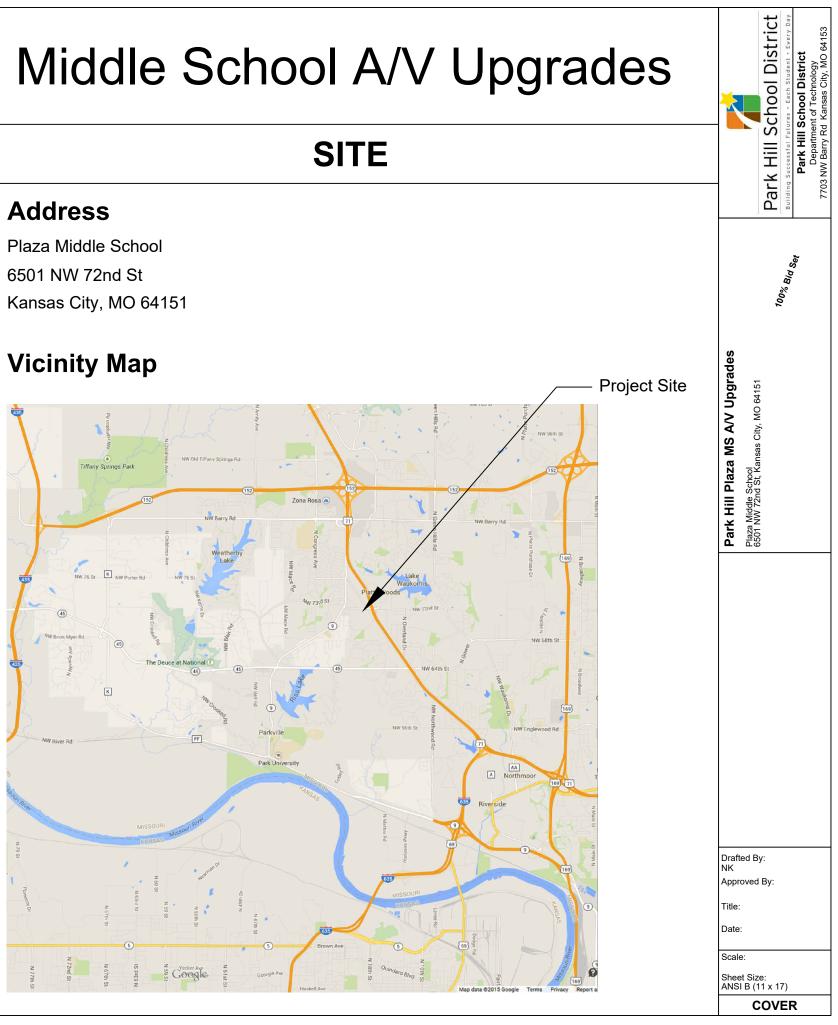
Park Hill School District - Plaza Middle School A/V Upgrades

