



INVITATION TO BID

FINANCE DEPARTMENT

GREGORY N. L'HEUREUX
Finance Director

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Purchasing Agent

AUDIO SYSTEM

Sealed bids for PURCHASE AND INSTALLATION of an Audio System for the Lecture Hall and Cafeteria for the South Portland High School as specified in the attached, will be received by the City Purchasing Agent, Room 105, City Hall, 25 Cottage Road, South Portland, Maine, 04106 until 2:00 P.M., Wednesday, October 9, 2013, which time they will be publicly opened and read aloud. Proposals received after the above stated day and time will not be considered.

Bids shall be submitted on the attached bid form in sealed envelopes, plainly marked "Bid #12-14 SPSHS Audio System" and shall be addressed to the Purchasing Agent at the above address.

At the time of the opening of bids, **each bidder will be presumed to have read and to be thoroughly familiar with the Plans and Contract Documents including all addenda.** The failure or omission of any bidder to examine the site or to receive any form, instrument, or documents shall in no way relieve any bidder from any obligation in respect to the bid.

The Contractor shall make the Bid from their own examinations and estimates, and shall not hold the City, its agents, employees or independent Engineer or agents hired by the City, responsible for or bound by any schedule. If any error in any Plan, Drawing, Specification or direction, relating to anything to be done under this Contract, comes to bidder's knowledge, the bidder should report it at once to the City.

The selected vendor must guarantee the installation and successful testing/commissioning of all parts of this project by November 28th, 2013. Failure to complete the project by the 28th will result in a forfeiture of \$1,000 per day (inclusive of weekends and holidays) of remaining money owed to vendor.

The winning bidder will be awarded 75% of the total bid upon award of bid by the South Portland City Council and South Portland Board of Education. The remaining 25% will be awarded upon signoff and acceptance at the completion of the project (less late penalties).

The successful bidder will be required to sign a standard City contract and provide a certificate of insurance for public liability, property damage, and worker's compensation coverage as stipulated in said contract. It is the custom of the City of South Portland to pay its bills within 20 to 30 days following delivery of and receipt of invoices for all items covered by the purchase order. In submitting bids under the attached specifications, bidders should take into consideration all discounts, both trade and time, allowed in accordance with the above payment policy. All bidders should quote net prices, therefore, exclusive of all Federal Excise Taxes.

The City of South Portland, Maine reserves the right to waive all informalities in bids, to accept any bid or any portion thereof, or to reject any or all bids should it be deemed in it's best interest to do so. Except as otherwise required by law or as specifically provided to the contrary herein, the award of this bid shall be governed by the City's purchasing ordinance.

Colleen C. Selberg
Purchasing Agent

Mailing address: P.O. Box 9422, South Portland, ME 04116-9422
Telephone (207) 767-3201 Fax (207) 767-7620

The South Portland School Department is seeking proposals for an audio system for the Lecture Hall and Cafeteria of the renovated South Portland High School.

Questions about this RFP should be directed to Andrew Wallace, Director of Technology at atw@spsd.org. Bidders who wish to be contacted via email of any questions and answers submitted by other bidders must email atw@spsd.org with their intent to bid.

Because this project is very space specific, bidders must arrange a walkthrough of the site prior to responding. Arrangements can be made by emailing atw@spsd.org

Responses to this bid will be opened at South Portland City Hall on Wednesday October 9th, 2013 at 2pm.

In submitting a proposal, the respondent attests that:
the bidder has read and understands all the bid requirements, conditions and specifications contained herein.

Requested Equipment & Services – all prices provided below must include shipping, handling and installation labor. All bidders must submit the summary response sheet in addition to other stated RFP requirements or information they may wish to share. BID will be awarded in totality to ONE vendor and will not be divided up by parts and installation (bidders must respond to all elements and are responsible for all subcontracts).

Installation

The vendor (or their subcontracted installers) must follow all federal, state and local installation/electrical codes.

The vendor (or their subcontracted installers) must be fully insured and licensed to conduct the requested installation of equipment.

The vendor will meet with a School Department representative to test and ensure the proper functioning of all equipment.

The selected vendor must guarantee the installation and successful testing/commissioning of all parts of this project by November 28th, 2013. Failure to complete the project by the 28th will result in a forfeiture of \$1,000 per day (inclusive of weekends and holidays) of remaining money owed to vendor.

The winning bidder will be awarded 75% of the total bid upon award of bid by the South Portland City Council and South Portland Board of Education. The remaining 25% will be awarded upon signoff and acceptance at the completion of the project (less late penalties).

The selected vendor will be solely responsible for the safe and appropriate storage of all materials during this project.

The selected vendor (or their subcontracted installers) must keep the site free of waste materials caused by the work. Upon completing the work, the vendor must remove all work related trash from the site (or dispose of, using waste facilities as/if permitted by the general contractor). The work area must be "broom clean."

Bid Pricing

The price of an item or installation as promised in a bid cannot be changed by the respondent regardless of whether the School Department changes the quantity of the item or service needed, unless the total scope of the project is decreased by more than 25%.

Any substitution from the specified products or installation scope must be pre-approved by the School Department Director of Technology and shall not result in an increase of unit cost, unless School Department initiated and agreed upon in writing. The School Department reserves the right to refuse any and all manufacturer substituted products.

Bid Evaluation

Overall cost is the primary factor in determining the bid award. However, references, experience and the demonstrated ability to complete the scope of work are also factors taken into consideration. The South Portland School Department reserves the right to contact past purchasers of services provided by the vendors considered for award.

The School Department will evaluate all submitted responses and reserves the right to accept or reject any or all responses, and the right to rebid this project.

The winning bidder will provide a written three year warranty/statement covering the installed parts, cabling, accessories, and wiring against defects in workmanship and performance. This is beyond, but does not supersede individual manufacturers' warranties.

The winning bidder will provide up to fifteen hours of training to school department and municipal staff on the operation and maintenance of the system.

South Portland High School

Lecture Hall Sound Reinforcement System

Specifications:

Scope:

This specification defines proposed new sound reinforcement systems to be installed in the new Lecture Hall and adjacent Cafeteria in the new South Portland High School. The successful bidder shall furnish and install the systems as outlined herein, including all equipment, material, cable, labor for installation, testing, adjustment, and equalization of the systems, supporting documentation of the systems including 'as-built' drawings, warrantee, and instruction of designated personnel in the proper use and maintenance of the systems. An empty conduit system has been installed for the proposed new systems, and is detailed on contract drawings 424-1 and 424-2. All new equipment, material, and workmanship shall be fully warranted against defects in materials and workmanship

for a period of one full year from date of acceptance of the installed systems by the City of South Portland.

Summary:

The design detailed herein is a definition of the City of South Portland School Department's requirements as of bid date. The manufacturers and model numbers specified herein are not intended to be proprietary or limiting, but rather are intended to define a level of performance and quality sought by the School Department. If the Contractor wishes to furnish a substitute for any piece of equipment specified herein, application is to be submitted in writing to the City of South Portland School Department via atw@spsd.org, complete with detailed specifications of the intended substitution, prior to installation. Final decision as to the acceptability of any proposed substitutions lies solely with the City of South Portland School Department.

Description of Equipment, Materials, and Standards:

All equipment, cables, and related devices shall be installed in a neat and workmanlike manner using accepted professional engineering standards.

