Document existing PA head-end location on building diagrams provided by Owner.

b. Document existing PA zones programmed.

c. Document connections of speakers and amplifiers to the system head-end.

d. Identify all existing amplifier locations on building diagrams provided by Owner.

e. Identify all existing speaker locations on building diagrams provided by Owner.

f. Identify existing installed speakers that are not working properly and/or are not acceptably intelligible for normal speech.

g. Measure and document the audio level (db) of existing exterior speakers at a distance of 100’ and an offset angle of 45 degrees.

h. Contractors shall re-tap existing speakers as necessary for consistent audio performance throughout the facilities.

2. Upon completion of the examination documentation, this information shall be compiled into a draft report and presented to the Owner and Designer for approval.

B. Contractor shall ensure all submittals and shop drawings have been provided to, and approval has been obtained from Designer prior to commencement of any final installation activities.

3.02 INSTALLATION

A. Contractor shall be familiar with the environment where work will be done as specified herein.

B. Work Areas shall be cleaned at the end of each day. All debris shall be cleared, removed and disposed of in an approved container for the site. All equipment and tools shall be removed from common areas and stored in approved, secure storage locations. Any work that may impede the general use of the space and cannot be removed shall be flagged and cordoned off by the Contractor prior to their departure.

C. All equipment and materials shall be installed in a neat and workmanlike manner. Best practices installation principles shall be used throughout the project.

D. The Contractor shall furnish, set in place, and install all equipment necessary for a fully compliant and operational system as specified herein. The installation process includes, but is not limited to the following:

1. Inventory receipt of all components and equipment.

2. Storage of all equipment and components until such time those items are installed according to the specifications.

3. Transport equipment to the Owner’s installation location(s).

4. Assemble, install, configure and test all equipment and components, maintaining accurate inventory records and status documents and discarding packaging.

5. Collect all information necessary to accurately program all sets and/or system devices to the Owner's intended use and need.

6. Complete end user and system administrator training programs as specified herein.

7. Work shall be performed to meet local codes and industry standards, including, but not limited to:

   a. Adequate gas tube protection for outside plant cable connections.

   b. Grounding and Bonding.

8. Work includes extending cable bundles, as required, to Owner identified equipment installation locations at all locations.

9. Owner will provide contractor with permanent asset tags for each system component that exceeds $100.00 in value. Equipment installed in wiring closets will have district asset tags installed in a prominent location. Assets installed in public areas, such as staff desktop devices, will have asset tags installed in discreet but consistent area of each asset.

   a. Asset number, device/component description, serial number, make, model, part-number, site, room number/name and any other critical asset information shall be recorded for Owner.

E. Contractor shall program all bells, alerts and schedules into the system to support initial operations. No Owner programming shall be required for successful system cut over in any building.

F. Worksites include the following:

1. Frankfort High School / District Board Office
   534 11th Street
   Frankfort, Michigan 49635

2. Frankfort Elementary School
   613 Leelanau Avenue
   Frankfort, Michigan 49635

G. It shall be the responsibility of the Contractor to repair or replace any damage done to the structure of finishes in the building by the Contractor. If in the course of work, Contractor damages, marks or misplaces any surfaces or access plates/panels the Contractor shall repair and/or replace the surface, plate or panel to the original condition.

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1. Final determination as to the damage condition and/or repair/replacement fitness of any surface, plate or panel shall be the sole responsibility of the Designer.

2. The building and work area shall be returned to its original condition prior to final sign off of the project.

H. Following installation and prior to final acceptance of the system, Contractor shall conduct follow-up interviews with Owner identified administrators and staff to review system functionality, suitability and confirm feature and program fitness for Owner applications.

1. Follow-up interviews shall be fully documented by Contractor and submitted to Owner for approval.

I. Contractor shall collect, consolidate and otherwise prepare for shipping or disposal Owner's existing telecommunications system components, including, but not limited to stations, processors, cards, options, and application servers in a manner acceptable to, and consistent with, Owner's intended disposition of the items.

3.03 TESTING

A. In an effort to ensure a smooth cut-over to the new system Contractor shall submit to a thorough testing process as defined herein prior to cut-over. Testing shall include, but not be limited to the following:

1. 100% of all speakers

2. Paging and Public Address programming

B. Prior to requesting testing by Designer, the Contractor shall use adequate means to assure the Work is completed in accordance with the specified requirements, meets the owner's specific application requirements and is ready for functionality and integrity testing.

C. PROCEDURES

1. Prior to system cut-over, Contractor shall submit a written request to Designer indicating they have completed full and final configuration of the system, and are ready to have system integrity and functionality tested.

2. Within reasonable time after receipt of request, Designer will provide a test schedule and coordinate testing date(s) with Owner and Contractor.

3. Should Designer determine the Work is not acceptably configured or not of adequate integrity:

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a. Designer promptly will so notify Contractor, giving reasons therefore and providing sufficient details to allow Contractor to make corrective actions.

b. Contractor shall then expeditiously remedy the deficiencies and notify Designer in writing when ready for re-testing.

c. Designer will schedule re-test of the Work.

d. Excessive re-testing of Work may result in fees being assessed Contractor.