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| Part 1. GENERAL SUMMARY | f. Change order amount g. Project manager, project engineer, lead installer, and lead programmer | P. HDMI Cables 30 AWG, PVC Jacket, Gold Plated Contacts, 1. Legrand C2G HDMI Cables |
|---|--|--|
| A. The work covered under this Section consists of furnishing all labor, material and services to install a complete audiovisual | h. Indicate whether or not the project was completed on time, and if not explain why not | 2. Comparable product by Covid, Crestron, Extron, Kramer, |
| system as shown on the Drawings and in these specifications. B. The Integrator shall do all work which is shown on the Drawings, mentioned in the specifications or reasonably implied as | SUBMITTALS A. Long Lead Time Equipment Submittal: | Q. DisplayPort to HDMI Cables: 30AWG, PVC Jacket, Mylar/A 1. C2G DisplayPort Adapter Cables |
| necessary to complete the contract for this project. | The integrator must Submit a list of long lead items before Full Project Submittals are due to not adversely impact the | Comparable products from Covid, Crestron, Extron, Krame |
| C. The Integrator is responsible for assessing the conditions of the job site, and facilities for delivering, storing, placing, | project schedule. | R. General Control Cable: Plenum rated, AWG, number of con |
| handling and installing of materials and equipment. D. The Integrator is responsible for assessing the conditions of the job site including the RF environment for the wireless AV | The Integrator shall use reasonable judgment as to which products are legitimate long lead items. Failure to include an item that may require long lead time shall not relieve the | function (e.g., IR, RS 232, dry closure, etc.). 1. Acceptable manufacturers: Belden, Gepco, West Penn W |
| equipment. | Integrator of the responsibility of furnishing said item to meet the project schedule. | S. Additional cable types as required. Cable type submitted to |
| E. Failure to assess the site conditions or failure to examine any and all construction documents will in no way relieve the | B. Full Project Submittals: | CONNECTORS |
| Integrator from the requirement of furnishing all materials and equipment, or performing any work, that may be required to complete the work in accordance with the Construction Documents. | Submittals shall include any components that the integrator wishes to use that the part number is not the same as or is no explicitly defined in this document. Including any comparable products. | A. 1/4 Inch Cable Connectors: Non long frame type. Neutrik "NP" Series |
| F. Neglect of above requirements will not be accepted as reason for delay in the work or additional compensation. | 2. The integrator must provide all submittals to PHSD for approval prior to installation. | 2. Comparable product by Switchcraft. |
| G. The Scope includes, but is not limited to: 1. Equipment and installation labor, including installation of Owner Furnished Equipment (OFE) as noted on the Drawings, for | Submittals must include installation details including any approvals from a licensed structural engineer as required. | B. BNC Cable Connectors: 1 piece, 360-degree compression of 1. Belden DB Series compression connectors |
| a fully functional system. | A. Provide warranty repair or replacement for one year on all products provided by the Integrator (including products having a | 2. Connector shall be compatible with cable type |
| 2. Miscellaneous components, hardware, interconnections and terminations required for proper operation of all systems. | manufacturer's warranty of less than one year) and all Integrator workmanship at no additional cost, except in case of | 3. Comparable product from Kings, Liberty, Extron, Canare, |
| All components or systems shown on the Drawings, referenced in these specifications, or both. Verification of accuracy and completeness of equipment lists, dimensions, mounting details, and equipment compatibility. | obvious abuse. Consumable items such as lamps, batteries, tapes, etc. are not covered. | C. F Cable Connectors : 1 piece, 360-degree compression con 1. Belden DB Series compression connectors |
| 5. Accurate documentation of the equipment and installation. | Part 2. PRODUCTS | 2. Connector shall be compatible with cable type |
| One-year warranty of the equipment and installation. Test equipment, tools, ladders, lifts and scaffolding required for installation. | GENERAL A. Acceptable Products are listed below and in this document and establish the Basis for Design for the AV systems. | Comparable product from Kings, Liberty, Extron, Canare, J. Antenna Coax Connectors, 3 piece, crimp type |
| Baily and final cleanup of debris caused by installation. | B. Integrator shall be fully responsible for making a substitute product match the requirements, description and functionality of | 1. Amphenol Connex Series compression connectors |
| 9. Assistance during Training. | the originally specified product regarding all options, accessories and external interface requirements. | 2. Connector shall be compatible with cable type |
| BASE SYSTEM DESCRIPTION A. General | C. B-stock, previously installed, refurbished or used equipment shall not be provided on this project. D. All products shall be new and under warranty at the time of installation. | Connector impendence must match cable type Heat shrink shall be installed over crimp sleeve |
| 1. Gym: This space is designed to allow for presentations from multiple sources and locations. Primarily, the space is used | E. The Integrator shall provide all options, accessories and hardware necessary to meet the function of the design even if they | |
| for Physical Education (PE) classes and school assemblies, among other things. B. Audio: | are not specifically listed (e.g., rack mount kits, separate or additional power supplies, input modules, transformers, etc.). F. Where a specified item has been discontinued by the manufacturer and/or replaced by a new model, PHSD may require | E. Loudspeaker Cable Connectors: 4 or 8 pole. 1. Neutrik Speakon NL4FC or NL8FC |
| Local speech capture and reinforcement shall be provided by various wired and wireless microphones installed in the | submission of the new model for evaluation prior to acceptance as a substitute. | 2. Comparable product by Switchcraft. |
| space. | G. Product substitution is allowed only by expressed written consent of PHSD and only before the Bid is received. | F. XLR Cable Connectors: Number of pins as required. |
| An assistive listening system shall be provided in the both areas to comply with applicable codes. Program audio reinforcement shall be provided by distributed, in-ceiling loudspeakers. | DEVICE PLATES A. NEMA gang type plates shall be standard at each plate location. | Black shell with gold pins, unless otherwise noted. Neutrik "XX" series |
| 4. A press connection shall be provided that allows for connection of a portable recording device to capture program audio. | B. Plates larger than NEMA 2-gang type plates shall be 1/8" aluminum or 1/16" stainless steel. | 3. No Alternate |
| C. Video | C. All plates shall be sized to cover the mounting box and rough opening. D. Finish to be approved by PHSD. | G. 1/4 Inch Panel Connectors: All conductors shall be insulated 1. Neutrik "NJ" series |
| The primary display shall consist of a suspended video projector and an electric projection screen. Connection plates shall be provided as indicated on drawings for presentation connections. | E. Connectors shall be fixed to plates and panels using screws and nuts, or by using the mounting method integral to the | Neutric NJ series Comparable product by Switchcraft. |
| E. Controls: | connector. Rivets are not acceptable. | H. Recessed BNC Panel Connectors: Shield shall be insulated |
| A wired touch panel shall be provided in each space as indicated on the Drawings. The system shall include various controls and automated functions as described herein. | F. Detailed drawings of plates & panels showing information required are included in this document. Any custom plate designs shall be submitted prior to fabrication. No exceptions. | s 1. Neutrik NBB75DFIB2. Comparable products by Canare, Switchcraft. |
| REGULATORY REQUIREMENTS | G. At all non connectorized pass-throughs provide a secured grommet in ceiling, wall or plate. | I. Non-recessed BNC Panel Connectors: Shield shall be insula |
| A. All equipment and installations under this contract shall conform to the following: | FIXED INSTALLATION CABLE A. General | 1. Neutrik NBB75FI |
| ANSI/NFPA 70 National Electrical Code. ANSI/IEEE C2 National Electrical Safety Code TIA/EIA Standards 568 A (including TSB 67), 569 and 607. | Following are cable types for fixed installation within the base building raceway and within fixed AV equipment racks. | Comparable product by Canare (with insulating washers) i J. Recessed F Panel Connectors: Feed thru type, female to fe |
| 3. IEEE/ANSI 142 1982 Recommended Practice for Grounding of Industrial and Commercial Power Systems. | Unless specifically noted, these are NOT acceptable for user interface cables used in lecterns/ credenzas or for connection | |
| B. Integrator shall be solely responsible to possess or obtain all permits and certificates required to complete this project. C. Integrator and employees shall perform all work in compliance with current Occupational Safety and Health Administration | of portable equipment. 2. Do not exceed cable manufacture's pull-force or bend radius recommendations. | Comparable by Trompeter, ADC. K. Non-recessed F Panel Connectors: Feed thru type, female to the second second |
| (OSHA) guidelines and regulations. | 3. All cable used on this project shall be rated for plenum use unless specified otherwise. | 1. Canare FJ JR |
| RELATED WORK | B. Audio or Video (including HDBaseT) over UTP Portable patch cable: Four pair, solid, #24 AWG, Bonded-Pair, Black. 1. Belden CA21100XXX ("XXX" denotes length) | Comparable by Trompeter, ADC. Loudspeaker Panel Connectors: 4 or 8 pole. |
| A. AV system and control system software. Integrator shall design all graphical user interface design for all AV control touch panels for the AV systems noted in these | 3 <i>i</i> | 1. Neutrik Speakon NL4MP or NL8MP |
| specifications and on the Drawings. The Integrator must submit these designs for review and approval by PHSD. | 1. Belden 1213F 003X1000 | 2. Comparable product by Switchcraft |
| Integrator shall create all customized code for all control systems noted in these specifications and on the Drawings. Integrator shall load software and configuration files into all programmable AV and control system devices. | D. AMX or Crestron Control Cable: Two pair - one pair shielded, one pair unshielded. Unshielded pair #18 AWG; shielded pair #22 AWG. NOTE: Also acceptable for use within lecterns. | M. RJ 45 Panel Connectors: Recessed Cat 5e compliant, 8 cor 1. Belden AX104595 |
| 4. Integrator shall set up and configure all programmable AV and control system devices as directed by PHSD. All source | 1. Belden 1392P | N. RJ 45 Cable Connectors: RJ45 (8P8C) Cat5e Shielded Con |
| code and graphic files to be provided to PHSD. PROJECT/SITE CONDITIONS | Comparable product by West Penn Wire, Belden, Crestron. Mic or Line Level Signal: Single twisted pair, overall shield, #22 AWG. | of 'EZ' or 'PassThru' type connectors is forbidden. Use Cop 1. Platinum Tools 106180, 106182C, or 106183C |
| A. Coordinate all access to the site at all times with the General Contractor and the Owner. | 1. Belden B6500FE | 2. Comparable Product. |
| B. Adhere to the safety standards established by the General Contractor and the Owner while performing work on site. | 2. Comparable product by West Penn Wire, Belden, Gepco. | O. XLR Panel Connectors: Black shell, gold pins. |
| C. All employees of the Integrator shall wear identification clearly indicating the Integrator's company while on site. D. Protect all existing work in place by others from damage by the Integrator, the Integrator's agents/sub Integrators, or any | F. Speaker Level: 16/2 UTP with overall jacket. 1. Belden 6200UE | Neutrik "DL" Series Comparable product by Switchcraft. |
| employees, agents or sub Integrators of the Integrators vendors. The integrator will be solely responsible for any/all damag | e 2. Comparable product by West Penn Wire, Belden, Gepco. | P. 3.5mm (1/8") Cable Connectors: Mini TRS for balanced mo |
| to work in place by others. E. Keep areas around and inside of each piece of equipment and each rack free from dust, dirt and debris throughout the | G. Speaker Level: 14/2 UTP with overall jacket. 1. Belden 6100UE | Canare F-12 Comparable product by Switchcraft, Neutrik, REAN |
| project. Equipment that is not properly maintained during installation shall be replaced at no cost to the Owner before final | 2. Comparable product by West Penn Wire, Belden, Gepco. | Q. Electrical/Electronic Hardware: Telco 66 type punch blocks |
| payment is made to the Integrator. | H. Speaker Level: 12/2 UTP with overall jacket. | be plenum rated. |
| F. All equipment and materials stored at the Integrators facility(s) or stored and/or installed at the project site will remain the property of the Integrator unless ownership is specifically assumed in writing by the Owner. The Integrator shall be solely | Belden 6000UE Comparable product by West Penn Wire, Belden, Gepco. | Terminal barrier strips - provide marker strips Phoenix UK |
| responsible for the protection of all equipment from damage, theft or vandalism regardless of cause, until ownership is | I. Speaker Level: 10/2 UTP with overall jacket. | b. Comparable product by Cinch, Beau |
| specifically assumed in writing by the Owner or the work described herein is accepted by the Owner at the time of official | Belden 6T00UP Comparable product by West Penn Wire, Belden, Gepco. | RACKS AND RACK ACCESSORIES |
| turnover. REQUIREMENTS SPECIFIC TO THIS PROJECT | J. Antenna Coax Cable (less than 25'): RG-58/U | A. All accessories shall be from the same manufacturer as the B. Provide the following accessories for each rack shown on the |
| A. Integrator Qualifications | 1. Belden 88240 | 1. Side panels for each individual rack or for end racks of each |
| Warranty service as defined herein shall be performed by the Integrator. The Integrator shall include firm information with the bid including: staff size, total number of offices, a statement indicating the statement indication. | Comparable product by West Penn Wire, Canare, Gepco, Commscope. K. Antenna Coax Cable (greater than 24'): RG-8/U | Solid or fan top as shown on the Drawings and solid rear of Grounding stud in top rear of rack. |
| whether or not the Integrator's primary business is audiovisual system contracting, and a statement of the number of | 1. Belden 9913 | 4. Full height rear mounting rails. |
| immediate years the Integrator has been regularly engaged in providing and installing systems of this type and size. | Comparable product by West Penn Wire, Canare, Gepco, Commscope. CATV, MATV, or CCTV Trunk Line: RG-11/U Quad Shield | 5. Horizontal lacing bars (as required). |
| The Integrator shall include with the bid resume(s), including years of experience, project experience, training and certifications, for proposed project team members including: project manager, project engineer, lead installer, and lead | 1. Commscope 2287V | Blank Panels as necessary to close front of rack. Vents, blowers, fans and fan packs as necessary to prope |
| programmer. | M. CATV, MATV, or CCTV Drop Line: RG-6/U Quad Shield | PATHWAYS |
| The Integrator shall include with the bid a list of three to five recent projects of similar size and scope and include the following information: | Belden 1695A AES3: Single twisted pair, overall shield, #24 AWG, Non-Plenum. | It is the responsibility of the Integrator to complete conduit Pathways being completed must use a comparable product |
| a. Project name, address, and description indicative of similarities to this project | 1. Belden 1353A | 3. Conduit must not be used on interior finished wall surfaces |
| b. Name of primary contact and telephone number | Comparable product by Belden, Canara, Gepco, West Penn Wire, Commscope HD, SDI, and video tie lines: RG-6/U | used. Unless otherwise noted surface raceway must be W |
| c. Design consultant (if applicable) d. Completion date | 1. Belden 1695A | complete solution. |
| e. Contract amount | 2. Comparable product by Liberty, Extron, Canara, Gepco, West Penn Wire, Commscope | |
| | | |

| acts, | Mylar/ | Aluminum | Shielding |
|-------|--------|----------|-----------|
|-------|--------|----------|-----------|

ner, Liberty, Westpenn, or equivalent. lar/Aluminum Shielding

Kramer, Liberty, Westpenn, or equivalent.
f conductors, pairs and/or shield depending on specific control

nn Wire, Commscope, Tappan. ed to PHSD for approval prior to use.

sion connector

are, ADC, Cambridge n connector

are, ADC, Cambridge

are, ADC, Cambridge

lated from panel.

lated from panel, shell finish to match adjacent surfaces.

insulated from panel, shell finish to match adjacent surfaces.

ers) for floor boxes (non-recessed). to female. Shield shall be insulated from panel.

nale to female. Shield shall be insulated from panel.

8 contacts, Latch hook Retention of RJ45 plugs, Tool-less Metallic.

