UMBC
AN HONORS UNIVERSITY IN MARYLAND

UNIVERSITY OF MARYLAND BALTIMORE COUNTY

MULTI-STEP BID # BC-20744-Q

FOR

PAHF – CLASSROOM SYSTEM

ISSUE DATE: JULY 15, 2011

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<tr>
<td>Issue Date</td>
<td>12:00 Noon</td>
<td>Friday, July 15, 2011</td>
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<td>Pre-Bid Conference</td>
<td>3:00 PM</td>
<td>Thursday, July 21, 2011</td>
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<td>Deadline for Questions</td>
<td>4:00 PM</td>
<td>Thursday, July 28, 2011</td>
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<td>Bid Due Date</td>
<td>2:00 PM</td>
<td>Thursday, August 4, 2011</td>
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**WARNING:** Prospective bidders who have received this document from a source other than the Issuing Office should immediately contact the Issuing Office and provide their name and mailing address in order that amendments to the Request for Bid or other communications can be sent to them. Any Prospective Bidder who fails to notify the Issuing Office with this information assumes complete responsibility in the event that they do not receive communications from the Issuing Office prior to the closing date.

UNIVERSITY OF MARYLAND BALTIMORE COUNTY
1000 Hilltop Circle
Baltimore, Maryland 21250
www.umbc.edu
PAHF – CLASSROOM SYSTEM
MULTI-STEP BID # BC-20744-Q

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PAHF – CLASSROOM SYSTEM
MULTI-STEP BID # BC-20744-Q

SECTION I: SUMMARY INFORMATION

A. SUMMARY STATEMENT

The University of Maryland Baltimore County (also called the “University” or “UMBC”) intends to accepts Bids for the equipment and services specified in accordance with these bid documents. The work includes, but is not limited to, the scope of work outlined in the Technical Specifications in Section IV.

Bidders are responsible for Division 1 – “General Requirements” which is available through CMC Repro, as well as, the Whiting Turner Contracting Project Manuel, dated January 25, 2010.

All work performed under this contract shall be in accordance with the University’s Technical Specifications, Contract Drawings, and any Addenda, and other components of the Contract.

Project Start Date: September 23, 2011 – Project End Date (complete): July 2, 2012

All inquiries during the bid process must be directed to UMBC Procurement. Bidders shall not contact Grimm + Parker Architects with William Rawn Associates or Convergent Technologies Design Group, who serve as consultants on the project.

The procurement method being used for this solicitation is a “Multi-Step Sealed Bid” and is defined as a two–phase process. Bidders are required to submit both a Technical Offer and a Bid Price, in separately identified and sealed packages by the deadlines set forth herein. In the first phase, bidders submit un-priced technical offers to be evaluated by the University. Only those bidders whose technical offers have been found to be acceptable during the first phase, that is both responsive and responsible, will have their price bids considered.

B. ISSUING OFFICE

Sharon Quinn
University of Maryland Baltimore County
Department of Procurement
Administration Building, Room 301,
1000 Hilltop Circle, Admin 923
Baltimore, MD 21250
Voice: (410)-455-2540
FAX: (410) 455-1009
E-mail: squinn@umbc.edu

The sole point of contact in the University for the purpose of this Bid is the issuing office. Any questions with regard to any aspect of this bid must be directed to Sharon Quinn in writing.
C. **QUESTIONS AND INQUIRIES**

Questions and inquiries should be directed to the individual referenced with the above Issuing Office. All such questions and inquiries must be received by 4:00 p.m. **Thursday, July 28, 2011.** Inquiries will receive a written reply. Copies of replies will also be sent to all other bidders, but without identification of the inquirer.

D. **DELIVERY OF BIDS**

Bids must be delivered to:

University of Maryland Baltimore County  
Department of Procurement  
1000 Hilltop Circle, Administration Building, Room 301  
Baltimore, MD 21250  
Attention: Sharon Quinn

E. **BID CLOSING DATE**

In order to be considered, one (1) original and five (5) copies [for a total of six (6) sets] of the Technical Offer, and one (1) original plus two (2) copies, plus one (1) CD [for a total of four (4) sets] of the Bid Price in this multi-step bid must be submitted to the Issuing Office by not later than **2:00 p.m. on Thursday, August 4, 2011.** The original must be clearly indicated as such. Late Bids cannot be accepted.

**NOTE:** All UMBC mail goes through the UMBC mailroom, so please leave sufficient time for the mail distribution. A mailed (via US Post Office) bid is not considered "received" until the document reaches the above room at UMBC. Bids delivered to the campus central mail facility or to locations other than Room 301 in the UMBC Administration Building will not be considered "received" by UMBC until they arrive at Room 301 in the Administration Building and are clocked in. The University will not waive delay in delivery resulting from the need to transport a bid from another campus location to Room 301, or error or delay on the part of the carrier.

Bids received after the established closing date and time cannot be considered. Offerors are advised that a bid is not considered "received" until it is delivered to the specific location; that is, a bid must be received in Room 301 by the due date in order to be considered. Offerors must allow sufficient time, therefore, to insure that their bid is "received" in accordance with this paragraph.

F. **PRE-BID CONFERENCE**

There will be a **Pre-Bid Conference** held in conjunction with this Bid. The conference will be held on **Thursday, July 21, 2011 at 3:00 p.m.** in the Whiting-Turner Construction Trailer Conference Room, which is located as you enter the UMBC Campus. As you enter the Campus from Wilkens Avenue there is a traffic light and you go straight towards the
construction site. As you approach the site there will a parking lot off to your left “Lot # 8” and you can park there and then proceed to the Construction Trailer. Please refer to the Campus Website for directions and parking: http://www.umbc.edu/aboutumbc/campusmap/. There will be a Site Visit following the Pre-Bid Meeting.

While attendance at the Pre-Bid Conference is not mandatory, information presented may be very informative; therefore, all interested vendors are encouraged to attend in order to be able to better prepare acceptable bids. If your firm plans to send representatives, please call the issuing office by Tuesday, July 19, 2011. We ask that a maximum of two (2) representatives from each company attend this meeting.

Appropriate auxiliary aids and services for qualified individuals with disabilities will be provided upon request. Please call Sharon Quinn (at 410-455-2540) with specific requests at least five (5) business days prior to conference.

G. DURATION OF BID OFFER

Bids are to be held valid for 120 days following the closing date for this Multi-Step Bid. This period may be extended by mutual agreement between the vendor and the University.

H. TERM OF CONTRACT

The contract term for PAHF Phase-I shall be for a period of one (1) year beginning September 23, 2011 and ending July 2, 2012.

I. AWARD

Only the Bid Price of those bidders whose Technical Offers are deemed acceptable will be opened. The Bid Price of bidders who did NOT meet the technical criteria will have their Bid Price returned to them unopened.

The contract for this project shall be awarded to the responsive and responsible bidder submitting the most favorable bid price after the initial technical evaluation is completed. Vendors responding to this solicitation must meet all requirements contained herein. If the vendor does not meet all requirements, the University may classify their bid as "non-responsive". The University may also determine that a vendor is "Not Responsible", i.e., does not have the capabilities in all respects to perform the work required. Should a bid be found unacceptable or if a vendor is found not responsible, the bid will not be considered further.

An award made to a "responsive and responsible" vendor pursuant to this solicitation is tentative and is final only upon approval by the appropriate office of the State of Maryland and execution on behalf of the State.
J. BID ACCEPTANCE

The University reserves the right to accept or reject any and all bids, in whole or in part, received as a result of this solicitation, and to waive minor irregularities. Further, the University reserves the right to make a whole award, multiple awards, a partial award or no award at all. The University reserves the right to increase or decrease the quantities of any materials, equipment, supplies or services.

K. FORMATION OF AGREEMENT/CONTRACT OR ISSUANCE OF PURCHASE ORDER

The Contract to be entered into as a result of this Bid (the "Contract") shall be by and between the offeror as contractor and the University in the form of a University Contract and shall contain the provisions included herein as Appendix C (Contract), as well as, any additional terms required by UMBC or the State of Maryland. By submitting an offer, the Contractor warrants that they have reviewed Appendix C (Contract) and will execute a contract on that form upon request by UMBC. Offerors must understand and acknowledge that UMBC, as an agency of the State of Maryland, cannot indemnify the Contractor, submit to binding arbitration, or agree to pay the Contractor’s attorney’s fee.

The Contract to be entered into as a result of this Bid (the “Contract”) shall be by and between the Offeror as contractor and the University and shall consist of (1) the terms, conditions and specifications of this Multi-Step Bid and any appendices, amendments, additions or changes thereto; (2) the Standard Contract found in Appendix C, and (3) the Offeror’s response to the Multi-Step Bid and any amendments or changes thereto.

L. ORDER OF PRECEDENCE

The contract between the parties will be embodied in the contract documents, which will consist of those items named in “K” above, listed in their order of precedence. Modifications to the Order of Precedence of those items will not be accepted in order to protect the University against obscure, unrecognized conflicts between the solicitation and a Bidder’s bid. In the event of a conflict, the terms of the University Contract shall prevail.

M. BID / PROPOSAL AFFIDAVIT AND CERTIFICATIONS

State procurement regulations require that responses contain certifications regarding non-collusion, debarment, cost and price, etc. The affidavit form, which should be completed by all respondents and returned with their respective responses, is included in Appendix A of the Bid.
N. PIGGYBACK CLAUSE

UMBC is a member of the University System of Maryland ("USM") and as such, UMBC reserves the right to extend the terms, conditions, and prices of this contract to other institutions of the USM must any of those institutions express an interest in participating in any contract that results from this solicitation for a period of up to one (1) year after UMBC makes its award. Furthermore, on occasion, other State educational institutions (e.g., St. Mary’s College, Morgan State University, Baltimore City Community College) may desire to take advantage of this contract. Each of the piggyback institutions will issue their own purchasing documents. UMBC assumes no obligation on behalf of the piggyback institutions. Offerors must set forth their willingness and ability to extend this contract and the terms, conditions and prices stated herein to these other institutions.

END OF SECTION I
SECTION II: GENERAL INFORMATION FOR VENDORS

A. PURPOSE

The overall purpose of this Multi-Step Bid is to provide information to vendors interested in preparing and submitting bids to meet the requirements for the equipment and services as described herein. Bids will be received for the equipment and services specified herein or attached hereto under the terms, conditions and general specifications of this bid.

B. GENERAL INFORMATION FOR VENDORS

1. Bids must be made in the official name of the firm or individual under whom business is conducted (showing official business address) and must be signed by a duly authorized person.

2. Each offeror must furnish all information required by the bid request. Erasures or other changes must be initialed by the person signing the bid. Bids signed by an agent of the corporation must be accompanied by evidence of their authority.

3. At the Pre-Bid Conference, potential offerors will have an opportunity to: (1) ask and receive answers to all questions regarding the specifications and general conditions, and (2) receive any additional information relating to this contract. A Site Visit is scheduled for areas involved with this contract.

4. This Multi-Step Bid creates no obligation on the part of the University to award the contract or to compensate offerors for bid preparation expenses.

5. The University reserves the right to award a contract based upon the bids received.

6. Before the award of a contract, UMBC may require the offeror to submit evidence of any information related to the financial, technical, and other qualifications and abilities of the offeror.

C. ADDENDA TO THE BID

Any additional information not addressed in this Multi-step Bid in response to an inquiry received by the Procurement Officer will be answered in writing as an addendum to the Bid. Copies of the addenda will be posted on the University’s eBid Board at www.umbc.edu/adminaffairs/procurement/EBidB.shtml. It is the responsibility of the vendor to check the website frequently until the opening date for addendums, amendments and changes. Reasonable efforts will be made to avoid the identification of Offerors in any addenda. For purposes of this Bid, there shall be no other communication between UMBC and Offerors other than as described in this paragraph.
RECEIPT OF THE ADDENDA, AMENDMENT AND/OR CHANGE ISSUED MUST BE ACKNOWLEDGED IN WRITING BY PROSPECTIVE BIDDERS AND EACH INCLUDED WITH THE BID PRICE FORM. An “Acknowledgement of the Receipt” Form (found in Appendix A) for all amendments, addenda, and changes issued shall be required from all vendors submitting a bid.

D. CANCELLATION OF THE BID

The University may cancel this Multi-Step Bid, in whole or in part, at any time.

E. ORAL PRESENTATION

Vendors who submit bids may not be required to make individual presentations to University representatives in order to discuss their bids.

F. INCURRED EXPENSES

The University will not be responsible for any costs incurred by any vendor in preparing and submitting a bid, delivery of or return of representative samples (if applicable).

G. ECONOMY OF PREPARATION

Bids should be prepared simply and economically, providing a straightforward, concise description of the vendor’s offer to meet the requirements of the Bid.

H. ACCEPTANCE OF TERMS AND CONDITIONS

By submitting a response to this Multi-Step Bid, the firm accepts the terms and conditions set forth in this Bid document.

I. PROCUREMENT REGULATIONS

This Multi-Step Bid and any resulting contract shall be governed by the USM Procurement Policies and Procedures and the State Finance and Procurement Article of the Annotated Code of Maryland and by State Procurement Regulations, Code of Maryland Regulations Title 21, as applicable.

J. MULTIPLE BIDS

Vendors may not submit more than one bid.

K. ALTERNATE SOLUTION BIDS

Vendors may not submit an alternate to the solution given in this bid.
L. TELEGRAPHIC/FACSIMILE BID MODIFICATIONS

Vendors may modify their bids by telegraphic or facsimile communication at any time prior to the due date and time set to receive bids provided such communication is received by the University prior to such time and, provided further, the University is satisfied that a written confirmation of the modification with the signature of the offeror was mailed prior to the time and date set to receive bids. The communication should not reveal the bid price but should provide the addition or subtraction or other modification so that the final prices, percent or terms will not be known to the University until the bids are received. If written confirmation is not received within two (2) days from the scheduled bid opening time, no consideration will be given to the modification communication.

M. CONTRACTOR RESPONSIBILITIES

The University shall enter into contractual agreement with the selected offering vendor(s) only. The selected vendor(s) shall be responsible for all products and/or services required by this Bid. Subcontractors, if any, shall be identified and a complete description of their role relative to the bid shall be included. The vendor shall be fully responsible for the acts and omissions of its subcontractors and of persons directly or indirectly employed by them.

N. PUBLIC INFORMATION ACT

Offerors should give specific attention to the identification of those portions of their bids, if any, which they deem to contain confidential, proprietary information or trade secrets and must provide justification why such material should not, upon request, be disclosed by the University under the Public Information Act, Part III, Title 10, State Government Article, Annotated Code of Maryland.

Vendors must clearly indicate each and every section that is deemed to be confidential, proprietary or a trade secret. It IS NOT sufficient to preface your bid with a proprietary statement. Failure to comply may result in rejection of your bid.

O. MINORITY BUSINESS ENTERPRISE NOTICES

State-certified Minority Business Enterprises (MBE) are strongly encouraged to respond to this solicitation. Minority participation is very important to UMBC and to the State of Maryland. For more information on the State’s MBE program, please see the MDOT website, at http://www.mdot.state.md.us/mb/index.html.
An overall MBE subcontract participation goal of 25 percent of the total contract dollar amount has been established for this procurement. This dollar amount includes the following whenever possible:

Offerors are encouraged to maximize the possible subcontracts to MBEs, and consider the 25 percent goal a minimum, not a maximum for this goal.

By submitting a response to this solicitation, the bidder or offeror agrees that the dollar amounts of the contract as included in the solicitation will be performed by certified minority business enterprises as specified.

All bids must include a statement as to the expected level of MBE participation (prime contractor and subcontractor) that will be involved in this contract. Offerors may propose percentages that exceed the requirement stated.

The “Certified MBE Utilization and Fair Solicitation Affidavit” Form (found in Appendix A) shall be completed and returned with the Technical Offer certifying the Offeror’s intent to provide MBE participation. **Failure to comply with this requirement will result in the Bid being deemed non-responsive and rejected from consideration.**

Within ten (10) days of notification of award, the successful Offeror should provide: (1) an “Outreach Efforts Compliance Statement Form”; and (2) a “Subcontractor Project Participation Statement Form”.

**P. ARREARAGES**

By submitting a response to this solicitation, a vendor shall be deemed to represent that it is not in arrears in the payment of any obligation due and owing the State of Maryland, including the payment of taxes and employee benefits and that it shall not become so in arrears during the term of the contract if selected for contract award.

**Q. TAXES**

The UMBC is exempt from Federal Excise Taxes, Maryland Sales and Use Taxes, and the District of Columbia Sales Taxes and Transportation Taxes, except as noted in applicable sections of COMAR. Exemption Certificates shall be provided upon request. Where a Contractor is required to furnish and install material in the construction or improvement of real property in performance of a contract, Contractor shall pay the Maryland Sales tax and the exemption does not apply.

**R. BID RESPONSE MATERIALS**
S. **SITE INVESTIGATION**

By submitting a bid the vendor acknowledges that he has investigated and satisfied himself as to the conditions affecting the work, including but not restricted to those bearing upon transportation, disposal, handling and storage of materials, availability of labor, water, and electric power. Any failure by the contractor to acquaint himself with the available information will not relieve him from responsibility for estimating properly the cost of successfully performing the work. The University shall not be responsible for any conclusions or interpretations made by the contractor of the information made available by the University.

T. **BID SECURITY**

1. If the total Bid Price is $100,000.00 or more, each Bidder shall furnish with his/her bid price a "bid bond" issued by a surety company licensed to issue bonds in the State of Maryland. The bond must be in an amount not less than five percent (5%) of the total amount of the base bid price and shall be in the form specified with the bid documents.

2. Certified checks, cash and other security in that amount are acceptable in lieu of a "bid bond", and shall be submitted with the Bid Price and subject to the same conditions as a bond.

3. Should the Bidder to whom the contract is awarded fail or be unable to execute the contract, for any reason, within ten (10) days after notification of award, then an amount equal to the difference between the accepted price, and that of the bidder to whom the award subsequently is made shall be paid to the University as liquidated damages.

4. The Bidder to whom a contract in excess of $100,000.00 is awarded also must furnish Performance and Payment Bonds, each in the amount of one hundred percent (100%) of the contract price, including executed Change Orders, in the form specified with the bid documents. These must be provided at the time of the signing of the contract and prior to the start of any work.

5. Bid Bonds remain in effect a minimum of 120-days from the bid due date.

U. **MARYLAND PUBLIC ETHICS LAW, TITLE 15**

The Maryland Public Ethics Law prohibits, among other things: State employees or officials (and in some cases, former employees) and businesses in which such an individual is employed or holds a financial interest from (i) submitting a bid, (ii) negotiating a contract, and (iii) entering into a contract with the governmental unit with which the individual is affiliated per the Maryland Code, State Government Article, SS 15-502.
If the bidder has any questions concerning application of the State Ethics law to the bidder’s participation in this procurement, it is incumbent upon the bidder to seek advice from the State Ethics Commission; Office of the Executive Director, 9 State Circle, Suite 200, Annapolis, MD 21401, 410-974-2068 or toll free 1-877-669-6085.

The procurement officer may refer any issue raised by a bid to the State Ethics Commission. The procurement officer may require the bidder to obtain advice from the State Ethics Commission and may reject a bid that would result in a violation of the Ethics Law.

The resulting contract is cancelable in the event of a violation of the Maryland Public Ethics Law by the vendor or any State of Maryland employee in connection with this procurement.

V. PAYMENTS BY ELECTRONIC FUNDS TRANSFER

By submitting a response to this solicitation, the Offeror agrees to accept payments by electronic funds transfer unless the State Comptroller’s Office grants an exemption. The selected Offeror shall register using the COT/GAD X-10 Vendor Electronic Funds (“EFT”) Registration Request Form. Any request for exemption shall be submitted to the State Comptroller’s Office for approval at the address specified on the COT/GAD X-10 form and shall include the business identification information as stated on the form and include the reason for the exemption. The COT/GAD X-10 form can be downloaded at: http://compnet.comp.state.md.us/gad/pdf/GADX-10.pdf

W. LICENSES AND QUALIFICATIONS

1. Bidders must be licensed as required by Article 17-601 of the Business Regulations, Annotated Code of Maryland, and shall submit proof of current licensing with their bid.

2. The University reserves the right to require that the contractor demonstrate that it has the skills, equipment and other resources to satisfactorily perform the nature and magnitude of work necessary to complete the project within the proposed contract schedule.

X. AVAILABLE DOCUMENTS

The Bidders shall assume the responsibility for the cost of reproduction of all specifications, drawings and contract-related documents, and may contact:

CMC Repro
8847 Orchard Tree Lane
Towson, MD 21286
Ph: 410-339-5390
Fax: 410-339-5393
E-mail: towson@cmcrepro.com

END OF SECTION II
SECTION III
BIDS, EVALUATION, AND FORMS

A. TRANSMITTAL LETTER:

A transmittal letter prepared on the Bidder's business stationery must accompany the Bid. The purpose of this letter is to transmit the Bid; therefore, it should be brief, but shall list all items contained therein as defined below. The letter must be signed by an individual who is authorized to bind his firm to all statements, including services and prices, contained in the Bid.

B. SIGNING OF FORMS:

The Bid, if submitted by an individual, shall be signed by the individual; if submitted by a partnership, they shall be signed by such member or members of the partnership as have authority to bind the partnership; if submitted by a corporation, they shall be signed by an officer, and attested by the corporate secretary or an assistant corporate secretary. If not signed by an officer there must be attached a copy of that portion of the by-laws or a copy of a board resolution, duly certified by the corporate secretary, showing the authority of the person so signing on behalf of the corporation. Signatures shall be under seal, i.e.: indicated by the word "(Seal)" following signature of individual and partner bidders, and indicated by affixing the Corporate Seal at corporate signatures.

C. SUBMITTAL:

The selection procedure for procurement of this contract requires that a review of the Bid of the contractors by an Evaluation Committee to ensure all requirements can be met by the bidder. The bid form(s) shall be filled out in ink or typed. Any erasures and/or alterations shall be initialed in ink by the signers.

The Bid should be prepared in a clear and precise manner. All appropriate points of the solicitation must be addressed. The award will be made to the lowest responsive and responsible bid of these vendors following the Technical Evaluation of the Technical Offer by the University Committee.

The Technical Offer and the Bid Price should be submitted in two (2) separately sealed envelopes. The envelopes shall have the Bidder's name, the project name and project number prominently displayed, together with the words, "Technical Offer" on one envelope and "Bid Price" on the other. No pricing information is to be included in the Technical Offer.

The following items should be included in the Technical Offer portion of the bidder's response. (Forms for a. through j. (with the exception of items f, g, and h which are to be provided by the Bidder) are included in the bid package:

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a. Company Profile (Appendix A)
b. Firm Experience / References (Appendix A)
c. Addenda Acknowledgment (Appendix A)
d. Bid/Proposal Affidavit (Appendix A)
e. Submittals listed under Section II, Item O, “Minority Business Enterprise Utilization Attachment A” (Appendix A)
f. Submittals listed under Item D, “Responsibility of Bidder” (noted below).
g. Copy of Bidder’s Contractor License.
h. Copy of Certificate if Insurance based on Section F, “Insurance” (noted below).
i. Bid/Price Form and all detailed per room pricing per section 274100, 1.1C. (One (1) original and two (2) copies of hardcopy signed sets, plus one (1) CD) (Appendix B)
j. Bid Bond (Appendix B)

D. RESPONSIBILITY OF BIDDER:

1. Contractor must have completed at least three (3) projects of similar size, scope and complexity within the last three (3) years. Contractor shall submit evidence that it has at least three (3) years experience in the design installation, testing and servicing of systems of the type called for in this specification. References for these projects shall be included with the bid. (See section 274100, 3.1)

2. The Contractor shall hold all licenses and obtain all permits necessary to perform work of this type in Baltimore County. Copies of the Contractor’s licenses shall be provided with bid submittal.

3. The Contractor shall provide resumes of Project Manager, lead engineer and lead install planned to be used for this project. (See section 274100, 3.1)

E. EVALUATION PROCESS:

Technical Offer Evaluation

The Evaluation Committee will first review the Technical Offers for qualifications and compliance with the specifications set forth in the document. Those bidders whose Technical Offers not achieving 75% of the technical points available will not continue or advance further in the procurement process.

Those Bidders whose Technical Offers achieve 75% or better of the available technical points will move into the Bid Price Phase of the procurement, and will have their Bid Prices opened.
Technical scoring will be based upon the evaluation of the information provided in the technical offer noted above in Section III, Item C, "Submittal".

Upon completion of the Technical Offer evaluation, all bidders will be notified as to the results of the evaluation of its firm's technical offer.

All references for the Contracts noted above will be checked and will be held in the strictest of confidence. The University reserves the right to verify all information given if it so chooses, as well as, to check any other sources available including itself even if not provided as a reference by the Proposer.

Please be sure that accurate information is provided and that the contact person is capable of speaking to your firm's capability in performing the services required.

Bid Price Evaluation

The University will identify the date/time in which Bid Prices will be opened and notify those bidders who have moved into the Bid Price Phase. Bidders are not required to be in attendance for the bid opening. Once the Bid Prices are opened, an award will be made to the lowest, responsible and responsive bidder.

F. INSURANCE:

The successful vendor will be required to document proof of insurance for Commercial General Liability, Worker's Compensation, and Automobile insurance. The University of Maryland Baltimore County and the State of Maryland are to be named as an "additional insured" on all but Worker's Compensation.

NOTE: INSURANCE MUST BE ON A PRIMARY BASIS. CONTRACTUAL REQUIREMENTS MUST BE CLEARLY INDICATED ON CERTIFICATE OR BY ENDORSEMENTS.

1. The following conditions for insurance must be met by the Vendor:

   a. The Contractor shall not start work under this contract until the Contractor has obtained at its own expense all of the insurance called for hereunder and such insurance has been approved by the procurement officer; nor shall the Contractor allow any subcontractor to start work on any subcontract until all insurance required by the subcontract has been obtained and approved by the contractor and University of Maryland Baltimore County. Approval of insurance required of the contractor and subcontractors for the University will be granted only after submission to the University of original certificates of insurance signed by an authorized representative of the insurers or, alternately, at the University's request, certified copies of the required insurance policies.
b. The Contractor shall require all subcontractors to maintain during the term of this agreement, Commercial General Liability insurance, Business Automobile Liability insurance, and Workers Compensation, in the same manner, including the additional insured requirements in paragraph e. below, i.e., as specified for the Contractor. The Contractor shall furnish subcontractors' certificates of insurance to the University immediately upon request.

c. All insurance policies required hereunder shall be endorsed to include the following provision; "It is agreed that this policy is not subject to cancellation, non-renewal, material change, or reduction in coverage until forty-five (45) days prior written notice has been given to the University of Maryland Baltimore County".

d. No acceptance and/or approval of any insurance by the University of Maryland Baltimore County shall be construed as relieving or excusing the Contractor, or the surety or bond, if any, from any liability or obligation imposed upon either or both of them by the provision of the Contract Documents.

e. NAMED ADDITIONAL INSURED - The University of Maryland Baltimore County and the State of Maryland (including their elected or appointed officials, agents and employees) are to be named as additional insured under all coverage except Workers Compensation, and the certificates of insurance (or the certified policies, if requested), must so indicate through inclusion of appropriate endorsement. **Coverage afforded under this paragraph shall be primary to any other insurance of self-insurance, whether or not such other insurance or self-insurance is stated as primary, excess or contingent, as respects the above additional insured, their elected and appointed officials, agents and employees.**

f. Insurance coverage required in these specifications shall be in force throughout the Contract Term. Should the Contractor fail to provide acceptable evidence of current insurance within ten (10) days of receipt of written notice at any time during the contract term, the University shall have the absolute right to terminate the Contract without any further obligation to the Contractor, and the Contractor shall be liable to the University for the entire additional cost of procuring substitute performance and the cost of performing the incomplete portion of the Contract at time of termination.

g. Contractual and other liability insurance provided under this Contract shall not contain a supervision, inspection or engineering service exclusion that would preclude University of Maryland Baltimore County or participation institutions from supervising or inspecting the operations of the contractors as the end result.
h. The Contractor shall assume all on-the-job responsibilities as to the control of persons directly employed by it and of agents or subcontractors and anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable.

Contractor shall be as fully responsible to University of Maryland Baltimore County for the acts and omissions of the subcontractors and of persons employed by them as it is for acts and omissions of persons directly employed by Contractor.

i. All required insurance coverage must be acquired from insurers allowed to do business in the State of Maryland and acceptable to University of Maryland Baltimore County. The insurers must have a policyholders' rating of "A-" or better, and a financial size of "Class VII" or better in the latest edition of Best's Insurance Reports.

j. The University of Maryland Baltimore County will consider deductibles or self-insured retention as part of its review of the financial stability of the bidder. Any deductibles or self-insured retention shall be disclosed in the Contractor's bid and shall be assumed by the Contractor.

2. The Contractor shall purchase the following insurance coverage:

a. **Commercial General Liability Insurance** or its equivalent, for bodily injury, personal injury and property damage, including loss of use. It is preferred that coverage be provided on an "occurrence" basis. If "claims made" forms are submitted, the requirements noted after section "4.1 and 4.2" below must be met. Such Commercial General Liability policy shall include the following extensions:

i. It is preferred that the General Aggregate Limit applies separately to this project:

ii. Premises/Operations:

iii. Actions of Independent Contractors:

iv. Products/completed Operations to be maintained for three (3) years after completion of the contract.

v. Contractual Liability including protection for the Contractor for claims arising out of liability assumed under this contract.

vi. Personal injury liability including coverage for offenses related to employment, and for offenses assumed under this contract (delete any
standard employment and contractual exclusions if contained in the personal injury coverage section):

b. **Business Automobile Liability** which will pay for liabilities arising out of accidents involving the ownership, operation, maintenance or use of any owned, hired, or non-owned motor vehicles, uninsured motorists' insurance and automobile contractual liability.

**NOTE:** INSURANCE MUST BE ON A PRIMARY BASIS. CONTRACTUAL REQUIREMENTS MUST BE CLEARLY INDICATED ON CERTIFICATE OR BY ENDORSEMENTS

c. **Workers Compensation** - statutory benefits are required by Maryland law or other laws as required by labor union agreements, including standard Other States coverage; Employers Liability coverage.

3. The coverage listed in Section III, Item F-2, above shall be written for not less than the following limits of liability. **Limits can be furnished by a combination of primary and excess (umbrella) policies.**

a. Commercial General Liability Insurance including all extensions -
   $2,000,000 each occurrence;
   $2,000,000 personal injury;
   $2,000,000 products liability;
   $2,000,000 general aggregate

b. Business Automobile Liability -
   $2,000,000 each accident

c. Workers Compensation insurance - statutory requirements. Employers liability insurance - $1,000,000 each accidental injury; and $1,000,000 each employee, $1,000,000 policy limit for disease.

4. **Tort-Claim Act** - It is agreed that the contractor and its insurers will not raise or use, in the adjustment of claims or in the defense of suits against any participating USM institution, any immunity of the insured from tort liability, (including Maryland Tort Claim Act), including any limitation of liability, unless requested by any participating institution.

**NOTE:** If insurance required in terms 2.iv and v above has been issued on a "claims made" basis, the Contractor must comply with the following additional conditions. The limits of liability and the extensions to be included as described above remain the same. The Contractor must either:

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1. Agree to provide certificates of insurance evidencing the above coverage for period of three (3) years after final payment for the contract. Such certificates shall evidence a retroactive date no later than the beginning of the Contractor's or subcontractor's work under this contract, or

2. Purchase an extended [minimum three (3) years] reporting period endorsement for the policy or policies in force during the term of this contract and evidence the purchase of this extended reporting period endorsement by means of a certificate of insurance or a copy of the endorsement itself.

3. The "retroactive date" must be effective prior to the inception of the work under this contract.

4. No "sunset" clauses shall apply.

A CERTIFICATION LETTER FROM AN AUTHORIZED BROKER OR AGENT THAT ALL REQUESTED COVERAGES ARE AVAILABLE AND WILL BE PROVIDED TO THE CONTRACTOR UPON AWARD OF THIS CONTRACT SHOULD BE PROVIDED WITH THE BID PRICE FORM.

END OF SECTION III
SECTION IV
UMBC PERFORMING ARTS AND HUMANITIES FACILITY – PHASE 1
BID # BC-20744-Q

CONTRACT DOCUMENTS

SPECIFICATIONS

SECTION 27 4100 - AUDIO-VISUAL SYSTEMS – Listed on the following pages

Note: Specifications dated May 6, 2010 are on file at CMC Repro for Bidders reference.
SECTION 27 41 00 - AUDIO-VISUAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Complete and operational audiovisual (A/V) and remote control systems, including:
   1. Video projection
   2. Remote controls
   3. Program and speech audio reinforcement
   4. AV recording
   5. Baseband/broadband distribution systems

B. Related Sections
   1. Division 26 Electrical Sections for conduits, wire pathways, connection boxes, pull boxes, junction boxes, and outlet boxes permanently installed in walls, floors, and ceilings.
   2. Division 11 Projection Screens
   3. Division 27 Telecommunications Cable Systems
   4. Specification Section 274100.23- Audiovisual Systems, Black Box Theatre, Proscenium Theatre, and theatre support spaces.
   5. Division 26 Electrical Sections for room lighting fixtures, power receptacle outlets, interconnecting wiring for these circuits and electrical breaker panels powering the audiovisual equipment.

C. Bid Proposals: Reference Division 01 specifications.

1.2 REFERENCES


B. Electronic Industries Association/Telecommunications Industry Association (EIA/TIA) -568A, "Commercial Building Telecommunications Wiring Standard"

C. EIA/TIA -569, "Commercial Building Standard for Telecommunications Pathways and Spaces"

D. EIA/TIA-606, “Administration Standard for the Telecommunications Infrastructure of Commercial Buildings”

E. EIA/TIA-607, “Commercial Building Grounding/Bonding Requirements”

F. National Fire Protection Agency (NFPA) 70 - National Electrical Code (NEC), 2002

G. Institute of Electrical and Electronic Engineers (IEEE) 802.3 Carrier Sense Multiple Access with Collision Detection (Ethernet and 10BASE-T)

I. National Institution for Communications Engineering Technology (NICET)

J. International Communications Industry Association (ICIA).

1.3 DEFINITIONS

A. The term "NIC" shall refer to material and work which is Not In Contract and for which the Installer is not responsible except as otherwise detailed herein.

B. The term "OFE" shall refer to "Owner Furnished Equipment" which will be provided by The Owner. Be responsible for installing and integrating this equipment as detailed herein.

C. The term "OFIC" shall refer to "Owner Furnished Contractor Installed" Equipment which will be provided by The Owner. Be responsible for installing and integrating this equipment as detailed herein.

D. The term "shall" is mandatory; the term "will" is informative; the term "should" is advisory; and the term "provide" means furnish and install.

E. The term "Installer/AV Contractor" refers to the successful A/V vendor/installer.

F. The term "AV Consultant" refers to Convergent Technologies Design Group, Inc.

G. The term "Bidder" refers to a qualified firm intending to tender a bid on the systems described herein.

H. The term "Owner" refers to University of Maryland Baltimore.

I. The term "Construction Manager" or GC refers to the representative responsible for general building construction and onsite coordination between sub-contractors.

1.4 SYSTEM DESCRIPTION

A. Design Standards:

1. The Owner's goal is to have available the most commonly used A/V equipment as a cohesive system. Therefore, part of the development efforts for successfully implementing the A/V systems should include:

   a. Installing the system in a manner that will comply with BiCSi, ICIA and routing all audio, video and control cabling elements of the final design in a subtle, unobtrusive manner to maintain the architectural and visual integrity of the building.

   b. Except where plenum cable is used above finished ceilings, it is required that cabling for microphone and line inputs, wideband RGBHV video, and other A/V-related cabling be routed inside the comprehensive system of conduit indicated on Drawings and installed by construction manager. Floor and wall boxes shall serve as the primary interface points to the A/V system.

   c. Provide and install cover plates, connectors, and associated cabling to link all floor and wall boxes to all affiliated local and remote A/V components. Necessary conduit, power and workboxes shall be installed by the construction manager. No wiremold or surface-mounted raceway will be permitted.
d. Provide and install security covers on any electronics with front panel controls that should not need to be adjusted after initial set-up. Back rack Remote Control CPU and Furman power distribution while loading associated front of rack spaces with blank panels. All components permanently mounted to rack rail systems shall be installed with industry accepted security screws. Each instructor's station shall include a 4” low-noise fan unit.

e. Provide 8 ½ x 11 Instruction card, approved by the Owner, and laminated with step-by-step instructions outlining system operations for each room that has AV systems. Provide editable file of card to Owner.

f. Provide a rack mounted uninterruptible power supply (UPS) device in each equipment rack included in this project. Device shall meet a minimum of thirty-minutes as back up for full active mode usage. 30-minutes back up and not to exceed three rack units in size. Projectors shall be mounted using security screws and stranded steel cables with padlocks.

g. Above finished ceiling AV equipment shall be secured to building structure only.

h. No more than thirty-lamp hours shall be expired for projection system set-up.

i. Steel cable security systems and padlocks to secure structure shall be provided for all surface loudspeakers, document cameras, video cameras, flat panel displays, and LCD projectors. All padlocks provided for security shall be keyed to a single master key.

j. Provide editable versions of all master source code for any digital signal processing, remote control or microprocessor-based systems included on this project. Provide CD-ROM copy, as well as, loading software onto Owner furnished personal computer.

k. Provide necessary audio, video, RGBHV, USB, and control signal repeaters, extenders, and amplifiers for any run greater than 30’ as needed to maintain required signal levels for receipt at destination device. All audio lines shall be balanced at the source, prior to any cable pull longer than twenty feet. There are no exceptions.

l. Low voltage transformers within 60 feet of associated video camera location shall receive AC power from above finished ceiling or from an associated equipment rack.

B. Performance Standards: Unless restricted by the published specifications of a particular piece of equipment, or unless otherwise required, the following minimum performance standards shall be met by each system:

1. Audio:
   a. S/N (including crosstalk and hum): 75 dB minimum
   b. Total Harmonic Distortion: 0.5% maximum from 30 Hz to 15,000 Hz.
   c. Frequency Response: Flat within +1.0 dB, 30 Hz to 15,000 Hz.

2. Video (signal):
   a. S/N (peak to RMS) unweighted DC to 4.2 MHz: 45-dB minimum
   b. Crosstalk, unweighted DC to 4.2 MHz: 45 dB minimum
   c. Frequency Response(composite): Within +0.5 dB to 10 MHz
   d. Frequency Response(component) Within +0.5 dB to 100 MHz
   e. Line and Field: 2% maximum
   f. Differential Gain: 3% maximum
   g. Differential Phase: 2 degrees maximum

3. Performance Test Signal Paths: The signal paths for the above Performance Standards shall be as follows:
a. Audio: From any and all source inputs (for microphones, audiotape units, videotape units, etc.) through all audio distribution amplifiers (ADA), mixers, switchers, codecs, etc., to all signal destinations.

b. Video: From all source inputs (for cameras, computers, videotape units, etc.) through all distribution amplifiers (VDA), processors, switchers, etc., to all signal destinations.

4. Remote Control Standards: As a minimum, the remote control system for each space shall be programmed to include the following:
   a. AM/PM Clock Settings
   b. Automatic System Shutdown
   c. Owner Logo on first page
   d. LAN IP Address
   e. Separate Program and Microphone Audio Level Control with mute function.
   f. Panel layout to include user screens, as well as, password protected technician pages
   g. Raise and lower projection screen when projection is powered on/off respectively
   h. Assign room computer as default system source upon power up
   i. Activate a minimum of three (3) presets for each installed remote controllable video camera.
   j. Provide AMX RMS Classroom Manager media and room management software and full licensing agreement as needed.
   k. Configure system to provide control and monitoring information to the existing UMBC Extron Global Viewer Enterprise Server.
   l. Full function control of all source components, display units, processing devices and switching electronics.
   m. Touchpanel page layouts shall be submitted for approval. Prior to designing touchpanel layouts, meet with the Owner and review existing control system standards on campus and determine a basis of design.
   n. Provide intellectual property release and install editable source code for the entire remote control program and associated panel layouts on two (2) personal computers. Editable source code is intended to enable the owner to make additions, modifications and changes to the remote control system after the warranty period has elapsed.
   o. Follow-up programming and modifications as requested by the Owner shall be provided 6 months after system acceptance. Provide and install updated editable source code to the Owner.
   p. Per function status feedback indicating active/passive modes of operation.
   q. In the event the remote control system programming becomes compromised during the warranty period, provide the necessary effort to make the system fully functional once again.

1.5 SUBMITTALS

A. Comply with requirements of Division 1 Section Submittal Procedures.

B. Product Data: Manufacturer's literature and catalog cuts indicating manufactured equipment and accessories including materials, fabrication, test results, operational ratings, and other pertinent information.
C. In order to develop a user interface which is both functional and usable, it will be necessary for the contractor to provide working “Beta” copies of system software for review and comment by the owner, architect and their consultants as per the below listed schedule:
   1. This is anticipated to be an “interactive” process, requiring at least (but not limited to) three submittals prior to first beneficial use. At a minimum, the software development process will have the following milestones:
      a. Submit project milestone schedule within 2 weeks after contract award and submit conduit verification for all spaces within 4 weeks of contract award.
      b. Initial Submittal for Review
      c. First Beta Review: Timing (four weeks after return of the initial submittal)
      d. Second Beta Review; Timing (four weeks after return of the First Beta submittal)
      e. Final Implementation and On-Site Training: Prior to Final Acceptance
      f. Follow-up programming review and updates; Timing (within sixty-days from final acceptance)

D. Shop Drawings: Prior to fabrication submit custom designs pertaining to the system. Shop drawings are required to include Penetration Control Plan drawings in their backgrounds. These designs include, but are not limited to, the following:
   1. All panels, plates, and designation strips, including details relating to terminology, engraving, finish and color.
   2. All equipment racks, cabinets, consoles, tables, carts, support bases, and shelves.
   4. All unusual equipment modifications.
   5. Front mechanical drawings of each equipment rack.
   6. Equipment location drawings.
   7. System functional block drawings, including those for audio and video subsystems.
   8. Cable labeling plan.
   9. Penetrations

E. Quality Assurance Submittals
   1. Training plan. Develop a training plan meeting the requirements of sub section 1.10 below. The training will be both technical staff and users, plan the training sessions to the level of the technical abilities of each group. The technical staff training and end-user training will be separate and unique to the requirements of each group.
   2. Pre-acceptance testing plan. The contractor will develop a internal testing plan for the installed system to test the function and operation of the system after completion of the install to verify proper operation of the system before requesting final acceptance. The plan will include but not limited to continuity, signal to noise, gain structure, DSP function, audio equalization, setting of audio dynamics controls, audio and video switching of all inputs and outputs, operation of control systems. List the documentation procedure to be used for the tests.
   3. Final acceptance testing plan. Provide a plan for the owner / consultant for final acceptance and verification testing. The plan will include the results of the pre-acceptance testing, the list of personnel the contractor will have on site to assist in the testing, and the test equipment the contractor will have on site.

F. Closeout Submittals: At the completion of the installation, but before Final Acceptance, provide for review and approval five (5) copies each of the following, in compliance with Division 1 Section Closeout Procedures.
1. Equipment manufacturer's operation and service manuals for each make and model of equipment.

2. System Operation Manual. Produce this manual specifically for the subsystems detailed herein. The manual shall describe all procedures necessary to activate each system to provide for the functional requirements, except as specifically excluded by the Owner. This section shall provide a simple "How-to" users guide for the procedures needed to operate the system. This document shall contain a section on operating the systems equipment in the event of control system failure. Control system touchpanel layouts shall be accompanied by narrative text describing "step-by-step" function engagement.

3. Include record diagrams for all systems including, but not limited to:
   a. Schematic wiring diagrams with cable markings.
   b. Internal wiring diagrams of the equipment rack cabinets.
   c. Custom equipment modifications.
   d. Final test results and nominal settings for all adjustable controls as outlined in the "Quality Assurance" article of this Section.
   e. Provide editable electronic copies of all software associated with audiovisual systems. Load editable source code software on Owner's personal computer as well as DVD copy.

