USD 320-Phase 1-Bid Package 3- 2017 Summer Work

Addendum 5

Issue Date: 4-18-17

Architect: BBN Architects Inc.

MEP: Orazem & Scalora Engineering, P.A.

Construction Manager: Coonrod & Associates Construction Co., Inc.

Owner: USD 320 Wamego

The attached documents and / or items below shall hereby become part of the Construction Documents for the referenced project above.

Architectural Plans / Specifications

ADD 5-1: THE FAX NUMBER TO SUBMIT BIDS TO THE SCHOOL DISTRICT IS **785-456-1690.** The attached “Instructions to Bidders” has the corrected fax number.

ADD 5-2: Any fire extinguisher signs will need to be relocated with the fire extinguishers, as shown per plans.

MEP Plans / Specifications

ADD 5-3: ADD attached specification section 275100-AV Systems.

ADD 5-4: ADD attached plan sheets AV101 and AV102.

ADD 5-5: Sheet E101 "Stage Lighting Improvements" shall be removed from the bid package as this work will no longer be performed as part of the overall bond work.

ADD 5-6: Note #1 on detail A/E102-Intercom Riser Diagram- USD 320 Wamego Middle School Improvements shall read: "Utilizing existing 4-conductor cabling, equivalent to West Penn 355, routed from existing switches to existing classrooms for intercom speakers where available."

USD 320 Wamego Schools- Phase 1- BP 3- 2017 Summer Work

INSTRUCTIONS TO BIDDERS

Date: 4/4/2017

Construction Manager:	Brad Rice, Project Manager	Coonrod & Associates	bradr@coonrod.com	P: 316-942-8430
	Scot Wolfington, Project Lead	Coonrod & Associates		
	Jack Austin, Steve Austin- Superintendents	Coonrod & Associates		
Architect:	Dan Crouch	BBN Architects Inc.		
	Carl Riblett	BBN Architects Inc.		

	Bid Date	**Time**
USD 320 Wamego Schools- Phase 1- BP 3- 2017 Summer Work	**4/21/2017**	**2:00:00 PM, CST**

Bidding Procedures

Public bid opening

Bids can be turned in at: USD 320 District Office, 1008 8th St., Wamego, KS, 66547.

Faxed Bids are acceptable. Please send to the fax number **785-456-1690**

Emailed bids are acceptable. Please email to **nikip@coonrod.com**.

FAXED OR EMAILED BIDS MUST RECEIVE VERBAL OR EMAIL ACKNOWLEDGEMENT OF RECEIPT - CALL 316-942-8430

The owner, architect and construction manager will review the bids and determine the lowest, reponsible bidder. The owner, architect and/or the construction manager reserve the right to reject any and/or all bids.

Late bids will not be considered.

Please use bid form provided.

There is a bid scope sheet issued. Please review and bid accordingly.

Plans

www.gradebeam.com

Coonrod & Associates Main Office (3350 S. Hoover Rd., Wichita)

- Available for viewing in office only

http://www.coonrod.com/wamego/

Kansas Construction News Report- Wichita, KS

****Addenda only sent to bidders receiving plans from Gradebeam**

Bonding

Successful subcontract bidders over $100,000 require Perf. & Payment Bonds

Include the price of the bid bond and P&P bond in the bid

Sales Tax

Exempt

Alternates:

None- Unless added by Addendum.

Unit Prices:

Unit Price 1: Maintenance and repair of existing steel roof deck.

Unit Price 2: Removal and replacement of damaged steel roof deck.

Unit Price 3: Cutting and patching of concrete slabs.

Schedule

SEE CM SCHEDULE

This summer (2017) will be critical in getting material. Please review the schedule carefully.

Liquidated damages = $500 / calendar day past substantial completion of the phase.

Testing & Special Inspections

Per specific specification section requirements.

Submittals

Via Submittal Exchange

Misc. Items

1. ALL questions/RFI's pre-bid and during construction must be sent in writing. Please send to bradr@coonrod.com.
2. This is a fast paced project so all subs/suppliers are responsible for having material delivered on time and have crews ready to go per the CM's schedule. There will be no added compensation for overtime work only unless there are circumstances out of the subcontractor's/supplier's control.
   Each subcontractor is required to provide enough manpower to meet the schedule and your bid should reflect this accordingly.
   Each subcontractor / supplier is to make sure that materials can and will arrive on time per the schedule. There will be no added compensation after the bid for accelerating the delivery time.

SECTION 27 51 00 - AUDIO-VISUAL SYSTEMS

PART 1 - GENERAL

1.1 SCOPE:

A. This specification provides the requirements for the installation, programming and configuration of a complete gymnasium and commons area Audio (AV) system. The AV system shall include, but not limited to: outlet boxes, conduit (with pull strings), cable and signal distribution components, equipment racks, AV source equipment, speakers and microphones as shown on the plans, and all other equipment necessary to provide a complete and operating system.

B. The AV system shall, as a minimum, incorporate all devices shown on the plans and specified herein.

C. The AV system shall be included in Bid Alternate #2, see plans for additional bidding requirements.

D. The requirements of Section 26 01 00, Basic Electrical Requirements, apply to this work.

1.2 QUALITY ASSURANCE:

A. Equipment:

1. Equipment shall be factory assembled and tested to meet the requirements of this system.
2. All products, parts, and components shall be in new and unused condition.
3. All products, parts, and components shall be authorized and recommended for use in the system by the manufacturer.
4. All components of any single function shall be from the same manufacturer and model. (I.e. All microphones shall be the same make and model throughout the project)

B. Bidders:

1. Bids by Wholesalers, Contractors, Franchised Dealers or any firm whose principal business is not that of manufacturing or installing AV systems shall not be acceptable.
2. The bidder shall have an in-place support facility with technical staff, spare parts inventory and all necessary test and diagnostic equipment. The installer shall have a resident fully qualified service organization equipped for on-site maintenance and repair within a 100 mile radius of the site.

C. Installer:

1. The system shall be installed by competent electricians, regularly employed by the AV manufacturer with full responsibility for proper operation of the system including debugging and proper calibration of each component in the entire system.

2. Supplier and installer shall be able to refer to similar installations in the immediate area furnished and serviced by him during the past three years, providing satisfactory service.
3. Where manufacturer's warranties are required, Contractor shall be authorized by manufacturer to warrant the system.
4. Contractor and all employees working on this project shall be trained on products, installation techniques, and practices.
5. Contractors unable to comply with the provisions of Qualification of Installers shall present proof of engaging the services of a subcontractor qualified to furnish the required services.
6. Manufacturer's Representative: Provide the services of a factory trained and certified representative or technician, experienced in the installation and operation of the type of system provided. The technician shall supervise installation, software documentation, adjustment, preliminary testing, final testing and certification of the system. The technician shall provide the required instruction to the owner's personnel in the system operation and maintenance.

1.3 SUBMITTALS:

A. Shop Drawings: Submit manufacturer's literature completely describing AV system components, equipment, and accessories, and shop drawings illustrating system interconnecting wiring and connections.

1. The contractor shall include the following information in the equipment submittal:

   a. Complete wiring diagrams that illustrate the wiring requirements for each component in the proposed system.
   b. Equipment list of all proposed devices and equipment.
   c. Manufacturer's catalog data cut sheets on all equipment being provided for a fully functional system.
   d. Software and firmware as required to provide a complete functioning system.

2. Provide testing record of each system, listing name of person testing, date of test, results, and -description of as-left set points.
3. Submit product data for all products and equipment for which a distinct model and/or manufacturer has not been specified in this document.
4. Submit all calculations required herein.
5. Submit warranty documentation for the following:

   a. Terms and conditions
   b. Party responsible for fulfilling warranty

B. Instructions: Furnish Instruction Manual describing operation of AV system.

C. Documentation:

1. Software documentation including description of programmed operation.
2. Submit maintenance brochure after completion of the project. Maintenance brochure shall include operating instructions, specifications, and instruction sheets for the equipment.