Connectors: Max cable jacket OD 0.260", solid conductors only. Use Copper Foil Strip with conductive adhesive (Platinum 2039 or similar).

d mono audio or unbalanced 2 channel audio.

ocks are not acceptable. All materials located in plenum spaces must

s the rack enclosure. on the Drawings. of each group of racks. rear door.

properly dissipate heat.

nduit as necessary to provide a complete pathway. product to the initially installed pathway rfaces. If a in-wall pathway is not practical surface raceway must be be Wiremold V2400 Series. Use of compatible parts is required for a

- Part 3. EXECUTION 8. Only one cable or set of wires shall be installed into any single connector; do not loop cable in and out of a connector. Provide a terminal block to parallel any audio signal wiring. INSTALLATION 9. Dual channel audio circuits using 5 pin XLR type connectors shall be made using a dual twisted pair type cable (Canare A. General 1 All equipment and enclosures described in this specification shall be installed plumb and square unless specifically Star Quad Proco Ameriquad or equivalent) 10.If multiple connection types are available on a given piece of equipment, the screw terminal type (including phoenix type) user via the user interface. detailed otherwise shall be used as first choice, with XLR connections used as second choice, and other connectors as last choice. 2. All equipment, except that designated as movable, portable or loose equipment, shall be secured and permanently attached to racks or structure in a manner which will require the use of a tool (e.g., screw driver, nut driver, etc.) for 11. Maintain proper polarity when wiring components and loudspeakers. settings/levels on startup or remain as last left. 12. Provide vertically mounted 1/2 inch, painted plywood or 1/8-inch-thick blank panels for mounting terminal strips. Do not a. Program audio (i.e. audio from AV sources such as a laptop, PC, DVD, etc.) shall be controlled from a single set of removal. 3. All supports shall meet or exceed the load requirements of the intended application with a minimum safety factor of five. mount terminal strips on the bottom of racks 13. Use only cable end connectors designed for the intended coaxial cable required. Apply connector with a crimp die certified 4. Support hardware shall have SAE Grade 5 or 8 load rating (min.). 5. All equipment mounted overhead that has a composite weight, including mounting hardware and brackets, of forty pounds to be used with the intended coaxial cable and BNC. Connectors and feed throughs must also strictly maintain the cable the muted state. or more shall be mounted using plans and specifications approved by a licensed structural engineer. All fees and expenses b. Speech audio (i.e. locally reinforced speech) shall have a single set of controls including "Up", "Down", and "Mute." An impedence related to structural approval shall be paid by the Integrator 14.For HD-SDI, do not use any connectors or feed-throughs not specifically rated through 3gHz digital bit rate. indication should be provided for the current level. B. Control System/ DSP Design 15. Bi-directional serial terminations shall always be assumed to be at minimum 5-wire in the absence of approved information E. Process 1. The Integrator shall install the control system/DSP design versions selected by PHSD for all programmable or configurable 1. Prior to creating any custom code, the Integrator shall meet with the Owner to review graphic user interface (GUI) which indicates otherwise QUALITY CONTROL AND INSTALLATION VERIFICATION requirements. Best practices as defined by the Infocomm "Dashboard for AV Controls" shall be adhered to. devices. 2. The Integrator shall be responsible for up to two additional control system/DSP design changes per device until project A. All AV systems that are a part of this project shall be completely installed and functional. closeout B. The Integrator's Project Manager or a senior technician who is familiar with the system shall demonstrate the complete 3. Integrator shall notify PHSD prior to any change of control system/DSP design in any programmable or configurable device functionality of each AV system to PHSD. until the Integrator is released from all installation and warranty responsibilities. C. PHSD will create a punch list of deficiencies that must be corrected by the Integrator prior to Final Project Verification. C. Equipment Racks, Conduit, and Raceways D. Items added to the punch list during this verification will not be re-verified or removed from the punch list during this 1. Electrical power distribution verification. implement changes to the user interface and/or control programming. a. Provide labels on receptacles within AV racks indicating branch panel and circuit number. SYSTEM TUNING AND COMMISSIONING Warrantv b. See the Drawings for details of power raceway entering and mounting inside rack. A. Final systems quality and performance, testing, calibrating, programming and overall commissioning shall be performed by 2. Provide a full height, technical ground bus bar in each equipment rack, mount adjacent to the power raceway and the installer prior to the owner training. Installer shall furnish all labor, instruments, equipment, temporary power, and electrically bond to rack. materials necessary to perform the system tests outline below at no additional cost. The system shall be fully tested and 3. Install rack mounted equipment as indicated on the approved AV shop drawings, and make connections within the racks operational before final inspection by the Owner. before delivery to job site. B. Test that all circuits and wiring are free of shorts and grounds and that all wiring has been terminated in the proper polarity, the end of the project. 4. Provide insulated connections between the building electrical raceway and the equipment racks. including loudspeakers, microphone and line input plates. G. Qualifications 5. Provide insulated connections between the AV raceway and the equipment racks. C. Microphone inputs shall be moderately compressed in the DSP to minimize level variation and equalized for both good 6. Where any cable is not within a finished wall or ceiling, it must be installed in EMT conduit, unless otherwise noted. fidelity and gain before feedback. credentials Integrator shall complete conduit as necessary to provide a complete pathway. D. Measure the acoustic performance of the sound system with a TEF, SMAART or an equivalent high-resolution system. 8. Provide EMT stubs, with insulated bushings to protect cable, into the above ceiling area for routing cable into the Parametric equalization shall be performed to obtain the most uniform response possible over the listening area. services equipment racks. E. Output limiters shall be set in the DSP to minimize the chance of accidental damage to the speakers and to prevent levels a. Indicate whether individual(s) is/are employees or subcontractors of the AV Integrator. 9. Do not exceed 40% conduit fill. b. Provide a list of three to five recent projects of similar size and scope programmed by the individual listed. Include that would cause amplifier clipping D. Labeling F. Normal operating levels shall be set in conjunction with the Owner to insure acceptable levels are achieved and that references. 1. General excessive levels are not possible. a. Handwritten labels are not acceptable. G. Post equalization/preset/routing DSP settings should be saved to a removable media and should be kept on file for use in b. Do not indicate the Integrator's name on movable, portable or loose equipment, touch panels, cables, or wall plates. the event of DSP failure. This file shall be transmitted to the Owner as part of the close-out document c. Integrator's name may be displayed on rack panel only as shown on the drawings. H. The Sound System Installer shall confirm the system gain structure is set properly, allowing for normal use level program to d. Label type, text and graphics shall be approved by PHSD before fabrication of labeling, plates or other labeled items. occur without system components clipping or overloading. No audible hiss, buzz or hum shall be present. e. All labels shall be legible. I. Confirm all other sources and systems are setup, adjusted and functioning properly including but not limited to DSP and 2. Provide permanent, self-adhesive labels on the back of rack mounted equipment. Remote control panel programming, Assisted Listening Systems, intercom systems and recording systems. a. Indicate system designation/functionality. CONTRACT CLOSEOUT b. Text shall be identical to equipment front panels A. Contract Closeout will be based on completion of Final Project Verification, completion of punch list items, acceptance of c. Indicate IP address for all networked equipment located in secured racks or locations. Project Record Documents and Completion of training. 3. Provide permanent label on plug end of power cords of all rack mounted equipment identifying the power cord with the B. The integrator must provide the following Project Record Documents as part of contract close out equipment. Red line drawings that note any deviation or change from initially designed project. 4. Provide labels for front panel input and output buttons of AV routers, switches, mixers, etc. 2 Acoustic measurement documentation 5. Provide text/graphics engraved directly on receptacle plates, panels, and rack panels 3. Digital Project Files including DSP settings, control system code and all other required files outlined in this document. a. Use eighth inch letters with contrasting fill color. APPENDIX A - DEMARCATION LIST b. Label all plate mounted connectors and receptacles as shown on approved shop drawings A. General: This Appendix Describes demarcation points in the Work to determine where the Integrator's responsibilities end in c. Label plates with plate designation shown on approved shop drawings the specific instances noted below 7. For all installed wiring provide permanent labels using wire numbers or designation as shown on approved shop drawings. B. Electrical System Connections: The Integrator shall coordinate with PHSD to extend the AV AC power circuits and insulated a. Wire labels shall be one of the following types ground wires into each equipment rack. 1) Self-adhesive label under clear heat shrink, C. Cabling: All audio, video and control cabling shall be provided, installed and terminated by the Integrator as noted on the 2) Direct printed heat shrink Integrator's Construction documents. Voice/data cabling, unless specifically noted otherwise, are the responsibility of others. 3) Direct printed, self-adhesive, self-laminating D. Cable Termination: Where cable installation is required, this will include wall and/or floor jacks, plates and terminations at b. Position labels as shown in wiring standard details on the Drawings. room devices, and service loops at patch bay locations. c. Provide wire labels on both ends of cable E. Projector and Monitor Mounts: The Integrator shall install all projectors and monitor mounts as indicated on the approved E. Wiring shop drawings. Integrator shall verify location and structural suitability before attaching projectors, monitors and mounts.
- 1. Do not make any in line cable splices unless specifically noted.
- 2. Use only cable pulling lubricants approved by the cable manufacturer.
- 3. Provide grommets or chase nipples at cable entry where conduit is not installed.
- 4. Provide cable anchors for any cable or cable bundle larger than 1-inch diameter, permanently installed and not in conduit.
- Do not use sticky back cable anchors. 5. Provide a service loop for each cable that connects to equipment in racks or AV furniture. Service loop length shall be
- sufficient to allow one re-termination without removing cable ties.
- 6. All cables connecting to a movable lectern, cart, or desk or lectern shall be highly flexible cable, specifically designed by the manufacturer to be flexed repeatedly. Permanent install type cable is not acceptable for this application
- 7. All cable bundles of more than one cable connecting to a movable lectern, cart, or desk or lectern shall be enclosed in a flexible braided sleeve and be of the minimum length extending from the furniture edge as noted on the Drawings.
- 8. The Integrator shall take precautions to ensure that cabling is not kinked, compressed or otherwise damaged such that performance is compromised
- 9. Bend radius shall not be less than recommended by the cable manufacturer.
- 10.Do not exceed the maximum permissible pulling tension. Consult the cable manufacturer for exact data.
- 11. Use soft Velcro based cable ties located at random distances apart for installation of specialty cable such as HD-SDI. Category cable, fiber, etc.
- -. Service and segregation of installed cables
- 1. Standard cable segregation similar signal types or signal levels may be grouped together as approved by PHSD. a. Microphone: below -30 dBu
- b Line: -30 dBu to +24 dBu
- c. Loudspeaker: Greater than +24 dBu
- d. Video: 1-volt peak-peak into 75 Ohms
- e. Control Circuits: 0-28 Volt into <50k Ohms and Data: 2 Volt peak-peak into 100 Ohms

f. Fiber

- G. Terminations
- 1. Use crimping tools recommended by the termination manufacturer. Use ratcheting crimp tools for spade lugs and Molex
- 2. Provide insulated spade lugs for screw terminals, two lugs per terminal maximum.
- 3. Use properly sized spade lugs for cable gauge and screw size.
- 4. Conductors in phoenix type connectors shall not be tinned.
- Terminate conductors with proper mating connectors
- 6. Wire Nuts are not acceptable
- 7. Audio shield/drain wires shall not be connected to the connector body at any time.