All cable terminations shall be accomplished using the appropriate connector type designated by the respective device manufacturer. Shielded pair, balanced line cables interconnecting devices within the equipment rack shall leave the shield not connected at one end (only) of the cable. By convention, this shall be the end of the interconnecting cable at the source, or output of the feeding device. The end of the interconnecting cable which is an input shall have the shield connected. All XLR-type 3-pin connectors shall be terminated using the following standard (EIA Standard RS-297-B):

Pin 1 - Shield
Pin 2 - + or 'positive'
Pin 3 - - or 'negative'

All cables, both inside of and external to the equipment rack, shall be labeled using a permanent, adhesive wire tag wrapped around the cable, no more than three inches (3") from the cable connector. An identical number shall be installed at each end of the cable. A corresponding adhesive cable number shall be placed adjacent to the equipment connector, receptacle, or termination point where the wire is connected. A printed record of all cable numbers, specifying the identity of each cable, by number, shall be furnished to the owner's representative.

All cables within the equipment rack shall be harnessed or bundled using waxed lacing cable, or, in the alternative, plastic cable ties may be used provided that the cut ends of the cable ties are sufficiently recessed so as not to present a sharp edge. Cables shall be separately bundled by signal level and purpose, with microphone level (-50dB) lines, line level (0dB) lines, loudspeaker lines (70 volt), and control lines isolated in separate harnesses. Cable harnesses shall provide a short service loop, allowing a piece of equipment to be removed from the front of the rack without disconnecting cables if needed. All cable harnesses shall be arranged so that they do not cover the rear of the individual equipment or devices, preventing access to the equipment.

All cables shall be stripped within no more than two inches (2") of the cable end, and the outer jacket shall be neatly removed with a clean circular cut around the cable outside perimeter, with no damage to the internal conductors or insulation. For shielded cables, the foil shield shall be similarly removed with a clean, circular cut, with no damage to the internal conductors or insulation. Heat shrink tubing, of appropriate size, shall be applied to the outside of all cable ends (except for those terminating *inside* of a connector (e.g., XLR, Speak-on, etc.). The heat shrink tubing shall extend no more than 3/4" onto the outer jacket of the cable, and no more than 1/4" beyond the outer jacket of the

cable (over the inside conductors). For shielded cables, a smaller diameter heat shrink tubing shall be applied to the shield drain wire, making certain that the drain wire heat shrink tubing extends up inside of the outer heat shrink, to the outer jacket of the cable.

Equalization:

Equalization of the sound reinforcement system shall be performed using a random pink noise generator, an ANSI Type 1 sound pressure meter, and a 1/3 octave real-time spectrum analyzer using ISO standard center frequencies. The equalization shall be performed to provide maximum speech intelligibility with a minimum of distortion and residual noise. The optimum equalization curve shall be obtained by the following process:

All dais gooseneck condenser microphones shall be switched to the 80 Hz low-frequency roll-off position using the integral recessed switch on the microphone.

The individual microphone channel front-panel, screwdriver adjustable equalization (lo-frequency roll-off and high frequency shelving) controls on the automatic microphone mixers shall be adjusted to the detented (flat response) positions initially. The lo-frequency roll-off controls for each channel shall then be adjusted, by channel, using a pink noise generator into each channel input, and real-time spectrum analyzer on the mixer output, to establish a high-pass of 160 Hz – 200 Hz, with a steep roll-off of $\geq -6\text{dB/oct.}$ below that.

For the Lecture Hall, the sound system electro-acoustical response shall be equalized using accepted real-time spectrum analysis techniques, averaging for all seats in the hall. For the dais microphones, the equalization shall establish an essentially flat response (± 1 dB) from ~ 200 Hz to 2500 Hz, with the aforementioned $\geq -6\text{dB/oct.}$ roll-off below ~ 200 Hz, and then create a uniform, precise roll-off of -3dB/oct. from 2500 Hz up to the limits of audibility. At ~ 2500 Hz – 3150 Hz, an intelligibility 'bump' of no more than $+2$ dB shall be established before the high frequency (-3 dB/oct.) roll-off begins. The equalization for the line level sources (e.g., CD player, MP3 player, sound track from video projection, laptop computer, etc.) through the line level mixer shall be essentially flat ($+0/-3\text{dB}$) from the loudspeaker manufacturer's recommended F_3 of 65 Hz to ~ 3 KHz, and then a linear -3dB/oct roll-off to the limits of the system.

The installing contractor shall have an appropriate impedance bridge, with a reference oscillator at 1 KHz, to measure the load impedance of all loudspeaker lines, *before* connecting any loudspeaker lines to the system amplifiers. A printed record of all loudspeaker line impedances, specifying the identity of each cable, by number, and the measured load in ohms, shall be furnished to the owner's representative.

Dais Table Microphones:

The microphone shall be a fixed-charge condenser designed for permanent installation or portable applications. It shall have a cardioid polar pattern with a uniform 120° angle of acceptance, and a frequency response of 30 Hz to 20,000 Hz. It shall be capable of accepting optional interchangeable elements for additional polar patterns. The microphone shall operate from an external 11V to 52V DC phantom power source. It shall be capable of handling sound input levels up to 139 dB with a dynamic range of 115 dB. Nominal open-circuit output voltage shall be 11.2 mV at 1 V, 1 Pascal. Output shall be low impedance balanced (250 ohms). It shall offer outstanding rejection of radio frequency interference (RFI). The microphone shall incorporate a self-contained power module with an XLRM-type connector at the base for direct connection to a mating XLRF-type panel jack or cable connector. It shall include a recessed switch to permit choice of flat response or 80 Hz low-frequency roll-off. A microphone shock mount shall be supplied for installing the microphone in a solid surface; it shall effectively isolate the microphone from noise, shock and vibration transmitted through the

mounting surface. A two-stage foam windscreen shall also be included. The microphone shall be a small diameter alternating gooseneck design, with an overall length of 365.0 mm (14.37") [481.0 mm (18.94")] and a head diameter of 12.2 mm (0.48"). Weight shall be 144 grams (5.1 oz) [150 grams (5.3 oz)]. Finish shall be low-reflectance black.

The dais table microphones shall be Audio-Technica U857QL or approved equal.

Dais Table Microphone stands:

The heavy desk stand base shall be designed to work with any dynamic gooseneck or phantom powered condenser gooseneck microphone with an integral 3-pin XLRM-type output connector. The unit shall offer a 3-pin XLRF-type input connector and a 3-pin XLRM-type connector for audio output. The unit shall offer a low-reflectance black finish. The unit's dimensions shall be: 160.0 mm (6.29") maximum length, 130 mm (5.11") maximum width, 39.0 mm (1.53") maximum height.

The dais table microphone stands shall be Audio-Technica AT8615 or approved equal.

Dais Table Microphone Cables:

Microphone cables shall be twenty feet (20') in length. The microphone cables shall be engineered for maximum signal transfer and minimum loss. Designed for low-impedance operation, the balanced cables shall feature heavy-duty construction, and shall be terminated with XLR-type connectors, one male (XLR-M) and one female (XLR-F). To protect signal quality, each heavy-duty 24-gauge stranded copper conductor shall have an individual spiral shield inside the molded insulating sheath. A conductive PVC layer inside each shield dissipates static buildup during flexing. Dual copper outer shields and twin conductive PVC inner shields shall protect cable signal quality with 100% coverage. The heavy-duty PVC jacket shall stand up to tough use, provide extra flexibility, and low memory for ease of use/storage

The microphone cables shall be Audio Technica AT-8314-20, or approved equal.