3. A complete list identifying all specific deviations from the specified system components and operation.

D. See Section 26 01 00.

1.4 SYSTEM SUMMARY:

A. Gymnasium & Commons area A/V Systems

1. See Audio diagrams on plans.

PART 2 - PRODUCTS

2.1 A/V EQUIPMENT:

A. Free Standing Equipment Rack

1. Model: See Audio Equipment Schedule on plans.
2. EIA/TIA 310D.
3. UL Listed: US and Canada.
4. Construction: Fully welded.
5. Weight Capacity: 2,500 pounds.
6. Materials: Top and Bottom - 14-gauge steel, Horizontal Braces - 16-gauge steel welded to integral structural side panels of 16-gauge steel giving 1/8-inch thick structure Rear Door - steel. Finish of Structural Elements - Black textured powder coat.
7. Rackrail: Two pairs of fully adjustable, 11-gauge steel rackrail with tapped 10-32 mounting holes in universal EIA spacing. Finish: Black e-coat.
8. Top and Bottom: Vertical slotted vent pattern.
9. Removable Rear Knockout Panel:

    a. 1/2-inch, 3/4-inch, 1-inch, and 1-1/2-inch electrical knockouts installed in top and bottom.
    b. 5/8-inch BNC knockouts for UHF/VHF antennas installed in top.

10. Grounding and Bonding Stud: 1/4-20 by 1-inch threaded, installed in base, allows installation to conform to NEC.
11. Front Doors: Reinforced 16-gauge steel, large perf, 63 percent open area.
12. Vented Rear Doors: 16-gauge steel, large perf, 63 percent open area.
13. Caster Base: Standard Caster Base, Total Weight Capacity of 4 Casters - 1,300 pounds.
14. Rail Bracket Adapters: Allow for mounting of blank or other panels vertically between rackrail brackets, 44 space enclosures.
15. Document pocket.
16. Removable side panels.
17. Door latch.
18. Acceptable Manufacturers: Middle Atlantic, Lowell.

B. Portable Equipment Cabinet

1. The portable equipment cabinet shall be a Top-Load rack with a slanted top rack that allows you easy access to the controls on the mixer. The lower portion of the case

allows racking of even more equipment, such as amplifiers, equalizers, and other processing.

2. Cabinet shall feature 3 removable covers - top, front and rear, for easy access to all the gear. Cable routing is made easy by an entirely open interior of the case.
3. The Cabinet shall be a Grundorf model T2-TLR1224M with a 13 space slant top and 12 rack spaces (21") on the bottom. The rackable depth on the bottom is 23.5". The rack body depth is 24". With the front and back covers on the cabinet shall measure 33.25" deep outside.
4. The Grundorf Tour 2™ Series Top-Load Racks shall be constructed of 1/2" multi-layer plywood with a durable ABS laminate finish.
5. Cabinet edges shall be finished with double edged aluminum extrusion.
6. The lid-to-body seal is made with an interlocking aluminum tongue and groove valance system to provide a tight seal.
7. Cabinet shall have 9 rivet point recessed handles and 14 rivet point recessed catches. The handles and catches shall use a steel washer backed rivet system for greater durability.
8. Cabinet shall be black.
9. Cabinet shall include 4" caster dolly plate with brakes.

C. Utility Drawer: EIA compliant 19” rackmount drawer. Drawer shall have useable width of 15.97”, a useable surface of 14.56” and occupy 3 rackspaces. Drawer base shall be 20-gauge steel, top and sides shall be 16-gauge steel. Drawer faceplate shall be 18-gauge steel with a black powder coat finish. Drawer shall extend 14.56”. Drawer shall use full extension, ball bearing slides. Drawer shall have a 50 lb. weight capacity. Drawer shall be from the same manufacturer as the provided equipment rack.

D. Rack panel fillers: 19” wide, 16-guage steel, black powder coat finish, RoHS EU Directive 2002/95/EC compliant. Panel fillers shall be from the same manufacturer as the provided equipment rack.

E. Rack mount power strip: 15 Amp power capacity, 120 volt AC/60Hz current. Rackmount power distribution unit shall include 9' 14/3 power cord with NEMA L5-15P plug, 9 rear outlets, and 9 front outlets. Rackmount power distribution shall be available with remote notification of 2-stage surge protection. Rackmount power distribution shall be available three channels of sequencing (two outlets per channel, six total), include adjustable sequencing delays of up to six seconds, and the option of local or remote control. Rackmount power distribution unit shall occupy one rackspace and be constructed of 18-gauge phosphate pre-treated steel with a black powder coat finish. Rackmount power strip shall comply with the requirements of RoHS EU Directive 2002 / 95 / EC. Rackmount power distribution unit shall be ETL listed to UL standard 1419, UL 60950-1 and UL 60065. Acceptable manufacturers: Middle Atlantic, Lowell or approved equivalent.

F. Power Conditioner/sequencer:

1. Model: See Audio Equipment Schedule on plans.
2. Current Rating: 20 amps.
3. Input Voltage: 85 to 264 VAC.
4. Delay Intervals: Total elapsed on or off delay time adjustable from .5-10 seconds between steps. with single trimpot.
5. Remote switch: screw terminals.
6. Surge protection:

a. Protection Mode: line to neutral
b. Clamping voltage: 188 Vpk @ 3,000 amps (133 VAC RMS)
c. Response time: 1 nanosecond.
d. Maximum Surge Current: 6,500 amps.

7. Construction: steel chassis, 0.125" brushed and black anodized aluminum front panel, glass epoxy printed circuit boards.
8. Over voltage shutdown: 140 VAC High, 80 VAC Low.
9. CE, NRTL-C listed.
10. Power sequencer shall be Lowell model SEQ-4

G. Bluetooth Receiver
1. Bluetooth receiver shall be a Denon DN-200BR. Receiver shall provide a fast and easy way to add Bluetooth input to any audio system. The receiver shall provide the following features at a minimum:
a. Receives Bluetooth 2.1 stereo audio up to 100' away
b. Includes both balanced XLR and unbalanced 1/4" stereo outputs
c. Small and robust frame mounts easily to standard rack shelves
d. Designed with low signal-to-noise ratio for ultra-clear audio
e. Receiver Frequency Range 2.4 GHz
f. Range up to 100 ft.
g. Antenna type shall be fixed
h. Frequency response 20Hz-20kHz
i. Signal/Noise Ratio > 75 dB
j. Outputs - 2 x XLR, 2 x 1/4"
k. Data I/O Bluetooth 2.1
2. Provide one Bluetooth receiver for the Gym system and one Bluetooth receiver for the Commons system.
a.