- F. AV Control System Connections and Devices: Integrator shall set up control system equipment with IP Addresses and
- proprietary control network addresses, install all necessary hardware cards, and adjust all appropriate DIP switch settings, and any other equipment settings such as baud rate and protocol settings. Integrator shall include all of this information in Project Record Documents APPENDIX B - CONTROL SYSTEM REQUIREMENTS
- A. General
- 1. Control system touch panels or button panels shall be programmed by the AV Integrator. This section shall describe the typical control programming requirements.
- All requirements herein shall be verified and approved by the Owner prior to commencement of programming.
- 3. All requirements herein are minimum requirements, full and specific functionality shall be coordinated with Owner through the integration process.
- 4. User interfaces should be task driven, and should use graphics that rely on shape and text changes in addition to color changes to be usable for the widest audience
- B. Submittals
- 1. The Integrator shall include a schedule of milestones for software programming in the Project Plan submittal.
- 2. A document describing proposed user interfaces for each system shall be submitted per the approved Project Plan. The submittal shall include:
- a. A user interface overview describing the proposed structure and layout including engraving for keypad controls
- b. Annotated screen shots of all proposed touch panel user interface pages

- a. System and device power control as possible b. Basic source selection of all sources with associated device controls
- c. Advanced routing for cameras, press feeds, technician preview monitors, etc.
- D. Functional Requirements
 - 1. Power control of a system is device and system dependent. As a standard when the system is turned on, the command to turn on all system devices shall be given. All devices should be ready for the user once the system is started. Some devices have dedicated "On' and "Off commands while some devices toggle On/Off using the same command. Minimize the possibility of system start error-due to premature user button presses-by initiating a lockout-wherever possible-until the system is fully started. On system shutdown, all controlled devices, with the exception of the control system processor, shall be powered off or put in a standby state. Power sequencing shall be as per approved shop drawings.
- c. A description of proposed system startup and shutdown behaviors and options
- d. A description of proposed source selection and device control behaviors
- e. A description of proposed presentation tools and options
- C. User Interface
- 1. Touch Panels

2. Projectors - The projector's input is generally an automatic selection through code as part of the system startup and/ or source selection. User level controls shall be "On", "Off', and "Blank" (Picture Mute). Note: Most projectors have a cool-down period on shutdown that is required to protect lamp life. Code shall prevent the projector from being turned back on until the cool-down period has been satisfied, and this prevention of normal user control shall be communicated to the

3. All audio outputs shall be muted on system shutdown. The Owner shall determine whether audio levels are reset to default

controls including "Up", "Down", and "Mute." An indication should be provided for the current level. It is recomm that the "Mute" button clearly indicate sound waves for the unmuted state and the use the international symbol for "no' for

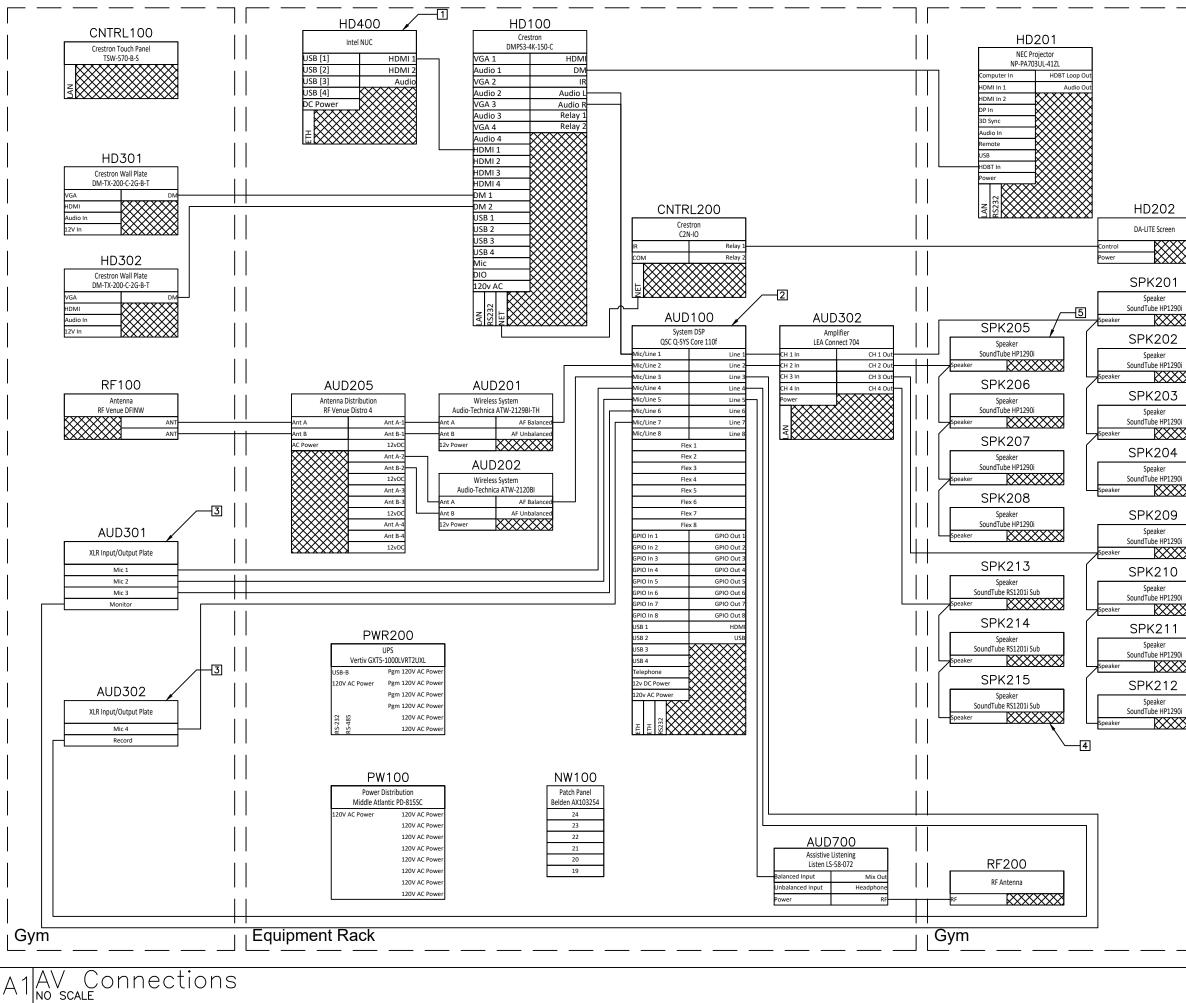
2. The Integrator shall demonstrate full systems programming to PHSD during Full Project Verification. This code shall incorporate any changes directed by PHSD during staging. The Integrator shall provide changes to the user interface and/or control programming beyond that described by the approved GUI, based on direction provided during verification. 3. Within 30 days after final acceptance of programming the Owner shall provide to the AV Integrator in writing any requested software changes. Within 30 days of receipt of the request, the AV Integrator shall provide one additional site visit to

Upon successful completion of these services, the AV Integrator shall provide an electronic copy of all software specific to this project to the Owner along with a nontransferable license to all software for the Owner's use solely in connection with the maintenance and modification of these systems. All copies of the software shall remain in control of the Owner. Warranties relating to the software will apply only to the original, unmodified software, as provided by the AV Integrator at