4. Materials shall be submitted as indicated in sections above. One copy of each submittal will be returned within a reasonable time from receipt there of bearing one of the following codes:
   a. "Approved" - Approved for manufacture.
   b. "Approved as Noted" - Approved for manufacture incorporating noted modification.
   c. "Revise and Resubmit" - Not approved. Submittal to be revised in accordance with comments and resubmitted.
   d. When the submittal receives the "approved" or "approved as noted" status, the AV Vendor shall contact the Construction Manager to coordinate the project schedule.
   e. No ordering/ manufacturing of equipment shall take place prior to approval of submittals.

1.6 QUALITY ASSURANCE

A. Demonstrate at least three- (3) years experience in the fabrication, programming, assembly, and installation of audiovisual presentation and remote control systems of similar magnitude and quality as specified for the subject job, and shall submit documentation to this effect with the bid return. Also, a qualified firm shall be authorized sales and service center for all listed components, offerings in this specification.

B. References: Furnish no less than three (3) references for installations of similar size (dollar amount & quantity of spaces receiving integrated technology) and scope, performed throughout the Baltimore, DC Metropolitan Area within the past three- (3) years. At a minimum, reference information will include the reference company or institute name, contact person's name and title, telephone number, address, and detailed project description, project manager's name, and contact information of the organization that is responsible for day-to-day operation of the audiovisual installation.

C. Submit, attached to an email addressed to the construction manager, weekly progress reports detailing audiovisual system installation progress against milestones dates as per installation schedule. This requirement is separate from any requirements from Division 1.
D. State of the Art Development
   1. Supply only the manufacturer's latest developed product. Where product development
      surpasses the criteria of the specification, inform the AV consultant. In no case shall
      discontinued or obsolete equipment be acceptable. The same requirement applies to
      software programs developed/updated during the warranty period. Owner must give final
      approval of all products.
   2. Should the product recall by the manufacturer require temporary or permanent
      replacement of a product specified under this section, notify the Architect at the earliest
      reasonable time and arrange to replace the product in question at the earliest possible
      time.
         a. Equipment found defective or subject to recall prior to scheduled installation shall
            not be delivered to the jobsite.
         b. Equipment defect or intended recall shall not relieve the manufacturer from his
            contractual obligation with regard to delivery schedule of product.
         c. Under no circumstances shall arrangement for alternate product necessarily require
            the Owner to accept superseded equipment except on a temporary basis.

E. During the warranty period, advise the Owner in writing each time any software program is
   updated, giving the Owner the opportunity to upgrade the software should they so desire.

1.7 DELIVERY STORAGE AND HANDLING

A. Delivery:
   1. Supply, transport, deliver, unload, move to the installation location, unpack, place,
      assemble, secure, connect, and install all equipment needed to complete the installation.
      Be responsible for transportation, parking, delivery, and on-site storage of the system’s
      equipment. Be responsible for all transportation of personnel to and from the site.
   2. Reconfirm before delivery that hallways, stairways, passages, doorways, rooms, entries,
      elevators and foyers are of sufficient size to accommodate the passage and installation of
      the equipment and systems. Off-site pre-staging of goods is encouraged.
   3. The Owner's acknowledgment of delivery of goods and any payment made on account
      of such delivery shall not constitute acceptance (partial or otherwise) and shall not
      diminish obligations as specified.
   4. The actual dates of delivery shall be under the absolute control of the Owner. The dates
      and times for delivery/installation are critical to the successful completion of the project.
      Deliveries shall normally be accepted only Monday through Friday 8:00 a.m. to 4:00 p.m.
      In the event it becomes necessary for goods to be installed outside these hours comply
      with the instructions of the Owner. Deliveries attempted outside these hours without
      prior consent of the Owner may be turned away. Comply with all instructions of the
      Owner and the Contractor concerning time of arrival at the site; which entrance shall be
      utilized for delivery; routes to be taken to reach the installation location; and other
      matters relating to the orderly and timely installation of the system.

1.8 STAGING

A. Installation shall commence immediately upon delivery of materials to the jobsite, except as
   directed by Construction Manager. Time required from delivery date to completion of project
   shall be in accordance with the approved schedules.

1.9 WARRANTY

AUDIO VISUAL SYSTEMS
27 41 00-7
A. The system warranty shall be for twenty-four (24) months from the date of system acceptance by The Owner. Provide all equipment, material, and labor required to uphold the warranty at no charge to the Owner. All manufacturers' equipment warranties shall be activated in the Owner name and shall commence on the date of system acceptance. In the case of modified equipment, the manufacturer's warranty is normally voided. In such cases, provide the Owner with a warranty equivalent to that of the original manufacturer.

1.10 OWNER'S INSTRUCTIONS

A. Training: Provide a minimum of 24 hours of training in the operation and maintenance of the system for personnel designated by the Owner. The training shall be organized as follows:

1. Two (2) two-hour training class for system technical operation and maintenance. Record owner training sessions in DVD or other agreed upon media. This class shall cover the following topics:
   a. Review of signal flow diagrams.
   b. Review of all equipment functions, relevant to the function in this system.
   c. Review of initial equipment settings.
   d. Demonstration of all functional connections from a user perspective.
   e. Review & demonstration of replacement procedures for consumables (e.g., lamps).
   f. Review of manufacturers' recommended routine maintenance procedures.

2. Two (2) two-hour training classes for system engineering concerns.

3. Two (2) five-day training classes for AMX touch-panel programming. This class shall cover the following topics:
   a. Basic techniques for programming AMX control systems

4. Review of signal flow diagrams.
   a. Review of all equipment functions, relevant to the installation.
   b. Review of initial equipment settings.
   c. Review of manufacturer’s recommended routine maintenance procedures.
   d. Review & demonstration of replacement procedures for consumables (e.g., lamps).
   e. Review & demonstration of control system software replacement/upgrade procedures.

5. Four (4) four-hour training classes addressing AV system operations. The classes will demonstrate and describe the following:
   a. System set-up and operations
   b. Control system operation
   c. How to edit and display videotape and computer images
   d. How to attach microphones, record A/V signals, and control the sound system
   e. Videoconferencing operation & capabilities (if applicable)
   f. Audio monitoring and ADA system operations
   g. Cable antenna television system (CATV)

6. Engineering Training may take place at any time (chosen by the Owner) after the systems are operational, up to a year following system acceptance.

7. System Operation and Service Manuals shall be provided for this training.

8. The Owner will detail additional specifics of the training session(s).

9. The Owner may take advantage of the training at anytime before acceptance, or within one (1) year of acceptance.

1.11 MAINTENANCE
A. Service Contract: Submit the costs for a one-year service contract, commencing with the completion of the two-year warranty. These contracts shall be fixed-cost, and can be accepted at the option of the Owner anytime during the two year warranty period. Each contract shall include the following services:

1. Provide a total of eight (8) one-day visits per year, or a total of sixty-four (64) engineering/service labor hours to conduct preventive maintenance and the Owner directed system adjustments. Each visit will include cleaning video and audio heads, checking and replacing projection lamps and indicators, checking and repairing microphones and microphone cables, and conducting subjective and objective tests of the audio, video, and control systems of the installed audiovisual systems. The Repair and/or adjust any malfunctioning components located by the technician during this testing. Include control system programming updates and modifications as part of this service contract, providing an updated editable copy of the source code.

2. Provide a service telephone number, staffed by a qualified technician familiar with the equipment installed by the vendor in the Owner Facility. Staff this number during normal business hours.

3. Respond with an on-site technician within 24-hours of a service call (including Saturdays and Sundays) for all equipment and system failures.

4. There shall be no cost to the Owner for maintenance performed under these service contracts beyond the fixed cost of the contracts.

5. Include under normal service contract visits, updates to both control and video wall system programming.

PART 2 - PRODUCTS

2.1 PRODUCTS AND MANUFACTURERS

A. Equipment Lists: Refer to the attachments following this Section for materials and equipment required to complete the work of this Section.

PART 3 - EXECUTION

3.1 ACCEPTABLE INSTALLERS

A. Designate to the Owner in writing, the responsible person who shall ensure timely and consistent communication with the Owner on progress of the contract. The designated representative shall have full knowledge of all engineering and production procedures and shall report status of the installation and upcoming work plans to the Owner’s Project Manager and consultant on a weekly basis. Project manager shall have successfully managed not less than two (2) projects of similar size and scope as defined in previous sections. Bid submission shall detail the percentage of time that the project manager and other key personnel will be involved with the project.

3.2 PREPARATION

A. Where the work is to be installed in, wired to, fitted to, attached to, or in any manner integrated with the work of another Trade Contractor or General Contractor, so advise the Owner in sufficient time to permit the installation, fitting, attachment, or integration of said work in an orderly manner, and shall furnish the other firm’s details and instructions required to complete their work. Where the work of another contractor is to be installed in, wired to, fitted to,
attached to, or in any manner integrated with your work, coordinate with the other trades in a timely manner.

3.3 INSTALLATION

A. General:
1. All installation work shall be in accordance with, but not limited to, this specification and drawings. Work practices shall be performed in accordance with applicable standards, requirements, and recommendations of Federal and Local authorities having jurisdiction.
2. All discrepancies discovered and any discrepancies which are apparent at the date of submission of bids shall be immediately corrected without additional charge to the Owner.
3. Clearly label all user controls for intended use and nominal setting. These labels shall be engraved and filled, or equal. Note: "Dymo" labels are not acceptable. Accessible controls that should not be changed (audio equalizer settings, etc.) shall be covered.
4. All equipment to be rack mounted shall be supplied with the appropriate rack mount kits. Each instructor's station and rack enclosure to have a single button on/off power distribution panel to include pull out lights and LED voltage indicator (Furman PL-Pro DMC or equal) located in the first available rack unit. All equipment racks to include removable, locking front doors and a 30-minute uninterruptable power supply (rack mount or free-standing at bottom of rack). Each instructor's station or equipment rack shall include a 4" diameter, low-noise fan. All rack and instructor stations shall include "security type" screws to secure rack-mounted components.

B. Physical Installation:
1. Provide plate as shown. Plate to occupy first available rack unit in all AV equipment racks. If more than two (2) racks are positioned together, one (1) plate for every two racks is acceptable. Product: Liberty Cable # C2121-28046-RHIM-Template

2. All equipment shall be firmly secured in place unless requirements of portability dictate otherwise. Unless granted specific permission by the Owner, install and secure all boxes, equipment, etc., plumb and square.
3. Fastenings, mounting brackets and supports shall be adequate to support their loads with a safety factor of at least three (3). A safety chain or cable will be tied to all equipment suspended from above.
4. In the installation of equipment and cable, consideration shall be given not only to operational efficiency, but also to overall aesthetic factors.

3.4 AUDIOVISUAL CABLE INSTALLATION

A. General: Because of the great number of possible variations in grounding systems, follow good engineering practice, as outlined above, and to deviate from these practices only when necessary to minimize crosstalk and to maximize signal-to-noise ratios in the audio, video, and
control systems. Inform the Contractor and the Owner in the event that there is a deviation from the standard grounding practices prior to actually performing the work.

B. Routing of raceways and cables shall be in accordance with Penetration Control Plans. Penetrations through acoustically significant construction shall be sealed airtight in accordance with the Penetration Control Plan, Resiliently Sealed Penetration Details and section 079005-Joint Sealers.

C. All cables, regardless of length, shall be marked with wraparound cable markers at both ends. There shall be no unmarked cables at any place in the system. Marking codes used on cables shall correspond to codes shown on “as-built” drawings and/or run sheets. The labeling and numbering system will be coordinated with the Owner.

D. All microphones to include 30ft. cable with heavy-duty jacket and XLR connectors.

E. Loudspeakers operating @ 8Ohm shall be installed with 12AWG cable as a minimum size/diameter.

F. Wall/ floorbox I/O panels shall be installed with audio/video line drivers on runs exceeding 35ft.

G. All cabling shall be neatly strapped, dressed, and adequately supported. Any exposed cabling shall be neatly enclosed in a protective covering.

H. Terminal blocks, boards, strips, or connectors shall be furnished for all cables, which interface, with racks, cabinets, consoles, or equipment modules. All audio signal lines shall be balanced at AV I/O plates.

I. All cables shall be grouped according to the signals being carried. In order to reduce signal contamination, separate groups shall be formed for the following cables:
   1. Power cables
   2. RGBHV, Video cables and Control cables. 75 and 110 Ohm cable 0 to 10 Mhz 1 volt peak to peak. 0 to 5 volt 0 to 10 Mhz control cables
   3. Data cables (when applicable) and 75 Ohm RF CATV cables, 47 to 890 Mhz
   4. Audio cables carrying low level (Microphone) signals below -30 dBu, 20 to 20,000 Hz
   5. Audio cables carrying line and high level signals -30dBu to +24dBu, 20 to 20,000Hz
   6. Loudspeaker cables 20 to 20,000 Hz less than 70 volts
   Microphone cables that are not in steel conduit will be routed to keep a minimum of 24” between the cables and AC power, transformers, and lighting ballasts. Microphone cables that are not in steel conduit will be kept a minimum of 12” from the loudspeaker cables. All other signal type must be routed to keep a minimum or 6” between the cable bundles and AC power, transformers, and lighting ballasts. In all cases the crossing of signal cable and power will occur at 90 degree perpendicular to each other.

J. Supply cables that meet the overall specifications, and approval by the Owner. Any cabling installed in walls or ceilings shall be plenum rated. All cables shall be cut to the length dictated by the run plus the required “slack” to permit future equipment movement and relocation. For equipment mounted in drawers or on slides, the interconnecting cables shall be provided with a service loop of appropriate length.

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K. No cable shall be installed with a bend radius less than that recommended by the cable manufacturer. Notify the Contractor in the event that a field condition interferes with the proper installation of any cables or equipment.

L. Grounding Procedures: In order to minimize problems resulting from improper grounding and to achieve maximum signal-to-noise ratios, the following grounding procedures shall be adhered to:
   1. General: Because of the great number of possible variations in grounding systems, follow good engineering practice, as specified herein, and to deviate from these practices only when necessary to minimize crosstalk and to maximize signal-to-noise ratios in the audio, video, and control systems. Inform the Contractor in the event that there is a deviation from the standard grounding practices prior to actually performing the work.
   2. System Ground: A single “system ground” shall be established for the system. All grounding conductors shall connect to this system ground. The system ground shall be provided in the equipment rack, and shall consist of a copper bar of sufficient size to accommodate all secondary ground conductors.
   3. A copper conductor, having a maximum of 0.1 Ohms total resistance, shall connect the system ground bar to the nearest grounded, metallic electrical conduit of at least 2 inches in diameter. Be responsible for determining if the metallic conduit is properly electrically bonded to the building ground system, and shall show the grounding path of a document that is provided with the system documentation.
   4. Secondary system grounding conductors shall be provided from all ungrounded equipment in each area, to the primary system grounding point for the area. Each of these grounding conductors shall have a maximum of 0.1 Ohms total resistance.
   5. Under no conditions shall the AC neutral conductor, either in the power panel or in a receptacle outlet, be used for a system ground.

M. Audio Cable Shields: All balanced audio cable shields shall be grounded at one point only. All audio lines shall be balanced at the source, prior to any cable pull longer than twenty feet. There are no exceptions. For ungrounded portable equipment, such as microphones, the shield shall be connected at both ends but grounded at only one end.

N. Video Receptacles: All video receptacles shall be insulated from the mounting panel, outlet box, or wireway.

3.5 REPAIR/RESTORATION

A. Any damage to any installed work or product caused by the unpacking, transporting, assembling, connecting, or configuring of the product shall be repaired at no charge to the Owner.

3.6 FIELD QUALITY CONTROL

A. Once installed and the System Checkout is complete, the system shall be tested by the Owner.
   1. If the A/V system fails to meet the requirements of this document or those stated by the technical documentation, then the Owner shall reject the installed system and then be given notice (either oral or in writing) to correct the failure as soon as possible.
   2. If unable to overcome repeated performance deficiencies within thirty (30) days, and if requested to do so by the Owner, remove the equipment at no expense to the Owner.
   3. No warranties shall begin until the Owner or AV Consultant has authorized acceptance in writing.
4. Right to Revoke Acceptance: If any equipment and/or goods which have been previously accepted, specifically or by the making of payment, are found to have defects, damage, deficiencies or fail to conform to the specification, for any cause not attributable to the Owner may revoke acceptance.

B. Acceptance Test: Testing will be performed with the Owner (or its designees) to determine that the A/V system equipment satisfies the manufacturers’ performance specifications and that the A/V system installed satisfactorily performs the functions required by this specification. Conduct formal pre-acceptance tests prior to the Owner’s acceptance testing to ensure that the performance and functional specifications are satisfied by the installed system and the system is ready for the Owner’s acceptance. The Owner will verify that the installed audiovisual system satisfies the performance and functional requirements through formal acceptance testing.

C. Conduct all pre-acceptance tests: The Owner / AV Consultant, may witness the pre-acceptance tests. The Owner / Architect may inspect and operate system components in order to evaluate installation progress and technical compliance prior to acceptance testing. Provide equipment necessary to demonstrate correct system performance. The Owner may conduct formal acceptance tests, and provide skilled technicians and test equipment as requested to assist the tests.

D. Contractor System Checkout
1. Perform system checkout before acceptance tests are scheduled. Furnish all required test equipment and perform all work necessary to determine and/or modify performance of the system to meet the requirements of this specification.
2. During performance testing, all equipment shall be operated under standard conditions as recommended by the manufacturer.
3. Test all audio and video systems for compliance with the Performance Standards using the following test procedures that follow later in this specification.
5. At the conclusion of the tests, return all equipment settings to previously calibrated positions.
6. Provide written records of all test results in spreadsheet form.
7. Check all control functions, from all controlling devices to all controlled devices, for proper operation.
8. Adjust, balance, and align all equipment for optimum quality and to meet the manufacturer’s published specifications. Establish and mark normal settings for all level controls, and record these settings in the “System Operation and Maintenance Manual.”
9. Provide testing results and settings for all equipment and systems to the AV Consultant at least three (3) business days prior to System Acceptance Testing.
10. Provide the AV Consultant with all test results, manuals, software, as-built documentation, etc. prior to acceptance testing in accordance with the dates and/or deadlines listed within this document.
11. Inform the PM and AV Consultant that the works are ready for System Acceptance Testing by the AV Consultant. The works shall be considered ready for acceptance testing when the following conditions are met:
   a. AV Contractor has pre-tested all systems such that all sub-systems, functions, software, and equipment are de-bugged and operational
   b. AV Contractor has supplied the AV Consultant with the written test results and documentation as listed above for all rooms and systems

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c. AV Contractor has supplied the AV Consultant with manuals, training materials, and other as-built documentation revised to reflect comments and/or revisions arising from the review cycles listed elsewhere within this document.

12. Should the systems not be ready for testing by the AV Consultant at the date(s) and time(s) indicated by the AV Contractor, system acceptance testing may be rescheduled at the sole discretion of the AV Consultant. The AV Contractor shall pay for the labor and expenses of the AV Consultant and other project team members assembled at the project site for the purpose of system acceptance testing for the date(s) of the original scheduled testing plus the labor and expenses of the AV Consultant and other project team members for the rescheduled testing date(s). The labor rate for the AV Consultant shall be a flat rate of $200.00/hour including travel time. Other project team member labor costs shall be at their respective published rates. The PM and/or Owner shall be entitled to deduct any money owed to the Owner, PM, AV Consultant, or other project team members under this contract from any sum which may become due or is payable to the AV Contractor under this Contract for the purposes of satisfying the charges listed above.

E. Test Equipment

1. Assemble the following test equipment (or equivalent) on site.
   a. Video signal generator, Leader 410C
   b. RGBS signal generator, Extron VTG 150
   c. Portable Signal Level Meter, Syncore SLM1476CM
   d. Combined waveform monitor/vectorscope, Leader 5872A
   e. Prerecorded Blue Ray disc
   f. Prerecorded DVD
   g. Blank DVD
   h. RGB HV cable, Extron BNC-5-6'HHR
   i. Audio and Video cable, terminations, adapters, etc
   j. Signal generator, Leader LAG-120B
   k. AC millivoltmeter, Leader LMV-181A
   l. Audio test set, Audio Precision PIPLUS
   m. Prerecorded cassette tape
   n. Audio Test CD
   o. 35mm Calibrated Test Slide
   p. Programmable Video & Audio Test Generator, Extron VTG-400D

F. Audio

1. Absolute Impedances:
   a. Set any speaker level controls at zero attenuation. Measure absolute impedance value of each speaker line at 250, 500, 1000, 2000, 4000 Hz without the amplifier connected but with all speakers connected. Impedance must not be below the rated load impedance of respective amplifier and may be any value equal to or above that. Check resistance of lines to all speakers and microphone receptacles with receptacles open and short-circuited.

2. Hum and Noise Level
   a. Test overall hum and noise, it should be at least 60 dB below rated power output of each amplifier with amplifier controls set for optimum signal to noise and full output and with inputs terminated with proper shielded resistor. (150 and 600 ohms).

3. Electrical Distortion:
a. Load power amplifiers with resistors matching nominal impedance of output terminals used in system in place of actual loudspeaker loads.
b. Adjust gain controls as for hum and noise level test.
c. Apply 250, 500, 1000, 2,000, 4,000 Hz sine-wave signal from an oscillator having less that 0.1% T.H.D. to each microphone and line level input at level required to produce full amplifier output.
d. Distortion must measure less than 1%.

4. Parasitic Oscillation and RF Pickup
a. Set up system for each specified mode of operation.
b. Use 5 MHZ band with oscilloscope and speaker monitoring.
c. Check to insure that the system is free of spurious oscillation and RF pickup in the absence of any input signal and also with the system driven momentarily to full output at 160 Hz.

5. Buzzes, Rattles, Distortions:
   a. Apply high quality music signal to the system. Adjust the sound system for frequent peaks at its specified maximum sound pressure level.
   b. Apply sine-wave sweep from 50 to 5,000 Hz to 6 dB below full amplifier power.
   c. In both cases, listen carefully for buzzes, rattles and objectionable distortion.
   d. Correct all causes of such defects. If cause is not from system, promptly notify the architect indicating cause and suggested corrective procedures.

6. Level Balance:
   a. Adjust all items of similar equipment for identical measured voltage gain.
   b. Unless otherwise specified, render tamper proof using security covers on all controls effecting overall system level balance and signal to noise ratio, such as power amplifier input level control, and input-output level controls for equalizers etc. Some controls may require readjustment as the result of “Acceptance Testing”.

7. Equalize all audio systems for maximum gain before feedback in all room configurations.
8. Record all systems settings for inclusion into systems manuals

G. Video
1. Signal Paths
   a. Utilizing a NTSC color bar generator and waveform analyzer with the video signal set at 100% saturation and 75% amplitude check that the video performance specifications are met at the display devices from all source inputs to all system outputs. Connect the combined waveform monitor/vectorscope to a final output point, e.g. an input to a picture monitor or video projector. Ensure that the test signal is routed to the selected output.

2. Level Balance:
   a. Adjust all video projection equipment to produce the best image possible. Ensure that horizontal sweep circuitry is not over driven to the point of audible sweep frequencies being emitted.
   b. Adjust all video monitor and videocassette players, video sources to produce the best image possible.
   c. Record all systems settings for inclusion into systems manuals

H. RGBHV:
1. For all RGBHV inputs, connect the RGBHV output of the signal generator to a floorbox/table/rack connector and select the SMPTE & PLUGE signal at the following computer scan rates:
   a. 1024 x 768 XGA
   b. 1280 x 1024 SXGA
   c. 1366 x 768 WXGA
   d. 1400 x 1050 SXGA+
   e. 1440 x 900 WXGA+
   f. 1600 x 1200 UXGA
2. Check that the image is correctly displayed at all system outputs including the monitor(s) and/or by the video projector.
3. Repeat using Crosshatch, Checkerboard, and H Pattern Signals

I. Optical

J. All optical projection systems shall meet the following performance standards:
   1. The total averaged light output from a projector, in lumens, shall be within plus-or-minus 15% of that specified by the projector manufacturer.
   2. The light fall-off from the center of the projected image to all four corners, as measured at the projected image plane, shall not exceed 35% for slide projector images. The light intensity shall be measured at all five positions of the projected image after the projector has been adjusted to provide the light output as specified above.
   3. The "corner" locations shall be defined as the four points determined by intersecting lines drawn 5% of the distance in from the focused edges of the image.
   4. The light meter used for the above measurements shall be properly calibrated footcandle (or lux) meter and shall be cosine-corrected
   5. Projectors, lenses, and mirrors shall be solidly mounted and braced so that there will be no observable movement in the image induced by motor vibration or other mechanical operations.

K. Qualification Methods: Three methods will be used to qualify the A/V system for acceptance.
   1. Inspection - A critical observation of qualifying factors, such as quality of workmanship, equipment placement, routing of cables, adequacy of technical documentation, etc., that do not lend themselves to demonstration or measurement.
   2. Demonstration - A process of showing by reason or evidence that a given condition clearly satisfies the requirement.

L. Measurement - A process of determining the actual dimension, capacity, or amount of something, by measuring using calibrated standards.

3.7 SCHEDULES

A. 40-SEAT SUITE CLASSROOM W/ VTC (108)
   1. General: This paragraph describes audiovisual system to be contained in the 40 Seat Suite Classroom with VTC. In general, this room will be used for teaching presentations and video teleconferencing utilizing audiovisual presentation and VTC system technology. The room shall be outfitted with a data/video projection system (as an add alternate) along with separate monaural speech and stereo program audio reinforcement to enhance presentations within the space.
2. The data/video projection system shall include a ceiling-mounted projector that will display an image onto a ceiling hung electric projection screen installed at the front of the room. A program/speech audio reinforcement system shall be provided. An instructor’s station has been specified for the front of the room, to include all AV sources and connections. The room shall include wall mounted pan/tilt/zoom video cameras for use during video teleconferencing. A control system to include a touchscreen remote has been specified for the room and shall be located at the instructors station. System inputs include, but are not limited to: personal computers, digital document camera, annotation devices, DVD/BLUE RAY Player/Recorder, HD TV Tuner, videoconferencing device, wall mounted video cameras, along with both wired and wireless microphones. The 40 Seat Suite Classroom with VTC shall contain a custom floorbox for system access.

3. System Interconnection: The functional interconnections of the RGBHIV, video, audio, and control systems shall be as detailed on the “TA” series drawing sheets associated with this space.

4. Equipment Layout: The equipment in this area shall be located as detailed on the “TA” series drawing sheets associated with this space.

5. Owner Furnished Equipment (OFE): Personal/Laptop Computer

6. System Details

   a. Control System: The Control System will be controlled from a lectern mount color LCD touchscreen that shall terminate at the specified custom instructor’s station. From this touchscreen, users shall have full function control of all room source and system functions with one button operation. These sources and associated electronics are to be detailed in the control drawing associated with these rooms. Touchscreen layouts to be approved prior to installation. It is intended to have the control system programmed to turn power on/off for all system components with a single function button.

   b. Projection Screen: The projection screen will be provided and installed by the Construction Manager. Projection screen shall be electric operated “permanently tensioned” type controlled by the remote control system.

   c. Electrical Boxes and Conduit: Electrical Contractor to provide electrical boxes and conduit below the floor, in the walls, and above the ceiling. Be responsible for all custom AV plates cabling connecting to the system’s equipment. There shall be a custom floorbox and rackplate location for input/output hook-ups during presentations. Confirm on site conditions with General Contractor.

   d. Program/Speech Reinforcement Loudspeakers: Wall- mounted loudspeakers will be installed for speech/program audio signals. Take care not to damage the walls during installation, and repair or replace any damage caused during the installation. Audio inputs include, but are not limited to: personal computers, DVD/BLUE RAY Player/Recorder, HD TV Tuner, along with both wired and wireless microphones.

   e. Data/Video Projector: The data/video projector shall be installed on the ceiling of the 40 Seat Suite Classroom with VTC. The video projector shall be installed and
adjusted to produce an image that fills the projection screen. Install on fixed pole mount secured to building structure.

f. LCD Displays: The LCD displays shall be installed as detailed on “TA” series drawings. The display shall be capable of displaying 1920 X 1080 resolution and 2000:1 contrast ratio with 16:9 native aspect ratio.

g. Room Video Cameras: Wall mounted video cameras shall be provided at the front and back of the room as detailed on “TA” series drawings for use during presentations.

h. Instructor’s Station: This station is to be located at the front the room. At this position, the station will have AV patch points via an associated room floorbox for connection to the room system.
   1) The specified instructor’s stations will house the following: remote control touchscreen, digital annotation device, keyboard/mouse, and gooseneck microphone.
   2) The station will be equipped with a task light. Unit to include a single duplex AC power receptacle on the work surface. Laptop access shall be provided.

i. Equipment Rack Hardware: Provide rack and all equipment rack hardware, including vent panels, slide-out shelves, rack mounts and miscellaneous hardware for a complete and finished system. Unit shall include a (Furman PL-Pro DMC) power distribution strip in the first RU space in the enclosure. Back rack power distribution and control system processor with blanks located in associated front panel positions. The equipment rack for this room shall be located as detailed on the “TA” series drawings. Provide cable management from the rack to associated wall plate.

7. Equipment List: On the following pages is the equipment list for this space. Each of these items shall be priced using both the equipment make and model shown, or components with equivalent functionality and of newer make. Meet or exceed the performance characteristics that are outlined for each component in the list. If an item is listed as “Custom,” this means that the Contractor may use any manufacturer’s component appropriate for the function and quality required for that item. Submit a “build” quality shop drawing for approval, on any custom items.

B. 40-SEAT SUITE CLASSROOM (107)

1. General: This paragraph describes audiovisual system to be contained in the 40 Seat Suite Classroom. In general, this room will be used for teaching presentations utilizing audiovisual presentation system technology. The room shall be outfitted with a data/video projection system along with program/speech audio reinforcement to enhance presentations within the space.

   2. The data/video projection system shall include a ceiling-mounted projector that will display an image onto a ceiling hung electric projection screen installed at the front of the room. A program/speech audio reinforcement system shall be provided. An instructor’s station has been specified for the front of the room, to include all AV sources and connections. A control system to include a touchscreen remote has been specified for the room and shall be located at the instructors station. System inputs include, but are not limited to: personal computers, digital document camera, annotation device, DVD/BLUE
RAY Player/Recorder, HD TV Tuner, along with both wired and wireless microphones. The 40 Seat Suite Classroom shall contain a custom floorbox for system access.

3. System Interconnection: The functional interconnections of the RGBHV, video, audio, and control systems shall be as detailed on the “TA” series drawing sheets associated with this space.

4. Equipment Layout: The equipment in this area shall be located as detailed on the “TA” series drawing sheets associated with this space.

5. Owner Furnished Equipment (OFE): Personal/Laptop Computer

6. System Details

   a. Control System: The Control System will be controlled from a lectern mount color LCD touchscreen that shall terminate at the specified custom instructor’s station. From this touchscreen, users shall have full function control of all room source and system functions with one button operation. These sources and associated electronics are to be detailed in the control drawing associated with these rooms. Touchscreen layouts to be approved prior to installation. It is intended to have the control system programmed to turn power on/off for all system components with a single function button.

   b. Projection Screen: The projection screen will be provided and installed by the Construction Manager. Projection screen shall be electric operated “permanently tensioned” type controlled by the remote control system.

   c. Electrical Boxes and Conduit: Electrical Contractor to provide electrical boxes and conduit below the floor, in the walls, and above the ceiling. Be responsible for all custom AV plates cabling connecting to the system’s equipment. There shall be a custom floorbox and rackplate location for input/output hook-ups during presentations. Confirm on site conditions with General Contractor.

   d. Program/Speech Reinforcement Loudspeakers: Wall- mounted loudspeakers will be installed for speech/program audio signals. Take care not to damage the walls during installation, and repair or replace any damage caused during the installation. Audio inputs include, but are not limited to: personal computers, DVD/BLUE RAY Player/Recorder, HD TV Tuner, along with both wired and wireless microphones.

   e. Data/Video Projector: The data/video projector shall be installed on the ceiling of the 40 Seat Suite Classroom. The video projector shall be installed and adjusted to produce an image that fills the projection screen. Install on fixed pole mount secured to building structure.

   f. Room Video Cameras: Wall mounted video cameras shall be provided at the front and back of the room as detailed on “TA” series drawings for use during presentations.

   g. Instructor’s Station: This station is to be located at the front the room. At this position, the station will have AV patch points via an associated room floorbox for connection to the room’s system.
1) The specified instructor’s stations will house the following: remote control touchscreen, digital annotation device, keyboard/mouse, and gooseneck microphone.

2) The station will be equipped with a task light. Unit to include a single duplex AC power receptacle on the work surface. Laptop access shall be provided.

h. Equipment Rack Hardware: Provide rack and all equipment rack hardware, including vent panels, slide-out shelves, rack mounts and miscellaneous hardware for a complete and finished system. Unit shall include a (Furman PL-Pro DMC) power distribution strip in the first RU space in the enclosure. Back rack power distribution and control system processor with blanks located in associated front panel positions. The equipment rack for this room shall be located as detailed on the “TA” series drawings. Provide cable management from the rack to associated wall plate.

7. Equipment List: On the following pages is the equipment list for this space. Each of these items shall be priced using both the equipment make and model shown, or components with equivalent functionality and of newer make. Meet or exceed the performance characteristics that are outlined for each component in the list. If an item is listed as “Custom,” this means that the Contractor may use any manufacturer’s component appropriate for the function and quality required for that item. Submit a “build” quality shop drawing for approval, on any custom items.

C. 20 SEAT SEMINAR CLASSROOM (123, 124, 239 428)

1. General: This paragraph describes audiovisual system to be contained in the 20 Seat Seminar Classrooms. In general, these rooms will be used for teaching presentations utilizing audiovisual presentation system technology. These rooms shall be outfitted with a data/video projection system along with speech/program audio reinforcement to enhance presentations within the space.

2. The data/video projection system shall include a ceiling-mounted projector that will display an image onto a ceiling hung electric projection screen installed at the front of the room. A program/speech audio reinforcement system shall be provided. An equipment rack has been specified for the front of the rooms, to include all AV sources and connections. A control system to include a touchscreen remote has been specified for the room and shall be located at the presentation wall. System inputs include, but are not limited to: personal computers, digital document camera, DVD/BLUE RAY Player/Recorder, IID TV Tuner. The 20 Seat Seminar Classrooms shall contain a custom floorbox for system access.

3. System Interconnection: The functional interconnections of the RGBHV, video, audio, and control systems shall be as detailed on the “TA” series drawing sheets associated with this space.

4. Equipment Layout: The equipment in these areas shall be located as detailed on the “TA” series drawing sheets associated with this space.

5. Owner Furnished Equipment (OFE): Personal/Laptop Computer

6. System Details
a. Control System: The Control System will be controlled from a wall mount color LCD touchscreen that shall terminate at the specified custom instructor’s station. From this touchscreen, users shall have full function control of all room source and system functions with one button operation. These sources and associated electronics are to be detailed in the control drawing associated with these rooms. Touchscreen layouts to be approved prior to installation. It is intended to have the control system programmed to turn power on/off for all system components with a single function button.

b. Projection Screen: The projection screen will be provided and installed by the Construction Manager. Projection screen shall be electric operated “permanently tensioned” type controlled by the remote control system.

c. Electrical Boxes and Conduit: Electrical Contractor to provide electrical boxes and conduit below the floor, in the walls, and above the ceiling. Be responsible for all custom AV plates cabling connecting to the system’s equipment. There shall be a custom floorbox and rackplate location for input/output hook-ups during presentations. Confirm on site conditions with General Contractor.

d. Program/Speech Reinforcement Loudspeakers: Wall- mounted loudspeakers will be installed for speech/program audio signals. Take care not to damage the walls during installation, and repair or replace any damage caused during the installation. Audio inputs include, but are not limited to: personal computers, DVD/BLUE RAY Player/Recorder, and an HD TV Tuner.

e. Data/Video Projector: The data/video projector shall be installed on the ceiling of the 20 Seat Seminar Classrooms. The video projectors shall be installed and adjusted to produce an image that fills the projection screen. Install on fixed pole mount secured to building structure.

f. Equipment Rack Hardware: Provide rack and all equipment rack hardware, including vent panels, slide-out shelves, rack mounts and miscellaneous hardware for a complete and finished system. Unit shall include a (Furman PL-Pro DMC) power distribution strip in the first RU space in the enclosure. Back rack power distribution and control system processor with blanks located in associated front panel positions. The equipment rack for this room shall be located as detailed on the “TA” series drawings. Provide cable management from the rack to associated wall plate.

7. Equipment List: On the following pages is the equipment list for this space. Each of these items shall be priced using both the equipment make and model shown, or components with equivalent functionality and of newer make. Meet or exceed the performance characteristics that are outlined for each component in the list. If an item is listed as “Custom,” this means that the Contractor may use any manufacturer’s component appropriate for the function and quality required for that item. Submit a “build” quality shop drawing for approval, on any custom items.

D. WRITING LAB (314, 317, 318)

1. General: This paragraph describes audiovisual system to be contained in the Writing Labs. In general, this room will be used for teaching presentations utilizing audiovisual presentation system technology. These rooms shall be outfitted with a data/video
projection system along with program/speech audio reinforcement to enhance presentations within the spaces.

2. The data/video projection system shall include a ceiling-mounted projector that will display an image onto a ceiling hung electric projection screen installed at the front of the room. A program/speech audio reinforcement system shall be provided. An instructor's station has been specified for the front of the room, to include all AV sources and connections. A control system to include a touchscreen remote has been specified for the room and shall be located at the instructor's station. System inputs include, but are not limited to: personal computers, digital document camera, annotation device, DVD/BLUE RAY Player/Recorder, HD TV Tuner, along with both wired microphones. The Writing Labs shall contain a custom floorbox for system access.

3. System Interconnection: The functional interconnections of the RGBHV, video, audio, and control systems shall be as detailed on the "TA" series drawing sheets associated with this space.

4. Equipment Layout: The equipment in these areas shall be located as detailed on the "TA" series drawing sheets associated with this space.

5. Owner Furnished Equipment (OFE): Personal/Laptop Computer

6. System Details

a. Control System: The Control System will be controlled from a lectern mount color LCD touchscreen that shall terminate at the specified custom instructor's station. From this touchscreen, users shall have full function control of all room source and system functions with one button operation. These sources and associated electronics are to be detailed in the control drawing associated with these rooms. Touchscreen layouts to be approved prior to installation. It is intended to have the control system programmed to turn power on/off for all system components with a single function button.

b. Projection Screen: The projection screen will be provided and installed by the Construction Manager. Projection screen shall be electric operated "permanently tensioned" type controlled by the remote control system.

c. Electrical Boxes and Conduit: Electrical Contractor to provide electrical boxes and conduit below the floor, in the walls, and above the ceiling. Be responsible for all custom AV plates cabling connecting to the system’s equipment. There shall be a custom floorbox and rackplate location for input/output hook-ups during presentations. Confirm on site conditions with General Contractor.

d. Program/Speech Reinforcement Loudspeakers: Wall-mounted loudspeakers will be installed for speech/program audio signals. Take care not to damage the walls during installation, and repair or replace any damage caused during the installation. Audio inputs include, but are not limited to: personal computers, DVD/BLUE RAY Player/Recorder, HD TV Tuner, along with both wired microphones.

e. Data/Video Projector: The data/video projector shall be installed on the ceiling of the Writing Labs. The video projectors shall be installed and adjusted to produce an
image that fills the projection screen. Install on fixed pole mount secured to building structure.

f. Instructor’s Station: This station is to be located at the front the room. At this position, the station will have AV patch points via an associated room floorbox for connection to the room’s system.
1) The specified instructor’s stations will house the following: remote control touchscreen, digital annotation device, keyboard/mouse, and gooseneck microphone.
2) The station will be equipped with a task light. Unit to include a single duplex AC power receptacle on the work surface. Laptop access shall be provided.

g. Equipment Rack Hardware: Provide rack and all equipment rack hardware, including vent panels, slide-out shelves, rack mounts and miscellaneous hardware for a complete and finished system. Unit shall include a (Furman PL-Pro DMC) power distribution strip in the first RU space in the enclosure. Back rack power distribution and control system processor with blanks located in associated front panel positions. The equipment rack for this room shall be located as detailed on the “TA” series drawings. Provide cable management from the rack to associated wall plate.

7. Equipment List: On the following pages is the equipment list for this space. Each of these items shall be priced using both the equipment make and model shown, or components with equivalent functionality and of newer make. Meet or exceed the performance characteristics that are outlined for each component in the list. If an item is listed as “Custom,” this means that the Contractor may use any manufacturer’s component appropriate for the function and quality required for that item. Submit a “build” quality shop drawing for approval, on any custom items.

E. HUMANITIES STUDY ROOM (212)

1. General: This paragraph describes audiovisual system to be contained in the Humanities Study Room. In general, this space will be used as a student study area. The room shall be outfitted with flat panel displays along with integrated program audio reinforcement to enhance student presentations within the space. The Humanities Study Room shall contain custom wall plates for system access.

2. System Interconnection: The functional interconnections of the RGBHV, video and audio systems shall be as detailed on the “TA” series drawing sheets associated with this space.

3. Equipment Layout: The equipment in these areas shall be located as detailed on the “TA” series drawing sheets associated with this space.

4. Owner Furnished Equipment (OFE): Laptop Computer

5. System Details

a. Electrical Boxes and Conduit: Electrical Contractor to provide electrical boxes and conduit below the floor, in the walls, and above the ceiling. Be responsible for all custom AV plates cabling connecting to the system’s equipment. There shall be a
custom floorbox and rackplate location for input/output hook-ups during presentations. Confirm on site conditions with General Contractor.

b. Integrated Program Reinforcement Loudspeakers: Integrated loudspeakers will be provided for the flat panel displays for program audio signals. Take care not to damage the flat panels during installation, and repair or replace any damage caused during the installation. Audio inputs include, but are not limited to: laptop computers, DVD/Blue Ray Player/Recorder, and an HD TV Tuner.

6. Equipment List: On the following pages is the equipment list for this space. Each of these items shall be priced using both the equipment make and model shown, or components with equivalent functionality and of newer make. Meet or exceed the performance characteristics that are outlined for each component in the list. If an item is listed as “Custom,” this means that the Contractor may use any manufacturer’s component appropriate for the function and quality required for that item. Submit a “build” quality shop drawing for approval, on any custom items.

F. HUMANITIES CONFERENCE ROOM (216)

1. General: This paragraph describes audiovisual system to be contained in the Humanities Conference Room. In general, this room will be used for conferencing related presentations utilizing audiovisual presentation system technology. The room shall be outfitted with a video display system along with program/speech audio reinforcement to enhance presentations within the space.

2. The video display system shall include A LCD projector and projection screen at the front of the room. A program/speech audio reinforcement system shall be provided. A control system to include a touchscreen remote has been specified for the room and shall be located along the presentation wall. System inputs include, but are not limited to: laptop computers, digital document camera, DVD/BLUE RAY Player/Recorder, and an HD TV Tuner. The Humanities Conference Room shall contain a custom floorbox for system access.

3. System Interconnection: The functional interconnections of the RGBHV, video, audio, and control systems shall be as detailed on the “TA” series drawing sheets associated with this space.

4. Equipment Layout: The equipment in this area shall be located as detailed on the “TA” series drawing sheets associated with this space.