H. Apple Airport

1. Provide one Apple AirPort Express for the gym system and one Apple AirPort Express for the commons system.
2. Audio output of the Apple AirPort shall connect to the program input of the audio system.
3. Apple AirPort shall provide the following features:
a. IEEE 802.11a/b/g/n
b. Simultaneous dual-band 2.4GHz and 5GHz
c. Radio output power: 20.5 dBm maximum (varies by country)
d. Channels 1-11, 36-116, and 132-165 approved for use in the United States and Canada
e. Interoperable with 802.11a, 802.11b, 802.11g, and 802.11n-enabled Mac computers, iOS devices, Apple TV, Windows-based PCs, and other Wi‑ Fi devices
f. NAT, DHCP, PPPoE, VPN Passthrough (IPSec, PPTP, and L2TP), DNS Proxy, SNMP, IPv6
g. Wi‑ Fi Protected Access™ (WPA/WPA2)2
h. WPA/WPA2 Enterprise2
i. Wireless security (WEP) configurable for 40-bit and 128-bit encryption
j. MAC address filtering

k. NAT firewall
l. 802.1X, PEAP, LEAP, TTLS, TLS, FAST
m. Time-based access control
n. Simultaneous dual-band 802.11n wireless
o. 10/100BASE-T Ethernet WAN port for connecting a DSL modem, cable modem, or Ethernet network
p. 10/100BASE-T Ethernet LAN port for connecting a computer, Ethernet hub, or networked printer
q. USB 2 port for connecting a USB printer
r. 3.5-mm audio minijack for analog or optical digital sound
s. 100-240V AC, 50-60Hz; input current: 0.2 amp
t. Operating temperature: 32° to 95° F (0° to 35° C)
u. Storage temperature: -13° to 140° F (-25° to 60° C)
v. Relative humidity (operating): 20% to 90%, noncondensing
w. Operating altitude: tested up to 10,000 feet (3000 m)
x. Maximum storage altitude: 15,000 feet

4. Setup and Administration
   a. iPhone, iPad, or iPod touch with iOS 6 or later and AirPort Utility
   b. Mac with OS X Lion v10.7.3 or later and AirPort Utility 6.1
   c. Mac with OS X v10.5.7 or later and AirPort Utility 5.6.1
   d. PC with Windows 7 or later and AirPort Utility 5.6.1
5. Wireless Device Access
   a. Any Wi‑Fi-enabled device that uses the 802.11a/b/g/n specification

I. Audio Recorder

1. The audio recorder shall be a Denon model DN-500R. Unit shall be a rackmount solid state recorder that's ideal for any audio installation that needs professional, reliable recording. Recorder shall be able to capture up to 24-bit/96kHz audio directly to SD/SDHC card media or a USB drive, in MP3 or WAV format.
2. The Denon DN-500R shall provide a dual record mode that records to both types of media (SD/SDHC and USB) at the same time.
3. Relay record mode shall automatically switch to the other media type when one becomes full
4. Supports creation of EDL markings and file edits
5. Recorder shall record audio as MP3 or WAV and provide the ability to playback MP3, WAV, AIFF, and AAC file formats
6. Recorder shall provide flexible connectivity with balanced XLR, unbalanced RCA, and AES/EBU digital
7. Front-panel USB keyboard connection for easy to edit file names

J. Digital Signal Processor

1. Model: See Notes on plans.
2. Balanced mic/line inputs and balanced mic/line outputs on plugin barrier-strip connectors. Inputs and outputs shall be analog, with internal 24-bit A/D & D/A converters operating at a sample rate of 48kHz. All internal processing shall be digital (DSP). CoberaNet connections shall allow sharing of digital audio within multi-unit systems. After initial programming, processors may be controlled via dedicated software screens, third-party RS-232 control systems, and/ or optional remote control devices. Programming software shall operate on a PC computer, with network card installed, running Windows®.

3. Acceptable Manufacturers: Biamp, QSC, Rane, Shure.
4. Control of presets, routing changes and levels within the Digital Signal Processor shall be via the Crestron control system.

K. Mixing Console

1. Model: Yamaha MGP16X.
2. 10 Mic Inputs with 48V Phantom Power and HPF per Channel
3. 16 Line Inputs (8 mono and 4 stereo)
4. Additional 2TR Inputs Provided to Accept the Output from Analog Devices or iPod/iPhone
5. 2 AUX Sends + 2 FX Sends
6. 4 GROUP Buses + ST Bus
7.
8. Performance Specifications:
   a. 10 Mic Inputs with 48V Phantom Power and HPF per Channel
   b. 16 Line Inputs (8 mono and 4 stereo)
   c. Additional 2TR Inputs Provided to Accept the Output from Analog Devices or iPod/iPhone
   d. 2 AUX Sends + 2 FX Sends
   e. 4 GROUP Buses + ST Bus
   f. Mic inputs MIC: 10
   g. Phantom power 48V phantom power per channel
   h. Line inputs LINE: 8mono+4stereo, CH INSERT: 8, RETURN: 1stereo, 2TR IN: 1 stereo
   i. Digital I/O USB Audio USB IN: iPod, iPhone exclusive
9. General Specifications
   a. Total harmonic distortion 0.02% (20Hz-20kHz@ +14dBu)
   b. Frequency response +0.5/-1.0dB 20Hz - 20kHz, refer to the nominal output level @1kHz
   c. Hum & noise level Equivalent input noise -128 dBu (20Hz–20 kHz, Rs=150Ω, Input Gain = Maximum)
   d. Residual output noise -102 dBu (20Hz–20 kHz, Rs=150Ω, Input Gain = Maximum)
   e. Crosstalk -74dB @ 1kHz
   f. Power requirements 100-240V 50Hz/60Hz
   g. Power consumption 55W max
   h. Dimensions W 447mm x H 143mm x D 495mm
   i. Net weight 9.0kg
10.
11. Acceptable Manufacturers: Yamaha.

L. Two-channel power amplifier

1. Model: See Audio Equipment Schedule on plans.
2. Power: 120 VAC
3. The amplifier shall contain all solid-state circuitry, using complementary silicon output devices. The amplifier shall operate from 50–60 Hz AC power and its efficiency shall exceed the efficiency of an ordinary class B linear output circuit. The amplifier shall draw 950 VA or less when driven with random program material at 1/8 of rated power into 4-ohm loads. The amplifier shall have a 320-C19 16A IEC mains connector and

shall be equipped with a removable power cord having a standard NEMA AC plug. The amplifier shall operate safely from a 15A 120V AC outlet, and shall comply with FCC part 15 Class B requirements.

4. The amplifier shall have internal heat sinks cooled by forced air, driven by a 24-volt DC fan whose speed shall vary in response to heat sink temperatures to minimize acoustic noise. The fan's speed shall be controlled by a drive voltage ranging from approximately 9 volts when cool to approximately 24 volts when at the upper ranges of its operating temperature. Air flow shall be from rear to front to avoid temperature rise inside equipment racks; rack mounting of multiple amplifiers shall be possible without clearance for ventilation. The amplifier shall be capable of continuous operation at 1/3 of rated power into 4-ohm loads, in ambient temperatures up to 104° F (40° C).
5. The amplifier shall contain two independent amplifier channels powered by a low-impedance switching power supply. All amplifier protection systems shall be synchronized and self-resetting upon removal of fault. Each channel shall have circuitry to protect against short circuits or mismatched loads. Each channel shall independently monitor heat sink temperature and shall trigger fan speed boost, and if necessary, signal muting to prevent excessive temperature rise. Both channels shall have synchronized on-off muting, acting for three seconds after turn-on, and within ¼ second after turn-off or loss of AC power. Each channel shall have DC fault protection for the load, consisting of a shutdown of the power supply. Each channel shall have an independent and defeatable clip limiter and a 12 dB per octave high-pass filter. The corner frequency of the filter shall be selectable between 30 Hz and 75 Hz.
6. The front panel shall contain these features: an AC power switch; LED status indicators for power (green), bridged mono (yellow), and parallel inputs (yellow); independent LED output metering indicators for each channel for signal present or –30 dB (green), -20 dB (green), -10 dB (green), and clip (red); and a recessed, detented gain control for each channel with 21 attenuation settings. From 0 to 14 dB, the attenuation steps shall be 1-dB increments. The labeled attenuation settings shall be 0, 2, 4, 6, 8, 10, 12, 14, 18, 24, and 8 dB. The 0 dB attenuation settings shall also be labeled with the amplifier's equivalent voltage gain in dB. A removable security panel shall be provided for covering and preventing unauthorized access to the gain controls, when needed.
7. The output connector for both channels shall be a barrier strip located on the rear panel, with screw terminals and a safety shroud. The terminals shall be arranged to facilitate bridged mono connection.
8. The inputs shall be located on the rear panel, and shall consist of a 3-pin detachable terminal block and a 3-pin XLR connector for each channel. The XLR input shall be wired with pin 2 high. Inputs shall be electronically balanced, with a minimum impedance of 12 kilohms balanced and 6 kilohms unbalanced, and a common mode rejection of at least 50 dB from 20 Hz to 20 kHz.
9. A high-density 15-pin DataPort connector shall be provided for carrying both audio and amplifier operational status signals to and from a QSControl network. The DataPort shall also accommodate plug-in crossover filters and other such accessories.
10. A set of DIP switches shall be provided on the rear panel for: setting bridged mono and parallel-input operation; selecting clip limiters; and selecting high-pass filters and setting their frequencies.
11. Each channel shall be capable of meeting the following performance criteria with all channels driven: Sine-wave output power of 425 watts into 8 ohms, 20 Hz to 20 kHz at <0.03% THD; 700 watts into 4 ohms, 20 Hz to 20 kHz at <0.03% THD; and 1200 watts into 2 ohms, 1 kHz at <1.0% THD. Frequency response (with filters not engaged) at 3 dB below rated power shall be 20 Hz to 20 kHz ±0.2 dB. The voltage gain shall be 50.5x, equivalent to 34.0 dB, and the input sensitivity shall be 1.16 Vrms (+3.5 dBu).