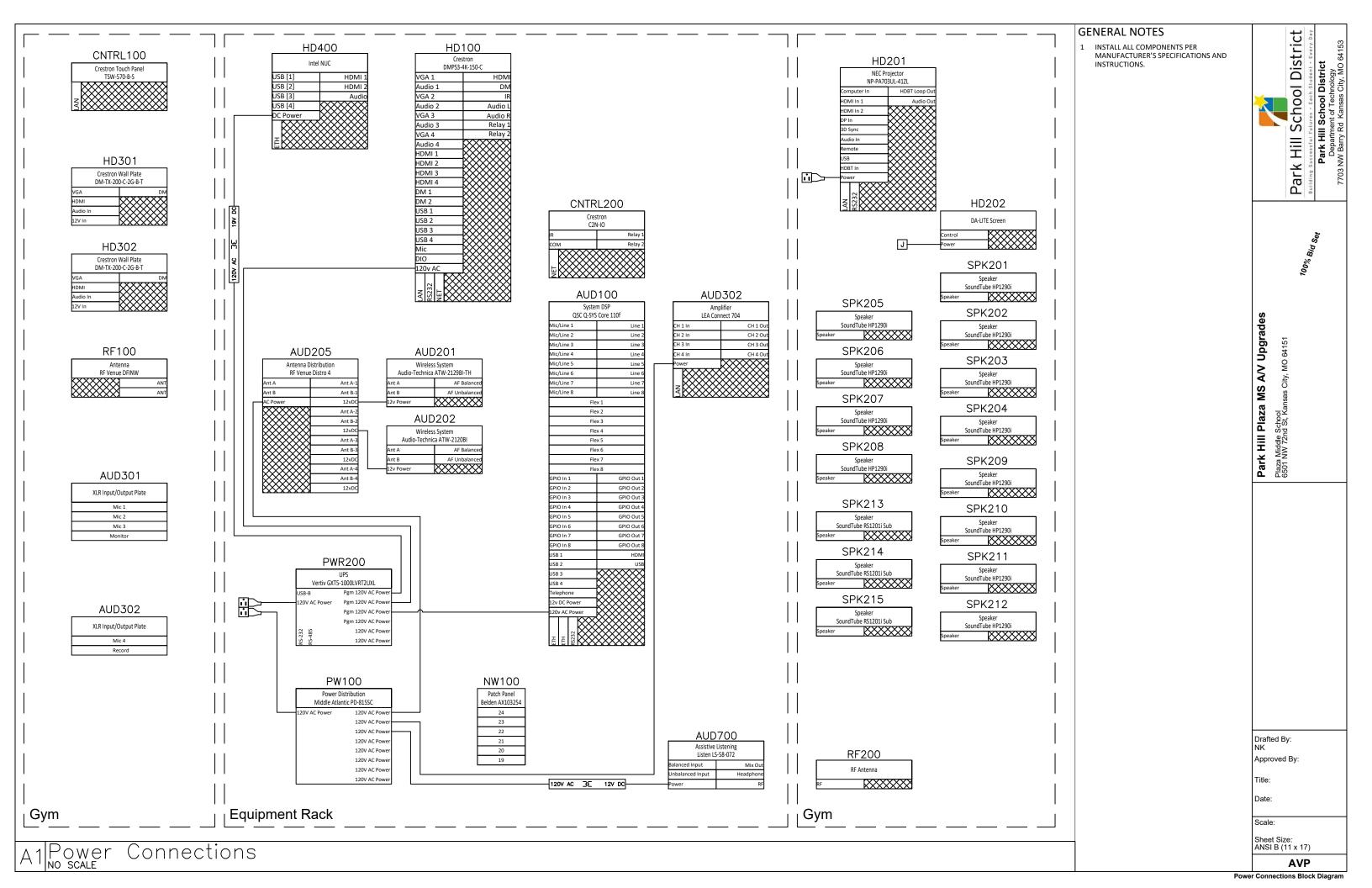
1. The individual responsible for programming the systems shall be a Crestron Certified Programmer with current certification

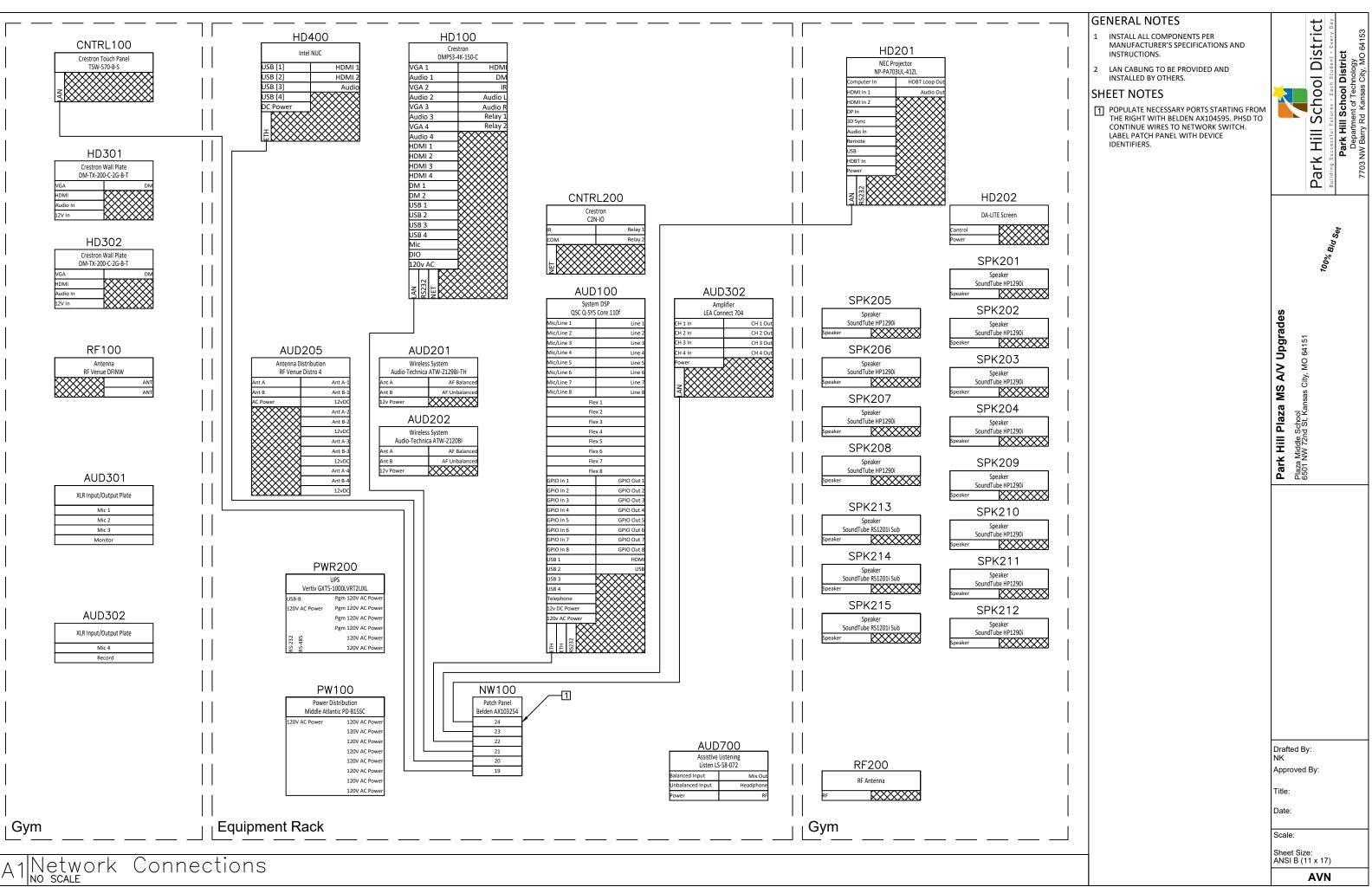
2. The Integrator shall include with the bid the resume(s) for the individual(s) that will be providing custom programming