5. Owner Furnished Equipment (OFE): Personal/Laptop Computer

6. System Details

a. Control System: The Control System will be controlled from a wall mount color LCD touchscreen that shall terminate at the presentation wall. From this touchscreen, users shall have full function control of all room source and system functions with one button operation. These sources and associated electronics are to be detailed in the control drawing associated with these rooms. Touchscreen layouts to be approved prior to installation. It is intended to have the control system programmed to turn power on/off for all system components with a single function button.
b. Electrical Boxes and Conduit: Electrical Contractor to provide electrical boxes and conduit below the floor, in the walls, and above the ceiling. Be responsible for all custom AV plates cabling connecting to the system’s equipment. There shall be custom floorboxes and rackplate location for input/output hook-ups during presentations. Confirm on site conditions with General Contractor.

c. Data/Video Projector: The data/video projector shall be installed on the ceiling of the Humanities Conference Room. The video projector shall be installed and adjusted to produce an image that fills the projection screen. Install on fixed pole mount secured to building structure.

d. Program/Speech Reinforcement Loudspeakers: Wall-mounted loudspeakers will be installed for speech/program audio signals. Take care not to damage the walls during installation, and repair or replace any damage caused during the installation. Audio inputs include, but are not limited to: personal computers, DVD/BLUE RAY Player/Recorder, HD TV Tuner, along with both wired and wireless microphones.

e. Equipment Rack Hardware: Provide rack and all equipment rack hardware, including vent panels, slide-out shelves, rack mounts and miscellaneous hardware for a complete and finished system. Unit shall include a (Furman PL-Pro DMC) power distribution strip in the first RU space in the enclosure. Rack rack power distribution and control system processor with blanks located in associated front panel positions. The equipment rack for this room shall be located as detailed on the “TA” series drawings. Provide cable management from the rack to associated wall plate.

7. Equipment List: On the following pages is the equipment list for this space. Each of these items shall be priced using both the equipment make and model shown, or components with equivalent functionality and of newer make. Meet or exceed the performance characteristics that are outlined for each component in the list. If an item is listed as “Custom,” this means that the Contractor may use any manufacturer’s component appropriate for the function and quality required for that item. Submit a “build” quality shop drawing for approval, on any custom items.

G. COSTUME LAB RECITATION (205b)

1. General: This paragraph describes audiovisual system to be contained in the Costume Lab Recitation space. In general, this room will be used for presentations utilizing audiovisual presentation system technology. The room shall be outfitted with a video display system along with integrated program/speech audio reinforcement to enhance presentations within the space.

2. The video display system shall include a wall mounted flat panel display installed at the front of the room. A program/speech audio reinforcement system shall be provided. A control system to include a touchpanel remote has been specified for the room and shall be located along the presentation wall. System inputs include, but are not limited to: laptop computers, digital document camera, DVD/BLUE RAY Player/Recorder, and an HD TV Tuner. The Costume Lab Recitation space shall contain a custom floorbox for system access.
3. System Interconnection: The functional interconnections of the RGBHV, video, audio, and control systems shall be as detailed on the "TA" series drawing sheets associated with this space.

4. Equipment Layout: The equipment in this area shall be located as detailed on the "TA" series drawing sheets associated with this space.

5. Owner Furnished Equipment (OFE): Personal/Laptop Computer

6. System Details
   a. Control System: The Control System will be controlled from a wall mount pushbutton touchpanel that shall terminate at the presentation wall. From this touchpanel, users shall have full function control of all room source and system functions with one button operation. These sources and associated electronics are to be detailed in the control drawing associated with these rooms. Touchpanel programming to be approved prior to installation. It is intended to have the control system programmed to turn power on/off for all system components with a single function button.
   b. LCD Display: The LCD display shall be installed as detailed on "TA" series drawings. The display shall be capable of displaying 1920 x 1080 resolution and 2000:1 contrast ratio with 16:9 native aspect ratio.
   c. Electrical Boxes and Conduit: Electrical Contractor to provide electrical boxes and conduit below the floor, in the walls, and above the ceiling. Be responsible for all custom AV plates cabling connecting to the system’s equipment. There shall be a custom rackplate location for input/output hook-ups during presentations. Confirm on site conditions with General Contractor.
   d. Integrated Program Reinforcement Loudspeakers: Integrated loudspeakers will be installed for program audio signals. Take care not to damage the flat panel display during installation, and repair or replace any damage caused during the installation. Audio inputs include, but are not limited to: personal computers, DVD/BLUE RAY Player/Recorder, HD TV Tuner, along with both wired and wireless microphones.
   e. Equipment Rack Hardware: Provide rack and all equipment rack hardware, including vent panels, slide-out shelves, rack mounts and miscellaneous hardware for a complete and finished system. Unit shall include a (Furman PL-Pro DMC) power distribution strip in the first RU space in the enclosure. Back rack power distribution and control system processor with blanks located in associated front panel positions. The equipment rack for this room shall be located as detailed on the "TA" series drawings. Provide cable management from the rack to associated wall plate.

7. Equipment List: On the following pages is the equipment list for this space. Each of these items shall be priced using both the equipment make and model shown, or components with equivalent functionality and of newer make. Meet or exceed the performance characteristics that are outlined for each component in the list. If an item is listed as "Custom," this means that the Contractor may use any manufacturer's component appropriate for the function and quality required for that item. Submit a "build" quality shop drawing for approval, on any custom items.
H. THEATRE CONFERENCE ROOM (319)

1. General: This paragraph describes audiovisual system to be contained in the Theatre Conference Room. In general, this room will be used for conferencing related presentations utilizing audiovisual presentation system technology. The room shall be outfitted with a video display system along with program/speech audio reinforcement to enhance presentations within the space.

2. The video display system shall include wall mounted flat panel displays installed at the front of the room. A program/speech audio reinforcement system shall be provided. A control system to include a touchscreen remote has been specified for the room and shall be located along the presentation wall. System inputs include, but are not limited to: laptop computers, digital document camera, DVD/BLUE RAY Player/Recorder, Compact disc Recorder with MP3 playback and an HD TV Tuner. The Theatre Conference Room shall contain a custom floorbox for system access.

3. System Interconnection: The functional interconnections of the RGBHV, video, audio, and control systems shall be as detailed on the “TA” series drawing sheets associated with this space.

4. Equipment Layout: The equipment in this area shall be located as detailed on the “TA” series drawing sheets associated with this space.

5. Owner Furnished Equipment (OFE): Personal/Laptop Computer

6. System Details

a. Control System: The Control System will be controlled from a wall mount color LCD touchscreen that shall terminate at the presentation wall. From this touchscreen, users shall have full function control of all room source and system functions with one button operation. These sources and associated electronics are to be detailed in the control drawing associated with these rooms. Touchscreen layouts to be approved prior to installation. It is intended to have the control system programmed to turn power on/off for all system components with a single function button.

b. LCD Display: The LCD display shall be installed as detailed on “TA” series drawings. The display shall be capable of displaying 1920 X 1080 resolution and 2000:1 contrast ratio with 16:9 native aspect ratio.

c. Electrical Boxes and Conduit: Electrical Contractor to provide electrical boxes and conduit below the floor, in the walls, and above the ceiling. Be responsible for all custom AV plates cabling connecting to the system’s equipment. There shall be a custom floorbox and rackplate location for input/output hook-ups during presentations. Confirm on site conditions with General Contractor.

d. Integrated Program Reinforcement Loudspeakers: Wall-mounted loudspeakers will be installed for program audio signals. Take care not to damage the walls during installation, and repair or replace any damage caused during the installation. Audio inputs include, but are not limited to: personal computers, DVD/BLUE RAY Player/Recorder, HD TV Tuner, along with both wired and wireless microphones.
e. Equipment Rack Hardware: Provide rack and all equipment rack hardware, including vent panels, slide-out shelves, rack mounts and miscellaneous hardware for a complete and finished system. Unit shall include a (Furman PL-Pro DMC) power distribution strip in the first RU space in the enclosure. Back rack power distribution and control system processor with blanks located in associated front panel positions. The equipment rack for this room shall be located as detailed on the “TA” series drawings. Provide cable management from the rack to associated wall plate.

7. Equipment List: On the following pages is the equipment list for this space. Each of these items shall be priced using both the equipment make and model shown, or components with equivalent functionality and of newer make. Meet or exceed the performance characteristics that are outlined for each component in the list. If an item is listed as “Custom,” this means that the Contractor may use any manufacturer’s component appropriate for the function and quality required for that item. Submit a “build” quality shop drawing for approval, on any custom items.

I. THEATRE REHEARSAL SPACE (102)

1. General: This paragraph describes audiovisual system to be contained in the Theatre Rehearsal Space. In general, this room will be used for theatre instruction utilizing audiovisual presentation system technology. The room shall be outfitted with a data/video projection system along with separate monaural speech and stereo program audio reinforcement to enhance presentations within the space.

2. The data/video projection system shall include a ceiling-mounted LCD projector that will display an image onto a ceiling hung electric projection screen installed at the front of the room as well as a portable projector with a portable projection screen. A separate stereo program and monaural speech audio reinforcement system shall be provided. An AV rack has been specified to include all AV sources and connections. The room shall include wall mounted pan/tilt/zoom video cameras for use during presentations. A control system to include a touchscreen with video preview has been specified for the room and shall be located at the AV systems rack. System inputs include, but are not limited to: personal/ laptop computers, DVD/VHS Player/Recorder, HD TV Tuner, wall mounted video cameras, along with wireless microphones. The Theatre Rehearsal Space shall contain a custom rack plate for system access.

3. System Interconnection: The functional interconnections of the RGBHV, video, audio, and control systems shall be as detailed on the “TA” series drawing sheets associated with this space.

4. Equipment Layout: The equipment in this area shall be located as detailed on the “TA” series drawing sheets associated with this space.

5. Owner Furnished Equipment (OFE): Personal/Laptop Computer

6. System Details

a. Control System: The Control System will be controlled from a hardwired rack mount color LCD touchscreen that shall terminate at the AV systems rack. From this touchscreen, users shall have full function control of all room source and system functions (including a light dimming system) with one button operation. These

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sources and associated electronics are to be detailed in the control drawing associated with these rooms. Touchscreen layouts to be approved prior to installation. It is intended to have the control system programmed to turn power on/off for all system components with a single function button.

b. Projection Screen: The projection screen will be provided and installed by the Construction Manager. Projection screen shall be electric operated “permanently tensioned” type controlled by the remote control system.

c. Electrical Boxes and Conduit: Electrical Contractor to provide electrical boxes and conduit below the floor, in the walls, and above the ceiling. Be responsible for all custom AV plates and the necessary cabling connecting to the system’s equipment. There shall be a custom rackplate location for input/output hook-ups during presentations. Confirm on site conditions with General Contractor.

d. Program/Speech Reinforcement Loudspeakers: Ceiling mounted loudspeakers will be installed for monaural speech. Wall mounted loudspeakers will be installed for program reinforcement. Take care not to damage the ceiling and walls during installation, and repair or replace any damage caused during the installation. Audio inputs include, but are not limited to: personal/laptop computers, DVD/VHS Player/Recorder, HD TV Tuner, along with wireless microphones.

c. Data/Video Projectors: A data/video projector shall be installed on the back wall of the Theatre Rehearsal Space. Mounting height shall be as detailed in the architectural series drawings. A portable projector shall be cart mounted for use with the portable projection screen. The video projector shall be installed and adjusted to produce an image that fills the projection screen.

f. Room Video Cameras: Wall mounted video cameras shall be provided at the front and back of the room as detailed on “TA” series drawings for use during presentations.

g. Equipment Rack/Hardware: Provide rack and all equipment rack hardware, including vent panels, slide-out shelves, rack mounts and miscellaneous hardware for a complete and finished system. Unit shall include a (Furman PL-Pro DMC) power distribution strip in the first RU space in the enclosure. Back rack power distribution and control system processor with blanks located in associated front panel positions. The equipment rack for this room shall be located as detailed on the “TA” series drawings. Provide cable management from the rack to associated wall plate.

7. Equipment List: On the following pages is the equipment list for this space. Each of these items shall be priced using both the equipment make and model shown, or components with equivalent functionality and of newer make. Meet or exceed the performance characteristics that are outlined for each component in the list. If an item is listed as “Custom,” this means that the Contractor may use any manufacturer’s component appropriate for the function and quality required for that item. Submit a “build” quality shop drawing for approval, on any custom items.

J. ACTING DIRECTING STUDIO (105)
1. General: This paragraph describes audiovisual system to be contained in the Acting Directing Studio. In general, this room will be used for theatre instruction utilizing audiovisual presentation system technology. The room shall be outfitted with a data/video projection system along with separate monaural speech and 5.1 surround sound program audio reinforcement to enhance presentations within the space.

2. The data/video projection system shall include a ceiling-mounted LCD projector that will display an image onto a ceiling hung electric projection screen installed at the front of the room as well as a portable projector with a portable projection screen. A separate surround sound program and monaural speech audio reinforcement system shall be provided. An AV rack has been specified to include all AV sources and connections. A control system to include a touchscreen with video preview has been specified for the room and shall be located at the AV systems rack. System inputs include, but are not limited to: personal laptop computers, DVD/VHS Player/Recorder, surround sound processor, HD TV Tuner, along with wireless microphones. The Acting Directing Studio shall contain a custom rackplate for system access.

3. System Interconnection: The functional interconnections of the RGBHV, video, audio, and control systems shall be as detailed on the “TA” series drawing sheets associated with this space.

4. Equipment Layout: The equipment in this area shall be located as detailed on the “TA” series drawing sheets associated with this space.

5. Owner Furnished Equipment (OFE): Personal/Laptop Computer

6. System Details

   a. Control System: The Control System will be controlled from a hardwired rack mount color LCD touchscreen that shall terminate at the AV systems rack. From this touchscreen, users shall have full function control of all room source and system functions (including a light dimming system) with one button operation. These sources and associated electronics are to be detailed in the control drawing associated with these rooms. Touchscreen layouts to be approved prior to installation. It is intended to have the control system programmed to turn power on/off for all system components with a single function button.

   b. Projection Screen: The projection screen will be provided and installed by the Construction Manager. Projection screen shall be electric operated “permanently tensioned” type controlled by the remote control system.

   c. Electrical Boxes and Conduit: Electrical Contractor to provide electrical boxes and conduit below the floor, in the walls, and above the ceiling. Be responsible for all custom AV plates and the necessary cabling connecting to the system’s equipment. There shall be a custom rackplate location for input/output hook-ups during presentations. Confirm on site conditions with General Contractor.

   d. Program/Speech Reinforcement Loudspeakers: Ceiling mounted loudspeakers will be installed for monaural speech. Wall mounted loudspeakers will be installed for program reinforcement. Take care not to damage the ceiling and walls during installation, and repair or replace any damage caused during the installation. Audio
inputs include, but are not limited to: personal/laptop computers, DVD/VHS Player/Recorder, HD TV Tuner, surround sound processor along with wireless microphones.

e. Data/Video Projector: The data/video projector shall be installed on the back wall of the Acting Directing Studio. Mounting height shall be as detailed in the architectural series drawings. The video projector shall be installed and adjusted to produce an image that fills the projection screen.

f. Equipment Rack/Hardware: Provide rack and all equipment rack hardware, including vent panels, slide-out shelves, rack mounts and miscellaneous hardware for a complete and finished system. Unit shall include a (Furman PL-Pro DMC) power distribution strip in the first RU space in the enclosure. Back rack power distribution and control system processor with blanks located in associated front panel positions. The equipment rack for this room shall be located as detailed on the “TA” series drawings. Provide cable management from the rack to associated wall plate.

7. Equipment List: On the following pages is the equipment list for this space. Each of these items shall be priced using both the equipment make and model shown, or components with equivalent functionality and of newer make. Meet or exceed the performance characteristics that are outlined for each component in the list. If an item is listed as “Custom,” this means that the Contractor may use any manufacturer’s component appropriate for the function and quality required for that item. Submit a “build” quality shop drawing for approval, on any custom items.

K. TECHNICAL DESIGN LAB (201)

1. General: This paragraph describes audiovisual system to be contained in the Technical Design Lab. In general, this room will be used for teaching presentations utilizing audiovisual presentation system technology. This room shall be outfitted with a data/video projection system along with speech/program audio reinforcement to enhance presentations within the space.

2. The data/video projection system shall include a ceiling-mounted projector that will display an image onto a ceiling hung electric projection screen installed at the front of the room. A program/speech audio reinforcement system shall be provided. An equipment rack has been specified for the front of the rooms, to include all AV sources and connections. A control system to include a touchscreen remote has been specified for the room and shall be located at the presentation wall. System inputs include, but are not limited to: personal computers, digital document camera, DVD/BLUE RAY Player/Recorder, HD TV Tuner. The Technical Design Lab shall contain a custom floorbox for system access.

3. System Interconnection: The functional interconnections of the RGBHV, video, audio, and control systems shall be as detailed on the “TA” series drawing sheets associated with this space.

4. Equipment Layout: The equipment in this area shall be located as detailed on the “TA” series drawing sheets associated with this space.

5. Owner Furnished Equipment (OFE): Personal/Laptop Computer
6. System Details

a. Control System: The Control System will be controlled from a wall mount color LCD touchscreen that shall terminate at the specified custom instructor’s station. From this touchscreen, users shall have full function control of all room source and system functions with one button operation. These sources and associated electronics are to be detailed in the control drawing associated with these rooms. Touchscreen layouts to be approved prior to installation. It is intended to have the control system programmed to turn power on/off for all system components with a single function button.

b. Projection Screen: The projection screen will be provided and installed by the Construction Manager. Projection screen shall be electric operated “permanently tensioned” type controlled by the remote control system.

c. Electrical Boxes and Conduit: Electrical Contractor to provide electrical boxes and conduit below the floor, in the walls, and above the ceiling. Be responsible for all custom AV plates cabling connecting to the system’s equipment. There shall be a custom floorbox and rackplate location for input/output hook-ups during presentations. Confirm on site conditions with General Contractor.

d. Program/Speech Reinforcement Loudspeakers: Wall-mounted loudspeakers will be installed for speech/program audio signals. Take care not to damage the walls during installation, and repair or replace any damage caused during the installation. Audio inputs include, but are not limited to: personal computers, DVD/BLUE RAY Player/Recorder, and an HD TV Tuner.

e. Data/Video Projector: The data/video projector shall be installed on the ceiling of the Technical Design Lab. The video projectors shall be installed and adjusted to produce an image that fills the projection screen. Install on fixed pole mount secured to building structure.

f. Equipment Rack Hardware: Provide rack and all equipment rack hardware, including vent panels, slide-out shelves, rack mounts and miscellaneous hardware for a complete and finished system. Unit shall include a (Furman PL-Pro DMC) power distribution strip in the first RU space in the enclosure. Back rack power distribution and control system processor with blanks located in associated front panel positions. The equipment rack for this room shall be located as detailed on the “TA” series drawings. Provide cable management from the rack to associated wall plate.

7. Equipment List: On the following pages is the equipment list for this space. Each of these items shall be priced using both the equipment make and model shown, or components with equivalent functionality and of newer make. Meet or exceed the performance characteristics that are outlined for each component in the list. If an item is listed as “Custom,” this means that the Contractor may use any manufacturer’s component appropriate for the function and quality required for that item. Submit a “build” quality shop drawing for approval, on any custom items.

L. TECHNICAL AREA SUPPORT (B009)
1. General: This paragraph describes audiovisual system to be contained in the Technical Area Support space. In general, this room will be used for teaching presentations utilizing audiovisual presentation system technology. This room shall be outfitted with a data/video projection system along with speech/program audio reinforcement to enhance presentations within the space.

2. The data/video projection system shall include a ceiling-mounted projector that will display an image onto a ceiling hung electric projection screen installed at the front of the room. A program/speech audio reinforcement system shall be provided. An equipment rack has been specified for the front of the rooms, to include all AV sources and connections. A control system to include a touchscreen remote has been specified for the room and shall be located at the presentation wall. System inputs include, but are not limited to: personal computers, digital document camera, DVD/BLUE RAY Player/Recorder, HD TV Tuner. The Technical Design Lab shall contain a custom floorbox for system access.

3. System Interconnection: The functional interconnections of the RGBHV, video, audio, and control systems shall be as detailed on the “TA” series drawing sheets associated with this space.

4. Equipment Layout: The equipment in this area shall be located as detailed on the “TA” series drawing sheets associated with this space.

5. Owner Furnished Equipment (OFE): Personal/Laptop Computer

6. System Details

   a. Control System: The Control System will be controlled from a wall mount color LCD touchscreen that shall terminate at the specified custom instructor’s station. From this touchscreen, users shall have full function control of all room source and system functions with one button operation. These sources and associated electronics are to be detailed in the control drawing associated with these rooms. Touchscreen layouts to be approved prior to installation. It is intended to have the control system programmed to turn power on/off for all system components with a single function button.

   b. Projection Screen: The projection screen will be provided and installed by the Construction Manager. Projection screen shall be electric operated “permanently tensioned” type controlled by the remote control system.

   c. Electrical Boxes and Conduit: Electrical Contractor to provide electrical boxes and conduit below the floor, in the walls, and above the ceiling. Be responsible for all custom AV plates cabling connecting to the system’s equipment. There shall be a custom floorbox and rackplate location for input/output hook-ups during presentations. Confirm on site conditions with General Contractor.

   d. Program/Speech Reinforcement L oudspeakers: Wall-mounted loudspeakers will be installed for speech/program audio signals. Take care not to damage the walls during installation, and repair or replace any damage caused during the installation. Audio inputs include, but are not limited to: personal computers, DVD/BLUE RAY Player/Recorder, and an HD TV Tuner.
e. Data/Video Projector: The data/video projector shall be installed on the ceiling of the Technical Design Lab. The video projector shall be installed and adjusted to produce an image that fills the projection screen. Install on fixed pole mount secured to building structure.

f. Equipment Rack Hardware: Provide rack and all equipment rack hardware, including vent panels, slide-out shelves, rack mounts and miscellaneous hardware for a complete and finished system. Unit shall include a (Furman PL-Pro DMC) power distribution strip in the first RU space in the enclosure. Back rack power distribution and control system processor with blanks located in associated front panel positions. The equipment rack for this room shall be located as detailed on the “TA” series drawings. Provide cable management from the rack to associated wall plate.

7. Equipment List: On the following pages is the equipment list for this space. Each of these items shall be priced using both the equipment make and model shown, or components with equivalent functionality and of newer make. Meet or exceed the performance characteristics that are outlined for each component in the list. If an item is listed as “Custom,” this means that the Contractor may use any manufacturer’s component appropriate for the function and quality required for that item. Submit a “build” quality shop drawing for approval, on any custom items.

M. Lobby and Circulation areas (1C03, 2C02, 2C03, 3C02, 3C03, 4C02, 3L01)

1. General: This paragraph describes audiovisual system to be contained in the listed Lobby and Circulation areas. These areas shall be outfitted with video display systems to provide digital signage.

2. System Interconnection: The functional interconnections of the RGBHV, video, audio, and control systems shall be as detailed on the “TA” series drawing sheets associated with these spaces.

3. Equipment Layout: The equipment in these areas shall be located as detailed on the “TA” series drawing sheets associated with this space.

4. System Details

a. LCD Displays: The LCD displays shall be installed as detailed on “TA” series drawings. The display shall be capable of displaying 1366 X 768 resolution and 4000:1 contrast ratio with 16:9 native aspect ratio.

b. The media players necessary to the digital signage functionality of these displays shall be included in the LCD displays.
40 SEAT CLASSROOM W/ VTC (108)

1) DSP Speaker Processor
   - 10 balanced mic/line inputs
   - 6 balanced mic/line outputs
   - RS232 controllable

   Product: Biamp Nexia CS or approved comparable product.

2) HD Television Tuner
   - XM Ready
   - Triple IR Code Sets
   - 200 Station Preset Memory
   - Dual Analog Audio Outputs
   - Provide optional rack kit (2RU)

   Product: Contemporary Research 232-ATSC+ or approved comparable product.

3) Remote Control System w/Programming
   - Provide expansion cards as needed
   - Netlinx Studio PC software
   - AMX PSN 4.4 power supply
   - AMX NXD-500i Wall-mounted touch panel interface
   - Ethernet cables as needed for NXD-500i
   - AMX CB-TP5i Wall-mounting wallbox for NXD-500i
   - AMX CB-TP5ib Back cover for CB-TP5i
   - AMX RK5 Rack Mount kit for NXD-500i

   Product: AMX Netlinx NL-4100 or approved comparable product.

4) Dual Channel Audio Amplifier
   - 80W at 8-ohms per channel
   - 20Hz-20kHz at 1 watt +/- 0.25dB
   - 100dBA-weighted signal to noise ratio
   - 1RU

   Product: Extron XPA 2004 or approved comparable product.

5) Surface-Mountable Enclosure for Cables and AC Power Outlet
   - Low profile with tilt-up lid
   - Flush-mountable
   - Include Architectural Adapter Plates (AAP) as needed

   Product: Extron Cable Cubby 600 or approved comparable product.

6) 10X3 Digital/Analog Video/Stereo Audio Matrix Switcher
   - 10X3 Digital/Analog Video I/O
   - Video Inputs: Two (2) composite on BNC, two (2) S-Video on Mini-DIN, two (2)
     RGBHV on 15-pin HD, two (2) DVI-I

   Product: Extron 3000 Series or approved comparable product.
7) Four Output VGA Distribution Amplifier
   - Accepts VGA and RGBHV video signal on 15-pin HD female connector
   - Outputs 4 simultaneous VGA or RGBHV video signals on four (4) 15-pin HD female connectors
   - Rack mountable (with 1RU Rack Shelf), 1RU, ½ rack width
   
   Product: Extron P/2 DA4xi with rack shelf or approved comparable product.

8) RGBHV Twisted Pair Transmitter
   - Transmits video and audio proprietary analog signals to Extron MTP 15HD A
   - One (1) RGBHV Video Input
   - One (1) Stereo unbalanced audio input through a single 3.5 mm mini stereo jack
   - Decora wallplate
   
   Product: Extron MTP T 15HD A D or approved comparable product.

9) RGBHV Twisted Pair Receiver
   - Receives video and audio proprietary analog signals from Extron MTP T 15HD A D
   - One (1) RGBHV Video Output
   - One (1) Stereo unbalanced audio output through 3.5 mm direct insertion captive screw connector, 5 pole
   - 1RU, ¼ Rack Width
   
   Product: Extron MTP RL 15HD A or approved comparable product.

10) HDMI Twisted Pair Transmitter
    - Transmits video and audio proprietary analog signals to Extron HDMI 201 AD Rx
    - One (1) HDMI Input
    - One (1) Stereo unbalanced audio input through a pair of female RCA jacks
    - Decora wallplate
    
    Product: Extron HDMI 201 AD Tx or approved comparable product.

11) HDMI Twisted Pair Receiver
    - Receives video and audio proprietary analog signals from Extron HDMI 201 AD Tx
    - One (1) HDMI Output
    - One (1) Stereo unbalanced audio output through a pair of female RCA jacks
    - Decora wallplate
    
    Product: Extron HDMI 201 AD Rx or approved comparable product.

12) S-Video Twisted Pair Transmitter
• Transmits video and audio proprietary analog signals to Extron MTP R SVA
• One (1) S-Video Input
• One (1) Stereo unbalanced audio input through a pair of female RCA jacks
• Decora wallplate

Product: **Extron MTP T SVA AAP** or approved comparable product.

13) S-Video Twisted Pair Receiver
• Receives video and audio proprietary analog signals from Extron HDMI 201 AD Tx
• One (1) S-Video Output
• One (1) Stereo unbalanced audio output through a pair of female RCA jacks
• 1RU, ¼ Rack Width

Product: **Extron MTP R SVA** or approved comparable product.

14) Custom Lectern
• Quote/Item Number MDP3036EA

Product: **KSI Custom** or approved comparable product.

15) Interactive Annotation & Digitizer Tablet
• Serves as PC Monitor
• Lectern Mount Brackets
• 19" Diagonal Interactive Screen
• WXGA
• Battery-free, tethered pen w/built-in holder
• Control Panel and Annotation Software

Product: **Hitachi, T19WX** or approved comparable products

16) 52” Equipment Rack
• 65” useable rack space, 35 RU
• Provide security screws
• Provide quiet exhaust fan top 4”
• Provide **RSH series** rack mount kits as needed
• Provide rack mount UPS to support a minimum of 30 min. backup time.
• Provide **Furman PL-Pro DMC** power distribution
• Provide ERK Castor Base

Product: **Middle Atlantic ERK-3525** w/locking casters and power distribution or approved comparable product.

17) DLP Data/Video Projector w/Ceiling Mount (ALTERNATE)
• 1280 x 800 native resolution
• 4000 ANSI lumens
• 16:10 Aspect Ratio
• Up to 2200:1 contrast ratio
• RS-232 Controllable
• 1:1.15x manual zoom lens with 1:1.5–1.7 throw ratio
- Provide **Surge X Flat Pack** surge protector and power conditioner
- One (1) RGB input (15-pin; BNC; DVI-D w/HDCP)
- Two (2) Video Inputs (Composite; S-Video; Component)
- Provide ceiling mount with vibration isolation
- Secure with security screw, steel cable and padlocks on the mount

Product: **Sharp PG-D40W3D** or approved comparable product w/mount.

18) 52" LCD Display (ALTERNATE)
- 1920 x 1080 resolution
- 2000:1 contrast ratio
- 89 degree viewing angle
- Provide **Surge X Flat Pack** surge protector and power conditioner
- 16:9 aspect ratio
- Secure with security screw, steel cable and padlocks on the mount

Product: **NEC LCD5220-2-AV** or approved comparable product.

19) DVD / VHS Player/Recorder
- DVD recording and playback
- ATSC built in tuner
- Provide Middle Atlantic RSH series rack mount

Product: **Panasonic DMR-EZ47VK** or approved comparable product.

20) Pan, Tilt, Zoom HD Video Camera w/ Wall mount (ALTERNATE)
- 1280 x 720 resolution at 60fps
- 12x zoom
- 180 degree panning radius
- Provide Vaddio IN-Wall Polycom EagleEye enclosure system wall mount

Product: **Polycom Eagle Eye** or approved comparable product.

21) Video Conferencing Codec (ALTERNATE)
- 1280 x 720 resolution
- Max bandwidth 6 Mbps
- 4-way Multipoint
- HD H.264 Content

Product: **Polycom HDX 9004** or approved comparable product.

22) One Channel Receiver w/ Network & Digital Interface System (ALTERNATE)
- Belt pack Transmitter **SW70-T**
- Advanced Lavaliere Microphone **SWTVT50-TA4**
- 2.4 GHz Extension Antenna Kit **SQASS-EXT**
- **SW-70H Series Charger/Mic Clip SWC70CL-1**

Product: **Sabine SW-71-R** or approved comparable product.

23) Two Channel Receiver w/ Network & Digital Interface System (ALTERNATE)
Handheld Microphone **SW70-H13**
2.4 GHz Extension Antenna Kit SQASS-EXT
SW-70H Series Charger/Mic Clip **SWC70CL-1**

Product: **Sabine SW-72-R** or approved comparable product.

24) Lectern microphone
- 18” gooseneck electret condenser microphone
- Frequency Response: 50Hz to 17kHz
- Cardioid cartridge
- Shock mount, flange mount, windscreen
- Mute switch and LED

Product: **Shure MX418S/C** w/shock mount or approved comparable product.

25) Wall Mounted Program Loudspeakers
- 4 ½” ICT transducer
- 9.47” x 6.1” x 6.38” system
- 90 Hz – 25 kHz ±3dB
- 100 watts program power handling
- 90 degree conical dispersion
- Grille finish to match room wall covering.
- Provide Omni-mount 50 series wall mount

Product: **Tannoy Di5** or approved comparable product.

26) Custom Multi- Gang AV plates
- Plate connections to match or exceed “TA” signal flow drawings

Product: **Whirlwind Custom** or approved comparable product.

27) Ceiling Mounted Digital Document Camera
- Progressive scan 1/3” CCD, RGB
- Native XGA signal output (1024 x 768) and DVI video output
- 30 frames/second
- Provide Ceiling Tile Bridge w/trim ring

Product: **Wolfvision EYE-12** or approved comparable product.

28) Cable, connectors, receptacles, plates, terminations, and miscellaneous hardware required to install a complete and working system as specified.
40 SEAT CLASSROOM (107)

1) Ceiling Installed Microphone
   - Omnidirectional flush-mount boundary microphone
   - 20Hz to 20kHz Frequency Range
   - 25mV/Pa (-32dBV) sensitivity
   - 78dB A-weighted signal/noise ratio
   - XLR phantom power adapter

   Product: **AKG C 562 CM** or approved comparable product.

2) DSP Speaker Processor
   - 6 Mono, balanced/unbalanced mic/line inputs
   - 4 Mono, balanced/unbalanced mic/line outputs
   - RS232 controllable

   Product: **Extron DMP 64** or approved comparable product.

3) RGBH Twisted Pair Transmitter
   - Transmits video and audio proprietary analog signals to Extron MTP 15HD A
   - One (1) RGBH Video Input
   - One (1) Stereo unbalanced audio input through a single 3.5 mm mini stereo jack
   - Decora wallplate

   Product: **Extron MTP T 15HD A D** or approved comparable product.

4) RGBH Twisted Pair Receiver
   - Receives video and audio proprietary analog signals from Extron MTP T 15HD A D
   - One (1) RGBH Video Output
   - One (1) Stereo unbalanced audio output through 3.5 mm direct insertion captive screw connector, 5 pole
   - 1RU

   Product: **Extron MTP RL 15HD A** or approved comparable product.

5) HDMI Twisted Pair Transmitter
   - Transmits video and audio proprietary analog signals to Extron HDMI 201 AD Rx
   - One (1) HDMI Input
   - One (1) Stereo unbalanced audio input through a pair of female RCA jacks
   - Decora wallplate

   Product: **Extron HDMI 201 AD Tx** or approved comparable product.

6) HDMI Twisted Pair Receiver
   - Receives video and audio proprietary analog signals from Extron HDMI 201 AD Tx
   - One (1) HDMI Output
   - One (1) Stereo unbalanced audio output through a pair of female RCA jacks
   - Decora wallplate

   Product: **Extron HDMI 201 AD Rx** or approved comparable product.
7) S-Video Twisted Pair Transmitter
- Transmits video and audio proprietary analog signals to Extron MTP R SVA
- One (1) S-Video Input
- One (1) Stereo unbalanced audio input through a pair of female RCA jacks
- Decora wallplate

Product: Extron MTP T SVA AAP or approved comparable product.

8) S-Video Twisted Pair Receiver
- Receives video and audio proprietary analog signals from Extron HDMI 201 AD Tx
- One (1) S-Video Output
- One (1) Stereo unbalanced audio output through a pair of female RCA jacks
- 1RU, ¼ Rack Width

Product: Extron MTP R SVA or approved comparable product.

9) HD Television Tuner
- XM Ready
- Triple IR Code Sets
- 200 Station Preset Memory
- Dual Analog Audio Outputs
- Provide optional rack kit (2RU)

Product: Contemporary Research 232-ATSC+ or approved comparable product.

10) Remote Control System w/Programming
- Provide expansion cards as needed
- Netlinx Studio PC software
- AMX PSN 4.4 power supply
- AMX NXD-500i Wall-mounted touch panel interface
- Ethernet cables as needed for NXD-500i
- AMX CB-TP5i Wall-mounting wallbox for NXD-500i
- AMX CB-TP5ib Back cover for CB-TP5i
- AMX RK5 Rack Mount kit for NXD-500i

Product: AMX Netlinx NI-3100 or approved comparable product.

11) Dual Channel Audio Amplifier
- 80W at 8-ohms per channel
- 20Hz-20kHz at 1 watt +/- 0.25dB
- 100dBA-weighted signal to noise ratio
- 1RU

Product: Extron XPA 2004 or approved comparable product.

12) Surface-Mountable Enclosure for Cables and AC Power Outlet
- Low profile with tilt-up lid
- Flush-mountable
- Include Architectural Adapter Plates (AAP) as needed
Product: Extron Cable Cubby or approved comparable product.

13) 10X3 Digital/Analog Video/Stereo Audio Matrix Switcher
   - 10X3 Digital/Analog Video I/O
   - Video Inputs: Two (2) composite on BNC, two (2) S-Video on Mini-DIN, two (2) RGBHV on 15-pin HD, two (2) DVI-I
   - Video Outputs: Two (2) simultaneous RGBHV on 15-pin HD female connectors, one (1) DVI-I.
   - 600MHz (-3dB) Bandwidth, Fully Loaded
   - RS-232 control
   - 2 RU

Product: Extron DVS-510 or approved comparable product.

14) Custom Lectern
   - Quote/Item Number MDP3036EA

Product: KSI Custom or approved comparable product.

15) Interactive Annotation & Digitizer Tablet
   - Serves as PC Monitor
   - Lectern Mount Brackets
   - 19” Diagonal Interactive Screen
   - WXGA
   - Battery-free, tethered pen w/built-in holder
   - Control Panel and Annotation Software

Product: Hitachi, T19WX or approved comparable products

16) 52” Half-Height Equipment Rack
   - 36 3/4” useable rack space, 18 RU
   - 40 7/8” overall height; 20” overall depth; 22” overall width
   - Provide security screws
   - Provide quiet exhaust fan top 4”
   - Provide RSH series rack mount kits as needed
   - Provide rack mount UPS to support a minimum of 30 min. backup time.
   - Provide Furman PI-Pro DMC power distribution
   - Provide ERK Castor Base

Product: Middle Atlantic ERK-2120 or approved comparable product.

17) DLP Data/Video Projector w/Ceiling Mount
   - 1280 x 800 native resolution
   - 4000 ANSI lumens
   - 16:10 Aspect Ratio
   - Up to 2200:1 contrast ratio
   - RS-232 Controllable
   - 1:1.15x manual zoom lens with 1:1.5~1.7 throw ratio
• Provide Surge X Flat Pack surge protector and power conditioner
• One (1) RGB input (15-pin; BNC; DVI-D w/HDCP)
• Two (2) Video Inputs (Composite; S-Video; Component)
• Provide ceiling mount with vibration isolation
• Secure with security screw, steel cable and padlocks on the mount

Product: Sharp PG-D40W3D or approved comparable product w/mount.

18) DVD / VHS Player/Recorder
• DVD recording and playback
• ATSC built in tuner
• Provide Middle Atlantic RSH series rack mount

Product: Panasonic DMR-EZ47VK or approved comparable product.

19) Lectern microphone
• 18” gooseneck electret condenser microphone
• Frequency Response: 50Hz to 17kHz
• Cardioid cartridge
• Shock mount, flange mount, windscreen
• Mute switch and LED

Product: Shure MX418S/C w/shock mount or approved comparable product.

20) Wall Mounted Program Loudspeakers
• 4 ½” ICT transducer
• 9.47” x 6.1” x 6.38” system
• 90 Hz – 25 kHz ±3dB
• 100 watts program power handling
• 90 degree conical dispersion
• Grille finish to match room wall covering.
• Provide Omni-mount 50 series wall mount

Product: Tannoy DiS or approved comparable product.

21) Custom Multi- Gang AV plates
• Plate connections to match or exceed “TA” signal flow drawings

Product: Whirlwind Custom or approved comparable product.

22) Ceiling Mounted Digital Document Camera
• Progressive scan 1/3” CCD, RGB
• Native XGA signal output (1024 x 768)
• 30 frames/second
• Provide Ceiling Tile Bridge w/trim ring

Product: Wolfvision EYE-12 or approved comparable product.

23) Cable, connectors, receptacles, plates, terminations, and miscellaneous hardware required to install a complete and working system as specified.
20 SEAT SEMINAR (123, 124, 428)

1) DSP Speaker Processor
   - 6 Mono, balanced/unbalanced mic/line inputs
   - 4 Mono, balanced/unbalanced mic/line outputs
   - RS232 controllable

   Product: Extron DMP 64 or approved comparable product.

2) HD Television Tuner
   - XM Ready
   - Triple IR Code Sets
   - 200 Station Preset Memory
   - Dual Analog Audio Outputs
   - Provide optional rack kit (2RU)

   Product: Contemporary Research 232-ATSC+ or approved comparable product.

3) Remote Control System w/Programming
   - Provide expansion cards as needed
   - Netinx Studio PC software
   - AMX PSN 4.4 power supply
   - AMX NXD-500i Wall-mounted touch panel interface
   - Ethernet cables as needed for NXD-500i
   - AMX CB-TP5i Wall-mounting wallbox for NXD-500i
   - AMX CB-TP5ib Back cover for CB-TP5i
   - AMX RK5 Rack Mount kit for NXD-500i

   Product: AMX Netinx NI-3100 or approved comparable product.

4) Dual Channel Audio Amplifier
   - 80W at 8-ohms per channel
   - 20Hz-20kHz at 1 watt +/- 0.25dB
   - 100dB/weighted signal to noise ratio
   - 1RU

   Product: Extron XPA 2004 or approved comparable product.

5) 10X3 Digital/Analog Video/Stereo Audio Matrix Switcher
   - 10X3 Digital/Analog Video I/O
   - Video Inputs: Two (2) composite on BNC, two (2) S-Video on Mini-DIN, two (2) RGBHV on 15-pin HD, two (2) DVI-I
   - Video Outputs: Two (2) simultaneous RGBHV on 15-pin HD female connectors, one (1) DVI-I.
   - 600MHz (-3dB) Bandwidth, Fully Loaded
   - RS-232 control
   - 2 RU

   Product: Extron DVS-510 or approved comparable product.
6) RGBH Twisted Pair Transmitter
   • Transmits video and audio proprietary analog signals to Extron MTP 15HD A
   • One (1) RGBH Video Input
   • One (1) Stereo unbalanced audio input through a single 3.5 mm mini stereo jack
   • Decora wallplate

   Product: Extron MTP T 15HD A D or approved comparable product.

7) RGBH Twisted Pair Receiver
   • Receives video and audio proprietary analog signals from Extron MTP T 15HD A D
   • One (1) RGBH Video Output
   • One (1) Stereo unbalanced audio output through 3.5 mm direct insertion captive screw connector, 5 pole
   • 1RU

   Product: Extron MTP RL 15HD A or approved comparable product.

8) HDMI Twisted Pair Transmitter
   • Transmits video and audio proprietary analog signals to Extron HDMI 201 AD Rx
   • One (1) HDMI Input
   • One (1) Stereo unbalanced audio input through a pair of female RCA jacks
   • Decora wallplate

   Product: Extron HDMI 201 AD Tx or approved comparable product.

9) HDMI Twisted Pair Receiver
   • Receives video and audio proprietary analog signals from Extron HDMI 201 AD Tx
   • One (1) HDMI Output
   • One (1) Stereo unbalanced audio output through a pair of female RCA jacks
   • Decora wallplate

   Product: Extron HDMI 201 AD Rx or approved comparable product.

10) 52"H Laminated Rack
    • 20 RU
    • 52" overall height; 18" depth; 20.4" overall width
    • Provide security screws and locking castered base
    • Provide quiet exhaust fan top 4"
    • Provide Middle Atlantic PD-915R rack-mount distribution
    • Provide Middle Atlantic U2MS rack shelf
    • Provide Middle Atlantic U3 rack shelf
    • Provide Middle Atlantic VTF1 vented panel
    • Provide rack mount UPS to support a minimum of 30 min. backup time.

    Product: Middle Atlantic ERK-2725 or approved comparable product.

11) DLP Data/Video Projector w/Ceiling Mount
    • 1280 x 800 native resolution
    • 4000 ANSI lumens
16:10 Aspect Ratio
Up to 2200:1 contrast ratio
RS-232 Controllable
1:1.15x manual zoom lens with 1:1.5~1.7 throw ratio
Provide Surge X Flat Pack surge protector and power conditioner
One (1) RGB input (15-pin; BNC; DVI-D w/HDCP)
Two (2) Video Inputs (Composite; S-Video; Component)
Provide ceiling mount with vibration isolation
Secure with security screw, steel cable and padlocks on the mount

Product: Sharp PG-D40W3D or approved comparable product w/mount.

12) DVD / VHS Player/Recorder
   • DVD recording and playback
   • ATSC built in tuner
   • Provide Middle Atlantic RSH series rack mount

Product: Panasonic DMR-EZ47VK or approved comparable product.