The unweighted signal to noise ratio over the range of 20 Hz to 20 kHz shall exceed 106 dB, referenced to full output. IHF damping factor shall exceed 500.

12. Acceptable Manufacturers: QSC, Lab Grubben, Ashley.

M. Loudspeakers

1. Existing loudspeakers shall remain and be reused with the new headend equipment.

2. Contractor shall test all existing loudspeakers and associated wiring and report any issues with the existing loudspeakers and associated wiring to the engineer upon completion of testing.
3. Provide a quantity of 10% of the total number of each type of existing loudspeaker.
   a. New loudspeakers shall match the existing loudspeakers.
   b. These new loudspeakers are to be used to repair any issues found with the existing loudspeakers, if not issues are found turn these new loudspeakers over to the owner.
   c.
4. Acceptable Manufacturers: EV, Atlas Sound.

N. Hearing Assist System

1. The stationary RF transmitter shall be capable of broadcasting on one of any three channels – A (72.100 MHz), E (72.900 MHz) or H (75.900 MHz). The transmitter shall have a SNR of 62 dB or greater. The output power shall be adjustable to quarter, half or full. Channel tuning shall be capable of being locked. The device shall have an audio frequency response of 50 Hz to 15k Hz, '± 3 dB at 72 MHz. It shall have two (2) mixing audio inputs. The device shall have the following audio controls: input level, mix level and an adjustable low pass filter (contour). The device shall have an audio processor that is capable of automatic gain control and limiting. The Listen LT-803-072 is specified.
2. The LA-130 remote antenna kit shall be provided to allow mounting of the antenna remotely from the transmitter.
3. The RF receiver shall be capable of receiving on three wide band channels. The receiver shall have an SNR of 62 dB or greater. The device shall have an audio frequency response of 50 Hz to 15 KHz, '± 3 dB at 72 MHz. The device shall incorporate a stereo headset jack that allows the user to plug in either a mono or stereo earphone(s). The unit shall operate with (2) AA batteries. The receiver shall incorporate automatic battery charging circuitry for recharging of NiMH batteries. The device shall have a switchable option for the use of (2) alkaline or (2) NiMH batteries. The Listen LR-200-072 is specified. Provide 6 receivers for each system.
4. The LA-401 Intelligent Ear Speaker shall provide an audio response of 20 Hz to 20 KHz with an impedance of 32 ohms. The device shall be easy to put on, easy to clean and shall provide a cable length of 13 in (33 cm) that reduces cable tangling. The device shall be open allowing direct sound to be heard by the user. The LA-401 is specified. Provide 6 ear speakers for each system.

O. Microphones: See Notes on plans for models, types, and quantities. Acceptable manufacturers – Sennheiser, Shure, Audix, Crown.

P. Video Switcher

1. Basis-of-Design Manufacturer: Provide products of Crestron Electronics, Inc., Rockleigh, NJ 07647, Phone (800)237-2041, Fax: (201)767-1903, www.crestron.com, with the following components and characteristics.
2. Description
   a. Card-cage matrix switchers with configurable input and output card modules. Through the use of interchangeable input and output modules the matrix switcher shall support various input formats up to 4K HDMI and H.264, HDMI and HDMI 4K output formats. Matrix Card-cage shall support local device input and output card types and special purpose cards for use with long distance transmitter and receiver devices by same manufacturer and HDBaseT compatible devices. Switcher shall include a built-in Ethernet switch. Switcher shall be available in 8x8, 16x16, and 32x32 chassis sizes. Switcher shall be capable of stand-alone operation or integrated operation using a control processor from the same manufacturer. Input and output cards shall be field-interchangeable. Any input slot shall be routable to any output slot. Setup and diagnostics tools shall be built-in and accessible through the front panel interface. Additional configuration and management tools shall be available through software applications provided by same manufacturer.
3. Basis-of-Design Products:
   a. Crestron modular matrix switcher: DM-MD8X8
4. System Capacity
   a. Main chassis shall be available in the following input and output capacities:
      1) 8 Input x 8 Output
5. Input and Output Modules
   a. The Switcher shall support the following input and output signal card types:
      1) Input card:
         a) Single input connection.
      2) b. Output card:
         a) One, two, or four output connections, configurable in groups of two.
6. Multi-Format Audio Backplain
   a. The matrix Switcher shall support the option to maintain two audio formats for a single surround sound source device using a single input module.
      1) Audio format 1: Native multi-channel audio generated by source.
      2) Audio format 2: Stereo down-mix of native multi-channel source audio.
7. Audio Breakaway
   a. Within a single switcher chassis, source audio inputs shall be routable to any output separately or combined with source video.
   b. Switcher shall be capable of routing stereo audio and surround audio separately when an input slot is equipped with an input card with audio processing functionality

Q. Single Cable UTP/STP Input Card
1. Description
   a. The single cable UTP or STP input card shall receive transmission from compatible transmitters, supporting distance of up to 330 feet (100 km).
   b. The single cable UTP or STP input card shall accept transmitted signal and convert to HDMI signal and separate audio output. This signal shall be available as an output on the matrix.
2. Basis of design product: Crestron DMC-4K-C-HDCP2 DigitalMedia input card. Card shall provide the following features at a minimum:

a. Modular input card for a DM-MD8X8, DM-MD16X16, or DM-MD32X32 switcher
b. Provides a single 4K DM 8G+® input
c. HDBaseT® Certified — Enables direct connection to other HDBaseT certified equipment
d. Handles video resolutions up to 4K and Ultra HD
e. Handles 3D video and Deep Color
f. Handles Dolby® TrueHD, Dolby Atmos®, DTS-HD®, and uncompressed 7.1 linear PCM audio
g. HDCP 2.2 compliant
h. Supports cable lengths up to 330 ft (100 m) for all resolutions up to UHD and 4K using DM® Ultra cable
i. Supports cable lengths up to 330 ft (100 m) for 1080p, WUXGA, and 2K using DM 8G® cable or CAT5e
j. Supports cable lengths up to 230 ft (70 m) for UHD and 4K using DM 8G cable, or 165 ft (50 m) using CAT5e
k. Includes an HDMI® output for pass-through of the input signal
l. Includes a stereo analog line-level audio output with volume control
m. Allows de-embedding of stereo 2-channel audio signals
n. Enables device control via CEC
o. Supports PoDM and HDBaseT PoE power sourcing
p. Occupies a single DM switcher input card slot
q. Provides a rack-mountable DM 8G+ receiver solution using the optional DMCI card interface

