September 28, 2006

Request for Proposal #09-07
Audiovisual Systems
University of Maine at Farmington
New Education Center
Farmington, ME 04938

Prepared by:

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SECTION 1 - GENERAL INFORMATION

Background
The University was founded in 1864 as Maine’s first public institution of higher education. It was founded a “Normal School” — a term used to describe a school dedicated to preparing teachers. Today, UMF continues to be a leader in education.

The College of Education, Health, and Rehabilitation is fully accredited by NCATE, which not only speaks to the outstanding quality of their teacher education programs, but also certifies UMF education graduates to teach in some thirty-three states across the U.S.

The new UMF Education Center will be a gathering place for people who care about education, teaching and learning about teaching. UMF faculty, undergraduates and practicing teachers will find a home here. Planners will create spaces in which ideas can be shared, where people can learn together, and where "best practices" can be modeled.

The new space — nearly 43,000 square feet — will create opportunities for teaching and learning that are simply not possible now.

Purpose
The University of Maine at Farmington (University) (UMF) is requesting qualified Vendors to submit proposals for audio, video and control systems equipment and installation for the above referenced project.

The intent of these specifications is to provide the University with a complete and operating system. The Offeror shall review the specifications and system configuration and provide or recommend any additional interfacing devices required whether or not specifically enumerated herein. The Offeror shall furnish all other installation materials, and items not furnished by the University, as required to complete the proper installation of the systems, as defined in the contract documents.

The scope of this project is to provide audiovisual systems for the rooms listed below. Note that each room has a system “type” number that relates directly to the drawings and the specifications, as several rooms are identical.

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Note that there are two Alternates included in the specifications. Alternate 4A is for the Distance Learning Room. Alternate 6A is for the Dean’s Conference Room.

**Project Timeline**

- RFP Release date: September 28, 2006
- Pre-proposal conference and site walk-through: October 10, 2006
- Deadline for submittal of questions (5 business days prior to proposal due date)
- Proposal due date: October 19, 2006
- Contract award: October 27, 2006
- Contract completion: January 2007

**DEFINITIONS**

- **University**
  The University of Maine at Farmington (University) (UMF).

- **Bidders**
  The terms “Bidder,” “Offeror,” “Contractor,” “Vendor,” “AV Contractor (Contractor)” and such, shall as the context permits, mean a firm or firms bidding or proposing to bid on this proposal and the firm or firms to which this contract is awarded.

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1 System 5, IMAT is not part of this contract.

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Shall, must or will
Features and specifications indicated with the words “shall” “must” or “will” constitute a mandatory requirement. The University reserves the right to waive or enforce any mandatory or other requirement in its own best interests.

Should
Features and specifications indicated with the word “should,” indicate a desirable feature. Offerors shall indicate in their proposal whether a particular product or service complies with these features.

Any
Certain items may be identified as “ANY.” Offeror may use any brand (or one of the specified brands) of product(s) as long as the product meets the technical criteria set by the specification or manufacturers listed.

Equivalent bid products/alternate bid items
Proposals are requested on this inquiry in accordance with brands, specifications and/or testing and are understood to include “or equal.” Manufacturer Names and Model Numbers, when named, are for establishing the standard of quality, design, and utility of the article desired.

If any items bid are other than "As Specified,” the Vendor MUST:

- Provide a Sample of the Alternate Item bid to the University, for pre-approval, at least ten (10) business days prior to the Proposal opening date,
- Include Literature with a picture and Specifications of the Alternate product, in the Bid Packet,
- Shall include non-equivalent pricing on line noted as Non Specified Alternate for easy analysis,
- Specify on the Bid Summary where there is an exception to the specified item. Failure to do any of the above may constitute grounds for a bid to be rejected as a nonconforming.

The University shall in its sole discretion determine what product is equal to that named, but the burden of proof and costs of any tests shall be the responsibility of the Vendor.

Consultant’s Role
The Consultant will assist the University in providing prompt and accurate answers, in writing, to any questions or comments received.

The Consultant’s role during the evaluation of responses to this specification will be to objectively determine compliance with the technical and procedural bidding requirements, confirm the accuracy of responses and to assist the University in evaluating
equipment substitutions and/or alternates as appropriate. The Consultant shall, under
direction of the University, review responses, and issue a compliance report for each
Offeror.

4 Evaluation Criteria

- Proposals will be evaluated on many criteria deemed to be in the University's best
  interests, including, but not limited to:
- Base proposal price
- Quality and reliability
- Ability to meet specifications
- Offeror's experience in the products and services specified herein
- Stability of Offeror
- Offeror references
- Product applications and features offered, flexibility and expandability
- Offeror's capabilities as a comprehensive source for products and services in an
  ongoing business partnership relationship
- Offeror's customer service and support services
- Product design
- Training program
- Utilization of industry standards
- Type and manufacturer of products
- Warranty and maintenance stipulations
- Replacement of parts and equipment costs
- Offeror’s ability to interface with existing campus requirements

Communication with the University

It is the responsibility of the bidder to inquire about any requirement of this RFP that is
not understood. Responses to inquiries, if they change or clarify the RFP in a substantial
manner, will be forwarded by addenda to all parties that have received a copy of the RFP.
The University will not be bound by oral responses to inquiries or written responses other
than addenda.

Inquiries must be made to: Hal Wells or Kevin Carr
Office of Strategic Procurement
University of Maine System
16 Central Street
Bangor, Maine 04401
(207) 973-3302 / 3307

Award of Proposal

Presentations may be requested of two or more Offerors deemed by the University to be
the best suited among those submitting proposals on the basis of the selection criteria.
After presentations have been conducted, the University may select the Offeror which, in
its opinion, has made the proposal that is the most responsive and most responsible and
may award the contract to that Offeror. The University reserves the right to waive minor
irregularities. Scholarships, donations, or gifts to the University, will not be considered
in the evaluation of proposals. The University reserves the right to reject any or all
proposals, in whole or in part, and is not necessarily bound to accept the lowest cost
proposal if that proposal is contrary to the best interests of the University. Should the
University determine in its sole discretion that only one Offeror is fully qualified, or that
one Offeror is clearly more qualified than any other under consideration, a contract may
be awarded to that Offeror without further action.

**Award Protest**

Offerors may appeal the award decision by submitting a written protest to the University of Maine System’s Director of Strategic Procurement within five (5) business days of the award notice, with a copy of the protest to the successful Offeror. The protest must contain a statement of the basis for the challenge.

**Confidentiality**

The information contained in proposals submitted for the University's consideration will be held in confidence until all evaluations are concluded and an award has been made. At that time, the winning proposal will be available for public inspection. Pricing and other information that is an integral part of the offer cannot be considered confidential after an award has been made. The University will honor requests for confidentiality for information of a proprietary nature. Clearly mark any information considered confidential.

**Proposal Understanding**

The Offeror shall clarify all questions and any misunderstandings prior to proposal submission and offer alternates if appropriate. The Offeror shall check in detail each item of equipment specified, each portion of the installation and the complete installation to insure that the intent of this specification is achieved.

**Proposal Validity**

Proposals shall remain open, valid, and subject to acceptance for at least thirty (30) days after opening date.

**Cost of Proposal Preparation**

Offeror assumes all costs of preparation of the proposal and any presentations necessary to the proposal process.

**Proposal Submission**

A signed original plus 3 copies of the proposal along with an electronic copy in Word, Excel or Adobe Acrobat format must be received at the Office of Strategic Procurement, University of Maine System, 16 Central Street, Bangor, Maine 04401, in a sealed envelope by close of business, Thursday, October 19, 2006. Proposals shall
contain the information outlined herein under “Consideration of Proposals” and the envelope shall be clearly marked “RFP #09-07 UMF AV System”. Offerors are strongly encouraged to submit proposals in advance of the due date to avoid the possibility of missing the deadline due to unforeseen circumstances. Offerors assume the risk of the methods of dispatch chosen. The University assumes no responsibility for delays caused by any package or mail delivery service. A postmark on or before the due date WILL NOT substitute for receipt of bid. Proposals must be date stamped by the University on time to be considered. In the event that the University is closed due to inclement weather at the time that a proposal is due, the proposals will be opened on the next day that the University is open. Offerors may wish to call 207-973-3298 if the weather is bad, to learn if the University has closed. Proposals received after the due date will be returned unopened. Additional time will not be granted to any single Offeror, however, additional time may be granted to all Offerors when the University determines that circumstances require it. FAXED PROPOSALS OR E-MAIL PROPOSALS WILL NOT BE ACCEPTED.

Pre-Proposal Conference and Site Walk-through
A pre-proposal conference and site walk-through will be held on Tuesday, October 10, 2006 at 1:00 p.m. local time at the New Education Center on the University of Maine Farmington campus. The purpose of the conference is to answer questions and provide further clarification as may be required. Please hold all questions until this meeting. Attendance by all prospective bidders is MANDATORY.

Firms planning to attend this pre-bid conference should contact Erin Tapley at 207-973-3313 no later than 4:00 p.m. local time on Friday, October 6, 2006 with the names and titles of the individuals who will attend.

Examination of Drawings, Specifications and Site
The Offeror shall include in their proposal a sum to cover all cost of all items necessary to perform the work as set forth in these documents. No allowance will be made to any Offeror because of lack of such examination or knowledge. The submission of a proposal will be construed as conclusive evidence that the Offeror has made such an examination. Proposals will not be accepted from Offerors who do not attend the pre-bid conference and site walk through.

Proposals become the Property of University
Upon submission to the University, all Proposals (including all materials, ideas and formats submitted in response to this RFP) shall become the property of University. The University reserves the right to make use of any information or ideas contained in the Proposal.

SECTION 2 - GENERAL TERMS AND CONDITIONS
Contract Documents
If a separate contract is not written, the contract entered into by the parties shall consist of this Request for Proposal, the signed Proposal submitted by the Contractor, the specifications including all modifications thereof, and a purchase order or letter of agreement requiring signatures of the University and the Contractor, all of which shall be referred to collectively as the Contract Documents.

Debarment
Submission of a signed proposal in response to this solicitation is certification that your firm (or any subcontractor) is not currently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any State or Federal department or agency. Submission is also agreement that the University will be notified of any change in this status.

Discrepancies
If Offeror discovers any ambiguity, conflict, discrepancy, omission or other error in the RFP or any of its attachments, they shall immediately notify the University of such error, in writing, and request modification or clarification of the document. Modifications shall be made by addenda. Clarification shall be given by written notice to all parties who have been furnished or who have requested an RFP for bidding purposes.

If Offeror fails to notify the University prior to five (5) business days before bids are due of an error in the RFP known to Offeror, or an error that reasonably should have been known to Offeror, Offeror shall bid at its own risk. If Offeror is awarded the contract, it shall not be entitled to additional compensation or time due to the error or its later correction.

If, however, Offeror believes that one or more of the RFP requirements impose unnecessary constraints on Offeror in proposing less costly or alternate solutions, they may request a change to the RFP by submitting, in writing, the recommended change(s) and the facts substantiating their belief and reasons for making the recommended change. Such requests must be submitted to the University on or before five (5) business days before proposals are due. Oral statements shall not be binding on the University.

Contract Validity
In the event one or more clauses of the contract are declared invalid, void, unenforceable or illegal, that shall not affect the validity of the remaining portions of the contract.

Cancellation/Termination
The University has the right to terminate this Agreement, in whole or in part, with or without cause, upon thirty (30) days written notice. As of the date specified in the notice, Contractor shall stop all performance under this Agreement, except as otherwise directed.
by the University, provide the University with a list of all unperformed services, and take
such action relative thereto as Contractor may be directed by the University.

Clarification of Responsibilities
If the Contractor needs clarification of or deviation from the terms of the contract, it is
the Contractor's responsibility to obtain written clarification or approval from Robert
Lawrence 778-7009.

Litigation
The Contract and the rights and obligations of the parties hereunder shall be governed by
and construed in accordance with the laws of the State of Maine without reference to its
conflicts of laws provisions. The Contractor agrees that any litigation, action or
proceeding arising out of this Contract, shall be instituted in a state court located in the
State of Maine.

Assignment of Contract
Neither party of the Contract shall assign the Contract without the prior written consent
of the other, nor shall the Contractor assign any money due or to become due without the
prior written consent of the University.

Employment Opportunity
In the execution of the contract, the Contractor and all subcontractors agree, consistent
with University of Maine System policy, not to discriminate on the grounds of race,
color, religion, sex, sexual orientation, transgender status or gender expression, national
origin or citizenship status, age, disability or veteran’s status and to provide reasonable
accommodations to qualified individuals with disabilities upon request.

Independent Contractor
Whether the Contractor is a corporation, partnership, other legal entity, or an individual,
the Contractor is an independent contractor. If the Contractor is an individual, the
Contractor’s duties will be performed with the understanding that the Contractor is a self-
employed person, has special expertise as to the services which the Contractor is to
perform and is customarily engaged in the independent performance of the same or
similar services for others. The manner in which the services are performed shall be
controlled by the Contractor; however, the nature of the services and the results to be
achieved shall be specified by the University. The Contractor is not to be deemed an
employee or agent of the University and has no authority to make any binding
commitments or obligations on behalf of the University except as expressly provided
herein. The University has prepared specific guidelines to be used for contractual
agreements with individuals (not corporations or partnerships) who are not considered
employees of the University.

Sexual Harassment
The University is committed to providing a positive environment for all students and
staff. Sexual harassment, whether intentional or not, undermines the quality of this
educational and working climate. The University thus has a legal and ethical
responsibility to ensure that all students and employees can learn and work in an
environment free of sexual harassment. Consistent with the state and federal law, this
right to freedom from sexual harassment was defined as University policy by the Board
of Trustees.

Failure to comply with this policy could result in termination of this contract without
advanced notice. Further information regarding this policy is available from
Affirmative Action/Equal Opportunity Officer, Valerie Huebner, University of Maine at
Farmington, 86 Main Street, Farmington, ME 04938, 207-778-7258.

**Indemnification**

The Contractor agrees to be responsible for, and to protect, save harmless, and indemnify
the University and its employees from and against all loss, damage, cost and expense
(including attorney's fees) suffered or sustained by the University or for which the
University may be held or become liable by reason of injury (including death) to persons
or property or other causes whatsoever, in connection with the operations of the
Contractor or any subcontractor under this agreement.

**Insurance**

During the term of this agreement, the Contractor shall maintain the following insurance:

<table>
<thead>
<tr>
<th>Insurance Type</th>
<th>Coverage Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Commercial General Liability</td>
<td>$1,000,000 per occurrence or more (Bodily Injury and Property Damage)</td>
</tr>
<tr>
<td>(Written on an Occurrence-based form)</td>
<td></td>
</tr>
<tr>
<td>2. Automobile Liability</td>
<td>$1,000,000 per occurrence or more (Bodily Injury and Property Damage)</td>
</tr>
<tr>
<td>(Including Hired &amp; Non-Owned)</td>
<td></td>
</tr>
<tr>
<td>3. Workers Compensation</td>
<td>Required for all personnel (In Compliance with Applicable State Law)</td>
</tr>
</tbody>
</table>

The University of Maine System shall be named as Additional Insured on the
Commercial General Liability insurance.

Certificates of Insurance for all of the above insurance shall be filed with:
Office of Strategic Procurement
University of Maine System
16 Central Street
Bangor, Maine 04401

Certificates shall be filed prior to the date of performance under this Agreement. Said
certificates, in addition to proof of coverage, shall contain the standard Acord statement
pertaining to written notification in the event of cancellation, with a thirty (30) day notification period.

As additional insured and certificate holder, the University should be included as follows:

   University of Maine System
   16 Central Street
   Bangor, Maine 04401

The Contractor shall not commence work under this contract until the Contractor has obtained all insurance coverage’s and limits required under this section and such insurance has been approved by the University; nor shall the Contractor allow any subcontractor to commence work on a subcontract until all similar insurance required of subcontractor have been so obtained and approved by the Contractor.

Smoking Policy
The University of Maine System must comply with the "Work place Smoking Act of 1985" and MRSA title 22, 1541 et seq, "Smoking Prohibited in Public Places." In compliance with this law, the University of Maine System has prohibited smoking in all University System buildings except in designated smoking areas. This rule must also apply to all contractors and workers in existing University System buildings. The Contractor shall be responsible for the implementation and enforcement of this requirement within existing buildings.

Taxes
The University is exempt from the payment of Federal Excise Taxes on articles not for resale and for the Federal Transportation Tax on all shipments. The Contractor and subcontractor(s) shall quote and shall be reimbursed less these taxes. Upon application, exemption certificates will be furnished when required.

SECTION 3 - PERFORMANCE TERMS AND CONDITIONS

Contract Administrator
Robert Lawrence, Director of Facilities Management, or his designated alternate shall be the University's authorized representative in all matters pertaining to the administration of this contract.

Employees
The Contractor shall employ only competent and satisfactory personnel and shall provide a sufficient number of employees to perform the required services efficiently and in a manner satisfactory to the University. If the Contract Administrator or designee, notifies the Contractor in writing that any person employed on this contract is incompetent,
disorderly, or otherwise unsatisfactory, such person shall not again be employed in the
execution of this contract without the written consent of the Contract Administrator,

Optional Equipment

For equipment identified as optional, the University reserves the right to purchase the
items indicated, in the quantity indicated, or other quantities as may be determined by the
University in its’ own best interests. Optional items shall only be a part of this contract if
specifically enumerated by University’s purchasing documentation, e.g. purchase order,
contract, letter of agreement or other mutually acceptable document.

Notices

- The Contractor shall obtain University approval of all panel layout and finishes;
furniture finishes and rack color or finishes prior to procurement or fabrication.
For purposes of costing plates and panels, assume that all visible wall plates will
be laser engraved and painted a custom color.

- The Contractor shall insure that all cabling installed within this building meets all
requirements of the Office of the Fire Marshall for the State of Maine. Particularly
note that cable bundles shall not exceed twelve (12) cables. When multiple cable
bundles are run in parallel there shall be at least three inches between the cable
bundles. The Contractor is responsible for providing all additional ceiling hooks
and other supports required to comply with this requirement. This requirement
does not apply to bundles within metallic enclosures such as equipment racks or
conduit.

- All cables not fully enclosed in conduit shall be rated for use in a return air
plenum.

- Prior to submitting a proposal, the Offeror shall carefully review all existing site
conditions. The Offeror will be solely responsible for field verifying all
dimensions, existing conditions, pathways, etc. The Offeror will be solely
responsible for insuring that all furniture, racks and other devices can be moved
into the building. The Offeror shall field verify all conduits, device boxes, power
requirements, etc. The Offeror shall field verify all obstructed conditions that may
effect mounting or installation of equipment. The Offeror will be responsible for
insuring that all lenses provided for all projectors are suitable to display the image
size (usually the screen size) required. By submitting a proposal, the Offeror
affirms positively that they have reviewed all site conditions and that no further
costs will be incurred by the University with relation to site conditions.

- It is a requirement that all Offerors have active e-mail accounts available to aid in
project administration. The Offeror shall provide a list of email addresses for all
project personnel. Notices and other information sent to Offeror by email shall be
considered the same as notices and information delivered in writing. Email accounts shall be capable of accepting file attachments of up to ten megabytes.

- In order to adequately administer this project, Offerors shall have the following software (or approved equal):
  - Microsoft Office
  - AutoCAD
  - Email
  - Adobe Acrobat

**Completion Time and Liquidated Damages**

This project shall be substantially completed on or before the date specified in the Project Timeline. If the Contractor finds it impossible to complete the work on or before the said date of completion, the Contractor may make a written request to the Contract Administrator for an extension of time setting forth therein the reasons for the request. If the University finds that the work was delayed because of conditions beyond the control and without the fault of the Contractor the University may extend the date of completion in such amount as, in the University’s judgment, the conditions warrant. The new date of completion shall then be in full force and affect the same as though it were the original date of completion.

Time is an essential element of the contract and it is important that the work be pressed vigorously to completion. The cost to the University of administration of the contract, inspection and supervision will be increased as the time occupied in the work is lengthened. Therefore, for each calendar day that any work shall remain uncompleted after the substantial completion date, $500.00 per day shall be deducted from any money due the Contractor, not as a penalty but as liquidated damages, provided, however, that due account shall be taken of any adjustment of the date of completion granted under the provisions of this section.

**Equipment Availability / Price Increases**

The Offeror shall verify manufacturers’ availability and cost of all equipment proposed, including equipment specified herein. Cost increases shall not be allowed due to manufacturers’ cost increases, shipping cost increases, etc., or for substitutions required because of unavailability of proposed equipment.

If during the time frame of the contract and prior to Contractor’s procurement of a particular piece of equipment, there is a price reduction, the price reduction will be proportionately passed through to the University.