Raised Platform (Stage) Microphone Receptacle Floor Box:

The raised platform (stage) microphone receptacle floor box shall be manufactured from stamped steel approved for use on above grade concrete floors, raised floors and wood floors with the same product. Boxes shall have the ability to accept a component (EFB610-CTR) that will allow the box to be installed in polished concrete or terrazzo floors. Boxes shall have a polyester based backed enamel finished interior (white). Boxes shall be 15-3/16" L x 13-7/8" W x 4-3/16" H [385mm x 351mm x 107mm]. Provide boxes with provisions that enable installation into concrete floors, raised floors, or wood floors without having to purchase additional components or accessories. Provide boxes with six (6) independent wiring compartments that allow for up to six (6) receptacles, communication and/or audio/video services. Boxes shall have removable and relocatable dividers to permit custom configuration of compartments as well as permit feed to adjacent compartments. Boxes shall permit feed to compartments on the opposite side of the box through a tunnel. Each of the four (4) outer compartments shall have a minimum wiring capacity of 32-in³ [524ml]. Each of the two (2) center compartments shall have a minimum wiring capacity of 38.5-in³ [630ml]. Each of the six (6) compartments shall have a minimum depth of 3-7/8" [98mm] behind the plate. Provide boxes with removable compartments to facilitate installation and moves, additions, and changes. The compartments shall be removable from the top and back of the floor box. Provide boxes with two (2) cable guides to organize and maintain the cables egress out of the box. Provide boxes with removable knockout plates to allow for the maximum cable pass-through area. The cable pass-through area shall be a minimum of 6-15/16 in² [176mm²]. The box shall contain the following number of knockouts: 10 1" trade size, six (6) 1-1/4" trade size, six (6) 3/4" trade size, and two (2) 2" trade size. Boxes shall be able to accept up to (6) six 2" trade size conduit feeds in the sides of the boxes, through the use of the EFB6S-2HUB and maintain a 4-inch deep concrete pour. Boxes shall be fully adjustable, accommodating a maximum 2-inch [51mm] pre-concrete pour and a maximum 1/2" [12.7mm] post-concrete pour adjustment.

Equip boxes with toggle clamps to allow box to be secured to raised and wood floors. The box shall be able to accept 2-3/4" x 4-1/2" standard size wall plates. Include mounting brackets with the boxes that will accommodate 15 amp, 20 amp straight blade, 20 amp turn loc, 30 amp straight blade and 30 amp turn loc receptacles, Ortronics® workstation connectivity and modular adapters, a variety of audio/video devices from most manufacturers, and other open system devices.

The Wiremold/Legrand Model EFB6S stage floor box has already been provided and installed in the stage by the City of South Portland.

The Wiremold/Legrand Model EFB610BTCBZ bronze surface style cover with solid lid has already been provided and installed by the City of South Portland.

There shall be a total of twelve (12) XLR-F microphone receptacles and one (1) ¼" phone jack line level receptacle installed in the stage floor box.

Microphone Wall-Mounted Receptacles:

The wall-mounted microphone receptacles shall consist of a single XLR-type female receptacle, mounted on a single-gang Decora style white wall plate. The XLR connector shall be of the solder type.

The microphone wall-mount receptacles shall be Radio Design Labs D-XLR3F microphone receptacle, or approved equal.

Auxiliary Line Input Receptacles:

The auxiliary line input receptacles, for connection of any line-level source such as a laptop computer, MP3 player, etc., shall provide for the passive mixing of two (stereo) unbalanced line-level audio sources to feed a mono balanced audio line. The front panel shall provide two gold plated phono jacks and a single 3.5 mm stereo mini-jack, intended for mono or stereo consumer level sources. An input signal may be connected to either the phono jacks or to the mini-jack. The left and right signal inputs are combined and balanced through audio transformers, configured to reject induced hum. A mono line-level output is provided on the rear-panel detachable terminal block for connection to a 10 kΩ or higher input impedance line-level module or equipment input. The receptacle plate shall be furnished in white.

The auxiliary line input receptacles shall be Radio Design Labs D-CIJ3 mono input receptacle, or approved equal.

Microphone and Line Level Receptacle Cover Plates:

The wall-mount microphone and line level receptacle cover plates shall be white plastic, and shall be of the appropriate number of gangs for the required receptacles.

The wall-mount receptacle plates shall be Leviton Model 80401-W or approved equal for single receptacles.

The wall-mount receptacle plates shall be Leviton Model 80411-W for the stage front apron (triple) receptacles.

Wireless Microphone Systems:

The frequency-agile FM wireless microphone system shall consist of a receiver and the appropriate

transmitter. Operating in the UHF bands of 482.000–507.000 MHz, 541.500–566.375 MHz , or 655.500–680.375 MHz, the system shall be capable of operating on any of 996 – 1001 PLL-synthesized frequencies per band. The frequency-agile FM wireless receiver shall be all-metal and shall provide an automatic scanning function to select appropriate local usable channels for proper wireless system operation. All configuration functions of the receiver shall be controlled by soft-touch controls on the receiver front panel. It shall be a True Diversity receiver with two independent internal receiver sections, automatically selecting the highest quality signal for the receiver's output. The system will be equipped with an advanced Tone Lock™ digital identification system to ensure that only the desired wireless microphone transmitter allows the receiver to be un-muted. The receiver shall have an alert LED on the front panel that indicates transmitter low battery warning, signal loss and input overload. The receiver shall continuously monitor and display the battery life indicator of the wireless transmitter, the RF signal strength and the diversity selection of internal dual tuner sections (A&B). The receiver shall have a rear panel selector to lift the ground connection from pin 1 of the XLR-type output connector to prevent ground loops. The receiver shall be able to be powered by 120V AC 60 Hz or 12–18V DC at 500 mA. Antennas shall be located on the rear of the receiver and shall incorporate standard BNC-type connectors to allow them to be detached from the receiver to facilitate the receiver being used with external antennas or antenna distribution devices. Switchable 12V DC power shall be provided on the BNC-type connectors. An accessory bracket should allow for the antennas to be located at the front of the receiver. The receiver can be rack-mounted singly or in pairs in a single rack space. The receiver's design shall provide totally silent audio output mute when the wireless transmitter is turned off or signal is lost. The wireless receiver and the supplied metal rack-mounting brackets shall be industrial black.

The frequency-agile FM wireless body-pack transmitter shall have microphone and line level inputs. It shall provide DC voltage to power microphones requiring DC bias. The body-pack transmitter shall be a part of a wireless microphone system operating in the bands of 482.000–507.000 MHz, 541.500–566.375 MHz , or 655.500–680.375 MHz. The body-pack transmitter shall have a reversible clip allowing for up or down cable entry. The transmitter shall have a recessed 4-pin locking input connector and a viewable fuel gauge to indicate the remaining battery life. 996-1001 frequencies shall be available and be selected with the soft-touch controls under the safety panel. The device shall have a dual-color LED to indicate power/mute status. There shall be an adjustment to allow input gain changes with a range of 18 dB. The transmitter shall include Tone Lock™ to identify the wireless transmitter to the wireless receiver. This transmitter shall utilize two RF output power levels and shall operate on two AA batteries. The transmitter battery compartment shall be locking. All adjustments shall be via soft-touch controls and shall remain as set even if the transmitter loses power or the batteries are removed. A backlit LCD display shall be provided to show transmitter setup parameters or frequency. The transmitter shall have a removable and field replaceable antenna.