R. Single UTP/STP Cable Transmission Output Card
1. Description
a. The Output Card shall provide transmission of any routed source signal within the matrix chassis.
b. The output card shall transmit over UTP or STP CAT5e, CAT6, cable or better, contact manufacturer for current list of suggested cable types.
c. The Output Card shall provide 2, 4, 6, or 8 discrete outputs.
d. The Output Card shall interface with HDBaseT supported single cable transmission.
e. The card shall provide 1 HDMI output for every 2 single cable transmission outputs:
1) HDMI output shall be a parallel signal to the single cable transmission output
2. Basis of design product: Crestron DMC-4K-CO-HDCP2 DigitalMedia HDBaseT certified 4K DigitalMedia 8G+ output card for DM switchers. Card shall provide the following features at a minimum:
a. Modular output card for a DM-MD8X8, DM-MD16X16, or DM-MD32X32 switcher
b. Provides two independent 4K DM 8G+® outputs
c. HDBaseT® Certified — Enables direct connection to other
d. HDBaseT certified equipment
e. Includes a parallel HDMI® port on the first output
f. Handles video resolutions up to 4K and Ultra HD
g. Handles 3D video and Deep Color
h. Handles Dolby® TrueHD, Dolby Atmos®, DTS-HD®, and uncompressed 7.1 linear PCM audio

i. HDCP 2.2 compliant
j. Supports cable lengths up to 330 ft (100 m) for all resolutions up to UHD and 4K using DM® Ultra cable
k. Supports cable lengths up to 330 ft (100 m) for 1080p, WUXGA, and 2K using DM 8G® cable or CAT5e
l. Supports cable lengths up to 230 ft (70 m) for UHD and 4K using DM 8G cable, or 165 ft (50 m) using CAT5e
m. Enables HDMI and HDBaseT device control via CEC
n. Supports PoDM and HDBaseT PoE power sourcing [2]
o. Occupies a single DM switcher output card slot

S. Digital Video Transmitter
1. Description
a. The signal transmitters shall extend HDMI video, audio, and data over a single UTP/STP cable to compatible transmission receiver modules or ports. The following source formats shall be supported:
1) HDMI
2) DVI-I
3) RGBHV
4) VGA
5) YPbPr
6) Y/C
7) Composite
8) Analog 2-channel audio
9) USB HID (Human Interface Device)
2. Switching:
a. Transmitter shall include integrated switching with signal sensing.
b. Switching modes:
1) Automatic: switcher shall switch to the last detected input.
2) Controlled: control processor controls source switching and audio break-away switching.
3. Basis of design product: Crestron DM-TX-200-C-2G DigitalMedia transmitter. The transmitter shall meet the following minimum requirements:
1) One (1) HDMI video, audio, and control input:
a) Supports HDMI.
b) Supports HDCP.
c) Supports Dolby Digital, Dolby Digital EX, DTS, DTS-ES, DTS 96/24, up to 8 channels PCM.
d) Supports DVI-D with adaptor.
e) Supports DisplayPort Multimode.
f) CEC device control.
2) One (1) DB15 input:
a) Component (YPbPr)
b) RGB
c) S-Video (Y/C)
d) Composite Video
3) One (1) analog stereo audio input:
a) (1) 3.5mm TRS (L/R unbalanced)
4) One (1) USB HID port.
a) Supports USB HID class devices
5) Single UTP/STP cable transmission connection

a) Supports HDBaseT signal specifications.
b) Supports remote power injection through matrix switcher.
c) Supports CAT5e.
d) Signal transmission up to 330 feet.

6) Power supply modes:
a) Remote power supplied by matrix switcher through UTP/STP transmission cable.
b) Local or remote DC power source.

7) Mounting:
a) 2-gang wall box mount.
b) 2-gang floor box mount.

T. Digital Video Receiver

1. Description
a. The signal receiver shall receive long distance transmission from compatible transmitter modules or ports. Receiver shall include the following outputs types and connections:
1) HDMI
2) USB HID (Human Interface Device)
b. Receiver shall include the following control port types for remote device control.
1) Serial RS-232 communication.
2) Infrared (IR) control.

2. Basis of design product: Crestron DM-RMC-SCALER-C. The receiver shall meet the following minimum requirements:
a. HDMI digital video, audio, and control output:
1) One (1) 19-pin Type A HDMI female connector
2) Supports HDMI with Deep Color and 3D.
3) Supports DVI-D with adaptor.
4) Supports HDCP.
5) HDMI audio Support:
a) Dolby Digital, Dolby Digital EX, Dolby TrueHD, DTS, DTS-ES, DTS 96/24, DTS-HD Master Audio, and up to 8 channel PCM.
6) CEC device control.
b. Integrated HD video scaling:
1) Deinterlacing and interlacing.
2) Frame rate conversion.
3) Deep Color support.
4) 3D to 2D conversion.
5) Content adaptive noise reduction.
6) Wide screen format selection:
a) Zoom.
b) Stretch.
c) Maintain source aspect ratio.
d) 1:1.
c. Video wall processing:
a) 2x2.
b) 3x2.
c) 3x3.
d) 4x3.
e) 4x4.
d. One (1) bidirectional RS-232 port:

a) One (1) 5-pin 3.5mm detachable terminal block.
b) GND, TX, RX, CTS, RTS support.
c) Up to 115.2k baud, hardware and software handshaking support.

e. Two (2) IR/Serial ports:
a) One (1) 4-pin 3.5mm detachable terminal block.
b) IR output up to 1.1 MHz.
c) 1-way serial TTL/RS-232 (0-5 Volts) up to 19200 baud.

f. One (1) USB HID port.
a) USB type A female.

g. One (1) 10/100 LAN port.

h. Single UTP/STP cable transmission connection
a) Supports HDBaseT signal specifications.
b) Supports CAT5e
c) Signal transmission up to 330 feet

i. Power supply:
a) Local or remote DC power source.

j. Mounts on a US 2-gang electrical box

U. Control System

1. Description
a. The Control System shall be designed for DIN rail mounting applications and featuring the 3-Series control engine. The controller shall be the core of the control system managing and integrating all the disparate technologies within the system.

2. Basis of design product: Crestron DIN-AP3. The controller shall meet the following minimum requirements:
a. Enterprise-class control system
b. 3-Series® Control Engine — substantially faster and more powerful than other control systems
c. Exclusive modular programming architecture
d. Programmable astronomical time clock for scheduled events
e. Onboard 256MB RAM & 4GB Flash memory
f. Memory card slot
g. Industry-standard Ethernet and Cresnet® wired communications
h. XPanel with Smart Graphics™ computer and web based control
i. iPhone®, iPad®, and Android™ control app support
j. Crestron Fusion® Cloud Enterprise Management Service support
k. SNMP remote management support
l. Two RS-232/422/485 COM ports with hardware and software handshaking
m. Four IR/serial, four relay, and eight Versiport I/O ports
n. Native BACnet™/IP support [2]
o. Installer setup via Crestron Toolbox™ software or web browser
p. C#, symbol based, and drag-and-drop programming environments
q. Full Unicode (multi-language) support
r. Increased network throughput and security
s. Secure access through full user/group management or Active Directory integration
t. Hardware level security using 802.1X authentication
u. TLS, SSL, SSH, and SFTP network security protocols
v. FIPS 140-2 compliant encryption
w. IIS v.6.0 Web Server
x. IPv6 ready
y. Front panel USB computer console port

z. 9M wide DIN rail mountable

V. Media Presentation Button Panel
1. Description
a. The Crestron MP-B10 used to control the commons area system shall be an enhanced pushbutton control panel designed for installation in a wall or podium. It can be used with any Crestron control system or presentation switcher. The button panel shall be available in white or black, the MP-B10 is constructed to handle the rigors of everyday use in a typical classroom, meeting room, lecture hall, or training facility. The button panel shall provide the following features at a minimum:
1) Wall mount pushbutton control panel
2) No programming required with select .AV Framework™ enabled switchers
3) 10 programmable buttons with LED feedback
4) Customizable backlit button labels
5) Volume control knob and LED bargraph
6) Built-in IR receiver and light sensor
7) High-speed Ethernet or Cresnet® communications
8) PoE or Cresnet network powered
9) 3-gang wall box-mountable