13) Wall Mounted Program Loudspeakers
   • 4 ½" ICT transducer
   • 9.47" x 6.1" x 6.38” system
   • 90 Hz – 25 kHz ±3dB
   • 100 watts program power handling
   • 90 degree conical dispersion
   • Grille finish to match room wall covering.
   • Provide Omni-mount 50 series wall mount

Product: Tannoy Di5 or approved comparable product.

14) Custom Multi- Gang AV plates
   • Plate connections to match or exceed “TA” signal flow drawings

Product: Whirlwind Custom or approved comparable product.

15) Ceiling Mounted Digital Document Camera
   • Progressive scan 1/3” CCD, RGB
   • Native XGA signal output (1024 x 768)
   • 30 frames/second
   • Provide Ceiling Tile Bridge w/trim ring

Product: Wolfvision EXE-12 or approved comparable product.

16) Cable, connectors, receptacles, plates, terminations, and miscellaneous hardware required to install a complete and working system as specified.
WRITING LAB (314, 317, 318)

1) DSP Speaker Processor
   - Omnidirectional flush-mount boundary microphone
   - 20Hz to 20kHz Frequency Range
   - 25mV/Pa (-32dBV) sensitivity
   - 78dB A-weighted signal/noise ratio
   - XLR phantom power adapter

   Product: AKG C 562 CM or approved comparable product.

2) DSP Speaker Processor
   - 6 Mono, balanced/unbalanced mic/line inputs
   - 4 Mono, balanced/unbalanced mic/line outputs
   - RS232 controllable

   Product: Extron DMP 64 or approved comparable product.

3) HD Television Tuner
   - XM Ready
   - Triple IR Code Sets
   - 200 Station Preset Memory
   - Dual Analog Audio Outputs
   - Provide optional rack kit (2RU)

   Product: Contemporary Research 232-ATSC+ or approved comparable product.

4) Remote Control System w/Programming
   - Provide expansion cards as needed
   - Netlinx Studio PC software
   - AMX PSN 4.4 power supply
   - AMX NXD-500i Wall-mounted touch panel interface
   - Ethernet cables as needed for NXD-500i
   - AMX CB-TP5i Wall-mounting wallbox for NXD-500i
   - AMX CB-TP5ib Back cover for CB-TP5i
   - AMX RK5 Rack Mount kit for NXD-500i

   Product: AMX Netlinx NI-3100 or approved comparable product.

5) Dual Channel Audio Amplifier
   - 80W at 8-ohms per channel
   - 20Hz-20kHz at 1 watt +/- 0.25dB
   - 100dB-A-weighted signal to noise ratio
   - 1RU

   Product: Extron XPA 2004 or approved comparable product.

6) Surface-Mountable Enclosure for Cables and AC Power Outlet
   - Low profile with tilt-up lid
7) 10X3 Digital/Analog Video/Stereo Audio Matrix Switcher
   - 10X3 Digital/Analog Video I/O
   - Video Inputs: Two (2) composite on BNC, two (2) S-Video on Mini-DIN, two (2) RGBHV on 15-pin HD, two (2) DVI-I
   - Video Outputs: Two (2) simultaneous RGBHV on 15-pin HD female connectors, one (1) DVI-I
   - 600MHz (-3dB) Bandwidth, Fully Loaded
   - RS-232 control
   - 2 RU

   Product: Extron Cable Cubby or approved comparable product.

8) HDMI Twisted Pair Receiver
   - Receives video and audio proprietary analog signals from Extron HDMI 201 AD Tx
   - One (1) HDMI Output
   - One (1) Stereo unbalanced audio output through a pair of female RCA jacks
   - Decora wallplate

   Product: Extron HDMI 201 AD Rx or approved comparable product.
   HDMI 201 IS THE BOX VERSION

9) HDMI Twisted Pair Transmitter
   - Transmits video and audio proprietary analog signals to Extron HDMI 201 AD Rx
   - One (1) HDMI Input
   - One (1) Stereo unbalanced audio input through a pair of female RCA jacks
   - Decora wallplate

   Product: Extron HDMI 201 AD Tx or approved comparable product.

10) Custom Lectern
    - Quote/Item Number MDP3036EA

    Product: KSI Custom or approved comparable product.

11) Interactive Annotation & Digitizer Tablet
    - Serves as PC Monitor
    - Lectern Mount Brackets
    - 19" Diagonal Interactive Screen
    - WXGA
    - Battery-free, tethered pen w/built-in holder
    - Control Panel and Annotation Software

    Product: Hitachi, T19WX or approved comparable products

12) DLP Data/Video Projector w/Ceiling Mount
1280 x 800 native resolution
4000 ANSI lumens
16:10 Aspect Ratio
Up to 2200:1 contrast ratio
RS-232 Controllable
1:1.15x manual zoom lens with 1:1.5~1.7 throw ratio
Provide Surge X Flat Pack surge protector and power conditioner
One (1) RGB input (15-pin; BNC; DVI-D w/HDCP)
Two (2) Video Inputs (Composite; S-Video; Component)
Provide ceiling mount with vibration isolation
Secure with security screw, steel cable and padlocks on the mount

Product: Sharp PG-D40W3D or approved comparable product w/mount.

13) DVD / VHS Player/Recorder
   • DVD recording and playback
   • ATSC built in tuner
   • Provide Middle Atlantic RSH series rack mount

Product: Panasonic DMR-EZ47VK or approved comparable product.

14) Lectern microphone
   • 18” gooseneck electret condenser microphone
   • Frequency Response: 50Hz to 17kHz
   • Cardioid cartridge
   • Shock mount, flange mount, windscreen
   • Mute switch and LED

Product: Shure MX418S/C w/shock mount or approved comparable product.

15) Wall Mounted Program Loudspeakers
   • 4 ½” ICT transducer
   • 9.47” x 6.1” x 6.38” system
   • 90 Hz – 25 kHz ±3dB
   • 100 watts programme power handling
   • 90 degree conical dispersion
   • Grille finish to match room wall covering.
   • Provide Omnimount 50 series wall mount

Product: Tannoy Di5 or approved comparable product.

16) Custom Multi- Gang AV plates
   • Plate connections to match or exceed “TA” signal flow drawings

Product: Whirlwind Custom or approved comparable product.

17) Ceiling Mounted Digital Document Camera
   • Progressive scan 1/3” CCD, RGB
   • Native XGA signal output (1024 x 768)
30 frames/second
• Provide Ceiling Tile Bridge w/trim ring

Product: **Wolfvision EYE-12** or approved comparable product.

18) Cable, connectors, receptacles, plates, terminations, and miscellaneous hardware required to install a complete and working system as specified.
HUMANITIES STUDY ROOM (212)

1) 52" LCD Display
   - 1920 x 1080 resolution
   - 2000:1 contrast ratio
   - 89 degree viewing angle
   - Provide Surge X Flat Pack surge protector and power conditioner
   - 16:9 aspect ratio
   - Secure with security screw, steel cable and padlocks on the mount

   Product: NEC LCD5220-2-AV or approved comparable product.

2) DVD / VHS Player/Recorder
   - DVD recording and playback
   - ATSC built in tuner
   - Provide Middle Atlantic RSH series rack mount

   Product: Panasonic DMR-EZ47VK or approved comparable product.

3) Custom Multi- Gang AV plates
   - Plate connections to match or exceed “TA” signal flow drawings

   Product: Whirlwind Custom or approved comparable product.

4) Cable, connectors, receptacles, plates, terminations, and miscellaneous hardware required to install a complete and working system as specified.
HUMANITIES CONFERENCE ROOM (216, 428)

1) DSP Speaker Processor
   - 6 Mono, balanced/unbalanced mic/line inputs
   - 4 Mono, balanced/unbalanced mic/line outputs
   - RS232 controllable

   Product: **Extron DMP 64** or approved comparable product.

2) HD Television Tuner
   - XM Ready
   - Triple IR Code Sets
   - 200 Station Preset Memory
   - Dual Analog Audio Outputs
   - Provide optional rack kit (2RU)

   Product: **Contemporary Research 232-ATSC+** or approved comparable product.

3) Remote Control System w/Programming
   - Provide expansion cards as needed
   - **Netlix Studio** PC software
   - AMX PSN 4.4 power supply
   - AMX NXD-500i Wall-mounted touch panel interface
   - Ethernet cables as needed for NXD-500i
   - AMX CB-TP5i Wall-mounting wallbox for NXD-500i
   - AMX CB-TP5ib Back cover for CB-TP5i
   - AMX RK5 Rack Mount kit for NXD-500i

   Product: **AMX Netlix NI-4100** or approved comparable product.

4) Dual Channel Audio Amplifier
   - 80W at 8-ohms per channel
   - 20Hz-20kHz at 1 watt +/- 0.25dB
   - 100dB A-weighted signal to noise ratio
   - 1RU

   Product: **Extron XPA 2004** or approved comparable product.

5) 10X3 Digital/Analog Video/Stereo Audio Matrix Switcher
   - 10X3 Digital/Analog Video I/O
   - Video Inputs: Two (2) composite on BNC, two (2) S-Video on Mini-DIN, two (2) RGBHV on 15-pin HD, two (2) DVI-I
   - Video Outputs: Two (2) simultaneous RGBHV on 15-pin HD female connectors, one (1) DVI-I.
   - 600MHz (-3dB) Bandwidth, Fully Loaded
   - RS-232 control
   - 2 RU

   Product: **Extron DVS-510** or approved comparable product.
6) Universal Computer-Video Interface
   - 300MHz RGB bandwidth
   - RS232 controllable
   - 1 analog RGBHV 15 Pin HD inputs
   - 1 analog RGBHV output
   - "Y" Type Cable
   - Provide **Extron AAP 102 Two-Gang Mounting Frame**

   **Product:** **Extron RGB 580xi SI AAF** or approved comparable product.

7) Surface-Mountable Enclosure for Cables and AC Power Outlet
   - Low profile with tilt-up lid
   - Flush-mountable
   - Include Architectural Adapter Plates (AAP) as needed

   **Product:** **Extron Cable Cubby** or approved comparable product.

8) Universal Twisted Pair Transmitter
   - Transmits HDMI, VGA, S-video/composite/component video, audio, and RS-232
   - One (1) RGBHV, RGBS, RGsB, s-video/component/composite video input
   - One (1) S-video input
   - One (1) composite video input
   - One (1) HDMI input
   - Two (2) Stereo unbalanced RCA audio inputs

   **Product:** **Extron MTP/HDMI U T A D** or approved comparable product.

9) Universal Twisted Pair Receiver
   - Receives video and audio proprietary analog signals from **Extron MTP/HDMI U T A D**
   - One (1) RGBHV, RGBS, Component video, S-Video, or Composite Video output
   - One (1) HDMI output
   - Two (2) Mono, balanced/unbalanced analog audio outputs with 3.5 mm captive screw connectors

   **Product:** **Extron MTP / HDMI U R** or approved comparable product.

10) 52"H Laminated Rack
    - 20 RU
    - 52" overall height; 18” depth; 20.4” overall width
    - Provide security screws and locking castered base
    - Provide quiet exhaust fan top 4”
    - Provide **Middle Atlantic PD-915R** rack-mount distribution
    - Provide Middle Atlantic U2MS rack shelf
    - Provide Middle Atlantic U3 rack shelf
    - Provide Middle Atlantic VTF1 vented panel
    - Provide rack mount UPS to support a minimum of 30 min. backup time.

    **Product:** **Middle Atlantic ERK-2725** or approved comparable product.
11) DLP Data/Video Projector w/Ceiling Mount
   - 1280 x 800 native resolution
   - 4000 ANSI lumens
   - 16:10 Aspect Ratio
   - Up to 2200:1 contrast ratio
   - RS-232 Controllable
   - 1:1.15x manual zoom lens with 1:1.5~1.7 throw ratio
   - Provide **Surge X Flat Pack** surge protector and power conditioner
   - One (1) RGB input (15-pin; BNC; DVI-D w/HDCP)
   - Two (2) Video Inputs (Composite; S-Video; Component)
   - Provide ceiling mount with vibration isolation
   - Secure with security screw, steel cable and padlocks on the mount

   Product: **Sharp PG-D40W3D** or approved comparable product w/mount.

12) DVD / VHS Player/Recorder
   - DVD recording and playback
   - ATSC built in tuner
   - Provide Middle Atlantic RSH series rack mount

   Product: **Panasonic DMR-EZ47VK** or approved comparable product.

13) Wall Mounted Program Loudspeakers
   - 4.5" ICT transducer
   - 9.47" x 6.1" x 6.38" system
   - 90 Hz – 25 kHz ±3dB
   - 100 watts programme power handling
   - 90 degree conical dispersion
   - Grille finish to match room wall covering.
   - Provide Omnimount 50 series wall mount

   Product: **Tannoy Di5** or approved comparable product.

14) Custom Multi- Gang AV plates
   - Plate connections to match or exceed “TA” signal flow drawings

   Product: **Whirlwind Custom** or approved comparable product.

15) Digital Document Camera
   - 1/3" 3-CCD Progressive Scan
   - 1024 x 768 resolution
   - 20 frames per second
   - 1034 line (H); 799 lines (V)
   - VGA Input/Output
   - RS232 Controllable

   Product: **Samsung SDP-860** or approved comparable product.
16) Cable, connectors, receptacles, plates, terminations, and miscellaneous hardware required to install a complete and working system as specified
COSTUME RECITATION (205B)

1) Remote Control System w/Programming
   - Provide expansion cards as needed
   - Netlinux Studio PC software
   - AMX PSN 4.4 power supply
   - AMX NXD-500i Wall-mounted touch panel interface
   - Ethernet cables as needed for NXD-500i
   - AMX CB-TP5i Wall-mounting wallbox for NXD-500i
   - AMX CB-TP5ib Back cover for CB-TP5i
   - AMX RK5 Rack Mount kit for NXD-500i

   Product: AMX Netlinux NI-3100 or approved comparable product.

2) Computer Interface with SI AAP Extension
   - One (1) analog VGA-QXGA RGBHV, RGBS female input
   - One (1) analog RGBHV female output
   - Five (5) female BNC output

   Product: Extron RGB 580xi SI AAP or approved comparable product.

3) 52"H Laminated Rack
   - 8 RU
   - 52" racking height; 18" depth
   - Provide security screws and RSH series mounts as needed
   - Provide rack mount UPS to support a minimum of 30 min. backup time.

   Product: Middle Atlantic BRK 8 or approved comparable product.

4) 52" LCD Display
   - 1920 x 1080 resolution
   - 5000:1 contrast ratio
   - 176 degree viewing angle
   - Provide Surge X Flat Pack surge protector and power conditioner
   - 16:9 aspect ratio

   Product: Sharp PN-E521 or approved comparable product.

5) DVD / VHS Player/Recorder
   - DVD recording and playback
   - ATSC built in tuner
   - Provide Middle Atlantic RSH series rack mount

   Product: Panasonic DMR-EZ47VK or approved comparable product.

6) Digital Document Camera
   - 1/3" 3-CCD Progressive Scan
   - 1024 x 768 resolution
   - 20 frames per second
   - 1034 line (H); 799 lines (V)

   AUDIO VISUAL SYSTEMS
   27 41 00-56
- VGA Input/Output
- RS232 Controllable

Product: **Samsung SDP-860** or approved comparable product.

7) Custom Multi- Gang AV plates
   - Plate connections to match or exceed "TA" signal flow drawings

   Product: **Whirlwind Custom** or approved comparable product.

8) Cable, connectors, receptacles, plates, terminations, and miscellaneous hardware required to install a complete and working system as specified
THEATRE CONFERENCE (319)

1) DSP Speaker Processor
   • 10 balanced mic/line inputs
   • 6 balanced mic/line outputs
   • RS232 controllable

   Product: Biamp Nexia CS or approved comparable product.

2) HD Television Tuner
   • XM Ready
   • Triple IR Code Sets
   • 200 Station Preset Memory
   • Dual Analog Audio Outputs
   • Provide optional rack kit (2RU)

   Product: Contemporary Research 232-ATSC+ or approved comparable product.

3) Remote Control System w/Programming
   • Provide expansion cards as needed
   • Netlinx Studio PC software
   • AMX PSN 4.4 power supply
   • AMX NXD-500i Wall-mounted touch panel interface
   • Ethernet cables as needed for NXD-500i
   • AMX CB-TP5i Wall-mounting wallbox for NXD-500i
   • AMX CB-TP5ib Back cover for CB-TP5i
   • AMX RK5 Rack Mount kit for NXD-500i

   Product: AMX Netlinx NI-3100 or approved comparable product.

4) 35"H Laminated Rack
   • 20 RU
   • 29.5" overall height; 18" depth; 20.4" overall width
   • Provide security screws and locking castered base
   • Provide quiet exhaust fan top 4"
   • Provide Middle Atlantic PD-915R rack-mount distribution
   • Provide Middle Atlantic U2MS rack shelf
   • Provide Middle Atlantic U3 rack shelf
   • Provide Middle Atlantic VTF1 vented panel
   • Provide rack mount UPS to support a minimum of 30 min. backup time.

   Product: Middle Atlantic BRK20 or approved comparable product.

5) 52" LCD Display
   • 1920 x 1080 resolution
   • 5000:1 contrast ratio
   • 176 degree viewing angle
   • Provide Surge X Flat Pack surge protector and power conditioner
• 16:9 aspect ratio

Product: **Sharp PN-E521** or approved comparable product.

6) DVD / VHS Player/Recorder
   • DVD recording and playback
   • ATSC built in tuner
   • Provide Middle Atlantic RSH series rack mount

Product: **Panasonic DMR-EZ47VK** or approved comparable product.

7) Digital Compact Disc Recorder with MP3 Playback
   • 24 bit A/D, D/A Converters
   • Unbalanced I/O, SPDIF digital I/O
   • Sample rate conversion
   • Adjustable gain on digital I/O
   • MP3 playback
   • 2RU

Product: **Tascam CD-RW901** or approved comparable product.

8) Custom Multi- Gang AV plates
   • Plate connections to match or exceed "TA" signal flow drawings

Product: **Whirlwind Custom** or approved comparable product.

9) Digital Document Camera
   • 1/3" 3-CCD Progressive Scan
   • 1024 x 768 resolution
   • 20 frames per second
   • 1034 line (H); 799 lines (V)
   • VGA Input/Output
   • RS232 Controllable

Product: **Samsung SDP-860** or approved comparable product.

10) Cable, connectors, receptacles, plates, terminations, and miscellaneous hardware required to install a complete and working system as specified.
THEATRE REHEARSAL STUDIO (102)

1) Rack Mount Audio Mixer
   - Eight (8) channel input
   - Balanced Outputs
   - 48 V Phantom Power front panel
   - Mic/line inputs

   Product: Ashly MX-508 or approved comparable product.

2) DSP Speaker Processor
   - 10 balanced mic/line inputs
   - 6 balanced mic/line outputs
   - RS232 controllable

   Product: Biamp Nexia CS or approved comparable product.

3) HD Television Tuner
   - XM Ready
   - Triple IR Code Sets
   - 200 Station Preset Memory
   - Dual Analog Audio Outputs
   - Provide optional rack kit (2RU)

   Product: Contemporary Research 232-ATSC+ or approved comparable product.

4) Remote Control System w/Programming
   - Provide expansion cards as needed
   - Netlinx Studio PC software
   - AMX PSN 4.4 power supply
   - AMX NXD-500i Wall-mounted touch panel interface
   - Ethernet cables as needed for NXD-500i
   - AMX CB-TP5i Wall-mounting wallbox for NXD-500i
   - AMX CB-TP5ib Back cover for CB-TP5i
   - AMX RK5 Rack Mount kit for NXD-500i

   Product: AMX Netlinx NI-3100 or approved comparable product.

5) Data/Video Projector w/ Mount
   - 6500 ANSI lumens
   - WXGA 1366 x 800 native resolution
   - 2500:1 contrast ratio
   - Provide mount
   - Provide Surge X Flat Pack surge protector and power conditioner
   - Inputs: Composite video, 15-pin D-Sub, S-Video, Component Video
   - RS-232 controllable
   - Provide Christie Lens: Standard Zoom 121-107109-01

   Product: Christie Digital LW650 or approved comparable product.
6) Eight-Channel Audio Amplifier
   - 200W at 8-ohm per channel
   - 20Hz-20kHz at 1 watt +/- 0.5dB
   - 100dB unweighted signal to noise ratio
   - 2RU

   Product: Crown CTs 8200 or approved comparable product.

7) Two Output VGA Distribution Amplifier
   - Accepts VGA and RGBHV video signal on 15-pin HD female connector
   - Outputs 2 simultaneous VGA or RGBHV video signals on four (4) 15-pin HD female connectors
   - Rack mountable (with 1RU Rack Shelf), 1RU, ½ rack width

   Product: Extron P/2 DA2xi with rack shelf or approved comparable product.

8) High Resolution Computer-To-Video Scan Converter
   - Accepts VGA and RGBHV video signal on 15-pin HD female connector
   - Outputs RGBHV, Composite, and Component on Six (6) female BNC, and S-Video on Mini-DIN
   - Rack mountable (with 1RU Rack Shelf), 1RU, ½ rack width

   Product: Extron VSC 500 with rack shelf or approved comparable product.

9) HDMI Twisted Pair Receiver
   - Receives video and audio proprietary analog signals from Extron HDMI 201 AD Tx
   - One (1) HDMI Output
   - One (1) Stereo unbalanced audio output through a pair of female RCA jacks
   - Decora wallplate

   Product: Extron HDMI 201 AD Rx or approved comparable product.
   HDMI 201 IS THE BOX VERSION

10) HDMI Twisted Pair Transmitter
    - Transmits video and audio proprietary analog signals to Extron HDMI 201 AD Rx
    - One (1) HDMI Input
    - One (1) Stereo unbalanced audio input through a pair of female RCA jacks
    - Decora wallplate

    Product: Extron HDMI 201 AD Tx or approved comparable product.

11) 10X3 Digital/Analog Video/Stereo Audio Matrix Switcher
    - 10X3 Digital/Analog Video I/O
    - Video Inputs: Two (2) composite on BNC, two (2) S-Video on Mini-DIN, two (2) RGBHV on 15-pin HD, two (2) DVI-I
    - Video Outputs: Two (2) simultaneous RGBHV on 15-pin HD female connectors, one (1) DVI-I.
    - 600MHz (-3dB) Bandwidth, Fully Loaded
    - RS-232 control
    - 2 RU
Product: Extron DVS-510 or approved comparable product.

12) 74" Equipment Rack
- 70 1/8" useable rack space, 40 RU
- 74 1/8" overall height; 25" overall depth; 22" overall width
- Provide security screws
- Provide quiet exhaust fan top 4"
- Provide RSH series rack mount kits as needed
- Provide rack mount UPS to support a minimum of 30 min. backup time.
- Provide Furman PL-Pro D II power distribution
  Product: Middle Atlantic ERK-4025 or approved comparable product.

13) Portable Projector with Folding Screen
- 1280 x 800 native resolution
- 3000 ANSI lumens
- 16:10 Aspect Ratio
- Up to 2200:1 contrast ratio
- RS-232 Controllable
- Provide Surge X Flat Pack surge protector and power conditioner
- DVI-D Digital/RGB/HDCP, Component Video, S-video, and RCA pin-type video inputs
- RCA Stereo audio inputs
- Provide Draper UFS Portable Projections Screen, in 16:10 format 95" diagonal size
  Product: Sharp PG-F325W or approved comparable product.

14) Surround Sound Processor
- 5.1 Surround sound compatible
- Stereo (two-channel) compatible
- Eight (8) analog audio inputs, Eight (8) digital audio inputs
- Built-in 8-channel 24-bit Digital-To-Analog Converter
- RS-232 controllable
  Product: Lexicon DC-2 or approved comparable product.

15) DVD Recorder
- DVD and Mini-DV Cassette recordable
- Three (3) component video outputs
- Three (3) analog stereo audio outputs
- Two (2) S-Video output terminals
- One (1) S-Video/Video/Stereo Audio input
- RS-232 controllable
  Product: JVC SR-DVM700 or approved comparable product.

16) Portable Public Address System
- Two (2) JBL EON 510 Self-powered 10" Two-Way Loudspeakers with built-in 3-channel mixer without phantom power capability
- JBL EON10-SYS-3G transport bag with telescoping tow handle and wheels
• Provide dynamic speech microphones as needed

Product: JBL Eon 500 series or approved comparable product.

17) 17” Preview Monitor
• One (1) RGB Analog video input
• 600:1 Contrast Ratio
• 1280 x 1024 resolution

Product: NEC LCD1770NXM-2 or approved comparable product.

18) DVD / VHS Player/Recorder
• DVD recording and playback
• ATSC built in tuner
• Provide Middle Atlantic RSH series rack mount

Product: Panasonic DMR-EZ47VK or approved comparable product.

19) Two Channel Receiver w/ Network & Digital Interface System
• Belt pack Transmitter SW70-T (x2)
• Handheld Microphone SW70-H13
• Advanced Lavalier Microphone SWTVC50-TA4
• 2.4 GHz Extension Antenna Kit SQASS-EXT
• SW-70H Series Charger/Mic Clip SWC70CL-1

Product: Sabine SW-72-R or approved comparable product.

20) HD Pan/Tilt/Zoom Video Camera
• 10x optical, 40x with digital zoom
• 8 to 70 degrees horizontal angle of view
• RS-232 controllable
• HD-SDI, Analog Component HD video outputs, VBS, Y/C SD video outputs

Product: Sony EVI-HD1 or approved comparable product.

21) Wall Mounted Program Loudspeakers
• 4 ½” ICT transducer
• 9.47” x 6.1” x 6.38” system
• 90 Hz – 25 kHz ±3dB
• 100 watts programme power handling
• 90 degree conical dispersion
• Grille finish to match room wall covering.
• Provide Omnimount 50 series wall mount

Product: Tannoy Di5 or approved comparable product.

22) Wall Mounted Loudspeaker
• 6” point source dual concentric driver
• 90Hz to 22kHz ± 3 dB response
• 200 watts programme power handling
- 90 degree conical dispersion

Product: Tannoy V6 or approved comparable product.

23) Digital Compact Disc Recorder with MP3 Playback
   - 24 bit A/D, D/A Converters
   - Unbalanced I/O, S/PDIF digital I/O
   - Sample rate conversion
   - Adjustable gain on digital I/O
   - MP3 playback
   - 2RU

Product: Tascam CD-RW901 or approved comparable product.

24) Twisted-Pair Multi-Media Transmitter Interface
   - CAT 5 transfer of video, power, IR and control
   - EZ Camera Interface Module
   - Y Gain Control

Product: Vaddio-Quick Connect Pro or approved comparable product.

25) Custom Multi- Gang AV plates
   - Plate connections to match or exceed “TA” signal flow drawings

Product: Whirlwind Custom or approved comparable product.

26) Cable, connectors, receptacles, plates, terminations, and miscellaneous hardware required to install a complete and working system as specified.
ACTING DIRECTING STUDIO (105)

1) Rack Mount Audio Mixer
   - Eight (8) channel input
   - Balanced Outputs
   - 48 V Phantom Power front panel
   - Mic/line inputs

   Product: Ashly MX-508 or approved comparable product.

2) DSP Speaker Processor
   - 10 balanced mic/line inputs
   - 6 balanced mic/line outputs
   - RS232 controllable

   Product: Biamp Nexia CS or approved comparable product.

3) HD Television Tuner
   - XM Ready
   - Triple IR Code Sets
   - 200 Station Preset Memory
   - Dual Analog Audio Outputs
   - Provide optional rack kit (2RU)

   Product: Contemporary Research 232-ATSC+ or approved comparable product.

4) Remote Control System w/Programming
   - Provide expansion cards as needed
   - Netlinx Studio PC software
   - AMX PSN 4.4 power supply
   - AMX NXD-500i Wall-mounted touch panel interface
   - Ethernet cables as needed for NXD-500i
   - AMX CB-TP5i Wall-mounting wallbox for NXD-500i
   - AMX CB-TP5ib Back cover for CB-TP5i
   - AMX RK5 Rack Mount kit for NXD-500i

   Product: AMX Netlinx NI-3100 or approved comparable product.

5) 10X3 Digital/Analog Video/Stereo Audio Matrix Switcher
   - 10X3 Digital/Analog Video I/O
   - Video Inputs: Two (2) composite on BNC, two (2) S-Video on Mini-DIN, two (2) RGBHV on 15-pin HD, two (2) DVI-I
   - Video Outputs: Two (2) simultaneous RGBHV on 15-pin HD female connectors, one (1) DVI-I.
   - 600MHz (-3dB) Bandwidth, Fully Loaded
   - RS-232 control
   - 2 RU
Product: **Extron DVS-510** or approved comparable product.

6) Two Output VGA Distribution Amplifier
   - Accepts VGA and RGBHV video signal on 15-pin HD female connector
   - Outputs 2 simultaneous VGA or RGBHV video signals on four (4) 15-pin HD female connectors
   - Rack mountable (with 1RU Rack Shelf), 1RU, ½ rack width

Product: **Extron P/2 DA2xi** with rack shelf or approved comparable product.

7) Eight-Channel Audio Amplifier
   - 200W at 8-ohm per channel
   - 20Hz-20kHz at 1 watt +/- 0.5dB
   - 100dB unweighted signal to noise ratio
   - 2RU

Product: **Crown CTs 8200** or approved comparable product.

8) HDMI Twisted Pair Receiver
   - Receives video and audio proprietary analog signals from Extron HDMI 201 AD Tx
   - One (1) HDMI Output
   - One (1) Stereo unbalanced audio output through a pair of female RCA jacks
   - Decora wallplate

Product: **Extron HDMI 201 AD Rx** or approved comparable product.

9) HDMI Twisted Pair Transmitter
   - Transmits video and audio proprietary analog signals to Extron HDMI 201 AD Rx
   - One (1) HDMI Input
   - One (1) Stereo unbalanced audio input through a pair of female RCA jacks
   - Decora wallplate

Product: **Extron HDMI 201 AD Tx** or approved comparable product.

10) High Resolution Computer-To-Video Scan Converter
    - Accepts VGA and RGBHV video signal on 15-pin HD female connector
    - Outputs RGBHV, Composite, and Component on Six (6) female BNC, and S-Video on Mini-DIN
    - Rack mountable (with 1RU Rack Shelf), 1RU, ½ rack width

Product: **Extron VSC 500** with rack shelf or approved comparable product.

11) DVD Recorder
    - DVD and Mini-DV Cassette recordable
    - Three (3) component video outputs
    - Three (3) analog stereo audio outputs
    - Two (2) S-Video output terminals
    - One (1) S-Video/Video/Stereo Audio input
    - RS-232 controllable
Product: JVC SR-DVM700 or approved comparable product.

12) Portable Public Address System
   - Two (2) JBL EON 510 Self-powered 10" Two-Way Loudspeakers with built-in 3-channel mixer without phantom power capability
   - JBL EON10-SYS-3G transport bag with telescoping tow handle and wheels
   - Provide dynamic speech microphones as needed
   
   Product: JBL Eon 500 series or approved comparable product.

13) 17" Preview Monitor
   - One (1) RGB Analog video input
   - 600:1 Contrast Ratio
   - 1280 x 1024 resolution
   
   Product: NEC LCD1770NXM-2 or approved comparable product.

14) Surround Sound Processor
   - 5.1 Surround sound compatible
   - Stereo (two-channel) compatible
   - Eight (8) analog audio inputs, Eight (8) digital audio inputs
   - Built-in 8-channel 24-bit Digital-To-Analog Converter
   - RS-232 controllable
   
   Product: Lexicon DC-2 or approved comparable product.

15) 41" Half-Height Equipment Rack
   - 36 3/4" useable rack space, 18 RU
   - 40 7/8" overall height; 20" overall depth; 22" overall width
   - Provide security screws
   - Provide quiet exhaust fan top 4"
   - Provide RSH series rack mount kits as needed
   - Provide Furman PL-Pro DMC power distribution
   - Provide ERK Castor Base
   
   Product: Middle Atlantic ERK-2120 or approved comparable product.

16) DLP Data/Video Projector w/Ceiling Mount
   - 1280 x 800 native resolution
   - 4000 ANSI lumens
   - 16:10 Aspect Ratio
   - Up to 2200:1 contrast ratio
   - RS-232 Controllable
   - 1:1.15x manual zoom lens with 1:1.5~1.7 throw ratio
   - Provide Surge X Flat Pack surge protector and power conditioner
   - One (1) RGB input (15-pin; BNC; DVI-D w/HDCP)
   - Two (2) Video Inputs (Composite; S-Video; Component)
• Provide ceiling mount with vibration isolation
• Secure with security screw, steel cable and padlocks on the mount

Product: **Sharp PG-D40W3D** or approved comparable product w/mount.

17) Portable Projector with Folding Screen
• 1280 x 800 native resolution
• 3000 ANSI lumens
• 16:10 Aspect Ratio
• Up to 2200:1 contrast ratio
• RS-232 Controllable
• Provide **Surge X Flat Pack** surge protector and power conditioner
• DVI-D Digital/RGB/HDCP, Component Video, S-video, and RCA pin-type video inputs
• RCA Stereo audio inputs
• Provide **Draper UFS Portable Projections Screen**, in 16:10 format 95” diagonal size

Product: **Sharp PG-F325W** or approved comparable product.

18) Surround Sound Processor/Receiver
• DTS-HD Master Audio™, DTS-HD High Resolution Audio™, Dolby® TrueHD,
  Dolby® Digital Plus Decoding
• Component Video Switching
• Digital Inputs
• Composite Video Inputs and Outputs
• Front Panel Auxiliary Inputs

Product: **Onkyo PRSC 886** or approved comparable product.

19) DVD / VHS Player/Recorder
• DVD recording and playback
• ATSC built in tuner
• Provide Middle Atlantic RSH series rack mount

Product: **Panasonic DMR-EZ47VK** or approved comparable product.

20) Two Channel Receiver w/ Network & Digital Interface System
• Advanced Lavalier Microphone **SWT50-TA4**
• Handheld Microphone **SW70-H13**
• 2.4 GHz Extension Antenna Kit **SQASS-EXT**
• SW-70H Series Charger/Mic Clip **SWC70CL-1**

Product: **Sabine SW-72-R** or approved comparable product.

21) Wall Mounted Program Loudspeakers
• 4 ¾” ICT transducer
• 9.47” x 6.1” x 6.38” system
• 90 Hz – 25 kHz ±3dB
• 100 watts programme power handling
• 90 degree conical dispersion

**AUDIO VISUAL SYSTEMS**
27 41 00-68
• Grille finish to match room wall covering.
• Provide Omnimount 50 series wall mount

Product: **Tannoy Di5** or approved comparable product.

22) Wall Mounted Loudspeaker
• 6” point source dual concentric driver
• 90Hz to 22kHz ± 3 dB response
• 200 watts programme power handling
• 90 degree conical dispersion

Product: **Tannoy V6** or approved comparable product.

23) Low Frequency Subwoofer
• 10” PowerDual
• 39Hz to 110Hz ± 3 dB response
• 400 watts programme power handling

Product: **Tannoy VS 10BP** assembly or approved comparable product.

24) Digital Compact Disc Recorder with MP3 Playback
• 24 bit A/D, D/A Converters
• Unbalanced I/O, S/PDIF digital I/O
• Sample rate conversion
• Adjustable gain on digital I/O
• MP3 playback
• 2RU

Product: **Tascam CD-RW901** or approved comparable product.

25) Custom Multi- Gang AV plates
• Plate connections to match or exceed “TA” signal flow drawings

Product: **Whirlwind Custom** or approved comparable product.

26) Cable, connectors, receptacles, plates, terminations, and miscellaneous hardware required to install a complete and working system as specified.
TECHNICAL DESIGN LAB (201)

1) HD Television Tuner
   - XM Ready
   - Triple IR Code Sets
   - 200 Station Preset Memory
   - Dual Analog Audio Outputs
   - Provide optional rack kit (2RU)

   Product: **Contemporary Research 232-ATSC+** or approved comparable product.

2) Remote Control System w/Programming
   - Provide expansion cards as needed
   - Netlink Studio PC software
   - AMX PSN 4.4 power supply
   - AMX NXD-500i Wall-mounted touch panel interface
   - Ethernet cables as needed for NXD-500i
   - AMX CB-TP5i Wall-mounting wallbox for NXD-500i
   - AMX CB-TP5ib Back cover for CB-TP5i
   - AMX RK5 Rack Mount kit for NXD-500i

   Product: **AMX Netlink NI-3100** or approved comparable product.

3) Dual Channel Audio Amplifier
   - 80W at 8-ohms per channel
   - 20Hz-20kHz at 1 watt +/- 0.25dB
   - 100dBA-weighted signal to noise ratio
   - 1RU

   Product: **Extron XPA 2004** or approved comparable product.

4) Custom Lectern
   - Quote/Item Number MDP3036EA

   Product: **KSI Custom or approved comparable product.**

5) 10X3 Digital/Analog Video/Stereo Audio Matrix Switcher
   - 10X3 Digital/Analog Video I/O
   - Video Inputs: Two (2) composite on BNC, two (2) S-Video on Mini-DIN, two (2) RGBHV on 15-pin HD, two (2) DVI-I
   - Video Outputs: Two (2) simultaneous RGBHV on 15-pin HD female connectors, one (1) DVI-I.
   - 600MHz (-3dB) Bandwidth, Fully Loaded
   - RS-232 control
   - 2 RU

   Product: **Extron DVS-510** or approved comparable product.

6) HDMI Twisted Pair Receiver
   - Receives video and audio proprietary analog signals from Extron HDMI 201 AD Tx

   **AUDIO VISUAL SYSTEMS**
   27 41 00-70
• One (1) HDMI Output
• One (1) Stereo unbalanced audio output through a pair of female RCA jacks
• Decora wallplate

Product: Extron HDMI 201 AD Rx or approved comparable product.
HDMI 201 IS THE BOX VERSION

7) HDMI Twisted Pair Transmitter
• Transmits video and audio proprietary analog signals to Extron HDMI 201 AD Rx
• One (1) HDMI Input
• One (1) Stereo unbalanced audio input through a pair of female RCA jacks
• Decora wallplate

Product: Extron HDMI 201 AD Tx or approved comparable product.

8) DLP Data/Video Projector w/Ceiling Mount
• 1280 x 800 native resolution
• 4000 ANSI lumens
• 16:10 Aspect Ratio
• Up to 2200:1 contrast ratio
• RS-232 Controllable
• 1:1.15x manual zoom lens with 1:1.5~1.7 throw ratio
• Provide Surge X Flat Pack surge protector and power conditioner
• One (1) RGB input (15-pin; BNC; DVI-D w/HDCP)
• Two (2) Video Inputs (Composite; S-Video; Component)
• Provide ceiling mount with vibration isolation
• Secure with security screw, steel cable and padlocks on the mount

Product: Sharp PG-D40W3D or approved comparable product w/mount.

9) DVD / VHS Player/Recorder
• DVD recording and playback
• ATSC built in tuner
• Provide Middle Atlantic RSH series rack mount

Product: Panasonic DMR-EZ47VK or approved comparable product.

10) Wall Mounted Loudspeaker
• 6” point source dual concentric driver
• 90Hz to 22kHz ± 3 dB response
• 200 watts programme power handling
• 90 degree conical dispersion

Product: Tannoy V6 or approved comparable product.

11) Custom Multi- Gang AV plates
• Plate connections to match or exceed “TA” signal flow drawings

Product: Whirlwind Custom or approved comparable product.
12) Cable, connectors, receptacles, plates, terminations, and miscellaneous hardware required to install a complete and working system as specified.
TECHNICAL AREA SUPPORT (B009)

1) HD Television Tuner
   • XM Ready
   • Triple IR Code Sets
   • 200 Station Preset Memory
   • Dual Analog Audio Outputs
   • Provide optional rack kit (2RU)

   Product: Contemporary Research 232-ATSC or approved comparable product.

2) Remote Control System w/Programming
   • Provide expansion cards as needed
   • Netlinx Studio PC software
   • AMX PSN 4.4 power supply
   • AMX NXD-500i Wall-mounted touch panel interface
   • Ethernet cables as needed for NXD-500i
   • AMX CB-TP5i Wall-mounting wallbox for NXD-500i
   • AMX CB-TP5ib Back cover for CB-TP5i
   • AMX RK5 Rack Mount kit for NXD-500i

   Product: AMX Netlinx NI-3100 or approved comparable product.

3) Dual Channel Audio Amplifier
   • 80W at 8-ohms per channel
   • 20Hz-20kHz at 1 watt +/- 0.25dB
   • 100dB-A-weighted signal to noise ratio
   • 1RU

   Product: Extron XPA 2004 or approved comparable product.

4) Component to RGBHV Converter
   • Converts Analog component video to RGBS or RGBHV
   • Inputs: Component video on BNCs
   • Outputs: RGBHV, RGBS or RGsB on BNCs
   • User selectable color space format
   • Rack mountable, 1RU, ¼ rack width

   Product: Extron CVC300 with rack shelf or approved comparable product.

5) Media Presentation Switcher
   • 8x6 RGB/VGA with audio
   • 6x6 S-video/composite video with audio switcher
   • 14x6 stereo matrix
   • 350 MHz (-3dB) RGB bandwidth
   • RS-232 controllable
   • 2RU

   Product: Extron MPX 866A or approved comparable product
6) DLP Data/Video Projector w/Ceiling Mount
   • 1280 x 800 native resolution
   • 4000 ANSI lumens
   • 16:10 Aspect Ratio
   • Up to 2200:1 contrast ratio
   • RS-232 Controllable
   • 1:1.15x manual zoom lens with 1:1.5~1.7 throw ratio
   • Provide Surge X Flat Pack surge protector and power conditioner
   • One (1) RGB input (15-pin; BNC; DVI-D w/HDCP)
   • Two (2) Video Inputs (Composite; S-Video; Component)
   • Provide ceiling mount with vibration isolation
   • Secure with security screw, steel cable and padlocks on the mount

   Product: Sharp PG-D40W3D or approved comparable product w/mount.

7) DVD / VHS Player/Recorder
   • DVD recording and playback
   • ATSC built-in tuner
   • Provide Middle Atlantic RSH series rack mount

   Product: Panasonic DMR-EZ47VK or approved comparable product.

8) Wall Mounted Loudspeaker
   • 6" point source dual concentric driver
   • 90Hz to 22kHz ± 3 dB response
   • 200 watts programme power handling
   • 90 degree conical dispersion

   Product: Tannoy V6 or approved comparable product.

9) Custom Multi- Gang AV plates
   • Plate connections to match or exceed “TA” signal flow drawings

   Product: Whirlwind Custom or approved comparable product.

10) Cable, connectors, receptacles, plates, terminations, and miscellaneous hardware required to install a complete and working system as specified.
LOBBY AND CIRCULATION AREAS (1C03, 2C02, 2C03, 3C02, 3C03, 3L01, 4C02)

1) 32” LCD Display
   - 1366 x 768 resolution
   - 4000:1 contrast ratio
   - 170 degree viewing angle
   - 16:9 aspect ratio
   - Includes embedded PC with media player
   - Secure with security screw, steel cable and padlocks on the mount
   - Provide Surge X Flat Pack surge protector and power conditioner
   - Two (2) displays located in 1C03, one located near the entrance to PT House 103 and the other near the entrance to Black Box 127, are to be mounted horizontally. The remainder of these displays are to be mounted vertically.