**Freight**

Drop shipment of equipment to the University’s site directly from the manufacturer, or other supplier will not be allowed.
Training
Training shall be included as part of the proposal at no additional cost. The University reserves the right at its sole discretion to purchase additional training, purchase less training or delete training entirely based on its own best interests.

Documentation
The Offeror shall provide an itemization of all costs associated with providing complete “as built” documentation for all systems and equipment specified herein, and in the format as specified herein. Included in this package shall be all system flows, rack elevations, block diagrams, detail drawings, shop drawings and wire run lists. Drawing documentation shall be provided in AutoCAD Release 14 or higher.

Contractor shall provide two (2) electronic copies of all software including control systems, audio processors and other programmable devices. Two (2) copies shall be provided on CD-ROM. Printed copies shall be provided on Mylar, along with two blue line or black line copies. All manuals shall be provided using Microsoft Word 98/2000 or Excel 98/2000 as appropriate. The Contractor shall provide copies of manuals as noted below. The University reserves the right at its sole discretion to purchase additional documentation, purchase less documentation or delete documentation entirely based on its own best interests.

STANDARDS AND CODES

OSHA, State, and Local Regulations
The Offeror shall verify that the items proposed meet and/or exceed all Federal Regulations, Maine Codes and University specifications and standards as of the date of their proposal.

The Contractor shall adhere to the Occupational Safety and Health Administration's (OSHA's) most recently published Safety and Health Regulations for Construction (29 CFR 1926) and general Occupational Safety and Health Standards (29 CFR 1910) for the duration of this Contract. If the contractor will be using electrical circuits that are not part of a building or structure and not equipped with ground fault interrupt systems, two copies of the Contractor's written Assured Equipment Grounding Conductor Program shall also be submitted to the University before the first application for payment.

Prior to the commencement of any phase of work under this Contract, the Contractor will submit the name(s) of the person(s) who is(are) designated as being responsible for job site safety under this contract and is(are) familiar with the above referenced OSHA regulations.

Contractor shall insure that all equipment, including but not limited to, tools, scaffolding, ladders, and rigging are in proper working condition and comply with applicable law.
If the University, in its sole judgment, determines that any additional protection is necessary, Contractor shall provide the same at no additional charge. Contractor shall be considered to have materially breached this Agreement if any safety and health standards or regulations have been breached by Contractor.

All Contractors and Subcontractors shall conform to the labor laws of the State of Maine, and all other laws, ordinances, and legal requirements affecting the work in Maine. A wage scale prepared by the State of Maine Department of Labor, Bureau of Labor Standards is included in the Contract Documents. This wage scale represents the minimum wages that must be paid to each category of laborers, workers and mechanics used in the performance of this contract. In the employment of Laborers, preference shall first be given to residents of the State who are qualified to perform the work to which the employment relates, and if they cannot be obtained in sufficient numbers, then to citizens of the United States.

Lockout/Tag Out

In accordance with the Occupational Safety and Health Administration's ("OSHA's") Lockout/Tag out Standard (29 CFR 1910.147), Contractor(s) involved in operations related to equipment or machinery lockout that affect the University's employees or other contractors at the work site shall submit their Energy Control Procedures to the University and train affected employees of the University prior to the time Contractor begins work pursuant to this Agreement. If Contractor does not have a Lockout/Tag out program, which meets the OSHA standard, Contractor shall develop a program that meets OSHA standards prior to commencing work on this project. The cost of training will be the responsibility of Contractor.

Hazardous Materials Precautions

Where any of the Contractor's operations occur in, on, or within 50 feet of any door, window, air intake in a building occupied by University employees or students, the Contractor shall, not less than 14 days prior to the start of any operation, provide directly to the University (with copies to the Architect) Material Safety Data Sheets on all materials to be used in the operation that may be classified as hazardous under OSHA’s Hazard Communication Standard (29 CFR 1200)

The disposal of hazardous or contaminated waste as defined by US EPA and Maine DEP, including but not limited to solvents, degreasers, contaminated solids, batteries, capacitors, Freon, filters, asbestos, fuels, PCB's, pesticides, acids, caustics, sealant, adhesives, paints, strippers, and petroleum based liquids, used in the process of performing the work shall be the responsibility of Contractor as the generator in accordance with any federal, state, or local law governing hazardous or contaminated waste. No such waste shall be disposed of in the disposal containers or disposal system of the University.

If any hazardous materials, as defined by federal, state or local law, are discharged by Contractor on University or non-University premises, Contractor shall notify the University immediately and shall take full responsibility for all necessary remedial action at its sole expense in compliance with the requirements of all applicable federal, state
and/or local laws, regulations, rules and ordinances and in accordance with University policies and procedures. Without limitation of the foregoing, Contractor shall keep University fully informed of any discharge and the remedial action being taken, and shall provide the University with such assurances as it may require concerning public safety and the environment. The University also reserves to itself the right to clean up at the expense of Contractor. This right includes, without limitation, approving cleanup contractors and procedures, and monitoring the work.

University Policies and Procedures
In performing the work, Contractor shall comply with University safety policies and procedures, including without limitation those concerning general fire and life safety, security and maintenance of the physical plant. Contractor shall routinely survey the work area and adjacent space to identify and correct potentially hazardous situations.

If the University permits the Contractor to use any of the University’s equipment, tools, or facilities, such use will be gratuitous, and the Contractor shall release the University from any responsibility arising from claims for personal injuries, including death, arising out of the use of such equipment, tools, or facilities, irrespective of the condition thereof or any negligence on the part of the University in permitting their use.

Utilities
In performing the work, Contractor shall not interfere with any utility service (electricity, water, gas, steam, etc.), or interfere with any fire protection system, without the prior consent of the University. Contractor shall not cause or produce any unusual, noxious or objectionable smokes, gasses, vapors or odors; overload any floor, ceiling, wall or fixture; remove, replace or install any locks; perform any act which might invalidate any insurance policies carried by either the University or Contractor; commit any nuisance or trespass; interfere with the effectiveness or accessibility of any building, mechanical, or electrical systems other than as necessary to perform the work; or mar, deface or damage any University property.

Flammability
Whenever required, all materials used in the fabrication or installation of the goods quoted shall have been tested and meet Maine State Fire Marshal’s Office. Such materials must meet the standards set forth in the most recent edition of NFPA’s standards.

Codes
The Contractor shall give all notices required by, and comply with, all applicable laws, ordinances, codes, rules and regulations and shall obtain and pay for all required permits before commencing work.

The Contractor shall, at his own expense, pay for the services of any inspector which the Contractor, under any applicable law, ordinance, rule, regulation or code, may be required to employ or order, the Contractor may be obliged to furnish as a condition to obtaining any such license or permit. It shall be the obligation of the Contractor to make
all necessary applications and to take all steps for the securing of permits of licenses, at
his own expense, and to receive all necessary permits of licenses before commencing the
applicable work.

The Contractor shall comply with applicable laws and ordinances governing the disposal
of materials, debris, rubbish and trash, on or off the job site, and shall commit no trespass
on any public or private property in any operations due to, or connected with this
Contract.

Wherein this specification and codes conflict, the more stringent shall take precedence
whether or not specifically enumerated herein.

**Standards**
All systems proposed herein shall meet the best commercial practices of the applicable
industries, except where alternatives are noted.

**Publications of issues of the following standards form a part of this specification**

- American Institute of Architects (AIA)
- Americans with Disabilities Act (ADA)
- American National Standards Institute (ANSI)
- Audio Engineering Society (AES)
- Building Industries Consulting Services International (BICSI)
- Computer Security Institute (CSI)
- Electronic Industries Association (EIA)
- Federal Communications Commission (FCC)
- Institute of Cable Engineers (ICEA)
- Institute of Electrical and Electronic Engineers (IEEE)
- International Standards Organization (ISO)
- International Telecommunications Union (ITU)
- National Association of Broadcasters (NAB)
- National Electric Code (NEC)
- National Electrical Manufacturers Association (NEMA)
- National Fire Protection Association (NFPA)
- National Institute for Certification in Engineering Technology (NICET)
- Occupational Safety and Health Administration (OSHA)
- Society of Motion Picture and Television Engineers (SMPTE)
- Telecommunications Industry Association (TIA)
- Underwriters Laboratories (UL)
- Nationally recognized standards of the various construction trades, as may be
  applicable.

References shall mean to the latest edition of that standard.
Subcontractors
The Contractor agrees that the Contractor is as fully responsible to the University for the acts and omissions of omissions of persons directly employed by the Contractor. The Contractor agrees to pay the Subcontractor or Material Supplier all monies requisitioned from the University as a result of invoices or billings from the Subcontractor or Material Supplier within seven (7) days of receipt of payment from the University.

Patents, Copyrights, Trademarks and Trade Secrets
Contractor warrants that the sale, use of, or incorporation into manufactured products of all goods furnished hereunder which are not of the University's design, composition or manufacture shall be free and clear of infringement of any valid patent, copyright, trademark, trade secret or other proprietary right. Contractor shall indemnify and hold the University harmless from any and all liability and/or loss of any kind (and the cost and expenses, including without limitation attorney’s fees) arising out of any claim, suit or action alleging or arising out of any such infringement, which claim, suit or action Contractor agrees to compromise or defend at the University's request.

By submitting a proposal you hereby affirm and agree to the following:

a) The term software shall consist of all commercially and non-commercially available and customized products, codes, user interfaces whether graphical or otherwise, macros, scripts and other components of assembly, machine, logic compilers debuggers, loaders, linkers utilities or compiled software languages meant to run on any type of processor whether enumerated herein or not, or any device whether hard or soft normally considered any part of the Open System Interconnection model with the sole exception of embedded processor code.

b) Contractor may incorporate into its work product under this Agreement certain software, programming, documents and other technology that has either previously been authored or created by Contractor or is pre-existing and owned by third parties. Such intellectual property shall be deemed "Contractor Intellectual Property," and shall not be owned by the University. Contractor hereby grants to the University a perpetual, royalty-free, non-exclusive license to make, use, and copy any Contractor Intellectual Property, including programming, source code, object code, documentation, upgrades, revisions, modifications, and any related materials. The University does not retain the right to sell or provide copies of “Contractor Intellectual property” to a non-University entity. Contractor agrees that the University shall have the right to modify Contractor Intellectual Property and to use and combine such modifications with the System or other University work product. Contractor is not liable for the effects of modifications of Contractor Intellectual Property by the University.

c) The University may supply to the Contractor or allow the Contractor to use certain proprietary information, including service marks, logos, graphics, software, documents and business information and plans that have previously
been authored or created by University or are pre-existing and owned by the
University. Such intellectual property shall be deemed "University Intellectual
Property," shall be owned by the University and shall not used by Contractor for
any purposes other than University purposes in keeping with Contractor's
obligations under this Agreement.

d) The University may make unlimited copies of the software for archive and back
up purposes.

e) The University may make changes or modifications of the software as it deems
fit. It is understood that any changes made to the software by the University voids
all warranties in relation to the software and relieves the Contractor of any
responsibility with regards to the software.

f) The Contractor hereby relinquishes any further rights to the software except as
covered and conveyed under warranty or applicable state or federal law.

g) The University will not reimburse the Contractor for software development costs
outside of this contract nor will the University be liable for any damages incurred
by the Contractor due to the University’s use of the software.

All software as defined herein shall be turned over to the University on removable media
for archiving.

Contract Security
Contractor may be required, at the option of the University, to furnish any or all of the
following bonds: (i) a performance bond in an amount not less than one hundred percent
(100%) of the contract price as security for the faithful performance of the contract; (ii) a
payment bond in an amount not less than one hundred percent (100%) of the contract
price as security for the payment of all persons furnishing materials and equipment in
connection with the contract; (iii) a lien bond in an amount not less than one hundred
percent (100%) of the contract price, in the form provided in M.G.L. ch. 254, sec. 12,
protecting the University against the consequences of any liens filed in connection with
this project. THE OFFEROR SHALL SEGREGATE AND STATE THE COST OF THE
ABOVE BONDS IN THE PROPOSAL.

Release of Liens
Lien release(s) must be provided to the University prior to final payment. Neither the
final payment nor any part of the retained percentage shall become due until the
Contractor shall deliver to the University a complete release of all liens arising out of this
contract, or receipts in full in lieu thereof, and, in either case, an affidavit that so far as
the Contractor has knowledge or information the releases and receipts include all the
labor and material for which a lien could be filed. Contractor may, if any subcontractor
refuses to furnish a release or receipt in full, furnish a bond satisfactory to the Owner, to
indemnify the Owner against any lien. If any lien remains unsatisfied after all payments
are made, the Contractor shall refund to the Owner all moneys that the latter may be
compelled to pay in discharging such a lien, including all costs and a reasonable
attorney's fee.

**Changes in the work**
The University may make changes in the scope of the work required to be performed by
the Contractor by making additions thereto, or by omitting work, without invalidating the
contract and without relieving or releasing the Contractor from any of its obligations
under the Contract, or any guarantee given by Contractor pursuant to the Contract
provisions.

Except for the purpose of affording protection against any emergency endangering life or
property, the Contractor shall make no change in the work, provide any extra or
additional work, or supply additional labor, services, or materials beyond that actually
required for the execution of the Contract, unless in pursuance of a written order from the
University authorizing the change.

**Payment to Contractor**
For purposes of payment **substantial completion** (which is not project completion) shall
be defined as:

- All equipment installed and operational and integrated into the system, no
equipment missing from the site. Control system program installed and operating
the equipment,
- All systems tested by both the Contractor and University or its Consultant and
punch list is generated,
- Draft as-built documentation available for examination with one copy left on site,
- University makes beneficial use of the equipment,
- Site is clean of all installation materials.

**Final completion** is defined as the above plus:

- All punch list items complete and signed off by the University.
- Acceptance Testing as defined herein
- Delivery and acceptance of all manuals, as-built documentation, inventory and
other documents as defined in the specifications,
- University has received training.
Acceptance Testing

The acceptance tests required to demonstrate that performance specifications can be met must be carried out in exacting accordance with the capabilities as described in the user and technical documentation/operation manuals(s) delivered with the audiovisual systems or submitted with the proposal response. Failure to satisfy this acceptance test may result in rejection of the audiovisual system with no financial obligation incurred by the University.

Payment terms

• Payment schedule can be AIA billing based on progress and equipment received with a 10% hold out for final completion. Or:

• 33% upon award

• 33% upon equipment delivery to University (with all equipment received and assembled at shop in a working system)

• 24% upon substantial completion or the beginning of beneficial use (whichever comes first) by the University

• 10% upon completion of all punch list items and delivering all documentation to the University with a copy to the Consultant.

Warranty

Warranty begins upon acceptance of final completion, not substantial completion.

SECTION 4 – GENERAL SPECIFICATIONS

Except as specifically noted otherwise, Work under this contract includes:

Provision of specified labor, materials and equipment,

1. Provision of necessary labor, tools and supplies to complete the installation of all systems enumerated herein. Include labor necessary to assemble University furnished equipment components as normally received from the manufacturer, into a correctly assembled and functioning equipment item,

2. Provision of necessary project management and supervisory personnel to coordinate, manage and oversee all activities,

3. Provision of technical and clerical personnel to handle equipment procurement, inventory and tracking,
4. Provision of design and drafting personnel to maintain complete systems documentation, and to provide as-built drawings,

5. Provision of technical personnel to test and align all equipment and systems, and to support the University through final testing and acceptance,

6. Provision of manufacturer support personnel, as not covered by other contracts, as required,

7. Provision of tools, construction equipment and machinery,

8. Provision of other facilities and services necessary for proper execution and completion of the work,

9. Paying all required sales or use taxes. The University is tax exempt,

10. Securing and pay for all permits, government fees and licenses, as required for proper execution of the Contract.

11. Giving any required notices,

12. Complying with all codes, ordinances, rules, regulations, orders and other legal requirements of public authorities which relate to the Contract,

13. Within forty-eight (48) hours submitting written notice to University of observed variances of Contract documents from legal requirements,

14. The Contractor shall appoint a single person to act as Project Manager. This person will be responsible for all communication between the Contractor, University and Consultant. This person will be responsible for insuring that the schedule will be met. The project manager will be responsible for insuring the quality of the work performed and implementation of the terms of the contract documents.

Site Condition

It is expected that work performed under this Contract will be performed at a time when construction of the building is complete. Contractors performing work under this Contract are advised that they are liable for any damage caused to the building due to accident, neglect or abuse. The Contractor will be responsible for repairing or replacing building structure, materials, equipment and furnishings, and restoring these items to the condition they were in prior to the damage.

The Contractor under this specification is responsible for replacing all ceiling tiles removed, as well as all fire stops encountered while running cables. The Contractor is responsible for cleaning debris generated during installation, and restoring the rooms to the condition in which they were found.
Therefore, prior to start of installation in any room, Contractor shall document the condition of the room. Use form PR-2 to document the condition of the room. Attach color photographs showing existing conditions and have University’s contract administrator witness the report. Two copies of the report shall be made, one copy filed with the University’s contract administrator, the other kept on file at the project site.

When work is completed in a room, have the University certify that no damage has occurred, or all damage has been repaired. The University reserves the right to withhold proportional payment as compensation until all damages have been repaired. Payment withheld will be determined by the University based on the value of repairing the damage.

**Use of Site**

All work shall be performed without unnecessary interference to the University's use of the site or premises. Contractor shall confine operations at the site areas permitted by law, ordinances, permit and this Agreement, and shall not unreasonably encumber the site with any materials or equipment.

**Access to Premises**

The University will provide Contractor reasonable access to the premises. To the extent that the premises in which services will be performed under this Agreement consists of student classrooms, offices, halls, and/or common areas, access may be limited to times agreed upon by the University in advance. The University must have access to the site at all times to inspect and approve of the work conducted on the premises.

The Contractor shall assume full responsibility for the protection and safekeeping of products under this Contract, stored on and off the site.

**Execution of work**

The Contractor recognizes that the building may be occupied during the Contractor’s performance of the work, and/or that other contractors may be working at the building site concurrently with the Contractor. The Contractor agrees to coordinate the scheduling of its work with the requirements of the University for the use of the building and of such other contractors. The Contractor agrees that the University shall have no liability to Contractor for delay damages arising out of or in connection with delays in the Contractor’s work due to such coordination or lack thereof, or scheduling changes to the work of other contractors.

Access to the project site will generally be available from Monday through Friday, 7:00 AM to 5:00 PM, local time. The Contractor shall coordinate site access with the University. The Contractor shall request coordination of any unusual access times or other requirements with the University as stated above as far in advance as possible.
The Contractor shall obtain passes, as required, by the University for each designated employee or sub-contractor who may require job site access. The Contractor shall be permitted access to the site through University designated security checkpoints. Keys or card access will not be provided to the Contractor for access to the work area.

Lavatory facilities will be made available to the Contractor by the University.

The University shall provide fire suppression equipment during the construction phase as required.

Subject to the Contractor’s coordination obligation, the Contractor may use available space, for office, storage and workshop space. Alternatively, the Contractor, at its own expense may obtain other space as required off the project site.

The University will store all University Furnished Equipment (UFE) items until they are needed and requested by the Contractor. Equipment and materials that are not UFE shall be stored by the Contractor.

The Contractor shall review the drawings, and any as-built conditions regarding room location, access, hallways and loading docks. It is understood that certain large equipment items such as racks, consoles, furniture and such will require suitable pathways in order to enter the building and to be moved to their final location. The Contractor shall be responsible for coordinating access through these passages with the University. It is the Contractor’s responsibility to move all equipment from its load-in or other origin to its final location within the building.

The Contractor shall construct work in stages as required to accommodate the University’s use of the premises during the construction period; coordinate the construction schedule and operations with the University.

The Contractor shall construct the work in a manner to provide for convenience of other Contractors and, as applicable, the public. The Contractor shall not close off such access to or use of facilities until Contractor’s completion of one stage of construction provides alternative access or usage.

The Contractor shall afford other trades reasonable opportunity for the installation of work, and storage of materials.

The Contractor shall abide by the decision of the University in case of conflict or interference by other trades.

The Contractor shall staff the job to keep pace with other trades and with work schedule. Otherwise, at the University’s discretion an increase in force or overtime work may be required without additional expense to the University.

The Contractor shall not build system racks on the job site without the direct consent of the University. The Contractor shall wire all equipment racks and fabricate all equipment
subassemblies at off-site facilities. The Contractor shall fully test all equipment
subassemblies before delivery to the job site. The Contractor shall limit work at the job
site to mounting, interconnecting and system-level testing of equipment. The Contractor
shall certify to the University the satisfactory performance of completed equipment
assemblies before their shipment to the installation site. The Contractor shall permit the
University to witness the off-site testing of such equipment assemblies.

The wiring shall be installed at a time when construction is substantially complete so that
the wiring shall not be exposed to any potential damage.