W. Keypad
1. Description
a. The Crestron C2N-CBD keypad used to control the Gymnasium system shall cost-effective keypad solution, featuring a highly configurable one-gang wall mount form factor that is at once inviting to the touch and appealing to the eye. The keypad shall provide the following features at a minimum:
1) Stylish and versatile wall-mount keypad
2) Standard electrical box installation
3) Color-matched almond, black, and white smooth finishes
4) Ascent® solid metal faceplates available separately
5) Versatile combinations of 2 to 8 pushbuttons
6) Installer-configurable with choice of 4 button sizes
7) “Split” buttons for “up/down” and “on/off” functions
8) “Button Events” enable tap, double-tap, and press and hold functionality
9) Customizable button engraving
10) Green LED feedback indicators
11) Built-in LED blinking and bargraph logic
12) Adjustable LED intensity
13) Quick and easy installation
14) Cresnet wired communications

X. Projector
1. Projector shall be Eiki model EK-500U. Projector shall provide the features and functionality shown below at a minimum.
a. 5,100 ANSI lumens bright and a 2500:1 contrast ratio.
b. Native WUXGA resolution. Compatible with inputs up-to UXGA and WUXGA.
c. Supports analog and digital video input in all color standards up-to 1080p.
d. Durable inorganic 3-panel LCD imaging engine with a high contrast ratio.
e. 10-bit color processing, for superior color reproduction.
f. Power zoom and focus lens. Optional wide-angle and telephoto lenses.

g. Vertical and Horizontal power lens shift and digital keystone correction.
h. Includes a full set of analog and digital computer and video inputs.
i. HDMI with MHL (Mobile High-Definition Link) displays HD Video from Smartphones and Tablets.
j. Built-in 10 Watt amplifier and speaker system. Closed Caption decoding.
k. Wired LAN connection for monitoring and control.
l. Centered lens with 1-button release. Side-accessed lamp, side-accessed filter.
m. Variable power management option. Optional local or remote keylock.
n. Wireless/wired remote control with laser pointer.

Y. Projector Mount
1. Projector mount shall be a Chief model RPAUW and provide the following features at a minimum
a. Adjustments: Roll: 4°, Pitch: 25°, Yaw: 360°
b. Certifications: UL Listed
c. Color: White
d. Overall Dimensions (H x W x D): 1.8" x 6.5" x 5.5" (44 x 165 x 140 mm)
e. Shipping Weight: 5.75 lbs
f. Solution Type: Universal
g. Weight Capacity: 50 lbs (22.7 kg)

Z. Cabling: See Audio Equipment Schedule on plans for types and quantities. Acceptable manufacturers – West Penn, Whirlwind, ProCon

AA. Custom parts and pieces: See Audio Equipment Schedule on plans for descriptions and requirements.

PART 3 - EXECUTION

3.1 INSTALLATION:

A. The AV system shall be designed, installed, and commissioned in a turnkey fully implemented and operational manner. The Contractor shall be responsible for all electrical installation required for a fully functional system. All wiring shall be in accordance to all local and national codes. All line voltage wiring and all wiring in equipment rooms shall be installed in conduit and in accordance with NEC and local codes.

1. Installation personnel shall be supervised by persons who are qualified and experienced in the installation, inspection, and testing of AV systems.

B. Provide and install the system in accordance with the plans and specifications, all applicable codes and the manufacturer's recommendations.

1. All system wiring shall be in a completely separate conduit system, except where cable is allowed below. All circuitry shall be concealed in walls and above ceilings.
2. Wiring color code shall be maintained throughout the installation. All new wiring shall have each conductor tagged and identified. Wiring for like functions shall be color-coded consistently throughout the systems.
3. Verify all circuiting requirements with equipment manufacturer before installation.

4. All splices shall be in easily accessible junction boxes, on terminal boards with punch down blocks or on screw terminals. Twisted and taped splices are unacceptable. Provide and install any specialized cables or cords necessary for the correct operation of the systems including, but not limited to: internal cabling connections, proprietary device interconnect cables, specialized patch cables.
5. Provide all cabling and AV supporting hardware such as equipment racks, faceplates, jacks, etc. as indicated on the drawings and specified herein.
6. Provide cabling as indicated on the drawings directly connected to the AV equipment.
7. Cables shall be installed with slack as directed herein.
8. Connect all speakers so that they maintain the same polarity and in phase with each other.
9. Cables shall located to new audio-visual wall plate as shown on drawings.
10. Grounding: According to recommendations in IEEE 142 and IEEE 1100.
11. Do not use water-based cable pulling lubricants with PVC-jacketed cable.
12. Do not exceed manufacturer's recommended minimum bending radiuses.
13. Pulling Cable: Do not exceed manufacturer's recommended pulling tensions. Do not install bruised, kinked, scored, deformed, or abraded cable. Remove and discard cable if damaged during installation and replace it with new cable.
14. Cable Support: Install supports at intervals recommended in writing by cable manufacturer. Install supports within 6 inches (150 mm) of connector so no weight of

C. Coordinate all work with other affected trades and contractors.

D. Unless otherwise stated, where installation requirements identified in drawings and specifications conflict with the manufacturer’s recommendations, the more restrictive standard shall apply.

E. Bring to the attention of the Engineer conflicts between manufacturer’s instructions and Construction Documents.

F. Provide parts, components, labor and installation as authorized, described, and recommended by the manufacturer.

G. All circuitry shall be properly supported and run in a neat and workmanlike manner. All circuitry shall run parallel to or at right angles to the building structure. All wiring within enclosures shall be neatly bundled and anchored to prevent obstruction to devices and terminals. All electronic wiring shall be type and size as recommended by system manufacturer.

1. Where installed above accessible ceilings, AV system cabling may be installed in a neat manner, tightly bundled and independently secured to building structure by approved means. Do not lay cable on ceiling and do not support from other conduit systems, ductwork or piping. Utilize plenum rated cable in return air plenums.
2. Where devices are to be installed on, or cabling is to pass through frame walls or hollow masonry walls the cabling shall be fished in the wall cavity to an appropriate flush outlet box firmly mounted in the wall.
3. Where devices are to be installed on or cabling is to be routed over solid masonry walls the cabling shall be installed in approved surface mounted raceways equal to Wiremold or equivalent. Where installed in rooms with accessible ceilings the surface raceways shall be routed vertically from the ceiling to the device in a neat and workman like manner. Verify all routing of surface raceways with the Architect.
4. Where approved surface mounted raceways are used, the device mounting boxes shall be finished surface boxes of suitable size for the device installation.

H. Labor to troubleshoot, repair, reprogram, or replace system components shall be furnished by the AV system contractor at no charge to the Owner during the warranty period.

I. All corrective software modifications made during warranty service periods shall be updated on all user documentation and on user and manufacturer archived software disks.

J. The AV system contractor shall maintain electronic copies of all data file and application software for reload use in the event of a system crash or memory failure. One copy shall be delivered to the Owner during training session, and one copy shall be archived by the system manufacturer.

K. The contractor shall clean all dirt and debris from the inside and the outside of all system equipment after completion of the installation.

L. All devices of the same model number shall be equipped with identical revisions of the latest firmware and software unless noted.

M. Provide all equipment as indicated on the drawings and herein. Mount equipment in a manner consistent with the drawings.

3.2 CLEANING:

A. Cleaning: Remove paint splatters and other spots, dirt, and debris. Clean unit internally using methods and materials recommended by manufacturer.

3.3 FIELD QUALITY CONTROL AND TESTING:

A. Manufacturer's Field Services: Provide services of a factory-authorized service representative to supervise the field assembly and connection of components and the pretesting, testing, and adjustment of the system.