Product: Samsung 320MXn-2
ACCEPTABLE MANUFACTURERS

360 SYSTEMS
AKG
ALTINEX
AMX
ANCHOR
AUDIOTECHNICA
AVID
BELDEN
BIAMP
BLONDER TONGUE
CHIEF
CHRISTIE DIGITAL
CHYRON
CLEARONE
CONTEMPORARY RESEARCH
CRESTRON
CROWN
DELL
DENON
DESISTI
DRAPER
ECHOLAB
ELECTROVOICE
ELMO
EXTRON ELECTRONICS
FUJITSU
HP
IBM
JBL
JVC
KSI
LEITCH
LEXICON
LIBERTY CABLE
MACKIE
MARSHALL ELECTRONICS
MARSHALL FURNITURE
MIDDLE ATLANTIC
NEC
PANASONIC
PANELCRAFTERS
PARKERVISION
PHILIPS
PIONEER
POLK AUDIO
PROXIMA
QSC
RCI

RDL
SABINE
SACHTLER
SAMSUNG
SENNHEISER
SHARP ELECTRONICS
SHURE
SMART
SONIC FOUNDRY
SONY ELECTRONICS
TANNOY
VIDEOTEK
WHIRLWIND
WILLIAMS
WINSTED
WOHLER
WOLFVISION
YAMAHA
SECTION IV
UMBC PERFORMING ARTS AND HUMANITIES FACILITY – PHASE 1
BID # BC-20744-Q

CONTRACT DOCUMENTS

DRAWINGS

TQ – 0.01 through TQ – 6.00 – Listed on the following page

Note: Drawings dated June 10, 2011 are on file at CMC Repro for Bidders reference.
DIVISION 1 – “GENERAL REQUIREMENTS”

The Sections listed below are included on the following pages:

01 10 00 Summary
01 30 00 Administrative Requirements
01 32 16 Construction Progress Schedule
01 60 00 Product Requirements
01 70 00 Execution requirements
01 74 19 Construction waste Management and Disposal
01 77 00 Closeout Procedures
01 78 00 Closeout Submittals
01 79 00 Demonstration and Training
01 86 36 Ambient Noise Levels

Note: Available at CMC Repro for Bidders reference.
SECTION 01 10 00 - SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:
   1. Work covered by the Contract Documents.
   2. Type of the Contract.
   3. Work under other contracts.
   4. Owner occupancy.
   5. Contractor use of site and premises.
   7. Owner-furnished products.
   8. Specification formats and conventions.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

A. The Project consists of:
   1. The Performing Arts + Humanities Facility is to provide a new facility for the University of Maryland Baltimore County's Arts and Humanities departments.
   2. The PAHF project includes the construction of a new approximately 90,000 GSF performing arts, classroom and office building to house the departments of English, Theatre, Arts Management, Dresher Center for the Humanities and the Linehan Artists Scholar Program.
   3. An upgrade and refurbishment of the Central Plant is included in this Phase of Work.
   4. The new PAHF will contain a variety of public performance spaces including a 275 seat prosenium theatre, a 100 seat black box theatre; departmental office spaces for faculty and staff; Classrooms, labs, seminar rooms and student lounges are also included in the program.
   5. This Project is Phase 1 of a 2-phase overall project.
   6. This project has been designed to achieve the LEED-NC Silver (minimum 33 points) rating, as defined in the LEED(r) Green Building Rating System(tm) for New Construction and Major Renovations, Version 2.2, October 2005.

B. Facility User: University of Maryland Baltimore County, 1000 Hilltop Circle, Baltimore, MD 21250.

C. Project Manager: University of Maryland, Baltimore, 220 Arch Street, Office Lvl 03 (14th Fl), Baltimore, MD 21201; tel. 410-706-2851.

D. Architect: Grimm and Parker Architects; 11720 Beltsville Drive, Suite 600, Calverton, MD 20705; tel. 301-595-1000; with William Rawn Associates Architects, Inc.; 10 Post Office Square, Suite 1010, Boston, MA 02109; tel. 617-423-3470.

E. Construction Manager: Whiting-Turner Contracting Company, 300 East Joppa Road, Towson, MD 21286; tel. 410-821-1100.

1.3 TYPE OF CONTRACT

A. Project will be constructed under a CM-at-risk single prime contract.
1.4 WORK UNDER OTHER CONTRACTS

A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract. Coordinate the Work of this Contract with work performed under separate contracts.

1.5 OWNER OCCUPANCY

A. Full Owner Occupancy: Owner will occupy surrounding existing building during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's operations.
   1. Maintain access to existing walkways, corridors and other adjacent occupied or used facilities; do not close or obstruct walkways, corridors or other occupied or used facilities without written permission from Owner and authorities having jurisdiction.
   2. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.

B. Partial Owner Occupancy: Owner reserves the right to occupy and to place and install equipment in completed areas of the Project before Substantial Completion, provided such occupancy does not interfere with completion of the work. Such placement of equipment and partial occupancy shall not constitute acceptance of the total Work.
   1. Owner will prepare a Certificate of Partial Substantial Completion for each specific portion of the Work to be occupied before Owner occupancy.
   2. Obtain a Certificate of Occupancy from authorities having jurisdiction before Owner occupancy.
   3. Before partial Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will provide, operate, and maintain mechanical and electrical systems serving occupied portions of building.
   4. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of building.

C. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.

D. Schedule the Work to accommodate Owner occupancy.

1.6 CONTRACTOR USE OF SITE AND PREMISES

A. Construction Operations:
   1. Limited to areas noted on Drawings; do not disturb portions of the site beyond the areas noted.

B. Provide access to and from site as required by law and by Owner:
   1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
   2. Do not obstruct roadways, sidewalks, or other public ways without permit.
   3. Existing building spaces may not be used for storage.
C. The Construction Manager shall include planned disruptions to University utilities in the agendas for project meetings, but in no case shall the Construction Manager proceed with any work that could disrupt services to the University without a fourteen calendar day written notice to the University and a written agreement by the University to the proposed outage or disruption period.

D. Noise Control And No-Work Days:
1. Hold construction and demolition noise to a minimum consistent with the type of work underway. Eliminate unnecessary noise.
2. Do not perform noisy construction operations that would disturb exam periods or other activities indicated below. Designated exam periods are from "study day" through Commencement Day.
   a. Fall Term 2010; December 15 through December 21.
   b. Spring Term 2011; May 16 through May 20.
   c. Fall Term 2011; December 15 through December 21.
   d. Spring Term 2012; May 14 through May 18.
3. Due to activities on campus, no work is to be performed on the following days:
   a. Fall Commencement Days:
      2) December 21 and 22, 2011.
   b. Spring Commencement Days:
      1) May 20 and May 23, 2011.
      2) May 18 and May 21, 2012.
4. Information concerning the University's Academic Calendar can be found at http://www.umbc.edu/registrar/calendars/.

E. Existing Underground Utilities:
1. Street Utilities Management Plan:
   a. Prior to the mobilization, provide a street utilities management plan that endures that 24 hour, 7-day a week operation of all utilities serving the campus.
   b. Where interruption of site utilities for longer than 2 hours will be necessary for the Work. The CM shall identify the outage and proposed duration for review and approval, 1 month in advance.
2. Notify all public and private utility companies as required by law in advance of construction so that existing underground utilities may be located and marked by the appropriate agency or utility; provide services of private utility locating service to locate and mark UMBC-owned underground utilities.
3. Prior to start of any excavation or underground work, the Construction Manager shall confirm all underground utility locations and top and bottom elevations at all new connection points and at all crossing points or points of potential conflict with new work. Confirmation is made by vacuum excavation test pits or other method approved by the University.
4. The Construction Manager shall immediately notify the Owner and appropriate authorities when encountering an unknown utility line, and await a decision as to how to dispose of the same.
5. When an existing utility line must be cut and plugged or capped, moved, or relocated, or has become damaged, Construction Manager shall notify Owner, Architect and utility company involved, and assure protection, support, or moving of utilities to adjust them to new work.
6. Construction Manager shall be responsible for damage caused to existing, active utilities under work of this Contract, including resultant damages or injuries to persons or properties.
1.7 SEXUAL HARASSMENT

A. The University is committed to maintaining a working and learning environment in which students, faculty and staff can develop intellectually, professionally, personally and socially. Such an environment must be free of intimidation, fear, coercion and reprisal. The University prohibits sexual harassment.

B. The Construction Manager will be responsible to inform his and his Trade Contractors and subcontractors work force than any act of sexual harassment will not be tolerated and such acts will be severely dealt with.

C. Sexual harassment includes but not limited to the following:
   1. Lewd remarks, suggestive sounds as whistling, wolf calls.
   2. Unwanted physical contact.
   3. Persistent and offensive sexual jokes and comments.

1.8 COORDINATION

A. Web-based Project Management Software:
   1. RFIs, project submittals and contractor change proposals will be submitted, managed and responded to through a web-based solution for construction administration.
   2. The Owner and Architect have selected attolist.com as the web-based solution for this Project. Refer to www.attolist.com for additional information on the service.
   3. Attolist will provide a training session via web conference.
   4. Additional PDF mark-up software may be required for electronic processing.
   5. The service fees to be included within Base Bid.
   6. Attolist Contact: Scott Balderman; office tel. 720-921-8800; cell tel. 720-982-3525; scott@attolist.com

1.9 OWNER-FURNISHED PRODUCTS

A. Owner will furnish products indicated; the Work includes providing support systems to receive Owner-furnished products and equipment.
   1. Owner will arrange for and deliver shop drawings, product data and samples to Construction Manager.
   2. Owner will arrange and pay for delivery of Owner-furnished items according to Construction Manager's schedule.
   3. After delivery, Owner will inspect delivered items for damage; Construction Manager to be present for and assist in Owner's inspection.
   4. If Owner-furnished items are damaged, defective or missing, Owner will arrange for replacement.
   5. Owner will arrange for manufacturer's field services and for delivery of manufacturer's warranties to Contractor.
   6. Owner will furnish Construction Manager the earliest possible delivery date for Owner-furnished products. Using Owner-furnished earliest possible delivery dates, Construction Manager shall designate delivery dates of Owner-furnished items in Contractor's construction schedule.
   7. Construction Manager is responsible for protecting Owner-furnished items from damage during storage and handling, including damage from exposure to the elements.
   8. If Owner-furnished items are damaged as a result of construction operations, Construction Manager shall repair or replace them.

B. Unless otherwise indicated, Owner to provide and install non-fixed furniture and equipment under a separate contract.

1.10 SPECIFICATION FORMATS AND CONVENTIONS

A. Specification Format: The Specifications are organized into Divisions and Sections using the 49-division format and CSI/CSC's "MasterFormat" numbering system.
1. Section Identification: The Specifications use Section numbers and titles to help cross-referencing in the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete because all available Section numbers are not used. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of Sections in the Contract Documents.

2. Division I: Sections in Division I govern the execution of the Work of all Sections in the Specifications.

B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.

2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.
   a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION
SECTION 01 30 00 - ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Requests for interpretation (RFI)
B. Subcontract list
C. Staff names and assignments
D. Preconstruction meeting.
E. Progress meetings.
F. Submittals for review, information, and project closeout.
G. Number of copies of submittals.
H. Submittal procedures.
I. Contractor's use of Architect's CAD files.
J. Delegated design.
K. Contractor's review.
L. Architect's action.
M. Daily construction reports.

1.02 REQUESTS FOR INTERPRETATION (RFIs)

A. Procedure: Immediately on discovery of the need for interpretation of the Contract Documents, and if not possible to request interpretation at Project meeting, prepare and submit an RFI in the form specified.
   1. RFIs shall originate with Contractor. RFIs submitted by entities other than Contractor will be returned with no response.
   2. Coordinate and submit RFIs (to Architect and Owner) in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
   3. Frivolous RFIs: The Contractor will compensate the Owner for the Architect's time and expenses to process RFIs resulting from the Contractor's lack of studying and comparing the Contract Documents, coordinating their own Work, or repeating previous RFIs.
   4. A pattern of submitting frivolous or repeating RFIs may result in a claim by the Owner against the Contractor for delay of the Project.
   5. Submit RFIs through the Web-based Project Management Software, in PDF format.

B. Content of the RFI: Include a detailed, legible description of item needing interpretation and the following:
   1. Project name.
   2. Date.
   3. Name of Contractor.
   5. RFI number, numbered sequentially.
   6. Specification Section number and title and related paragraphs, as appropriate.
   7. Drawing number and detail references, as appropriate.
   8. Field dimensions and conditions, as appropriate.
9. Contractor's suggested solution(s). If Contractor's solution(s) impact the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.

10. Contractor's signature.

11. Attachments: Include drawings, descriptions, measurements, photos, Product Data, Shop Drawings, and other information necessary to fully describe items needing interpretation.
   a. Supplementary drawings prepared by Contractor shall include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments.

C. Format of RFIs: Content provided by CSI Form 13.2.A, as provided at end of this Section.
   1. Software-Generated RFIs:
      a. Preferred format.
      b. Software-generated form with substantially the same content as indicated above.
      c. Photographs shall be electronic files in JPG format.
      d. Attachments shall be electronic files in Adobe Acrobat PDF format.

   2. Hard-Copy RFIs:
      a. Permitted under conditions where electronic RFI is not feasible.
      b. Identify each page of attachments with the RFI number and sequential page number.

D. Architect's Action: Architect will review each RFI, determine action required, and respond through the Web-based Project Management Software. Allow seven working days for Architect's response for each RFI. RFIs received after 1:00 p.m. will be considered as received the following working day.
   1. The following RFIs may be returned without action:
      a. Requests for approval of submittals.
      b. Requests for approval of substitutions.
      c. Requests for coordination information already indicated in the Contract Documents.
      d. Requests for adjustments in the Contract Time or the Contract Sum.
      e. Requests for interpretation of Architect's actions on submittals.
      f. Incomplete RFIs or RFIs with numerous errors.
   2. Architect's action may include a request for additional information, in which case Architect's time for response will start again.
   3. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, submit Change Order Request within 10 days of receipt of the RFI response as provided by General Conditions of the Contract.

E. On receipt of Architect's action, immediately distribute the RFI response to affected parties.
   Review response and notify Architect within seven days if Contractor disagrees with response.
   1. Refer to the RFI process diagram following this Section.

F. RFI Log: Prepared and maintained by the Architect within the Web-based Project Management Software; Contractor to maintain a separate RFI log with subcontractors.

1.03 SUBCONTRACT LIST

A. Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Use CSI Form 1.5.A. Include the following information in tabular form:
   1. Name, address, and telephone number of entity performing subcontract or supplying products.
   2. Number and title of related Specification Section(s) covered by subcontract.
   3. Drawing number and detail references, as appropriate, covered by subcontract.
   4. Number of Copies: Submit four copies of subcontractor list, unless otherwise indicated. Architect will return two copies.
a. Mark up and retain one returned copy as a Project Record Document

1.04 STAFF NAMES AND ASSIGNMENTS

A. Submit a list of principal staff assignments, including superintendent and other personnel in attendance at Project site, prior to or coinciding with initial Application for Payment.

B. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers.

C. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.

D. Post copies of list in Project meeting room, in temporary field office, and by each temporary phone.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PRECONSTRUCTION MEETING

A. Architect will schedule a meeting after submission of the Guaranteed Maximum Price.

B. Attendance Required:
   1. Owner.
   3. Construction Manager.
   4. Designated trade contractors, suppliers and others.

C. Agenda:
   1. Distribution of final Guaranteed Maximum Price.
   2. Submission of executed bonds and insurance certificates.
   4. Submission of list of Subcontractors, list of Products, schedule of values, and progress schedule.
   5. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
   7. Phasing.
   8. Critical work sequencing and long-lead items.
   9. Designation of key personnel and their duties.
   10. LEED requirements.
   11. Preparation and maintenance of record documents.
   12. Use of premises and work restrictions; working hours; storage on site.
   13. Responsibilities for temporary facilities and controls, utilities.
   15. IAQ restrictions and plan.
   16. Authority of commissioning agent.

D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

E. Acoustical and Theater Equipment Conference: Schedule a separate preconstruction conference, at a time convenient to the Owner, Construction Manager, Architect, Acoustical Consultant and Theater Consultant. The meeting to be conducted to review responsibilities, concerns and critical issues regarding the installation of acoustic and theater equipment.
1. Attendees: Authorized representatives of Owner, Architect and their consultants, Contractor and their superintendent; major subcontractors, and other concerned parties.
2. Acoustical and Theatrical Equipment Consultants will make presentations regarding acoustic and theater equipment design; and they will be available for questions.
3. Agenda: Discuss items of significance that could affect acoustical and theatrical quality, including the following:
   a. Acoustical design issues.
   b. Theater equipment requirements.
   c. Critical work sequencing.
   d. Designation of responsible personnel.
4. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.02 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the Work at maximum bi-weekly intervals; coordinate dates of meetings with preparation of payment requests.

B. Architect will make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.

C. Attendance Required: Construction Manager's project manager and job superintendent, major trade contractors and suppliers, Owner, Architect, as appropriate to agenda topics for each meeting.

D. Agenda:
   1. Review minutes of previous meetings.
   2. Review of Work progress.
   3. Field observations, problems, and decisions.
   4. Identification of problems which impede planned progress.
   5. Review of submittals schedule and status of submittals.
   6. Review of off-site fabrication and delivery schedules.
   7. Maintenance of progress schedule.
   8. Corrective measures to regain projected schedules.
   9. Planned progress during succeeding work period.
  10. Maintenance of quality and work standards.
  11. Effect of proposed changes on progress schedule and coordination.
  12. Maintenance of Coordination Drawings.
  13. LEED requirements and documentation progress.
  14. Other business relating to Work included, but not limited to:
      a. Interface requirements.
      b. Sequence of operations.
      c. Status of submittals.
      d. Deliveries.
      e. Off-site fabrication.
      f. Access.
      g. Site utilization.
      h. Temporary facilities and controls.
      i. Work hours.
      j. Hazards and risks.
      h. Progress cleaning.
      i. Tests and inspections.
      j. RFI's.
k. Correction of deficient items.

l. Field observations.

E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.03 SUBMITTALS FOR REVIEW

A. When the following are specified in individual sections, submit them for review:
   1. Product data.
   2. Shop drawings.
   3. Samples for selection.
   4. Samples for verification.
   5. LEED submittals and reports.
   6. Data for commissioning.

B. Package these submittals by specification section, except closeout submittals or Work performed by separate trades, in a single delivery to the Architect; failure of the Contractor to package these submittals in a single delivery may cause the Architect to withhold action on submittal until associated submittals required by the particular specification section are received.

C. Submit to Architect and Owner for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.

D. Product data and shop drawings to be submitted and managed through the Web-based Project Management Software.

E. Samples will be reviewed only for aesthetic, color, or finish selection.

D. After review, provide copies for record documents purposes described in Section 01 78 00 - CLOSEOUT SUBMITTALS.

3.04 SUBMITTALS FOR INFORMATION

A. When the following are specified in individual sections, submit them for information:
   1. Design data.
   2. Certificates.
   3. Test reports.
   4. Inspection reports.
   5. Manufacturer's instructions.
   6. Manufacturer's field reports.
   7. Daily construction reports.
   8. Other types indicated.

B. Submit for Architect's knowledge as contract administrator. No action will be taken.

C. Informational submittals to be submitted and managed through the Web-based Project Management Software.

3.05 SUBMITTALS FOR PROJECT CLOSEOUT

A. When the following are specified in individual sections, submit them at project closeout:
   1. Project record documents.
   2. Warranties.
   4. Other types as indicated.
B. Immediately following acceptance of each equipment submittal under Divisions 21 through 36, the equipment manufacturer shall submit the associated O & M submittal; all approved submittals shall be provided in electronic format.

C. Refer to Section 01 35 15 for LEED closeout submittal requirements.

3.06 NUMBER OF COPIES OF SUBMITTALS

A. Documents for Project Closeout: Make one reproduction of submittal originally reviewed. Submit one extra of submittals for information.

B. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect.
   1. After review, produce duplicates.
   2. Retained samples will not be returned to Contractor unless specifically so stated.

3.07 SUBMITTAL PROCEDURES

A. Submittals not requested will not be recognized or processed.

B. Submittals Schedule: Comply with requirements in Division 01 Section "Construction Progress Documentation" for list of submittals and time requirements for scheduled performance of related construction activities.

C. Submittal will be managed and processed electronically using the Web-based Project Management Software, to the greatest extent possible.

D. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
   1. Initial Review: Allow 21 days for initial review of each submittal; duration of time is defined by date received in Architect's office until the day sent from the Architect's office. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
   2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
   3. Resubmittal Review: Allow 15 days for review of each resubmittal; duration of time is defined by date received in Architect's office until the day sent from the Architect's office.
   4. Concurrent Review: Where concurrent review of submittals by Architect's consultants, Owner, or other parties is indicated, allow 21 days for initial review of each submittal; duration of time is defined by date received in consultant's office until the day sent to the Contractor.
      a. All required submittals for items affecting acoustical integrity to be reviewed by Architect's Acoustical Consultant, in addition to others.
      b. All required submittals indicated in Division 3 section.
      c. The following required submittals indicated in Division 4:
         1) Product data, shop drawings, material certificates, mix designs, and cold-weather procedures.
      d. All required submittals indicated in the following Division 5 Sections:
         1) Structural Steel
         2) Steel Joists
         3) Steel Decking
         4) Cold-Formed Metal Framing
5) Metal Stairs
6) Railings and Handrails
7) Metal Fabrications

e. All required submittals indicated in the following Division 8 Section:
1) Door Hardware
2) Curtainwall

f. All required submittals indicated in Division 21 through 28 sections.
g. All required submittals indicated in Division 31 through 33 sections.

5. Color Selection (colors not already specified or scheduled): Architect will select colors within 60 days (to allow time for presentation to Owner and for Owner comments) after all color samples have been submitted including, but not limited to items listed below. The submittal data shall be complete, including shop drawings, product data, and color samples, and all required submittals and materials shall be in compliance with the specifications and be subsequently approved by the Architect. Color samples shall be actual samples of the material and not photographs. If there is a variation in color, shade, texture, or pattern, submit multiple samples to show full range of variation.

a. Interior Items (including but not limited to):
1) Plastic laminate and millwork.
2) Wood door veneer.
3) Ceramic tile.
4) Resilient floor tile.
5) Resilient wall base and accessories.
6) Resinous flooring.
7) Carpet.
8) Acoustical wall panels.
9) Paint.
10) High-performance coatings.
11) Toilet compartments.
12) Signs and cast letters.
13) Casework veneer.

b. Prefinished Exterior Items (including but not limited to):
1) Metal shingles.
2) Copings, perimeter edge systems.
3) Site furnishings and equipment.

E. Submittal Identification: Place a permanent label or title block on each submittal for identification.

1. Indicate name of firm or entity that prepared each submittal on label or title block.
2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Architect.
3. Include the following information on label for processing and recording action taken:
   a. Project name.
   b. Date.
   c. Name and address of Architect.
   d. Name and address of Contractor.
   e. Name and address of subcontractor.
   f. Name and address of supplier.
   g. Name of manufacturer.
   h. Submittal number or other unique identifier, including revision identifier.

1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 06 10 00.01). Resubmittals shall
include an alphabetic suffix after another decimal point (e.g., 06 10 00.01.A).
2) Number and title of appropriate Specification Section.
3) Drawing number and detail references, as appropriate.
4) Location(s) where product is to be installed, as appropriate.
5) Other necessary identification.

F. Deviations: Encircle or otherwise specifically identify deviations from the Contract Documents on submittals.

G. Submittal Requirements for Commissioning:
   1. Normal Submittals:
      a. CxA will review and approve normal submittals applicable to systems being
         commissioned for compliance with commissioning needs, concurrent with Architect's
         and Construction Manager's review.
      b. Process repeated for any resubmissions.
   2. Data for Commissioning: The following information must be included in all submittals of
      commissioned equipment and systems.
      a. Detailed manufacturer's installation and start-up procedures.
      b. Operating, troubleshooting, and maintenance procedures.
      c. Fan and pump curves.
      d. Full warranty information, with responsibilities of Owner to keep warranty in force
         clearly defined.
      e. Installation and checkout materials actually shipped inside equipment and actual field
         checkout sheet forms to be used by factory or field technicians.
   3. CxA will request specific information needed about each piece of commissioned
      equipment or system. Information requested includes, but is not limited to:
      a. Full details of Owner-contracted tests, if any.
      b. Full factory testing reports, if any.
   4. CxA may request additional documentation necessary for commissioning process.
      Requests by CxA may precede, be concurrent with, or follow normal submittals.
   5. Contractor's responsibility for deviations in submittals from requirements of Contract
      Documents is not relieved by CxA's review.

H. Resubmittals:
   1. Resubmit submittals until they are marked "No Exception Taken" or "Note Markings".
   2. Resubmission of items rejected or marked "Revise and Resubmit" will be reviewed one
      time by the Architect at no cost to the Contractor. Should the re-submittal be rejected or
      marked "Revise and Resubmit", the Contractor will reimburse the Owner by credit Change
      Order for all costs to the Owner for additional time spent by the Architect and the
      Architect's consultants to review the second (and subsequent) resubmission.

I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers,
   fabricators, installers, authorities having jurisdiction, and others as necessary for performance of
   construction activities. Show distribution on transmittal forms.

J. Use for Construction: Use only final submittals with mark indicating "No Exceptions Taken" or
   "Note Markings" taken by Architect.
3.08 CONTRACTOR'S USE OF ARCHITECT'S CAD FILES

A. At Contractor's written request, copies of Architect's CAD Drawing files will be provided to Contractor for Contractor's use in connection with Project, subject to the Contractor signing and returning the release form at the end of this Section and making payment.

B. Allow one week for processing, shipping and handling after Architect receives the signed form.

C. Only certain drawings indicated on Agreement included at the end of this Section shall be made available for use as backgrounds for preparation of shop drawings and coordination drawings. No other CAD Drawing files will be made available.

D. All submittals with plan drawings must have the Penetration Control Drawings used as backgrounds or clearly indicated in the submittal.

3.09 DELEGATED DESIGN

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
   1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit three copies of a statement, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
   1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

3.10 CONTRACTOR'S REVIEW

A. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect through the Web-based Project Management Software.

B. Verify:
   1. Field Measurements.
   2. Field Construction Criteria.
   3. Catalog Numbers and Similar Data.
   4. Quantities.

C. Contractor's responsibility regarding errors and omissions in submittals is not relieved by Architect's review of submittals.

D. Contractor's responsibility regarding deviations in submittals from requirements of Contract Documents is not relieved by Architect's review of submittals, unless Architect gives written acceptance of specific deviations as approved by Owner.

E. When work is directly related and involves more than one trade, coordinate submittal with other trades and submit under one cover.
F. After a submittal has been submitted for review, no changes may be made to that Submittal other than changes resulting from review notes made by the Architect unless such changes are clearly identified and circled before being resubmitted. Any failure to comply with this requirement shall nullify and invalidate the Architect's review.

G. Approval Stamp: Stamp each submittal. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents as follows:

THIS IS TO CERTIFY THAT THE SPECIFICATION REQUIREMENTS HAVE BEEN MET AND ALL DIMENSIONS, CONDITIONS, AND QUANTITIES ARE VERIFIED AS SHOWN AND/OR CORRECTED ON THESE DRAWINGS.

SIGNED

3.11 ARCHITECT'S/ACTION

A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.

B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it; except where indicated otherwise. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:

1. NO EXCEPTION TAKEN: The Work covered by the submittal is accepted as specified and the Work may proceed provided it complies with requirements of the Contract Documents.

2. NOTE MARKINGS: The Work covered by the submittal is accepted as noted and the Work may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents.

3. REVISE AND RESUBMIT: Do not proceed with the Work covered by the submittal. Revise or prepare a new submittal according to the notations and requirements of the Contract Documents, and resubmit without delay. Unmarked items may be fabricated if indicated.

4. REJECTED: Architect will list reasons for rejection on the submittal or in the transmittal letter accompanying the submittal. Do not proceed with the Work covered by the submittal. Prepare new submittal according to the notations and requirements of the Contract Documents, and resubmit without delay.

C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

D. Partial submittals are not acceptable, will be considered nonresponsive, and will be returned without review.

E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

3.12 DAILY CONSTRUCTION REPORTS

A. Prepare a daily construction report, recording the following information concerning events at the site:

1. List of Trade Contractors at the site.
2. List of major items of equipment on site.
3. List of construction activities performed (for each trade).
4. Approximate count of personnel at the site for each trade.
5. High and low temperatures, general weather conditions.
6. Accidents and unusual events.
7. Meetings and significant decisions.
8. Stoppages, delays, shortages, losses.
9. Meter readings and similar recordings.
10. Emergency procedures.
11. Orders and requests of governing authorities.
12. Change Orders received, implemented.
13. Services connected, disconnected.
14. Equipment or systems tests and start-ups.
15. Partial Completions, occupancies.

B. Submit duplicate copies to the Owner at weekly intervals.

END OF SECTION
SECTION 01 32 16 - CONSTRUCTION PROGRESS SCHEDULE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Preliminary schedule.

B. Construction progress schedule, with network analysis diagrams and reports.

1.02 SUBMITTALS

A. Within 15 days after the submission of the Guaranteed Maximum Price (GMP), submit preliminary schedule defining planned operations for the first 60 days of Work, with a general outline for remainder of Work. Submission of preliminary schedule may be concurrent with Prescheduling Conference.

B. If preliminary schedule requires revision after review, submit revised schedule within 10 days.

C. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
   1. Include written certification that major contractors have reviewed and accepted proposed schedule.

D. Within 10 days after joint review, submit complete schedule.

E. Submit updated schedule with each Application for Payment.

F. Submit the number of opaque reproductions that Contractor requires, plus two copies which will be retained by Architect.

G. Submit under transmittal letter form specified in Section 01 30 00 - Administrative Requirements.

1.03 QUALITY ASSURANCE

A. Scheduler: Contractor's personnel or specialist Consultant specializing in CPM scheduling with one year minimum experience in scheduling construction work of a complexity comparable to this Project, and having use of computer facilities capable of delivering a detailed graphic printout within 48 hours of request.

B. Prescheduling Conference: Conduct at project site and review methods and procedures related to the Preliminary Construction Schedule and subsequent schedules including, but not limited to, the following:
   1. Review software limitations and content and format for reports.
   2. Identify qualified scheduler.
   3. Discuss constraints, including phasing, area separations, and partial Owner occupancy.
   4. Review delivery dates for Owner-furnished products and equipment.
   5. Review schedule of Owner's separate contracts.
   6. Review procedures and time required for review of submittals and resubmittals.
   7. Review requirements for tests and inspections by independent testing and inspecting agencies.
   8. Review time required for completion and startup procedures; commissioning procedures.
   9. Review and finalize list of construction activities to be included in schedule.
   10. Identify LEED requirements requiring time allowance within schedule including, but not limited to, building flush-out.
   11. Review procedures for updating schedule.
PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PRELIMINARY SCHEDULE

A. Prepare preliminary schedule in the form of a preliminary network diagram.

3.02 CONTENT

A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
   1. Define activities so no activity is longer than 20 days, unless specifically allowed by the Architect.
   2. Include procurement process activities for long lead items and major items requiring a cycle of more than 60 days, as separate activities in schedule; procurement process activities include, but are not limited to, submittals, approvals, purchasing, fabrication and delivery.
   3. Constraints: Include constraints and work restrictions, and indicate how the sequence of work is effected; including but not limited to:
      a. Phasing.
      b. Work by Owner separate contracts.
      c. Owner-furnished products and equipment.
      d. Work restrictions (ie. use of premises, environmental control, uninterruptible services)
   4. Include milestones.

B. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.

C. Provide separate schedule of submittal dates for shop drawings, product data, and samples, owner-furnished products; Products identified under Allowances, and dates reviewed submittals will be required from Architect, within the Web-based Project Management Software. Indicate decision dates for selection of finishes.
   1. 30 days after accepted GMP, the Construction Manager must submit the submittals schedule; the Architect will indicate the reviewing parties, indicating to whom the Construction Manager must send each submittal.
   2. The Construction Manager must produce the a submittal schedule to coordinate the correct timing and sequence of submittals to be reviewed by the Architect and Architect's consultants; every effort must be made to even out the reviews and avoid overloaded time periods, which would create review time frame difficulties.
   3. The Architect shall maintain the submittal log between the Architect and Construction Manager through Web-based Project Management Software.
   4. Contractor to maintain a submittal log with subcontractors.

D. Coordinate content with schedule of values specified in Section 01 20 00; provide cost correlation line (planned and actual costs) at head of schedule. On the cost correlation line, indicate dollar volume of Work performed as of dates used for preparation of payment requests.

E. Provide legend for symbols and abbreviations used.

3.03 NETWORK ANALYSIS

A. Prepare network analysis diagrams and supporting mathematical analyses using the Critical Path Method.
B. Illustrate order and interdependence of activities and sequence of work; how start of a given activity depends on completion of preceding activities, and how completion of the activity may restrain start of subsequent activities.

C. Mathematical Analysis: Tabulate each activity of detailed network diagrams, using calendar dates, and identify for each activity:
1. Preceding and following event numbers.
2. Activity description.
3. Estimated duration of activity, in maximum 15 day intervals.
4. Earliest start date.
5. Earliest finish date.
6. Actual start date.
7. Actual finish date.
8. Latest start date.
9. Latest finish date.
10. Total and free float; float time shall accrue to Owner and to Owner's benefit.
11. Monetary value of activity, keyed to Schedule of Values.
12. Percentage of activity completed.

D. Analysis Program: Capable of compiling monetary value of completed and partially completed activities, accepting revised completion dates, and recomputation of all dates and float.

E. Required Reports:
1. Activity Report: List of all activities sorted by number and then early start date, or actual start date if known.
2. Logic Report: List of preceding and succeeding activities for all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.
3. Total Float Report: List of all activities sorted in ascending order of total float.
4. Earnings Report: Compilation of Contractor's total earnings from commencement of the Work until most recent Application for Payment.

3.04 REVIEW AND EVALUATION OF SCHEDULE

A. Participate in joint review and evaluation of schedule with Architect at each submittal.

B. Evaluate project status to determine work behind schedule and work ahead of schedule.

C. After review, revise as necessary as result of review, and resubmit within 10 days.

3.05 FLOAT TIME

A. Float is not for the exclusive benefit of either Contractor or Owner.

B. Manage work according to early start dates, by commencing activities on the early start date (calculated by the latest approved Contract Schedule) or earlier if possible, unless constrained by a bona fide resource limitation.

C. Owner may reserve and apportion float time according to the needs of the Project.

D. Actual or projected Owner-caused delays that do not exceed available float time shall not have any effect upon Contractor's adherence to specified time constraints and shall not be a basis for any time extension.

E. Contractor acknowledges the following:
1. Activity delays shall not automatically result in adjustment of specified time constraints.
2. A Change Order or other Owner action or inaction may not affect existing critical activities or cause non-critical activities to become critical.
3. A Change Order or delay may result in only absorbing a part of the available total float that may exist within an activity chain of the network, thereby not causing any effect on specified time constraints.

F. Pursuant to the above float sharing requirements, use of float released by elimination of float suppression techniques such as preferential sequencing, special lead/lag logic restraints, unreasonably extended activity durations, or imposed dates shall be distributed by Owner to the benefit of Owner and Contractor.

G. In the event of the Contractor wishes to complete the Work earlier than the time specified therefore:
1. Continue to calculate float based on the Work completion date specified as of Contract execution, by maintaining the specified Work completion date as a "finish-no-later-than" constraint.
2. The completion time for the Work shall be amended by Owner's acceptance of or acquiescence to Contractor's proposed earlier completion date.
3. Contractor shall not, under any circumstances, receive additional compensation for indirect, general, administrative or other forms of overhead costs, for the period between the time of earlier completion proposed by Contractor and the completion time for the Work specified as of NTP.

3.06 UPDATING SCHEDULE

A. Maintain schedules to record actual start and finish dates of completed activities.

B. Indicate progress of each activity to date of revision, with projected completion date of each activity.

C. Annotate diagrams to graphically depict current status of Work.

D. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.

E. Indicate changes required to maintain Date of Substantial Completion.

F. Submit reports required to support recommended changes.

G. Provide narrative report to define problem areas, anticipated delays, and impact on the schedule. Report corrective action taken or proposed and its effect including the effects of changes on schedules of separate contractors.

3.07 DISTRIBUTION OF SCHEDULE

A. Distribute copies of updated schedules to Contractor's project site file, to Subcontractors, suppliers, Architect, Owner, and other concerned parties.

B. Instruct recipients to promptly report, in writing, problems anticipated by projections shown in schedules.

END OF SECTION
SECTION 01 60 00 - PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. General product requirements.
B. LEED-related product requirements.
C. Re-use of existing products.
D. Transportation, handling, storage and protection.
E. Product option requirements.
F. Substitution limitations and procedures.
G. Spare parts and maintenance materials.

1.02 SUBMITTALS

A. Proposed Products List: Submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
   1. Submit within 45 days after submission of the Guaranteed Maximum Price (GMP).
   2. For products specified only by reference standards, list applicable reference standards.

B. Product Data Submittals: Submit manufacturer’s standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

C. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

D. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
   1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

E. LEED Submittals: Use forms provided in Section 01 35 16.

PART 2 PRODUCTS

2.01 EXISTING PRODUCTS

A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by the Contract Documents.

B. Unforeseen historic items encountered remain the property of the Owner; notify Owner promptly upon discovery; protect, remove, handle, and store as directed by Owner.

C. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the Owner, or otherwise indicated as to remain the property of the Owner, become the property of the Contractor; remove from site.

D. Reused Products: Reused products include materials and equipment previously used in this or other construction, salvaged and refurbished as specified.
2.02 NEW PRODUCTS

A. Provide new products unless specifically required or permitted by the Contract Documents.

B. Regionally-Sourced Products:
   1. Overall Project Requirement: Provide materials amounting to a minimum of 20 percent of the total value of all materials (excluding plumbing, HVAC, electrical, elevators, and other equipment) that have been extracted, harvested, or recovered, as well as manufactured, within a radius of 500 miles from the project site.
      a. This provision is applicable to LEED Credit MR 5.1; show quantity on LEED report.
      b. This provision is applicable to LEED Credit MR 5.2; show quantity on LEED report.
   2. Specific Product Categories: Provide regionally-sourced products as specified elsewhere.
   3. LEED Submittals: Indicate location of manufacture; in all cases indicate location of final assembly; for harvested products, indicate location of harvest; for extracted (i.e. mined) products, indicate location of extraction; for products involving multiple manufacturing steps, indicate all locations of manufacture or assembly; provide manufacturer or supplier certification of location information.

C. Products with Recycled Content:
   1. Overall Project Requirement: Provide products with recycled content such that the sum of post-consumer recycled content plus one-half of the pre-consumer recycled content constitutes at least 20 percent of the total value of all products installed, except plumbing, mechanical and electrical components.
      a. This provision is applicable to LEED Credit MR 4; show quantity and calculations on LEED report.
   2. Specific Product Categories: Provide recycled content as specified elsewhere.
   3. Calculations: Where information about recycled content is required to be submitted:
      a. Determine percentage of post-consumer and post-industrial content separately, using the guidelines contained in ISO 14021 - Environmental Labels and Declarations - Self-declared Environmental Claims (Type II Environmental Labeling).
      b. Previously used, reused, refurbished, and salvaged products are not considered recycled.
      c. Wood fabricated from timber abandoned in transit to original mill is considered reused, not recycled.
      d. Determine percentage of recycled content of any item by dividing the weight of recycled content in the item by the total weight of all material in the item.
      e. Determine value of recycled content of each item separately, by multiplying the content percentage by the value of the item.
   4. LEED Submittals: State unit cost, post-consumer and pre-consumer content percentages, quantity installed, total material cost, and total recycled content value; attach evidence of contents from either manufacturer or an independent agency.

D. Sustainably Harvested Wood:
   1. Overall Project Requirement: Provide wood-based products such that 50 percent of permanently installed wood-based materials are certified as sustainably harvested in accordance with the Forest Stewardship Council (FSC) guidelines, in compliance with LEED MR Credit 7.
      a. FSC Pure and FSC Mixed Credit shall be valued at 100 percent of product cost.
      b. FSC Mixed (NN) percent shall be valued at indicated percentage of their cost.
      c. FSC Recycled and FSC Recycled Credit do not contribute to this credit. These products qualify to contribute to MR Credit 4.
      d. Where FSC wood is combined with non-FSC wood in an assembly, all non-FSC
wood shall meet the Controlled Wood criteria of the FSC. FSC wood in assemblies with non-Controlled Wood is not eligible for this credit.

2. Definition: Wood-based materials include but are not limited to structural framing, dimension lumber, flooring, wood doors, finishes, and furnishings that are permanently installed in the project. Wood and wood-based products not permanently installed in the project are not included in the definition.

3. Specific Wood-Based Fabrications: Fabricate of sustainably harvested wood when so specified elsewhere.

4. Certification: Provide wood certified or labeled by an organization accredited by one of the following:
   b. LEED Submittals: State unit cost of each wood-based item, quantity installed, quantity certified as sustainably harvested, total wood-based material cost, and total sustainably harvested value; provide letter of certification signed by supplier of each item, indicating compliance with the specified requirements and identifying the certifying organization.
      a. Include the certifying organization's certification numbers for each certified product, itemized on a line-item basis.
      b. Attach copies of invoices bearing the certifying organization's certification numbers.

E. Urea-Formaldehyde Prohibition:

F. Adhesives and Joint Sealants:

G. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

H. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.
   1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
   2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
   3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
   4. Where products are accompanied by the term "as selected," Architect will make selection.
   5. Where products are accompanied by the term "match sample," sample to be matched is Architect's.

I. Basis-of-Design Product Specification: Where a specific manufacturer's product is named and accompanied by the words "basis of design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers.

2.03 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
B. Products of Named Manufacturers: Contractor to provide products from named manufacturers; refer to other provisions regarding substitutions.

C. Comparable Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

D. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
2.04 SPARE PARTS AND MAINTENANCE PRODUCTS

A. Provide spare parts, maintenance, and extra products of types and in quantities specified in individual specification sections.

B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION

3.01 SUBSTITUTION PROCEDURES

A. Instructions to Bidders specify time restrictions for submitting requests for substitutions during the bidding period. Comply with requirements specified in this section.

B. Timing: Architect will not consider requests for substitution within 15 days after the submission of the Guaranteed Maximum Price (GMP), except for extenuating circumstances described below. Requests may be considered or rejected at discretion of Architect.
   1. The specification permits "Or Equal."
   2. The product is no longer manufactured.
   3. The product is not available due to a strike.
   4. The specified product is identified as incompatible or inappropriate for the project.
   5. The specified item fails to comply with building code requirements.
   6. The manufacturer or fabricator declares a specified product to be unsuitable for the use intended and refuses to warrant its installation.
   7. Significant cost savings to the Owner.

C. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.
   1. Statement indicating why specified material or product cannot be provided.
   2. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
   3. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
   4. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
   5. Samples, where applicable or requested.
   6. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
   7. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
   8. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
   9. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.
   10. Cost information, including a proposal of change, if any, in the Contract Sum.
   11. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
12. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

D. Reason for Substitute Request: The substitute must be of a benefit to the University, and the Contractor must demonstrate that the proposed substitute is a benefit.

E. A request for substitution constitutes a representation that the submitter:
   1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
   2. Will provide the same warranty for the substitution as for the specified product.
   3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
   4. Waives claims for additional costs or time extension which may subsequently become apparent.
   5. Will reimburse Owner and Architect for review or redesign services associated with re-approval by authorities.

F. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.

G. Substitution Submittal Procedure:
   1. Substitution Request Form: Use CSI Form 13.1A.
   2. Submit three copies of request for substitution for consideration. Limit each request to one proposed substitution.
   3. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence. Burden of proof is on proposer.
   4. Architect will consider Contractor's request for substitution when the following conditions are met. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
      a. Substitution requested must meet or exceed specified material, product or equipment items appearance, function and quality level as determined by the Architect and Owner.
      b. Requests for substitution must include clear identification of the material, product or equipment item and complete description including drawings, cuts, performance and test data, along with any other information necessary for a complete evaluation.
      c. Requested substitution shall not require extensive revisions to the Contract Documents or changes to any other materials, products or equipment items.
      d. Requested substitution is consistent with the Contract Documents and will produce indicated results.
      e. Substitution request is fully documented and properly submitted.
      f. Requested substitution will not adversely affect Contractor's Construction Schedule.
      g. Requested substitution has received necessary approvals of authorities having jurisdiction.
      h. Requested substitution is compatible with other portions of the Work.
      i. Requested substitution provides specified warranty.
      j. Requested substitution will not delay the Work.
      k. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
      l. The Architect's/Owner's decision to accept or reject the proposed substitution shall be final and will be set forth in writing.
H. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within 7 days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later. Architect's notification will be in one the following forms:
1. Form of Acceptance:
   a. After Contract signing: Change Order.
2. Use product specified if Architect cannot make a decision on use of a proposed substitution within time allocated.