The frequency-agile FM wireless handheld transmitter utilizing a dynamic cardioid element shall be a part of a wireless microphone system operating in the bands of 482.000–507.000 MHz, 541.500–566.375 MHz, or 655.500–680.375 MHz. The capsule shall incorporate internal shock mounting and have a two-stage integral pop filter. It shall be capable of transmitting on any of 996-1001 frequencies per band. It shall have a metal housing with a plastic antenna end cap. The transmitter shall transmit a digital Tone Lock™ signal that allows the receiver to un-mute. A dual-color LED indicator shall illuminate green when the transmitter is turned on and shall illuminate red when the transmitter is muted. A backlit LCD display shall be provided to show transmitter setup parameters or frequency. The microphone shall have an audio input level adjustment range of 18 dB. All adjustments shall be via soft-touch controls and shall remain as set even if the transmitter loses power or the batteries are removed. The transmitter shall operate on two AA batteries and contain a Hi/Lo RF power selector. A battery fuel gauge shall be incorporated to indicate the status of the internal batteries. The transmitter shall be supplied with a heavy-duty stand clamp.

The wireless lavalier microphone system shall be Audio-Technica ATW-3131bC Body-pack System

with AT831cW Lavalier Microphone, or approved equal.

The wireless hand-held microphone system shall be Audio Technica ATW-3141bC, or approved equal.

Control Room Desk Turret:

The Control Room Desk Turret shall have a 12-degree front slope and measure 21.1"W x 18"D (at base). Height shall be seven (7) rack units. The welded assembly shall be 16-gauge steel with fixed front mounting rails tapped 10-32. It shall include protective rubber feet. Finish shall be black wrinkle powder epoxy.

The Control Room turret for desktop use shall be Lowell Model LDSR-718, or approved equal. A pair of rear rack rails, Lowell Model RRTF-7, shall also be provided.

Control Room Desk Turret Remote Controlled AC Receptacles:

The device for remote AC power control inside the control turret shall be a rack mounted device of two rack units (3 ½" panel space). It shall include four duplex outlets, a power supply, relay and circuit breaker. It shall terminate with a six-foot cord. The panel shall measure 19"W x 3.5"H x 2.75"D.

The device for remote AC power control shall be Lowell 15-amp rack panel power control Model RPC-4CD.

Control Room Power Control Buttons:

The device for converting normally open momentary contact closures to latching maintained closures shall be a momentary switch module. It shall allow for multiple momentary style switches to be used to activate equipment that is connected to remote power controls or outlet strips. The device shall include 1 terminal strip for connection to remote power controls. It shall also include 2 terminal strips to connect up to 4 momentary switches when connected to a remote control host, or up to 12 momentary switches.

Switch assemblies for low voltage remote activation of equipment shall operate in conjunction with the remote power control. Switches shall be 19" rack mount panel with momentary closure. Switches shall include two status LEDs and rocker switch activation. Rear connection termination strips shall have a wire capacity of up to 18 gauge.

The device to control the remotely powered AC receptacles in both the control turret and the wall-mounted equipment rack shall be Lowell Model MSM2 momentary switch module or approved equal.

The sound system power control switches in both the control turret and the wall-mount equipment rack for low voltage activation of equipment shall be the Lowell RPSB2-MR or approved equal.

The sound system power control switch on the stage for low voltage activation of equipment shall be the Lowell RPSW2-MP or approved equal.

Automatic Microphone Mixers:

The mixer shall provide 8 differentially balanced mic/line inputs and one auxiliary line input, all on plug-in Phoenix-style connectors on the rear panel. The mixer shall accommodate any low impedance dynamic or condenser microphones. Phantom power shall be +48 volts, and shall be individually switch selectable for each microphone input via rear panel DIP switches. The auxiliary

line input shall be selectable for either front or rear panel ¼" jacks via a rear panel DIP switch. Two front panel screwdriver adjustable equalization (lo-frequency roll-off and high frequency shelving) controls, and rear panel pad switches shall be provided for each input channel. Each input channel shall also include a rotary level control, an LED peak indicator, a high-pass filter switch, and an unbalanced direct output ¼" jack, which is non-gated, pre-fader, and pre-EQ. The mixer main output shall be electronically balanced on a plug-in barrier-strip connector. The output section shall include a limiter with threshold control and a 9-segment output level LED indicator, a rotary Master level control, and a headphone jack with level control. Link in and link out connectors shall allow up to 50 mixers (400 microphones) to be linked, for increased system input capability. Channel 1 automatic priority override shall be assignable on other input channels. Three logic terminals, (Gate Out, Mute In, and Override In) for each of the microphone inputs shall appear at a DB-25 connector on the rear panel. The logic terminals can be used to control external devices such as loudspeaker mute relays. Rear panel DIP switches shall allow adjustment of the Manual/Automatic function, Last-Mic-on function, Hold time, Off attenuation, Limiter threshold, and Local/Global settings for multiple mixers.

The automatic microphone mixer shall allow for multiple microphone operation while maintaining the sound system below the threshold of feedback with fast-acting, noise-free microphone selection and automatic gain adjustment as additional microphones are activated. The mixer shall incorporate a noise adaptive threshold, which distinguishes between constant background noise and changing speech levels for each input. It shall continuously adjust the activation threshold so that only speech levels louder than the background noise activate a channel.

Frequency Response shall be +/- 2dB from 50Hz to 20kHz at +4dBu. THD + Noise shall be less than 0.1% from 20Hz to 20kHz at +18dBV. EIN shall be less than -125dBV and output Hum & Noise shall be less than -90 dBu from 20Hz to 20kHz at nominal level. Dimensions shall be 1.75 inches (1 rack space) high, 19 inches wide, and 12.5 inches deep. Weight shall be 9 lbs 9 ounces. The mixer shall operate from 120 VAC, 50/60 Hz. Power Consumption shall be less than 13 Watts. The mixer shall be CE marked with a UL / C-UL listed power source.

The automatic microphone mixers shall be Shure SCM810, or approved equal.

Four Input Line Level Mixer:

The mixer shall be a high performance mic/line mixer featuring four balanced, studio-grade microphone inputs. XLR connectors shall be provided for mic-level input. TRS switching jacks shall be provided for line-level input. Use of the TRS jacks shall automatically set the preamplifier gain structure for line-level input and defeat phantom power. Each of the four inputs shall feature input gain control, overload indicator, three-band Accelerated-Slope™ equalizer and a Level control. The mixer shall have a post-mix effects loop with Wet/Dry pan control. A single master Level control shall control two unbalanced and two balanced outputs. Unbalanced output jacks shall be RCA type. Balanced outputs shall employ one XLR and one ¼" TRS jack. Each balanced output shall provide an additional 6 dB of gain and deliver a minimum signal level of +24 dBu into a 10k ohm load. The balanced outputs shall be capable of operating at mic level with a maximum output of -16 dBu. XLR inputs shall operate in mic mode with a gain range of +12 dB to +50 dB. Each microphone input shall operate with or without 15 volt phantom power. ¼" TRS inputs shall operate at line-level with a gain range of 0 to 12 dB. If the Line input is inserted, phantom power shall be defeated. The unit shall be capable of operation by means of its own built-in universal power supply operating at 100-240 VAC and meet CE requirements. The unit shall be UL and cUL listed. The unit shall be entirely constructed from cold-rolled steel.