1. Service personnel shall be qualified and experienced in the inspection, testing, and maintenance of AV systems.

B. Coordinate the testing during occupied hours with the Owner to minimize disruption of the daily schedule.

C. Pretesting: Determine, through pretesting, the conformance of the system to the requirements of the Drawings and Specifications. Correct deficiencies observed in pretesting. Replace malfunctioning or damaged items with new and retest until satisfactory performance and conditions are achieved.

D. Final Test Notice: Provide a 10-day minimum notice in writing to the Architect when the system is ready for final acceptance testing.

E. Retesting: Correct deficiencies indicated by tests and completely retest work affected by such deficiencies. Verify by the system test that the total system meets the Specifications and complies with applicable standards.

F. Report of Tests and Inspections: Provide a written record of inspections, tests, and detailed test results in the form of a test log.

3.4 INSTRUCTION:

A. Installation contractor shall conduct up to 2 hours of instruction in the use and operation of the system to designated owner representatives, within (60) days of system acceptance.

B. Installation contractor shall conduct up to 2 hours of technical training in the troubleshooting, and service of the system to designated owner representative, within one hundred twenty (120) days of system acceptance.

3.5 MANUALS AND DRAWINGS:

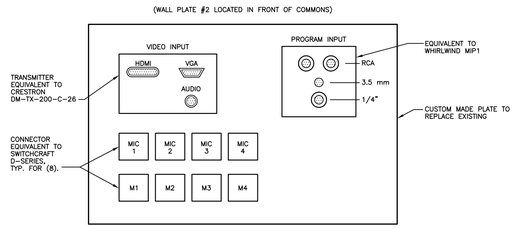
A. Contractor shall provide owner with three (3) copies of standard factory prepared operation, installation and maintenance manuals. Manuals shall include typical wiring diagrams.

B. Contractor shall provide owner with three (3) copies of any risers, layouts, and special wiring diagrams showing any changes to standard drawings.

3.6 WARRANTY:

A. All components of this specification shall be warranted for a minimum period of ONE (1) years from the date of installation, against defects in materials, equipment and workmanship. This warranty shall also include the performance of these systems. This warranty shall include transmission requirements as specified in applicable ANSI/TIA/EIA/IEC/ISO standards for each system specified.

END OF SECTION 27 51 00



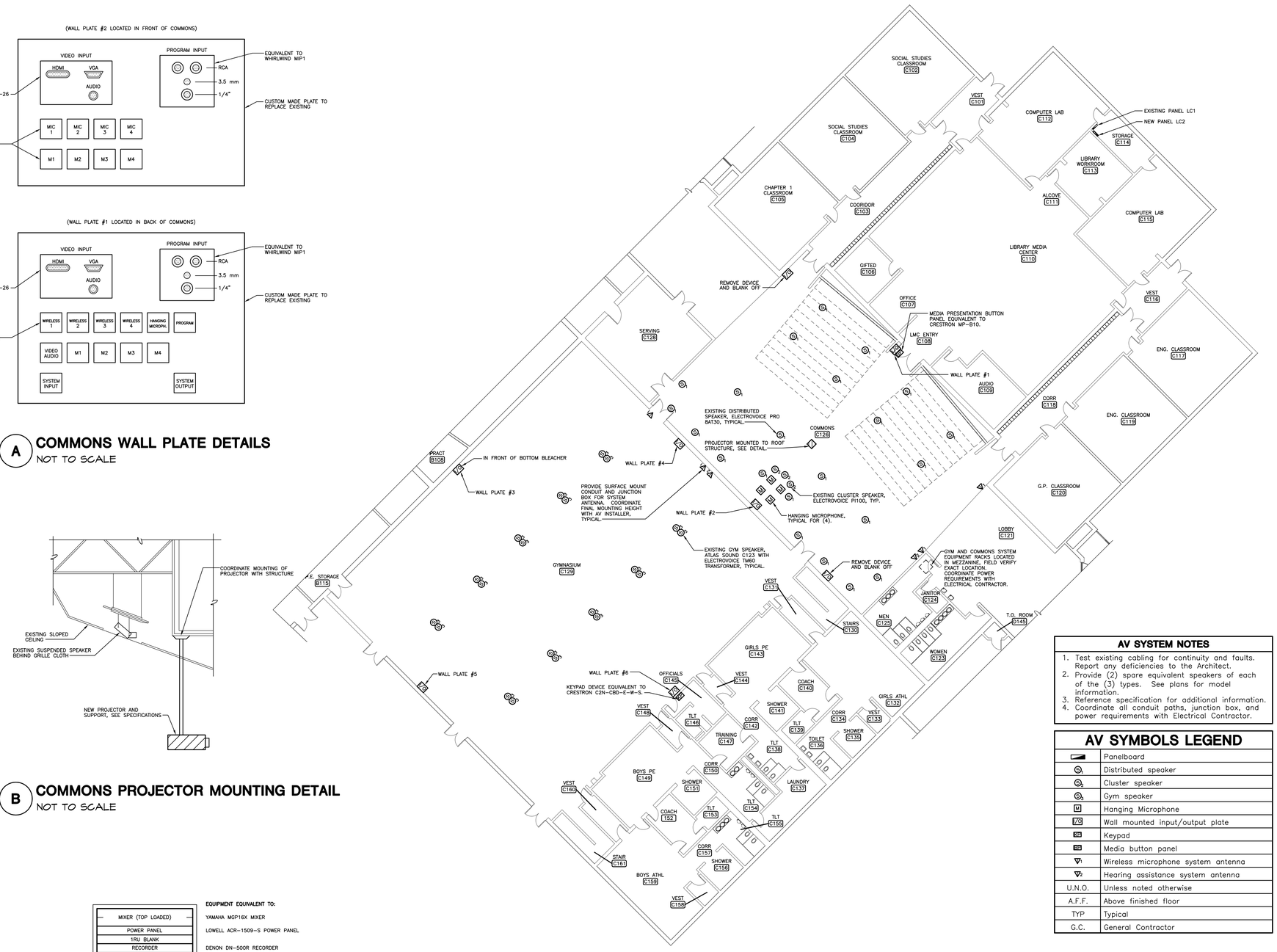
A COMMONS WALL PLATE DETAILS
NOT TO SCALE

B COMMONS PROJECTOR MOUNTING DETAIL
NOT TO SCALE

	EQUIPMENT EQUIVALENT TO:
MIXER (TOP LOADED)	YAMAHA MGP16X MIXER
POWER PANEL	LOWELL ACR-1509-S POWER PANEL
1RU BLANK	
RECORDER	DENON DN-500R RECORDER
APPLE AIRPORT EXPRESS	GRUNDORF 75-212P SHELF
BLUETOOTH RECEIVER	DENON DN-200BR BLUETOOTH RECEIVER
3RU BLANK	
DRAWER	GRUNDORF 75-103 DRAWER

PORTABLE SOUND RACK EQUIVALENT TO GRUNDORF T2-TLR1224M WITH TLR2-24-LC2B CASTERS WITH BRAKE

C PORTABLE SOUND RACK FOR COMMONS AREA
NOT TO SCALE



NORTH

AUDIOVISUAL PLAN
1/16" = 1'-0"

AV SYSTEM NOTES

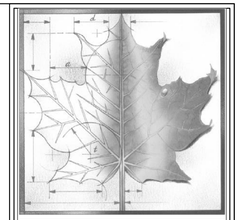
1. Test existing cabling for continuity and faults. Report any deficiencies to the Architect.
2. Provide (2) spare equivalent speakers of each of the (3) types. See plans for model information.
3. Reference specification for additional information.
4. Coordinate all conduit paths, junction box, and power requirements with Electrical Contractor.