Any construction that deviates from the drawings and impedes the progress of the
installation shall immediately be brought to the attention of the University.

Identification of Employees

Each employee of the Contractor is to carry appropriate identification as prepared by
Contractor. Identification information will include the employee's full name, photograph,
company name, address, telephone number and the name of the employee's immediate
supervisor.

University Furnished Equipment (UFE)

Certain products may be furnished and paid for by the University as described in the
Specifications and/or the Drawings.

Equipment provided by the University will be in working condition. The Contractor shall
exercise due care in handling the University Furnished Equipment (UFE) and shall be
held responsible for repair or replacement of any item damaged as a result of negligence.
If equipment operational defects arise through no negligence of the Contractor, the
Contractor shall not be responsible for correction of such defects. The University will
provide a remedy. The Contractor shall integrate University furnished products into the
system as required in the contract documents. The Contractor shall advise University if
product(s) furnished are not suitable for the application intended.

The University reserves the right to procure under separate contract and to require the
Contractor to install, or install equipment into (as outlined on the documents) the
following equipment:

1. Computers
2. Projection screens
3. Electrical Services
4. Data Services
5. Lecterns and podiums
6. Various pieces of furniture as shown on the contract documents
Warranty and Guarantee

The Contractor warrants to the University that all material and equipment furnished under this contract will be new unless otherwise specified in the Contract documents and that all work will be free of defects and in conformance with the contract documents. The Contractor shall guarantee the Work for a period of one (1) year from the date of the acceptance of final completion, and upon written notice shall remedy all the defects and pay all expenses for any damage to their work resulting there from. Neither the final payment nor any provisions in the Contract shall operate to void the guarantee obligation. This guarantee is in addition to, not in limitation of, University’s remedies at Law or in Equity.

All equipment shall be governed by the terms of the manufacturer’s original warranty. If a manufacturer’s warranty exceeds any of the above, its effect shall not be diminished by any of the above.

Electronic devices whose performance deteriorates due to drift during the warranty period shall be considered defective, requiring alignment or other repair or replacement at no charge to the University. If any device fails, due to no fault of the University, more than three times during the warranty period, it shall be considered a “lemon” and be replaced, or credited to the University against replacement or similar equipment.

With this warranty, and at no additional charge, the Contractor shall provide preventive maintenance service for a period of one year from final acceptance of the system. During this one-year period, the Contractor shall provide quarterly visits to the site for preventive maintenance and general system review. Contractor shall notify the University in writing of all service and corrective measures taken during the site visits.

The Contractor shall provide on-site warranty service as specified above at the University’s location regardless of the terms of any manufacturer’s warranty.

If an equipment item cannot be readily repaired within forty-eight (48) hours, upon request, the Contractor shall provide a suitable replacement unit at no charge. The Contractor shall install this replacement in a timely fashion so that system operation is restored within a 48-hour period from the initial failure. The Contractor shall permit such replacement to remain available to the University until the original unit is repaired and reinstalled.

Proposals shall include the cost of second year extended warranty as a separate alternative. Provide a list of any items not covered under second year warranty.

Project Meetings and Reports

All work must be installed by the appropriate skilled personnel.
The Contractor will attend job site meetings on a regular basis with building trades, other technology contractors or the University, upon request, regardless of their home office location. Project meetings may be weekly on request of the University.

A report shall be required indicating job progress, and identification of significant issues. The report shall be submitted to the University and its Consultant. The Contractor shall submit form PR-1A (see Appendix 1) every week by Monday 3 PM starting three weeks after contract award until acceptance of final completion. Contractors shall file special reports when significant project issues arise.

If a report is due on a University holiday, the Contractor will have until the next business day immediately after the holiday to file the report.

Address and location for submittal of reports will be provided upon contract award.

**Failure to submit reports more than two times when due, will result in a $50.00 penalty (deduct from contract price) for each week that the Contractor is in arrears.**

The Contractor shall maintain a complete set of system drawings, reports and specifications at the job site at all times

**Submittals required during Contract Performance**

The following documentation shall be submitted as required throughout the performance of this contract, or as otherwise designated by the University:

All drawings contained in these contract documents will be provided to the Contractor in AutoCad or DXF format. (IBM compatible or Macintosh.)

*Subsequent issues of the drawings must incorporate the current title block, along with the copyright notices shown on the attached print sets. The University’s name, address and logo must appear on all documentation relating to this project.*

The Contractor shall provide any additional details required providing sufficient information for construction and servicing of the systems. Additional detail may include wire numbers and/or pin-outs of multi-pin connectors. The Contractor shall provide other items required giving installation and service personnel sufficient information to install the systems in an efficient and cost-effective manner.

The following documentation is required for Architect, Consultant and University approval prior to fabrication and installation. For each submittal, the Contractor shall provide two copies and one electronic copy.

1. Detailed flows and wire diagrams including wire numbers and pin-outs of multi-pin connectors. In addition to the flows included with the contract documents, provide complete control, data or other flows required fully documenting all wiring and equipment placement in the system.
2. Provide shop drawings and product data, as not provided by others, for all custom fabrication items including:

   A) Loudspeaker mounting and aiming details,
   B) Projector(s) and monitor(s) mounting detail(s),
   C) Control panel(s) and touch screen layout and finishes,
   D) Switch panel(s) layout and finishes
   E) Connector panel(s) layout and finishes,
   F) Rack layouts and finishes
   G) Cabling colors and lengths for patch cords
   H) Custom software

3. Include complete descriptive information regarding all furniture. Include lecterns, media enclosures, portable media stands, carts, tables and any other furniture specified. Provide a selection of finishes for the University’s approval prior to ordering.

4. **Obtain University approval of all panels, consoles and lectern layout and finishes prior to fabrication.** The University will specify exact finishes. **For purposes of costing, assume that visible wall plates will be laser engraved and painted a custom color.**

5. Include descriptive information regarding all equipment racks and furniture in this contract. Provide a selection of finishes for University approval prior to ordering.

6. Include samples of all loudspeaker grills and loudspeaker cabinet finishes.

7. Provide any other submittals elsewhere required herein or as required by the University.

8. Maintain at least two copies of the documentation on-site for use by the University, or other parties, as authorized by the University, during the construction and installation.

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**As-Built Documentation**

**Drawings**

Three copies of the following drawings shall be provided to the University upon completion of installation. All documentation shall be provided as bound manuals/print sets, Mylar originals and computer disks in an acceptable format to the University. Additionally, the Contractor shall provide one copy to the University on computer disk. All documentation shall be produced in AutoCad version 12 or greater or in a compatible format as approved by the University.
The Contractor shall provide draft copies of all documentation for inspection at least five business days before demonstration and acceptance testing of the system. The Contractor shall provide finished copies, in the required quantities, within 30 days thereafter.

The final documentation package shall include at minimum, and as applicable, all drawings issued as part of the contract documents and all shop drawings produced by the Contractor. For each series of drawings listed below, the Contractor shall provide:

- Loudspeaker mounting and aiming details,
- Projector(s) and monitor(s) mounting detail(s),
- Control panel(s) and touch screen layout and finishes,
- Switch panel(s) layout and finishes,
- Connector panel(s) layout and finishes,
- Rack layouts and finishes,
- Cabling colors and lengths for patch cords,
- Custom software.

The Contractor shall provide the following drawings at minimum, and as applicable:

A. Series 100 Drawings: Provide receptacle location plan, keyed to the architectural floor plans. Indicate the location and designation of all receptacles, equipment racks and other equipment as required.

B. Series 200 Drawings: Provide as built wire and cable riser diagrams.

C. Series 300 Drawings: Provide rack elevations keyed to the block diagrams showing the location of all equipment installed.

D. Series 400 Drawings: These are conceptual drawings, included for information only. They should be included in the final print set.

E. Series 500 Drawings: Provide complete as-built audio systems.

F. Series 600 Drawings: Provide complete as-built control systems.

G. Series 800 Drawings: Provide complete as-built communications.

H. Series 1000 Drawings: Provide complete as-built GPI and tally systems.

I. Series 1100 Drawings: Provide complete as-built video systems.

J. Series 1200 Drawings: Provide complete as-built synchronization systems.

K. Series 1300 Drawings: Provide complete as-built data network system.
L. Series 1500, 1600 and 1700 Drawings: Provide layout of all patch panels and fiber interconnect panels. Indicate the exact nomenclature to be used on the patch panel labels. Obtain University’s approval prior to printing and installing patch panel labels.

M. Series 1800 Drawing: Show any special chassis or other mechanical fabrication required.

N. Series 1900 Drawings: Provide schematic-wiring diagrams of all custom circuits, including a part list of all components used in the custom circuits.

O. Series 2000 drawings: Provide structural and mounting details of all projectors, loudspeakers and racks and any other items as appropriate.

P. Series 2300 Drawings: Provide complete as-built RF systems, including details of any custom circuitry. Provide detailed block diagrams showing the interconnection of all equipment components and functional relationships.

Technical Manuals

The Contractor shall provide three copies of detailed technical manuals, tab indexed, containing the information necessary for the performance of routine maintenance by the University's staff, as well as corrective maintenance and upgrading by the Contractor’s (or other qualified) technicians. To this end, include the following information:

1. Table of contents;
2. General system description(s) and block diagram(s);
3. Detailed system descriptions;
4. Detailed as-built system wiring diagram and cable schedule. Include a set of simplified line diagrams showing the essential parts of the completed installation, by room, and their functional relationship;
5. A list of settings and adjustments for semi-fixed controls;
6. A list of equipment incorporated, including manufacturer, model number, and serial number where applicable;
7. A printed listing of all graphic user interfaces. Provide two copies on diskette of all control software and control panel configurations;
8. A list of any special tools or test equipment necessary for system maintenance;
9. A list of consumables and spare parts (fuses, lamps, etc). Show recommended stock levels for each item;

10. A list of manufacturers with addresses and telephone numbers;

11. Manufacturer's specifications, operating instructions and service information sheets, arranged alphabetically. Bind these documents separately from the other sections of the manuals described above;

12. Two sets of service manuals for each type of tape or disk transport, projector, monitor, switcher, router, audio mixer/console, distribution equipment, graphics equipment, printer and scanner if available from the manufacturer without charge.

13. Completed warranty cards from all equipment furnished.

Operating Manuals

The Contractor shall provide three copies of complete instructions for operating all systems in all modes of operation and as necessary to fulfill all functional requirements. Include one un-bound original.

Operating manuals shall include:

1. System operation in all modes including step-by-step instructions,

2. System troubleshooting including systematic instructions on how to solve common problems.

Line Diagrams

The Contractor shall mount one copy of simplified line diagrams behind clear plastic. The Contractor shall mount the diagrams on the wall near the equipment racks, or inside the console or lectern. The line diagram will include all wire numbers.

Equipment Inventory

The Contractor shall provide a complete inventory of all equipment provided and installed on this project including University Furnished Equipment. As part of the equipment installation, the Contractor shall affix University provided inventory tags to all the equipment. The Contractor shall track all equipment inventories with an Excel spreadsheet. The spreadsheet shall contain the following fields (columns)

1. Building
2. Room Number
3. Manufacturer
4. Model Number
5. Serial Number
6. Inventory Tag number

The Contractor shall confirm format of spreadsheet with University prior to entering data.

**Training**

Training shall be included as part of the overall proposal cost. Specific details regarding the training program that the Offeror will provide shall be included as part of the proposal response.

Training is not required for each individual room. Training is required for each type of system installed, as defined in the RFP.

At minimum, training shall include the set-up and operation of all the systems. In addition, the training shall include routine maintenance and operational adjustments. The thoroughness of the training program shall be a factor in consideration of proposals from Offerors.

Final “as built” documentation must be available at the job site for all training sessions.

The Contractor shall provide training materials free from any copyright restrictions, and upon request from the University, furnish a reproducible set of these materials.

Six months after completion of the installation, the Contractor shall conduct a follow-up training program, consisting of one four-hour session. The Contractor shall conduct this training program at the project location, and schedule at the mutual convenience of the University and Contractor.

Six months after completion of the installation, the Contractor shall provide a control system review making any minor changes to the control system as the University may request based on the configuration at final completion acceptance.

Instruction and training for the operation and routine maintenance of the system shall be provided at site, within twenty-five business days of final completion acceptance of the system, at a time mutually satisfactory to the Contractor and University.

The training shall include system(s) and circuit functional description and the proper adjustment procedure for every adjustment in the system(s).

The equipment will be made available by University, after delivery and acceptance, for use in the instruction and training program. University will provide space for the instruction and training. The Contractor shall provide the instructor(s) and all training materials.
The instruction and training shall be scheduled not to exceed 7.5 hours each working day. Instructor(s) compensation, travel, living and all other expenses incurred as the result of fulfilling these requirements shall be the responsibility of the Contractor.

**Shop and Factory Testing**

The Contractor shall perform preliminary tests at their shop or factory before the system is shipped to the University’s site. The University may be present for these tests. These tests shall include Contractor provided equipment and any University provided equipment (equipment that the University shipped to the assembly site).

**Electronic Test Equipment**

The Contractor shall provide and be proficient in the usage of the following test equipment for use during initial tests and adjustments and during acceptance testing and final adjustment of the systems. The Contractor shall provide other test equipment as may be required in other Sections of this RFP.

Furnish within the proposal a list identifying manufacturer, model number, serial number, date of most recent calibration, and name of organization performing calibration, for each piece of test equipment. Equipment without evidence of calibration within the past 12 months shall be considered unacceptable, unless the manufacturer indicates that a longer calibration cycle applies. The unit shall have been calibrated within the manufacturer-specified period. Calibration shall not be required for video monitors.

- **Continuously Variable Sine Wave Generator:** Capable of 20 Hz to 20,000 Hz range within ±1 dB with less than 0.5 percent THD at 1-volt output into 600 ohms.
- **AC Voltmeter:** Provide an AC Voltmeter with frequency response within ±1 dB from 20 to 20,000 Hz, 0.0001 volts to 100 volts, minimum input impedance 0.1 megohm.
- **Multimeter (VOM):** Provide as a separate item or include with AC voltmeter.
- **Oscilloscope:** Provide an oscilloscope with at least 100 MHz bandwidth and external horizontal input. Vertical sensitivity shall be 10 mV/division or less.
- **Impedance Measuring Device:** This device shall be capable of measuring at 1,000 Hz and within each loudspeaker's passband (at center of passband or at least one octave removed from crossover frequency), minimum range 0 to 1,000 Hz
- **Light Meter:** The meter shall be capable of measuring illuminance (foot-candles) and luminance (footlamberts).
- **NTSC Color Video Test Signal Generator:** The test signal generator shall be capable of generating SMPTE color bars, multiburst, modulated ramp or stair step, and window signals.
Video Sweep Generator: The generator shall be capable of producing sine wave frequency sweep from 30 Hz to 100 MHz, locked to horizontal sync.

Wideband Video Distribution Amplifier: Provide a one input three output (minimum) distribution amplifier with frequency response at least -3dB at 100 MHz.

RGB Test Signal Generator: The generator shall be capable of generating the SMPTE RP-133 test pattern and window pattern on black background over entire range of horizontal and vertical scan frequencies of the video projector(s) specified.

Waveform Monitor and Vectorscope: The monitor(s) shall provide facilities for complete line select and simultaneous channel A and B display. The unit shall be able to make differential phase and gain measurements. Inputs shall be able to be displayed in one or two line sweeps. The vectorscope shall be able to measure SC/H phasing and color framing.

Real Time Audio Analyzer: Shall provide a pink noise generator, a calibrated microphone and graphic representation of the audio spectrum in 1/3-octave increments.

Connectors, Adapters, Cables, etc: Provide various adapters and cables to permit flexible interconnection of test equipment and convenient, reliable connection to receptacles, patch panels and amplifier terminal strips.

Testing Requirements

1. The Contractor shall perform proof-of-performance (POP) tests when each system is substantially complete at the University’s facility. The Contractor shall align and test each piece of equipment, regardless of who supplied the equipment. After each operational area or sub-system is tested, Contractor shall conduct technical demonstrations where the University’s personnel will observe, examine and accept the work. The systems and sub-systems will be accepted on a progressive basis. A system or sub-system may be conditionally accepted, if there is an agreement with the University regarding a defined punch-list of items requiring correction. In all instances, correction of technical or cosmetic deficiencies shall be performed at no additional cost to the University.

2. The Contractor shall follow manufacturer’s set-up and alignment procedures for each piece of equipment furnished by the University or the Contractor.

3. System tests shall be performed in the presence of the University. If wiring errors are discovered, they shall be corrected immediately, or documented on the punch-list for later remedy.

4. The procedures and methods shall be documented and submitted in the system proof of performance. System testing and alignment shall consist of all procedures
necessary to insure proper installation and operational compliance with all
standards and documentation. Test procedures shall include, but not be limited to:

A. Gain Adjustment for audio and video equipment,
B. Adjustment of equalization, timing and SC/H phase etc., as required,
C. Gain stage and equalize all rooms,
D. Adjustment of all switches, and configuration of all software to make the
equipment functional,
E. Measurements of system distortion, crosstalk, hum and noise,
F. Confirmation of all wiring,
G. Confirmation of the operation of all controls.

5. The equipment tests shall be performed with signal processing devices in the
measured signal path switched to by-pass or defeat. The equipment shall
otherwise be left in the circuit. Special measurements shall also be made in all
processing modes to demonstrate the proper operation of the processing circuits.

6. As part of on-site equipment testing, the Contractor shall verify correct operation
of all equipment functions and signal systems, for each item regardless of its
source. Test results shall be recorded on a checklist in a pass-fail format. Any
item that fails shall be corrected by either the University or Contractor (depending
on who supplied the equipment).

7. Contractor shall maintain all work areas in a clean and safe fashion at all times. At
the conclusion of all work, Contractor must complete to the University’s
satisfaction, any repairs to the physical plant that may have occurred due to
negligence, accident or abuse. Any damage to existing surfaces such as scratches
to paint, stains and burns, which result from the activities of the Contractor, shall
be corrected to the University’s satisfaction.

Initial Post-Completion Tests

The Contractor shall perform the following tests, as applicable for each system
incorporated herein.

Video System

Test of Signal Routing

Verify that signal flow is as intended. Verify that no cross-connection exists
of video, red, green, blue, and sync lines.
Test of Transmission Line Quality

1. Employ a video sweep generator to produce a test pattern with a swept frequency response from 30 Hz to 100 MHz. Test the cable run from each input in the manner described below.

2. Report the calculated and measured values of gain at low frequency and attenuation at 100 MHz in the report of post-completion tests.

Timing for RGBS signals

1. Employ an RGBS test generator to produce a window test pattern with the window rise time as fast as the generator will permit. Connect the green channel output to the distribution amplifier, and use the amplifier outputs to test the red, green and blue channels. Test the input path cable run from each source in the manner described below.

2. With the oscilloscope triggering on the green channel, measure the delay between the green and red channels. Verify that this delay does not exceed 0.75 nanoseconds. Similarly, test the green and blue channels.

3. Perform similar adjustments upon the output path cabling.

4. Report the measured values of green to red and green to blue delay in the report of post-completion tests.

Timing of Composite video signals

Use a waveform monitor and vector scope to time all signals to the router and to the switcher and other destinations requiring timed signals. Timing parameters have been set forth above.

Subjective Image Quality

Observe the image quality on displays throughout the system, employing sources such as computers and videotape. Check for errors of linearity, chroma luminance delay, signal to noise performance, blanking and gain shifts. Check for RF interference, crosstalk and other imperfections. Test for these errors under various operating conditions.

Test of Portable Equipment:

Verify the proper operation of any items of portable equipment.
Audio System

**Loudspeaker Line Impedance**

Measure the resistance and impedance of each loudspeaker line leaving the system equipment rack, with the line disconnected from its normal driving source. Measure impedance within each loudspeaker's pass band (at center of pass band or at least one octave removed from crossover frequency). Verify that values are within ±10 percent of the value calculated for that circuit based upon the parallel impedance’s/resistance’s of the loudspeakers connected plus the resistance of the loudspeaker line. Correct any discrepancies.

**Loudspeaker Phasing**

Perform phasing checks of loudspeaker lines by means of a DC source at one end of each line and a voltmeter at the other end. Phase all loudspeaker lines identically with respect to color-coding.

**Hum and Noise Level**

Measure the hum and noise levels of the overall system. Adjust gain controls for optimum signal-to-noise ratio.

**Electrical Distortion**

Load power amplifiers with resistors matching normal impedance of output terminals used in system in place of actual loudspeaker loads. Adjust gain controls as for hum and noise level tests. Apply 1,000 Hz sine-wave signal from an oscillator having less than 0.1 percent total harmonic distortion to each microphone and line level input at level required producing full amplifier output. Distortion shall measure less than 1 percent.