3.02 TRANSPORTATION AND HANDLING

A. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.

B. Transport and handle products in accordance with manufacturer's instructions.

C. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.

D. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.

E. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

F. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.03 STORAGE AND PROTECTION

A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.

B. Store and protect products in accordance with manufacturers' instructions.

C. Store with seals and labels intact and legible.

D. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.

E. For exterior storage of fabricated products, place on sloped supports above ground.

F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

G. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.

H. Prevent contact with material that may cause corrosion, discoloration, or staining.

I. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

J. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION
## SUBSTITUTION
### REQUEST

<table>
<thead>
<tr>
<th>Project:</th>
<th>Substitution Request Number:</th>
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<table>
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<table>
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<thead>
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<th>Contract For:</th>
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### Specification Title:__________________________

<table>
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<th>Section:</th>
<th>Description:</th>
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### Article/Paragraph:__________________________

<table>
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<th>Proposed Substitution:</th>
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<table>
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<tr>
<th>Manufacturer:</th>
<th>Address:</th>
<th>Phone:</th>
</tr>
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<table>
<thead>
<tr>
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<th>Model No.:</th>
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</table>

<table>
<thead>
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<th>Phone:</th>
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</table>

<table>
<thead>
<tr>
<th>History:</th>
<th>New product</th>
<th>2-5 years old</th>
<th>5-10 yrs old</th>
<th>More than 10 years old</th>
</tr>
</thead>
</table>

Differences between proposed substitution and specified product:__________________________

☐ Point-by-point comparative data attached - REQUIRED BY A/E

Reason for not providing specified item:__________________________

### Similar Installation:

<table>
<thead>
<tr>
<th>Project:</th>
<th>Architect:</th>
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<table>
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<tr>
<th>Address:</th>
<th>Owner:</th>
</tr>
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<table>
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<tr>
<th>Date Installed:</th>
</tr>
</thead>
</table>

 Proposed substitution affects other parts of Work: ☐ No ☐ Yes; explain__________________________

Savings to Owner for accepting substitution:__________________________($__________).

Proposed substitution changes Contract Time: ☐ No ☐ Yes [Add] [Deduct] ________________ days.

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐

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601 Madison Street, Alexandria, VA 22314-1791

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September 1996

CSI Form 13.1A
The Undersigned certifies:
- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted by:

Signed by: ____________________________

Firm: ________________________________

Address: _____________________________

Telephone: ____________________________

Attachments: _________________________

A/E's REVIEW AND ACTION

☐ Substitution approved - Make submittals in accordance with Specification Section 01330.
☐ Substitution approved as noted - Make submittals in accordance with Specification Section 01330.
☐ Substitution rejected - Use specified materials.
☐ Substitution Request received too late - Use specified materials.

Signed by: ____________________________ Date: ____________________________

Additional Comments:  ☐ Contractor  ☐ Subcontractor  ☐ Supplier  ☐ Manufacturer  ☐ A/E  ☐
SECTION 01 70 00 - EXECUTION REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Examination, preparation, and general installation procedures.

B. Requirements for alterations work, including selective demolition, except removal, disposal, and/or remediation of hazardous materials and toxic substances.

C. Pre-installation meetings.

D. Cutting and patching.

E. Surveying for laying out the work.

F. Final property survey.

G. Cleaning and protection.

H. Starting of systems and equipment.

1.02 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Survey work: Submit name, address, and telephone number of Surveyor before starting survey work.
   1. On request, submit documentation verifying accuracy of survey work.
   2. Submit a copy of site drawing signed by the Land Surveyor, that the elevations and locations of the work are in conformance with Contract Documents.
   3. Submit surveys and survey logs for the project record.
   4. Final Property Survey: Provide Owner with 10 copies, one reproducible copy, and one electronic copy of the final property survey.

C. Cutting and Patching: Submit written request in advance of cutting or alteration which affects:
   1. Structural integrity of any element of Project.
   2. Integrity of weather exposed or moisture resistant element.
   3. Efficiency, maintenance, or safety of any operational element.
   5. Work of Owner or separate Contractor.
   6. Include in request:
      a. Identification of Project.
      b. Location and description of affected work.
      c. Necessity for cutting or alteration.
      d. Description of proposed work and products to be used.
      e. Alternatives to cutting and patching.
      f. Effect on work of Owner or separate Contractor.
      g. Written permission of affected separate Contractor.
      h. Date and time work will be executed.

D. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.03 QUALIFICATIONS

A. For survey work, employ a land surveyor registered in the State of Maryland and acceptable to Architect. Submit evidence of Surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate.
1.04 PROJECT CONDITIONS

A. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.

B. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

C. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere.

D. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.

E. Pest Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.

F. Rodent Control: Provide methods, means, and facilities to prevent rodents from accessing or invading premises.

G. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

A. New Materials: As specified in product sections; match existing products and work for patching and extending work.

B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.

C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 60 00.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.

B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.

C. Examine and verify specific conditions described in individual specification sections.

D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.

E. Verify that utility services are available, of the correct characteristics, and in the correct locations.

F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.
3.02 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.
B. Seal cracks or openings of substrate prior to applying next material or substance.
C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 PREINSTALLATION MEETINGS

A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.
B. Require attendance of parties directly affecting, or affected by, work of the specific section.
C. Notify Owner and Architect four days in advance of meeting date.
D. Prepare agenda and preside at meeting:
   1. Review conditions of examination, preparation and installation procedures.
   2. Review coordination with related work.
   3. Review conflicts and compatibility issues.
   4. Review environmental limitations and protection.
   5. Examine substrates.
   6. Review requirements of the following:
      b. Options.
      c. Related Change Orders.
      d. Submittals.
      e. Mockups.
      f. Testing and inspection.
E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.04 LAYING OUT THE WORK

A. Verify locations of survey control points prior to starting work.
B. Promptly notify Architect of any discrepancies discovered.
C. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
D. Promptly report to Architect the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.
E. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Architect.
F. Utilize recognized engineering survey practices.
G. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
   1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
   2. Grid or axis for structures.
   3. Building foundation, column locations and ground floor elevations.
H. Periodically verify layouts by same means.
I. Maintain a complete and accurate log of control and survey work as it progresses.

3.05 GENERAL INSTALLATION REQUIREMENTS

B. Coordinate with requirements of Division 1 Section "Indoor Air Quality."
B. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.06 CUTTING AND PATCHING

A. Execute cutting and patching including excavation and fill to complete the work, to uncover work in order to install improperly sequenced work, to remove and replace defective or non-conforming work, to remove samples of installed work for testing when requested, to provide openings in the work for penetration of mechanical and electrical work, to execute patching to complement adjacent work, and to fit products together to integrate with other work.
B. Execute work by methods to avoid damage to other work, and which will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
C. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
D. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
E. Restore work with new products in accordance with requirements of Contract Documents; patching to be airtight and have surface weight equivalent to surrounding construction.
F. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
G. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 84 00, to full thickness of the penetrated element.
H. Penetrations through acoustically significant construction shall be resiliently sealed in accordance with the Penetration Control Drawings and Details and Section 07 90 05.
I. Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
J. Make neat transitions. Patch work to match adjacent work in texture and appearance. Where new work abuts or aligns with existing, perform a smooth and even transition.
3.07 PROGRESS CLEANING
   A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
   B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
   C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
   D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.08 PROTECTION OF INSTALLED WORK
   A. Protect installed work from damage by construction operations.
   B. Provide special protection where specified in individual specification sections.
   C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
   D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
   E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
   F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
   G. Prohibit traffic from landscaped areas.
   H. Remove protective coverings when no longer needed; reuse or recycle plastic coverings if possible.

3.9 FINAL PROPERTY SURVEY
   A. Prepare a final property survey showing significant features (real property) for Project.
   B. Include a certification on the survey, signed by the surveyor, that principle metes, bounds, lines and levels of the Project are accurately positioned as shown on the survey.
   C. Show boundary lines, monuments, streets, site improvements and utilities, existing improvements and vegetation, adjoining properties, acreage, grade contours and the distance and bearing from a site corner to a legal point.

3.10 STARTING SYSTEMS
   A. Coordinate schedule for start-up of various equipment and systems.
   B. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions which may cause damage.
   C. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
   D. Complete manufacturer's Start-Up Checklists or approved alternate checklist.
   E. Verify that wiring and support components for equipment are complete and tested.
F. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.

G. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.11 ADJUSTING

A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.12 FINAL CLEANING

A. Employ experienced workers or professional cleaners for final cleaning; clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program.

B. Use cleaning materials that are nonhazardous.

C. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

D. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.

E. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.

F. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.

G. Remove tools, construction equipment, machinery, and surplus material from Project site.

H. Remove snow and ice to provide safe access to building.

I. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.

J. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.

K. Sweep concrete floors broom clean in unoccupied spaces.

L. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.

M. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscurring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.

N. Remove labels that are not permanent.

O. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
   1. Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
   2. Revise seven subparagraphs below to suit Project. Check for conflict or duplication with provisions in other Sections, particularly Divisions 20 through 29.
P. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

Q. Replace parts subject to unusual operating conditions.

R. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.

S. Clean exposed surfaces of diffusers, registers, and grills.

T. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

U. Leave Project clean and ready for occupancy.

END OF SECTION
SECTION 01 74 19 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 GENERAL

1.01 WASTE MANAGEMENT REQUIREMENTS

A. Owner requires that this project generate the least amount of trash and waste possible.

B. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.

C. Minimize trash/waste and demolition waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.
   1. Provide alternatives to landfilling for at least the following materials:
      a. Aluminum and plastic beverage containers.
      b. Corrugated cardboard.
      c. Wood pallets.
      d. Clean dimensional wood.
      e. Land clearing debris, including brush, branches, logs, and stumps.
      f. Concrete.
      g. Bricks.
      h. Concrete masonry units.
      i. Asphalt paving.
      j. Metals, including packaging banding, metal studs, sheet metal, structural steel, piping, reinforcing bars, door frames, and other items made of steel, iron, galvanized steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze.

   2. Project Requirements:
      a. Compost, recycle, or salvage a minimum of 75% by weight or volume of total project site-clearing, construction and demolition debris.
      b. Minimum of 50% of structural fill material, for new construction, to be comprised of recycled/reclaimed debris contributing to the 50% overall goal of the Project.

E. LEED Certification for this project is dependent on diversion of 50 percent, by weight, of potential landfill trash/waste by recycling and/or salvage.

F. Contractor shall develop and follow a Waste Management Plan designed to implement these requirements.

G. The following sources may be useful in developing the Waste Management Plan:
   7. The Loading Dock, Inc., Baltimore, MD.
   8. Second Chance Inc., Baltimore, MD.

H. Methods of trash/waste disposal that are not acceptable are:
1. Burning on the project site.
2. Burying on the project site.
3. Dumping or burying on other property, public or private.
4. Other illegal dumping or burying.

I. Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, State and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

J. Standards: Comply with ANSI A10.6 and NFPA 241.

1.02 DEFINITIONS

A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.

B. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair and demolition operations.

C. Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity or reactivity.

D. Nonhazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity, or reactivity.

E. Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.

F. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.

G. Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.

H. Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.

I. Return: To give back reusable items or unused products to vendors for credit.

J. Reuse: To reuse a construction waste material in some manner on the project site.

K. Salvage: To remove a waste material from the project site to another site for resale or reuse by others.

L. Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.

M. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.

N. Toxic: Poisonous to humans either immediately or after a long period of exposure.

O. Trash: Any product or material unable to be reused, returned, recycled, or salvaged.

P. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.
1.03 QUALITY ASSURANCE

A. Predemolition Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination." Review methods and procedures related to building demolition including, but not limited to, the following:
1. Inspect and discuss condition of construction to be demolished.
2. Review structural load limitations of existing structures.
3. Review and finalize building demolition schedule and verify availability of demolition personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review and finalize protection requirements. Review procedures for noise control and dust control.
5. Review procedures for protection of adjacent buildings. Review items to be salvaged and returned to Owner.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.


C. Waste Management Plan: Include the following information:
1. Analysis of the trash and waste projected to be generated during the entire project construction cycle and demolition of existing structures, including types and quantities.
2. Description of the means and methods to achieve the 50% diversion requirement for compostable, recyclable and salvageable materials.
3. Landfill Options: The name, address, and telephone number of the landfill(s) where trash/waste will be disposed of, the applicable landfill tipping fee(s), and the projected cost of disposing of all project trash/waste in the landfill(s).
4. Landfill Alternatives: List all waste materials that will be diverted from landfills by reuse, salvage, or recycling.
5. Meetings: Describe regular meetings to be held to address waste prevention, reduction, recycling, salvage, reuse, and disposal.
6. Materials Handling Procedures: Describe the means by which materials to be diverted from landfills will be protected from contamination and prepared for acceptance by designated facilities; include separation procedures for recyclables, storage, and packaging.
7. Transportation: Identify the destination and means of transportation of materials to be recycled; i.e. whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler.

D. Waste Disposal Reports: Submit at specified intervals, with details of quantities of trash and waste, means of disposal or reuse, and costs; show both totals to date and since last report.
1. Submit updated Report with each Application for Progress Payment; failure to submit Report will delay payment.
2. LEED Online: Complete LEED Template including the amount of recycled and salvaged construction and demolition waste to date.
3. Landfill Disposal: Include the following information:
   a. Identification of material.
   b. Amount, in tons or cubic yards, of trash/waste material from the project disposed of in landfills.
c. State the identity of landfills, total amount of tipping fees paid to landfill, and total disposal cost.

d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.

4. Recycled and Salvaged Materials: Include the following information for each:

a. Identification of material, including those retrieved by installer for use on other projects.

b. Amount, in tons or cubic yards, date removed from the project site, and receiving party.

c. Transportation cost, amount paid or received for the material, and the net total cost or savings of salvage or recycling each material.

d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.

e. Certification by receiving party that materials will not be disposed of in landfills or by incineration.

5. Material Reused on Project: Include the following information for each:

a. Identification of material and how it was used in the project.

b. Amount, in tons or cubic yards.

c. Include weight tickets as evidence of quantity.

6. Other Disposal Methods: Include information similar to that described above, as appropriate to disposal method.

E. Final Waste Management Documentation: Submit at completion of Substantial Completion and prior to contract closeout:

1. All information required in Monthly Report Submittals.

2. Legible copies of on-site logs, manifests, weight tickets, and receipts.

3. Final LEED Template uploaded to LEED Online, including appropriate documentation of total amount (by weight or volume) of diverted construction and demolition waste, and the total amount (by weight or volume) of landfilled waste excluding site clearing.

   a. MR Credit 2, Construction Waste Management.

PART 2 PRODUCTS

2.01 PRODUCT SUBSTITUTIONS

A. See Section 01 60 00 - Product Requirements for substitution submission procedures.

B. For each proposed product substitution, submit the following information in addition to requirements specified in Section 01 60 00:

   1. Relative amount of waste produced, compared to specified product.

   2. Cost savings on waste disposal, compared to specified product, to be deducted from the Contract Sum.


PART 3 EXECUTION

3.01 WASTE MANAGEMENT PROCEDURES

A. See Section 01 30 00 for additional requirements for project meetings, reports, submittal procedures, and project documentation.

B. See Section 01 50 00 for additional requirements related to trash/waste collection and removal facilities and services.
3.02 WASTE MANAGEMENT PLAN IMPLEMENTATION

A. Manager: Designate an on-site person or persons responsible for instructing workers and overseeing and documenting results of the Waste Management Plan.

B. Communication: Distribute copies of the Waste Management Plan to job site foreman, each subcontractor, Owner, and Architect.

C. Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the project.

D. Meetings: Discuss trash/waste management goals and issues at project meetings.
   1. Pre-bid meeting.
   2. Pre-construction meeting.
   3. Regular job-site meetings.

E. Records: Maintain onsite logs for each load of materials removed from site:
   1. Landfill Log: Include type of material, load (by weight or volume), recycling/hauling service, date accepted by landfill, and facility fee.
   2. Waste Diversion: Include type of material, load (by weight or volume), recycling/hauling service, date accepted by recycling service, or non-profit receiver and facility fee.
   3. Where commingling occurs prior to collection, track the amount of construction waste diverted from landfill based on the weight or volume of the removed co-mingled waste and provide the documentation of percentages of recycled from the sorting facility.

F. Facilities: Provide specific facilities for separation and storage of materials for recycling, salvage, reuse, return, and trash disposal, for use by all contractors and installers.
   1. Provide containers as required.
   2. Provide temporary enclosures around piles of separated materials to be recycled or salvaged.
   3. Provide materials for barriers and enclosures that are nonhazardous, recyclable, or reusable to the maximum extent possible; reuse project construction waste materials if possible.
   4. Locate enclosures out of the way of construction traffic.
   5. Provide adequate space for pick-up and delivery and convenience to subcontractors.
   6. If an enclosed area is not provided, clearly lay out and label a specific area on-site.
   7. Keep recycling and trash/waste bin areas neat and clean and clearly marked in order to avoid contamination of materials.
   8. Provide bi-lingual signage.

G. Hazardous Wastes: Separate, store, and dispose of hazardous wastes according to applicable regulations.

H. Recycling: Separate, store, protect, and handle at the site identified recyclable waste products in order to prevent contamination of materials and to maximize recyclability of identified materials. Arrange for timely pickups from the site or deliveries to recycling facility in order to prevent contamination of recyclable materials.
   1. Coordinate work of recycling, composting and salvaging waste haulers with other trades.
2. Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall accrue to Contractor.

   I. Reuse of Materials On-Site: Set aside, sort, and protect separated products in preparation for reuse.

   J. Salvage: Set aside, sort, and protect products to be salvaged for reuse off-site.

END OF SECTION
SECTION 01 77 00 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY
A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
   1. Inspection procedures.

1.02 SUBSTANTIAL COMPLETION
A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.
   1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
   2. Advise Owner of pending insurance changeover requirements.
   3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
   4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
   5. Prepare and submit Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
   6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer’s name and model number where applicable.
   7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner’s personnel of changeover in security provisions.
   8. Complete startup testing of systems.
   10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
   11. Advise Owner of changeover in heat and other utilities.
   12. Submit changeover information related to Owner’s occupancy, use, operation, and maintenance.
   13. Complete final cleaning requirements, including touchup painting.
   14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
   1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
   2. Results of completed inspection will form the basis of requirements for Final Completion.

1.03 FINAL COMPLETION
A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:
1. Submit a final Application for Payment according to Division 1 Section "Payment Procedures."
2. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report and warranty.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.04 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Preparation: Submit three copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction. Use CSI Form 14.1A.

1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:
   a. Project name.
   b. Date.
   c. Name of Architect.
   d. Name of Contractor.
   e. Page number.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION 01770
The following items require the attention of the Contractor for completion or correction. This list may not be all-inclusive, and the failure to include any items on this list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

<table>
<thead>
<tr>
<th>Item</th>
<th>Room Number</th>
<th>Location Number</th>
<th>Description</th>
<th>Correction/Completion Date</th>
<th>Verification A/E Check</th>
</tr>
</thead>
</table>

☐ Attachments

Signed by: ___________________________ Date: ___________________________

Copies: ☐ Owner ☐ Consultants ☐ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ File

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SECTION 01 78 00 - CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Project Record Documents.
   B. Operation and Maintenance Data.
   C. Warranties and bonds.

1.02 RELATED SECTIONS
   A. Section 01 30 00 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.
   B. Individual Product Sections: Specific requirements for operation and maintenance data.
   C. Individual Product Sections: Warranties required for specific products or Work.

1.03 SUBMITTALS
   A. Project Record Documents: Submit documents to Architect with claim for final Application for Payment.
   B. Warranties and Bonds:
      1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten days after acceptance.
      2. Make other submittals within ten days after Date of Substantial Completion, prior to final Application for Payment.
      3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within ten days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS
   A. Maintain on site one set of the following record documents; record actual revisions to the Work:
      1. Drawings.
      2. Specifications.
      3. Addenda.
      4. Change Orders and other modifications to the Contract.
      5. Reviewed shop drawings, product data, and samples.
   B. Ensure entries are complete and accurate, enabling future reference by Owner.
   C. Store record documents separate from documents used for construction.
   D. Record information concurrent with construction progress.
   E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
      1. Manufacturer's name and product model and number.
      2. Product substitutions or alternates utilized.
      3. Changes made by Addenda and modifications.
F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
   1. Field changes of dimension and detail.
   2. Details not on original Contract drawings.

3.02 OPERATION AND MAINTENANCE DATA
   A. Refer to Section 01 78 23 for equipment and systems.

3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES
   A. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.
   B. Assemble data under separate binder organized similar to manuals provided under Section 01 78 23.

3.06 WARRANTIES AND BONDS
   A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial completion is determined.
   B. Verify that documents are in proper form, contain full information, and are notarized.
   C. Co-execute submittals when required.
   D. Retain warranties and bonds until time specified for submittal.
   E. Manual: Bind in commercial quality 8-1/2 x 11 inch three D side ring binders with durable plastic covers.
   F. Cover: Identify each binder with typed or printed title WARRANTIES AND BONDS, with title of Project, name, address and telephone number of Contractor and equipment supplier, and name of responsible company principal.
   G. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.
   H. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

I. Start of product and installers warranties to be July 1, 2012. All warranties on materials, equipment and systems start on this date regardless of when the item comes on line or work was installed.

END OF SECTION
SECTION 01 79 00 - DEMONSTRATION AND TRAINING

PART 1 GENERAL

1.01 SUMMARY

A. Demonstration of products and systems to be commissioned and where indicated in specific specification sections.

B. Training of Owner personnel in operation and maintenance is required for:
   1. All software-operated systems.
   2. HVAC systems and equipment.
   3. Plumbing equipment.
   4. Electrical systems and equipment.
   5. Security and audio visual systems.
   6. Conveying systems.
   7. Items specified in individual product Sections.

C. Training of Owner personnel in care, cleaning, maintenance, and repair is required for:
   1. Roofing, waterproofing, and other weather-exposed or moisture protection products.
   2. Finishes, including flooring, wall finishes, ceiling finishes.
   3. Fixtures and fittings.
   4. Items specified in individual product Sections.

1.02 SUBMITTALS

A. Instruction Program:
   1. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals; do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.
   2. Submit two copies of outline of instructional program for demonstration and training, including a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
   2. At completion of training, submit one complete training manual(s) for Owner's use.

B. Qualification Data: For facilitator.

C. Attendance Record: For each training module, submit list of participants and length of instruction time.

D. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

E. Video Recordings: Submit digital video recording of each demonstration and training session for Owner's subsequent use.
   1. Format: DVD Disc.
   2. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to show area of demonstration and training. Display continuous running time.
   3. Label each disc and container with session identification and date.
   4. Transcript: Prepared on 8-1/2-by-11-inch (215-by-280-mm) paper, punched and bound in heavy-duty, 3-ring, vinyl-covered binders. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as the corresponding disc.
5. Narration: Describe scenes on videotape by audio narration by microphone while video is recorded. Include description of items being viewed. Describe vantage point, indicating location, direction (by compass point), and elevation or story of construction.

6. As part of training, devote one lesson plan to reviewing of video to allow new employees to view tape at their own convenience and be able to comprehend system without need for instructor in attendance.

1.03 QUALITY ASSURANCE

A. Instructor Qualifications: Familiar with design, operation, maintenance and troubleshooting of the relevant products and systems.
   1. Provide as instructors the most qualified trainer of those contractors and/or installers who actually supplied and installed the systems and equipment.
   2. Where a single person is not familiar with all aspects, provide specialists with necessary qualifications.

PART 2 PRODUCTS

2.01 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections, and as follows:
   1. Fire alarm systems
   2. Fire suppression systems
   3. Electronic security systems.
   4. Heat generation, including boilers, feedwater equipment, pumps, steam distribution piping, and water distribution piping.
   5. Refrigeration systems, including chillers, cooling towers, condensers, pumps, and distribution piping.
   6. HVAC systems, including air-handling equipment, air distribution systems, and terminal equipment and devices.
   7. HVAC instrumentation and controls.
   8. Electrical service and distribution, including transformers, switchboards, panel boards, uninterruptible power supplies, and motor controls.
   9. Lighting equipment and controls.
   10. Communication systems, including intercommunication, surveillance, clocks and programming, voice and data, and television equipment.
   11. Plumbing systems and equipment, including hot water heaters, well pumps and systems, booster pumps, treatment systems, and rainwater harvesting systems.

B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following:
   1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
      a. System, subsystem, and equipment descriptions.
      b. Performance and design criteria if Contractor is delegated design responsibility.
      c. Operating standards.
      d. Regulatory requirements.
      e. Equipment function.
      f. Operating characteristics.
      g. Limiting conditions.
      h. Performance curves.
   2. Documentation: Review the following items in detail:
      a. Emergency manuals.
      b. Operations manuals.
      c. Maintenance manuals.
      d. Project Record Documents.
3. Emergencies: Include the following, as applicable:
   a. Instructions on meaning of warnings, trouble indications, and error messages.
   b. Instructions on stopping.
   c. Shutdown instructions for each type of emergency.
   d. Operating instructions for conditions outside of normal operating limits.
   e. Sequences for electric or electronic systems.
   f. Special operating instructions and procedures.

4. Operations: Include the following, as applicable:
   a. Startup procedures.
   b. Equipment or system break-in procedures.
   c. Routine and normal operating instructions.
   d. Regulation and control procedures.
   e. Control sequences.
   f. Safety procedures.
   g. Instructions on stopping.
   h. Normal shutdown instructions.
   i. Operating procedures for emergencies.
   j. Operating procedures for system, subsystem, or equipment failure.
   k. Seasonal and weekend operating instructions.
   l. Required sequences for electric or electronic systems.
   m. Special operating instructions and procedures.

5. Adjustments: Include the following:
   a. Alignments.
   b. Checking adjustments.
   c. Noise and vibration adjustments.
   d. Economy and efficiency adjustments.

6. Troubleshooting: Include the following:
   a. Diagnostic instructions.
   b. Test and inspection procedures.

7. Maintenance: Include the following:
   a. Inspection procedures.
   b. Types of cleaning agents to be used and methods of cleaning.
   c. List of cleaning agents and methods of cleaning detrimental to product.
   d. Procedures for routine cleaning
   e. Procedures for preventive maintenance.
   f. Procedures for routine maintenance.
   g. Instruction on use of special tools.

8. Repairs: Include the following:
   a. Diagnosis instructions.
   b. Repair instructions.
   c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
   d. Instructions for identifying parts and components.
   e. Review of spare parts needed for operation and maintenance.

9. Energy and Environment
   a. Energy impact.
   b. Optimization of energy utilization.
   c. Environmental impact.
   d. Ongoing strategies revised to maintain performance.
PART 3 EXECUTION

3.01 DEMONSTRATION - GENERAL

A. Demonstrations conducted during system start-up do not qualify as demonstrations for the purposes of this section, unless approved in advance by Owner.

B. Demonstrations conducted during Functional Testing need not be repeated unless Owner personnel training is specified.

C. Demonstration may be combined with Owner personnel training if applicable.

D. Operating Equipment and Systems: Demonstrate operation in all modes, including start-up, shut-down, seasonal changeover, emergency conditions, and troubleshooting, and maintenance procedures, including scheduled and preventive maintenance.
   1. Perform demonstrations not less than two weeks prior to Substantial Completion.
   2. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

E. Non-Operating Products: Demonstrate cleaning, scheduled and preventive maintenance, and repair procedures.
   1. Perform demonstrations not less than two weeks prior to Substantial Completion.

3.02 INSTRUCTION

A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.

B. Provide manufacturer's instructors or instructors certified by manufacturer as being experienced in operation and maintenance procedures for each system, subsystem, or piece of equipment to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
   1. Architect will furnish an instructor to describe basis of system design, operational requirements, criteria, and regulatory requirements.
   2. Owner will furnish an instructor to describe Owner's operational philosophy.
   3. Owner will furnish Contractor with names and positions of participants.

C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
   1. Schedule training with Owner through Construction Manager and CxA with at least fourteen (14) days' advance notice.
   2. Schedule training to conform to personnel availability at Site and to conclude prior to startup of system.

D. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of an oral and/or a demonstration performance-based test.

E. In addition to written technical descriptions, training shall detail training program to allow those who have completed training to provide training for new employees resulting in self-perpetuating training program.

F. Cleanup: Collect used and leftover educational materials and give to Owner. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

END OF SECTION
SECTION 01 86 36 - AMBIENT NOISE LEVELS

PART 1 GENERAL

1.01 SUMMARY: This section specifies ambient noise levels allowable when spaces are unoccupied while mechanical, electrical, conveying and other equipment is operating. Refer to drawings and other sections of these specifications for vibration isolation and noise control systems and requirements.

1.02 REQUIREMENTS: Provide equipment and materials and install systems in a manner that conforms to the requirements of the contract documents. As required to meet scheduled ambient noise levels, contractor shall replace unapproved product substitutions and defective or improperly installed materials before the end of the warranty period.

1.03 DEFINITIONS: This document and other specifications will use the term *acoustically sensitive* for rooms with criteria between RC-25 and RC-34 and the term *acoustically critical* for rooms with criteria below RC-25. For rooms or spaces that are specified as having a range of criteria, the lowest number of the range will dictate whether a room is critical or sensitive.

1.04 LIGHTING SYSTEMS: Luminaire components including lamp, housing, ballasts, and wiring shall operate silently and inaudibly at all points of operation between and including 0-100% power in acoustically sensitive/critical spaces.

1.05 FIRE ALARM SYSTEMS: System components including initialization devices, annunciators, visual and audible devices, shall operate silently and inaudibly except during system emergency and system activation. Components shall not transmit noise between spaces served.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.01 CRITERIA: This building has been designed to meet specified ambient noise levels for the following room types:

<table>
<thead>
<tr>
<th>LIST OF SPACES:</th>
<th>ROOM CRITERIA: RC(N):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proscenium Theatre</td>
<td>RC 20-24(N)</td>
</tr>
<tr>
<td>Proscenium Theatre Control Room</td>
<td>RC 20-24(N)</td>
</tr>
<tr>
<td>Proscenium Theatre Sound/Light Locks</td>
<td>RC 25-29(N)</td>
</tr>
<tr>
<td>Black Box</td>
<td>RC 20-24(N)</td>
</tr>
<tr>
<td>Black Box Control Room</td>
<td>RC 20-24(N)</td>
</tr>
<tr>
<td>Black Box Sound/Light Locks</td>
<td>RC 25-29(N)</td>
</tr>
<tr>
<td>Warm-up/Green Rooms</td>
<td>RC 25-29(N)</td>
</tr>
<tr>
<td>Followspot Rooms</td>
<td>RC 30-34(N)</td>
</tr>
<tr>
<td>Dressing Rooms</td>
<td>RC 30-34(N)</td>
</tr>
<tr>
<td>Make-up Room</td>
<td>RC 30-34(N)</td>
</tr>
<tr>
<td>Costume Shop/Storage/Fitting/Laundry/Dyeing</td>
<td>RC 30-34(N)</td>
</tr>
<tr>
<td>Scene Shop/Storage/Paint/Tool</td>
<td>RC 35-39(N)</td>
</tr>
<tr>
<td>Large/Medium/Small Classrooms</td>
<td>RC30-35(N)</td>
</tr>
<tr>
<td>Seminar/Study</td>
<td>RC25-30(N)</td>
</tr>
<tr>
<td>Study Rooms</td>
<td>RC30-35(N)</td>
</tr>
<tr>
<td>Theatre Rehearsal Studios</td>
<td>RC25-30(N)</td>
</tr>
<tr>
<td>Acting/Directing Studio</td>
<td>RC25-30(N)</td>
</tr>
<tr>
<td>All other spaces not listed</td>
<td>RC40</td>
</tr>
</tbody>
</table>
3.02 STANDARDS: The maximum Room Criteria (RC) levels acceptable in the octave bands 16 Hz to 4000 Hz shall be as specified in the 2003 ASHRAE Handbook, HVAC Applications, Chapter 47. In addition, the maximum RC-15 and RC-20 noise levels acceptable in the octave bands 16 Hz to 4000 Hz shall be as follows:

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Octave Band Center Frequency (Hertz)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>16</td>
</tr>
<tr>
<td>RC - 20</td>
<td>55</td>
</tr>
<tr>
<td>RC - 15</td>
<td>55</td>
</tr>
</tbody>
</table>

3.03 TESTS: Following substantial completion, the project Acoustics Consultant will observe and measure noise levels. The measurements will be taken at normal locations of people and/or audio microphones.

END OF SECTION
Obligations for this Subcontractor from the Whiting-Turner Project Manual dated January 25, 2010, include the following Sections:

I. Safety/Orientation/Loss Control
J. Project Procedures
L. Temporary Facilities and Controls
M. Scheduling and Progress Meetings
Z. Cleanup

Note: Available at CMC Repro for Bidders reference
BIDDING AND CONTRACT REQUIREMENTS

UMBC Performing Arts & Humanities Facility
I - GENERAL NOTES TO ALL CONTRACTORS

Reference Project Manual Section V Item 00700- UMB GENERAL CONDITIONS OF CONSTRUCTION and other sections of the Bidding and Contract Requirements for requirements applicable to each contractor’s unit(s) of work.

1. Each contractor is responsible for its respective Scope of Work as presented in the Bidding and Contract Requirements.

2. Each contractor is responsible for applicable requirements as stipulated in Grimm + Parker Architects. Project Manuals issued under separate cover.

3. Each bidder and contractor is required to review and accept responsibility for its scope of work as stipulated in the full set of plans and specifications.

4. Each contractor is responsible for coordinating work with other unit contractors that touch upon their work.

5. Each contractor shall coordinate the work and its performance with that of other contractors, independent testing and inspection agencies, and as directed by the Construction Manager. Furthermore, each contractor agrees to work in harmony with other trades employed on the project and all work shall be in accordance with the requirements of appropriate governing bodies.

6. Each contractor shall provide full-time on-site supervision and management during performance of the work; and shall attend all CM requested progress and foreman’s meetings; and supply input into the CPM schedule.

7. Each contractor is responsible for any overtime work and temporary construction required to perform his work in accordance with the Contract Documents. This includes but is not limited to work that may have to be completed on overtime due to constraints of an outage, noise control, or other trade contractors.

8. In the performance of this contract, the contractor agrees to observe all applicable standards prescribed by or pursuant to the Federal Occupational Safety and Health Act, and agrees to indemnify the Construction Manager, and the University of Maryland and hold them harmless from all damages arising from and all expenses reasonably incurred due to Contractor’s violation of or failure to comply with such standards.

9. Contractor shall provide all samples, certificates and tests as required by Contract Documents, and a complete list of sources of material to be furnished within ten (10) days of award of this contract or Letter of Intent.

10. Each contractor shall submit daily work reports to Whiting-Turner including manpower and construction progress information.

11. Each contractor shall submit a copy of their affirmative action programs and a Minority Business Participation schedule and MBE Statement of Intent to the Construction Manager within five (5) days of request by Construction Manager or contract award of Letter of Intent.

12. Each Contractor and its subcontractors agrees to take all precautionary measures necessary to prevent damage to Owner’s property and buildings, and to promptly repair any damage caused by its actions at no cost to the Owner or Construction Manager.

13. Each contractor is responsible for barricading, for safety means and actions. Barricades shall be placed and maintained by the contractor creating the hazard or when necessary to facilitate the next sequence of construction. The contractor responsible for the next sequence of construction, as determined (if necessary) by the Construction Manager, is then responsible for barricades if a hazard still exists. Contractors who disturb barricades shall restore them to meet safety requirements at their own expense. The foregoing "barricades" applies equally to all kinds of safety means or actions. The Construction Manager has the right to deem what is a proper barricade.
14. Each contractor will be responsible for providing parking for its employees. The Construction Manager will not provide any parking. Parking is available at the TRC Lot on the UMBC Campus remote from the project site. On Site parking may be allowed for maximum one vehicle per Contractor as space becomes available and as coordinated with the work on site.

15. Submittals shall conform to requirements as outlined in each specification section and to provisions in Grimm + Parker Architect’s Project Manual. All submittals are to be reviewed and signed by the contractor, checked for conformance with the contract documents and not passed on from vendors or subcontractors without review.

16. The schedule for this project is extremely important. (See Section N – CONSTRUCTION SCHEDULE).

17. A copy of the contract agreement has been enclosed in this bid package. (See Section O – CONTRACT FORM).

18. This project is in a university setting. The university is extremely sensitive to the behavior of workers on the campus. Any worker not adhering to the policies and behavior criteria will be immediately removed from the project.

19. All engineering and layout for this scope of work, Construction Manager to provide vertical control (benchmarks) and horizontal control (building centerlines each way) only. Contractor shall perform all other vertical/horizontal control required.

20. All contractors are responsible to field measure and verify existing conditions pertaining to their scope of work.

21. All contractors are responsible to maintain a safe passage and required barricades at all time at the elevators, stairways and entrances. At the main elevator lobby and corridors adjacent to elevators on each floor where construction occurs maintain a 5-foot egress for access.

22. Contractors are responsible to exercise caution when working in areas that existing wall and floor finishes are to remain. Damages to existing finishes and structures will be borne by the contractor performing the task at time damages were incurred.

23. Each contractor is responsible to assure to Whiting-Turner that there will be consistent communication between the contractor’s office and their field personnel and foreman. Also, the contractor will have the foreman assigned to the project from the start date remain for the complete duration of the project unless Whiting-Turner requests the foreman to be removed from the project.

24. Throughout the performance of work, the contractor’s representative will remain in contact with the Construction Manager or his designate to monitor the progress of the work. It will be the responsibility of the contractor’s representative to advise this individual of any problems that may affect the work.

25. For all work done on a time and material basis, the contractor shall, on a daily basis, submit a daily time and cost record for all personnel and materials involved on the project, including subcontractors. At the end of each day, all time and cost records must be signed by the Construction Manager or his designate. Any time and cost record that is submitted for payment unsigned by WT will not be paid.

26. Since time is of the essence in this project, upon award of contract, contractors are required to immediately submit material delivery schedule, material submittals and coordination drawings for approval.

27. The following documents will be required prior to the performance of work:
   
   a. Executed Contract.
      
   b. Insurance Certificate indicating coverage and limits, as specified in Contract Documents.
c. Permits or permit filing receipts as required by the contract documents, State of Maryland or any other regulatory agencies having jurisdiction.

d. Bid Security or bid Bond (AIA Document A310), Performance Bond/Labor and Material Payment Bond (forms are in section F of this manual).

e. List of all sub-contractors proposed for major portions of the work and/or for those portions of the work as may be designated in the bidding.

f. Emergency Telephone Numbers

g. MSDS Information

30. Contractors shall submit all warranties called for and specified for all equipment installed under this contract commencing on date of substantial completion, and/or as requested by the University of Maryland Baltimore. Contractors holding or providing warranty coverage as part of their agreements to install must provide warranty services as required within two (2) hours of notification from the Plant Manager or his designate.

31. At each progress billing and at the end of the contract, the contractor shall submit written release of liens from all sub-contractors, suppliers, etc. Release of liens will be on Whiting-Turner's form. (See Section R – RELEASE AND WAIVER OF LIEN.)

32. Invoices may only be submitted when the work is completed, or at such intervals as prescribed in the contract documents.

33. All invoices must be accompanied by: Copies of all daily time and cost records pertinent to the job, signed by the appropriate Construction Manager representative; copies of all invoices for materials purchased for the job; copies of any subcontractor invoices paid as part of the job.

34. All contractors are responsible to order as soon as possible, all materials required to complete this project. Excuses for late deliveries will not be accepted or tolerated unless notified of such in writing within one week of award of contract.

35. All contractors acknowledge the lack of staging area within the project limits. Whiting-Turner will assign limited space to each contractor. Although, the contractor may be requested to relocate their storage area(s) on various occasions throughout the project duration.

36. All invoices must contain the contract number for the job being invoiced.

37. Invoices must be individual. Multiple billing on a single invoice will not be accepted. Any invoices submitted in this manner will be returned to the contractor for appropriate breakdown and invoicing.

38. Any invoice that is submitted in a format other than that described herein will be rejected and sent back to the contractor to be resubmitted in the proper format.

39. All applications for payment are to be on Whiting-Turner forms W-T 001, W-T 002 and W-T 003. (See Section E – APPLICATION FOR PAYMENT.)

40. All progress billings and final billings are to be submitted/faxed by the 20th of the month for review by Whiting-Turner then the original delivered to Whiting-Turner by the 25th of the month for processing.

41. The successful contractor will be required to furnish an itemized “Schedule of Values” broken down by floor or work area and major item of work and separated by labor and material for accounting purposes.
42. All Contractors are responsible to submit Material Safety Data Sheets (MSDS) to the Construction Manager, including but not limited to any and all adhesives, caulking, paint, solvents, cleaners, thinner, etc. for their scope, and prior to the commencement of any work. In addition, each contractor shall maintain, on site, a file with MSDS sheets for all products that Contractor is using.

43. All contractors acknowledge that adjacent facilities are in operation 24 hours a day, 7 days a week. All care must be taken to avoid disturbance of the occupants which includes but is not limited to, minor shift work, minor stoppage, relocating activities, power, heating, cooling, water, etc.

44. Smoking is prohibited within all campus buildings including roof areas. Violators will be warned in writing one time. Written warning will be copied to their office. The second violation will result in removal from project.

45. All Contractors are required to provide written certification of ALL fire retardant treated materials. Send all information to the Construction Manager.

46. All contractors are to give the Construction Manager at least 48 hours notice of all deliveries.

47. A two-week notice is required for all outages.

48. All contractors will be responsible for Whiting-Turner Non-OSHA Safety Rules. A copy of these safety rules is included in this section.

49. Whiting-Turner will hold a safety orientation for all workers on site. This will consist of a 15 minute safety orientation video as well as review of the WT safety rules and safety program. Hard hat stickers will be issued to all workers. All contractors and workers must participate in this program.

50. WT will also hold monthly safety meetings around lunch time that will last approximately 15 minutes. During these meetings a new safety topic will be discussed. All workers are required to attend these meetings.

51. WT will administer a strict safety program in which violation could result in fines. A copy of the Safety Program and Fine Schedule follows this section.

52. Obtain and pay fees for permits (other than the building permit), licenses, inspections, and testing required.

53. Provide permits or permit filing receipts as required by the Contract Documents, State of Maryland or any other regulatory agencies having jurisdiction prior to the performance of work.

54. Provide list of all sub-contractors proposed for major portions of the work and/or for those portions of the work as may be designated in the bidding prior to the performance of work.

55. Provide emergency telephone numbers prior to performing work.

56. Submit daily certified payroll. (refer to section T in the Construction Manager Bidding and Contract Requirements)

57. Review thoroughly and include current prevailing wage rates.

58. Comply with all Construction Manager and Owner Quality Control Program requirements.

59. Complete as-built drawings, O&M Manuals, commissioning tests, LEED paperwork, and all other required closeout documentation.

60. Complete construction activities on the proposed schedule within the specified duration regardless of the actual start date. The proposed schedule includes "estimated" start dates for the construction activities. Construction Manager reserves the right to alter the sequencing of construction activities.
61. Complete work in conjunction with the work of all other trade contractors within the construction activity sequence and construction activity durations so as to not delay the proposed schedule. The proposed schedule for this project is presented in Section N. The schedule is of the essence.

62. Schedule work during normal working hours as established by Construction Manager. Obtain authorization from Construction Manager to work outside of normal working hours.

63. Complete sufficiently all work, or applicable portions of the work, as required for Owner’s fit-out, use and occupancy. Obtain all required approvals and permits from the appropriate authorities for use and occupancy, or applicable portion thereof, prior to the established “Date of Substantial Completion”.