The four-input, line level mixer shall be a Rane MLM42S Mic/Line Mixer, or approved equal.

Control Room Wall-Mounted Equipment Cabinet:

The equipment cabinet to house all of the Lecture Hall and Cafeteria sound system electronics shall be E.I.A. compliant, U.L listed (Standard 1678). The welded rack shall consist of three parts, a back box, a mounting section with side vents, and a locking front door. The unit shall have overall measurements of 42.88" H x 23.06" W x 19.05" D, not including the front door. The mounting section shall be 14.18" deep and formed of 16-gauge certified U.S. steel with triple-formed side-to-bottom and side-to-top wrapped construction to achieve strength equivalent to 3/16" thick steel. It shall include one pair of front-to-rear adjustable mounting rails tapped 10-32 (mounting hardware included), integral rails on E.I.A. spacing (top and bottom), and knockouts for BNC style antennae (top and bottom). The mounting section shall attach to the backbox from the inside using two heavy duty, spring-loaded L-pins that are self seating and positive locking. The L-pins shall be capable of being moved to the opposite side to change swing orientation if needed. The backbox shall be 4.69" deep and shall be formed from 16 gauge certified U.S. steel with keyhole mounting slots on 16" centers. It shall include a 10" x 10" opening for mounting over electrical pull boxes, removable knockout panels (top and bottom), embossed dimples and lacing points on the back plane, and two locks on the 4.69" side for security between the backbox and the mounting section. Knockout panels shall be equipped with 0.5" knockouts for BNC and compound knockouts for conduit size 0.75" - 0.5" and 1.5" - 1". The mounting section and backbox shall have a black wrinkle powder epoxy finish.

The wall-mounted equipment cabinet shall be the Lowell Model LWR-2119.

The wall-mounted equipment cabinet shall be furnished with a solid, locking front door, Lowell Model LFD-21.

Equipment Rack Remote Controlled AC Receptacles:

The device for remote AC power control inside the equipment cabinet shall be a rack mounted device of two rack units (3 ½" panel space). It shall include four duplex outlets, a power supply, relay and circuit breaker. It shall terminate with a six-foot cord. The panel shall measure 19"W x 3.5"H x 2.75"D.

The device for remote AC power control shall be Lowell 15-amp rack panel power control Model RPC-4CD or approved equal.

Equipment Rack Multiple Outlet Strips:

A UL Listed AC power outlet strip shall be mounted inside the sound system cabinet. Power rating shall be 120VAC 15A with circuit breaker protection and an LED indicator that is lit when protection is active. The power strip shall have a suppressed voltage rating of 400V with maximum surge at 6000V and 6500 Amperes maximum peak current. Power strip shall include twelve (12) outlets spaced to accept power supplies. It shall be terminated with a six foot cord and molded plug. It shall install to adjustable or fixed rail racks with a mounting clip and screw.

The AC outlet strip shall be the Lowell Model ACS-1512, or approved equal.

Rack Mount Kit for Audio Distribution Amplifier and Fire Alarm and Emergency Page Mute Relay:

A rack mount kit shall be provided and installed in the system equipment cabinet to house the system audio distribution amplifier (ADA) and the fire alarm and emergency page mute relay. The rack mount kit shall be 19" in width, and occupy one rack unit (1.75") of panel space. It shall provide three (3) front panel openings, for mounting of the ADA and mute relay. Blank filler panels shall be provided for any unused openings. The finish of the rack mount kit shall be black powder epoxy paint.

The rack mount kit shall be Radio Design Labs model RU-RA3A, or approved equal.

The rack mount kit filler panels shall be Radio Design Labs model RU-FP1, or approved equal.

Audio Distribution Amplifier:

The audio distribution amplifier (ADA) shall be a four channel stereo device with both input and output gain adjustments and input level metering. The ADA may be operated in mono mode to provide up to eight distributed mono signals. The inputs and outputs are connected on rear-panel detachable terminal blocks. Each of the two line level inputs accepts either a balanced or an unbalanced signal. Each input is equipped with a front panel INPUT GAIN trimmer. Input signal levels between -14 dBV unbalanced and +9 dBu balanced may be set to the proper operating level as indicated by a dual-LED VU meter. This assures ample headroom at all normal operating levels. The maximum input level is + 25 dBu. A rear-panel switch selects between stereo and mono operation. In the mono position, input A (left) is used to drive all 8 output channels. When the module is used in a monaural system, only input A must be wired. Audio outputs are isolated from each other and may be wired balanced or unbalanced. Each of the outputs is provided with a front panel screwdriver adjusted OUTPUT LEVEL control. Relative to a balanced +4 dBu output level, this gain potentiometer allows an adjustment range from -9 dB to +6 dB. Relative to an unbalanced -10 dBV output, each output potentiometer allows an adjustment from -3 dB to +12 dB. The audio distribution amplifier shall offer exceptional headroom, very low distortion, excellent crosstalk isolation, wide flat frequency response and extremely low noise with very high common-mode signal rejection. It shall operate from 24 VDC connected through a rear-panel detachable terminal block.

The audio distribution amplifier shall be the Radio Design Labs RU-ADA4D, or approved equal.

Fire Alarm and Emergency Page Mute Relay:

A fire alarm and emergency page mute relay shall be fabricated and installed in the wall-mounted equipment cabinet to provide emergency override of the Lecture Hall sound reinforcement system in the event of a fire alarm or emergency page from the office intercom. The fire alarm and emergency page mute relay shall be constructed in a single rack unit housing according to contract drawing #424-8, and mounted in the rack mount kit containing the audio distribution amplifier.

The fire alarm and emergency page mute relay shall provide for connection of a pair of dry contacts from a relay supplied and installed within the wall-mounted equipment cabinet by the fire alarm company. The dry contacts shall be maintained (closed) for the duration of a fire alarm. The fire alarm dry contacts shall cause any audio originating within the Lecture Hall sound system to be muted for the duration of the fire alarm, unless overridden by the office intercom system. It shall not be necessary to reset the fire alarm and emergency page mute relay or the sound system at the end of the fire alarm signal; normal operation of the Lecture Hall sound system shall resume immediately upon the conclusion of the fire alarm.

The fire alarm and emergency page mute relay shall provide for connection of a 24 VDC priority override signal from the office intercom system, which shall be maintained for the duration of the emergency page. A standard 25 volt intercom/paging speaker line shall also be connected from the office intercom. During an emergency page from the office, the Lecture Hall sound system shall be turned on in the event that it was off, all audio signals originating within the Lecture Hall shall be muted, and the emergency page from the office intercom shall take precedence. Even in the event of a fire alarm, the fire alarm and emergency page mute relay shall allow emergency messages from the office to override the Lecture Hall sound system.

The fire alarm and emergency page mute relay shall be fabricated as shown in contract drawing #424-8.