**Power Output and Signal Level Adjustments**

Measure the electrical distortion of the overall system. Adjust gain controls as for the tests specified in the preceding paragraph. Apply a 1,000 Hz sine wave signal to the input tested, at a level required to produce full amplifier output. Use a distortion analyzer to measure the output level and total harmonic distortion of the amplification equipment. In the absence of a distortion analyzer, a VDVM or transistor voltmeter may be used to measure the output level. Lack of clipping or apparent deformation of a sine-wave input signal at the power amplifier output, as seen on an oscilloscope, may serve as evidence that distortion of amplification and control equipment is within acceptable limits. Make all
measurements with loads incurred in system operation. (Power amplifier loads shall use resistors equal to the nominal impedance of the output terminals used in the systems.)

The Contractor shall also be responsible for insuring that the line and microphone outputs at the wall plate will be suitable for recording with the University furnished camcorders. The Contractor will be responsible for providing pads and other devices to insure compatibility.

*Freedom from Parasitic Oscillation and Radio-Frequency Pick-up*

Check to insure that the system is free from spurious oscillation and radio frequency pick-up, both in the absence of any audio input signal and when the system is driven to full output at 160 Hz. Employ an oscilloscope as specified.

*Freedom from Buzzes, Rattles, and Objectionable Distortion*

Apply a high quality music signal to the system. Adjust the system for frequent peaks at its specified maximum sound pressure level. Apply a slow sine-wave sweep from 50 to 5,000 Hz at a level of 6 dB below rated power amplifier output voltage. Listen carefully for buzzes, rattles and objectionable distortion. Correct any causes of these defects, unless the cause is clearly outside the sound amplification system equipment and installation. Under these circumstances, notify the University.

*Gain Control Settings*

Establish tentative normal settings for all gain controls. Adjust all gain controls for optimum signal to noise ratio and signal balance.

*Freedom from Switching Transient Noise*

Eliminate audible clicks or pops produced by the operation of any controls.

*Equalization*

Measure system acoustical performance using a calibrated ANSI standard type 1 or IEC precision sound level meter set for “slow” meter damping except as otherwise noted, and flat response with random incidence at a height of four to five feet. All interior finishes and furnishings shall be in place. System gain shall be adjusted to provide levels of 70 to 80 dB and at least 10 dB above background noise at the measuring locations for these tests, except as otherwise noted. Include the following tests and adjustments:
Frequency Response

1. Loudspeaker frequency response shall be measured with all control
equalization set for flat response using 1/3 octave bands of filtered pink
noise centered on ANSI preferred frequencies or broadband calibrated
pink noise measured in 1/3 octave bands using a calibrated real time
analyzer.

2. Adjust equalization to provide average system response within +/-3dB of a
response (0 dB) which is flat from 63 to 2500 Hz and sloped uniformly
from 0 dB at 2500 Hz to -5 dB at 10,000 Hz.

Uniformity of Coverage

1. Use an octave band of random noise centered at 4000 Hz as test signal
output to the loudspeakers.

2. Lateral uniformity shall be +/- 2 dB at all positions equidistant from the
front of the room.

3. Front to back uniformity shall decrease linearly within +/- 2 dB from 0 dB
at the front of the room to -6 dB at the rear as measured on the room’s
centerline.

Maximum output level

Take this measurement with standard “fast” meter damping. The
loudspeakers shall be capable of providing 100 dB SPL in the audience
area on axis of any high frequency horn and employing wide band
recorded music as a test signal.

Listening Test

Listen to normal program material to be sure that there are no remaining
defects.

Remote Controls

Verify proper operation of all remote controls from all locations. Test to insure
that all interactions between control point’s function as intended. Verify that
improper use of controls does not result in the control system locking-up, and that
damage to the control system and to the controlled equipment is prevented under
all conditions.
Report

Upon completion of the above tests and adjustments, submit two copies of a written report presenting test results, including numerical values where appropriate, for review by the University prior to demonstration and acceptance testing. With this report, submit written certification that the installation conforms to the requirements stated herein, is complete in all respects, and is ready for inspection and testing by the University.

Demonstration and Acceptance Testing

1. Upon approval of the above test report by the University and at a mutually acceptable time, demonstrate operation of each major component and of the complete installation. After demonstration, Contract shall assist, as required, in acceptance testing performed by the University.

2. If the need for adjustment or modification becomes evident during testing, either continue testing, or interrupt testing to permit corrective action, as directed by the University. Perform re-testing following any corrective action to the extent directed by the University.

Operating Tests

Tests shall be included to verify that the system functions as required, and that operating controls work properly.

Listening and Viewing Tests

Testing shall include subjective evaluations by persons listening and viewing from various positions under various operating conditions. The objective of these tests will be to verify system functioning under conditions of normal operation.

Equipment Tests

Testing of the proper functioning of equipment items shall be performed for major equipment pieces.

Final Adjustments

Make control adjustments as directed by the University. Provide covers, caps or shaft-locks for controls not used in system operations. Make a record of these control settings for inclusion with the final documentation.

Cleaning up

Contractor at all times shall keep the premises free from accumulation of waste materials or rubbish caused by operations and from leaks and spillage from equipment. Upon
completion of the work, and on a daily basis as required, the Contractor shall remove all waste materials from and about the area of operation. This shall include all tools, equipment, machinery and surplus materials. The Contractor shall clean all building surfaces and leave the work area clean. The contractor shall make good all materials and finishes cut into or damaged during installation.

Provisions regarding the disposal or other treatment of hazardous or contaminated waste appear in other sections of this document.

Installation Specifications
Conduits

Use separate steel conduits for microphone-level circuits (below -20 dBm), video and line-level audio circuits (up to +30 dBm), loudspeaker circuits (above +30 dBm), control circuits and power circuits. Space all low-voltage conduit far from power circuits. Insulate all conduits from the equipment rack(s); connect conduits mechanically and electrically to the system ground point.

Do not splice lines in conduit. Use only cables that are insulated from the conduit and from each other for the entire conduit length. Connect each input receptacle by an individual, insulated line to the system equipment rack.

Mechanical Requirements

Secure equipment firmly in place, including control panels, loudspeakers, conduit, amplifiers, racks, cables, etc. Make fastenings and supports suitable for supporting required loads with a safety factor of three.

Install work neatly, with boxes or equipment plumb and square. Install the system in cooperation with other trades in order to achieve coordinated progress and satisfactory result. Watch for conflicts with work of other trades on the job. Execute, without claim for extra payment, moderate moves or changes as are necessary to accommodate other equipment or preserve symmetry and pleasing appearance.

Clearly, consistently, logically and permanently mark switches, connectors, jacks, relays, receptacles, electronic and other equipment. Where feasible, engrave directly upon plates and panels on which controls or receptacles are mounted. Use adhesive or screw-attached engraved labels on manufactured assemblies that would otherwise require disassembly for direct engraving. Fill engraving with black or white paint, whichever contrasts best with panel finish, or as directed by the University. Do not use hand lettering for any labels visible to operators or public during normal system operation. Do not use embossed tape (e.g., Dymo) labels.

Provide printed patch panel labels for each panel specified herein. Labels shall be supplied by Patch Bay Designation Company, PO Box 6278, 4742 San Fernando Road, Glendale, CA 91204, 818-241-5585, fax: 818-507-5050 or approved equal.
Install all switching devices and connectors for circuits where hazardous voltages are present in metal enclosures. Provide positive electrical ground for all such enclosures. Provide protective covers, clearly marked to indicate nominal voltage levels, on all terminal strips where such voltages are present.

Fabricate resistive networks and other Contractor fabricated assemblies on terminal blocks. Securely support all connections between individual components; do not rely on mechanical strength of components to support other components.

Take precautions to prevent electromagnetic and electrostatic interference. Install the equipment to provide safe operation.

Provide ventilation as required to maintain equipment within the manufacturers specified temperature limits.

Install all relays in sockets or in an otherwise removable manner. Do not solder directly to relay terminals.

Locate audio, video, data, control and other receptacles as directed by the University. Except for receptacles mounted in equipment cabinets or in floor boxes or designated as surface-mounted, flush mount other receptacles on cover plates in gang boxes recessed in vertical surfaces. Provide finishes as approved by the University. Submit samples for approval by the University.

Where cover plates are not fitted with connectors, provide bushed hole(s) through cover plate in sizes and quantities required. Do not allow cables to enter or exit boxes without cover plates installed.

Provide paint, or approved factory finishes, for all system components exposed to public view.

Cabling

Use cable products as listed herein or approved equals. Do not change cable types without the direct approval of the University. Note that the cables listed are not suitable for use in an open return air ceiling plenum. Where conduit is not to be provided, and upon direction by the University, provide plenum rated cable equivalent in electrical characteristics to the cable specified.

General Installation Procedures

It shall be the Contractor’s responsibility, in conjunction with the University, to insure that all conduits, raceways and ladders are installed correctly and to the specifications. The Contractor shall inform the University of any discrepancies. Should the Contractor wish to alter or replace existing construction, the Contractor shall obtain written approval from the University.
Cables running through wall, ceilings or floor plenums or any other interstitial space inclusive shall be bundled in such a way, as the bundle does not contain more than 12 cables. Maintain at least three inches between cable bundles. Where bundles must penetrate walls through fire stops, individual cable bundles may be brought together within a short distance of the fire stop. Then the cable bundles must immediately fan out to provide appropriate separation.

Notwithstanding the above, all contractors must conform to ANSI/NFPA 70, National Electric Code.

The Contractor shall be responsible for determining the proper length of all cables whether manufactured on or off the job site.

Wire and cables shall be installed in a neat and orderly fashion, with like cable types following similar paths.

Groups of cables shall be neatly combed or harnessed.

Harness groups of cables shall be anchored at suitable intervals to reduce and relieve wire strain, especially strain on connections.

Lead dress shall be considered from a maintenance standpoint. Suitable service loops shall be provided to remove equipment. When rear access to rack mounted equipment is unavailable, the cabling shall be of sufficient length to enable the removal and replacement of any individual piece of equipment with all others in place.

Install cable wrapping on all cable runs of two or more cables that are not in conduit. Place cable wrapping approximately six inches apart inside racks and enclosures. When in cable trays, or free run in ceiling plenum, place cable wrapping approximately twelve inches apart on similar cable groupings. All service/installation loops shall be secured with two cable wraps where they exit from the frame to insure that the service loop of cable shall not be shortened after the device is installed.

For all schemes of cable routing, no point in the path shall be subjected to a bend radius of less than eight (8) times the cable diameter.

All cables shall be grouped by signal level, and separation shall be maintained between signal levels consistent with established industry practices.

Where circuits of different types must cross, they shall do so at right angles and then return to the above-required separations as soon as possible.

All video, data and audio line level circuits shall be kept at least three inches away from any parallel AC circuits.

All cables without exception shall carry a permanent mechanically printed cable label at each end. Employ a consistent cable-labeling scheme. The labels shall contain the wire
number. There shall not be any unmarked cables within the system. Cable labels shall not
be made by hand. All cable labels either be self-laminating, or be laminated with clear
heat shrink tubing.

Label all power cables as to equipment powered.

The Contractor shall exercise great care to assure that regardless of cable color-coding,
the signal path polarity remains intact. This applies to full signal paths, and all interim
connection points. Polarity reversals are not allowed to correct for previous errors.

Where jumpers are indicated between pins of the same connector, they shall be installed
internal to the connector shell, and shall not have any cable number designations applied.

Where there are unused conductors or pairs in a cable assembly, they shall be insulated as
a group, left long enough for future termination, and folded into the connector hood.
Where this is impractical, they shall be cut off flush with the outer jacket prior to sleeving
outer jacket/conductor interface (if required).

All cables shall be prepared in such a way that the individual conductors or shields or
their insulation is not nicked or cut in any way.

The cable outer jacket shall be cut square.

The cable outer jacket shall be cut back only as far as necessary for termination of the
internal wires. Sufficient jacket length shall be retained to allow proper interface to the
connector housing or other strain relief device.

Insulation shall be removed from conductors in such a manner that:

A. Conductor strands shall not be nicked to the extent that base metal shows through
the plating.

B. Wire strands remain in their original lay, and are not combed out.

C. The conductor's insulation shall be cut square within 1/4 of the outer diameter of
the insulated conductor.

D. There shall not be burning or charring the conductor's insulation.

If required, the conductor shall be tinned with a minimum amount of 60-40 or 63-37
solder (tin/lead) with resin flux. The solder shall be as manufactured by Kester or Ersin
and shall be designed for electronic use.

Mechanical connections made to terminals prior to soldering shall be the minimum
required to reliably retain the wire. Avoid the practice of multiple wraps on solder
terminals, as that practice makes conductor removal very difficult after soldering.
Crimping of terminals to conductors shall be performed only by experienced personnel.
Only tooling recommended by the manufacturer shall be used. Only pins and connectors of the proper size and design for the cable to which they are to be applied shall be used.
There shall be no abnormal deformation of the contact during the crimping operation.

There shall be no damage done to the conductor that either severs strands or exposes the base metal of the individual strand by the crimping operation.

Audio Cables and Connections

Audio cables shall be subdivided into three classes: Microphone level circuits, Line level circuits Speaker level circuits

Microphone level circuits shall be kept at least three inches from any other parallel signal circuits and at least six inches from any parallel AC power circuits.

All audio connectors must conform to IEC standards; the convention is pin 1 shield, pin 2 HOT and pin 3 low. If any equipment is supplied wired as pin three hot, it should be changed or adapted to conform to the IEC standard.

Ground each audio cable shield at one point and one point only. Terminate shields at the "floating" end with insulating collars or heat shrink. Bare shields or wires in the system will not be acceptable. Connect all electronics grounds to a common point on the equipment rack(s). Ground this point and the rack(s) to the building main service ground point using a ground cable sized for a DC resistance of less than 0.1 ohm.

Audio cable from the following manufacturers shall be considered acceptable:

1. Belden
2. Canare
3. Clark
4. Gepco
5. Or approved equal

Line level and microphone audio cable shall be 100 percent shielded, 22 gauge twisted pair, Belden 9451 or Clark 61801EZ or equal.

Speaker level cable shall be unshielded twisted pair, 12 AWG, Belden 8477 or Clark SPSW12G.

Constant current (70.7 Volt) speaker cable shall be unshielded twisted pair, 18 AWG, Clark SPSW18G or equal.

Employ multi-conductor cables appropriate to the system and/or equipment to be interfaced.
Connectors from the following manufacturers shall be considered acceptable. Install connectors appropriate for the equipment interface:

1. ADC
2. Amp
3. Amphenol
4. Canare
5. H.H. Smith
6. Neutrik
7. Ponoma
8. Switchcraft
9. Trompeter
10. Or approved equal

**Video Cables and Connections**

All video wiring shall use BNC connectors suitable for the cable specified, unless specifically otherwise noted. Crimp connectors shall be installed using manufacturer's approved tooling and procedure.

Where the design requires that a group of cables be specified as equal length, but no length is specified, the Contractor shall determine the longest length required in the group, and match all cables in the group to this length. All RGB cable sets shall have each cable cut to identical lengths within the cable set.

All video cable and connectors employed on this project shall be digital capable. All connectors must have true 75-ohm impedance. Any 50-ohm connectors used, except on manufactured equipment shall be changed to 75 ohm as appropriate for the equipment and signal to be passed.

Video cable shall exhibit the characteristics of Belden 1505A or Belden 8281. Triax cable shall be Belden 9267.

Video cable from the following manufacturers shall be considered acceptable:

1. Belden
2. Canare
3. Extron
4. Or approved equal

Connectors from the following manufacturers shall be considered acceptable. Install connectors appropriate for the equipment interface:

1. ADC
2. Amp
3. Amphenol

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RF Performance Requirements

The RF distribution and cabling system shall meet or exceed the following electrical specifications, measured at any point in the system. Compliance with these specifications shall be determined by introducing a standard video reference signal at points normally used for origination (e.g., camera, video tape player, computer) and measuring the signal characteristics at points normally serving as destinations (e.g., monitor, projector, videotape recorder). Note that these are end-to-end performance requirements to be met under all system configurations.

The RF system shall meet or exceed Federal Communications Commission (FCC) rules pertaining to cable television systems. Specifically FCC Rules 47 USC Part 76.

Channel allocations shall be coordinated with the University and Cable Company.

For purposes of this paragraph, the distribution and cabling system shall include all equipment and cabling normally within the signal path.

1. Carrier to noise ratio shall be greater than or equal to 45dB.
2. Coherent disturbances shall not be less than 55 dB.
3. Hum and LF (Low Frequency) disturbances shall be less than or equal to 0.5 percent peak to peak, but no worse than 1 percent peak to peak anywhere in the system
4. Adjust all equipment upon installation to provide an output level at each final tap from +5dBmv to +10dBmv.

Video System Performance Requirements

1. The system shall meet all applicable standards and recommended practices in effect at the time of installation by applicable standards organizations, including but not limited to:
   A. American National Standards Institute (ANSI)
   B. Audio Engineering Society (AES)
C. Federal Communications Commission (FCC)

D. International Standards Organization (ISO)

E. National Association of Broadcasters (NAB)

F. Society of Motion Picture and Television Engineers (SMPTE)

2. The following specific standards shall be adhered to:


B. ANSI Standard RS-170 for television signals

C. Federal Communications Commission (FCC) Rules for Cable Television Systems; Part 76 of the Telecommunications Regulations, 47CFR76

D. National Cable Television Association (NCTA): Recommended CATV Measurements and Practices.

3. The start of color fields one and three shall be defined by a whole line between the first equalizing pulse and the preceding horizontal (H) sync pulse. Start of color field two and four shall be defined by a half line between the first equalizing pulse and the preceding H pulse. Color field one is that field with a positive going zero crossing of reference sub-carrier nominally coincident with the 50 percent amplitude point of the leading edges of even numbered horizontal sync pulses.

4. The zero crossing of reference subcarrier shall be nominally coincident with the 50 percent point of the leading edges of all horizontal sync pulses. For those cases where the relationship between sync and sub-carrier is critical for program integration, the tolerance on this coincidence is ±45 degrees of the reference sub-carrier.

5. All rise and fall times are to be 0.140 seconds ±0.02 seconds measured from ten to ninety percent amplitude. All pulse widths except blanking are measured at the 50 percent amplitude point.

6. Overshoot on all pulses during sync and blanking (vertical and horizontal) shall not exceed two IRE units. Any other extraneous signals during blanking intervals shall not exceed two IRE units measured over a bandwidth of 6 MHz.

7. Burst envelope rise time shall be 0.30 uSec measured between the ten and ninety percent amplitude points.
8. Start of burst shall be defined as the zero crossing, either positive or negative sloped, that precedes the first half cycle sub-carrier that is fifty percent greater of the burst amplitude.

9. The end of burst shall be defined by the zero crossing, either positive or negative sloped, that follows the last half cycle of sub-carrier that is fifty percent or greater of the burst amplitude.

10. Reference sub-carrier shall be a contiguous signal that has the same instantaneous phase as burst.

11. The following video levels shall be maintained:
   A. Program operating level at full white shall be set to 100 IRE, (+0 -2 IRE).
   B. Program operating level for black shall be set to 7.5 IRE (±2.5 IRE).
   C. Program operating level for sync shall be set to 40 IRE (± 2 IRE).
   D. Program operating level for burst shall be set to 40 IRE (±2 IRE).
   E. Burst pedestal shall be set as not to exceed ±2 IRE.

12. The ratio of area to vertical equalizing pulse to sync pulse shall be within 45 to 50 percent.

13. There shall be a 180 degree reversal of phase when even lines on a display device that is triggered by four field, 15.75 KHz information.

Distribution and Cabling

1. The video distribution and cabling system shall meet or exceed the following electrical specifications, measured at any point in the system. Compliance with these specifications shall be determined by introducing a standard video reference signal at points normally used for origination (e.g., camera, video tape player, computer) and measuring the signal characteristics at points normally serving as destinations (e.g., monitor, projector, videotape recorder). Note that these are end-to-end performance requirements to be met under all system configurations.

2. For purposes of this paragraph, the distribution and cabling system shall include all equipment and cabling normally within the signal path.

3. Frequency Response shall be ±1.5 dB, DC to 100 MHz for component video signals and ±0.5 dB; DC to 5.0 MHz for NTSC encoded composite video signals.

4. Rise time shall be 250 V/microseconds minimum.
5. Crosstalk shall be 45-dB minimum below nominal signal level, unweighted DC to 70 MHz.
6. Signal to Noise Ratio shall be 45-dB minimum, peak noise to RMS signal, unweighted DC to 70 MHz.
7. Signal Gain shall be unity (1.00) terminated into 75 ohms.
8. Line and Field Tilt shall be less than 2 percent.
9. Differential Gain shall be less than 3 percent.
10. Differential Phase shall be less than 3 degrees.
11. Color Timing (where applicable) shall be within 2 degrees at 3.58 MHz.
12. Input Return Loss shall be 40-dB minimum, DC to 70 MHz.
13. Path Length Inequality for Y/C and RGBS cable sets where the signals are not subject to subsequent matrixing or encoding shall be within 12 inches of cable length, or 1.6 nsec.
14. If cable length results in the deterioration of gain and frequency response characteristics and cable compensation equipment are not specified, the system shall be adjusted for best performance. The Contractor shall be able to demonstrate that any inability to meet gain and frequency response specification is due solely to length of cable.