64. Complete, with Owner and Architect approval, all punchlist work and project closeout documentation by the “Date of Final Completion”, no later than 14 days after the “Date of Substantial Completion”. After this date, Construction Manager will complete outstanding punchlist items and backcharge the appropriate trade contractor or vendor. Until final completion and certification of punchlist work by Construction Manager, Owner, and Architect, final invoices will not be processed.

65. Provide engineering calculations and PE certifications as specified.

66. Prepare and inspect surface for proper installation of work in a timely manner. Include cleanup, etching, flash patching, moisture testing, etc. as required per specifications and manufacturers instructions. Commencement of this work shall constitute acceptance of the substrate as suitable for work.

67. Provide hoisting, scaffolding, lifting and cranes as necessary to move and relocate any required material and for proper, safe installation of all work under your contract.

68. Perform cutting precisely and conservatively to minimize patching.

69. Include sealants, caulking and firestopping integral to work.

70. Furnish and install sleeves, inserts, and anchors for work.

71. Furnish and install concrete required for work, which is not detailed on the architectural or structural drawings (e.g. equipment pads, thrust blocks, inertia pads, ductbanks, etc.).

72. Furnish and install additional reinforcement and supports for work, which is not detailed on the architectural and structural drawings but required for all work.

73. Furnish and install control wiring required for equipment provided as part of work and not specified in the Contract Documents.

74. Provide temporary lighting, power & water as required for work beyond that provided by mechanical and electrical trade contractors per specifications. Each trade contractor is responsible for temporary measures required to perform their work, including temporary staging, storage, office facilities, and utilities.

75. Provide temporary weather and dust protection for work.

76. Provide temporary support as required to perform work.

77. Verify capacity of area being used for storage, hoisting, etc prior to commencing work.

78. Provide daily cleanup of debris/dirt generated by execution of this scope of work, including daily and final cleanup of mud and dirt tracked onto public walks, lots and roads. Keep clean work areas, stairways, walkways, storage rooms, and other areas of obstructions. Each foreman and his crew are responsible for maintaining an orderly jobsite. An orderly jobsite is essential to the safe and efficient construction of the project. Each contractor is to
provide for own cleanup of own debris for own work as well as to provide one laborer to a composite crew to work on general, un-assignable, debris clean up of the jobsite for the duration of the contract.

79. Dumpster, trash removal and disposal fees will be provided by the Construction Manager, except for provisions clearly defined in a Contractor’s Specific Scope of Work.

80. Provide all requirements necessary for compliance with LEED Silver Certification as outlined in the specifications and as required for your contract including but not limited to proper documentation of materials provided, proper handling and disposal of waste materials, proper installation, using only approved materials, to fully comply with all LEED guidelines.

81. When provided by separate parties, furnishing and installation includes the following:
   - Furnish - deliver to job site, including freight and taxes.
   - Install - receive, unload, inventory, store, handle and install.
   - Provide – Furnish and install
THE WHITING-TURNER CONTRACTING COMPANY  
NON-OSHA SAFETY RULES

CONTAINERS
A. No glass containers allowed on site.

CRANES
A. All lifts must use tag lines.
B. No open hooks used on lifts.

EQUIPMENT
A. Absolutely no riding on equipment not equipped with proper seating.
B. Site Speed not to exceed 10 MPH.

FIRE CONTROL
A. No open fires, fire barrels, or hot boxes.
B. Fire extinguishers in:
   - Trailers/offices: minimum 10 lb ABC
   - Equipment: minimum 5 lb ABC
   - Fire Watch: minimum 20 lb ABC

HARDHATS
A. Wear on site at all times, must have Z89.1 rating.
B. No metal hardhats or bump caps authorized.

FOOT PROTECTION
A. Substantial leather boots required.
B. Loafers, sandals, tennis shoes (including steel toe type) are not allowed.

LADDERS
A. No metal ladders allowed on site.
B. Damaged ladders must be immediately removed from site or destroyed.

SCAFFOLDING
A. Full handrails, midrails, toeboards, full decking required on all scaffolds, according to standards.

SIGNAGE
A. Post safety or hazard signs (bilingual if necessary).
B. Use Whiting-Turner Supplied (Do Not Remove) signs on floor openings.

TRUCKS
A. No more than three (3) persons in cab of truck.
B. No riding in back of truck unless truck is equipped with seats and safety belts.

WORK CLOTHING
A. All shirts must have a minimum four (4) inches sleeve length over shoulders.
B. No shorts, cut offs, tank tops, net shirts, etc.
EMPLOYEE CONDUCT

A. Contractor's employees shall conduct themselves in a professional manner at all times.
B. University facilities not associated with the construction work are off-limits to the contractor's employees.
C. No portable radios, compact disc players, tape players, or other music reproduction equipment. Two-way radios are allowed for communication only.
D. No smoking, except in designated smoking areas, outside the building.
E. Harassment and indiscretions such as profanity, whistles, "cat-calls", etc. directed towards anyone is prohibited.
F. No horseplay or fighting.

DRUG FREE WORKPLACE

A. This Project is a drug-free workplace. Alcoholic beverages and/or controlled substances, except prescription medications are not allowed on site. Anyone intoxicated or under the influence of alcohol or controlled substances, shall be removed from the jobsite immediately.

Upon notice from the Construction Manager, the Contractor shall immediately remove from the project, any employee who fails to comply with these rules.
Job Name: UMBC – Performing Arts & Humanities Facility

Company Name (print): ____________________________

Employee Name (print): ____________________________

Employee Signature: ____________________________

Date: ____________________________

Sticker ID Number: ____________________________

**Penalties**

The following fine schedule will be assessed by Whiting-Turner to the subcontractor observed committing the indicated offense. The amount will be deducted from the subcontractor’s pay application.

<table>
<thead>
<tr>
<th>Safety Schedule</th>
<th>$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. No hard hat in designated areas</td>
<td>50.00</td>
</tr>
<tr>
<td>2. No safety belt or full body harness</td>
<td>100.00</td>
</tr>
<tr>
<td>3. Employee Wearing Improper / Unsafe Attire (Sneakers, shorts, etc.)</td>
<td>50.00</td>
</tr>
<tr>
<td>4. Employees Misusing Ladder</td>
<td>50.00</td>
</tr>
<tr>
<td>5. No eye protection where required</td>
<td>50.00</td>
</tr>
<tr>
<td>6. No welding blankets where required</td>
<td>100.00</td>
</tr>
<tr>
<td>7. No fire watch while welding or burning</td>
<td>100.00</td>
</tr>
<tr>
<td>8. Grounds missing on extension cords or tools</td>
<td>50.00</td>
</tr>
<tr>
<td>9. Unsafe housekeeping</td>
<td>100.00</td>
</tr>
<tr>
<td>10. Lack of shields to protect others while welding or burning</td>
<td>100.00</td>
</tr>
<tr>
<td>11. Lifting over occupied space without proper flag people, notification &amp; coordination</td>
<td>500.00</td>
</tr>
<tr>
<td>12. Unlabeled containers / no MSDS on file</td>
<td>50.00</td>
</tr>
<tr>
<td>13. Improper storage of gas cylinders</td>
<td>100.00</td>
</tr>
<tr>
<td>14. Any person removing barriers and leaving the area without barriers returned (floor, roof, etc.)</td>
<td>1,000.00</td>
</tr>
<tr>
<td>15. Any OSHA violation</td>
<td>50.00</td>
</tr>
<tr>
<td>16. No dust mask or improper dust mask</td>
<td>50.00</td>
</tr>
<tr>
<td>17. Using improper scaffolding</td>
<td>100.00</td>
</tr>
<tr>
<td>18. Misc. Minor violations (to be determined)</td>
<td>50.00</td>
</tr>
</tbody>
</table>
General Information

- All personnel working on this site will go through the same orientation you are going through.

- You will receive a hardhat sticker indicating you have gone through this orientation. This sticker is our means of knowing if anyone is on the job that has not gone through the orientation.

- Whiting-Turner will enforce all OSHA rules as defined in the Federal Code of Regulations 1926.29 amended 2002 – 2003 for ironwork. (Show book and explain that is it here in the trailer and available to everyone.)

- Whiting-Turner also has non-OSHA rules that are unique to Whiting-Turner and are displayed on the board outside. (Explain some of the unique rules i.e. no glass containers, tag lines on all lifts, no metal ladders permitted whatsoever, 100% hard hat at all times, minimum 4 inch sleeve length.)

- The purpose of our safety program is YOU! It is our goal that everyone working on this site goes home the same way they came.

- Our safety program is implemented by means of this orientation, weekly mandatory safety meetings, and daily audits for compliance.

- When we (A Whiting-Turner employee) witness anyone in violation of an OSHA or Whiting-Turner non-OSHA rule we will issue that individual a safety violation notice. (Show form)

- On this project, we have instituted a 3-strike rule. Any contractor whose employees have committed three safety violations or more will be subject to automatic expulsion from the project. Fines will be issued per the contract-scheduled amount. The exception is attitudes given to those WT employees issuing citations and any life threatening violation.

- Any Whiting-Turner employee can issue a violation notice. The severity of the fine will depend on the spirit in which the ticket is received. We are not here to be policemen, but we must enforce safety standards.

- In most cases the first two written violations per sub contractor will result in a warning only.

- In some cases no warning can be given. In any life threatening violation the fines will be automatic and they will be severe.

- Examples of life threatening violations are: Removing the cover from an open hole and not safeguarding it. (Show the hole cover sign and make sure they understand it means what it says!) Removing perimeter safety cable and not tightening it back up. Electrician walking away from an open panel that has hot leads in it. Entering any excavation 5 feet deep or deeper without trench protection.

- There will be a drawing held at the meeting.

- This is how the drawing works:
  - If there are NO lost accidents for 10 weeks, WT will draw one ticket worth $25 cash prize.
  - After 10 weeks, the amount of the drawing will increase to $50.
  - If there are no lost time accidents for 20 weeks, the amount of the drawing will increase to $100.

- LOST TIME ACCIDENTS AFFECT EVERYONE!!!
UMBC – Performing Arts & Humanities Facility – Bidding and Contract Requirements

- If at any time there is a lost time accident, the drawing will automatically revert to $25 for the entire building at the next safety meeting.

- If anyone in the company you are working for receives a Safety Violation Notice, your entire crew will be ineligible for the next safety drawing, even if it follows in the next week. **However, you must still attend the meeting!!!**

- All other trades of companies working on the same buildings where the Safety Violation Notice has been issued will remain eligible for the cash drawing.

- In addition to the safety program, Whiting-Turner has a quality award program on the project. Each week the foreman will nominate one individual from the crew for a quality award. (WT Superintendents can nominate foremen.)

- The person nominated for a quality award will receive a small token of appreciation (i.e. a hat or sunglasses). Further, their name will be placed in a can and once a month we will draw from those names and award one individual with $100 cash.

- Any individual who receives a safety violation will be ineligible for a quality award. Any individual who has received a quality award and then receives a safety violation notice will have their name removed from the quality award drawing.

**SITE**

- Deliveries & Construction entrances should be used at all times when entering and leaving site.

- Speed limit on the site is 10 mph.

- Parking on site is limited and is in designated areas only. Parking is strictly controlled for everyone’s safety. Limited contractor parking may be available in the TRC lot on the UMBC Campus, removed from the project site.

- Anyone found to be parking in the wrong lot will receive a safety violation notice and will be towed!

- No one is permitted to store building materials, tools or equipment unless a WT superintendent has approved the area of storage.

**Buildings**

- All cranes used for erecting, lifting or staging will present the WT superintendent with their current inspection certificate. Any crane found to be more than a year out on inspection will be shut down until an inspection has been performed to the satisfaction of the WT superintendent.

- Any open hole in the building will have its edges protected from fall by either a safety cable fixed to welded steel stanchions or a fixed and fastened plywood covering. *(No one can remove a hole cover without the permission of a Whiting-Turner superintendent.)*

- Perimeter cables will be placed on all levels and roof of the buildings. *(No one can take these cables down without permission from a WT superintendent.)*

- All personnel other than ironworkers will use 100% tie off when working at heights greater than 6'-0". Ironworkers must comply with sub part R of the OSHA code revised 2002 – 2003. Any ironworker working 15'-0" above an unprotected floor will use 100% tie off (except connectors who can work up to 30'-0").

- WT defines connectors as the initial two men who put the first two bolts in a beam and release the load from the crane.
- No radios of any kind are permitted on site. *(Except for use in two-way communication.)*

- All lifts, delivery trucks, bobcats, lulls and other delivery or hoisting equipment shall be equipped with back up beepers.

- There is a mandatory safe scaffold tag system for all scaffolding rising above one frame. The system will be the OSHA required three-color system. The subcontractor's competent person will be responsible for daily tag sign off.

- Any scaffold that is occupied and has not been inspected and signed off on will be shut down and the work will be halted until the competent person has performed an inspection in the presence of the Whiting-Turner superintendent.

- Hot Work Permits are MANDATORY! Refer to handout for requirements.

- Utility Red Tag Out Procedures are MANDATORY! Refer to handout for requirements.

- Restrooms in the existing buildings are off limits. No loitering (including eating lunch).

- There is no on site parking provided.

- There will be NO riding in the bed of a pick up truck!
LOSS CONTROL PROGRAM

The major goal of the Loss Control Program is to prevent losses. Prevention of accidents and elimination of hazards will, in turn, prevent pain, suffering and direct loss in terms of dollars. A safe work place must be maintained for all employees and visitors. High quality work standards and on-time performance are facilitated by an effective Loss Control Program.

Controlling conditions which result in losses is the responsibility of all parties. The Construction Manager will designate a job site safety officer responsible for program management. The responsibility for program implementation is the responsibility of all employees of the Owner, Construction Manager, Contractors and all Subcontractors. The following summary identifies objectives requiring a firm commitment to insure a continuing and comprehensive Loss Control Program.

Construction Manager Duties:

1. Designate jobsite safety officer.
2. Loss reporting and summaries.
3. Accident investigation.
4. Establish project procedures.
5. Inspections, notifications and follow-up.
   Monthly Safety Meetings.

Contractors Duties:

1. Designate on-site safety representative.
2. Consult with insurance carrier for construction operations.
3. Involve foreman and employees.
4. Safety training.
5. Weekly "Tool Box" talks
6. Adherence to safety standards, rules and government regulations.
7. Report conditions or practices which might cause injury or damage.
9. Participate in all accident investigations.
10. All employees attend weekly Tool Box talks.
11. Attend weekly Superintendents/Foreman’s Meetings.
12. Request permission to move barricades and floor opening protection.
13. Maintain fire watch for all burning operations
14. Properly store and protect hazardous chemicals and flammable substances.
15. Insure performance of these duties by subcontractors.
17. Prohibit the use of drugs and/or intoxicating beverages.
18. Maintain equipment in safe condition.

In order for our accident prevention program to be effective, management at all levels must personally take a serious interest in the prevention of accidents. They must also provide the leadership to which supervisory personnel and employees will respond by developing a positive safety attitude.

END OF SECTION I
J - PROJECT PROCEDURES

1.0 PROCEDURES

1.1 CONSTRUCTION MANAGER

A. The Construction Manager shall control, enforce, direct, instruct, and otherwise implement regulations and restrictions as set forth in this section.

1.2 OWNER’S REPRESENTATIVE

A. All communications with the owner’s representative shall be thru the Construction Manager unless otherwise noted in the General Conditions.

1.4 NOISE CONTROL

A. The Contractor shall execute the Work in this Contract as quietly as practicable to avoid unnecessary disturbances.

B. Any complaints duly registered by the Construction Manager of unacceptable noise levels shall be cause for the use of special precautions and methods of operation by the Contractor to reduce noise to acceptable levels.

C. The Owner and Construction Manager shall be the sole judge of the tolerability of noise levels.

D. Use of portable radios or tape recorders will not be allowed on the premises other than two-way communication radios.

E. The Contractor shall prepare a "Noise Schedule" as soon as practicable indicating the type of noise inducing work showing the dates, times and duration of such work. The Contractor should note any special instruction and/or time requirement in Scopes of Work.

1.5 PERSONNEL IDENTIFICATION

A. All employees of the Contractor and all subcontractors will be required to wear numbered identification tags with their name while on the premises of existing buildings.

B. The identification tags shall be conspicuously fixed to the front of their hard hats. If badges are required in lieu of or in addition to numbered tags, such badges should be conspicuously fixed to outer garments above elbow level.

C. Any of the Contractor’s personnel or subcontractors personnel who do not comply with this requirement at all times will be denied access to the facility or will be escorted off the premises. Any Contractor not turning in badges at the end of the project will be charged $10.00 per badge.

1.6 PERSONNEL PARKING

A. At no time shall the employees of the Contractor or subcontractor employed by Contractor be allowed to park their vehicles on UMBC property except where designated/previoulsy agreed upon.

B. At no time shall the employees of the Contractor or subcontractor employed by Contractor be allowed to park their vehicles on site without prior approval from the Construction Manager.
2.0 LIMIT OF OPERATIONS

A. It shall be noted that adjacent areas will remain open throughout the duration of this Project. The Construction Manager will provide a perimeter fence, which will establish the limits of operation for the main building area of work. Work outside the main building fenced area (ie. Chilled Water Line & Tunnel Extension) should be done with the utmost care for surrounding areas.

B. The Contractor’s normal limit of operations shall be confined within the Limits of Work Area as designated on the drawings.

C. The Owner, Architect, and other Contractors performing Work within these limits of operation, shall be allowed access at all times.

D. Construction operations must be planned and executed in a manner which allows emergency access to the project.

E. Any construction operations outside the limits of the perimeter fence shall only be done with the permission of the Construction Manager and proper protection must be provided at the expense of the Contractor.

3.0 COORDINATION

A. Coordinated Drawing Process
   1. Provide coordinated drawings in accordance with contract documents, and as specified in the Project Manual provided by Grimm+Parker Architects.

3.1 SCHEDULING

A. All arrangements for work which will involve interference with normal Owner functions, particularly in occupied areas, or adjacent thereto, shall be scheduled a minimum of 14 days in advance with the Construction Manager to provide for minimum of disruption and inconvenience.

3.2 OUTAGES

A. Utility and service outages shall be kept to a minimum, and will be permitted only with written approval of the Construction Manager and the Owner.

B. All requests for the outages shall be made a minimum of fourteen working days in advance of their need.

C. Requests for outages will not be considered unless they include an identification of all areas, which will be affected by the proposed outage. Blank outage forms will be provided by the Construction Manager upon request.

D. All outages shall occur after normal working hours. All costs including premium time shall be included in the Bid amounts.

END OF SECTION J
L. TEMPORARY FACILITIES AND CONTROLS
(Also see G+P section 01 50 00)

1.0 GENERAL

A. Included in this section are lists of temporary facilities and controls as follows:

1. As provided by each Contractor, or by particular Contractors.

2. As provided by the Owner or Construction Manager.

3. Other requirements affecting each Contractor.

2.0 ITEMS BY CONTRACTORS

A. The Contractor shall furnish and maintain, during construction of the project, adequate facilities at the site as set forth below. Upon completion of the project, or as directed by the Construction Manager, the Contractor shall remove all such temporary structures and facilities from the site, same to become his property and leave the premises in the condition required by the Contract.

B. The Contractor and his subcontractors may maintain temporary facilities on the site in addition to those specified as may be necessary for the proper conduct of the work. These shall be located so as to cause no interference to any Contract work. Locations shall be subject to approval by the Construction Manager.

C. Except as otherwise provided in this Section, each Contractor on the Project shall provide and pay for and shall be responsible for, all of his own temporary facilities and temporary services, including but not limited to the following, where applicable:

1. Material hoists and material handling, as required.

2. Protection for stored materials, equipment, tools, etc.

3. Storage facilities, located as directed by the Construction Manager.

4. Barricades at the following locations: the Contractor who creates a hazard shall be responsible for providing and maintaining barricades and other protection means and actions. Contractors who disturb barricades shall restore them to meet safety requirements at their own expense.

5. Scaffolding; working platforms.

6. Field office, located as directed by the Construction Manager, and on site supervision of all contract work.

7. Surveyor's work, staking, layout, measurements, except as provided by the Construction Manager. Where the nature of the work requires, the Contractor shall employ a registered surveyor for instrument work.

8. Extension cords for power tools and wiring to power equipment from the sources provided, (See paragraph 4.2 of this Section).

9. Temporary heat, except as otherwise provided in this Section. (See paragraph 4.3 of this Section.)

10. Water hoses, watertight and with stop valve to prevent waste. (See paragraph 4.6 of this section.)

11. Weather protection, pumping, drainage and ventilation, if needed.
12. Protection of adjacent materials, finishes, etc.

13. All other temporary facilities and temporary services not otherwise provided in this Section.

14. Temporary approaches and cleanup (see paragraph 4.1 of this Section).

15. Clean-up (See paragraph 4.7 of this section).

16. On site job drinking water until work is completed.

3.0 ITEMS BY CONSTRUCTION MANAGER
   A. Construction Manager will provide and pay for the following temporary facilities and temporary services for the Project (all items listed do not necessarily have application to each Contract):
      1. Toilet facilities (See paragraph 4.6 of this section.)
      2. Fire Extinguishers, except as required for specific burning operations.
      3. Access routes and temporary approaches (see paragraph 4.1 of this Section).
      4. Project sign naming only the major participants, as determined by the Architect and Owner.
      5. Construction Manager’s field office for the exclusive use of Construction Manager, Owner, Architect and Engineers.
      6. Basic bench marks on the site, major building line offsets at grade, and center line of corridors at all floors, only. (Any other instrument work or measuring undertaken by the Owner or Construction Manager will be solely as a double-check on the Contractor’s instrument work or measuring.)
      7. Trash bins, located on the new construction jobsite, and disposal of trash deposited in same, for use by all Contractors.
      8. Progress Photos.
      9. Soils, concrete and reinforcing inspection agency by the Construction Manager.
      10. Building permit, if required, by Construction Manager.

4.0 REQUIREMENTS—Intentionally Omitted

4.1 TEMPORARY APPROACHES
   A. The Construction Manager shall provide all necessary approaches and exits as required to properly execute the work, and as indicated on the Drawings.

   B. The Contractor shall keep streets, drives and walks, adjacent to and on the site, clean of all dirt, debris and litter caused by its construction operations for this Project. A clean-up shall be accomplished at the end of each day’s work. Clean-up of mud and dirt tracked onto public streets shall be done as often as required during the work day.

4.2 TEMPORARY ELECTRIC
   A. Each Contractor is responsible for electrical connections as required for its field office and/or equipment.
   B. Each Contractor shall bear the cost of standby electricians as necessitated by the Contractor’s operations.

   C. Temporary electric and lighting as needed to perform work will be provided by each Contractor.
D. Contractors shall provide their own generators or gas powered equipment as necessary if temporary power is not available.

4.3 TEMPORARY HEAT

A. The Contractor shall furnish at his own expense, such temporary heat, including apparatus, fuel and firemen, as may be necessary to fully protect the work.

B. Methods of temporary heating shall be approved by all governing agencies having legal jurisdiction, and by CM.

4.4 TEMPORARY SIGNS

A. The Construction Manager will furnish and erect the following:
   1. Project sign naming major participants, as determined by the Architect and the Owner.

B. Contractors will be responsible for signs required by safety regulations or as necessary to safeguard life and property.

C. Contractors may not display any other signs or advertisements.

4.6 TEMPORARY WATER AND SANITARY FACILITIES

A. Potable water will be supplied by each Trade Contractor as needed.

B. All other water will be obtained by each Trade Contractor.

C. Each Contractor shall provide his own water-tight hoses, equipped with stop valve at point of use.

D. Sanitary Facilities
   1. Portable type sanitary toilets for the use by contractors shall be furnished by the Construction Manager.
   2. The Construction Manager, at its option, may designate existing toilets for construction trade use.

4.7 DAILY CLEAN-UP

A. Each Unit Contractor will be responsible for all daily job clean-up until Contractor’s work is completed and no longer on the jobsite. The contractor must clean-up, consistent with the standard of final cleaning, (broom clean), on a daily basis. If a Contractor has been found delinquent in it’s clean-up, the Construction Manager, with 12 hours notice to the Contractor shall clean-up and BACKCHARGE the Contractor. The Construction Manager will not tolerate a messy work area.

4.8 USE PROHIBITED

A. Open fires; Salamanders.

B. Equipment, processes or materials producing excessive noise, dust, smoke, and flames.

C. Existing toilets, other than those specifically designated for construction use.

D. The use of elevators, except as specifically approved by the Construction Manager, is not allowed.

END OF SECTION L
UMBC – Performing Arts & Humanities Facility – Bidding and Contract Requirements

M - SCHEDULING AND PROGRESS MEETINGS

1.0 SCHEDULING

A. The work on this project will be monitored by the Construction Manager using a CPM schedule. The purpose is to provide a comprehensive planning tool to assure project completion on time. Each Contractor shall provide a schedule of his work to enable the Construction Manager to develop the CPM schedule.

B. A general bar-chart type schedule is provided in Section N of the Bidding and Contract Requirement to show an overall construction schedule. The purpose is to provide an overview of the project planning and phasing.

C. Short term bar chart schedules will be issued every other week at Progress Meetings. The purpose is to identify specific operations and planning in the immediate future. Each Unit Contractor shall assist in developing these schedules.

D. Each Contractor is responsible for adherence to the schedule. This responsibility shall include coordination among other contractors to assure an orderly and expeditious execution of the construction.

2.0 PROGRESS MEETINGS

A. Regularly scheduled progress meetings will be held at the site every other week or as otherwise deemed necessary by the Construction Manager.

B. Progress meetings shall be attended by representatives of Contractors involved in current work or involved in the near future, as directed by the Construction Manager. Representatives of the Contractor must be authorized to make decisions and issue instructions, which obligate the Contractor – typically the Project Manager.

C. The Construction Manager will publish minutes for each progress meeting. Contractors are responsible for careful review of the minutes, whether or not they were in attendance.

D. Contractor project foremen attendance is mandatory at all scheduled progress meetings. Foremen Meetings are different from and in addition to the Progress Meetings.

END OF SECTION M
Z - CLEANUP

1.1 DESCRIPTION:

A. This Section supplements provisions of Section V - GENERAL CONDITIONS FOR CONSTRUCTION and Section I - TEMPORARY FACILITIES AND CONTROLS. Cleaning as specified herein is the responsibility of each Contractor as applicable to its Work.

B. Keep premises free from accumulation of waste materials or rubbish.

C. At completion of the Work, remove waste materials and rubbish from the site as well as tools, construction equipment, machinery and surplus materials.

D. Definitions of terms used in this section:
   2. Semi-rough Work: exposed masonry, plastering and the like.
   3. Finish Work: involving finish surfaces throughout the Work.
   4. Broom Cleaning: cleaning by sweeping with broom and using a commercial dust retardant where required.
   5. Commercial Equipment: includes commercial washing, vacuuming, shampoo cleaning, and maintenance materials and equipment.

1.2 CONSTRUCTION MANAGER'S RIGHT TO CLEAN:

A. If Contractor fails to clean up as herein specified, the Construction Manager may do so and costs thereof shall be charged to Contractor as provided in the General Conditions.

B. If disputes arise between separate Contractors as to their responsibilities for cleaning up as specified herein, the Construction Manager may clean up and charge the cost thereof to the several Contractors.

1.3 SITE CLEANING:

A. Throughout the execution of the Work, the site shall be maintained in a neat and orderly condition. At least each week, clear the site of construction rubbish and maintain stored materials in an orderly manner.

B. Burial of waste materials shall not be permitted.

1.4 FALL-OUT CONTROL:

A. Maintain controls so that dust or airborne debris does not contaminate adjacent property, public streets and sidewalks.

B. Load and contain trucks bringing to site earth and building products and removing from site earth and building products in a manner to prevent spillage. Keep pavement and walks adjacent and leading to site clean and free of mud, dirt and debris at all times. Clean tires of vehicles coming to site so as not to contaminate street approaches with mud or debris.

1.5 COLLECTION OF CONSTRUCTION RUBBISH:

A. Construction rubbish shall be collected daily and removed from site or to designated onsite areas, consistent with scope of work, site and LEED requirements.
B. Building Demolition and Site Preparation.
   1. Provide containers to receive construction rubbish located at strategic points.
   2. Allow no rubbish to accumulate outside containers.
   3. Empty containers when at capacity, but not more than every three days unless warranted.
   4. Demolition contractor will provide dumpsters for disposal of building debris and general rubbish.
   5. Hazardous materials will be contained, removed and disposed in accordance with specification requirements.

C. Construction:
   1. Allow no construction rubbish to accumulate outside containers and dumpsters.
   2. On-floor containers shall be picked up and emptied daily.
   3. Take precautions not to create dust in finish areas.
   4. Do not "broom-clean" in areas where finish Work is being executed; use only commercial cleaning equipment.
   5. The Construction Manager will provide dumpsters for disposal of general rubbish and debris.

D. Compliance with LEED Waste Management requirements
   1. Comply with all requirements of 01 74 19 Construction Waste Management and Disposal
   2. All onsite trash must be sorted by each contractor and distributed to designated waste areas
   3. Wherewater possible re-use/recycle methods should be utilized and documentation submitted
   4. No hazardous, toxic, off-gasing, non-approved items are to be brought on site. If such items are found on site they are NOT to be disposed of in onsite containers – they must be removed from site, disposed of properly and documentation submitted.
   5. Comply with all requirements of the Waste Management Plan.
   6. Submit Waste Disposal Reports in accordance with procedures specified in Section 01 35 15

1.6 PESTS:
   A. Remove debris daily from the jobsite, which might contribute to survival or spread of rodents, roaches, and other household pests.

1.7 CLEANING MATERIALS & METHODS:
   A. In accord with manufacturer's instructions of the material cleaned, use cleaning materials only on surfaces recommended by cleaning material manufacturer. Cleaning shall result in a uniform appearing finish surface clean of foreign matter and undamaged as to its factory or job finished color, sheen, texture and general appearance. Where cleaning operations begin or stop shall not be evident in the finished Work. Do not damage or mar adjacent Work with cleaning materials or procedures.

1.8 FINAL CLEANING: Each Contractor shall perform the following final clean up items as applicable to their Work.
   A. Clean site of debris.
   B. Broom clean work areas.
   C. Remove all construction tools, gang boxes, equipment and materials.
   D. Remove temporary protection provided by the Contractor.
   E. Remove protection, stickers, markings, etc provided by Manufacturer or Contractor.
   F. Perform final cleaning as may be specified by Specification Sections in respective Contractors' scopes.

1.9 FINAL CLEANING BY CONSTRUCTION MANAGER: The Construction Manager shall perform final clean-up items beyond the work in paragraph 1.8 as required by the University for actual occupancy.

END OF SECTION Z
V. APPENDICES

APPENDIX A – TECHNICAL BID FORMS
APPENDIX B – BID PRICE FORM
APPENDIX C – CONTRACT FORMS
APPENDIX D – UMBC WEBSITE / CAMPUS MAP
APPENDIX A

TECHNICAL BID FORMS

TECHNICAL FORMS

Company Profile Form
Firm Experience
Acknowledgement of Receipt of Addenda Form
Bid Proposal Affidavit
MBE Utilization & Fair Solicitation Affidavit
APPENDIX A

PAIIF – CLASSROOM SYSTEM - BID # BC-20744-Q
COMPANY PROFILE FORM
Page 1 of 2

COMPANY NAME: __________________________________________

DATE OF INCORPORATION: ___________ STATE OF INCORPORATION: ______

# OF YEARS IN BUSINESS: ___________ NUMBER OF EMPLOYEES: ______

OTHER OR FORMER NAMES UNDER WHICH YOUR ORGANIZATION HAS OPERATED:

________________________________________________________________________

NAMES OF PRINCIPAL(S) AND TITLE(S): ______________________________________
________________________________________________________________________
________________________________________________________________________

HEADQUARTERS LOCATION: ________________________________________________

________________________________________________________________________

LOCATION OF OFFICE THAT WILL PROVIDE SERVICES TO UMBC AND NUMBER OF
EMPLOYEES:

________________________________________________________________________

TYPE(S) OF WORK PERFORMED AND SERVICES PROVIDED:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
APPENDIX A

PAHF – CLASSROOM SYSTEMS - BID # BC-20744-Q
COMPANY PROFILE FORM
Page 2 of 2

COMPANY NAME: _________________________________

ANNUAL SALES:


BRIEF HISTORY OF THE COMPANY (if preferred, an attachment to this form can be provided):

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

OTHER COMMENTS/ADDITIONAL INFORMATION:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

END OF COMPANY PROFILE FORM
EXPERIENCE FORM (Complete for three (3) similar/relevant contracts.)

BIDDER'S NAME: __________________________________________

CLIENT'S NAME: __________________________________________  CLIENT CONTACT PERSON'S NAME: _______________________

CLIENT'S ADDRESS: ________________________________  CLIENT'S TELEPHONE NUMBER: _______________________

CONTRACT DOLLAR SIZE: ________________________________

CONTRACT TERM: FROM: ___________________________ TO: ___________________________

NAME OF BIDDING FIRM'S ON-SITE PROJECT MANAGER WHO MANAGED THIS CONTRACT: ___________________________

PROVIDE A BRIEF, BUT DETAILED, DESCRIPTION OF THE SIMILARITIES OF THIS CONTRACT SCOPE TO THE REQUIREMENTS FOR THE UMBC CONTRACT SCOPE:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

LIST THE SERVICES PROVIDED UNDER THIS CONTRACT:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
BID NO.:  BC-20744-Q

BID PRICE FORM

BID DUE DATE:  THURSDAY, AUGUST 4, 2011 AT 2:00 P.M.

BID FOR:  UMBC PAHF – CLASSROOM SYSTEMS

NAME OF BIDDER:______________________________________________

ACKNOWLEDGEMENT OF RECEIPT OF ADDENDA

The undersigned, hereby acknowledges the receipt of the following addenda:

<table>
<thead>
<tr>
<th>Addendum No.</th>
<th>dated</th>
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As stated in the solicitation documents, this form is included with your Bid Price Form.

_____ Please check here to acknowledge that you have reviewed the Whiting-Turner Contracting Project Manual, dated January 25, 2010.

__________________________________________
Signature

__________________________________________
Printed Name

__________________________________________
Title

__________________________________________
Date

END OF FORM
BID/PROPOSAL AFFIDAVIT

A. AUTHORIZED REPRESENTATIVE

I HEREBY AFFIRM THAT: I am the ___________________________ (title) and the duly authorized representative of ___________________________ (business) and that I possess the legal authority to make this Affidavit on behalf of myself and the Business for which I am acting.

B. AFFIRMATION REGARDING BRIBERY CONDITIONS

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the above business (as is defined in Section 16-101 (b) of the State Finance and Procurement Article of the Annotated Code of Maryland), or any of its officers, directors, partners, controlling stockholders, or any of its employees directly involved in the business's contracting activities including obtaining or performing contracts with public bodies (as is defined in Section 16-101 (f) of the State Finance and Procurement Article of the Annotated Code of Maryland), has been convicted of, or has had probation before judgment imposed pursuant to Article 27, Section 641 of the Annotated Code of Maryland, or has pleaded nolo contendere to a charge of bribery, attempted bribery, or conspiracy to bribe in violation of Maryland law, or of the law of any other state or federal law, except as follows (indicate the reasons why the affirmation cannot be given and list any conviction, plea, or imposition of probation before judgment with the date, court, official or administrative body, the sentence or disposition, the name(s) of person(s) involved, and their current positions and responsibilities with the business) (use attachments as necessary):

C. AFFIRMATION REGARDING OTHER CONVICTIONS

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the above business, or any of its officers, partners, controlling stockholders, or any of its employees directly involved in the business's contracting activities including obtaining or performing contracts with public bodies, has:

1. Been convicted under state or federal statute of:
   (a) a criminal offense incident to obtaining, attempting to obtain, or performing a public or private contract; or
   (b) fraud, embezzlement, theft, forgery, falsification or destruction of records, or receiving stolen property;
2. Been convicted of any criminal violation of a state or federal antitrust statute;
3. Been convicted under the provisions of Title 18 of the United States Code for violation of the Racketeer Influenced and Corrupt Organization Act, 18 U.S.C. 1961 et seq., or the Mail Fraud Act, 18 U.S.C. 1341 et seq., for acts in connection with the submission of bids or proposals for a public or private contract;
4. Been convicted of a violation of the State Minority Business Enterprise Law, SS 14-308 of the State Finance and Procurement Article of the Annotated Code of Maryland;
5. Been convicted of a violation of the SS11-205.1 of the State Finance and Procurement Article of the Annotated Code of Maryland;
6. Been convicted of conspiracy to commit any act or omission that would constitute grounds for conviction or liability under any law or statute described in subsection (1) - (5) above;
7. Been found civilly liable under a state or federal antitrust statute for acts or omissions in connection with the submission of bids or proposals for a public or private contract; or
8. Admitted in writing or under oath, during the course of an official investigation or other proceeding, acts or omissions that would constitute grounds for conviction or liability under any law or statute described in SSB and C (1) - (7) above, except as follows (indicate reasons why the affirmations cannot be given, and list any conviction, plea, or imposition of probation before judgment with the date, court, official or administrative body, the sentence or disposition, the name(s) of the person(s) involved and their current positions and responsibilities with the business, and the status of any debarment) (use attachments as necessary):

D. AFFIRMATION REGARDING DEBARMENT

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the above business, or any of its officers, directors, partners, controlling stockholders; or any of its employees directly involved in the business's contracting activities, including obtaining or performing contracts with public bodies, has ever been suspended or debarred (including being issued a limited denial of participation) by any public entity, except as follows (list each debarment or suspension providing the dates of the suspension or debarment, the name of the public entity and the status of the proceedings, the name(s) of the person(s) involved and their current positions and responsibilities with the business, the grounds of the debarment or suspension, and the details of each person's involvement in any activity that formed the grounds of the debarment or suspension) (use attachments as necessary):
E. AFFIRMATION REGARDING DEBARMENT OF RELATED ENTITIES

I FURTHER AFFIRM THAT:

(1) The business was not established and it does not operate in a manner designed to evade the application of or defeat the purpose of debarment pursuant to Section 16-101 et seq. of the State Finance and Procurement Article of the Annotated Codes of Maryland; and

(2) The business is not a successor, assignee, subsidiary, or affiliate of a suspended or debarred business, except as follows (you must indicate the reasons why the affirmations cannot be given without qualification) (use attachments as necessary):

F. SUB-CONTRACT AFFIRMATION

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the above business, has knowingly entered into a Contract with a public body under which a person debarred or suspended under Title 16 of the State Finance and Procurement Article of the Annotated Code of Maryland will provide, directly or indirectly, supplies, services, architectural services, construction related services, leases of real property, or construction.

G. AFFIRMATION REGARDING COLLUSION

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the above business has:

(1) Agreed, conspired, conspired, or colluded to produce a deceptive show of competition in the compilation of the accompanying bid or offer that is being submitted;

(2) In any manner, directly or indirectly, entered into any agreement of any kind to fix the bid price or price proposal of the bidder or proposer or of any competitor, or otherwise taken any action in restraint of free competitive bidding in connection with the contract for which the accompanying bid or offer is submitted.

H. FINANCIAL DISCLOSURE AFFIRMATION

I FURTHER AFFIRM THAT:

I am aware of, and the above business will comply with, the provisions of Section 13-221 of the State Finance and Procurement Article of the Annotated Code of Maryland, which require that every business that enters into contracts, leases, or other agreements with the State of Maryland or its agencies during a calendar year under which the business is to receive in the aggregate $100,000 or more shall, within 30 days of the time when the aggregate value of the contracts, leases, or other agreements reaches $100,000, file with the Secretary of State of Maryland certain specified information to include disclosure of beneficial ownership of the business.

I. POLITICAL CONTRIBUTION DISCLOSURE AFFIRMATION

I FURTHER AFFIRM THAT:

I am aware of, and the above business will comply with, Election Law Article, SS 14-101 through 14-108, Annotated Code of Maryland, which requires that every person that enters into contracts, leases, or other agreements with the State of Maryland, including its agencies or a political subdivision of the State, during a calendar year in which the person receives in the aggregate $100,000 or more shall, file with the State Board of Elections a statement disclosing contributions in excess of $500 made during the reporting period to a candidate for elective office in any primary or general election.

J. DRUG AND ALCOHOL FREE WORKPLACE

(Applicable to all contracts unless the contract is for a law enforcement agency and the agency head or the agency head's designee has determined that application of COMAR 21.11.08 and this certification would be inappropriate in connection with the law enforcement agency's undercover operations.)

I CERTIFY THAT:

(1) Terms defined in COMAR 21.11.08 shall have the same meaning when used in this certification.

(2) By submission of its bid or offer, the business, if other than an individual, certifies and agrees that, with respect to its employees to be employed under a contract resulting from this solicitation, the business shall:

(a) Maintain a workplace free of drug and alcohol abuse during the term of the contract;

(b) Publish a statement notifying its employees that the unlawful manufacture, distribution, dispensing, possession, or use of drugs, and the abuse of drugs or alcohol is prohibited in the business' workplace and specifying the actions that will be taken against employees for violation of these prohibitions;

(c) Prohibit its employees from working under the influence of drugs or alcohol;

(d) Not hire or assign to work on the contract anyone whom the business knows, or in the exercise of due diligence should know, currently abuses drugs or alcohol and is not actively engaged in a bona fide drug or alcohol abuse assistance or rehabilitation program;
Promptly inform the appropriate law enforcement agency of every drug-related crime that occurs in its workplace if the business has observed the violation or otherwise has reliable information that a violation has occurred;

Establish drug and alcohol abuse awareness program to inform its employees about:
(i) The dangers of drug and alcohol abuse in the workplace;
(ii) The business' policy of maintaining a drug and alcohol free workplace;
(iii) Any available drug and alcohol counseling, rehabilitation, and employee assistance programs; and
(iv) The penalties that may be imposed upon employees who abuse drugs and alcohol in the workplace;

Provide all employees engaged in the performance of the contract with a copy of the statement required by J (2)

Notify its employees in the statement required by J (2) (b), above, that as a condition of continued employment on the contract, the employee shall:
(i) Abide by the terms of the statement; and
(ii) Notify the employer of any criminal drug or alcohol abuse conviction for an offense occurring in the workplace not later than five (5) days after a conviction;

Notify the procurement officer within ten (10) days after receiving notice under J (2) (b) (i), above, or otherwise receiving actual notice of a conviction;

Within 30 days after receiving notice under J (2) (b) (ii), above, or otherwise receiving actual notice of conviction, impose either of the following sanctions or remedial measures on an employee who is convicted of a drug or alcohol abuse offense occurring in the workplace:
(i) Take appropriate personnel action against an employee, up to and including termination; or
(ii) Require an employee to satisfactorily participate in a bona fide alcohol abuse assistance or rehabilitation program; and

Make a good faith effort to maintain a drug and alcohol free workplace through implementation of J (2) (a) - (j), above.

If the business is an individual, the individual shall certify and agree as set forth in J (4), below, that the individual shall not engage in the unlawful manufacture, distribution, dispensing, possession, or use of drugs or the abuse of drugs or alcohol in the performance of the contract.

I acknowledge and agree that:
(a) The award of the contract is conditional upon compliance with COMAR 21.11.08 and this certification;
(b) The violation of the provisions of COMAR 21.11.08 or this certification shall be cause to suspend payments under, or terminate the contract for default under COMAR 21.07.11 or 21.07.03.15, as applicable; and
(c) The violation of the provisions of COMAR 21.11.08 or this certification in connection with contract may, in the exercise of the discretion of the Board of Public Works, result in suspension and debarment of the business under COMAR 21.08.03.

K. CERTIFICATION OF CORPORATION REGISTRATION AND TAX PAYMENT

I FURTHER AFFIRM THAT:

Except as validly contested, the business had paid, or has arranged for payment of, all taxes due the State of Maryland and has filed all required returns and reports with the Comptroller of the Treasury, the State Department of Assessments and Taxation, and the Employment Security Administration, as applicable, and will have paid all withholding taxes due the State of Maryland prior to final payment under any contract relating to this bid/proposal affidavit.