AV SYMBOLS LEGEND

	Panelboard
S1	Distributed speaker
S2	Cluster speaker
S3	Gym speaker
M	Hanging Microphone
I/O	Wall mounted input/output plate
KP	Keypad
MB	Media button panel
V1	Wireless microphone system antenna
V2	Hearing assistance system antenna
U.N.O.	Unless noted otherwise
A.F.F.	Above finished floor
TYP	Typical
G.C.	General Contractor

Job No. 15011-1

ORAZEM & SCALORA ENGINEERING, P.A.
Manhattan, Kansas



BBN

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REVISIONS:	
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Project Number:

Date: 04/04/2017

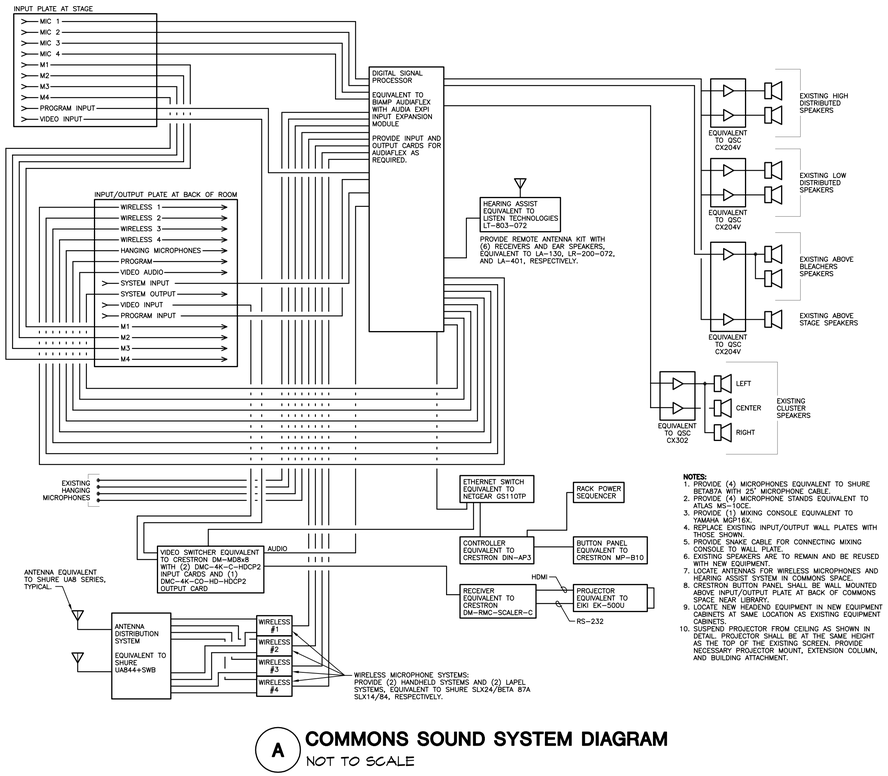
Project Name:
USD 320 WAMEGO MIDDLE SCHOOL IMPROVEMENTS

Project Address:
1701 Kaw Valley Road Wamego, KS 66547

Sheet Title:
AUDIOVISUAL PLAN

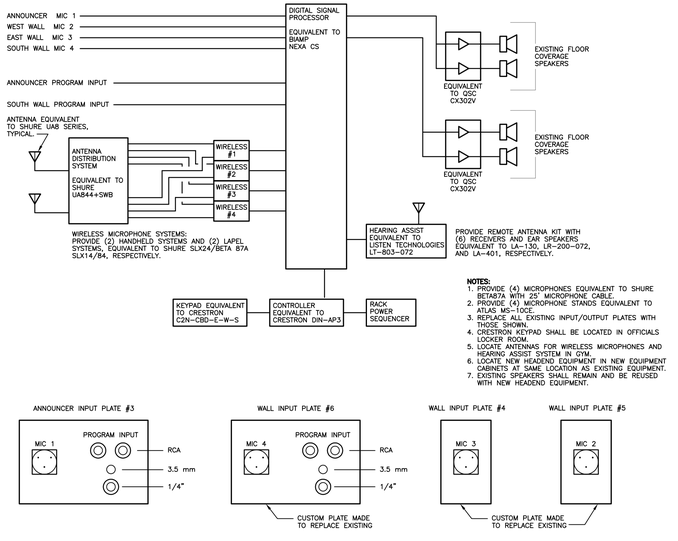
Sheet: **AV101** 1

Of: 12



NOTES:
1. PROVIDE (4) MICROPHONES EQUIVALENT TO SHURE BETA87A WITH 25' MICROPHONE CABLE.
2. PROVIDE (4) MICROPHONE STANDS EQUIVALENT TO ATLAS MS-10CE.
3. PROVIDE (1) MIXING CONSOLE EQUIVALENT TO YAMAHA MGP16X.
4. REPLACE EXISTING INPUT/OUTPUT WALL PLATES WITH THOSE SHOWN.
5. PROVIDE SNAKE CABLE FOR CONNECTING MIXING CONSOLE TO WALL PLATE.
6. EXISTING SPEAKERS ARE TO REMAIN AND BE REUSED WITH NEW EQUIPMENT.
7. LOCATE ANTENNAS FOR WIRELESS MICROPHONES AND HEARING ASSIST SYSTEM IN COMMONS SPACE.
8. CRESTRON BUTTON PANEL SHALL BE WALL MOUNTED ABOVE INPUT/OUTPUT PLATE AT BACK OF COMMONS SPACE NEAR LIBRARY.
9. LOCATE NEW HEADEND EQUIPMENT IN NEW EQUIPMENT CABINETS AT SAME LOCATION AS EXISTING EQUIPMENT CABINETS.
10. SUSPEND PROJECTOR FROM CEILING AS SHOWN IN DETAIL. PROJECTOR SHALL BE AT THE SAME HEIGHT AS THE TOP OF THE EXISTING SCREEN. PROVIDE NECESSARY PROJECTOR MOUNT, EXTENSION COLUMN, AND BUILDING ATTACHMENT.

A COMMONS SOUND SYSTEM DIAGRAM
NOT TO SCALE



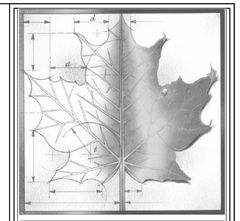
NOTES:
1. PROVIDE (4) MICROPHONES EQUIVALENT TO SHURE BETA87A WITH 25' MICROPHONE CABLE.
2. PROVIDE (4) MICROPHONE STANDS EQUIVALENT TO ATLAS MS-10CE.
3. REPLACE ALL EXISTING INPUT/OUTPUT PLATES WITH THOSE SHOWN.
4. CRESTRON KEYPAD SHALL BE LOCATED IN OFFICIALS LOCKER ROOM.
5. LOCATE ANTENNAS FOR WIRELESS MICROPHONES AND HEARING ASSIST SYSTEM IN GYM.
6. LOCATE NEW HEADEND EQUIPMENT IN NEW EQUIPMENT CABINETS AT SAME LOCATION AS EXISTING EQUIPMENT.
7. EXISTING SPEAKERS SHALL REMAIN AND BE REUSED WITH NEW HEADEND EQUIPMENT.

B GYM SOUND SYSTEM DIAGRAM
NOT TO SCALE

AV SYSTEM NOTES
1. Test existing cabling for continuity and faults. Report any deficiencies to the Architect.
2. Provide (2) spare equivalent speakers of each of the (3) types. See plans for model information.
3. Reference specification for additional information.
4. Coordinate all conduit paths, junction box, and power requirements with Electrical Contractor.

Job No. 15011-1

OSE ORAZEM & SCALORA ENGINEERING, P.A.
Manhattan, Kansas



BBN

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REVISIONS:
1 4/17/17
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Sheet Title:
AUDIOVISUAL DETAILS

Sheet: **AV102** 1

Of: 12