Displays

1. All displays shall meet manufacturers' published specifications for brightness, contrast, focus, convergence, linearity, distortion and purity, across the entire range of horizontal and vertical scan frequencies for which the display is capable. In the absence of manufacturers’ specifications, convergence, linearity, distortion, or purity errors shall be not be visible from a viewing distance equal to the image width. Brightness, contrast and focus shall meet standard performance guidelines.
2. Projectors shall be installed and adjusted so that the resultant images are free from all keystone and barrel distortion and vignette.
3. Projectors shall exhibit correct color balance, both at black and at peak white, and proper gray scale tracking.
4. All displays shall meet manufacturers' published specifications for horizontal and vertical scan frequency ranges. Where appropriate, adjustments shall be made to allow for automatic scan locking across specified ranges. Image quality
specifications shall be met throughout the horizontal and vertical scan frequency ranges.

Audio Systems

1. To meet the acoustical performance criteria, the Contractor shall be responsible for setting the adjustments of loudspeakers, equalizers and other signal-processing equipment, pads, and gain controls. During demonstration and acceptance testing, under the direction of the University, make any final adjustment of these items as required. If so directed, provide additional field assembled resistive pads and/or resistor-capacitor equalizers.

2. All ceiling loudspeaker systems shall provide even distribution of the sound throughout the seating area, typically ±3 dB front to back or side to side for the one octave band centered at 4000 Hz. Total variation from the worst to the best seats shall not exceed ±4 dB.

3. Provide uniform frequency response for voice and program systems throughout the audience area. Typically, ±3 dB as measured with 1/3-octave bands of pink noise at positions across the main seating area as selected by the University.

4. Provide adequate dynamic range at an acoustic distortion level sufficiently low to ensure minimum listening fatigue. The system should be capable of delivering 75 dB average program level with an additional 10 dB SPL peaking margin to any seat in the audience area at an acoustic distortion level below 5 percent THD. The articulation loss of consonants shall not exceed 15 percent within the seating area.

5. Adjust all equalizers to realize maximum gain and optimal tonal balance from the sound system throughout the audience area.

6. Output level of all program sources arriving at switching or routing equipment shall be within ±0.25 dB of each other as measured at the input to the switcher or router. Provide pads, line amplifiers or other gain control devices as required to achieve this specification.

7. System frequency response shall be 20 - 20 KHz ±3 dB, unless the known, published specifications of a particular piece of mixing, processing, amplification or transducing equipment limit this specification.

8. System signal to noise ratio shall be 60 dB or greater, unless the known, published specifications of a particular piece of mixing, processing, amplification or transducing equipment limit this specification.

Equipment Racks and Furniture

Racks shall be provided for mounting equipment. Racks used shall present a neat unified appearance.
Racks shall conform to mounting dimensions for 19-inch racks under EIA standard RS-310 C.

Provide at least one vertical power distribution strip in each rack and console. Strips shall be provided with sufficient receptacles for the designed load. All racks and consoles shall have at least two spare outlets. All racks sixty-two inches and taller shall have a work light.

Provide side covers or doors on all exposed rack sides. Provide top covers on all racks. Coordinate HVAC requirements with these covers.

If any item of equipment includes exposed controls that are not used in system operation, and if those controls cannot be locked, capped or concealed behind a security cover, mount said item of equipment recessed behind a blank rack panel.

Provide steel blank and vent panels on all equipment racks to fill any unused rack spaces. Use panels with factory-applied finishes to match the color of the rack itself unless otherwise directed by the University.

**Identification Panel**

Install an identification panel with ¼” high engraved characters on the front or side (if visible) of the equipment racks. Rack panels shall not be more than one rack unit high or the equivalent. Identify the Project, System Installation Contractor, and System Designer and date of final installation (month and year only) in the following format:

| PROJECT: | University of Maine at Farmington  
|          | College of Education, Health and Rehabilitation  
|          | (Room Name) |
| ARCHITECT | PDT Architects  
|          | 49 Dartmouth Street  
|          | Portland, ME 04101 |
| SYSTEM DESIGNER: | Communications Design Associates, Inc.  
|          | 437 Turnpike Street  
|          | Canton, MA 02021  
|          | 339-502-6551 |
| INSTALLATION CONTRACTOR | Company name  
|          | Address  
|          | Telephone |
| INSTALLED: | Insert date of installation (Month and Year only) |
SECTION 5 – EQUIPMENT SPECIFICATIONS

Introduction

This section of the RFP provides equipment specifications and general installation requirements.

Work included

• Provide and install equipment as specified.
• Coordinate with other contractors as necessary to provide a complete and operational system.
• Provide University with hands on training with regards to equipment set-up, operation and adjustment.
• Provide system proof of performance tests as outlined.
• Set-up and adjust all equipment.
• Provide system documentation as outlined herein. The strongly suggested technical writer for system documentation is:

  Mr. William R. Lewis
  31 Nikisch Avenue
  Boston, MA 02131
  Telephone: 617-469-3265
  Email: billlewis4av@verizon.net

• Coordinate furnishings and rack enclosures as required. All visible items shall be approved by the University prior to installation. Custom racks shall be provided by:

  Michael Hoffmeier, General Manager
  Robert Treate Hogg Cabinetmaker Shop
  5650 Homeville Road
  Oxford, PA 19363
  Telephone: 717-529-2522 ext. 3
  Fax: 717-529-1909
  Email: MHoffmeier@rthogg.com

• Provide and install loudspeakers as specified.
• Provide and install blocking for all loudspeakers as required.
• Provide and install all projector mounting hardware.

• Provide and install computer security cables.

• Provide and install all video projectors as required.

• Obtain IP address and other configuration information from University for all applicable equipment. Provide and install management software in UFE computer as directed.

• Coordinate all AV provided data connections with University’s IT department. Provide patch cords as not provided by others.

• Coordinate with University to provide on-site supervision of electrical contractor installation.

• All devices that are mounted on shelves inside an equipment rack, with or without a faceplate, shall be secured to the shelf by screws. Specifically all devices mounted on a Mid-Atlantic RSH series mounts such as VCR’s and DVD players, as well as any other shelf-mounted device shall be secured. All devices shall be furnished with faceplates and complete trim kits.

• Assemble all loose equipment as required to form a functional unit.

• Align all projection systems and demonstrate setup and alignment to the University.

• All projectors shall be setup with the following options: The projector shall be setup so that the color mode is set to “Dynamic.” Setup the projector so that it shuts down if no signal is received within thirty minutes. The Contractor shall coordinate with the University to provide a custom user logo that will be displayed on startup (this also reduces the chances of theft). The projector shall be setup for SNMP management. The projector shall be setup with EMP management as per manufacturer specifications including email notification. Enable projector advanced functions including: projector lamp hour monitoring, quick setup, Easy MP mode (wireless presentation, Contractor shall setup projector for wireless and network presentations, coordinate IP addresses and other information with University.). Enable projector image mute, picture preview (allows preview of other inputs through the projector), image freeze, image zoom, menu functions including cursor controls.

• Provide the following services relative to the control system

  a) Provide the services of a certified Crestron Programmer. The suggested programmer is:
b) Meet with University and/or its Consultant to review all control functions and layout of all control panels.

c) Provide layout of all touch screens for University and its Consultant approval.

d) Provide layout of all push-button panels for University and its Consultant approval.

e) Provide layout of all web pages for University and its Consultant approval.

f) Provide control system programming.

g) Provide all necessary software for the control system operation. Provide printouts or electronic files for approval. Include with final as-built submittals.

h) Upon completion of system, provide print out of all touch panel pages. Provide electronic copies of all software programs to the University and its Consultant on CD-ROM.

i) Provide the operating software from which the control system program has been created.

j) Setup and integrate Room View monitoring on University’s network. Provide Room View 7.0 or newer.

k) Services shall include all control system programming, initial client consultation meeting, touch panel design, e-control design, Room View integration and at least three days on-site for system programming and debugging.

- Provide other work as outlined in the system descriptions and as shown on the drawings.

**Work not included**

- Power, except for the provision of power strips as noted.
- Data cabling except equipment patch cords as noted.


• Telephone cabling.

**Related work specified elsewhere**

- Data systems
- Power Systems

**SYSTEM DESCRIPTIONS**

**System Type 1: Classrooms**

This section of the specifications applies to the following rooms:

<table>
<thead>
<tr>
<th>Room Name</th>
<th>Room Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Snow Sports</td>
<td>001</td>
</tr>
<tr>
<td>Art Education</td>
<td>012</td>
</tr>
<tr>
<td>Resource Classroom 1</td>
<td>114</td>
</tr>
<tr>
<td>Resource Classroom 2</td>
<td>115</td>
</tr>
<tr>
<td>EMS Classroom</td>
<td>111</td>
</tr>
<tr>
<td>Classroom</td>
<td>107</td>
</tr>
<tr>
<td>Classroom</td>
<td>106</td>
</tr>
<tr>
<td>Literacy Classroom</td>
<td>103</td>
</tr>
<tr>
<td>Center for Excellence in Teaching</td>
<td>329</td>
</tr>
</tbody>
</table>

This specification applies to a typical classroom. Other systems are based on the same design with modifications as described below under their respective sections.

Each classroom has a projection screen provided by the University. Some of the screens are installed in a corner of the classroom in order to maximize white/chalkboard space. See architectural plans for screen placement. In all instances the Contractor shall be responsible for installing the projector mount so that the image fills the screen.

Each classroom will have an equipment rack provided by the Contractor. Placement is shown on the drawings. The rack will contain all the AV equipment. The rack will have a connection for a laptop as discussed below. It will be on casters. The racks shall be custom made per specifications in Appendix 2.

The rack will have a remote controlled surge protector that will be used to power all the equipment. The surge protector will be controlled by the control system relays to turn the equipment on and off.

The Contractor shall provide security covers mounted in front of the audio amplifier and the surge protector. This will prevent the rack master power from being shut down. The
rack should only be shut down through the control system. The cover over the amplifier will prevent unauthorized adjustments to the audio system.

The Contractor shall supply a drawer with lock for cable and remote control storage.

The Contractor shall install a grommet on the side panel towards the bottom of rack. The rack will have a cable support bracket installed on side panel towards the top of rack. The grommet and cable support bracket will be installed on the same side of rack.

The cable support bracket will be used to store (when not in use) a twenty-five foot VGA cable, data cable, and power extension cable. The cables will be covered by a mesh to keep cables together. The Contractor shall provide all cables.

These cables will have connections for a laptop provided by University or a document camera, provided by Contractor from the portable equipment list. When equipment needs to be connected the instructor will remove the cable from the hook, connect to the laptop or document camera, then return the cables to the hook when finished. The Contractor shall use flexible stranded cable. Use of solid conductor cable is not acceptable.

All cables from the rack to A/V junction box will pass through knockouts at the bottom rear of rack then through a grommet on A/V junction box. The knockout where the cables exit the rack shall be provided with a bushing to protect the cables. The cables will be wrapped in a mesh to keep them all together. The cables will be secured at both ends to provide strain relief.

The classrooms will have capability to playback video tape, DVD (all regions) and have connections for a laptop or document camera. A permanent computer will not be installed.

The laptop or document camera VGA video will connect directly to the projector as shown on the drawings. The projector shall switch to this input when the laptop input is selected. If a document camera and a laptop are to be used at the same time, the instructor will need to connect the laptop to the document camera and then the document camera to the VGA cable.

The VCR composite video will connect to an integrated A/V switcher / control system. Composite video from the A/V switcher/control system will connect to the projector.

The DVD component video will connect directly to the projector. The projector will switch to this input when DVD is selected as a source.

Power for both the DVD and VCR shall be plugged into a constant on outlet. Power will be initiated through commands by the control system.

All audio for these sources will connect to the A/V switcher/control system. The audio section will be able to switch between laptop, VCR and DVD audio sources in conjunction with the projector switching.
The VCR will be connected to a cable television (CATV) feed supplied by the University. The Contractor shall supply a jumper cable from the cable TV feed to the VCR CATV input.

Output of the AV switcher/control system will feed audio to the amplifier housed in the rack that will then feed the loudspeakers.

The loudspeakers will be suspended from the ceiling by the Contractor with pole mounts on either side of the screen. Loudspeaker cables will run inside the pole mount. The Contractor shall be responsible for installing all mounting hardware.

The Contractor will install projector in the ceiling. A 60 X 80” electric projection screen will be provided by University.

The projector will be provided a data connection by University. The Contractor shall supply jumper cable.

The projection screen will have a wall switch to control the screen. The room’s control system will parallel the wall switch functions.

The room will have a control system and 3.6” touch panel. The touch panel will be mounted on a custom rack mount. The custom rack mount will allow the touch panel to pivot vertically. The touch panel can pivot up to be used from a standing position or lay flat to meet ADA requirements.

The control system will be provided a data connection by University, for the implementation of Room View. The Contractor shall supply jumper cable.

The control system will have the following functions:

1. System power (through surge protector): System shut down with cool down cycle and system start up with warm up cycle. All items shall be switched off except control system and VCR/DVD. Those devices will be powered on/off by discrete commands.

2. Projector as outlined above.

3. Source selection for projector and video/audio switcher as required.

4. Projection screen: up/stop/down

5. VCR: Play, stop, pause, rewind, fast forward, search forward, search reverse, power on, power off, TV tuner select, channel up, channel down, keypad, keypad entry indication

6. DVD: Play, scan reverse, scan forward, skip reverse, skip forward, pause, stop, slow forward, slow reverse, up, down, right, left, menu, select, power.
7. Volume up/down and mute

8. E-control web pages

9. Room View integration

Provide and install equipment in the racks and furniture as required. Provide power distribution as required.

Provide and install the equipment listed below.

**System Type 2: Music Room 006**

This room is the same as a typical classroom (system one) with the addition of a turntable and a CD/cassette combination deck. All provisions of system one shall apply to this system.

The turntable will sit on top of rack. The turntable audio cables and power cord will pass through one of the conduit knockouts (top rear) of the rack. These cables will be secured to provide strain relief.

The turntable audio cables will connect to the A/V switcher/control system. The turntable specified does not need a preamplifier. If another turntable is substituted, a preamplifier must be provided. The turntable will not be controlled by the control system.

The CD/cassette combination deck will be mounted in rack. The CD/cassette audio cables will connect to the A/V switcher/control system.

In addition to the control functions listed in system one, the control system in this room will include all transport functions for the CD/Cassette deck including deck selection. The CD/cassette deck shall be switched on/off with discrete power commands to the IR port on the deck.

Provide and install equipment in the racks and furniture as required. Provide power control and distribution as required.

Provide and install the equipment listed below.

**System Type 3: Lobby/Lounge 117**

The lobby will consist of three touch sensitive monitors that will be used for building directory and other functions. The Contractor shall install the monitors into the kiosk provided by others. The Contractor shall connect the monitors through USB extenders to computers in an adjacent room off the lobby. The Contractor shall install drivers into the University furnished computer and align the monitor as required so that proper commands are initiated when the screen is touched.
The University will provide either three separate computers or one computer with three video cards. The Contractor shall provide VGA line amplifiers to insure that adequate video signal strength is received at the monitors.

Provide and install equipment in kiosk as required. Provide VESA mounts as required to install monitor in kiosk. Provide power control and distribution as required.

The University will provide all software programming for the kiosk.

The Lounge is adjacent to the Lobby. It will have its own AV system that will be separate from the Lobby. Equipment will be housed in a rack that will be installed by the Contractor in a corner of the room near the windows.

The Contractor should note that the conduit rough in for the projector was installed based on a previous design. This placed the junction box for the video projector signals about eight feet behind the final location of the video projector under this design. The Contractor will be responsible for providing cabling (including power cable) from the existing infrastructure to the video projector.

This system will operate similarly to the classrooms except it will have a wireless control panel and a voice reinforcement system. Ceiling loudspeakers will be provided and installed by the Contractor. They will be used for both voice reinforcement and program audio.

The voice reinforcement system consists of four microphone inputs. Two inputs will be installed on a wall plate near the projection screen. The other two inputs will be installed on a rack panel.

Each of the microphone inputs, along with the program audio sources will input into a digital signal processor (DSP). The DSP will be augmented by a custom microphone input volume panel that will be fabricated and installed by the Contractor. The panel shall consist of four volume control potentiometers rated between 5 – 50K ohms. The potentiometers shall be linear taper. Consult manufacturer operational instructions for further information.

The knobs shall interface to the DSP through a voltage control box as shown on the drawings. The voltage control box shall be installed at the rear of the rack by the Contractor.

In addition to the volume controls specified above, overall volume control for microphone and program volume shall be included on the touch panel.

At system power up all inputs on the DSP will be active. All speaker zones within the room shall be turned on. DSP programming in this mode shall include:

A. Fixed parametric equalization for all microphones turned on and preset for maximum gain before feedback. In addition add feedback suppression filters to
each microphone input. Use the feedback suppression filters primarily as a search
and destroy insurance tool. Any engaged filters during an event are not to be
locked and need to be reset to zero after the system is powered down so the
roaming filters are zeroed and ready for the next event.

B. Split the mono program signal input to separate program signal chain level
controllers. The Crestron control system will control the program volume of the
program signal chains.

C. Add overall equalization, low and hi pass filters per speaker manufacturers
specifications and limiters on all speaker zones to prevent speaker overloading.

The Contractor shall install loudspeakers into the ceiling tiles. Secure loudspeakers to
structure as required per code. Zone loudspeakers as shown on the drawings.

The Lounge has a projection screen provided by the University. See architectural plans
for screen placement. The Contractor shall be responsible for installing the projector
mount so that the projected image fills the screen.

The rack will have a remote controlled surge protector that will be used to power all the
equipment. The surge protector will be controlled by the control system relays to turn the
equipment on and off.

The Contractor shall provide security covers mounted in front of the audio amplifier and
the surge protector. This will prevent the rack master power from being shut down. The
rack should only be shut down through the control system. The cover over the amplifier
will prevent unauthorized adjustments to the audio system.

The Contractor shall supply a drawer with lock for cable, microphone and remote control
storage.

The lounge will have capability to playback video tape, DVD (all regions) and have
connections for a laptop or document camera. A permanent computer will not be
installed.

All video sources (laptop, rack aux inputs, VCR and DVD) will connect to a presentation
switcher. The video, s-video and VGA outputs of the switcher will input to the video
projector. Component output of the DVD player will input directly to the projector. When
DVD is selected, the projector shall switch to the component input. When other sources
are selected the projector will switch to the input of the appropriate format.

Power for both the DVD and VCR shall be plugged into a constant on outlet. Power will
be initiated through commands by the control system

Audio from all these sources will input into the DSP as shown on the drawings. Selection
of any source will switch the presentation switcher, DSP and video projector as
appropriate.
The VCR will be connected to a cable television (CATV) feed supplied by the University. The Contractor shall supply a jumper cable from the cable TV feed to the VCR CATV input.

The Contractor will install projector in the ceiling. A 60 X 80” electric projection screen will be provided by University.

The projector will be provided a data connection by University. The Contractor shall supply jumper cable.

The projection screen will have a wall switch to control the screen. The room’s control system will parallel the wall switch functions.

The room will have a control system and a wireless touch panel. The touch panel operates over a WiFi signal. The University will supply and configure wireless access points for the control panel along with other wireless data access for the lounge. Coordinate configuration with the University.

The control system will be provided a data connection by University, for the implementation of Room View. The Contractor shall supply jumper cable.

The control system will have the following functions:

1. System power (through surge protector): System shut down with cool down cycle and system start up with warm up cycle. All items shall be switched off except control system and VCR/DVD. Those devices will be powered on/off by discrete commands.

2. Projector as outlined above.

3. Source selection for projector and video/audio switcher as required.

4. Projection screen: up/stop/down

5. VCR: Play, stop, pause, rewind, fast forward, search forward, search reverse, power on, power off, TV tuner select, channel up, channel down, keypad, keypad entry indication

6. DVD: Play, scan reverse, scan forward, skip reverse, skip forward, pause, stop, slow forward, slow reverse, up, down, right, left, menu, select, power.

7. Volume up/down and mute for program and voice

8. DSP control as described above

9. E-control web pages
10. Room View integration

Provide and install equipment in the racks and furniture as required. Provide power distribution as required.

Provide and install the equipment listed below.