4. Should Designer and Owner concur the Work is configured properly, and system integrity is as required:

a. Designer will review Contractors detailed cut-over plan, and upon finding it acceptable issue a memorandum of Testing Completion to Owner and Contractor after which system cut-over can proceed.

3.04 DEMOLITION

A. Contractor shall ensure all components of the old system are removed and properly disposed of. Owner will identify any materials it intends to maintain for future use. All other materials shall be removed from sites by Contractor. Such material shall include, but not be limited to equipment, mounting hardware, cables, cabinets and all other supporting items.

B. Contractor shall ensure all areas of equipment removal are restored to a safe and professional environment. This work shall specifically exclude patching, painting and electrical work. Patching and painting shall remain Contractor responsibility in locations where the highest degree of care is not taken to remove items without creating additional damage to the surfaces or finishes.

C. All unused call buttons shall be physically removed. All remaining raceway and low voltage rough ins shall be blanked of with Contractor supplied stainless steel blank.

3.05 DOCUMENTATION

A. Contractor shall, throughout the completion of the project, provide Owner a file storage system that shall include all necessary equipment (file drawers, folders, dividers, etc.), to contain all as-built drawings, owner's manuals of all equipment installed, warranty and maintenance information and other information the Contractor, Designer and/or Owner deem necessary.

B. Contractor shall be responsible for providing thorough, timely documentation on all hardware, software. Documentation shall include, but not be limited to:

1. Equipment description.
2. Equipment make.
3. Model number.
4. Software release.
5. Date installed.
6. Manufacturer's warranty.
7. Maintenance contract terms.
8. Verification of maintenance contract engagement.
9. Telephone numbers for service and support.
10. Detailed technical support and service procedure instructions.
11. All product (hardware and software) manuals and manufacturer supplied documentation, including, but not limited to owner manuals, system administrator manuals and configuration guides. Where number of duplicate copies for particular manual or documentation item could be reasonably considered excessive, Contractor shall request direction from Owner and Designer.
12. Photocopy of original invoice listing make and model for all components and equipment from individual manufacturer(s), distribution source(s), or authorized agent(s) to establish manufacturer warranty start date for potential use after end of contract warranty provisions.
13. As built drawings for each building.
14. Dial Plan Report.
15. Complete inventory of installed station hardware and system software. Hardware inventory shall include set type (model number), Ethernet MAC address, station serial number, extension number, station user's name, location, software groups (including call pick-up, intercom, class of service, speed call, etc.).

3.06 TRAINING

A. Training shall be conducted at the Owner's discretion and at times and places convenient to Owner personnel. Prior to any training being conducted,

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Contractor shall provide Owner and Designer with detailed training syllabus and schedule for proposed training event. Compliant syllabus and schedule shall be provided at least ninety-six 96 hours in advance. Owner reserves the right to postpone training if syllabus and/or schedule submitted are deemed inadequate. Training shall not be conducted until such time a syllabus and schedule submitted by Contractor are found to be acceptable to Owner.

B. Contractor shall provide training for the Owner designated system user(s). Owner shall designate up to ten (10) administrators to be trained in each building where a system is installed. Training shall be a minimum of One (1), one (1) hour session in length, repeated in each building where a system is installed, at the convenience of the Owner personnel, and of sufficient duration to satisfactorily complete training on all system administration functions including, but not limited to:

1. Zone and building public address functions.

2. Placing intercom calls in the system.

3. Emergency alerts.

4. Program manipulation.

C. Contractor shall provide training for the Owner designated system administrator(s). Owner shall designate up to two (2) administrators to be trained. Training shall be a minimum of One (1), four (4) hour session in length, at the convenience of the Owner personnel, and of sufficient duration to satisfactorily complete training on all system administration functions including, but not limited to:

1. Basic trouble shooting of the installed system and components including diagnostic and problem resolution actions.

2. System back-up and restore functions and procedures for all system parameters and configurations.

3. Device additions and changes as well as device reconfiguration.

4. Program manipulation.

3.07 SCHEDULE, MEETINGS AND PLANS

A. Sequence of operations shall be established by the Contractor within the guidelines established by the Owner, documented herein, required by Designer, Architect and/or Construction Manager and as required to meet schedules.

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B. Schedule

1. Final Vendor Presentations: Week of July 25, 2022
2. Contractor Chosen: Week of August 8, 2022
3. Work Commences: October 1, 2022
4. Substantial Completion: November 15, 2022
5. Project Close-out: December 1, 2022

C. Planned sequence of operations shall be established by the Contractor within the guidelines established by the Owner, as required herein and as required to meet schedules.

D. All work shall be coordinated with Owner's construction manager on site.

E. Project progress meetings shall be held, but not limited to, weekly at a site and time identified as convenient for Owner and as required herein. Meetings will be attended as required herein.

END OF SECTION

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