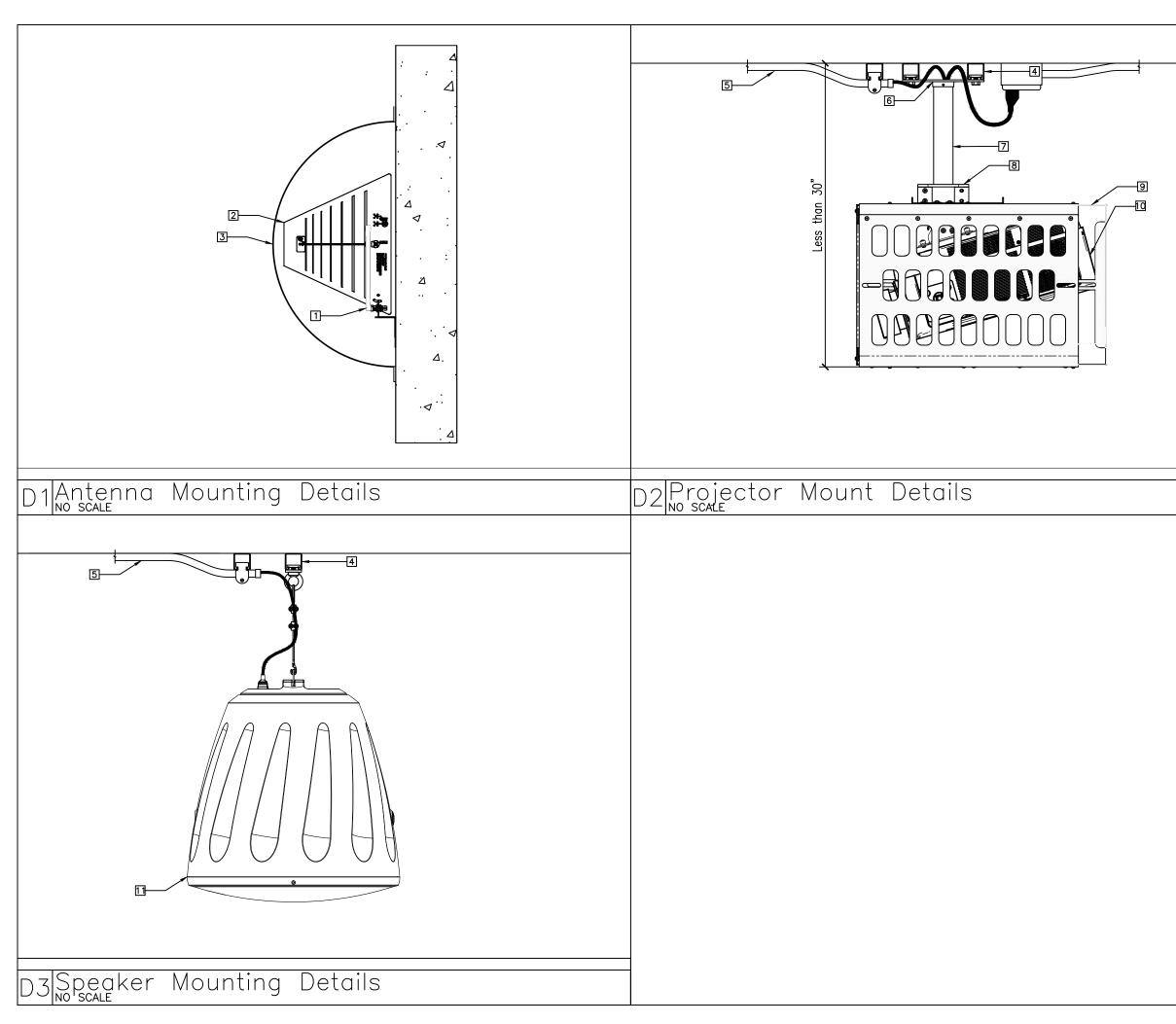
| Park Hill School District Park Hill School District Park Hill School District Park Hill School District Department of Technology 7703 NW Barry Rd Kansas City, MO 64153 | | | | |
|--|--|--|--|--|
| Park Hill Plaza MS A/V Upgrades Plaza Middle School 6501 NW 72nd St, Kansas City, MO 64151 ^{100% Big} Set | | | | |
| Park Hill Pla Plaza Middle Scho 6501 NW 72nd St | | | | |
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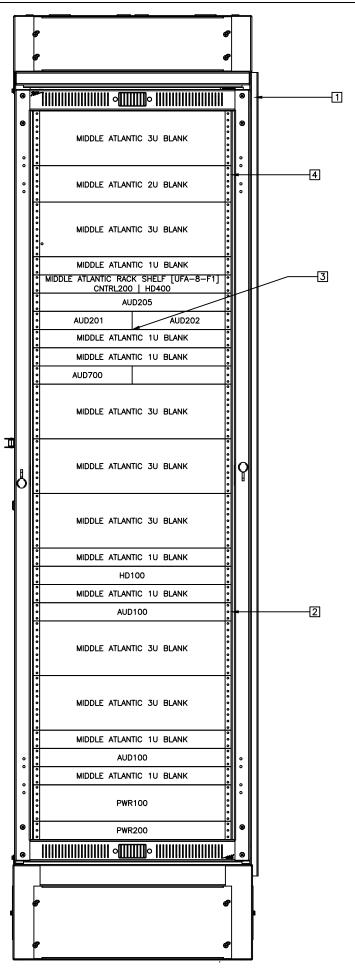
| | GENERAL NOTES | |
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| 1 | 1 INSTALL ALL COMPONENTS PER MANUFACTURER'S SPECIFICATIONS AND INSTRUCTIONS. | Stri • • • • • • • • • • • • • • • • • • • |
| | SHEET NOTES | Di Di Stric V, MO |
| | HD400 WILL BE OWNER PROVIDED. CONTRACTOR WILL INSTALL. | OOI Di Lechnor Isach St |
| | PROGRAMMING FOR AUD100 WILL INCLUDE THE USE OF A PRIORITY DUCKER FOR THE FUTURE INTEGRATION OF AN INTERCOM SYSTEM. | ark Hill School Distric Park Hill School Distric Park Hill School District Department of Technology 7703 NW Barry Rd Kansas City, MO 64153 |
| | STAINLESS STEEL OR CLEAR ANODIZED ALUMINUM WALL PLATE WITH NO MORE THAN FOUR PANEL MOUNT XLR CONNECTORS PER PLATE. | |
| | 4 SET SOUNDTUBE RS1201I TAP TO 70V 138W | D Buil |
| | 5 SET SOUNDTUBE HP1290I TAP TO 70V 150W | |
| | | 100% Bid Set |
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| | A | AV / Connections Block Diagram |
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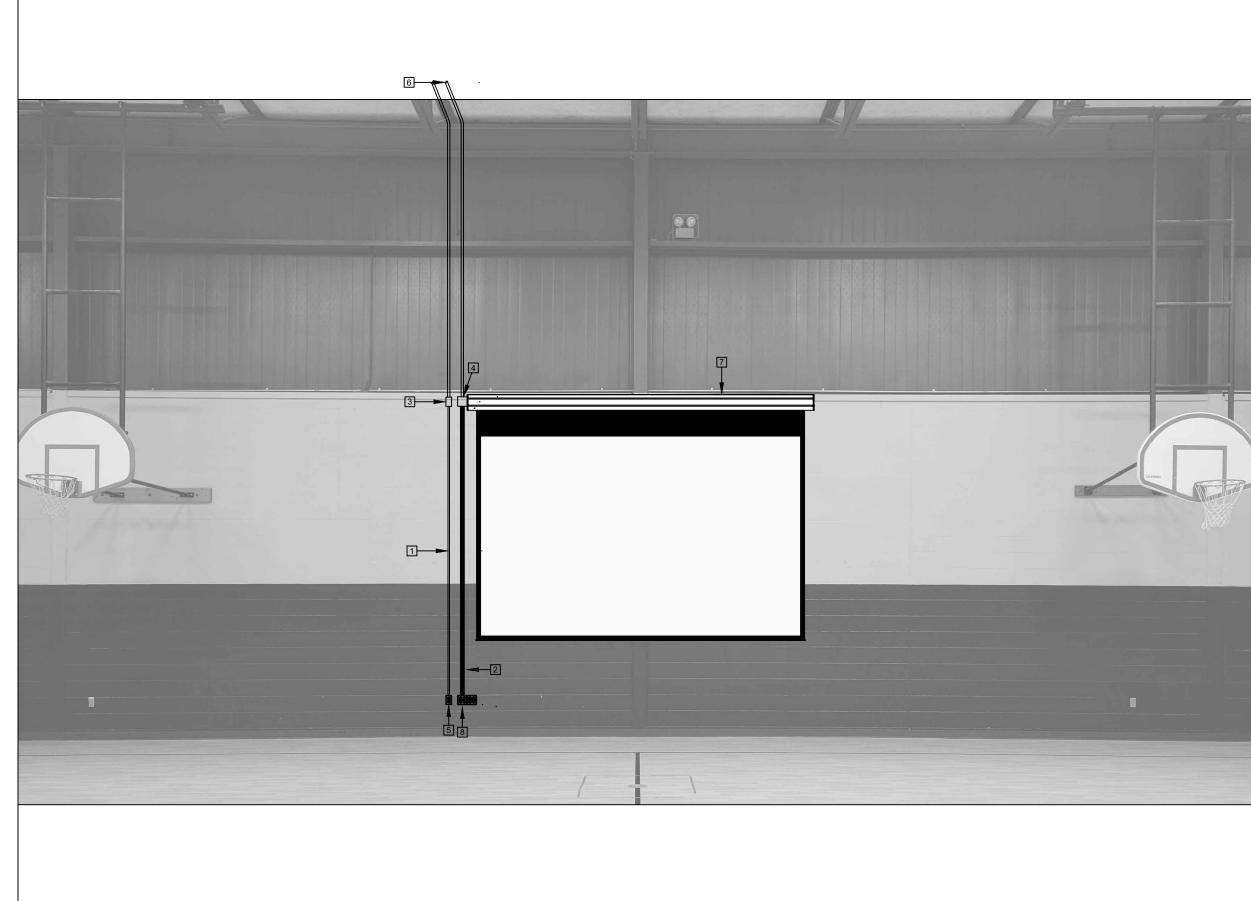
| | NERAL NOTES | 3 Ct |
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| 1 | INSTALL ALL COMPONENTS PER MANUFACTURER'S SPECIFICATIONS AND INSTRUCTIONS. | istric to 64153 |
| 2 | THE SWL OF ANY ONE COMPONENT OR FITTING MUST NOT BE LESS THAN 15% GREATER THAN THE WEIGHT OF THE TOTAL EQUIPMENT BEING SUPPORTED. | School Dist utures - Each Student - E nent of Technology Rd Kansas City, MO 6 |
| 3 | THESE DRAWINGS MUST NOT REPLACE A STRUCTURAL ENGINEER. THESE DRAWINGS ARE SOLELY FOR THE PURPOSE OF DEPICTING THE MINIMUM EXPECTATION OF INSTALLATION TO PHSD. | Hill ark Hi Departr V Barry |
| SH | EET NOTES | |
| 1 | LISTEN TECHNOLOGIES LA-123 90° HELICAL ANTENNA (72MHZ). INSTALL USING SHURE UA505 MOUNTING BRACKET AND BNC ADAPTER FOR REMOTE ANTENNA MOUNTING. | Pa Inited |
| 2 | RF VENUE DFINW DIVERSITY FIN™ ANTENNA, INSTALL MODEL. INSTALL USING THE INCLUDED L-BRACKET WALL-MOUNT KIT | ia S _{et} |
| 3 | CALIFORNIA QUALITY PLASTICS HEMI24 24" CLEAR ACRYLIC HEMISPHERE INSTALLED PROTECT BOTH ANTENNAS. | 100% B _i |
| 4 | 1-5/8 X 1-5/8 X 14 GA STEEL CHANNEL (STRUT) BETWEEN STRUCTURAL MEMBERS. USE APPROPRIATE STRUT HARDWARE. | ø |
| 5 | THE CONTRACTOR SHALL EXTEND THE CONDUIT FROM ITS CURRENT LOCATION TO EACH DEVICE. THE CONDUIT SHALL BE INSTALLED IN A SIMILAR FASHION AS ANY PREVIOUS CONDUIT WAS INSTALLED. THE CONDUIT SHALL END NO MORE THAN 8" FROM THE RIG POINT. | MS A/V Upgrades sas City, MO 64151 |
| 6 | LEGRAND AV CHIEF CMA110 8" (203 MM) CEILING PLATE, WHITE FOR ATTACHMENT OF COLUMN TO STRUCTURE. | a MS / ansas Cit |
| 7 | LEGRAND AV CHIEF CMS SPEED-CONNECT FIXED EXTENSION COLUMN SERIES, WHITE. LENGTH TO BE DETERMINED AS NECESSARY TO ACHIEVE THE DESIRED DISTANCE ABOVE FINISHED FLOOR. | Park Hill Plaza MS A/V Upgr Plaza Middle School 6501 NW 72nd St, Kansas City, MO 64151 |
| 8 | LEGRAND AV CHIEF RPA285W CUSTOM RPA PROJECTOR MOUNT (WHITE) AND ADJUST AS NECESSARY TO ALIGN PROJECTOR WITH SCREEN. | Park 6501 h |
| 9 | LEGRAND AV CHIEF PG4AW LARGE VENUE PROJECTOR GUARD, WHITE AND ADJUST AS NECESSARY TO FIT PROJECTOR. | |
| ta | HD201 AS REFERENCED ON SHEET AV. | |
| 11 | PENDANT MOUNT SPEAKER AS SPECIFIED ON SHEET AV. | |
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| | | AVD1 Audio/Visual Details |