System Type 4: Distance Learning 112 – Base Contract

The Distance Learning Room has two displays. A video projector in the front of the room for the near end students to view instructional materials and the far end sites and a flat panel display at the rear of the room for the instructor to view the far end sites.

There will be two cameras. One camera will be on the front wall to the side of the projection screen, it will be used to photograph near end students. The second camera at the rear of the room will be used to photograph the instructor. The Contractor shall be responsible for completely installing all displays, cameras and loudspeakers. The projection screen will be provided by the University.

A lectern will be provided by the Contractor. It will house the following equipment:

- Microphone
- University supplied permanent computer and LCD monitor
- Computer interface
- Wired control system touch panel
- Touch panel interface
- Cable cubby

The lectern will house a computer provided by the University along with connections for a laptop and document camera. Each of these devices will connect into a three input computer interface.

All equipment will be housed in a lectern (presenter’s station) that will be provided by the Contractor. The Contractor shall provide a complete set of submittals on the lectern including finish samples for the University to approve. Submittals shall include drawings, photographs, cut sheets and other documentation as requested by the University.

The total cost of the lectern shall be calculated as follows: The Contractor shall budget $6,500.00 dealer cost. The Contractor shall markup from this dealer cost. This will provide a preliminary final cost to the University. The Contractor shall provide the University with the percentage markup as part of their proposal.

Once the lectern has been approved, the Contractor shall present to the University final quotes and invoices from the manufacturer(s) showing the actual cost of all products to the dealer including shipping. The dealer may then mark up the actual cost of the lectern.
at the same percentage as the bid submitted. This will be handled as a change order to the Contractor.

The lectern shall provide space to house a University furnished PC. The lectern shall provide facilities for the touch panel. It is likely that the touch panel will be installed on an articulating arm to allow easy adjustment. The lectern shall provide proper venting so that the ambient temperature inside the lectern does not exceed specifications for any of the equipment installed in the lectern. The lectern will be provided with a low voltage light on a gooseneck so that the instructor has sufficient light to view papers (Littlelight or equal). The lectern shall be provided with a clock.

The lectern shall be provided with support and/or storage for a document camera.

Wire management shall be provided within the lectern. Power and low voltage wiring shall be fed into the lectern from the floor.

As part of the design and submittal process the Contractor shall meet with the University and the consultant to itemize all devices that must be accommodated in the lectern. After this meeting, the Contractor may provide a lectern from pre-qualified suppliers including Marshall Furniture, KSI, R.T. Hogg Cabinetmakers, Van San and Forbes Industries. Other suppliers may be considered if samples of their work are submitted or if the University and/or its Consultant have previous positive experience with the supplier.

Under the lectern there will be a floor box with connections as shown on the drawings. The floor box has been provided by the general contractor. The Contractor is responsible for providing all connections in the floor box with the exception of power and data.

There will be an additional rack in this room that will house all the support equipment. This rack will be in front of room behind podium. This rack will have casters.

The podium computer interface will connect to input one on the VGA matrix switcher.

Outputs one and two from the VGA matrix switcher will connect to the VGA inputs one and two on the digital processor. This will allow two VGA sources to be displayed at the same time.

A document camera shall be setup so that a USB mouse (supplied with the document camera) can be used for annotation. It shall be setup so that images may be captured into the PC. The Contractor shall be responsible for installing this software into the University’s PC.

Outputs one and two from the S-video matrix switcher will connect to s-video inputs one and two on the digital processor. This will allow two s-video sources to be displayed at one time.

The digital processor will have two inputs and two outputs. It will have dual window capabilities allowing for the display of two VGA and two s-video sources on either
display. The digital processor DVI outputs will connect to the projector and flat panel
display VGA inputs with an adapter cable. The adapter cable will convert the DVI-I
signal to five wire RGBHV signals for input to the displays.

Other outputs of the VGA switcher will connect into the flat panel display and the codec
as shown on the drawings. Outputs from the s-video switcher will connect to the touch
panel, the VCR and camera inputs on the codec and directly to the VCR.

Other devices will connect to the matrix switcher as shown on the drawings.

The connectivity shown will allow the projector to display the near end instructional
materials in full screen along with far end camera video as a picture in picture, or far end
cameras as full screen.

The podium computer interface audio will connect to audio input one on the VGA matrix
switcher through a transformer.

Other sources will connect to the system as shown on the drawings. Feedback eliminators
shall be provided on all sources that could be used for recording to prevent a feedback
loop.

There will be eight microphone plates placed through out the room. There will be two
microphones per plate. The sixteen microphones will connect to the first sixteen inputs on
the audio digital signal processor (DSP). The Contractor shall provide microphones with
12’ goosenecks. The microphones will be provided with a switch that can be set to mute
the microphone or to activate the microphone. For initial setup, set the switches to mute
the microphone when pressed. If during the course of this project the University decides
to change this function to push-to-talk, change the settings without charge to the
University.

There will be one 18” lectern microphone with shock mount at the podium. This
microphone will connect to input 17 on the audio DSP.

Outputs of the DSP will connect to the codec and the program audio amplifier. Output of
the amplifier will feed the loudspeakers on either side of the projection screen.

The codec will be configured for IP configuration to operate over the University
computer network. This network connects into a state wide ATM network linking the
University of Maine System campuses and provides gateway services for external video
conferencing.

The microphone system is used for distance learning and video conferencing only. All
microphone signals are mixed by the automatic microphone mixers within the DSP. The
microphone signals are combined together and sent to the codec as the “send audio.”
When a program source is added to the “send audio” supply a separate control page for the program source add feature. For example, allow for sending VCR audio with speech to a remote site. Provide this capability for all program sources.

When using the add feature the selected program source to be sent is also mixed together with the return audio for playback. The combined program and speech signal is a second output of the router and appears as its own input to the DSP matrix mixer. Provide a technician page on the touch panel for adjustment of the speech and program mix and an overall send level control. This page will be password protected and used only by authorized personnel.

During a conference the return audio from the conference far end is routed through the router and the DSP matrix mixer to the program playback speakers. For recording purposes, only the return audio and the send audio are mixed together in the DSP matrix mixer to the record output.

Provide a level control for the record output on a technician page as described above.

Add DSP processing to the conference and record signals. On the send audio and recording signals provide any necessary band pass filters required by the frequency limitations of the codec and recorder. Provide a compressor/limiter to maintain uniform levels and to prevent signal overload.

Program audio from all the sources available on the router shall be reproduced, as shown on the drawings, through the program loudspeakers only. This shall be accomplished through a dedicated router output and DSP matrix mixer input for the program sources.

The control panels will have a volume control for program audio. Add DSP processing for room equalization and compressor/limiter and band pass filters for the program loudspeakers.

Program the DSP so that near end audio can never go to the program speakers.

The Contractor will install projector in ceiling. A 60 X 80” electric projection screen will be provided by University.

The projection screen will be provided by the University with a wall switch. The screen shall also be controlled by the AV control system.

The control system will have the following functions:

1. System power on/off with projector cool down and warm up indications.

2. Projector controls as specified above.

3. Flat panel display power: on/off, input select, aspect ratio select (default shall be 16:9), menu controls for all adjustments on tech pages.
4. Source selection for near end viewing and far end transmission.

5. DSP routing

6. Computer interface input selection


8. Video conferencing codec: All functions as available on the Crestron control module including: volume, privacy, picture in picture, address book with two numbers per entry, site name and call quality, call speed, audio only conferencing, camera control including five presets, local presets, emulation of all functions on the IR remote, internet streaming, source selection of transmit and receive video

9. VCR: Play, stop, pause, rewind, fast forward, search forward, search reverse, power on, power off, TV tuner select, channel up, channel down, keypad, keypad entry indication

10. DVD: Play, scan reverse, scan forward, skip reverse, skip forward, pause, stop, slow forward, slow reverse, up, down, right, left, menu, select, power.

11. Volume up/down and mute

12. E-control web pages

13. Room View integration

Provide and install equipment in the racks and furniture as required. Provide power control and distribution as required.

Provide and install the equipment listed below

System Type 6: Dean’s Conference Room 238A – Base Contract

This room will consist of a flat panel display at one end of the conference room and a rack that will be housed in millwork at the other end of the room. The rack shall be installed on the adjustable shelves in the millwork so that the top of the rack is near the top of the cabinet.

The flat panel display will be provided and installed by the Contractor. The Contractor will be responsible for all structural support. The flat panel display will be provided with loudspeakers that shall be installed on either side of the display. When ordering the loudspeakers, be sure to inform the manufacturer of the display being used so the right size loudspeaker enclosure will be provided.
Source equipment, such as the VCR and DVD player will be contained in millwork. The Contractor shall provide power distribution as required.

The system will have a controlled surge protector that will be used to power all the equipment. Security covers will be provided by the Contractor for the amplifier and surge protector.

A laptop connection will be provided on the front wall of the room underneath the flat panel display. It will connect directly to the flat panel display as shown on the drawings. A VCR and an all region DVD player will be contained in the racks and will connect directly to the flat panel display. Audio from these sources shall be balanced as they leave the rack or wall plate and then unbalanced at the audio input to the flat panel display.

The VCR shall be connected to the University’s CATV system by the Contractor. The Contractor shall be responsible for providing cabling to the CATV jack provided by others.

A 60 X 80” electric projection screen will be provided by University. The projection screen shall be operable through the control system.

The control system will be provided a data connection for the implementation of Room View. The Contractor shall be responsible for connecting the control system and configuring it onto the University’s network.

There will be a wireless touch panel in this room. The University will provide a Wireless Access Point. The Contractor shall closely coordinate touch panel configuration with the University to put it onto the wireless network.

The Contractor will provide and install a docking station for the touch panel. This will provide charging for the touch panel battery.

The control system will have the following functions:

1. System power on/off with projector cool down and warm up indications.
2. Flat panel display power: on/off, input select, aspect ratio select (default shall be 16:9), menu controls for all adjustments on tech pages
3. Projection screen: up/stop/down
4. VCR: Play, stop, pause, rewind, fast forward, search forward, search reverse, power on, power off, TV tuner select, channel up, channel down, keypad, keypad entry indication
5. DVD: Play, scan reverse, scan forward, skip reverse, skip forward, pause, stop, slow forward, slow reverse, up, down, right, left, menu, select, power.
6. Volume up/down and mute
7. E-control web pages
8. Room View integration

Provide and install equipment in the racks and furniture as required. Provide power control and distribution as required.

Provide and install the equipment listed below

**System Type 7A 7B and 7C: Conference Rooms 319, 322 and 240**

The three conference rooms will simply consist of a flat panel display installed on the wall at the front of the room and a wall plate to connect sources into the display.

The wall plate will be mounted on wall at receptacle height on the same wall as the flat panel display. The wall plate will have the same inputs as the flat panel display. If during the course of procurement of this contract the configuration of the display changes or if the display specified is discontinued, the wall plate shall be adjusted to mirror the inputs of the display actually installed.

Wiring going to the flat panel display will pass through a grommet on a plate that is mounted behind the display.

An integrated control system will not be provided in these rooms. The remote control that comes with the flat panel display will be used to switch between sources.

The flat panel display shall be provided with loudspeakers. The loudspeakers shall be installed on either side of the display. The flat panel will be provided with an integrated TV tuner; the Contractor shall connect the display to the CATV outlet provided by others and program the tuner for all available channels.

Provide and install equipment as required. Provide power distribution as required.

Provide and install the equipment listed below

**System Type 8: Portable Equipment**

Provide the portable equipment listed below. Unpack, test and assemble all equipment and accessories. Be sure all equipment is in operational order. Any equipment found to be defective out of the box shall be exchanged for non-defective equipment. Repairing new equipment is not acceptable.

Inventory and store all equipment as directed by the University.
System Type 4A: Distance Learning Alternate

Note this alternate adds rear projection capability to this room. If this alternate is taken, the entire cost of system four as described above will be deducted and the entire cost of system 4A will be added to the contract. Therefore, this specification is written to stand independently of system six. Under this alternate a rear projection enclosure is substituted for front video projection. To this end, due to requirements for a wide angle lens, the projector is changed.

The Distance Learning Room has two displays. There is a rear screen video projector in the front of the room for the near end students to view instructional materials and the far end sites. There is a flat panel display at the rear of the room for the instructor to view the far end sites.

There will be two cameras. One camera will be installed within the rear projection unit; it will be used to photograph near end students. The second camera at the rear of the room will be used to photograph the instructor. The Contractor shall be responsible for completely installing all displays, cameras and loudspeakers.

There will be a rack in this room that will house all the support equipment. The rack will be housed in the rear projection enclosure along with the loudspeakers. Use a swing out rack to aid in servicing.

A lectern will be provided by the Contractor. It will house the following equipment:

- Microphone
- University supplied permanent computer and LCD monitor
- Computer interface
- Wired control system touch panel
- Touch panel interface
- Cable cubby

The lectern will house a computer provided by the University along with connections for a laptop and document camera. Each of these devices will connect into a three input computer interface.

All equipment will be housed in a lectern (presenter’s station) that will be provided by the Contractor. The Contractor shall provide a complete set of submittals on the lectern including finish samples for the University to approve. Submittals shall include drawings, photographs, cut sheets and other documentation as requested by the University.

The total cost of the lectern shall be calculated as follows: The Contractor shall budget $6,500.00 dealer cost. The Contractor shall markup from this dealer cost. This will provide a preliminary final cost to the University. The Contractor shall provide the University with the percentage markup as part of their proposal.
Once the lectern has been approved, the Contractor shall present to the University final quotes and invoices from the manufacturer(s) showing the actual cost of all products to the dealer including shipping. The dealer may then mark up the actual cost of the lectern at the same percentage as the bid submitted. This will be handled as a change order to the Contractor.

The lectern shall provide space to house an University furnished PC. The lectern shall provide facilities for the touch panel. It is likely that the touch panel will be installed on an articulating arm to allow easy adjustment. The lectern shall provide proper venting so that the ambient temperature inside the lectern does not exceed specifications for any of the equipment installed in the lectern. The lectern will be provided with a low voltage light on a gooseneck so that the instructor has sufficient light to view papers (Littlelight or equal). The lectern shall be provided with a clock.

The lectern shall be provided with support and/or storage for a document camera.

Wire management shall be provided within the lectern. Power and low voltage wiring shall be fed into the lectern from the floor.

As part of the design and submittal process the Contractor shall meet with the University and its consultant to itemize all devices that must be accommodated in the lectern. After this meeting, the Contractor may provide a lectern from pre-qualified suppliers including Marshall Furniture, KSI, R.T. Hogg Cabinetmakers, Van San and Forbes Industries. Other suppliers may be considered if samples of their work are submitted or the University and/or its consultant have previous positive experience with the supplier.

Under the lectern there will be a floor box with connections as shown on the drawings. The floor box has been provided by the general contractor. The Contractor is responsible for providing all connections in the floor box with the exception of power and data.

Under the lectern there will be a floor box with connections as shown on the drawings. The floor box has been provided by the general contractor. The Contractor is responsible for providing all connections in the floor box with the exception of power and data.

The podium computer interface will connect to input one on the VGA matrix switcher.

A document camera shall be setup so that a USB mouse (supplied with the document camera) can be used for annotation. It shall be setup so that images may be captured into the PC. The AVC shall be responsible for installing this software into the University’s PC.

Outputs one and two from the VGA matrix switcher will connect to the VGA inputs one and two on the digital processor. This will allow two VGA sources to be displayed at the same time.
Outputs one and two from the S-video matrix switcher will connect to s-video inputs one
and two on the digital processor. This will allow two s-video sources to be displayed at
one time.

The digital processor will have two inputs and two outputs. It will have dual window
capabilities allowing for the display of two VGA and two s-video sources on either
display. The digital processor DVI outputs will connect to the projector and flat panel
display VGA inputs with an adapter cable. The adapter cable will convert the DVI-I
signal to five wire RGBHV signals for input to the displays.

Other outputs of the VGA switcher will connect into the flat panel display and the codec
as shown on the drawings. Outputs from the s-video switcher will connect to the touch
panel, the VCR and camera inputs on the codec and directly to the VCR.

Other devices will connect to the matrix switcher as shown on the drawings.

The connectivity shown will allow the projector to display the near end instructional
materials in full screen along with far end camera video as a picture in picture, or far end
cameras as full screen.

The podium computer interface audio will connect to audio input one on the VGA matrix
switcher through a transformer.

Other sources will connect to the system as shown on the drawings. Feedback eliminators
shall be provided on all sources that could be used for recording to prevent a feedback
loop.

There will be eight microphone plates placed throughout the room. There will be two
microphones per plate. The sixteen microphones will connect to the first sixteen inputs on
the audio digital signal processor (DSP). The Contractor shall provide microphones with
12’ goosenecks. The microphones will be provided with a switch that can be set to mute
the microphone or to activate the microphone. For initial setup, set the switches to mute
the microphone when pressed. If during the course of this project the University decides
to change this function to push-to-talk, change the settings without charge to the
University.

There will be one 18” lectern microphone with shock mount at the podium. This
microphone will connect to input 17 on the audio DSP.

Outputs of the DSP will connect to the codec and the program audio amplifier. Output of
the amplifier will feed the loudspeakers on either side of the projection screen.

The codec will be configured for IP configuration to operate over the University
computer network. This network connects into a state wide ATM network linking the
University of Maine System campuses and provides gateway services for external video
conferencing.
The microphone system is used for distance learning and video conferencing only. All microphone signals are mixed by the automatic microphone mixers within the DSP. The microphone signals are combined together and sent to the codec as the “send audio.”

When a program source is added to the “send audio” supply a separate control page for the program source add feature. For example, allow for sending VCR audio with speech to a remote site. Provide this capability for all program sources.

When using the add feature the selected program source to be sent is also mixed together with the return audio for playback. The combined program and speech signal is a second output of the router and appears as its own input to the DSP matrix mixer. Provide a technician page on the touch panel for adjustment of the speech and program mix and an overall send level control. This page will be password protected and used only by authorized personnel.

During a conference the return audio from the conference far end is routed through the router and the DSP matrix mixer to the program playback speakers. For recording purposes, only the return audio and the send audio are mixed together in the DSP matrix mixer to the record output.

Provide a level control for the record output on a technician page as described above.

Add DSP processing to the conference and record signals. On the send audio and recording signals provide any necessary band pass filters required by the frequency limitations of the codec and recorder. Provide a compressor/limiter to maintain uniform levels and to prevent signal overload.

Program audio from all the sources available on the router shall be reproduced, as shown on the drawings, through the program loudspeakers only. This shall be accomplished through a dedicated router output and DSP matrix mixer input for the program sources.

The control panels will have a volume control for program audio. Add DSP processing for room equalization and compressor/limiter and band pass filters for the program loudspeakers.

Program the DSP so that near end audio can never go to the program speakers.

The Contractor will install projector in ceiling. A 60 X 80” electric projection screen will be provided by University.

The projection screen will be provided by the University with a wall switch. The screen shall also be controlled by the AV control system.

The control system will have the following functions:

1. System power on/off with projector cool down and warm up indications.
2. Projector APA adjust (auto button). Projector advanced functions including:
projector lamp hour monitoring, quick setup, Easy MP mode (wireless
presentation, Contractor shall setup projector for wireless and network
presentations, coordinate IP addresses and other information with University.)

3. Projector image mute, picture preview (allows preview of other inputs through
the projector)

4. Flat panel display power: on/off, input select, aspect ratio select (default shall
be 16:9), menu controls for all adjustments on tech pages

5. Source selection for near end viewing and far end transmission.

6. DSP routing

7. Computer interface input selection

8. Routing switchers: input and output selection. Provide basic selection on main
pages for typical configurations. Provide complete routing capabilities on tech
pages.

9. Video conferencing codec: All functions as available on the Crestron control
module including: volume, privacy, picture in picture, address book with two
numbers per entry, site name and call quality, call speed, audio only
conferencing, camera control including five presets, local presets, emulation
of all functions on the IR remote, internet streaming, source selection of
transmit and receive video

10. VCR: Play, stop, pause, rewind, fast forward, search forward, search reverse,
power on, power off, TV tuner select, channel up, channel down, keypad,
keypad entry indication

11. DVD: Play, scan reverse, scan forward, skip reverse, skip forward, pause,
stop, slow forward, slow reverse, up, down, right, left, menu, select, power.

12. Volume up/down and mute

13. E-control web pages

14. Room View integration

Provide and install equipment in the racks and furniture as required. Provide power
control and distribution as required.

Provide and install the equipment listed below
System Type 6A: Dean’s Conference Room Alternate

Note this alternate adds video conferencing capability to this room. If this alternate is taken, the entire cost of system six as described above will be deducted and the entire cost of system 6A will be added to the contract. Therefore, this specification is written to stand independently of system six. Under this alternate two flat panel displays are substituted for the video projector.