The business named above is a sole proprietorship, partnership, or corporation formed under the laws of the State of [State name]. I further affirm that the business named above is registered in accordance with the Corporations and Associations Article, Annotated Code of Maryland, and that it is in good standing and has filed all of its annual reports, together with filing fees, with the Maryland State Department of Assessments and Taxation, and that the name and address of its current registered agent is filed with the State Department of Assessments and Taxation as:

Name: ____________________________

Address: __________________________

L. CONTINGENT FEES

I FURTHER AFFIRM THAT:
The business has not employed or retained any person, partnership, corporation, or other entity, other than a bona fide employee, bona fide agent, or commercial selling agency working for the business, to solicit or secure the Contract, and that the business has not paid or agreed to pay any person, partnership, corporation, or other entity, other than a bona fide employee, bona fide agent, or commercial selling agency, any fee or any other consideration contingent on the making of the Contract.

M. ACKNOWLEDGMENT

I ACKNOWLEDGE THAT this Affidavit is to be furnished to the Procurement Officer and may be distributed to units of: (1) the State of Maryland; (2) counties or other subdivisions of the State of Maryland; (3) other states; and (4) the federal government. I further acknowledge that this Affidavit is subject to applicable laws of the United States and the State of Maryland, both criminal and civil, and that nothing in this Affidavit or any contract resulting from the submission of the accompanying bid or proposal shall be construed to supersede, amend, modify or waive, on behalf of the State of Maryland, or any unit of the State of Maryland having jurisdiction, the exercise of any statutory right or remedy conferred by the Constitution, and the laws of Maryland with respect to any misrepresentation made or any violation of the obligations, terms and covenants undertaken by the above business with respect to (1) this Affidavit, (2) the contract, and (3) other Affidavits comprising part of the contract.
I DO SOLEMNLY DECLARE AND AFFIRM UNDER PENALTIES OF PERJURY THAT THE CONTENTS OF THIS AFFIDAVIT ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE, INFORMATION, AND BELIEF.

Date: ________________________________

By: ________________________________

(Full Name of Authorized Representative and Affiant)

FIN or SS#: __________________________

Solicitation#: _________________________

12.0021 (Rev. 11/05)

END OF FORM
MDOT Certified MBE Utilization and Fair Solicitation Affidavit
(submit with offer)

This document MUST BE included with the bid or offer. If the Bidder or Offeror fails to complete and submit this form with the bid or offer as required, the procurement officer shall deem the bid non-responsive or shall determine that the offer is not reasonably susceptible of being selected for award.

In conjunction with the bid or offer submitted in response to Solicitation No. __________, I affirm the following:

1. ☐ I acknowledge and intend to meet the overall certified Minority Business Enterprise (MBE) participation goal of ____ percent and, if specified in the solicitation, sub goals of ____ percent for MBEs classified as African American-owned and ____ percent for MBEs classified as women-owned. Therefore, I will not be seeking a waiver pursuant to COMAR 21.11.03.11.

OR

☐ I conclude that I am unable to achieve the MBE participation goal and/or subgoals. I hereby request a waiver, in whole or in part, of the overall goal and/or subgoals. Within 10 business days of receiving notice that our firm is the apparent awardee, I will submit all required waiver documentation in accordance with COMAR 21.11.03.11.

2. I understand that if I am notified that I am the apparent awardee, I must submit the following additional documentation within 10 working days of receiving notice of the potential award or from the date of conditional award (per COMAR 21.11.03.10), whichever is earlier.

   (a) Outreach Efforts Compliance Statement (Attachment B)
   (b) Subcontractor Project Participation Statement (Attachment C)
   (c) Any other documentation, including waiver documentation, if applicable, required by the Procurement Officer to ascertain bidder or offeror responsibility in connection with the certified MBE participation goal.

I understand that if I fail to return each completed document within the required time, the Procurement Officer may determine that I am not responsible and therefore not eligible for contract award. If the contract has already been awarded, the award is voidable.

3. In the solicitation of subcontract quotations or offers, MBE subcontractors were provided not less than the same information and amount of time to respond as were non-MBE subcontractors.

4. Set forth below are the (i) certified MBEs I intend to use and (ii) the percentage of the total contract amount allocated to each MBE for this project. I hereby affirm
that the MBE firms are only providing those products and services for which they are MDOT certified.

<table>
<thead>
<tr>
<th>Prime Contractor: (Firm Name, Address, Phone)</th>
<th>Project Description:</th>
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<tbody>
<tr>
<td>Project Number:</td>
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</tbody>
</table>

**List Information For Each Certified MBE Subcontractor On This Project**

<table>
<thead>
<tr>
<th>Minority Firm Name</th>
<th>MBE Certification Number</th>
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<tbody>
<tr>
<td>Certification Category For Dually Certified MBE Subcontractors (<em>Check Only One Certification Category</em>)</td>
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<tr>
<td>□ African American Owned</td>
<td>□ Woman-Owned</td>
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</tr>
<tr>
<td>Percentage of Total Contract</td>
<td></td>
</tr>
</tbody>
</table>

Continue on a separate page, if needed.
SUMMARY

Total African-American MBE Participation:    %
Total Woman-Owned MBE Participation:    %
Total Other Participation    %
Total All MBE Participation:    %

I solemnly affirm under the penalties of perjury that the contents of this Affidavit are true to the best of my knowledge, information, and belief.

Bidder/Offeror Name
(PLEASE PRINT OR TYPE)

Signature of Affiant

Name: ____________________________________________
Title: ____________________________________________
Date: ____________________________________________

END OF FORM

END OF APPENDIX-A
APPENDIX B

BID PRICE FORMS

Bid Price Form
Bid Bond Form
MS BID NO.: BC-20744-Q
BID PRICE DUE: THURSDAY, AUGUST 4, 2011 at 2:00 P.M.
BID FOR: UMBC PAHF – CLASSROOM SYSTEMS

BIDDER: 

Federal Identification Number/Social Security Number: 

MULTI-STEP BID PRICE FORM

DATE

Ms. Sharon Quinn
Department of Procurement Services
University of Maryland Baltimore County
Administration Building, Room 301
1000 Hilltop Circle
Baltimore, MD 21250

Dear Ms. Quinn:

The undersigned hereby submits the Bid Price Form as set forth in MS BID # BC-20744-Q dated 07/14/11 and the following subsequent addenda:

Addendum _____ dated _____
Addendum _____ dated _____
Addendum _____ dated _____

Having received clarification on all matters upon which any doubt arose, the undersigned proposes to complete the work as described in the Multi-Step Bid and subsequent Addenda as noted above.

By signing and submitting this response, undersigned hereby agrees to all the terms and conditions of the Bid including any issued addenda.

The pricing provided on the following Bid Price Attachment is to include all of the Contractor’s costs to perform the contracted services (i.e. overhead, profit, etc.). No additional compensation will be applicable for these contracted services, unless additional items or services are requested by the University which are outside of the scope of items and services specified within this Bid document.

The Contractor’s Bid can be accepted in whole or part. While it is the intent of the University to award most or all of the requested work as one contract, the University reserves the right to make an award which best serves the interest of the University.

Complete the Bid Price Attachment per Section 274100, 1, 1C of the specifications.
BID NO.: BC-20744-Q
BID PRICE DUE: THURSDAY, AUGUST 4, 2011 at 2:00 P.M.
BID FOR: UMBC PAHF – CLASSROOM SYSTEMS

We understand that by submitting a response we are agreeing to all of the terms and conditions included in the Multi-Step Bid documents.

We understand that the award will be made to the lowest, responsible and responsive bidder.

We understand that the University reserves the right to award a contract (or contracts) for all items, or any parts thereof, as set forth in detail under the information furnished in the Bid document.

We further confirm that the Project Manager named within our Technical response will be assigned to the University for the duration of this contract.

The undersigned hereby certifies that he/she is a duly authorized officer of the Bidding Firm and can bind the Bidder to the prices quoted herein.

________________________________________________________________________________________

Bidding Firm (Company Name)

________________________________________________________________________________________

Authorized Signature

________________________________________________________________________________________

Print Name

________________________________________________________________________________________

Title

END OF BID PRICE FORM
BID BOND

Bid No._____

KNOW ALL MEN BY THESE PRESENTS, that we, ________________________, as Principal, hereinafter called the Principal, and ________________________, a corporation duly organized under the laws of the state of ______________________________________, as Surety, hereinafter called the Surety, are held and firmly bound unto the State of Maryland, hereinafter called "State", for the sum of $__________________________ (S$__________), for the payment of which sum, the said Principal and the said Surety bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for ________________________,

NOW, THEREFORE, if the Principal, upon acceptance by the State of its bid identified above, within the period specified herein for acceptance (one hundred and twenty (120) days, if no period is specified), shall execute such further contractual documents, if any, and give such bond(s) as may be required by the terms of the bid as accepted within the time specified (ten (10) days if no period is specified) after receipt of the forms, or in the event of failure to execute such further contractual documents and give such bond(s), if the Principal shall pay the State for any cost of procuring the work which exceeds the amount of its bid, then the above obligation shall be void and of no effect.

The Surety executing this insurance hereby agrees that its obligation shall not be impaired by any extension(s) of the time for acceptance of the bid that the Principal may grant to the State, notice of which extension(s) to the Surety being hereby waived; provided that such waiver of notice shall apply only with respect to extensions aggregating not more than one hundred and twenty (120) calendar days in addition to the period originally allowed for acceptance of the bid.

In Presence of Witness

In Presence of Witness

In Presence of Witness

In Presence of Witness

Co-Partnership Principal

Co-Partnership Principal

Co-Partnership Principal

Co-Partnership Principal

Corporate Principal

Corporate Principal

Corporate Principal

Corporate Principal

Attest:

Attest:

Attest:

(Seal)

(Seal)

(Seal)

(Seal)

(Name of Co-Partnership)

(Name of Corporation)

(Name of Corporation)

President

President

President

President

AFFIX CORPORATE SEAL

AFFIX CORPORATE SEAL

AFFIX CORPORATE SEAL

AFFIX CORPORATE SEAL

Corporate Secretary

Corporate Secretary

Corporate Secretary

Corporate Secretary

Approved as to legal form and sufficiency

this ______ day of ____________, 20____

Asst. Attorney General
APPENDIX C

CONTRACT FORMS

Contract
Contract Affidavit
Performance Bond
CONTRACT
BETWEEN
THE UNIVERSITY OF MARYLAND, BALTIMORE COUNTY
AND

By this Contract, made as of the day of ____________, 2011, by and between The University of Maryland, Baltimore County, a constituent institution of the University System of Maryland, agency of the State of Maryland ("University"), 1000 Hilltop Circle, Baltimore, Maryland 21250, and ________________________________ ("Contractor"), for ____________, the parties hereby agree as follows:

1. **TERM OF CONTRACT:** The term of this Contract shall begin on ____________ and terminate on ____________.

2. **SCOPE OF CONTRACT:** The Contractor’s obligations and duties under this Contract shall include, but are not limited to, the terms, conditions and specifications contained in RFP No. ____________ and any amendments or changes thereto as well as the Contractor’s proposal submitted in response to the aforementioned RFP (collectively referred to hereinafter as the “Contract Documents”). These obligations and duties are subject to the unilateral right of the University to order, in writing, changes in the work within the scope of the Contract.

3. **COMPENSATION AND METHOD OF PAYMENT:**
   A. As compensation for satisfactory performance of the work described in Paragraph 2, above, the University will pay the Contractor $___________.
   B. The Contractor’s Federal Tax Identification Number or, where applicable, Social Security Number is _____________.
   C. The Contractor shall be paid only for items or services that are specifically named in this Contract. No additional costs for items or services will be paid by the University without its prior express written consent.

4. **DELIVERY:** Delivery shall be made in accordance with bid/RFP specifications. The University reserves the right to test any materials, equipment, supplies or services delivered to determine if the specifications have been met. The materials listed in the specifications shall be delivered FOB the point or points specified prior to or on the date specified in the solicitation. Any material that is defective or fails to meet the terms of the specifications shall be rejected. Rejected materials shall be promptly replaced. The University reserves the right to purchase replacement materials in the open market. Contractors failing to promptly replace materials lawfully rejects shall be liable for any excess price paid for the replacement plus applicable expenses, if any.

5. **NON-HIRING OF EMPLOYEES:** No employee of the State of Maryland or any unit thereof, whose duties as such employee include matters relating to or affecting the subject matter of this Contract, shall, while so employed, become or be an employee of the party or parties hereby contracting with the State of Maryland or any unit thereof.

6. **RESPONSIBILITY OF CONTRACTOR:**
   A. The Contractor shall perform the services with that standard of care, skill and diligence normally provided by a Contractor in the performance of services similar to the services hereunder.
B. Notwithstanding any review, approval, acceptance or payment for the services by the University, the Contractor shall be responsible for professional and technical accuracy of its work, design drawings, specifications and other materials furnished by the Contractor under this Contract.

7. DISSEMINATION OF INFORMATION:
A. During the term of this Contract, the Contractor shall not release any information related to the services or performance of the services under this Contract nor publish any final reports or documents without the prior written approval of the University.
B. The Contractor shall indemnify and hold harmless the University, its officers, agents and employees, from all liability which may be incurred by reason of dissemination, publication, distribution or circulation, in any manner whatsoever, of any information, data, documents, or materials pertaining in any way to this Contract by the Contractor, its agents or employees.

8. OWNERSHIP OF DOCUMENTS AND MATERIALS: The Contractor agrees that all documents and materials, including but not limited to, reports, drawings, studies, specifications, estimates, maps, photographs, designs graphics, mechanical, artwork, and computations prepared by or for it under the terms of this Contract shall at anytime during the performance of the services be made available to the University upon request by the University and shall become and remain the exclusive property of the University upon termination or completion of the services. The University shall have the right to use same without restriction or limitation and without compensation to the Contractor other than that provided by this Contract. The University shall be the owner for purposes of copyright, patent or trademark registration.

9. PATENTS, COPYRIGHTS AND TRADE SECRETS:
A. If the Contractor furnishes any design, device, material, process or other item which is covered by a patent or copyright or which is deemed proprietary to or a trade secret of another, Contractor shall obtain the necessary permission or license to use such item.
B. Contractor will defend or settle, at its own expense, any claim or suit against the University alleging that any such item furnished by Contractor infringes any patent, trademark, copyright, or trade secret. Contractor also will pay all damages and costs that by final judgment may be assessed against the University due to such infringement and all attorneys’ fees and litigation expenses reasonably incurred by the University to defend against such a claim or suit. The obligations of this paragraph are in addition to those stated in paragraph 16 below.

C. If any products furnished by Contractor become, or in Contractor’s opinion, are likely to become, the subject of a claim of infringement, Contractor will, at its option: (1) procure for the University the right to continue using the applicable item; (2) replace the product with a non-infringing product substantially complying with the item’s specifications; or (3) modify the item so it becomes non-infringing and performs in a substantially similar manner to the original item.

10. DISPUTES: This Contract shall be subject to the provisions of University System of Maryland Procurement Policies and Procedures. Pending resolution of a claim, the Contractor shall proceed diligently with the performance of the Contract in accordance with the Procurement Officer’s decision. Any dispute that is not subject to the jurisdiction of the Maryland State Board of Contract Appeals, as provided in the University System Procurement Policies and Procedures, shall be brought in and heard by
the courts of the State of Maryland, and the parties voluntarily consent to the exclusive
jurisdiction of the courts of this State for any such proceeding.

11. **NONDISCRIMINATION IN EMPLOYMENT**: The Contractor agrees: (a) not to
discriminate in any manner against an employee or applicant for employment because of
race, color, religion, creed, age, sex, sexual orientation, marital status, national origin,
ancestry, or physical or mental handicap unrelated in nature and extent so as reasonably
to preclude the performance of such employment; (b) to include a provision similar to
that contained in subsection (a), above, in any subcontract except a subcontract for
standard commercial supplies or raw materials; and (c) to post and to cause
subcontractors to post in conspicuous places available to employees and applicants for
employment, notices setting forth the substance of this clause.

12. **CIVIL RIGHTS ACT 1964**: Vendors and Contractors providing materials, equipment,
supplies or services to the State under this Contract herewith assure the State that they are
conforming to the Civil Rights Act of 1964, the Civil Rights Restoration Act of 1988, and
the Civil Rights Act of 1991, and Section 202 of Executive Order 11246 of the President
of the United States of America as amended by Executive Order 11375, as applicable.

13. **AFFIRMATIVE ACTION**: The Contractor and all subcontractors shall develop and
maintain affirmative action plans directed at increasing the utilization of women and
members of minority groups on State public works projects, pursuant to the Executive
Order 11246 of the President of the United States of America and guidelines on
Affirmative Action issued by the Equal Employment Opportunities Commission (EEOC)
29 C.F.R. part 1608 and the Governor of Maryland's Executive Order 01.01.1993.16.

14. **CONFLICT OF INTEREST LAW**: It is unlawful for any University officer,
employee, or agent to participate personally in his official capacity through decision,
approval, disapproval, recommendation, advice, or investigation in any contract or other
matter in which he, his spouse, parent, child, brother, or sister, has a financial interest or
to which any firm, corporation, association, or other organization in which he has a
financial interest or in which he is serving as an officer, director, trustee, partner, or
employee, or any person or organization with whom he is negotiating or has any
arrangement concerning prospective employment, is a party, unless such officer,
employee, or agent has previously complied with the provisions of Article 40A, §3-101 et
seq of the Annotated Code of Maryland.

15. **CONTINGENT FEE PROHIBITION**: The Contractor, Architect, or Engineer (as
applicable) warrants that it has not employed or retained any person, partnership,
corporation, or other entity, other than a bona fide employee or agent working for the
Contractor, Architect, or Engineer, to solicit or secure this agreement, and that it has not
paid or agreed to pay any person, partnership, corporation, or other entity, other than a
bona fide employee or agent, any fee or any other consideration contingent on the making
of this agreement.

16. **INTELLECTUAL PROPERTY**: Contractor agrees to indemnify and save harmless the
State, its officers, agents and employees with respect to any claim, action, cost or
judgment for patent infringement, or trademark or copyright violation arising out of
purchase or use of materials, supplies, equipment or services covered by this Contract.

17. **SOFTWARE CONTRACTS**: [Delete if not applicable and insert "N/A"] As
specifically provided by Maryland Code Annotated, Commercial Law Article, Section
21-104, the parties agree that this Contract shall not be governed by the Uniform
Computer Information Transaction Act ("UCITA"), Title 21 of the Maryland Code
Annotated, Commercial Law Article, as amended from time to time. This Contract shall
be governed by the common law of Maryland relating to written agreements, as well as other statutory provisions, other than UCITA, which may apply, and shall be interpreted and enforced as if UCITA had never been adopted in Maryland. Vendor agrees that, as delivered to the University, the software does not contain any program code, virus, worm, trap door, back door, timer or clock that would erase data, or programming or otherwise cause the software to become inoperable, inaccessible, or incapable of being used in accordance with its conditions, or manually on command of Vendor.

18. **EPA COMPLIANCE**: Materials, supplies, equipment and services shall comply in all respects with the federal Noise Control Act of 1972, where applicable. Power equipment, to the greatest extent possible, shall be the quietest available. Equipment certified by the US EPA as a Low Noise Emission Product pursuant to the Federal Noise Control Act of 1972 shall be considered to meet the intent of the regulation. The Contractor must supply and have immediately available to their employees spill containment equipment/supplies necessary to contain any hazards they may introduce to the job site. The Contractor is responsible for any and all costs incurred by the University in remediating spills or releases of materials he/she introduced onto the job site.

19. **MULTI-YEAR CONTRACTS CONTINGENT UPON APPROPRIATIONS**: If the General Assembly fails to appropriate funds or if funds are not otherwise made available for continued performance for any fiscal period of this Contract succeeding the first fiscal period, this Contract shall be canceled automatically as of the beginning of the fiscal year for which funds were not appropriated or otherwise made available; provided, however, that this will not affect either the State's rights or the Contractor's rights under any termination clause in this Contract. The effect of termination of the Contract hereunder will be to discharge both the Contractor and the State of Maryland from future performance of the Contract, but not from their rights and obligations existing at the time of termination. The Contractor shall be reimbursed for the reasonable value of any non-recurring costs incurred but not amortized in the price of the Contract. The State shall notify the Contractor as soon as it has knowledge that funds may not be available for the continuation of this Contract for each succeeding fiscal period beyond the first.

20. **TERMINATION FOR DEFAULT**: If the Contractor fails to fulfill its obligation under this contract properly and on time, or otherwise violates any provision of the contract, the University may terminate the contract by written notice to the Contractor. The notice shall specify the acts or omissions relied upon as cause for termination. All finished or unfinished work provided by the Contractor shall, at the University's option, become the University's property. The University shall pay the Contractor fair and equitable compensation for satisfactory performance prior to receipt of notice of termination, less the amount of damages caused by Contractor's breach. If damages are more than the compensation payable to the Contractor, the Contractor will remain liable after termination and the University can affirmatively collect damages. Termination hereunder, including the determination of the rights and obligations of the parties, shall be governed by the provisions of USM Procurement Policies and Procedures.

21. **TERMINATION FOR CONVENIENCE**: The performance of work under this Contract may be terminated by the University in accordance with this clause in whole, or from time to time in part, whenever the University shall determine that such termination is in the best interest of the University. The University will pay all reasonable costs associated with this Contract that the Contractor has incurred up to the date of termination and all reasonable costs associated with termination of the Contract.
However, the Contractor shall not be reimbursed for any anticipatory profits that have not been earned up to the date of termination. Termination hereunder, including the determination of the rights and obligations of the parties, shall be governed by the provisions of USM Procurement Policies and Procedures.

22. **TERMINATION OF MULTIYEAR CONTRACTS:** If the General Assembly fails to appropriate funds or if funds are not otherwise made available for continued performance for any fiscal period of this Contract succeeding the first fiscal period, this Contract shall be canceled automatically as of the beginning of the fiscal year for which funds were not appropriated or otherwise made available; provided, however, that this will not affect either the State’s rights or the Contractor’s rights under any termination clause in the Contract. The effect of termination of the Contract hereunder will be to discharge both the Contractor and the State from future performance of the Contract but not from their rights and obligations existing at the time of termination. The Contractor shall be reimbursed for the reasonable value of any non-recurring costs incurred but not amortized in the price of the Contract. The State shall notify the Contractor as soon as it has knowledge that funds may not be available for the continuation of this Contract for each succeeding fiscal period beyond the first.

23. **DELAYS AND EXTENSIONS OF TIME:** The Contractor agrees to perform this agreement continuously and diligently. No charges or claims for damages shall be made by the Contractor for any delays or hindrances, regardless of cause, in the performance of services under this Contract. Time extensions will be granted only for excusable delays that arise from unforeseeable causes beyond the control and without the fault or negligence of the Contractor, including but not restricted to, acts of God, acts of the public enemy, acts of the State in either its sovereign or contractual capacity, acts of another Contractor in the performance of a State Contract, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, or the delay of a sub-contractor or supplier arising from unforeseeable causes beyond the control and without the fault or negligence of either the Contractor or the subcontractors or suppliers.

24. **VARIATIONS IN ESTIMATED QUANTITIES:** [Delete is not applicable - if contract does not contain estimated quantity items.] No equitable adjustment shall be permitted in favor of either the State of Maryland or the Contractor in the event that the quantity of any pay item in this Contract is an estimated quantity and the actual quantity of such pay item varies from the estimated quantity stated in the Contract.

25. **LIQUIDATED DAMAGES:** [To be included where deemed appropriate by the Procurement Officer or insert “N/A”] Time is an essential element of the Contract and it is important that the work be vigorously prosecuted until completion. For each day that any work shall remain uncompleted beyond the time(s) specified elsewhere in the contract, the Contractor shall be liable for liquidated damages in the amount(s) provided for in the solicitation, provided, however, that the due account shall be taken of any adjustment of the specified completion time(s) for completion of work as granted by approved change orders.

26. **SUSPENSION OF WORK:** The procurement officer unilaterally may order the Contractor in writing to suspend, delay or interrupt all or any part of the work for such period of time as the Procurement Officer may determine to be appropriate for the convenience of the University.
27. **PRE-EXISTING REGULATIONS:** In accordance with the provisions of Section 11-206 of the State Finance and Procurement Article, Annotated Code of Maryland, the regulations set forth in USM Procurement Policies and Procedures in effect on the date of execution of this Contract are applicable to this Contract.

28. **FINANCIAL DISCLOSURE:** The Contractor shall comply with the provisions of Section 13-221 of the State Finance and Procurement Article of the Annotated Code of Maryland, as from time to time amended, which requires that every business that enters into contracts, leases or other agreements with the State of Maryland or its agencies during a calendar year under which the business is to receive in the aggregate $100,000 or more, shall, within 30 days of the time when the aggregate value of these contracts, leases or other agreements reaches $100,000, file with the Secretary of State of Maryland certain specified information to include disclosure of beneficial ownership of the business.

29. **POLITICAL CONTRIBUTION DISCLOSURE:** The Contractor shall comply with Article 33, Sections 14-101 through 14-104, of the Annotated Code of Maryland, which requires that every person that enters into contracts, leases, or other agreements with the State, a county, or an incorporated municipality, or their agencies, during a calendar year under which the person receives in the aggregate $100,000 or more shall file with the State Administrative Board of Election Laws a statement disclosing contributions in excess of $500 to a candidate for elective office in any primary or general election. The statement shall be filed with the State Administrative Board of Election Laws: (1) before a purchase or execution of a lease or contract by the State, a county, an incorporated municipality, or their agencies, and shall cover the preceding two calendar years; and (2) if the contribution is made after the execution of a lease or contract, then twice a year, throughout the contract term, on: (a) February 5, to cover the 6-month period ending January 31; and (b) August 5, to cover the 6-month period ending July 31.

30. **RETENTION OF RECORDS:** The Contractor shall retain and maintain all records and documents relating to this Contract for three (3) years after final payment by the University hereunder or any applicable statute of limitations, whichever is longer, and shall make them available for inspection and audit by authorized representatives of the University, including the Procurement Officer or the Procurement Officer's designee, at all reasonable times.

31. **AUDIT:** The University reserves the right to request an independent review of the Contractor's financial operations and overall contract compliance ("Review"). The Review would be at the Contractor's expense and comprised of an agreed upon procedures engagement by an independent certified public accountant with a protocol acceptable to both parties at the time of the request.

32. **COMPLIANCE WITH LAWS:** The Contractor hereby represents and warrants that:
   A. It is qualified to do business in the State of Maryland and that it will take such action as, from time to time hereafter, may be necessary to remain so qualified;
   B. It is not in arrears with respect to the payment of any monies due and owing the State of Maryland, or any department or unit thereof, including but not limited to the payment of taxes and employee benefits, and that it shall not become so in arrears during the term of this Contract;
   C. It shall comply with all federal, State and local laws, regulations, and ordinances applicable to its activities and obligations under this Contract; and
D. It shall obtain at its expense, all licenses, permits, insurance, and governmental approval, if any, necessary to the performance of its obligations under this Contract.

33. **COST AND PRICE CERTIFICATION:** By submitting cost or price information, the Contractor certifies to the best of its knowledge that the information submitted is accurate, complete, and current as of a mutually determined specified date prior to the conclusion of any price discussions or negotiations for:

   A. A negotiated contract, if the total contract price is expected to exceed $100,000, or a smaller amount set by the procurement officer; or
   
   B. A change order or contract modification, expected to exceed $100,000, or a smaller amount set by the procurement officer.
   
   C. The price under this Contract and any change order or modification hereunder, including profit or, fee, shall be adjusted to exclude any significant price increases occurring because the Contractor furnished cost or price information which, as of the date agreed upon between the parties, was inaccurate, incomplete, or not current.

34. **TRUTH-IN NEGOTIATION CERTIFICATION:** [Mandatory provision for architectural services or engineering services contracts exceeding $100,000. It shall be in substantially the same form as follows: or insert “N/A” if not applicable.] The Contractor by submitting cost or price information, including wage rates or other actual unit costs, certifies to the best of its knowledge, information and belief, that:

   A. the wage rates and other factual unit costs supporting the firm=s compensation, as set forth in the proposal, are accurate, complete and current as of the contract date;
   
   B. if any items of compensation were increased due to the furnishing of inaccurate, incomplete or noncurrent wage rates or other units of costs, the State is entitled to an adjustment in all appropriate items of compensation, including profit or fee, to exclude any significant sum by which the price was increased because of the defective data. The University=s right to adjustment includes the right to a price adjustment for defects in costs or pricing data submitted by a prospective or actual subcontractor; and
   
   C. If additions are made to the original price of the contract, such additions may be adjusted to exclude any significant sums where it is determined the price has been increased due to inaccurate, incomplete or noncurrent wage rates and other factual costs.

35. **PAYMENT OF UNIVERSITY OBLIGATIONS:** Payments to the Contractor pursuant to this Contract shall be made no later than 30 days after the University's receipt of a proper invoice from the Contractor. Each such invoice must reflect the Contractor's federal tax identification number. Charges for late payment of invoices, other than as prescribed by Title 15, Subtitle 1, of the State Finance and Procurement Article, Annotated Code of Maryland, as from time to time amended, are prohibited.

36. **SET-OFF:** The University may deduct from and set-off any amounts due and payable to the Contractor any back-charges or damages sustained by the University by virtue of any breach of this Contract by the Contractor or by virtue of the failure or refusal of the Contractor to perform the services or any part of the services in a satisfactory manner. Nothing herein shall be construed to relieve the Contractor of liability for additional costs resulting from a failure to satisfactorily perform the services.
37. **INDEMNIFICATION:** The University shall not assume any obligations to indemnify, hold harmless, or pay attorneys' fees that may arise from or in any way be associated with the performance or operation of this Contract.

38. **PROHIBITION AGAINST SHIFTING MARYLAND INCOME TO OUT-OF-STATE AFFILIATES:** Contractor may not, for any period during the Contract term, seek to reduce the amount of Contractor's income subject to Maryland income tax by payments made to an affiliated entity or an affiliate's agent for the right to use trademarks, trade names, or other tangible property associated with Contractor. Contractor agrees that during the course of this Contract it shall not make any such royalty or similar payments to any affiliated company; and if any such royalty or similar payments are made, Contractor and the affiliated company shall file separate Maryland income tax, under a formula that reasonably apportions the income of the affiliated company among the states, including Maryland, in which the Contractor does business. Contractor agrees that it is authorized to bind its affiliated entities to the terms hereof.

39. **USE OF CONTRACTOR'S FORMS NOT BINDING ON STATE:**

A. The use or execution by the University of any forms, orders, agreements, or other documents of any kind, other than the Contract documents, used pursuant to or in the administration of any contract awarded by the University to the Contractor, shall not bind the University to any of the terms and conditions contained therein except those provisions:

   (1) Generally describing for the purposes of ordering: equipment or services to be provided, locations, quantities, delivery or installation dates, and, to the extent consistent with the Contract Documents, prices; and
   (2) not otherwise inconsistent with the Contract Documents.

B. Any such form, order, or others document shall not vary, modify, or amend the terms and provisions of the Contract Documents, notwithstanding any provision to the contrary in such document, unless all of the following conditions are met:

   (1) the document expressly refers to the particular document and provision of the Contract Documents being modified and plainly and conspicuously identifies any modifications thereto as a modification; and
   (2) the document is executed on behalf of the University by the procurement officer; and
   (3) execution of the document is approved by the procurement authority whose approval is required by law.

40. **ASSIGNMENT:** This Contract and the rights, duties, and obligations hereunder may not be assigned or subcontracted by Contractor without the prior written consent of the University.

41. **WAIVER OF JURY:** UNIVERSITY AND CONTRACTOR, HEREBY WAIVE TRIAL BY JURY IN ANY ACTION OR PROCEEDING TO WHICH THEY ARE PARTIES ARISING OUT OF OR IN ANY WAY PERTAINING TO THIS CONTRACT. IT IS AGREED AND UNDERSTOOD THAT THIS WAIVER CONSTITUTES A WAIVER OF TRIAL BY JURY OF ALL CLAIMS AGAINST ALL PARTIES WHO ARE NOT PARTIES TO THIS CONTRACT. THIS WAIVER IS KNOWINGLY, WILLINGLY AND VOLUNTARILY MADE BY UNIVERSITY AND CONTRACTOR, WHO HEREBY REPRESENT AND WARRANT THAT NO REPRESENTATIONS OF FACT OR OPINION HAVE BEEN MADE BY AN
INDIVIDUAL TO INDUCE THIS WAIVER OF TRIAL BY JURY OR TO IN ANY WAY MODIFY OR NULLIFY ITS EFFECT.

42. **MARYLAND LAW**: This Agreement shall be governed by and construed in accordance with the laws of the State of Maryland, without regard to its conflicts of law or choice of law principles.

43. **SUCCESSORS AND ASSIGNS.** This Agreement will bind upon and inure to the benefit of the parties hereto and their respective personal representatives/successors and assigns. Successors and assigns shall agree to assume in writing the obligations under this Contract.

44. **COMPLIANCE WITH FERPA**: The University agrees that, for purposes of the Family Educational Rights and Privacy Act of 1974 (20 U.S.C. § 1232g) as amended (“FERPA”), the Contractor will be considered a contractor to whom functions and services have been outsourced by the University. As a result of these functions and services, the Contractor might have access to educational records, as defined by FERPA. Contractor agrees that it shall not re-disclose personally identifiable educational records that it receives from the University pursuant to this Agreement, unless such disclosure is authorized to perform the functions and services provided through this agreement or is authorized under FERPA. Contractor expressly warrants and represents that it shall not use the student information or educational records provided by the University for any purpose other than to comply with the terms of this Agreement with the University. Contractor shall indemnify and hold harmless the University from and against any and all claims, suits, proceedings, costs, losses, damages, liabilities, expenses, demands, and judgments, including court costs, attorney’s fees, and other reasonable expenses of litigation, which may arise out of, relate to, or be a consequence of, an unauthorized disclosure of educational records. Contractor will, upon discovery, or receipt of notice, of a potential, or actual, material unauthorized disclosure of educational records, immediately report said occurrence to the University. Contractor will work with the University to remediate the unauthorized disclosure (or anticipated unauthorized disclosure) at the expense of Contractor. The terms of the remediation are the sole and exclusive determination of the University.

45. **CONTRACT CONTROLS**: It is mutually agreed that any attached contract, or addenda thereto, by and between the University and the Contractor pertaining to this Contract is supplemental and subordinate to this University of Maryland, Baltimore County Contract. The terms and conditions of this University of Maryland, Baltimore County Contract shall, at all times and in all events and situations, be controlling.

46. **CONTRACT AFFIDAVIT**: The Contract Affidavit required by the USM Procurement Policies and Procedures, consisting of Authorized Representative statement, Certification of Corporate Registration and Tax Payment, and Certain Affirmations Valid is attached and is a part of this Contract that must be executed by an authorized representative of the Contractor.

47. **ENTIRE AGREEMENT**:

   A. This Contract constitutes the entire agreement of the parties and supersedes all prior written or oral and all contemporaneous oral agreements, understandings, and negotiations between the parties with respect to the subject matter hereof. This Contract is intended by the parties as the final expression of their agreement and may not be contradicted by evidence of any prior or contemporaneous agreement.
B. Headings: All headings are for reference purposes only and must not affect the interpretation of this Contract. All references to days in this Agreement mean calendar days, unless otherwise expressly stated. All references to including mean including without limitation.

C. Partial Invalidity. Any provision of this Contract which is found to be invalid or unenforceable shall be ineffective to the extent of such invalidity or unenforceability, and the invalidity or unenforceability of such provision shall not affect the validity or enforceability of the remaining provisions hereof.

D. Notices. Any notice required to be given hereunder shall be deemed to have been given either when served personally, by facsimile, or when sent by first class mail addressed to the parties at the addresses set forth in this Agreement.

E. Counterparts. This Contract may be executed simultaneously, in two (2) or more counterparts, each of which shall be deemed an original and all of which, when taken together, shall constitute one and the same document. The signature of any party to any counterpart shall be deemed a signature to, and may be appended to any other counterpart.

(Signatures to be placed on the following page)
IN WITNESS WHEREOF, the parties have caused this Contract to be executed on their behalf by the undersigned as of the date first shown above.

Contractor:

BY: ____________________________
Signature

_______________________________
Typed/Printed Name

_______________________________
Title

_______________________________
Date

_______________________________
Telephone Number

University of Maryland Baltimore County

BY: ____________________________
Signature

_______________________________
Typed/Printed Name

_______________________________
Title

_______________________________
Date

_______________________________
Telephone Number
CONTRACT AFFIDAVIT

A. AUTHORIZED REPRESENTATIVE
I HEREBY AFFIRM THAT:
I am the (title) ____________________________ and the duly authorized representative of (business) ____________________________ and that I possess the legal authority to make this Affidavit on behalf of myself and the business for which I am acting.

B. CERTIFICATION OF CORPORATION REGISTRATION AND TAX PAYMENT
I FURTHER AFFIRM THAT:
(1) The business named above is a ( domestic) ( foreign) corporation registered in accordance with the Corporations and Associations Article, Annotated Code of Maryland, and that is in good standing and has filed all of its annual reports, together with filing fees, with the Maryland State Department of Assessments and Taxation, and that the name and address of its current resident agent is filed with the State Department of Assessments and Taxation is:

Name: __________________________________________

Address: __________________________________________

City, State, Zip: __________________________________________

(2) Except as validly contested, the business had paid, or has arranged for payment of, all taxes due the State of Maryland and has filed all required returns and reports with the Comptroller of the Treasury, the State Department of Assessments and Taxation, and the Department of Labor, Licensing, and Regulation, as applicable, and will have paid all withholding taxes due the State of Maryland prior to final settlement.

C. CERTAIN AFFIRMATIONS VALID
I FURTHER AFFIRM THAT:
To the best of my knowledge, information and belief, each of the affirmations, certifications, or acknowledgements contained in that certain Bid/Proposal Affidavit dated __________, 20__, and executed by me or for the purpose of obtaining the contract to which this Exhibit is attached remains true and correct in all respects as if made as of the date of this Contract Affidavit and as if fully set forth herein.

I DO SOLEMNLY DECLARE AND AFFIRM UNDER THE PENALTIES OF PERJURY THAT THE CONTENTS OF THIS AFFIDAVIT ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE, INFORMATION, AND BELIEF.

Date: ____________________________  By: ____________________________

(Authorized Representative & Affiant)

12.00061 (04/02)

END OF FORM
PERFORMANCE BOND

Principal                                      Business Address of Principal

Surety                                          Obligee

a corporation of the State of ________________________________ STATE OF MARYLAND

and authorized to do business in the State of Maryland

By and through the following

Administration __________________________________________________________________________

Penal Sum of Bond (express in words and figures)                    Date of Contract

                                                                 _____________________________, 20________

Description of Contract                                           Date Bond Executed

                                                                 _____________________________, 20________

Contract Number:

KNOW ALL MEN BY THESE PRESENTS, That we, the Principal named above and Surety named above, being authorized to
do business in Maryland, and having business addresses as shown above, are held and firmly bound unto the Obligee named
above in Penal Sum of this Performance Bond stated above, for the payment of which Penal Sum we bind ourselves, our heirs,
executors, administrators, personal representatives, successors, and assigns, jointly and severally, firmly by these presents.
However, where Surety is composed of corporations acting as co-sureties, we, the co-sureties, bind ourselves, our successors and
assigns, in such Penal Sum jointly and severally as well as severally for the purpose of allowing a joint action or actions
against any or all of us, and for all other purposes each co-surety binds itself, jointly and severally with the Principal, for the
payment of such sum as appears above its name below, but if no limit of liability is indicated, the limit of such liability shall be
the full amount of the Penal Sum.

WHEREAS, Principal has entered into or will enter into a contract with the State of Maryland, by and through the
Administration named above acting for the State of Maryland, which contract is described and dated as shown above, and
incorporated herein by reference. The contract and all items incorporated into the contract, together with any and all changes,
extensions of time, alterations, modifications, or additions to the contract or to the work to be performed thereunder or to the
Plans, Specifications, and Special Provisions, or any of them, or to any other items incorporated into the contract shall
hereinafter be referred to as "the Contract."

WHEREAS, it is one of the conditions precedent to the final award of the Contract that these presents be executed.

NOW, THEREFORE, during the original term of said Contract, during any extensions thereto that may be granted by the
Administration, and during the guarantee and warranty period, if any, required under the Contract, unless otherwise stated
therein, this Performance Bond shall remain in full force and effect unless and until the following terms and conditions are met:

1. Principal shall well and truly perform the Contract; and

2. Principal and Surety shall comply with the terms and conditions contained in this Performance Bond.

Whenever Principal shall be declared by the Administration to be in default under the Contract, the Surety may, within 15 days
after notice of default from the Administration, notify the Administration of its election to either promptly proceed to remedy the
default or promptly proceed to complete the contract in accordance with and subject to its terms and conditions. In the event the
Surety does not elect to exercise either of the above stated options, then the Administration thereupon shall have the remaining
contract work completed, Surety to remain liable hereunder for all expenses of completion up to but not exceeding the penal sum
state above.

The Surety hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or
to the work to be performed thereunder or to the Specifications accompanying the same shall in any way affect its obligations on
this Performance Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms
of the Contract or to the work or to the Specifications.

This Performance Bond shall be governed by and construed in accordance with the laws of the State of Maryland and any
reference herein to Principal or Surety in the singular shall include all entities in the plural who or which are signatories under
the Principal or Surety heading below.

IN WITNESS WHEREOF, Principal and Surety have set their hands and seals to this Performance Bond. If any individual is a
signatory under the Principal heading below, then each such individual has signed below on his or her own behalf, has set forth
below the name of the firm, if any, in whose name he or she is doing business, and has set forth below his or her title as a sole
proprietor. If any partnership or joint venture is a signatory under the Principal heading below, then all members of each such
partnership or joint venture have signed below, each member has set forth below his or her title as a general partner, limited partner, or member of joint venture, whichever is applicable. If any corporation is a signatory under the Principal or Surety heading below, then each such corporation has caused the following: the corporation's name to be set forth below, a duly authorized representative of the corporation to affix below the corporation's seal and to attach hereto a notarized corporate resolution or power of attorney authorizing such action, and each such duly authorized representative to sign below and to set forth below his or her title as a representative of the corporation. If any individual acts as a witness to any signature below, then each such individual has signed below and has set forth below his or her title as a witness. All of the above has been done as of the Date of Bond shown above.

<table>
<thead>
<tr>
<th>In Presence of Witness</th>
<th>Individual Principal</th>
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<tbody>
<tr>
<td>(SEAL)</td>
<td></td>
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<tr>
<th>Co-Partnership Principal</th>
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<tbody>
<tr>
<td>(Name of Co-Partnership)</td>
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<tr>
<th>By:</th>
<th>to</th>
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<table>
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<tr>
<th>Corporate Principal</th>
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<tr>
<td>(Name of Corporation)</td>
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<table>
<thead>
<tr>
<th>By:</th>
<th>President</th>
<th>SEAL</th>
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<tr>
<th>(Surety)</th>
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<table>
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<th>(SEAL)</th>
<th>By:</th>
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<table>
<thead>
<tr>
<th>Title:</th>
<th>(Business Address of Surety)</th>
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<table>
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<tr>
<th>Bonding Agent's Name</th>
<th>Agent's Address</th>
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</table>

(Contractor shall fill in all blank spaces above this line)

Approved as to legal form and sufficiency

day of 20

Attorney
APPENDIX D

UMBC WEBSITE/CAMPUS MAP
APPENDIX D

1. UMBC WEBSITE / MAP

1.1 UMBC Website: www.umbc.edu

1.2 UMBC Map: http://www.umbc.edu/aboutumbc/campusmap/

END OF SECTION V – APPENDIXES

END OF BID DOCUMENT