D1 LC, RN Eqpmt Rack Elevation Details

| GENERAL NOTES I INSTALLAL COMPONENTS PER INSTALLED ACCOMPONENTS PER INSTALLED AND ONE (ADDITIONAL) DAVIO MIDDLE ATLANTIC LACE-40-OWE HACE STRIPS INSTALLED AND ONE (ADDITIONAL) DWR-RRAD RACK RALI PAR INSTALLED. ARIONTO PACA WILL BE SECURED WITH A MIDDLE ATLANTIC PEP-40 PLEXI FRONT DOOR INSTALLED AS REQUIRED. IMDULE ATLANTIC LBP SERIES HORIZONTAL LACEA BARS SHALL BE PROVIDED AND INSTALLED AS REQUIRED. IMDULE ATLANTIC PEP-40 PLEXI FROM D DOOR INSTALLED ON REAR RACK RAILS September 2000 VIEW COMPONENTS PER INSTALLED AS REQUIRED. IMDULE ATLANTIC LBP SERIES HORIZONTAL LACEA BARS SHALL BE PROVIDED AND INSTALLED AS REQUIRED. IMDULE ATLANTIC PEP-40 PLEXI FROM D DOOR INSTALLED ON REAR RACK RAILS FOR DOON VIEW COMPONENTS INSTALLED AS REQUIRED. IMDULE ATLANTIC PEP-40 PLEXI FROM D DOOR INSTALLED ON REAR RACK RAILS FOR DOON VIEW COMPONENTS INSTALLED AS REQUIRED. IMDULE ATLANTIC PEP-40 PLEXI FROM D DOOR INSTALLED ON REAR RACK RAILS FOR DOON VIEW COMPONENTS FOR DOOR V | | | |
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| REQUIRED FOR INSTALLATION. NW100 TO BE INSTALLED ON REAR RACK RAILS NW100 TO BE INSTALLED ON REAR RACK RAILS Separation | GE | ENERAL NOTES | Day |
| REQUIRED FOR INSTALLATION. NW100 TO BE INSTALLED ON REAR RACK RAILS NW100 TO BE INSTALLED ON REAR RACK RAILS Separation | 1 | MANUFACTURER'S SPECIFICATIONS AND | listric ict |
| REQUIRED FOR INSTALLATION. NW100 TO BE INSTALLED ON REAR RACK RAILS NW100 TO BE INSTALLED ON REAR RACK RAILS Separation | SH | IEET NOTES | Distr Distr Distr |
| REQUIRED FOR INSTALLATION. NW100 TO BE INSTALLED ON REAR RACK RAILS NW100 TO BE INSTALLED ON REAR RACK RAILS Separation | | ENCLOSURE WITH TWO MIDDLE ATLANTIC LACE-40-OWP LACE STRIPS INSTALLED AND ONE (ADDITIONAL) DWR-RR40 RACK RAIL PAIR INSTALLED. FRONT OF RACK WILL BE SECURED WITH A MIDDLE ATLANTIC PFD-40 PLEXI | ark Hill School Distric Park Hill School Distric Dark Hill School District Department of Technology Department of Technol |
| REQUIRED FOR INSTALLATION. NW100 TO BE INSTALLED ON REAR RACK RAILS NW100 TO BE INSTALLED ON REAR RACK RAILS Separation | 2 | LACER BARS SHALL BE PROVIDED AND | |
| Drated By: Plazer MS AV Upgrades Plazer MS AV Upgrades | 3 | | |
| Drafted BS: Plaze Middle School Bark Hill Plaze MS AV Upgrades Drafted BS: NK Plaze Middle School Bark Kanses City, MO 64151 Plaze MS: NK | 4 | NW100 TO BE INSTALLED ON REAR RACK RAILS | 5 |
| Drafted BS: Plaze Middle School Bark Hill Plaze MS AV Upgrades Drafted BS: NK Plaze Middle School Bark Kanses City, MO 64151 Plaze MS: NK | | | 100% Bid S. |
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| AVD2 | |
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| Audio/Visual | Details |



D1 East Wall Elevation

| | 1 | INSTALL ALL COMPONENTS PER MANUFACTURER'S SPECIFICATIONS AND INSTRUCTIONS. |
|---|----|--|
| | 2 | ELECTRICAL WORK TO BE PERFORMED BY LICENSED ELECTRICIAN. LABEL FACEPLATES FOR EACH RECEPTACLE WITH PANEL AND CIRCUIT. |
| | SH | EET NOTES |
| | 1 | WIREMOLD V700 SERIES RACEWAY AND FITTINGS. |
| | 2 | WIREMOLD V2400 SERIES RACEWAY AND FITTINGS. |
| | 3 | PROVIDE POWER TO SCREEN ON DEDICATED CIRCUIT AS SHOWN ON SHEET PLFP. LOCATE A WIREMOLD V700 SERIES JUNCTION BOX AT THE END OF THE SCREEN HOUSING. CONTINUE POWER TO RECEPTACLE BELOW. |
| | 4 | USE WIREMOLD V2444-2 EXTRA DEEP DEVICE BOX TO TRANSITION FROM V2400 SERIES RACEWAY TO 1" EMT CONDUIT. INSTALL WITH COLOR MATCHING BLANK COVER. |
| | 5 | PROVIDE POWER RECEPTACLE TIED TO NEW CIRCUIT ABOVE. |
| T | 6 | CONTINUE CONDUIT TO NEAREST ACCESSIBLE CEILING. |
| A Charles and a | 7 | INSTALL DA-LITE COSMOPOLITAN SERIES 70279L, 16:10, 100"X160" (189" DIAGONAL), MATTE WHITE, 120V (60HZ), WITH LVC AT THE TOP OF THE BLOCK WALL. PROVIDE EXTRA DROP TO ALLOW FOR BOTTOM OF THE SCREEN IMAGE TO REACH 48" AFF. |
| | 8 | INSTALL CRESTRON DM-TX-200-C-2G-B-T WALL PLATE [HD301] AND XLR INPUT/OUTPUT WALLPLATE [AUD301]. |
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GENERAL NOTES

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| T | Park Hill Plaza MS A/V Upgrades | | |
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D1 West Wall Elevation