This room will consist of a flat panel display at one end of the conference room and a rack that will be housed in millwork at the other end of the room. The rack shall be installed on the adjustable shelves in the millwork so that the top of the rack is near the top of the cabinet.

The flat panel display will be provided and installed by the Contractor. The Contractor will be responsible for all structural support. The flat panel display will be provided with loudspeakers that shall be installed on either side of the display. When order the loudspeakers, be sure to inform the manufacturer of the display being use so the right size loudspeaker enclosure will be provided.

Source equipment, such as the VCR and DVD player will be contained in millwork. The Contractor shall provide power distribution as required.

The system will have a controlled surge protector that will be used to power all the equipment. Security covers will be provided by the Contractor for the amplifier and surge protector.

A laptop connection will be provided on the front wall of the room underneath the flat panel display. A VCR and a DVD player will be housed in the equipment racks.

The VCR shall be connected to the University’s CATV system by the Contractor. The Contractor shall be responsible for providing cabling to the CATV jack provided by others.

A 60 X 80” electric projection screen will be provided by the University. The projection screen shall be operable through the control system.

The control system will be provided a data connection for the implementation of Room View. The Contractor shall be responsible for connecting the control system and configuring it onto the University’s network.

There will be a wireless touch panel in this room. The University will provide a Wireless Access Point. The Contractor shall closely coordinate touch panel configuration with the University to put it onto the wireless network.

The Contractor will provide and install a docking station for the touch panel. This will provide charging for the touch panel battery.
The room will have video conferencing capability. There will be a video codec in rack one.

RGBHV video from the wall plate will connect to the video codec.

The output of the VCR will connect to a 6 X 1 switcher in the main equipment rack.

The DVD component video will connect to the VGA/component input on flat panel display one. The DVD S-video will connect to a 6 X 1 s-video switcher.

The output of the 6 X 1 switcher will connect into the “VCR” input on the codec.

The Contractor shall install a camera above the flat panel display facing into the conference room. The camera will connect to a CAT 5e transmitter. The Contractor will provide a Cat5e cable from camera position to rack one. This cable will connect to a CAT 5e receiver mounted in rack one. From the CAT 5e receiver output a custom cable will connect to two places on the video codec, the camera one input and the camera control input.

The Contractor shall be responsible for providing and installing a camera mount above the flat panel display

The VCR output will connect to the VCR for recording.

The video codec VGA output will connect to the RGBHV position of flat panel display.

The video codec will have a data connection provided by University. The Contractor shall be responsible for configuring the codec to work on the University’s network. Coordinate addressing and other information with the University’s IT department.

Audio from the laptop input will connect to the VGA audio input on the video codec.

Audio from the VCR and DVD will connect to the 6 X 1 switcher. Audio from the 6 X 1 switcher will connect to the VCR input on the video codec. Audio from the video codec VCR output will connect to the VCR for recording.

Three table microphones will connect to the wall plate at the front of the room. Provide the microphones along with enough cable to allow the microphones to be placed anywhere on the table.

Audio from the video codec VGA output will connect to the flat panel displays through buffer amplifiers.

The control system will be provided a data connection for the implementation of Room View. The Contractor shall be responsible for connecting the control system and configuring it onto the University’s network.
There will be a wireless touch panel in this room. The University will provide a Wireless Access Point. The Contractor shall closely coordinate touch panel configuration with the University to put it onto the wireless network.

The Contractor will provide a docking station for the touch panel. This will provide charging for the touch panel battery.

The control system will have the following functions:

1. System power on/off for both flat panel displays.

2. Source selection for both flat panel displays and audio for speakers.

3. VCR: Play, stop, pause, rewind, fast forward, search forward, search reverse, power on, power off, TV tuner select, channel up, channel down, keypad, keypad entry indication

4. DVD: Play, scan reverse, scan forward, skip reverse, skip forward, pause, stop, slow forward, slow reverse, up, down, right, left, menu, select, power.

5. Video conferencing codec: All functions as available on the Crestron control module including: volume, privacy, picture in picture, address book with two numbers per entry, site name and call quality, call speed, audio only conferencing, camera control including five presets, local presets, emulation of all functions on the IR remote, internet streaming, source selection of transmit and receive video

6. Volume up/down and mute

7. E-control web pages

8. Room View integration
4.0 Equipment

Provide and install the following equipment. Approved equals will only be accepted as provided herein.

System Type 1: Classrooms

This section of the specifications applies to the following rooms:

<table>
<thead>
<tr>
<th>Room Name</th>
<th>Room Number</th>
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</thead>
<tbody>
<tr>
<td>Snow Sports</td>
<td>001</td>
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<tr>
<td>Art Education</td>
<td>012</td>
</tr>
<tr>
<td>Resource Classroom 1</td>
<td>114</td>
</tr>
<tr>
<td>Resource Classroom2</td>
<td>115</td>
</tr>
<tr>
<td>EMS Classroom</td>
<td>111</td>
</tr>
<tr>
<td>Classroom</td>
<td>107</td>
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<tr>
<td>Classroom</td>
<td>106</td>
</tr>
<tr>
<td>Literacy Classroom</td>
<td>103</td>
</tr>
<tr>
<td>Center for Excellence in Teaching</td>
<td>329</td>
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</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Manufacturer</th>
<th>Model</th>
<th>Description</th>
<th>Quan</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Pioneer</td>
<td>DV-383S</td>
<td>DVD player</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Middle Atlantic</td>
<td>RSH-4S</td>
<td>Rack Shelf for Pioneer</td>
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<tr>
<td>3</td>
<td>Panasonic</td>
<td>PV-V4628S</td>
<td>VCR</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Middle Atlantic</td>
<td>RSH-4S</td>
<td>Rack Shelf for Panasonic</td>
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<td>5</td>
<td>Extron</td>
<td>VGA A M-M MD/25</td>
<td>25' VGA cable with audio for CPU/laptop</td>
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<td>6</td>
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Sources

Video Display

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<td>Video Projector 1024 x 768 3000 Lumens</td>
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<td>RPA-149</td>
<td>Projector mount</td>
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<td>10</td>
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Program Audio System

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<td>2 channel power amplifier</td>
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<td>Item</td>
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<td>Model</td>
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<td>JBL</td>
<td>Control 28</td>
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<td>TPS-4L</td>
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<td>Crestron</td>
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<td>20</td>
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<td><strong>Peripherals</strong></td>
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<td>RT Hogg</td>
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<td>L18-193L</td>
<td>19&quot; Rack Storage Drawer with Lock</td>
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<td>Chatsworth</td>
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<td>SurgeX</td>
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<td>Surge Suppressor with Remote</td>
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**Total Equipment**

Contractor labor and supervision to install

Materials to install

Freight

Training

As-built documentation

System test and acceptance

**Total non equipment**

**TOTAL SYSTEM COST**

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## System Type 2: Music Room 006

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<thead>
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<td>Panasonic</td>
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<td>VCR</td>
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<td>Omnimount</td>
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<td>Ceiling mount for Speaker</td>
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**Total Equipment**

Contractor labor and supervision to install
Materials to install
Freight
Training
As-built documentation
System test and acceptance

**Total non-equipment**

**TOTAL SYSTEM COST**

**System Type 3: Lounge Lobby 117**

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**Total equipment**

Contractor labor and supervision to install

Materials to install

Freight

Training

As-built documentation

System test and acceptance

**Total non-equipment**

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</tr>
<tr>
<td>49</td>
<td>RT Hogg</td>
<td>Custom</td>
<td>Lectern (Provide an allowance of $6,500 dealer cost).</td>
<td>1</td>
</tr>
<tr>
<td>50</td>
<td>RT Hogg</td>
<td>Custom rack</td>
<td>Per specifications</td>
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<td>51</td>
<td>Lowell</td>
<td>L18-193L</td>
<td>19” Rack Storage Drawer with Lock</td>
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<tr>
<td>52</td>
<td>SurgeX</td>
<td>SX1115RT</td>
<td>Surge Suppressor with Remote</td>
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**Total Peripherals**

**Total equipment**

Contractor labor and supervision to install

*Page 86 of 108*
<table>
<thead>
<tr>
<th>Item</th>
<th>Manufacturer</th>
<th>Model</th>
<th>Description</th>
<th>Quan</th>
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<tbody>
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<td></td>
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<td></td>
<td></td>
<td>Freight</td>
<td></td>
</tr>
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<td></td>
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<td>Training</td>
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<td></td>
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<td></td>
<td>System test and acceptance</td>
<td></td>
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<td></td>
<td>Total non-equipment</td>
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<td>TOTAL SYSTEM COST</td>
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1

2 System Type 6: Dean’s Conference Room 238A

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<tbody>
<tr>
<td>1</td>
<td>Pioneer</td>
<td>DV-383S</td>
<td>DVD player</td>
<td>1</td>
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<tr>
<td>2</td>
<td>Middle Atlantic</td>
<td>RSH-4S</td>
<td>Rack Shelf for Pioneer</td>
<td>1</td>
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<tr>
<td>3</td>
<td>Panasonic</td>
<td>PV-V4628S</td>
<td>VCR</td>
<td>1</td>
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<td>4</td>
<td>Middle Atlantic</td>
<td>RSH-4S</td>
<td>Rack Shelf for Panasonic</td>
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<td>5</td>
<td>RDL</td>
<td>STA-1</td>
<td>Line Amplifier</td>
<td>5</td>
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<td>6</td>
<td>Extron</td>
<td>AAP 104</td>
<td>Four-Gang AAP Mounting Frame</td>
<td>1</td>
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<tr>
<td>7</td>
<td>Extron</td>
<td>70-147-12</td>
<td>Active Extender AAP</td>
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<tr>
<td>8</td>
<td>Extron</td>
<td>70-090-12</td>
<td>Blank Plate Double</td>
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Sources

<table>
<thead>
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<th>Description</th>
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</tr>
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<tbody>
<tr>
<td>9</td>
<td>Panasonic</td>
<td>TH65PHD9UK</td>
<td>65” plasma</td>
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<td>10</td>
<td>Chief Manufacturing</td>
<td>PLP-2000 + PSB-H2458</td>
<td>Plasma Wall Mount</td>
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Video Display

<table>
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<tr>
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<tbody>
<tr>
<td>11</td>
<td>Innovox</td>
<td>Sound Frame Flex</td>
<td>Speakers for Panasonic TH65PHD8UK (pair)</td>
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Program Audio System
### Control System

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<th>Item</th>
<th>Manufacturer</th>
<th>Model</th>
<th>Description</th>
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<tbody>
<tr>
<td>12</td>
<td>Crestron</td>
<td>AV2</td>
<td>Control System</td>
<td>1</td>
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<td>13</td>
<td>Crestron</td>
<td>TPMC-10</td>
<td>WI-FI Touch Panel</td>
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<td>14</td>
<td>Crestron</td>
<td>TPMC-10-DS</td>
<td>Docking Station for TPMC-10</td>
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<tr>
<td>15</td>
<td>Crestron</td>
<td>C2ENET-2</td>
<td>Dual Port Ethernet Card for AV2</td>
<td>1</td>
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<tr>
<td>16</td>
<td>Crestron</td>
<td>CNSP-XX</td>
<td>Serial Interface Cable for projector</td>
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<tr>
<td>17</td>
<td>Crestron</td>
<td>IRP2</td>
<td>Infrared Emitter Probe</td>
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<tr>
<td>18</td>
<td>Crestron</td>
<td>Programming</td>
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### Peripherals

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<tbody>
<tr>
<td>19</td>
<td>Middle Atlantic</td>
<td>5--8</td>
<td>Slim 5 Eight Rack Unit Rack</td>
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<tr>
<td>20</td>
<td>SurgeX</td>
<td>SX1115RT</td>
<td>Surge Suppressor with Remote</td>
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</tbody>
</table>

### Total Equipment

- Contractor labor and supervision to install
- Materials to install
- Freight
- Training
- As-built documentation
- System test and acceptance

### TOTAL SYSTEM COST

1

---

**SYSTEM TYPE 7A, 7B AND 7C: CONFERENCE ROOMS 319, 322 AND 240**

### System 7A

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<thead>
<tr>
<th>Item</th>
<th>Manufacturer</th>
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<tbody>
<tr>
<td>1</td>
<td>Extron</td>
<td>AAP 104</td>
<td>Four-Gang AAP Mounting</td>
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<tr>
<td>Item</td>
<td>Manufacturer</td>
<td>Model</td>
<td>Description</td>
<td>Quan</td>
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<tr>
<td>------</td>
<td>--------------</td>
<td>-----------</td>
<td>--------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>2</td>
<td>Extron</td>
<td>70-107-xx</td>
<td>Video/s-video AAP Panel (RCA/S-Video)</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Extron</td>
<td>70-094-x2</td>
<td>Three RCA AAP Panel w/ silkscreen</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Extron</td>
<td>70-094-x1</td>
<td>Two RCA Audio AAP Panel w/ silkscreen</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>Extron</td>
<td>70-101-x3</td>
<td>VGA/HD w/ audio AAP Panel w/silkscreen</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Extron</td>
<td>70-090-x1</td>
<td>Single AAP Blank Panel</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>Extron</td>
<td>97-001-01</td>
<td>One-time charge silkscreen</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>Extron</td>
<td>97-002-01</td>
<td>Silk Screen</td>
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<tr>
<td>9</td>
<td>Samsung</td>
<td>LN-S4092D</td>
<td>40” LCD Display Monitor</td>
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<tr>
<td>10</td>
<td>Chief</td>
<td>MTR-6241</td>
<td>Tilt wall-mount</td>
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</tbody>
</table>

**Total equipment**

Contractor labor and supervision to install

Materials to install

Freight

Training

As-built documentation

System test and acceptance

**Total non-equipment**

**TOTAL SYSTEM COST**

<table>
<thead>
<tr>
<th>Item</th>
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<th>Description</th>
<th>Quan</th>
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</thead>
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<tr>
<td>1</td>
<td>System 7B</td>
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</tbody>
</table>

1 | Extron | AAP 104 | Four-Gang AAP Mounting Frame | 1 |
2 | Extron | 70-107-xx | Video/s-video AAP Panel(RCA/S-Video) | 1 |

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3  Extron  70-094-x2  Three RCA AAP Panel w/ silkscreen  1
4  Extron  70-094-x1  Two RCA Audio AAP Panel w/ silkscreen  2
5  Extron  70-101-x3  VGA/HD w/ audio AAP Panel w/silkscreen  1
6  Extron  70-090-x1  Single AAP Blank Panel  3
7  Extron  97-001-01  One-time charge silkscreen  1
8  Extron  97-002-01  Silk Screen  1
9  Samsung  LN-S4692D  46" LCD Display Monitor 16x9  1
10  Chief  PLP-2534  Tilt wall mount  1

**Total equipment**

Contractor labor and supervision to install
Materials to install
Freight
Training
As-built documentation
System test and acceptance

**Total non-equipment**

**TOTAL SYSTEM COST**

### System 7C

<table>
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<tbody>
<tr>
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<td>Extron</td>
<td>AAP 104</td>
<td>Four-Gang AAP Mounting Frame</td>
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<tr>
<td>2</td>
<td>Extron</td>
<td>70-107-xx</td>
<td>Video/s-video AAP Panel(RCA/S-Video)</td>
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</tr>
<tr>
<td>3</td>
<td>Extron</td>
<td>70-094-x2</td>
<td>Three RCA AAP Panel w/ silkscreen</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Extron</td>
<td>70-094-x1</td>
<td>Two RCA Audio AAP Panel w/ silkscreen</td>
<td>2</td>
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</tbody>
</table>

Page 90 of 108
<table>
<thead>
<tr>
<th>Item</th>
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<th>Model</th>
<th>Description</th>
<th>Quan</th>
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<tbody>
<tr>
<td>1</td>
<td>Samsung</td>
<td>SDP-950 DX</td>
<td>Document camera with VGA output</td>
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</tr>
<tr>
<td>2</td>
<td>Bretford</td>
<td>MP24-E4</td>
<td>Cart for Document Camera</td>
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</tr>
<tr>
<td>3</td>
<td>Smart Technologies</td>
<td>Model 680</td>
<td>77” diagonal interactive white board</td>
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<tr>
<td>4</td>
<td>Smart Technologies</td>
<td>FS670</td>
<td>Floor stand for Model 680</td>
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<td>5</td>
<td>Smart Technologies</td>
<td>USB-XT</td>
<td>USB Extension cable</td>
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<tr>
<td>6</td>
<td>Smart Technologies</td>
<td>20-00653-00</td>
<td>Replacement stylus and eraser</td>
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### New Education Center - Audiovisual Systems

**RFP# 09-07**

<table>
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<tbody>
<tr>
<td>7</td>
<td>Epson</td>
<td>Powerlite 835P</td>
<td>Video Projector 1024 x 768 3000 Lumens</td>
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<tr>
<td>8</td>
<td>Bretford</td>
<td>A26TG42E-GM</td>
<td>Tech-Guard Adjustable Cart w/e-unit</td>
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<tr>
<td>9</td>
<td>Epson</td>
<td>V13H010L31</td>
<td>UHE Replacement Lamp</td>
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<td>10</td>
<td>Epson</td>
<td>V13H134A07</td>
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**Total equipment**

Contractor labor and supervision to install

Freight

**Total non-equipment**

**TOTAL SYSTEM COST**

1

2 **System Type 4A: Distance Learning Alternate**

<table>
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<th>Description</th>
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<tr>
<td>1</td>
<td>Pioneer</td>
<td>DV-383S</td>
<td>Multi Region DVD player</td>
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</tr>
<tr>
<td>2</td>
<td>Middle Atlantic</td>
<td>RSH-4S</td>
<td>Rack Shelf for Pioneer</td>
<td>1</td>
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<tr>
<td>3</td>
<td>JVC</td>
<td>HR-S5902U</td>
<td>S-VHS VCR</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Middle Atlantic</td>
<td>RSH-4S</td>
<td>Rack Shelf for JVC</td>
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<td>5</td>
<td>Extron</td>
<td>RGB 203Rxi</td>
<td>Triple Input Computer Interface</td>
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<td>Extron</td>
<td>MBU 125</td>
<td>Under-Desk Mount</td>
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<td>VGA M-M MD10</td>
<td>VGA cable with for doc camera</td>
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<td>8</td>
<td>Extron</td>
<td>VGA-A M-M MD/12</td>
<td>VGA cable with audio for computer/laptop</td>
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<td>9</td>
<td>Extron</td>
<td>Cable Cubby 600</td>
<td>Surface -mountable Enclosure for cables</td>
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**Video Display**