Hearing Assistive System:

A wireless FM hearing assistive system shall be furnished for the Lecture Hall. The hearing assistive system shall consist of a wireless FM transmitter, mounted in the equipment rack, and a series of four (4) portable receivers. The transmitter shall be microprocessor controlled with push button configuration. It shall have an operating range of up to 1000 feet. It shall have 17 wideband channels operating on 72.1-75.9 MHz. It shall have 77 narrowband channels operating on 72.025-75.975 MHz. The transmitter shall have a push button controlled LCD digital display. There shall be three pre-configured (selectable) application presets: Hearing Assist, Music and Voice. Configurations for Bandwidth, Frequency, Audio Input Source (Microphone, Line, Simplex), High Pass Filter, Low Pass

Filter, Compressor Slope, Compressor Gain and RF Output Power shall be push button controlled. The audio level shall be adjustable by push button control. There shall be a 10 LED array showing audio level from +9 to -18 at 3dB intervals. The transmitter shall have a 1/4" phone jack with push button volume control. It shall have push button control for monitoring source audio or transmitted audio. It shall have an input overload indicator. It shall have an "on" indicator and power button. The transmitter shall be powered by 24 VAC power supply via a 3-pin Molex® connector. It shall have a 75 ohm F-connector antenna. It shall have an ANT 025 whip antenna on the top panel directly connected to the circuit board. The transmitter shall have an RCA line output jack. It shall have a combination 1/4" phone/XLR audio input jack. It shall have an RF "Off" timer that turns off RF signal after 1 hour of no audio activity. The transmitter shall be FCC compliant with RoHS and WEEE regulations and be powered by UL and CSA power supply. It shall have a Lifetime PLUS Limited Warranty. It shall be compatible with other specified FM equipment operating on 72-76 MHz.

The receiver shall be encased in black, PC/ABS impact-resistant plastic with a hinged battery door. The receiver shall be a body-pack style and include a detachable belt-clip for hands-free operation. The receiver shall have a 3.5mm stereo/mono jack to accommodate stereo or mono low impedance earphones, headphones and neckloops. Receiver shall have a combination volume control with power on/off rotary dial. It shall have a green LED indicating battery and system status codes. The receiver shall have access to 17 wideband channels between 72-76MHz. Channel selection shall be made by pushing the seek button inside the battery compartment. Receiver shall have channel-lock capability. Receiver shall have a slide switch inside the battery compartment to select Alkaline or rechargeable NiMH rechargeable battery operation. It shall have charger contacts on the bottom of the receiver for use with drop-in chargers. The receiver shall operate up to 48 hrs with two AA Alkaline batteries, and up to 30 hrs with two AA NiMH rechargeable batteries. The receiver shall provide a maximum out of 35mW at 16 ohms with an earbud-type earphone. The system's audio frequency response shall be 200Hz to 15kHz \pm 3dB and the signal-to-noise ratio shall be 65dB min. The receiver sensitivity shall be 2 μ V or better at 12dB Sinad with squelch defeated. The receiver shall accept up to \pm 75kHz FM deviation and have a 75 μ s de-emphasis time constant. The receiver shall have FCC, Industrie Canada approvals and be compliant with RoHS and WEEE regulations. The receiver shall be covered by a Lifetime PLUS Limited Warranty.

The transmitter shall be the Williams Sound model number PPA T35.

The four receivers shall be the Williams Sound model PPA R37.

The transmitter rack mount kit shall be Williams Model RPK-005.

Digital Signal Processor (DSP):

The digital signal processor shall provide two balanced line inputs, a digital stereo AES3 input, a front panel USB port, and six balanced analog outputs. The inputs shall be 100% controllable via software, including gains. An industry-standard, two channel AES3 digital expansion input shall be provided via an XLR-type connector. Analog audio inputs and outputs shall be accessible via rear panel XLR-type connectors. The signal processing configuration shall be 100% user programmable using supplied software. The control software shall provide complete display and control, in graphical form, of all signal processing configurations and functions. The signal processing configurations shall be 100% drag and drop configurable utilizing a variety of digital signal processing algorithms, including but not limited to:

- Analog & digital input & output gains.
- Parametric bandpass, all-pass, high & low shelf & cut filters.
- Mix, select, level control, delay, pink noise/sine wave generator.
- Linkwitz-Riley, Butterworth, Bessel crossovers (various slopes).
- Compression, limiting, automatic gain control.

Control ports shall include 8 logic inputs for contact closure preset recall or potentiometer level control. There shall be up to 80 non-volatile presets (60 factory presets and 20 programmable user

presets) to store settings for later recall using a dedicated on-site computer or via external contact closure, making the computer optional once the unit is programmed. Contact closure ports shall be able to be paralleled for recalling the same Preset number across multiple units. Direct-access buttons for editing DSP parameters shall be available on the front panel. All processing settings shall always be stored in nonvolatile memory within the unit, thus allowing for power or computer failure without loss of settings. Data conversion shall be 24-Bit Delta-Sigma, 24-bit/sigma-delta 128 times oversampling Linear Phase with a minimum 111 dB dynamic range. A switchable input PAD (-6dB) placed prior to the AD converter can be activated. The device input impedance shall be 10 K Ω , and the frequency response shall be 10 Hz - 22 kHz \pm 0.5 dB. The unit shall provide 3-color LED meters for each input and output level. There shall be front panel Power, Status, Ethernet, and control logic port communications indicators, and an illuminated display of the currently recalled preset. The device shall have certified compliance with FCC Part 15J for a Class B computing device and EMC/CE 89/336/EEC (CE certified). The device shall feature a built-in universal voltage power supply capable of operating from 100 to 240 VAC, 50-60 Hz. The unit shall feature an IEC socket line cord. The unit shall meet UL/CSA and CE safety requirements. The unit shall be constructed of cold-rolled steel and mount into a standard 19" 1U EIA rack. The unit shall comply with the AES48 Grounding Standard.

The digital signal processor shall be the Electro-Voice DC-One or approved equal.

Power Amplifiers:

Two identical dual channel power amplifiers shall be provided, for a total of four discrete amplifier channels, to power the main loudspeaker cluster components and the Control Room monitor loudspeaker. The two-channel power amplifier shall incorporate the latest amplifier technology to deliver a minimum power of 650 Watts per channel into 2 Ohm loads, 450 Watts per channel into 4 Ohm loads, or 270 Watts per channel into 8 Ohm loads with both channels operating. The amplifier shall have rear panel switching for parallel mono and bridging modes. When switched into bridged-mono mode, the amplifier it shall deliver 1,300 Watts into a 4 Ohm load and 900 watts into an 8 ohm load. The amplifier protection shall include circuitry against overheating, overload, short circuit, HF and DC as well as back-EMF. Frequency response shall be 10Hz to 40kHz \pm 1dB (1W @ 8 Ohms). The Signal-to-Noise Ratio shall be greater than 108dB at rated power into 8 Ohms (unweighted). THD shall be less than 0.03% into 4 Ohms, 20Hz – 20kHz and 10dB below rated power. The amplifier shall have a channel attenuator for each input on the rear panel, and a high-pass filter switch on the rear panel. The inputs shall be 20 k Ω electronically balanced bridging type with Phoenix 3 pin connectors. The amplifier gain shall be 32 dB, with input sensitivity of 2.2 dBu (1.0V), and a maximum input voltage of +21 dBu (8.69 Vrms). The output impedance shall be 2/4/8 Ω . L.E.D type indicators shall be employed to show the relative power level of each channel, clip/protect, and power on/off. Two self contained front-to-rear forced air cooling fans shall be used. The power amplifier shall weigh 12.6 kg (27.8 lbs) and mount in a standard 19 inch rack using two spaces (3.5 inches high). The power requirement shall be 110 – 125VAC, 50 – 60Hz.