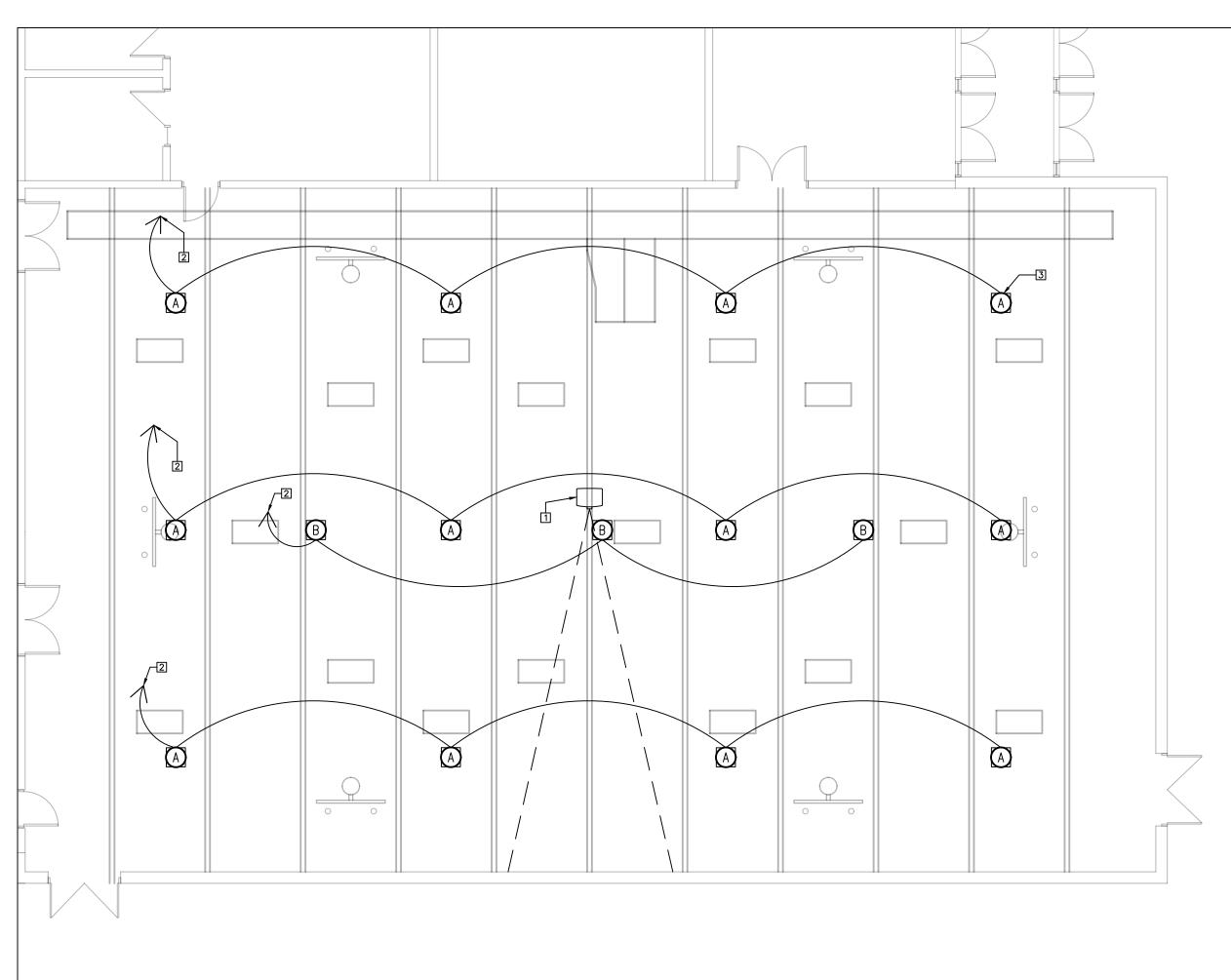
General Notes

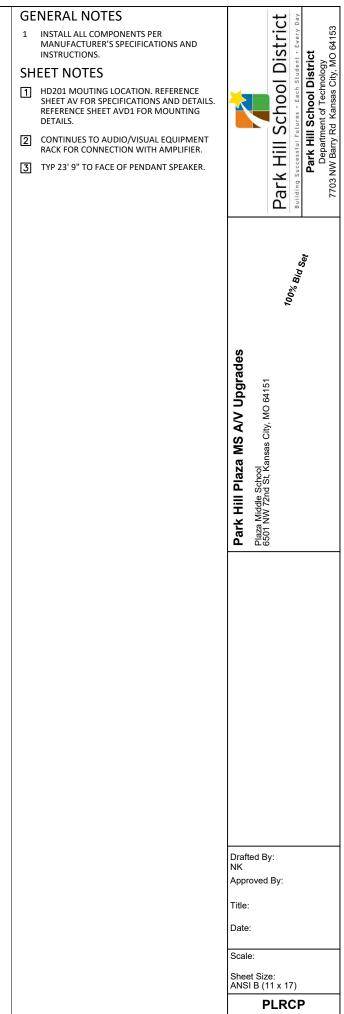
1 INSTALL ALL COMPONENTS PER MANUFACTURER'S SPECIFICATIONS AND INSTRUCTIONS.

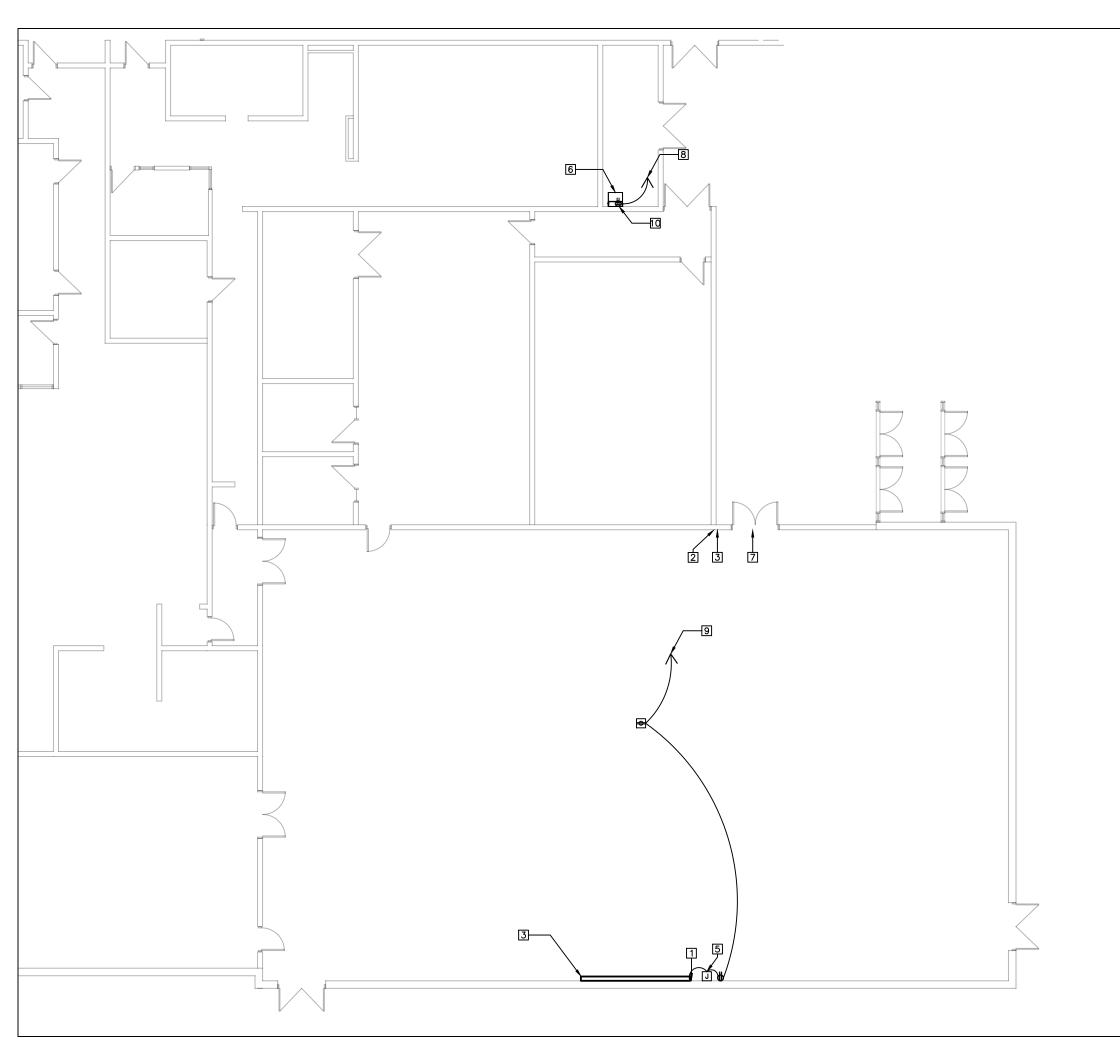
Sheet Notes

- INSTALL CRESTRON TSW-570-B-S TOUCH PANEL [CNTRL100] IN FSR WB-PR3G WINDOWED COVER ABOVE EXISTING RECEPTACLE, COORDINATE EXACT MOUNTING HEIGHT AND LOCATION WITH THE OWNER. MAKE A REASONABLE EFFORT TO CUT IN AND INSTALL FLUSH INTO THE BLOCK BEFORE USING SURFACE MOUNT BOX.
- 2 INSTALL CRESTRON DM-TX-200-C-2G-B-T WALL PLATE [HD301] AND XLR INPUT/OUTPUT WALLPLATE [AUD301] AT THE SAME HEIGHT AND NEAR THE EXISTING RECEPTACLE. MAKE A REASONABLE EFFORT TO CUT IN AND INSTALL FLUSH INTO THE BLOCK BEFORE USING SURFACE MOUNT BOX.









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| GE 1 | NERAL NOTES INSTALL ALL COMPONENTS PER | rict |
| | MANUFACTURER'S SPECIFICATIONS AND INSTRUCTIONS. | ict NO 641 |
| SH | EET NOTES | ol D stude Distr City, h |
| 1 | HD301 & AUD301 INSTALLED AT ROOM OUTLET HEIGHT. | |
| 2 | HD302 & AUD302 INSTALLED AT ROOM OUTLET HEIGHT. | Hill School Dist ark Hill School Dist ark Hill School District Department of Technology V Barry Rd Kansas City, MO 6- |
| 3 | HD202 MOUNTING LOCATION. REFERENCE SHEET AV FOR SPECIFICATIONS AND DETAILS. REFERENCE SHEET AVD3 FOR MOUNTING DETAILS. | |
| 4 | CNTRL100 MOUNTING LOCATION. REF SHEET AVD 4 FOR PLACEMENT. | Park Building Suc P |
| 5 | INSTALL POWER RECEPTACLES AND TIE IN POWER TO PROJECTOR SCREEN FROM EXISTING LOCAL CIRCUITRY. REF SHEET AVD3. | |
| 6 | AUDIO/VISUAL RACK. REFERENCE SHEET AVD2 FOR OWNER SPECIFICATIONS AND INSTALLATION DETAILS. | 100% Bia Set |
| 7 | RF100 & RF200. CONSULT OWNER REGARDING HEIGHT AND EXACT PLACEMENT. | 100% |
| 8 | NEW CIRCUIT #1. FED FROM ELECTRICAL PANEL NL2. | |
| 9 | NEW CIRCUIT #2. FED FROM ELECTRICAL PANEL NL2. | ades |
| 10 | FOURPLEX RECEPTACLE INSTALLED IN BACKPAN OF AV RACK. | Park Hill Plaza MS A/V Upgrades Plaza Middle School 6501 NW 72nd St, Kansas City, MO 64151 |
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Plaza Middle School Floor Plan