<table>
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<tr>
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<td>Large Screen Solutions</td>
<td>RM120VFA</td>
<td>120&quot; Vista Power rear screen</td>
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**Page 92 of 108**
<table>
<thead>
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<td>16:9 Video Projector</td>
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<td>Sanyo</td>
<td>LNS-W32</td>
<td>0.79:1 Lens</td>
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<td><strong>Video Switching and Processing</strong></td>
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<td>Extron</td>
<td>MAV Plus 128 SVA</td>
<td>12 X 8 S-video Matrix Switcher with audio</td>
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<td>14</td>
<td>Extron</td>
<td>MVX 44 VGA A</td>
<td>4 X 4 VGA Matrix Switcher with audio</td>
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<td>RGB Spectrum</td>
<td>DV-XL-2/0</td>
<td>Display Processor</td>
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<td>DVIAM-VGAF</td>
<td>DVI-A Male to 15-pin HD Female Cable</td>
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<td>Aurora Multimedia</td>
<td>BTL</td>
<td>Feedback Eliminator</td>
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<td>18</td>
<td>RDL</td>
<td>STA-1</td>
<td>Electronic Transformer</td>
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<td>19</td>
<td>Tenneco</td>
<td>SV4-2B-6</td>
<td>S-Video Adapter</td>
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<td>21</td>
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<td>Per Drawing</td>
<td>3 Gang Microphone floor box plate</td>
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<td><strong>Audio System</strong></td>
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<tr>
<td>22</td>
<td>Biamp</td>
<td>AudiaFlex CM</td>
<td>AudiaFlex chassis with Cobranet</td>
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<tr>
<td>23</td>
<td>Biamp</td>
<td>AEC2w</td>
<td>2 channel wide band acoustic echo cancelling/noise suppression input card</td>
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</tr>
<tr>
<td>24</td>
<td>Biamp</td>
<td>OP2e</td>
<td>2 channel mic/line output card</td>
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<tr>
<td>25</td>
<td>Biamp</td>
<td>Audia EXPI</td>
<td>8 channel mic/line analog inputs to Cobranet output expansion unit</td>
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<td>26</td>
<td>Electro-Voice</td>
<td>PC Desktop-12</td>
<td>Polar Choice free standing 12&quot; desktop mic with switch module</td>
<td>16</td>
</tr>
<tr>
<td>27</td>
<td>Electro-Voice</td>
<td>PC Plus-18</td>
<td>Polar Choice 18' Lectern microphone with base mount</td>
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<tr>
<td>28</td>
<td>Crown</td>
<td>CDi-1000</td>
<td>2 channel 275 watt @ 8 ohm power amplifier</td>
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<tr>
<td>Item</td>
<td>Manufacturer</td>
<td>Model</td>
<td>Description</td>
<td>Quan</td>
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<td>------------------------------</td>
<td>--------------------------------------------------</td>
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<tr>
<td>29</td>
<td>Electro-Voice</td>
<td>XI-1082</td>
<td>Program playback speakers</td>
<td>2</td>
</tr>
<tr>
<td>30</td>
<td>Custom</td>
<td>Per Drawing</td>
<td>2 Gang Microphone floor box plate</td>
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<tr>
<td>31</td>
<td>Mitsubishi</td>
<td>MDT-461S</td>
<td>46” LCD Display Monitor 16x9</td>
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<td>32</td>
<td>Chief Manufacturing</td>
<td>PSM 2049</td>
<td>LCD mount</td>
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<tr>
<td>33</td>
<td>Polycom</td>
<td>VSX-7000E (CP-3372B)</td>
<td>Videoconferencing Codec 7000 System</td>
<td>1</td>
</tr>
<tr>
<td>34</td>
<td>Polycom</td>
<td>4870-00001-100</td>
<td>Premier Maintenance 1yr upgrade</td>
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<tr>
<td>35</td>
<td>Polycom</td>
<td>5150-21297-001</td>
<td>Multipoint Software</td>
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<tr>
<td>36</td>
<td>Polycom</td>
<td>7200-22785-001</td>
<td>Image Share II Software</td>
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<tr>
<td>37</td>
<td>Sony</td>
<td>EVID70</td>
<td>Camera</td>
<td>2</td>
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<tr>
<td>38</td>
<td>Innovative Communications</td>
<td>WM-30B</td>
<td>Wall Mount for Sony Cameras</td>
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<tr>
<td>39</td>
<td>Crestron</td>
<td>PRO2</td>
<td>Professional Dual Bus Control System</td>
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<td>40</td>
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<td>Single Port Ethernet Card</td>
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<td>41</td>
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<td>CNPWS-75</td>
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<td>1</td>
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<td>42</td>
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<td>TPS-15B</td>
<td>15” Touch Panel</td>
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<td>43</td>
<td>Crestron</td>
<td>CNISP-XX</td>
<td>Serial Interface Cable</td>
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<td>44</td>
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<td>Infrared Emitter Probe</td>
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<td>45</td>
<td>Crestron</td>
<td>C2COM3</td>
<td>3 Port RS-232 Comm. Card</td>
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<td>46</td>
<td>Crestron</td>
<td>Programming</td>
<td>Custom</td>
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<tr>
<td>47</td>
<td>RT Hogg</td>
<td>Custom</td>
<td>Lectern (Provide an allowance of $6,500 dealer cost)</td>
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**Videoconference System**

**Control System**

**Peripherals**
<table>
<thead>
<tr>
<th>Item</th>
<th>Manufacturer</th>
<th>Model</th>
<th>Description</th>
<th>Quan</th>
</tr>
</thead>
<tbody>
<tr>
<td>48</td>
<td>Middle Atlantic</td>
<td>SRSR-4-20</td>
<td>Rotating Rail System (for installation in rear projection enclosure)</td>
<td>1</td>
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<tr>
<td>49</td>
<td>Lowell</td>
<td>SRSR-Catrim</td>
<td>Trim Panel</td>
<td>1</td>
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<tr>
<td>50</td>
<td>Lowell</td>
<td>L18-193L</td>
<td>19” Rack Storage Drawer with Lock</td>
<td>1</td>
</tr>
<tr>
<td>51</td>
<td>SurgeX</td>
<td>SX1115RT</td>
<td>Surge Suppressor with Remote</td>
<td>1</td>
</tr>
</tbody>
</table>

**Total equipment**

Contractor labor and supervision to install

Materials to install

Freight

Training

As-built documentation

System test and acceptance

**Total non-equipment**

**TOTAL SYSTEM COST**

1 System Type 6A: Dean’s Conference Room Alternate

<table>
<thead>
<tr>
<th>Item</th>
<th>Manufacturer</th>
<th>Model</th>
<th>Description</th>
<th>Quan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sources</td>
<td>1</td>
<td>Pioneer</td>
<td>DV-383S</td>
<td>DVD player</td>
</tr>
<tr>
<td>2</td>
<td>Middle Atlantic</td>
<td>RSH-4S</td>
<td>Rack Shelf for Panasonic</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>JVC</td>
<td>HR-S5902U</td>
<td>S-VHS VCR</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Middle Atlantic</td>
<td>RSH-4S</td>
<td>Rack Shelf for JVC</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Extron</td>
<td>AAP 104</td>
<td>Four-Gang AAP Mounting Frame</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Extron</td>
<td>70-147-12</td>
<td>Active Extender AAP</td>
<td>1</td>
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<tr>
<td>7</td>
<td>Extron</td>
<td>70-103-14</td>
<td>Two XLR-3 Female AAP Plate</td>
<td>2</td>
</tr>
<tr>
<td>Item</td>
<td>Manufacturer</td>
<td>Model</td>
<td>Description</td>
<td>Quan</td>
</tr>
<tr>
<td>------</td>
<td>-------------------</td>
<td>------------------------</td>
<td>----------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>8</td>
<td>Extron</td>
<td>70-090-12</td>
<td>Blank Plate Double</td>
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<tr>
<td>8</td>
<td>RDL</td>
<td>RU-DA4D</td>
<td>Audio DA</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>RDL</td>
<td>STA-1</td>
<td>Line Amplifier</td>
<td>3</td>
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<td></td>
<td><strong>Switching and Processing</strong></td>
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<td></td>
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</tr>
<tr>
<td>10</td>
<td>Kramer</td>
<td>VS-61YC</td>
<td>6 X 1 YC Switcher</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><strong>Video Display</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Panasonic</td>
<td>TH65PHD9UK</td>
<td>65&quot; plasma</td>
<td>1</td>
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<tr>
<td>12</td>
<td>Chief Manufacturing</td>
<td>PLP-2000 + PSB-H2458</td>
<td>Plasma Wall Mount</td>
<td>1</td>
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<tr>
<td></td>
<td><strong>Program Audio System</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Shure</td>
<td>SCM 410</td>
<td>Four Channel Microphone Mixer</td>
<td>1</td>
</tr>
<tr>
<td>14</td>
<td>Innovox</td>
<td>Sound Frame Flex</td>
<td>Speakers for Panasonic TH65PHD8UK (pair)</td>
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</tr>
<tr>
<td></td>
<td><strong>Video Conferencing</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Polycom</td>
<td>7200-21962-001</td>
<td>VSX Presenter includes VSX 8000,PowerCam, 2 microphones, Image Share 2, and People + contend IP</td>
<td>1</td>
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<tr>
<td>16</td>
<td>Polycom</td>
<td>5150-22762-001</td>
<td>VSX MP Plus Multi Point Option</td>
<td>1</td>
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<tr>
<td>17</td>
<td>Clock Audio</td>
<td>C009E</td>
<td>Boundary Microphone without mounting holes</td>
<td>3</td>
</tr>
<tr>
<td>18</td>
<td>Sound Control Tech</td>
<td>RC1-SP</td>
<td>Camera Mount and Cable for Polycom Power Cam</td>
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<tr>
<td></td>
<td><strong>Control System</strong></td>
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<tr>
<td>19</td>
<td>Crestron</td>
<td>AV2</td>
<td>Control System</td>
<td>1</td>
</tr>
<tr>
<td>20</td>
<td>Crestron</td>
<td>C2ENET-2</td>
<td>Ethernet Card for AV2</td>
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<tr>
<td>21</td>
<td>Crestron</td>
<td>TPMC-10</td>
<td>WI-FI Touch Panel</td>
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<tr>
<td>22</td>
<td>Crestron</td>
<td>TPMC-10-DS</td>
<td>Touch Panel docking station/charger</td>
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</tr>
<tr>
<td>23</td>
<td>Crestron</td>
<td>CNSP-XX</td>
<td>Serial Interface Cable</td>
<td>3</td>
</tr>
<tr>
<td>Item</td>
<td>Manufacturer</td>
<td>Model</td>
<td>Description</td>
<td>Quan</td>
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<tr>
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<td>----------</td>
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<td>------</td>
</tr>
<tr>
<td>24</td>
<td>Crestron</td>
<td>IRP2</td>
<td>Infrared Emitter Probe</td>
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<tr>
<td>25</td>
<td>Crestron</td>
<td>Programming</td>
<td>Custom</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><strong>Peripherals</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Middle Atlantic</td>
<td>5--8</td>
<td>Slim 5 Eight Rack Unit Rack</td>
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<tr>
<td>27</td>
<td>SurgeX</td>
<td>SX1115RT</td>
<td>Surge Suppressor with Remote</td>
<td>1</td>
</tr>
</tbody>
</table>

**Total Equipment**

- Contractor labor and supervision to install
- Materials to install
- Freight
- Training
- As-built documentation
- System test and acceptance

**Total non-equipment**

**TOTAL SYSTEM COST**

END OF SPECIFICATIONS

**SECTION 6 – PROPOSAL CONTENT**

The following sections of the Request for Proposal outline the general proposal format and procedures required for submission to the University. All terms of this Request for Proposal are hereby incorporated into the final proposal form.

Any Offeror may withdraw its Proposal by written request at any time prior to the proposal due date. No Offeror may withdraw its proposal for a period of thirty (30) days after the due date, and all bids shall be subject to acceptance by the University during this period.

Only one proposal may be submitted by each Offeror.

Each responding Offeror shall furnish verifiable evidence that its organization and personnel meet the following minimum qualifications. Any sub-contractor to the Offeror must comply with the following requirements:
Offeror’s Qualifications

Each Offeror shall include a description of the professional and technical experiences, background, qualifications and expertise of the organization's key personnel assigned to this project. The description shall show that Offeror possesses the demonstrated skills and experience in specific areas of the project scope. In addition, Offeror shall identify a project manager for the project and shall provide resumes of all personnel who shall be assigned to this project. Offeror shall estimate the percentage of time each individual shall be working on this project.

Contacts

Offeror shall identify the following individuals who shall act as contacts for the University:

1. The sales representative/account manager responsible for the sale
2. The corporate executive who has the authority to negotiate on behalf of and bind the company if the contract is awarded
3. A qualified technician who can answer detailed questions about the products/services offered

References

In order to qualify for consideration, the Offeror must show evidence of at least five (5) years previous experience in the design and construction of facilities of similar scope and magnitude, using similar equipment. Provide three (3) references, including telephone numbers and the names of people to contact, at locations where the Offeror has performed work on a scale and manner similar to this installation.

Provide references of key personnel who will be working on this project including but not limited to project manager, systems engineer and lead technicians.

Financial Statement

Offeror must demonstrate its financial ability to enter into this contractual relationship and to sustain this project by providing the following documentation and such other documentation, as the University shall reasonably request:

1. Annual Report with audited Financial Statement for the most recent three years; or
2. Audited Financial Statements for the most recent three years; or
3. Audited Balance Sheets for most recent three years
Insurance

Evidence that the Offeror can meet insurance requirement section of this document.

Warranties

Indicate the extent of all warranties applied to this contract.

Test Equipment

Provide a listing including manufacturer, model number, serial number and date of latest calibration of all test equipment that will be used in performance of this contract. See test equipment section below for details of required equipment.

Sample Documentation

Provide sample rack elevations, audio flows, control flows and video flows showing as-built conditions of previous projects. Submittals shall be full size.

Provide user operations and troubleshooting manuals from a previous project. Provide complete bound manuals.

Authorized Dealer

A letter of confirmation from the manufacturer(s) that the vendor is authorized to service all items of equipment quoted, and retains full-time employees who are factory trained and certified to perform field service on all major items of equipment. For each major product, provide a letter from the manufacturer stating that the dealer is authorized to sell, install and service the equipment specified herein.

A joint proposal may be submitted provided that each participating Offeror signs the proposal. If the contract is awarded to Joint Contractors, each Joint Contractor shall be jointly and severally liable for the performance of the entire contract, and the Joint Contractors must designate, in writing, one individual having authority to represent the Joint Contractors in all matters relating to the contract. The University assumes no responsibility or obligation for the allocation of orders or purchases among the Joint Contractors. Provide collateral material for each organization or individual listed, in addition and to the extent provided herein by the primary Offeror on this contract.

The primary Offeror shall clearly state the role of any sub-contractor, partner or other persons with regards to furnishing equipment, services, installation, design, engineering, and warranty or post-warranty equipment maintenance. The University shall hold the primary Contractor (Offeror) liable for compliance with all terms of this specification, and all terms of this contract. If the Offeror is a primary manufacturer, or a manufacturer...
who is a Value Added Reseller of products for all equipment and services specified, the
Offeror shall so state in their proposal.

Training

Provide operator and maintenance training as specified below. As part of the proposal,
the Offeror shall include a syllabus outlining the training offered. This syllabus shall
include a clear set of instructional objectives, and the methods that will be used to
achieve those objectives.

Procurement and Installation Timeline

Offeror shall provide a procurement and installation time line with their proposal. The
time line shall be in the form of a CPM based PERT or Gantt chart. The chart shall show
the various steps required for procurement, assembly and installation. The timeline shall
indicate each task to be performed, expected resource allocation, and expected duration
of each task. Also, indicate earliest start, earliest finish, latest start and latest finish for
each major task. Note prominently expected task milestones, and expected payment
milestones. Critical path shall be indicated in the timeline, along with a discussion as to
the implications of slippage in the critical path. Offeror shall indicate any “long lead
time” equipment or material items with their proposal that could hinder the timely
completion of the project.

PRICING

Equipment

The Offeror shall include with their proposal a complete itemized list including the
manufacturer, model number, unit cost and total cost for all specified items; reference
each item by “item number” or when necessary a description of the item as it appears in
this document. Provide expected delivery information in timeline and include separately
cost for any substitutions, or add or deduct items.

The University reserves the right to purchase additional equipment, purchase less
equipment or delete equipment entirely based on its own best interests.

Labor/Supervision

The Offeror shall provide itemized pricing for all labor and supervision required to set-up
and install the systems. Labor shall be itemized for each system. Itemizations shall
include all labor and/or supervision to procure, manage and install the systems. Labor
shall be provided at a fixed price, time and materials rates are not acceptable.
Additionally, the Offeror shall provide labor rates for all personnel to be used in case of
change order.
The University reserves the right to purchase additional labor and supervision, purchase less labor and supervision or delete labor and supervision entirely based on its own best interests.

**Purchased Services**

The Offeror shall identify all purchased or sub-contracted services to be provided under this contract. Indicate, in detail, the extent and cost associated with the purchased services. The Offeror shall identify, and provide references for all sub-contractors who may be employed in the execution of the Work under this contract.

The University reserves the right to purchase additional services, purchase fewer services or delete purchased services entirely based on its own best interests.

Provide a bid summary as shown below. NO OTHER FORMAT IS ACCEPTABLE.

*Note that if alternates are taken for systems four and six, the total cost of system four and six will be deducted and the cost of alternates 4A and 6A will be added to the contract as applicable.*

<table>
<thead>
<tr>
<th>System</th>
<th>Equipment</th>
<th>Labor and Materials</th>
<th>Total</th>
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<tbody>
<tr>
<td>1. Snow Sports 001</td>
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<tr>
<td>1. Art Education 012</td>
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</tr>
<tr>
<td>1. Resource Classroom 1 114</td>
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<tr>
<td>1. Resource Classroom2 115</td>
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<tr>
<td>1. EMS Classroom 111</td>
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<td>1. Classroom 107</td>
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<td>1. Literacy Classroom 103</td>
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<td>1. Center for Excellence in Teaching 329</td>
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<tr>
<td>1. Classroom 106</td>
<td></td>
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</tr>
<tr>
<td>2. Music Room 006</td>
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<td>3. Lounge 117</td>
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<tr>
<td>System</td>
<td>Equipment</td>
<td>Labor and Materials</td>
<td>Total</td>
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</tr>
<tr>
<td>4 Distance Learning 112</td>
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</tr>
<tr>
<td>6. Dean’s Conference Room 238A</td>
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<tr>
<td>7A. Conference 319</td>
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<tr>
<td>7B Conference 322</td>
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<td></td>
<td></td>
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<tr>
<td>7C: Conference 240</td>
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<td>8. Portable Equipment</td>
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<td><strong>Total Base Bid</strong></td>
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<tr>
<td>Alternate 4A Distance Learning Alternate</td>
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<tr>
<td>Alternate 6A Dean’s Conference Room Alternate</td>
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<tr>
<td>Cost of Bonds</td>
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<tr>
<td>Other</td>
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</table>

APPENDICES FOLLOW
Appendix 1

Project Reports
FORM PR-1A

File this form in a timely manner as instructed in the contract documents. This form is available electronically or in paper format. It may be reproduced for administration of this project only. Complete all sections. If a section is not applicable, place NA in the appropriate space. Return this form as instructed in the specifications. Reports are due by 3:00PM on the dates indicated in the contract documents.

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Report Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Division Number</td>
<td>Report Number</td>
</tr>
<tr>
<td>Contractor Name</td>
<td>Contractor Project Manager</td>
</tr>
<tr>
<td>Contractor Telephone/e-mail</td>
<td>Person filing report</td>
</tr>
</tbody>
</table>

Section 1: Equipment (Use separate sheets as necessary)

A. Percent of all equipment received to date but not on-site

B. Percent of equipment ordered but not received

C. Percent of equipment not ordered (explain)

D. Percent of equipment on-site

E. Value of all equipment received $

F. List any items with procurement/delivery problems. Describe problem

G. List any equipment that is defective or requires service. Describe problem.

H. Describe any system integration problems relative to the equipment.

I. Are there any other equipment-related issues that need to be resolved?
### Section 2: Installation Status (Use separate sheets as necessary)

<table>
<thead>
<tr>
<th>A) Days of work performed in the last report period</th>
</tr>
</thead>
<tbody>
<tr>
<td>B) Expected days of work for the next report period</td>
</tr>
<tr>
<td>C) Average number of personnel provided during this report period</td>
</tr>
<tr>
<td>D) Average number of personnel expected to be provided in the next report period</td>
</tr>
<tr>
<td>E) Estimated overall percent of project completed</td>
</tr>
<tr>
<td>F) List areas completed</td>
</tr>
<tr>
<td>G) List areas started but not completed. Provide estimated completion date</td>
</tr>
<tr>
<td>H) List areas not started</td>
</tr>
</tbody>
</table>

### Section 3: Conflicts and Problems:

A) Describe work completed during this report period

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

B) Document all meetings that took place during this report period. List attendees, items discussed and decisions made. (Attach separate sheets if necessary)

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Page 105 of 108
C) Provide a narrative of any problems encountered that require University, Manufacturer or others’ intervention (attach separate sheets if necessary).

________________________________________________________________________

________________________________________________________________________

Provide narrative of conflicts with other trades that may be holding up installation progress:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

D) Report any unusual incidents or occurrences:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

E) Provide any other information you deem appropriate to aid in the management of this project:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

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FORM PR-2

File this form prior to commencing work in a room, or as otherwise instructed. One form shall be filed for each room, and anytime the room condition changes. All surveys must be witnessed either the University’s representative, or be documented with photographs/videos. This form is available electronically or in paper format. It may be reproduced for administration of this project only. Complete all sections. If a section is not applicable, place NA in the appropriate space. Return this form as instructed in the specifications. Use the back of this form for additional comments.

<table>
<thead>
<tr>
<th>Project Name</th>
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</thead>
<tbody>
<tr>
<td>Report Date</td>
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</tr>
<tr>
<td>Room Number</td>
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</tr>
<tr>
<td>Contractor Name</td>
<td></td>
</tr>
<tr>
<td>Contractor Project Manager</td>
<td></td>
</tr>
<tr>
<td>Contractor Telephone and e-mail</td>
<td></td>
</tr>
<tr>
<td>Division Number</td>
<td></td>
</tr>
<tr>
<td>Room Surveyed by contractor (name/date/time)</td>
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</tr>
<tr>
<td>Survey witnessed by University’s representative (name/date/time)</td>
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Section 1: Document Room Condition (attach photos or additional sheets if necessary)

<table>
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Release of responsibility: I/we, as University’s representative, have reviewed the condition of this room post-installation, and find it to ☐ require repair ☐ not require repair (check one), and hereby ☐ release ☐ do not release (check one) this contractor from liability.

Signed/dated: ______________________________________________________________

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Appendix 2

Rack Specifications