The power amplifier shall be the Electro-Voice CPS 2.4 MK II or approved equal.

Loudspeaker Systems:

The Lecture Hall loudspeaker 'cluster' shall be comprised of two identically sized loudspeaker enclosures with different dispersion characteristics, horizontally mounted, one above the other, at the ceiling plane at the leading edge of the raised platform. The upper loudspeaker enclosure shall have a high frequency dispersion of 60 $^{\circ}$ H x 40 $^{\circ}$ V, and the lower loudspeaker enclosure shall have a high frequency dispersion of 120 $^{\circ}$ H x 60 $^{\circ}$ V (with the high frequency wave guides rotated 90 $^{\circ}$). (See drawing #424-9).

Both loudspeaker enclosures shall be of the two-way type, with a frequency response of 58 Hz to 16 KHz

(+0 dB/-3dB). Axial sensitivity (1W/1M) shall be 98 dB. The recommended high pass frequency (f_3) shall be 65 Hz. The maximum SPL from the loudspeaker shall be 131 dB. The trapezoidal enclosures shall be constructed of 13 ply weather resistant birch, and coated with a protective coating for maximum protection from the elements. The loudspeaker systems shall provide an externally accessible jumper to select passive or active operation. Connections to the loudspeaker shall be via phoenix style connector. The low frequency driver shall be a 12" woofer using FEA optimization for motor, suspension, and electrical design for very low distortion, high efficiency, and maximum intelligibility at high SPL levels. The high frequency driver shall be a high output 2" titanium compression driver, coupled to a constant directivity waveguide. Power handling for the loudspeaker system shall be 500W continuous, 2000W peak. The built-in passive crossover frequency shall be 1450 Hz, and shall have fourth order (24 dB/oct) slope rates and high frequency protection. The nominal impedance of the loudspeaker system shall be 8Ω , and the minimum impedance shall be 6Ω . The loudspeaker enclosure shall provide a total of twenty-two (22) M10 threaded suspension points. The loudspeaker enclosure dimensions shall be 30.26" x 16.00" x 16.27" (768.6mm x 406.3mm x 413.3mm), and the weight shall be 63.1 lb (28.6 kg). The loudspeaker enclosure finish shall be white.

The Lecture Hall loudspeaker cluster enclosures shall be Electro-Voice EVF-1122S/126-WHT and Electro-Voice EVF-1122S/64-WHT, or approved equal.

Control Room Monitor Loudspeaker:

The loudspeaker shall be a two-way system consisting of a 13 cm (5-1/4") low-frequency loudspeaker, 2.5 cm (1 inch) high-frequency loudspeaker and frequency dividing network installed in a vented enclosure. The dividing network crossover frequency shall be 3,500 Hz. The dividing network shall include protection circuits for both the low frequency loudspeaker and the high-frequency loudspeaker. The loudspeaker system shall meet the following performance criteria: Power handling, 120 watts per EIA RS-426A. Frequency response ± 3 dB from 85 Hz to 20 kHz. Pressure sensitivity, 85 dB SPL at one watt, 100 Hz to 10 kHz measured at a distance of one meter on axis. The loudspeaker impedance shall be 4 ohms nominal, 3.7 ohms minimum. The enclosure shall be molded of high impact polystyrene structural foam. The unit shall be 24.9 cm (9.8 inch) high, 17.8 cm (7.0 inch) wide, 15.0 cm (5.9 inch) deep.

The Control Room monitor loudspeaker system shall be the Electro-Voice model S-40 or approved equal.

South Portland High School

Cafeteria Sound Reinforcement System

Specifications:

Cafeteria Hanging Loudspeakers:

The loudspeaker system shall include a high performance 4.0 inch coaxial loudspeaker in a ported bass reflex enclosure and press-fit aluminum grille for conventional ceiling installation via cable or down tube mounting system. Frequency response for the system shall be 70 Hz – 20 kHz (± 5 dB). Sensitivity shall be 88 dB average. Magnet shall be a minimum of 10 oz. (264 g) and the voice coil diameter shall be 1" (25 mm). Transformer shall be (70.7V/100V) volt type with 1, 2, 4, 8, & 16 Watts primary taps (@ 70.7V) and a transformer bypass position for 8Ω direct coupled operation on an

integrated 8 position terminal block .

The hanging loudspeaker shall be the Atlas Sound Model PM4FA-WH or approved equal.

Cafeteria Ceiling-Mount Loudspeakers:

The ceiling-mounted loudspeaker system shall be UL listed and include a coaxial, 4" loudspeaker, matched enclosure, and flush grille. The loudspeaker, enclosures and grilles shall be listed by Underwriters Laboratories (UL 1480 General Signaling) to U.S. and Canadian safety standards. Nominal frequency response of the system shall be 110Hz – 20kHz and the sensitivity shall be 92dB (peak) measured at 1W/1M across the full bandwidth. Power rating shall be 25 Watts. Unit shall be comprised of 4" diameter low frequency driver and a .5" high frequency driver. Magnet shall be a 10oz and the voice coil diameter shall be 1" (25mm). Dispersion shall be 130° measured in the enclosure at -6dB, 2kHz octave band. Transformer-equipped models shall include factory wired 70.7V volt transformer with primary taps of 1, 2, 4, & 8 Watts.

The loudspeaker shall be the Atlas Sound Model FA134T87 or approved equal.

The 4" loudspeaker enclosures shall be acoustically-treated, front-loading units, equipped for installation in ceilings up to 2-3/8" thick. The enclosure shall have a depth of 6-1/8". The enclosure shall be equipped with conduit knockouts. The enclosures shall be constructed of CRS (22-gauge top ring & 20-gauge bottom/sides), painted and shall include four threaded inserts for loudspeaker installation and three stud receptacles for accepting loudspeaker grilles. The enclosures shall be electro galvanized. The enclosures shall use clamping dog legs for ceiling mounting and stud receivers for wall mounting. The enclosures shall be lined with high density acoustic batting.

The loudspeaker enclosure shall be the Atlas Sound Model FA95-4 or approved equal.

The loudspeaker grilles shall measure 8-5/8" diameter x 1/4" projection (216mm x 5.8mm). The round grilles shall feature a one-piece, stamped, perforated opening with 1/8" diameter holes equally spaced, forming a perforation pattern which allows for high-quality sound transmission.

The loudspeaker grilles shall be the Atlas Sound Model FA51-4 or approved equal.

The ceiling tile bridge for 4" loudspeakers shall be designed to prevent ceiling tile sag by distributing the loudspeaker assembly weight to the ceiling's support members. The tile bridge shall accept the specified enclosure and shall be constructed of 24-gauge electro-galvanized steel. The tile bridge shall measure 14-1/8" (359mm) x 23-5/8" (600mm), with a 6-1/2" (165mm) opening. The weight shall be 2.38 lbs. /1.1 kg.

The tile bridge shall be Atlas Sound Model FA81-4 or approved equal.

Remote Volume Control:

The remote volume control shall be mounted on a single gang Decora-style white plate, and shall be a 10 kΩ linear potentiometer with knob. The remote volume control panel shall have 10 graphic increments which provide a visual indication of the level setting. Connections shall be via a shielded pair cable to three screw terminals on the rear of the remote volume control. The remote volume control shall connect to the "Remote Volume Control" terminals of the mixer-amplifier, and shall serve as the master volume control for the Cafeteria system.

The remote volume control shall be Radio Design Labs Model D-RLC10K or approved equal.

Microphone Wall-Mount Receptacles:

The wall-mounted microphone receptacles shall consist of a single XLR-type female receptacle, mounted on a single-gang Decora style white wall plate. The XLR connector shall be of the solder type.

The microphone wall-mount receptacles shall be Radio Design Labs D-XLR3F microphone receptacle, or approved equal.

Auxiliary Line Input Receptacles:

The auxiliary line input receptacles, for connection of any line level A/V source, shall provide for the passive mixing of two (stereo) unbalanced line-level audio sources to feed a mono balanced audio line. The front panel shall provide two gold plated phono jacks and a single 3.5 mm stereo mini-jack, intended for mono or stereo consumer level sources. An input signal may be connected to either the phono jacks or to the mini-jack. The left and right signal inputs are combined and balanced through audio transformers, configured to reject induced hum. A mono line-level output is provided on the rear-panel detachable terminal block for connection to a 10 k Ω or higher input impedance line-level module or equipment input. The receptacle plate shall be furnished in white.

The auxiliary line input receptacles shall be Radio Design Labs D-CJ13 mono input receptacle, or approved equal.

Cafeteria Sound System Hand Held Microphone:

The hand held microphone for use in the Cafeteria shall be of the dynamic neodymium type, and shall have a cardioid pattern. The output from the microphone's XLRM-type connector shall be low impedance balanced. The signal appears across Pins 2 and 3; Pin 1 is ground (shield). Output phase is "Pin 2 hot" – positive acoustic pressure produces positive voltage at Pin 2. The microphone shall provide a switch with silent on-off operation. A two-stage ball-type windscreen shall be incorporated which reduces wind noise and "popping" during close use. The microphone shall provide superior internal shock mounting to reduce handling noise. The microphone shall provide corrosion-resistant contacts from gold-plated XLRM-type connectors.

The Cafeteria microphone shall be the Audio Technica PRO 41 cardioid dynamic microphone or approved equal.

Microphone Floor Stand:

The Cafeteria microphone floor stand shall consist of a nine (9) pound hexagonal cast base and an adjustable (33" – 61") black shaft. The shaft shall install into the base by just pushing down and turning the shaft one-quarter turn clockwise to lock, or pushing down and turning one-quarter turn counter-clockwise to remove.

The sidebar microphone floor stand shall be the On Stage Stands MS-7625, or approved equal.

Cafeteria Loudspeaker Switch:

A double pole double throw (DPDT) toggle switch shall be installed in a single rack unit blank panel in the Control Room equipment cabinet, and connected to switch on and off all of the Cafeteria

loudspeakers except the seven (7) ceiling-mounted loudspeakers in Breakout Cafeteria Room F-109, which shall remain connected all the time.

Mixer-amplifier:

The mixer power amplifier shall have eight mixer input ports and shall be capable of operation from a 120V, 50/60Hz line. Each input port shall be usable with microphone, phono pickup or high-level devices. The amplifier shall meet the following performance criteria. Power output shall be 120W at less than 0.5% THD from 20 to 20,000Hz (direct output) or 50 to 20,000Hz(transformer output). Frequency response shall be ± 1 dB from 20 to 20,000Hz (direct output) or 20 to 15,000Hz (transformer output).Source impedance shall be 200/50K ohms with a microphone preamplifier,50k ohms with a mag. phono preamplifier, 220k ohms with an auxiliary preamplifier, 10k ohms with a bridging transformer, 600 ohms with a line matching transformer and 600 ohms with a paging input. Load impedance shall be 4, 8, 5.2 (25V line) or 40.8 (70V line) ohms. Load voltage shall be 21.9, 31.0, 25 or 70 volts. Equivalent input noise shall be -126dBm with a Lo-Z microphone preamplifier. Output noise shall be 90dB below rated output when all gain controls are off. TOA plug-in accessory modules designed for use with the A-912MK2 mixer power amplifier shall utilize the latest in surface mount component technology and include the following modules: the M Series microphone preamplifiers available with muting, remote volume control, voice gate and compressor options; the U Series auxiliary preamplifiers available with muting, remote volume control and compressor options; the R-01 magnetic phono preamplifier; the B Series bridging transformers available with muting option, the L Series line matching transformers available with muting option; the S Series signal generator modules, and the I-01 TOA intercom system interface paging module. Also available shall be the T-01 module featuring 600-ohm balanced output capability, and the T-02 module featuring auxiliary input and balanced line output for music-on-hold. The mixer power amplifier shall be rack mounted using the TOA MB-25B rack mounting bracket. The amplifier's dimensions shall be 16.5"(W) x 3.9"(H) x 14.1"(D) (420 x 99.1 x 358mm) and its weight shall be 25.1 Lbs. (11.4kg).

The mixer-power amplifier shall be TOA Model A-912MK2 or approved equal.

Input Modules:

The microphone input modules shall be powered by 24 VDC @9 ma. supplied from the mixer-amplifier mainframe. The input shall be 600 Ω balanced with jumper-defeatable phantom power of +22 VDC. Input sensitivity shall be -60 dB, with gain adjustable from 32 dB to 52 dB. Frequency response shall be 25 Hz to 20 KHz, ± 2 dB. Distortion shall be less than 0.05%. Noise level shall be -86 dB, with equivalent input noise of -126 dB. There shall be two shelving tone controls (bass and treble), with levels adjustable from 0 to -10 dB at 100 Hz and at 10 KHz. Input connections shall be via removable 3-pin terminal block.

The microphone preamplifier modules shall be TOA Model M-01S or approved equal.

The balanced line level input module shall be powered by 24 VDC supplied from the mixer-amplifier mainframe. The input shall be 10 K Ω balanced. Input sensitivity shall be -18 dB. Frequency response shall be 20 Hz to 20 KHz, ± 1.5 dB. Input connections shall be via removable 3-pin terminal block.

The line input modules shall be TOA B-01S or approved equal.

Essential drawings are located at:

CORRECTED LINK:

<http://infotech.spsd.org/lecturehall>

Response Summary

Total Price:_____

The UNDERSIGNED having examined the job site located at 637 Highland Avenue, South Portland, Maine, hereby proposes to perform the work including all labor, materials and equipment necessary to complete the work in a manner satisfactory to the South Portland School Department, in accordance with the attached Request for Proposal, detailed specifications, and at following time and price specified on this page:

1. Purchase and Installation of Audio System for the Lecture Hall and Cafeteria:

Total contract price for a complete installation including
all items specified in the RFP \$ _____

Guarantee labor period: _____

The work to be performed under this item shall be commenced by _____ and fully completed on or before _____.

Signed: _____
(Corporation, Firm or Company)

By: _____ Title: _____
(Officer, Authorized Individual or Owner)

Mailing Address: _____ State: _____ Zip Code: _____

Telephone: () _____ Fax: () _____

Email: _____ Date _____

NOTE: Bids must bear the handwritten signature of a duly authorized member or employee of the organization making the bid.